



# Sourcebook ★ Vol. 3

## Sourcebook: Women Veterans in the Veterans Health Administration

### VOLUME 3: SOCIODEMOGRAPHICS, UTILIZATION, COSTS OF CARE, AND HEALTH PROFILE

Women's Health Evaluation Initiative (WHEI)  
VA HSR&D Center for Innovation to Implementation (Ci2i)  
VA Palo Alto Health Care System  
Palo Alto, CA

Women's Health Services  
Office of Patient Care Services  
Veterans Health Administration  
Washington, DC

February 2014



U.S. Department  
of Veterans Affairs

WOMEN VETERANS HEALTH CARE



*SINCE THE REVOLUTIONARY WAR, AMERICA'S WOMEN  
HAVE EARNED AMERICA'S GRATITUDE AND RESPECT FOR  
THEIR CONTRIBUTIONS TO THE MILITARY  
AND TO THE NATION.*

*VA WILL CONTINUE TO IMPROVE OUR BENEFITS AND  
SERVICES FOR WOMEN VETERANS AS WE TRANSFORM  
INTO A 21ST CENTURY ORGANIZATION.*

**SECRETARY OF VETERANS AFFAIRS**

**ERIC K. SHINSEKI**

**MARCH 10, 2010**



# Sourcebook: Women Veterans in the Veterans Health Administration

## Volume 3: Sociodemographics, Utilization, Costs of Care, and Health Profile

*Prepared for:*

### **Women's Health Services**

Office of Patient Care Services, Veterans Health Administration  
Department of Veterans Affairs  
810 Vermont Ave., NW  
Washington, DC 20420

*Prepared by:*

### **Women's Health Evaluation Initiative (WHEI)**

VA HSR&D Center for Innovation to Implementation (Ci2i)  
VA Palo Alto Health Care System  
3801 Miranda Ave. (152-MPD)  
Palo Alto, CA 94304

Susan M. Frayne, MD, MPH, WHEI Director  
Ciaran S. Phibbs, PhD, WHEI Associate Director  
Fay Saechao, MPH, Project Manager and Lead Technical Writer  
Natalya C. Maisel, PhD, Technical Writer  
Sarah A. Friedman, MSPH, Technical Writer  
Andrea Finlay, PhD, Technical Writer  
Eric Berg, MS, Senior Data Analyst  
Vidhya Balasubramanian, MS, Data Analyst  
Sharon K. Dally, MS, Data Analyst/Technical Writer  
Lakshmi Ananth, MS, Data Analyst  
Yasmin Romodan, MPH, Program Evaluation Assistant  
Jimmy Lee, MS, Program Evaluation Assistant  
Samina Iqbal, MD, Senior Clinical Consultant

### **Women's Health Services**

Patricia M. Hayes, PhD, Chief Consultant  
Sally Haskell, MD, Deputy Chief Consultant for Clinical Operations  
and Director of Comprehensive Women's Health  
Laurie Zephyrin, MD, MPH, MBA, FACOG, Director, Reproductive Health  
Alison Whitehead, MPH, Management Analyst  
Anupama Torgal, MPH, Management Analyst  
Jodie G. Katon, MS, PhD, Consultant, Reproductive Health

**Recommended citation:** Frayne SM, Phibbs CS, Saechao F, Maisel NC, Friedman SA, Finlay A, Berg E, Balasubramanian V, Dally SK, Ananth L, Romodan Y, Lee J, Iqbal S, Hayes PM, Zephyrin L, Whitehead A, Torgal A, Katon JG, Haskell S. Sourcebook: Women Veterans in the Veterans Health Administration. Volume 3. Sociodemographics, Utilization, Costs of Care, and Health Profile. Women's Health Evaluation Initiative, Women's Health Services, Veterans Health Administration, Department of Veterans Affairs, Washington DC. February 2014.

**Acknowledgements:** We express appreciation to our reviewers, who made substantive contributions to this Sourcebook: Rachel Kimerling, PhD, Kristin Mattocks, PhD, Joanne Pavao, MPH, Susan Schmitt, PhD, Jonathan Shaw, MD, MS, Elizabeth Tarlov, PhD, RN, Donna Washington, MD, MPH, Jean Yoon, PhD, MHS, and Donna Zulman, MD, MS. We also gratefully acknowledge important contributions to development of medical conditions by other members of the Women's Health Services' Cardiovascular Health Workgroup, including Melinda Davis, MD and Claire Duvernoy, MD, and other members of the Women's Health Services' Reproductive Health Workgroup, including Katherine Hoggatt, PhD, MPH, Amanda Johnson, MD, and Kristin Mattocks, PhD. We are grateful to other contributors who helped in the development of this Sourcebook including Xiaoyu Bi, PhD, Maggie Czarnogorski, MD, Eva Durazo, MPH, Melissa Lanzendorfer, RN, BSN, MBA, and Alyssa Pomernacki, MPH. Finally, the WHEI team profited greatly in the development of this report from the support of the VA HSR&D Center for Innovation to Implementation (Ci2i), the Health Economics Resource Center (HERC), and the Women's Health Section of the Medical Service at VA Palo Alto Health Care System.

***Our deepest gratitude goes to the women Veterans who have served our country across the generations.***

This report is based on program evaluation analyses conducted by the Women's Health Evaluation Initiative at the VA Palo Alto Health Care System in Palo Alto, California. This work was funded by Women's Health Services, Veterans Health Administration, Department of Veterans Affairs. The findings and conclusions in this document are those of the authors who are responsible for its contents, and do not necessarily represent the views of the Department of Veterans Affairs or the United States government. Therefore, no statement in this document should be construed as an official position of the Department of Veterans Affairs.

## Table of Contents

<b>EXECUTIVE SUMMARY.....</b>	<b>1</b>
Key Findings .....	3
Key Implications for Policy and Practice .....	7
Sociodemographics.....	7
Utilization.....	9
Cost .....	12
Health Profile .....	12
<b>INTRODUCTION .....</b>	<b>17</b>
Background .....	17
Methods .....	19
<b>PART 1. SOCIODEMOGRAPHICS .....</b>	<b>21</b>
Cohort Size .....	21
Age .....	22
Race/Ethnicity .....	25
Urban/Rural Status .....	27
Service-Connected Disability Rating Status .....	28
OEF/OIF/OND Status .....	31
<b>PART 2. TOTAL UTILIZATION: VHA OR NON-VA (FEE) MEDICAL CARE, COMBINED, FY12 .....</b>	<b>39</b>
Overview of Parts 2, 3, and 4 .....	39
Total Outpatient Care .....	42
<b>PART 3. VHA UTILIZATION, FY12 .....</b>	<b>45</b>
VHA Outpatient Care .....	45
Primary Care .....	47
Gynecology Care .....	58
Mental Health/Substance Use Disorder (SUD) Care .....	59
Telephone and Telehealth Care .....	66
<b>PART 4. NON-VA (FEE) MEDICAL CARE UTILIZATION, FY12 .....</b>	<b>69</b>
Non-VA (Fee) Medical Care Outpatient Care .....	69
Mammography Services through the Non-VA (Fee) Medical Care System .....	77
<b>PART 5. COST OF CARE, FY12 .....</b>	<b>83</b>
Total Cost.....	84
VHA Outpatient Cost.....	85
VHA Inpatient Cost.....	86
Non-VA (Fee) Medical Care Cost.....	87

<b>PART 6. HEALTH PROFILE - OVERVIEW.....</b>	<b>89</b>
Overview of Parts 6, 7 and 8 .....	89
Domain Frequencies Among Women Veteran Patients .....	93
<b>PART 7. HEALTH PROFILE - CONDITIONS .....</b>	<b>101</b>
Condition Frequencies .....	101
Infectious Disease Conditions .....	102
Endocrine/Metabolic/Nutritional Conditions .....	104
Cardiovascular Conditions .....	106
Respiratory Conditions.....	108
Gastrointestinal Conditions .....	110
Urinary Conditions .....	112
Reproductive Health Conditions .....	114
Breast Conditions.....	117
Cancer Conditions.....	118
Hematologic/Immunologic Conditions .....	121
Musculoskeletal Conditions .....	122
Neurologic Conditions .....	124
Mental Health/Substance Use Disorder Conditions .....	126
Sense Organ Conditions.....	128
Dental Conditions .....	129
Dermatologic Conditions .....	130
Other Conditions .....	131
Top 20 Conditions for Women Veterans by Age Group, FY12 .....	133
<b>PART 8. HEALTH PROFILE - SUBPOPULATIONS .....</b>	<b>135</b>
Domain Frequencies Among Subpopulations of Women Veteran Patients .....	135
Race/Ethnicity.....	135
Urban/Rural Status .....	140
Service-Connected Disability Rating Status .....	144
OEF/OIF/OND Status .....	148
<b>PART 9. TECHNICAL APPENDIX .....</b>	<b>151</b>



## List of Exhibits

### PART 1. SOCIODEMOGRAPHICS

Exhibit 1.A: Number of Women Veteran Patients in Each Year, FY03-FY12 .....	21
Exhibit 1.B: Number of Men Veteran Patients in Each Year, FY03–FY12 .....	21
Exhibit 1.C: Age Distribution of Women Veteran Patients, FY03 and FY12 .....	23
Exhibit 1.D: Age Distribution of Men Veteran Patients, FY03 and FY12 .....	23
Exhibit 1.E: Age Distribution of Women Veteran Patients, FY03–FY12 .....	23
Exhibit 1.F: Age Distribution of Women and Men Veteran Patients, FY12.....	24
Exhibit 1.G: Race/Ethnicity Distribution of Women and Men Veteran Patients, FY12 .....	25
Exhibit 1.H: Race/Ethnicity Distribution of Women and Men Veteran Patients by Age, FY12 .....	26
Exhibit 1.I: Urban/Rural Status of Women Veteran Patients, FY12 .....	27
Exhibit 1.J: Urban/Rural Status of Women and Men Veteran Patients, FY12 .....	28
Exhibit 1.K: Service-Connected Disability Rating of Women Veteran Patients, FY03 and FY12 .....	29
Exhibit 1.L: Service-Connected Disability Rating of Women and Men Veteran Patients by Age, FY12 ..	29
Exhibit 1.M: Timeline of OEF/OIF/OND Conflicts .....	31
Exhibit 1.N: OEF/OIF/OND Status of Women and Men Veteran Patients by Age, FY12 .....	32
Exhibit 1.O: OEF/OIF/OND Status of Women and Men Veteran Patients by Fine Age Group, FY12 .....	33
Exhibit 1.P: OEF/OIF/OND Status of Women Veteran Patients, FY03-FY12.....	35
Exhibit 1.Q: OEF/OIF/OND Status of Men Veteran Patients, FY03-FY12 .....	35
Exhibit 1.R: OEF/OIF/OND Status of Women Veteran Patients Age 18-44, FY03-FY12 .....	36
Exhibit 1.S: OEF/OIF/OND Status of Women Veteran Patients Age 45-64, FY03-FY12.....	36

### PART 2. TOTAL UTILIZATION: VHA OR NON-VA (FEE) MEDICAL CARE, COMBINED, FY12

Exhibit 2.A: Description of Denominators for Utilization Data .....	41
---	----

### PART 3. VHA UTILIZATION, FY12

Exhibit 3.A: Proportion of Women and Men Veteran Patients by VHA Outpatient Encounters and Age, FY12 .....	46
Exhibit 3.B: Proportion of Women Veteran Outpatients by Total VHA Primary Care Encounters, FY12 ..	48
Exhibit 3.C: Proportion of Women and Men Veteran Outpatients by Total VHA Primary Care Encounters and Age, FY12 .....	49
Exhibit 3.D: Proportion of Women and Men Veteran Outpatients by Total VHA Primary Care Encounters, Race/Ethnicity, and Age, FY12 .....	50
Exhibit 3.E: Proportion of OEF/OIF/OND Women and Men Veteran Outpatients by Total VHA Primary Care Encounters and Age, FY12 .....	52
Exhibit 3.F: Proportion of Women Veteran Outpatients by VHA Primary Care Clinic Encounters, FY12 .....	54
Exhibit 3.G: Proportion of Women Veteran Outpatients by VHA Women’s Health Clinic Encounters, FY12 .....	54
Exhibit 3.H: Proportion of Women Veteran Outpatients by Which VHA Primary Care Clinics They Use, FY12 .....	55
Exhibit 3.I: Proportion of Women Veteran Outpatients by VHA Women’s Health Clinic Encounters and Age, FY12 .....	56

Exhibit 3.J: Proportion of Women Veteran Outpatients by VHA Women's Health Clinic Encounters, Race/Ethnicity, and Age, FY12 .....	57
Exhibit 3.K: Proportion of OEF/OIF/OND Women Veteran Outpatients by VHA Women's Health Clinic Encounters and Age, FY12 .....	58
Exhibit 3.L: Proportion of Women Veteran Outpatients by VHA Mental Health/SUD Encounters, FY12 .....	59
Exhibit 3.M: Proportion of Women and Men Veteran Outpatients by VHA Mental Health/SUD Encounters, FY12 .....	60
Exhibit 3.N: Proportion of Women and Men Veteran Outpatients by VHA Mental Health/SUD Encounters and Age, FY12 .....	61
Exhibit 3.O: Proportion of Women and Men Veteran Outpatients by VHA Mental Health/SUD Encounters, Race/Ethnicity, and Age, FY12 .....	62
Exhibit 3.P: Proportion of Women and Men OEF/OIF/OND Veteran Outpatients by VHA Mental Health/SUD Encounters and Age, FY12 .....	64
<b>PART 4. NON-VA (FEE) MEDICAL CARE UTILIZATION, FY12</b>	
Exhibit 4.A: Proportion of Women Veteran Patients by Non-VA (Fee) Medical Care Outpatient Days, FY12 .....	70
Exhibit 4.B: Proportion of Women and Men Veteran Patients by Non-VA (Fee) Medical Care Outpatient Days, FY12.....	70
Exhibit 4.C: Proportion of Women and Men Veteran Patients by Non-VA (Fee) Medical Care Outpatient Days and Age, FY12.....	71
Exhibit 4.D: Proportion of Women and Men Veteran Patients by Non-VA (Fee) Medical Care Outpatient Days, Race/Ethnicity, and Age, FY12.....	73
Exhibit 4.E: Proportion of OEF/OIF/OND Women and Men Veteran Patients by Non-VA (Fee) Medical Care Outpatient Days and Age, FY12 .....	75
Exhibit 4.F: Proportion of Women and Men Veteran Outpatients by Non-VA (Fee) Medical Care Use (None vs. Mammography Only vs. Other Type of Use [With or Without Mammography]) and Age, FY12 .....	78
Exhibit 4.G: Proportion of Women Veteran Outpatients by Non-VA (Fee) Medical Care Use (None vs. Mammography Only vs. Other Type of Use [With or Without Mammography]), Race/Ethnicity, and Age, FY12 .....	80
Exhibit 4.H: Proportion of OEF/OIF/OND Women Veteran Outpatients by Non-VA (Fee) Medical Care Use (None vs. Mammography Only vs. Other Type of Use [With or Without Mammography]) and Age, FY12 .....	81
<b>PART 5. COST OF CARE, FY12</b>	
Exhibit 5.A: Mean Total Cost For Women and Men Veteran Patients by Age, FY12.....	84
Exhibit 5.B: Mean VHA Outpatient Cost For Women and Men Veteran Patients by Age, FY12 .....	85
Exhibit 5.C: Mean VHA Inpatient Cost For Women and Men Veteran Patients by Age, FY12 .....	86
Exhibit 5.D: Mean VHA Inpatient Cost For Women and Men Veteran Patients, Limited to Only Those Who Utilized VHA Inpatient Care, by Age, FY12 .....	86
Exhibit 5.E: Mean Non-VA (Fee) Medical Care Cost For Women and Men Veteran Patients by Age, FY12 .....	88
Exhibit 5.F: Mean Non-VA (Fee) Medical Care Cost For Women and Men Veteran Patients, Limited to Only Those Who Utilized Non-VA (Fee) Medical Care, by Age, FY12.....	88

**PART 6. HEALTH PROFILE - OVERVIEW**

Exhibit 6.A: Domain Frequencies Among Women and Men Veteran Patients, FY12 .....	93
Exhibit 6.B: Top Five Domain Frequencies Among Women and Men Veteran Patients by Age, FY12 ...	94
Exhibit 6.C: Domain Frequencies Among Women and Men Veteran Patients by Age, and Age-adjusted Odds Ratio (AOR) of Each Domain for Women Versus Men, FY12 .....	96
Exhibit 6.D: Domain Frequencies Among Women Veteran Patients by Age, FY12 .....	98

**PART 7. HEALTH PROFILE - CONDITIONS**

Exhibit 7.A: Condition Frequencies for <b>Infectious Disease</b> Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12.....	102
Exhibit 7.B: Condition Frequencies for <b>Endocrine/Metabolic/Nutritional</b> Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12 .....	104
Exhibit 7.C: Condition Frequencies for <b>Cardiovascular</b> Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12 .....	106
Exhibit 7.D: Condition Frequencies for <b>Respiratory</b> Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12 .....	108
Exhibit 7.E: Condition Frequencies for <b>Gastrointestinal</b> Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12 .....	110
Exhibit 7.F: Condition Frequencies for <b>Urinary</b> Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12 .....	112
Exhibit 7.G: Condition Frequencies for <b>Reproductive Health</b> Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12.....	114
Exhibit 7.H: Condition Frequencies for <b>Breast</b> Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12 .....	117
Exhibit 7.I: Condition Frequencies for <b>Cancer</b> Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12 .....	118
Exhibit 7.J: Condition Frequencies for <b>Hematologic/Immunologic</b> Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12 .....	121
Exhibit 7.K: Condition Frequencies for <b>Musculoskeletal</b> Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12.....	122
Exhibit 7.L: Condition Frequencies for <b>Neurologic</b> Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12 .....	124
Exhibit 7.M: Condition Frequencies for <b>Mental Health/SUD</b> Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12 .....	126
Exhibit 7.N: Condition Frequencies for <b>Sense Organ</b> Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12 .....	128
Exhibit 7.O: Condition Frequencies for <b>Dental</b> Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12 .....	129
Exhibit 7.P: Condition Frequencies for <b>Dermatologic</b> Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12 .....	130
Exhibit 7.Q: Condition Frequencies for <b>Other</b> Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12 .....	131
Exhibit 7.R: Top Twenty Condition Frequencies Among Women Veteran Patients by Age, FY12 .....	134

**PART 8. HEALTH PROFILE - SUBPOPULATIONS**

Exhibit 8.A: Domain Frequencies in Women Veteran Patients by Race/Ethnicity and Age, FY12 .....	138
Exhibit 8.B: Domain Frequencies in Women Veteran Patients by Urban/Rural Status and Age, FY12. ....	142
Exhibit 8.C: Domain Frequencies in Women Veteran Patients by SC Rating Status and Age, FY12.....	146
Exhibit 8.D: Domain Frequencies in OEF/OIF/OND Women Veteran Patients, Overall, FY12 .....	148
Exhibit 8.E: Domain Frequencies in OEF/OIF/OND Women Veteran Patients by Fine Age Group, FY12 .....	150

**PART 9. TECHNICAL APPENDIX**

Exhibit 9.A: Number of People in WHEI Master Database and in Base Cohort for Sourcebook Volume 3, by Year .....	156
Exhibit 9.B: Mapping of “Race” Values.....	160
Exhibit 9.C: Mapping of “Ethnicity” Values .....	161
Exhibit 9.D: Mapping of WHEI_RACE and WHEI_ETHNICITY to WHEI_RACE/ETHNICITY.....	163
Exhibit 9.E: Three Scenarios Observed in FY12 Non-VA (Fee) Medical Care Outpatient Data .....	172
Exhibit 9.F: Percent of Individuals in WHEI Master Database by Cross-Year Consistency of Sex Variable, FY03–FY12 (Among Base Cohort Women and Men, N=9,313,153).....	189
Exhibit 9.G: Number of Individuals Missing a Sex Value in Each Fiscal Year by Step of Sex Variable Creation Algorithm (Among Base Cohort—Women and Men) .....	190
Exhibit 9.H: Number of Individuals Missing a Date of Birth (DOB) Value in Each Fiscal Year by Step of DOB Variable Creation Algorithm (Among Base Cohort—Women and Men) .....	191
Exhibit 9.I: Number of Individuals Missing a Race Value by Step of WHEI_RACE Variable Creation Algorithm (Among FY12 Base Cohort—Women and Men, N=5,613,091).....	192
Exhibit 9.J: Number of Individuals Missing an Ethnicity Value by Step of WHEI_ETHNICITY Variable Creation Algorithm (Among FY12 Base Cohort—Women and Men, N=5,613,091) .....	192
Exhibit 9.K: Number of Individuals Missing an Urban/Rural Value in FY12 (Among FY12 Base Cohort— Women and Men, N=5,613,091) .....	193
Exhibit 9.L: Number of Individuals Missing a Service-Connected Rating in Each Fiscal Year (Among Base Cohort—Women and Men).....	193
Exhibit 9.M: Clinic Stops with High Rates of Duplicate Records.....	194
Exhibit 9.N: Number of Records in FY12 Non-VA (Fee) Medical Care Outpatient Data Files by Year of Service, Out of 25,374,963 Total Records Appearing in FY12 Non-VA (Fee) Medical Care File .....	195
Exhibit 9.O: Steps Taken by WHEI to Define and Resolve Multiple Records in the FY12 Non-VA (Fee) Medical Care Outpatient File .....	196
Exhibit 9.P: Processing of Non-VA (Fee) Medical Care Outpatient Data Volume Indicator Field .....	199

## List of Acronyms

ADUSH	Assistant Deputy Under Secretary of Health	NDEs	National Data Extracts
AHRQ	Agency for Healthcare Research & Quality	NEPEC	VA Mental Health's Northeast Program Evaluation Center
AOR	Adjusted Odds Ratio	NNPO	National Non-VA Medical Care Program Office
CBOC	Community Based Outpatient Clinic	OEF	Operation Enduring Freedom
CCS	Clinical Classification Software	OIF	Operation Iraqi Freedom
Ci2i	VA HSR&D Center for Innovation to Implementation	OMB	Office of Management and Budget
CLC	Community Living Center	OND	Operation New Dawn
CMS	Centers for Medicare and Medicaid Services	PACT	Patient Aligned Care Team
CPT	Current Procedural Terminology	PC	General Primary Care
DMDC	Department of Defense Manpower Data Center	PSSG	Planning Systems Support Group
DOD	Department of Defense	PTSD	Posttraumatic Stress Disorder
DRG	Diagnostic-Related Group	QUERI	Quality Enhancement Research Initiative
DSS	Decision Support System	SC	Service-Connected
EKG	Electrocardiogram	SE/SF	VHA Outpatient Event and Outpatient Visit Files
FY	Fiscal Year (e.g., FY12 is October 1, 2011 to September 30, 2012)	STIs	Sexually Transmitted Infections
GAO	Government Accountability Office	SUD	Substance Use Disorder
GRECC	Geriatrics Research Education & Clinical Center	TBI	Traumatic Brain Injury
HCPCS	Healthcare Common Procedure Coding System	TRT	Treating Specialty File
HERC	Health Economics Resource Center	VA	Department of Veterans Affairs
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome	VBA	Veterans Benefits Administration
HSR&D	Health Services Research & Development	VHA	Veterans Health Administration
ICD-9-CM	International Classification of Diseases, Ninth Revision, Clinical Modification	VIReC	VA Information Resource Center
MRI	Magnetic Resonance Imaging	VSF	Vital Status File
		VSSC	VHA Support Service Center
		WHC	Women's Health Clinic
		WHEI	Women's Health Evaluation Initiative
		WHS	Women's Health Services Program Office



# Executive Summary

Despite women serving in every United States military conflict since the American Revolution, they were not recognized as Veterans when President Abraham Lincoln urged Congress to authorize Veterans benefits assistance “to care for him who shall have borne the battle, and for his widow, and his orphan.” Even when Congress granted women eligibility for Veterans Health Administration (VHA) care, women represented an extreme numeric minority group in an organization originally designed to meet the health care needs of men.

Over the past two decades, VHA has rolled out numerous initiatives designed to improve access and quality of care for women Veterans. Since 2008, these efforts have been overseen nationally by the Women’s Health Services (WHS) program office.<sup>1</sup> Along with clinical advances, VHA women’s health research has accelerated,<sup>2,3,4</sup> providing an evidence base that further sharpens the focus on women Veterans.

Although highly informative data on women Veterans are available from the research literature<sup>5</sup> and from various VHA reports (e.g., VHA Office of Policy and Planning and the searchable VHA Support Services Center [VSSC] Data Cube), WHS identified the need for detailed data specifically tailored to its strategic planning objectives. Therefore, WHS formed a linkage with women’s health investigators at the Department of Veterans Affairs (VA) Health Services Research & Development (HSR&D) Center for Innovation to Implementation (Ci2i)<sup>6</sup> and the VA Health Economics Resource Center (HERC) at VA Palo Alto Health Care System.

Sourcebook Volume 3 is a product of this collaboration. Its primary purpose is to present data to inform policy and program planning as VHA implements and evaluates new ways of providing care to women Veterans. Sourcebook Volume 3—like Volumes 1<sup>7</sup> and 2<sup>8</sup>—describes sociodemographic characteristics and health care utilization patterns of women Veteran patients in VHA, using updated (Fiscal Year 2012 [FY12]) data. As in prior Sourcebooks, this includes the number of women Veterans, their ages,

---

1 VHA Women Veterans Health Strategic Health Care Group was renamed Women’s Health Services (WHS) in July 2012.

2 Yano EM, Frayne SM. Health and health care of women veterans and women in the military: research informing evidence-based practice and policy. *Women’s Health Issues* 2011;21(4 Suppl):S64-6.

3 Yano EM, Bastian LA, Bean-Mayberry B, et al. Using research to transform care for women veterans: advancing the research agenda and enhancing research—clinical partnerships. *Women’s Health Issues* 2011;21(4 Suppl): S73–S83.

4 Bastian LA, Bosworth HB, Washington DL, Yano EM. Setting the stage: research to inform interventions, practice and policy to improve women veterans’ health and health care. *J Gen Intern Med* 2013; 28(Suppl 2):S491–4.

5 Bean-Mayberry B, Yano EM, Washington DL, et al. Systematic review of women veterans’ health: update on Successes and Gaps. *Women’s Health Issues* 2011;21(4 Suppl):S84-97. Yano EM and Frayne SM. Health and health care of women veterans and women in the military: research informing evidence-based practice and policy. *Women’s Health Issues* 2011;21(4 Suppl):S64-66.

6 Previously the VA HSR&D Center of Excellence at the VA Palo Alto Health Care System.

7 Frayne SM, Phibbs CS, Friedman SA, Berg E, Ananth L, Iqbal S, Hayes PM, Herrera L. Sourcebook: Women Veterans in the Veterans Health Administration. Volume 1. Sociodemographic Characteristics and Use of VHA Care. Women Veterans Health Strategic Health Care Group, Veterans Health Administration, Department of Veterans Affairs, Washington DC. December 2010. Download: [www.va.gov/vhapublications/ViewPublication.asp?pub\\_ID=2455](http://www.va.gov/vhapublications/ViewPublication.asp?pub_ID=2455).

8 Frayne SM, Phibbs CS, Friedman SA, Saechao F, Berg E, Balasubramanian V, Bi X, Iqbal S, Mattocks K, Haskell S, Zephyrin L, Torgal A, Whitehead A, Hayes PM. Sourcebook: Women Veterans in the Veterans Health Administration. Volume 2. Sociodemographics and Use of VHA and Non-VA Care (Fee). Women’s Health Services, Veterans Health Administration, Department of Veterans Affairs, Washington DC. October 2012. Download: [www.womenshealth.va.gov/WOMENSHEALTH/docs/SourcebookVol2\\_508c\\_FINAL.pdf](http://www.womenshealth.va.gov/WOMENSHEALTH/docs/SourcebookVol2_508c_FINAL.pdf).

service-connected disability rating status, urban/rural status, and use of outpatient VHA and Non-VA (Fee) Medical Care<sup>9</sup> services. Sourcebook Volume 3 builds on the prior reports by providing data about women Veterans' race/ethnicity, service in Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn (OEF/OIF/OND), and costs of care, as well as detailed information about the medical conditions for which women Veterans are treated in VHA.

All data in this Sourcebook come from centralized, national VHA databases. This report describes women Veterans receiving VHA care in FY12 overall, and within key subgroups (e.g., within age groups, by race/ethnicity, and among the subpopulation of OEF/OIF/OND Veteran patients). It also presents gender comparisons between women and men in FY12. Finally, it presents longitudinal trends over the past decade (FY03–FY12).

Sourcebook Volume 3 has several limitations:<sup>10</sup>

1. The data represent only Veterans who used VHA care in FY12, rather than all Veterans. The characteristics of Veterans who did not choose to use VHA could differ from the characteristics of those who did.
2. This report does not examine non-Veteran women who used VHA services.<sup>11</sup>
3. Utilization data include outpatient VHA care and Non-VA (Fee) Medical Care but do not include all care provided by VHA through contracts outside VHA, nor care received privately by women who use VHA. Thus, for women Veterans who used VHA for at least some of their care in FY12, total outpatient health care utilization across all systems of care is likely to be higher than the VHA-based utilization rates presented in this report. Note that the focus of the utilization data presented in Parts 2-4 of this report is on outpatient care, not inpatient care.
4. Description of the health profile of women Veteran VHA patients is based upon International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis codes, aggregated into 202 "*conditions*," these conditions are in turn aggregated into 17 broad "*domains*." This report describes the rate at which these ICD-9-CM codes appear in patients' VHA or Non-VA (Fee) Medical Care outpatient or inpatient administrative records; this should not be interpreted as indicating the "prevalence" of these conditions in an epidemiologic sense.
5. Other than age-adjusted odds ratios presented for gender differences in frequency of medical conditions, all data in Sourcebook Volume 3 are descriptive; no other statistical significance testing is presented for the differences described here.

---

9 This was formerly known as "Fee" or "Fee-basis" care. VHA has renamed the program that administers reimbursements as the "National Non-VA Medical Care Program Office" and now refers to this type of service as "Non-VA Medical Care." This Sourcebook uses the convention of adding the word "Fee" in parentheses to this term (i.e., Non-VA [Fee] Medical Care) so as to distinguish this type of non-VA care from other types of care that VHA patients might receive outside of VHA (e.g., care funded through Medicare, Medicaid, private insurance, etc.).

10 Other notes to interpretation of data are included throughout the text and in the Technical Appendix.

11 See Technical Appendix, Section 9.2, for a more complete explanation of categories of non-Veteran women who use VHA services.



## Key Findings<sup>12</sup>

### Rapid Growth in Number of VHA Women Veterans, FY03–FY12:

- The number of women Veterans using VHA nearly doubled in the past decade, from 200,631 in FY03 to 362,014 in FY12 (an 80% increase).
- Women comprised 6.5% of Veteran VHA patients in FY12.
- The number of women Veterans has been growing faster than the number of men Veterans.

### Shifting Age Distribution in VHA Women Veterans:

- In FY03, the age distribution of women showed two main peaks: The tallest peak had a maximum at age 46, and the second peak had a maximum at age 79. By FY12, the peaks had shifted forward. The peak that had been tallest in FY03 was even taller and was bifurcate, with its maximum at age 50, and with a secondary maximum at age 55. The second peak had its maximum at age 88. Meanwhile, a new third peak had appeared, with its maximum at age 29.
- In FY12, 42% of women Veteran patients were 18–44 years old, 46% were 45–64 years old, and 12% were 65+ years old.
- Compared to men, women were, on average, substantially younger: 42% of women and 13% of men were less than 45 years old.

### Over One-Third of Women Veteran Patients Represent a Racial/Ethnic Minority Group:

- ★ Overall, 39% of all women Veteran VHA patients in FY12 represented a racial/ethnic minority group; 29% of women Veteran patients were Black/African American and 6% were Hispanic. An additional 1% of women Veteran patients in FY12 identified as American Indian/Alaska Native, 1% as Asian, and 1% as Native Hawaiian/Other Pacific Islander. The largest group of women Veteran patients in FY12 was White (61%).
- ★ Women Veteran patients were much more heterogeneous on race/ethnicity than their male counterparts: 39% of women vs. 23% of men had a racial/ethnic minority background.

### VHA Women Veterans Dwell in Both Urban and Rural Areas:

- A higher proportion of women Veteran patients lived in urban areas than in rural areas in FY12 (urban 72%; rural 28%).
- Among VHA women Veterans, young women (18–44 years old) were more likely than older women (65+ years old) to live in urban areas (18–44: 75%; 45–64: 70%; 65+: 66%).
- Women were more likely than men to live in large urban areas.

### High Levels of Service-Connected (SC) Disability in VHA Women Veterans:

- As of FY12, more than half (57%) of women Veteran patients in VHA had an SC disability rating.<sup>13</sup>
- The proportion of women Veterans with an SC disability rating increased over the decade.

---

<sup>12</sup> Key Findings that are new compared to Sourcebook Volume 2 are identified with a star symbol (★).

<sup>13</sup> Service-connected rating status indicates an injury or illness deemed to have been incurred or aggravated while serving in the armed forces. The Veterans Benefits Administration (VBA) reviews disability compensation claims using a multi-step process. VBA first determines whether the disability was incurred or aggravated during active military service—if so, the Veteran receives an “SC” disability status. The Veteran’s SC disability is then assessed and rated for severity, yielding a rating from 0 to 100 percent.

- In FY12, a higher proportion of women Veterans who were 18–44 years old than women who were older had an SC disability rating (18-44 years: 67%; 45-64 years: 57%; 65+ years: 23%).
- Women were more likely than men to have an SC disability rating (57% of women vs. 46% of men) and to have an SC disability rating of at least 50 percent<sup>14</sup> (30% of women vs. 23% of men).

**Nearly One in Five Women Veteran VHA Patients Served in OEF/OIF/OND:**

- ★ Among the 362,014 women Veteran patients in FY12, roughly 19% or 67,522 women served in OEF/OIF/OND. This is notably higher than the proportion of men Veteran patients in FY12 who served at least one OEF/OIF/OND tour (9% or 463,868 men).

**Frequent Use of Outpatient Care by Women Veterans:**

- Over half of women Veteran patients had outpatient visits in VHA and/or in Non-VA (Fee) Medical Care settings on six or more different days in FY12 (overall and within each of the three age groups). Within every age group, a greater proportion of women than men had six or more days on which they received outpatient care.
- Of women Veteran outpatients, 88% had at least one primary care visit in FY12. A higher proportion of women than men used frequent primary care services: 42% of women vs. 36% of men had at least three primary care visits, and 12% of women vs. 10% of men had at least six primary care visits in FY12. Among primary care patients, women Veterans visited any primary care clinic an average of 3.3 times in FY12, compared to an average of 3.0 times in FY12 for men.
- Among women Veteran outpatients, 37% received mental health or substance use disorder (SUD) services in FY12. A higher proportion of women than men used frequent mental health/SUD services; 14% of women and 8% of men had six or more mental health/SUD visits in FY12. Women who used mental health/SUD care visited these clinics an average of 9.4 times in FY12.
- A substantial proportion of women Veteran patients relied on Non-VA (Fee) Medical Care services for some of their outpatient care. In FY12, 31% of women patients had at least one day on which they received Non-VA (Fee) Medical Care. This was driven in part by the fact that many women (16% of all women Veteran outpatients) received a mammogram at a non-VHA location through Non-VA (Fee) Medical Care in FY12. Women were more likely than men to use Non-VA (Fee) Medical Care (31% vs.15%).

**Costs of Care in Women:**

- ★ The mean total cost per woman Veteran patient in FY12 was \$8,601, which was lower than the \$8,984 mean total cost per man.
- ★ Focusing on outpatient costs, the mean per-patient VHA outpatient costs in FY12 were higher for women than for men (\$6,062 vs. \$5,412). When stratified by age, mean VHA outpatient costs were highest for women Veteran VHA patients in the middle age group (18-44: \$4,827; 45-64: \$7,213; 65+: \$6,014).
- ★ Among all women Veteran patients (i.e., including both women who did use inpatient care in FY12 and those who did not), the mean cost of inpatient care for women in the oldest age group was much higher than the cost for women in the youngest age group (18-44: \$837 vs. 65+: \$3,589).

---

<sup>14</sup> To enhance the clarity and readability of this report, an editorial decision has been made to spell out “percent” in reference to service-connected disability ratings, e.g. “SC disability rating of 70 percent.” In all other measures of percentage, the percent symbol (%) is used. Also note that “0 percent” refers to a patient who does have service-connected disability rating status, but whose severity rating is 0 (zero) percent; this is distinct from a patient who has no service-connected disability rating.

- ★ Among all Veteran patients (i.e., including those who did and those who did not use any Non-VA [Fee] Medical Care in FY12), mean Non-VA (Fee) Medical Care costs were higher for women than men in the youngest and oldest age groups, but slightly lower for women than men in the middle age group (18-44: \$590 vs. \$336; 45-64: \$885 vs. \$971; 65+: \$1,123 vs. \$787).

#### **Heavy Burden of Illness in Women Veteran VHA Patients:**

- ★ The top five domains of medical conditions in women Veteran VHA patients, in rank order, were:
  - #1 Musculoskeletal (55.9% of women vs. 48.5% of men)
  - #2 Endocrine/Metabolic/Nutritional (50.6% of women vs. 64.5% of men)
  - #3 Mental Health/SUD (44.5% of women vs. 31.4% of men)
  - #4 Cardiovascular (37.3% of women vs. 62.7% of men)
  - #5 Reproductive Health (31.2% of women vs. 24.3% of men)
- ★ Women Veteran VHA patients had similar or greater age-adjusted odds for most condition domains compared to men Veterans (14 out of 17 domains).
- ★ Health profile among women Veteran patients varied markedly by age group:
  - ★ Among women 18-44 years old, the top three domains were: Musculoskeletal (50.1%), Mental Health/SUD (46.2%), and Reproductive Health (41.0%).
  - ★ Among women 45-64 years old, the top three domains were: Musculoskeletal (61.7%), Endocrine/Metabolic/Nutritional (61.7%), and Mental Health/SUD (47.7%), followed closely by Cardiovascular (47.6%).
  - ★ Among women age 65 years or older, the top three domains were: Endocrine/ Metabolic/ Nutritional (73.8%), Cardiovascular (70.6%), and Musculoskeletal (54.2%).
- ★ Across age groups, the only domain for which women in the youngest age group (18-44 years old) had the highest frequency was Reproductive Health. The proportion of women with a Cardiovascular domain condition increased markedly with age (18-44: 16.9%; 45-64: 47.6%; 65+: 70.6%), as was the case for multiple other domains. Conversely, frequency of Mental Health/SUD diagnoses decreased in the oldest group (18-44: 46.2%; 45-64: 47.7%; 65+: 26.1%).
- ★ Except in the Musculoskeletal domain, the specific conditions contributing most prominently to the frequency of the top domains tended to vary by age group:
  - ★ Among Musculoskeletal conditions, joint disorders and spine disorders were very common in every age group.
  - ★ Among Endocrine/Metabolic/Nutritional conditions, Lipid Disorders, Thyroid Disorders, and Overweight/Obesity were in the top five for every age group, whereas Diabetes Mellitus and Osteoporosis became more common with advancing age.
  - ★ Among Mental Health/SUD conditions, Major Depressive Disorder/ Depression, Possible - Other, Posttraumatic Stress Disorder (PTSD) and Anxiety Disorders - Other were in the top four for every age group.
  - ★ Among Cardiovascular conditions, Hypertension was the top condition in each age group. Next most common were Chest Pain/Angina and Arrhythmia/Conduction Disorder - Other in women under age 65 years, and Coronary Artery Disease - Other and Atrial Fibrillation/Flutter in women age 65+ years old.

- ★ Among Reproductive Health conditions, the leading conditions for women in their reproductive years (18-44 years old), which included Contraceptive Care Management and Menstrual Disorders, differed from the leading conditions in older women, which included Menopausal Disorders.
- ★ In a number of cases, specific conditions also differed markedly by gender:
  - ★ Among the Musculoskeletal conditions more common in women than in men were Connective Tissue Disease, Myalgia/Myositis - Unspecified, and Rheumatoid Arthritis and Related Disease.
  - ★ Among the Endocrine/Metabolic/Nutritional conditions more common in women than in men were Osteoporosis, Thyroid Disorders, and Cancer - Thyroid.
  - ★ Among the Mental Health/SUD conditions more common in women than in men were Eating Disorders, Dissociative Disorders, and Acute Stress Disorders.
  - ★ Among the Cardiovascular conditions, some conditions had similar frequency in women vs. men, whereas some had lower frequency in women than in men.
  - ★ Among the Reproductive Health conditions, most conditions were gender-specific (precluding gender comparisons), but women did have higher frequency than men of diagnosed Infertility.
- ★ Distinct health profiles were also seen in specific subgroups of women Veteran VHA patients:
  - ★ In every race/ethnicity group, Musculoskeletal, Endocrine/Metabolic/Nutritional and Mental Health/SUD conditions were common, although the patterns of association varied by age group. In every age group, Black/African American women had the highest rates of Cardiovascular conditions.
  - ★ In both urban and rural areas, women Veteran VHA patients tended to have high rates of the five domains most common in women Veteran patients overall, except that women in highly rural areas tended to have somewhat lower rates of Cardiovascular conditions than did women living in other rural or in urban areas.
  - ★ For the majority of domains, the proportion of women with a condition in the domain increased as SC disability rating increased. For example, among women Veterans with an SC disability, women with a rating of 0-49 percent were far less likely than those with a rating of 100 percent to have a Mental Health/SUD condition, within each age group (18-44: 38.4% vs. 78.0%; 45-64: 38.8% vs. 73.4%; 65+: 25.8% vs. 60.3%).
  - ★ For OEF/OIF/OND women Veteran patients in every fine age group (five-year increments of age), Musculoskeletal conditions were among the top three domains, and for women in every fine age group except 60-64 years old, Mental Health/SUD conditions were among the top three. For those under age 40 years, Reproductive Health conditions were consistently in the top three, and for those age 40 years or older, Endocrine/Metabolic/Nutritional conditions were consistently in the top three. For those age 60 years or older, Cardiovascular conditions were also in the top three.

#### **Comparison with Data from Prior Sourcebooks:**

- ★ Overall, Sourcebook Volume 3 confirms stability in many of the proportions reported in Volumes 1 and 2, including demographic characteristics, overall VHA outpatient use, primary care use, and mental health use. However, one notable exception is in data reporting where women receive primary care. In concert with VHA policy, the proportion of women Veteran outpatients who received primary care in both women's health clinics and in other primary care clinics has been progressively decreasing (FY09: 24%; FY10: 22%; FY11: 20%; FY12: 19%).

## Key Implications for Policy and Practice<sup>15</sup>

### Sociodemographics

- **Growth in Number of Women Veterans.** The *number* of women Veterans using VHA services increased by 80% in the past decade. If growth continues at this pace, and especially if market penetration increases among the large group of women Veterans who currently do not use VHA, increasing demands upon VHA delivery systems for women are anticipated.
- **Shifting Age Distribution.** The number of young women using VHA has been growing rapidly in recent years; indeed, the number of women Veteran patients with age less than 35 has increased by 120% over the past decade. This rapid demographic shift highlights the need to ensure ample capacity for clinical services necessary for women, including reproductive health services, and to ensure that health care providers' knowledge and skills are up to date in this clinical domain. In addition, the tallest peak in the age distribution of women Veteran patients was at age 50-55 in FY12. If this cohort of women Veterans continues to use VHA, the number of women Veterans reaching age 65 or older can be expected to steeply and steadily increase each year for the next 10–20 years. These women could require more intensive health care services as they age, including geriatric and extended care services and, where applicable, support for their role as caregivers. Also, as these women become Medicare-eligible, coordination of care across health care systems for dual users of VHA and Medicare services may become increasingly important.
- ★ **Racial/Ethnic Diversity.** Women Veteran patients are much more heterogeneous on race/ethnicity than are men, and women in the youngest age groups represent particularly diverse racial/ethnic groups. VHA providers can apply this finding by ensuring that services are not only gender-sensitive but also culturally-sensitive.
- **Urban/Rural Status.** Unlike most health care organizations, VHA has a mission to provide care to every Veteran eligible for services, regardless of how remote the Veteran's residence is. This duty extends to the care of women Veterans as well. Although a lower proportion of women than men live in rural areas, many women do live in rural areas: across all age categories, at least a quarter of women Veteran patients live in rural areas. This highlights the challenge of ensuring high-quality, equitable, gender-specific VHA primary care services in areas remote from the main VHA facility, where numerically low numbers of women reside. It also suggests a possible niche for programs that extend access to women's health screening and specialty care (e.g., outreach screening programs, telemedicine, etc.). Furthermore, a moderately higher proportion of women age 65 years or older live in rural areas, highlighting the need for gender-specific geriatric care in these areas.
- **Service-Connected Disability Rating.** The proportion of women Veteran patients with any SC disability rating, as well as the proportion with SC disability ratings of 50 percent or more, has increased over the decade. More than half of women Veteran patients now carry an SC disability rating, some of whom are very young. These women will be eligible for lifelong VHA care for their SC conditions.

---

15 Implications that are new compared to Sourcebook Volume 2 are identified with a star symbol (★).

**★ OEF/OIF/OND:**

- ★ OEF/OIF/OND women Veterans have represented an increasing share of women Veteran VHA patients in each year since 2003, and many have an SC disability rating. While data on the specific causes of their disability are not available in this report, gender differences in the medical profile of OEF/OIF/OND Veterans have been reported previously<sup>16,17,18</sup> suggesting that VHA will need to tailor care to the distinct health care needs of women in this newest generation of Veterans. Conversely, many OEF/OIF/OND women Veterans do *not* have SC disability rating status. Some of them may have SC claims in process or may have plans to submit an SC claim. However, others may not have any major disabilities, perhaps related in part to favorable pre-deployment health (a “healthy warrior effect”<sup>19</sup>). VHA clinicians will need to continue to be attuned to potential disabilities in recently returned women Veterans, while at the same time recognizing that OEF/OIF/OND women Veterans have had a range of military experiences, translating into diversity in post-deployment health status.
- ★ The increasing number of OEF/OIF/OND women Veterans has contributed to part of the overall increase in the number of women Veteran patients over the past decade. This applies primarily among the substantial share of women 18-44 years old, and to a lesser degree, to those 45-64 years old. Young women recently returned from war may become lifelong VHA patients. It will be critical to ensure that, upon joining VHA, they connect promptly with the spectrum of health care services that they need, in an effort to enhance their current health-related quality of life, and in an effort to reduce illness burden later in life.
- ★ A substantial proportion of women are non-OEF/OIF/OND Veterans. While expected for the older cohort of women, this finding holds even among those younger than 25 years old. Based on their young age, these women must have served in the military recently, but not in OEF/OIF/OND (i.e., they were not deployed to an OEF/OIF/OND combat zone and were not directly in support of the OEF/OIF/OND mission). While the specifics of their service are not known, perhaps some women were deployed to other conflicts or to peacetime duties abroad, or provided stateside service not directly in support of the OEF/OIF/OND mission. Alternatively, perhaps some of these women had health issues with identification or onset occurring early in military service, making them ineligible for deployment to a war zone.<sup>20,21</sup> Awareness of the diversity of roles women may have experienced during military service will prepare VHA to welcome all women following military discharge.

---

16 Haskell SG, Mattocks K, Goulet JL, et al. The burden of illness in the first year home: do male and female VA users differ in health conditions and healthcare utilization. *Women's Health Issues*. 2011; 21(1):92-7.

17 Frayne SM, Chiu VY, Iqbal S, et al. Medical care needs of returning veterans with PTSD: Their other burden. *Journal of General Internal Medicine* 2011;26(1):33-39.

18 Kimerling R, Street AE, Pavao J, Smith MW, Cronkite RC, Holmes TH, Frayne SM. Military-related sexual trauma among Veterans Health Administration patients returning from Afghanistan and Iraq. *American Journal of Public Health* 2010;100(8):1409-12.

19 Larson GE, Highfill-McRoy RM, Booth-Kewley S. Psychiatric diagnoses in historic and contemporary military cohorts: combat deployment and the healthy warrior effect. *American Journal of Epidemiology* 2008;167(11):1269-1276.

20 Smith TC, Zamorski M, Smith B, et al. The physical and mental health of a large military cohort: baseline functional health status of the Millennium Cohort. *BMC Public Health* 2007;7:340.

21 Baiocchi D. Measuring Army Deployments to Iraq and Afghanistan, Santa Monica, Calif.: RAND Corporation, RR-145-A, 2013. (Accessed May 28, 2013 at [http://www.rand.org/pubs/research\\_reports/RR145](http://www.rand.org/pubs/research_reports/RR145).)

## Utilization

### *Utilization: Overview*

- **Use of Outpatient Services.** Across all age groups, women use the full range of outpatient services<sup>22</sup> more heavily than do men. As VHA projects resources needed for the future care of the growing population of women Veterans, women's heavier utilization needs to be taken into account, especially for women in the 45-64 year old age group since they tend to use outpatient services particularly heavily.

### *VHA Outpatient Care*

- **Primary Care:**
  - ★ Nearly 90% of women Veteran outpatients see a VHA primary care provider, with use of any primary care varying by age. However, within each age group, use of any primary care is largely constant across most race/ethnicities. VHA's efforts to ensure that all patients are connected with a primary care provider appear to be successfully reaching women Veterans.
  - The small group not receiving primary care merits further scrutiny to determine whether they have unmet primary care needs, whether they are receiving primary care outside VHA, or whether they are relatively healthy and have lower care needs.
  - Women are disproportionately represented among heavy users of primary care (i.e., 12% of women vs. 10% of men had at least six primary care visits in FY12), despite women's younger average age. These findings support the concept that clinicians with a large number of women in their patient panels will likely require adjustments in panel size and scheduling profiles to ensure that women have sufficient access to care. Further, implementation of VHA's Patient Aligned Care Teams (PACT) initiative<sup>23</sup> should be adapted to account for women Veterans' needs, customizing care arrangements and services where appropriate.
- **Comprehensive Women's Health Care:**
  - VHA policy now sets the expectation that women will receive Comprehensive Women's Health Care (i.e., having both gender-neutral primary care services and gender-specific primary care services from a single designated women's health provider) to reduce fragmentation of care. Women who receive all their primary care from a designated women's health provider in a general primary care clinic or in a women's health clinic receive Comprehensive Women's Health Care, while those receiving primary care in *both* general primary care and women's health clinics may not be receiving this model of care. Technical issues with the coding of women's health clinic care preclude precise estimation of how many women have already transitioned to care consistent with this new policy. However, while it is promising that the proportion apparently receiving care in dual settings was lower in FY12 than it had been in FY09, the fact that 19% of women received care in both general primary care and women's health clinic settings in FY12 motivates a continued push towards a system that ensures that all women have access to Comprehensive Women's Health Care.

---

22 As noted in Part 2, counts of services here include any type of encounter recorded in the VHA Outpatient Event file or any type of service recorded in the Non-VA (Fee) Medical Care outpatient file. This includes in-person services (e.g., visits with a clinician, laboratory or radiology encounters, etc.) as well as telephone and telehealth modalities.

23 PACT is VHA's patient-centered medical home initiative. Current research is examining approaches to tailoring PACT to women Veterans: Yano E and Rubenstein L, "Implementation of VA Women's Health Patient Aligned Care Teams (WH-PACTs)", VA HSR&D CRE 12-026.

- **Mental Health/Substance Use Disorder Care:**

- Many women Veteran patients use mental health/SUD services, and among those who do, they tend to have multiple visits. Further, a far greater proportion of women than men use any mental health/SUD care (37% vs. 24%) and likewise a far greater proportion of women than men use mental health/SUD care at least six times (14% vs. 8%). VHA is recognized for its longstanding expertise in mental health/SUD and for its ongoing efforts to remain a leader in mental health care (e.g., through integration of mental health in primary care, increases in mental health care capacity, research funding, provider training, etc.). It appears that such services may be of particular importance for a substantial subset of women Veterans. Recent research assesses whether mental health/SUD service delivery systems require any adaptations to ensure they optimally meet women Veterans' treatment needs; given the large number of women using these services, such inquiry is timely.
- ★ Women who served in OEF/OIF/OND utilize substantial mental health/SUD care. Understanding and providing for the mental health/SUD care needs of these women continues to be a priority.

- ★ **Telephone and Telehealth Care:**

- ★ Telephone services have long been available to Veterans as a means of communicating with their health care teams, and remain the most frequently used form of remote communication between patients and their VHA providers. Telephone services are particularly important for women: more women than men contact their VHA care teams by phone (63% vs. 55%), and among those who do contact VHA via phone, women do so with higher frequency than men (average telephone encounters 4.6 vs. 4.2). This high volume of telephone-based care suggests that sufficient capacity of providers with time carved out to respond promptly to telephone queries is essential, especially in clinics caring for substantial numbers of women Veterans.
- ★ A small proportion of women Veterans have begun to use recently introduced technologies: Clinical Video Telehealth (3% of women), Home Telehealth (3% of women), and Store & Forward Telehealth (3% of women), as of FY12. These technological innovations are quite new. Therefore, uptake is likely to increase in the years to come as Veterans and clinicians become increasingly comfortable with these new tools.



*Non-VA (Fee) Medical Care Outpatient Services*

- **Use of Non-VA (Fee) Medical Care:**

- Nearly one of every three women Veteran patients receives at least some care through the Non-VA (Fee) Medical Care system. Among women Veterans, those who use Non-VA (Fee) Medical Care are about equally divided between those who use exactly one day of Non-VA (Fee) Medical Care and those who use multiple days. Within all age groups, higher proportions of women than men use Non-VA (Fee) Medical Care, both in single-day use and multiple-day use.<sup>24</sup> Ongoing efforts to examine the quality of such care and to identify optimal approaches to coordination between VHA and Non-VA (Fee) Medical Care are of great relevance for women as they navigate between distinct sources of care.<sup>25</sup>
- Women 45-64 years old more commonly use Non-VA (Fee) Medical Care services than do women in other age groups. This is explained partly by women eligible for mammography screening, which VHA frequently provides off-site through the Non-VA (Fee) Medical Care system. However, even after excluding women whose only use of the Non-VA (Fee) Medical Care system was for mammography services, women in the 45-64 year old age group still are more likely to use Non-VA (Fee) Medical Care services than are other women Veterans—this may reflect either gender-specific care (e.g., specialized gynecological services) or care for gender-neutral health care needs (e.g., dialysis or physical therapy). Furthermore, even after excluding women Veterans whose only use of the Non-VA (Fee) Medical Care system is for mammography services, more women than men Veterans use Non-VA (Fee) Medical Care services in all age groups. This suggests that, even aside from mammography services, Non-VA (Fee) Medical Care is of particular relevance to women.
- ★ Among women Veteran patients age 45-64 years, a particularly high proportion of Native Hawaiian/Other Pacific Islander women use Non-VA (Fee) Medical Care services, and among women 65+ years old, a particularly high proportion of American Indian/Alaska Native women use these services. Some women in these groups may reside in more remote areas such as rural Indian Reservations,<sup>26</sup> Alaska, or outlying Pacific Islands, where availability of Non-VA (Fee) Medical Care services may augment access to care, in part by reducing distance travelled.<sup>27</sup> Provision of services through the Non-VA (Fee) Medical Care system may also enhance ability to meet the requirements of VHA policy which states that women should be able to receive mammography services within 50 miles of home.<sup>28</sup>
- ★ Receipt of mammography services through the Non-VA (Fee) Medical Care system likely accounts for some of the higher rate of use of Non-VA (Fee) Medical Care services among OEF/OIF/OND women age 40 years and over. However, even among those under age 40 years (who account for 74% of OEF/OIF/OND women Veterans), more women than men OEF/OIF/OND Veterans use Non-VA (Fee) Medical Care services. Women recently returned from the OEF/OIF/OND conflicts could face especially complex challenges as they reintegrate into

---

24 Some facilities may send lab specimens to private labs for processing and interpretation. These services may appear in the Non-VA (Fee) Medical Care data and be counted in our data as Non-VA (Fee) Medical Care services, even though they do not represent cases of women Veterans actually visiting Non-VA (Fee) Medical Care providers for in-person care. However, this cannot explain the higher Non-VA (Fee) Medical Care use among women than men, since only 761 women (0.2% of women Veteran patients) had Non-VA (Fee) Medical Care lab care as their only type of Non-VA (Fee) Medical Care in FY12.

25 Bastian L, Mattocks K, Principal Investigators. Evaluation of Quality and Coordination of Outsourced Care for Women Veterans. Veterans Health Administration, HSR&D grant CRE 12-008.

26 For example, see: <http://www.nps.gov/nagpra/DOCUMENTS/ResMap.htm>.

27 Mooney C, Zwanziger J, Phibbs CS, Schmitt S. Is travel distance a barrier to veterans' use of VA hospitals for medical surgical care? *Soc Sci Med* 2000;50(12):1743-1755.

28 Veterans Health Administration. Health Care Services for Women Veterans (VHA Handbook 1330.01). Washington, DC: Department of Veterans Affairs, 2010.

civilian life. For some of them, Non-VA (Fee) Medical Care services could represent an added layer of complexity, making it particularly important that VHA assist them with coordination of care. At the same time, Non-VA (Fee) Medical Care services could represent a boon for OEF/OIF/OND women Veterans, making it possible for them to receive needed services close to home, work, or school, within their familiar local communities.

## Cost

- ★ **Outpatient VHA.** Despite the tendency for chronic diseases to develop with advancing age, women in the middle age group (women 45-64 years old, who also represent the largest subgroup of women Veterans in VHA) have higher average cost of outpatient VHA care per patient than do women in the oldest age group (65+ years old). The higher cost seen in the middle age group parallels the higher utilization levels of this group.
- ★ **Inpatient VHA.** In contrast to the VHA outpatient setting (where average costs are greatest for the middle age group), in the VHA inpatient setting, not surprisingly, the *oldest* age group of women (65+ years old) has the highest costs of any group of women. In fact, in this oldest age group, women's VHA inpatient costs actually exceed those of men. Among women Veterans, VHA inpatient costs are lower than outpatient costs in each age group, when averaged across *all* patients. In contrast, the average per-person inpatient costs for the *subgroup* of women who do receive inpatient care exceed the average per-person outpatient costs among all patients.
- ★ **Non-VA (Fee) Medical Care.** For women 18-44 years old or 65+ years old, average Non-VA (Fee) Medical Care costs are higher in women than men. However, when analyses are limited to the subset of patients who received at least one Non-VA (Fee) Medical Care service, the pattern flips and costs are lower in women than in men in all age ranges.

## Health Profile

### *Domains: Overview*

- ★ **Burden of Illness, Overall:**
  - ★ For all but three condition domains, women are as likely as men or more likely than men to have a condition in the domain, after accounting for age. This is consistent with prior literature finding that women Veterans in VHA have a burden of illness at least as great as that of men.<sup>29</sup>
  - ★ Overall, for women Veteran VHA patients the top five domains, in rank order, are: Musculoskeletal, Endocrine/Metabolic/Nutritional, Mental Health/SUD, Cardiovascular, and Reproductive Health:
    - ★ Musculoskeletal conditions are among the leading contributors to the health profile of women Veterans and are likewise more common in women than in men (in particular for those age 45 years and older); programs addressing pain and functional status in women Veterans are highly relevant.
    - ★ Endocrine/Metabolic/Nutritional conditions become increasingly common as women age. Several common conditions in this domain (e.g., Diabetes Mellitus, Lipid Disorders and Overweight/Obesity) are risk factors for disease in other organ systems.

---

29 Frayne SM, Parker VA, Christiansen CL, Loveland S, Seaver MR, Kazis LE, Skinner KM: Health status among 28,000 women veterans. The VA Women's Health Program Evaluation Project. J Gen Intern Med 2006;21 Suppl 3:S40-6.

- ★ Mental Health/SUD conditions are among the top three domains for women under age 65 years, and are more common in women than in men, consistent with women's high rate of utilization of mental health/SUD clinics.
- ★ Cardiovascular conditions are modestly less common in women than men (after adjusting for age), but they fall within the top five domains for women 45 years and older. With cardiovascular disease being the leading cause of death for women in the United States,<sup>30</sup> it merits close attention by clinicians.
- ★ Reproductive Health conditions are the third most frequent domain among women under age 45 years and likewise require gender-tailored comprehensive primary care and specialty care services, with attention to women's privacy needs.
- ★ **Age Effects.** Health care systems design must account for women's distinct needs across the life span:
  - ★ For women in their reproductive years (18-44 years old), Reproductive Health conditions are among the top three domains, suggesting that access to high quality reproductive health services is critical for the rapidly expanding population of young women Veterans in VHA.
  - ★ Women in the middle age group (45-64 years old), who represent the largest subgroup of women Veterans, have an especially heavy burden of disease, and have higher rates than other age groups of diverse conditions, from Musculoskeletal to Mental Health/SUD conditions. For women suffering from more than one of these conditions simultaneously, the impact of comorbidity upon care management plans and the need for care coordination must be taken into account.
  - ★ For older women (65+ years old), later-life chronic diseases such as Cardiovascular and Endocrine/Metabolic/Nutritional conditions become dominant sources of morbidity and require comprehensive disease management. This oldest age group also leads the other age groups in Sense Organ conditions—patient-provider interactions must be sensitive to these physical limitations, and assistive devices to enhance vision or hearing may help some women with activities of daily living.

### *Specific Conditions in Top Five Domains*

- ★ **Musculoskeletal Conditions (rank: #1 overall):**
  - ★ Musculoskeletal conditions are the leading cause of morbidity in women Veteran VHA patients: over 200,000 women Veterans in VHA have a Musculoskeletal diagnosis in the FY12 administrative records. Spine and joint disorders are extraordinarily common, making VHA's emphasis upon pain as "the 5th vital sign" highly relevant to women. VHA specialists and primary care providers need skills in caring for women's Musculoskeletal conditions, which may require pharmacologic, non-pharmacologic, and/or team-based approaches to care. Connective Tissue Diseases are substantially more common in women than in men, and should be considered in women with clinical presentations suggesting multi-system disease.

---

30 Mosca L, Benjamin EJ, Berra K, et al. Effectiveness-based guidelines for the prevention of cardiovascular disease in women - 2011 update. A guideline from the American Heart Association. *Circulation* 2011; 123(11): 1243-62.

**★ Endocrine/Metabolic/Nutritional Conditions (rank: #2 overall):**

- ★ Among the youngest cohort of women (18-44 years old), nearly one in six carries a diagnosis of Overweight/Obesity, suggesting that this group is not spared from the national obesity epidemic despite having been relatively recently in military service, where fitness is a priority. Since these data identify only women who received an ICD-9-CM diagnosis, the proportion of women in this age group actually meeting criteria (Body Mass Index  $\geq 25$ ) is likely higher. Intervention in this young cohort of women may help to avert complications of Overweight/Obesity (e.g., cardiovascular disease and diabetes). Indeed, since diabetes has major impacts on health and affects more than one out of every five women Veteran patients age 65 years or older, such preventive measures earlier in life need to be a priority.
- ★ Odds of a Thyroid Disorder are more than three-fold higher in women than men. While the frequency of Thyroid Disorder increases with advancing age, this condition is quite common even among the youngest women Veterans. VHA providers need to be aware of symptoms of hypo- and hyperthyroidism and be attentive to special considerations in reproductive-age women, such as dose adjustment in pregnancy.
- ★ Osteoporosis rates are much higher (nearly 10-fold greater odds) in women Veterans than in men Veterans, and are especially high in women 65+ years old. Preventive measures in young women may reduce risk of osteoporosis later in life. VHA providers must be aware of screening older women and those with risk factors for osteoporosis; appropriate technology must be in place to ensure timely diagnosis and treatment. For women with osteoporosis, fall risk assessment may reduce fracture risk.

**★ Mental Health/SUD Conditions (rank: #3 overall):**

- ★ Overall, nearly 45% of women Veteran VHA patients (more than 160,000 nationally) have a Mental Health/SUD condition, based on FY12 ICD-9-CM code data. In addition to presenting in mental health specialty care settings, these conditions may also present in primary care settings, providing additional opportunities for intervention or referral.
- ★ Across the life span, depression (Major Depressive Disorder or Depression, Possible – Other) and PTSD or Anxiety Disorders - Other are among the most common Mental Health/SUD conditions for women Veterans and, except for PTSD, are more common among women than men. Among women Veterans who use VHA services, 17.2% of those 18-44 years old, 15.2% of those 45-64 years old, and 3.8% of those 65+ years old have an ICD-9-CM diagnosis code for PTSD, based upon FY12 administrative data. After accounting for age, women are as likely as men to have a diagnosis of PTSD (age-adjusted odds ratio 0.97). Women may develop PTSD due to combat trauma, military sexual trauma, or other types of trauma; as women are increasingly exposed to combat, some have theorized that rates of PTSD in women could rise.<sup>31</sup>
- ★ While less common, Eating Disorders and Dissociative Disorders are diagnosed substantially more frequently in women Veteran VHA patients than in men, and may require evaluation by clinicians with specialized expertise in these areas.

---

31 Maguen, S., Ren, L., Bosch, J. O., et al. Gender Differences in Mental Health Diagnoses Among Iraq and Afghanistan Veterans Enrolled in Veterans Affairs Health Care. *American Journal of Public Health* 2010;100: 2450-2456.

**★ Cardiovascular Conditions (rank: #4 overall):**

- ★ In the Cardiovascular domain—the fourth most common body system to be affected for women Veteran patients—Hypertension is the most common condition in each age group, especially among older women. Rates of major Cardiovascular conditions are high among women age 65 years or older (e.g., Acute Myocardial Infarction: 0.6%; Coronary Artery Disease - Other: 12.9%; Heart Failure: 6.5%; Cerebrovascular Accident/Transient Ischemic Attack: 5.5%). Therefore, risk reduction—through attention to Hypertension and other cardiac risk factors—is critical so as to prevent onset or progression of Cardiovascular disease, the leading cause of mortality in the general population of women.<sup>32</sup>
- ★ Among older women (65+ years old), Atrial Fibrillation/Flutter is common (7.9%); this condition may require complex disease management approaches, such as close monitoring of anticoagulation therapy, so as to reduce risk of stroke and subsequent disability.

**★ Reproductive Health Conditions (rank: #5 overall):**

- ★ Issues directly relating to reproduction, including Contraceptive Care Management and pregnancy (Pregnancy or Delivery – Normal or Pregnancy with Obstetrical Complications or Prolonged) are common among women in the reproductive age group (under age 45 years). VHA providers at the front lines of care for women must be facile with addressing or triaging these dimensions of health; training provided through VHA's Women's Health Mini-residency Program targets these issues, along with other aspects of women's health care. Providers can take advantage of VHA's prescription formulary, which includes oral or injected contraceptive medications, and can seek gynecology consultation for other forms of contraception (including Intrauterine Devices and sterilization). Because VHA provides pregnancy care to women primarily through the Non-VA (Fee) Medical Care system, and because some women Veteran VHA patients may instead choose to seek pregnancy-related services outside VHA (e.g., through Medicaid or private insurance), novel approaches to care coordination may enhance cross-system continuity as women navigate between providers within and outside of VHA. Among women under age 45 years, almost 7% have a pregnancy diagnosis within a one year period: providers in every department — including Primary Care, Emergency Department, Urgent Care, Medical-Surgical Specialty Care, Mental Health, Pharmacy, and Radiology, among others — must keep the possibility of pregnancy in mind when treating women of child-bearing age who present for non-pregnancy-related services.
- ★ Menstrual Disorders serious enough to generate a recorded diagnosis in the administrative data afflict over one in ten women under age 45 years, and are the second leading condition in this age group. These conditions require attention as they can adversely affect quality of life, can lead to days missed from work or other responsibilities, and can potentially contribute to iron deficiency.
- ★ For women age 45 years and older (and especially for those 45-64 years old), Menopausal Disorders are the most frequent Reproductive Health condition. Menopause benefits from a biopsychosocial approach to care that addresses a range of manifestations, from loss of bone strength and increase in cardiovascular risk to hot flashes, sleep disturbances, and changes in sexual function.

---

32 Mosca L, Benjamin EJ, Berra K, et al. Effectiveness-Based Guidelines for the Prevention of Cardiovascular Disease in Women - 2011 update. A Guideline from the American Heart Association. *Circulation* 2011;123(11): 1243-62.

- ★ While Sexually Transmitted Infections have relatively low frequency (3.0% of women age 18-44 years, 1.4% of women age 45-64 years, and 0.3% of women age 65+ years), these can be occult, so providers must take a sexual history and screen for Sexually Transmitted Infections when indicated. This is important from a public health standpoint (to reduce transmission) and, especially in the case of Gonorrhea or Chlamydia, to preserve subsequent fertility.
- ★ The age-adjusted odds of receiving a Sexual Dysfunction diagnosis is ten-fold lower in women than in men. It is not clear whether women actually have lower prevalence of Sexual Dysfunction, versus whether they are less likely to raise this issue with their providers, versus whether providers are less likely to record a Sexual Dysfunction diagnosis in women. This points to the relevance of taking a thorough sexual history.

### *Condition Domains in Subgroups*

- ★ **Race/Ethnicity.** VHA's initiatives to address Cardiovascular disease in women should include efforts focused on Black/African American women, because in every age group they have the highest rates of Cardiovascular conditions.
- ★ **Urban/Rural.** In general, the patterns of illness in women Veteran patients do not vary substantially by urban/rural status, except that highly rural women may have modestly less Cardiovascular Disease and Hematologic/Immunologic conditions, and modestly more Breast Disease (for those 45+ years old). Highly rural and other rural women, like other women, have substantial rates of diverse conditions. For example, among highly rural women Veteran patients, Reproductive Health conditions affect 40.6% of 18-44 year olds, 28.5% of 45-64 year olds, and 11.8% of 65+ year olds; for this reason, VHA gender-specific care must be designed to reach even women in remote areas. Similarly, among highly rural women, 47.4% of 18-44 year olds, 43.7% of 45-64 year olds, and 27.1% of 65+ year olds have been diagnosed with a Mental Health/SUD condition—VHA's Tele-Mental Health initiatives may benefit them.
- ★ **Service-Connected Disability Rating Status.** Across multiple body systems, rates of conditions increase (often substantially) with increasing SC disability rating. This is particularly true for Mental Health/SUD conditions, the most common domain among women Veteran patients with an SC rating of 100 percent who are under age 65 years old. In women with this high level of SC disability, 78.0% of 18-44 year olds, 73.4% of 45-64 year olds, and 60.3% of 65+ year olds have a Mental Health/SUD condition, although this is not necessarily the reason for their SC disability rating.
- ★ **OEF/OIF/OND.** Among OEF/OIF/OND women Veteran patients the top three domains, in rank order, are: Musculoskeletal (48.3%), Mental Health/SUD (45.7%), and Reproductive Health (39.2%). While these Veterans returning from war need access to care for the full range of conditions, clinical services targeting pain, mental health or SUD issues, and gender-specific conditions may be particularly important.

# Introduction

## Background

Despite women serving in every United States military conflict since the American Revolution, they were not recognized as Veterans when President Abraham Lincoln urged Congress to authorize Veterans benefits assistance “to care for him who shall have borne the battle, and for his widow, and his orphan.” When the congressional Government Accountability Office (GAO) released its first comprehensive report addressing Veterans Health Administration (VHA) care for women Veterans in 1982, women represented an extreme numeric minority group within an organization originally designed to meet the health care needs of men. Reports by the GAO and the VA Office of Inspector General in the late 1980s and early 1990s documented quality gaps in VHA women’s health care delivery.

By the mid-1990s, major change had begun. Over the past two decades VHA has rolled out numerous initiatives designed to improve access and quality of care for women Veterans. Among these were Comprehensive Women Veterans Health Centers, Continuing Medical Education offerings in women’s health, post-doctoral fellowship training programs in women’s health, the Women’s Health Sciences Division of the National Center for PTSD, women’s mental health specialty programs, a national Military Sexual Trauma Support team, and active solicitation of women’s health services research projects.

Building on these earlier achievements, in late 2008 VA’s Women’s Health Services (WHS) launched a five-year plan to redesign the women’s health care delivery system within VHA.<sup>33</sup> A fundamental component of this new vision was to ensure that women Veterans receive comprehensive primary care from providers skilled in women’s health care. Every VHA health care system in the country now has a full-time Women Veterans Program Manager tasked with advocating for the health care needs of women using that facility. Mini-residencies in women’s health have been disseminated system-wide to enhance clinician proficiency; over 1,850 health care providers have been trained to date in this national program. Meanwhile, VHA is actively recruiting additional providers with experience in women’s health care. Numerous other initiatives have been launched to improve access to state of the art reproductive health care, mental health services, and emergency services for women Veterans, as well as enhanced care coordination through technological innovations such as registries and mobile applications. With the tagline, “You Served, You Deserve the Best Care Anywhere,” communications initiatives have raised awareness about the top notch health care services women Veterans should expect at every VHA facility. WHS oversees these efforts nationally.

---

33 Veterans Health Administration. Health Care Services for Women Veterans (VHA Handbook 1330.01). Washington, DC: US Department of Veterans Affairs, 2010.

As part of this dynamic systems redesign, WHS identified the need for data to inform policy and program planning. While highly informative data on women Veterans are available from the research literature<sup>34</sup> and from various VHA reports (e.g., VHA Office of Policy and Planning, and the searchable VSSC Data Cube), WHS identified the need for detailed data specifically tailored to its strategic planning objectives.

To address this need, WHS approached women's health investigators with expertise in large database research at the VA HSR&D Center for Innovation to Implementation (Ci2i)<sup>35</sup> and the VA HERC at VA Palo Alto Health Care System. The resulting partnership was called the *Women's Health Evaluation Initiative*, or WHEI. Since 2009, WHEI has been conducting analyses in response to queries by WHS. The analyses that WHEI produces are relevant to groups beyond WHS, including policymakers, clinicians, researchers, advocates, and women Veterans. To facilitate dissemination of major findings to a broader audience, key sociodemographic and VHA health care utilization data are presented in a series of Sourcebooks. Sourcebook Volume 3 builds upon the prior Volumes 1 and 2. Volume 1<sup>36</sup> described sociodemographic characteristics and VHA health care utilization of women Veterans in fiscal year 2009 (FY09). Volume 2<sup>37</sup> provided updated information for FY10, and additionally described urban/rural status of women, as well as women Veterans' use of Non-VA (Fee) Medical Care.<sup>38</sup> The current report, Volume 3, provides updates through FY12 of information from prior volumes, and also includes information about women Veterans' race/ethnicity, service in OEF/OIF/OND, and costs of care, as well as detailed information about the medical conditions for which women Veterans are treated in VHA.

---

34 Bean-Mayberry B, Yano EM, Washington DL, et al. Systematic review of women veterans' health: update on successes and gaps. *Women's Health Issues*, 2011;21(4 Suppl), S84-97. Yano EM, Frayne SM. Health and health care of women veterans and women in the military: research informing evidence-based practice and policy. *Women's Health Issues* 2011;21(4 Suppl):S64-66.

35 In 2013, the VA HSR&D Center of Excellence in Palo Alto became the Center for Innovation to Implementation (Ci2i), a VA HSR&D Center of Innovation.

36 Frayne SM, Phibbs CS, Friedman SA, Berg E, Ananth L, Iqbal S, Hayes PM, Herrera L. Sourcebook: Women Veterans in the Veterans Health Administration. Volume 1. Sociodemographic Characteristics and Use of VHA Care. Women Veterans Health Strategic Health Care Group, Veterans Health Administration, Department of Veterans Affairs, Washington DC. December 2010. Download: [www.va.gov/vhapublications/ViewPublication.asp?pub\\_ID=2455](http://www.va.gov/vhapublications/ViewPublication.asp?pub_ID=2455).

37 Frayne SM, Phibbs CS, Friedman SA, Saechao F, Berg E, Balasubramanian V, Bi X, Iqbal S, Mattocks K, Haskell S, Zephyrin L, Torgal A, Whitehead A, Hayes PM. Sourcebook: Women Veterans in the Veterans Health Administration. Volume 2. Sociodemographics and Use of VHA and Non-VA Care (Fee). Women's Health Services, Veterans Health Administration, Department of Veterans Affairs, Washington DC. October 2012. Download: [http://www.womenshealth.va.gov/WOMENSHEALTH/docs/SourcebookVol2\\_508c\\_FINAL.pdf](http://www.womenshealth.va.gov/WOMENSHEALTH/docs/SourcebookVol2_508c_FINAL.pdf).

38 This was formerly known as "Fee" or "Fee-basis" care. VHA has renamed the program that administers reimbursements as the "National Non-VA Care Program Office NNPO." Note that the official term for care overseen by this office is actually "Non-VA Medical Care," but this Sourcebook uses the convention of adding the word "Fee" in parentheses to this term so as to distinguish this type of non-VA care from other types of care that VHA patients might receive outside of VHA (e.g., care funded through Medicare, private insurance, etc.).



## Methods

**Overview.** This volume presents the number, age, race/ethnicity, urban/rural status, SC disability rating status, and OEF/OIF/OND status of women Veterans who received medical care in the VHA (Part 1), along with information about their utilization of outpatient VHA services and Non-VA (Fee) Medical Care services (Parts 2, 3, and 4), costs of care (Part 5) and health profile (Parts 6, 7, and 8).

Data for this volume were derived from centralized VHA administrative files: Office of the Assistant Under Secretary for Health (ADUSH) Monthly Enrollment File, Planning Systems Support Group (PSSG) Enrollee file, VHA Medical SAS Datasets, Non-VA (Fee) Medical Care outpatient and inpatient files, VHA Vital Status File, VA OEF/OIF/OND Roster, and the Decision Support System (DSS) National Data Extracts (NDEs), all described in the Technical Appendix. Data sources for variable creation span a 13-year period from fiscal year 2000 through fiscal year 2012 (FY00–FY12), although FY03 is the earliest year for which results are presented herein. Non-Veterans who use VHA services are not included in this volume.

**Characteristics examined.** *Sociodemographic* characteristics examined in this volume are age, race/ethnicity, urban/rural status, SC disability rating, and OEF/OIF/OND Veteran status. This volume examines several specific types of *outpatient utilization*: total outpatient utilization, primary care visits (total primary care visits as well as visits to primary care clinics and women’s health clinics, defined in Part 3), gynecology, mental health/substance use disorder care, telehealth visits, telephone care, and Non-VA (Fee) Medical Care outpatient utilization. (See Technical Appendix [Part 9] for details of the algorithms used to create these variables and the data validity checks completed.) Inpatient utilization through VHA care or Non-VA (Fee) Medical Care is not characterized in this volume; however, data on inpatient utilization are available in Sourcebook Volume 1. Sourcebook Volume 3 also contains new information on *costs* associated with providing care to women Veteran patients (Part 5): these are divided into outpatient, inpatient and Non-VA (Fee) Medical Care costs. Additionally, three new sections on individual medical *conditions* and broad condition *domains* in women Veteran VHA patients are presented in Parts 6, 7, and 8.

**Analyses.** All data in this volume are descriptive, other than age-adjusted odds ratios presented for gender differences in frequency of medical conditions or condition domains.

The analyses in “Part 1: Sociodemographics” are organized as follows:

- Number of women Veteran patients
- Age distribution
- Race/ethnicity
- Urban/rural status
- SC disability rating status
- OEF/OIF/OND status

The analyses in Parts 2, 3, and 4 describe outpatient service utilization by women Veterans in FY12 based on types of care, e.g., VHA primary care,<sup>39</sup> gynecology care, VHA mental health/SUD care, telephone/telehealth care, and specific types of Non-VA (Fee) Medical Care. Patterns of utilization are reported for:

- Overall women Veteran patients
- Key women Veteran sub-populations (i.e., by sociodemographic characteristics)
- Women Veteran patients’ utilization compared to men Veteran patients’ utilization

---

39 VHA primary care visits include primary care provided in general medical clinics well as primary care provided in women’s health clinics.

Part 5 additionally describes total cost per woman Veteran patient in FY12, overall, by age group, and compared to men Veterans.

The analyses in Parts 6, 7, and 8 describe specific medical conditions and broad condition domains in women Veterans in FY12 based on presence of International Classification of Diseases 9th Revision – Clinical Modification (ICD-9-CM) diagnosis codes in the VHA administrative files (i.e., VHA Outpatient Event files, VHA Inpatient Main and Bed Section files, and Non-VA [Fee] Medical Care outpatient and inpatient files). Related diagnoses are grouped into mutually exclusive “conditions”, and related conditions are then aggregated into broader “domains.” Domain frequencies are reported for:

- Overall women Veteran patients in FY12
- Women Veteran patients compared to men Veteran patients
- Key women Veteran sub-populations (i.e., by sociodemographic characteristics)

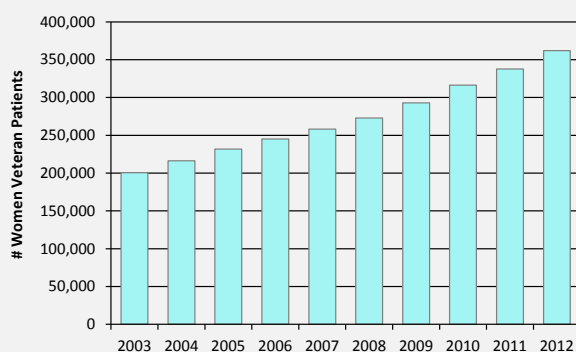
Further, Parts 6 and 7 provide domain and condition frequencies by age group in women Veteran patients, and age-adjusted odds ratios for frequency of each domain and condition in women versus men Veteran patients.

# Part 1. Sociodemographics

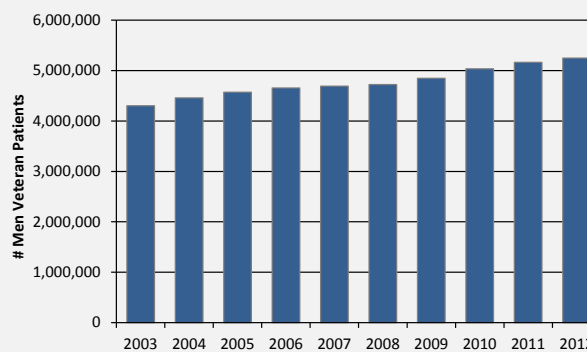
## Cohort Size

**Growth in number of women Veterans using VHA, FY03–FY12.** While women Veterans remain a numerical minority group in VHA, the number using VHA services has nearly *doubled* in the past decade, growing from 200,631 in FY03 to 362,014 in FY12, representing an 80% increase over 10 years (Exhibit 1.A). In contrast, the number of men Veterans in VHA has grown more slowly, from 4,302,858 to 5,249,002—a 22% increase (Exhibit 1.B). Between FY03 and FY12, VHA cared for a cumulative total of 537,944 women Veterans. The 362,014 women Veterans who used any VHA care in FY12 represent about 6.5% of all Veterans using VHA in that year.

**Exhibit 1.A: Number of Women Veteran Patients in Each Year, FY03–FY12**



**Exhibit 1.B: Number of Men Veteran Patients in Each Year, FY03–FY12**



**Key:** FY—Fiscal Year

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix.

**Cohort:** Women and men Veteran patients in each year. Women in FY12: N=362,014; Men in FY12: N=5,249,002.

**Source:** WHEI Master Database

Since 2004, the annual year over year increase in the number of women Veteran patients has been consistently at least four percentage points higher than the corresponding annual increase for men Veterans. Between FY11 and FY12, the increase in the number of women Veteran patients was 7% (from 337,696 to 362,014), compared to a 2% increase in the number of men. Since 2009, the annual percent increase in the number of women Veteran patients has been over 6% (FY09: 7%; FY10: 8%; FY11 7%; FY12: 7% increase over the prior year).

**NOTES TO INTERPRETATION:** These data reflect the VHA system at a national level. Specific geographic regions or individual VHA facilities may have experienced greater or lesser increases in the women Veteran patient population.

---

**IMPLICATIONS**

---

The *number* of women Veterans using VHA services increased by 80% in the past decade. If growth continues at this pace, and especially if market penetration increases among the large group of women Veterans who currently do not use VHA, increasing demands upon VHA delivery systems for women are anticipated.

---

## Age

**Age mix, FY12.** Women Veteran patients span the full adult lifespan, from the late teen years to over 100 years. The history of U.S. military conflicts influences their age distribution. Many who join the military do so in their late teens or early 20s. Thus, the age distribution of women in part reflects war era cohort effects.

**Changes in age distribution, FY03– FY12.** Exhibit 1.C shows the number of women at each age in FY03 (dotted line) and in FY12 (bold line). In FY03, the distribution had two main peaks. The tallest peak had a maximum at age 46, and the second peak had a maximum at age 79. By FY12, the peaks had shifted forward. The peak that had been tallest in FY03 was even taller and was bifurcate, with its maximum at age 50, and with a secondary maximum at age 55. The second FY12 peak had its maximum at age 88. This peak had shifted to the right and decreased in height since 2003, perhaps in part due to women patients' death or transfer to long-term care facilities. Furthermore, by FY12 a substantial new third peak had appeared, with its maximum at age 29, probably representing in large part the most recent cohort of military returnees.

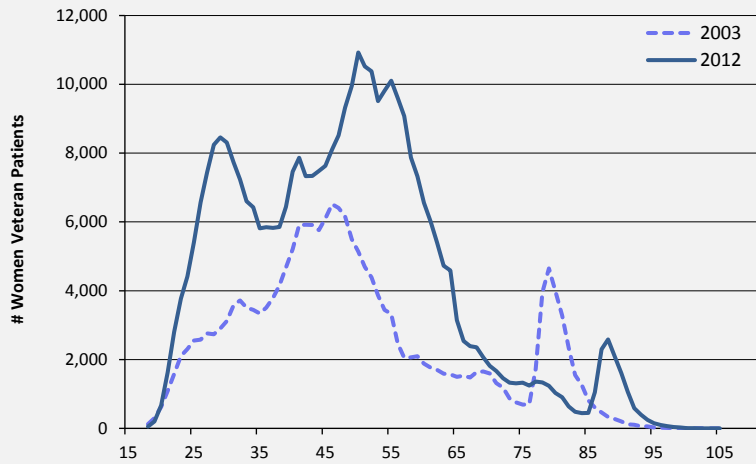
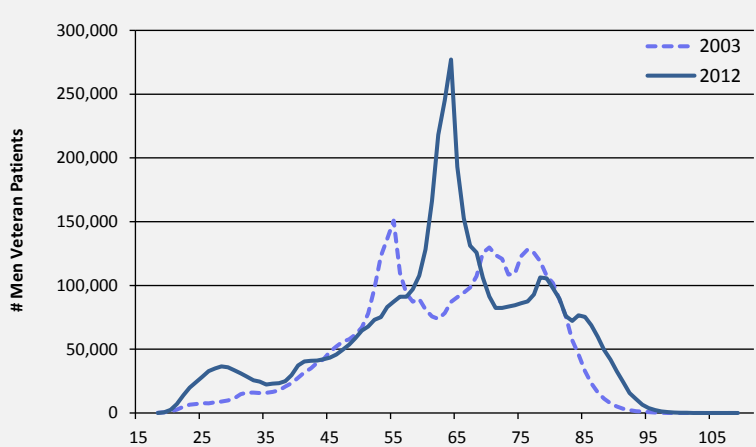
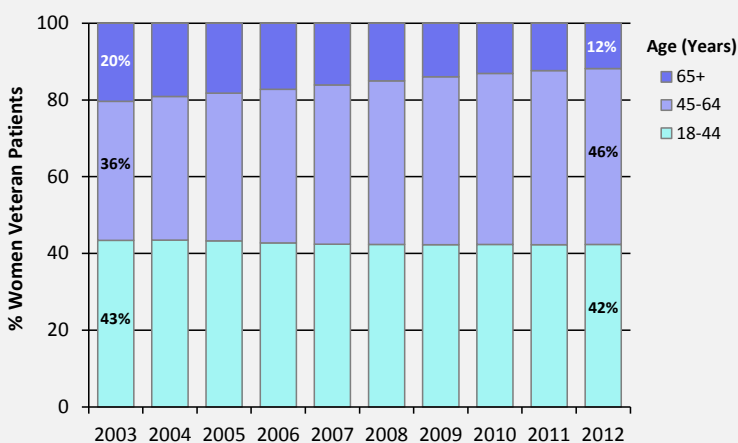


Exhibit 1.D shows that the age distribution for men Veterans in FY03 (dotted line) also had two main peaks, the tallest with a maximum age at 55, and a bifurcate peak with maximums at age 70 and 76. Although both of these peaks had shifted forward about 10 years by FY12 (bold line), the taller peak in FY03 had grown so much that the age distribution for men appeared to have one primary peak, with a maximum at age 64. Also by FY12, the youngest cohort of men Veterans could be seen as a visible bump in the left side of the distribution, with maximum age at 28 years.

Even though the total *number* of women under age 45 increased by 76%, from 87,112 in FY03 to 153,212 in FY12, the *proportion* of women under age 45 actually decreased, from 43% in FY03 to 42% in FY12 (Exhibit 1.E). However, the youngest group (18–34 year olds) increased both numerically (from 39,033 in FY03 to 85,960 in FY12, a 120% increase) and proportionally (from 19% of the women Veteran VHA patient population in FY03 to 24% in FY12; age group not represented in Exhibit 1.E).

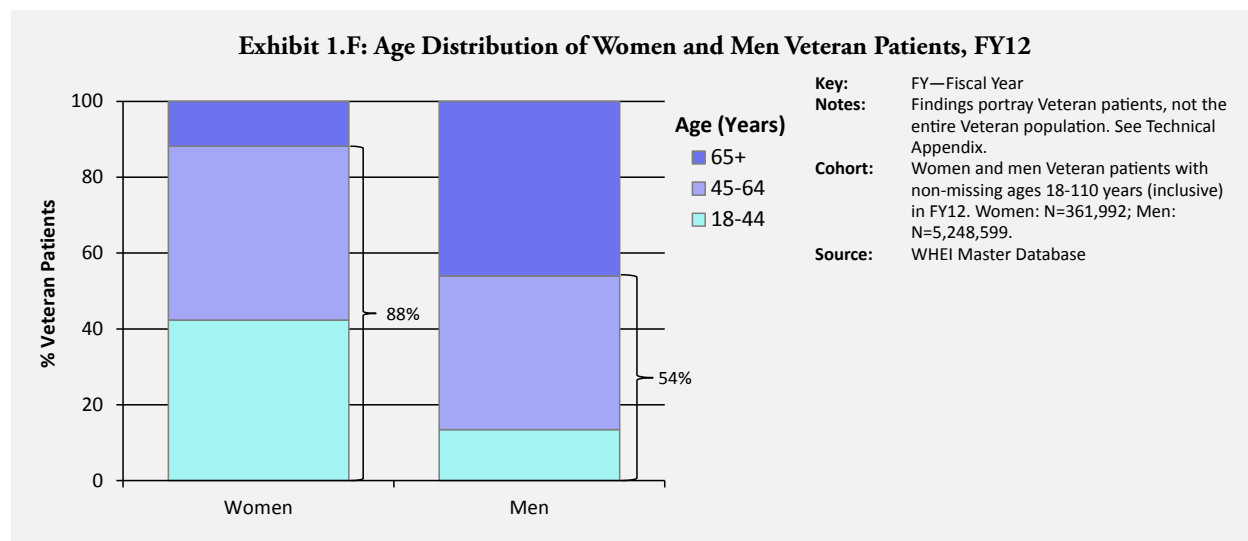
Over this same period, the 45–64 year old cohort became much larger. This age group grew both numerically (72,665 in FY03, 165,898 in FY12) and as a proportion of all women patients (36% in FY03, 46% in FY12) (Exhibit 1.E).

Compared with the numbers of women in the 18–44 and 45–64 year old age groups, relatively fewer women were 65+ years old. Between FY03 and FY12, the number of women in this age cohort grew from 40,820 to 42,882, but this group decreased as a proportion of all women Veteran patients, from 20% to 12% (Exhibit 1.E).

**Exhibit 1.C: Age Distribution of Women Veteran Patients, FY03 and FY12****Exhibit 1.D: Age Distribution of Men Veteran Patients, FY03 and FY12****Exhibit 1.E: Age Distribution of Women Veteran Patients, FY03–FY12\***

**NOTE TO INTERPRETATION:** Change in the age distribution of women from one year to another represents a change in the ages of the group of women Veterans who were using VHA in one year versus the ages of the group of women Veterans who were using VHA in another year. These changes in age distribution can occur for two reasons. First, the changes reflect aging of women receiving ongoing care in VHA. Second, the changes reflect the age characteristics of dynamic cohorts of women who use VHA services over time: annual cohorts change because of new women VHA users, women ceasing to use VHA (through death or attrition), or women using VHA infrequently (and thus not being counted in some years).<sup>40</sup>

**Women compared to men, FY12.** Exhibit 1.F indicates that, compared to men Veteran patients in FY12, the population of women was substantially younger: 88% of women compared to 54% of men were less than 65 years old, and 42% of women compared to 13% of men were less than 45 years old. In 2012, the average age of women Veterans was 47.8 years, and the average age of men Veterans was 62.8 years.



### IMPLICATIONS

The number of young women using VHA has been growing rapidly in recent years; indeed, the number of women Veteran patients with age less than 35 has increased by 120% over the past decade. This rapid demographic shift highlights the need to ensure ample capacity for clinical services necessary for women, including reproductive health services, and to ensure that health care providers' knowledge and skills are up to date in this clinical domain. In addition, the tallest peak in the age distribution of women Veteran patients was at age 50-55 in FY12. If this cohort of women Veterans continues to use VHA, the number of women Veterans reaching age 65 or older can be expected to steeply and steadily increase each year for the next 10–20 years. These women could require more intensive health care services as they age, including geriatric and extended care services and, where applicable, support for their role as caregivers. Also, as these women become Medicare-eligible, coordination of care across health care systems for dual users of VHA and Medicare services may become increasingly important.

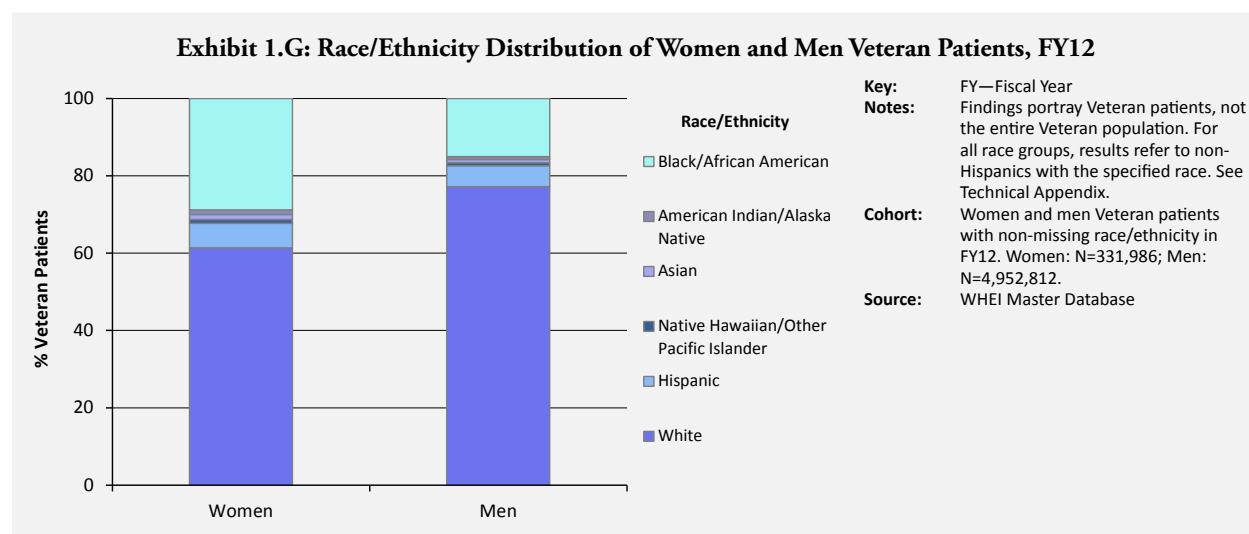
40 Friedman SA, Phibbs CS, Schmitt SK, et al. New Women Veterans in the VHA: A Longitudinal Profile. *Women's Health Issues* 2011. 21 (4 Suppl):S103-S111.

## Race/Ethnicity

The five race categories (American Indian/Alaska Native; Asian; Black/African American; Native Hawaiian/Other Pacific Islander; and White) and one ethnicity category (Hispanic) presented in this Sourcebook follow the Office of Management and Budget's (OMB) Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity.<sup>41</sup> For data presented herein, race/ethnicity is presented as a composite.<sup>42</sup> A patient's race/ethnicity is considered to be "Hispanic" if ethnicity is Hispanic (independent of the patient's race). See Technical Appendix, Section 9.3.5, for further details.

**Race/ethnicity, overall and by gender, FY12.** Overall, 39%<sup>43</sup> of all women Veteran VHA patients in FY12 represented a racial/ethnic minority group. Twenty nine percent of women Veteran patients were Black/African American and 6% were Hispanic. An additional 1% of women Veteran patients in FY12 identified as American Indian/Alaska Native, 1% as Asian, and 1% as Native Hawaiian/Other Pacific Islander. The largest group of women Veteran patients in FY12 was White (61%) (Exhibit 1.G).

Exhibit 1.G also shows that women Veteran patients are much more heterogeneous in race/ethnicity than their male counterparts. A larger proportion of women Veterans compared to men Veterans in FY12 had a racial/ethnic minority background (39% vs. 23%). The proportion of women Veteran patients of Black/African American descent was almost double that of men (29% vs. 15%). Compared to men Veterans, a slightly higher proportion of women were Hispanic (6% vs. 5%). Among the remaining racial/ethnic minority groups, equal proportions of women and men Veterans were American Indian/Alaska Native, Asian, and Native Hawaiian/Other Pacific Islander.



**Race/ethnicity by age and gender, FY12.** Women in the younger age groups were much more diverse than women in the oldest age group (Exhibit 1.H). Women age 18-44 were the most diverse. Among this age cohort, 32% of women Veteran patients identified as Black/African American while 10% identified as Hispanic, and 4% made up the remaining racial/ethnic minority groups (American Indian/Alaska Native: 1%; Asian: 2%; Native Hawaiian/Other Pacific Islander: 1%). Women in the 45-64 age cohort were slightly less diverse than those women in the youngest age group. Although the population of Black/African American women Veterans age 45-64 was the same as those in the 18-44 group (18-44: 32% vs. 45-64:

41 Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity. The White House. Office of Management and Budget, 30 Oct. 1997. (Accessed March 2013 at [http://www.whitehouse.gov/omb/fedreg\\_1997standards](http://www.whitehouse.gov/omb/fedreg_1997standards).)

42 Ibid.

43 Due to rounding, this aggregated number does not equal the sum of the component values reported in the text.

32%), the proportion of women of Hispanic origin was less than half (18-44: 10% vs. 45-64: 4%). Women in the oldest age group, 65+, were the least diverse, with Whites accounting for 88% of women Veterans in this age cohort, followed by 8% Black/African American, and 2% Hispanic.

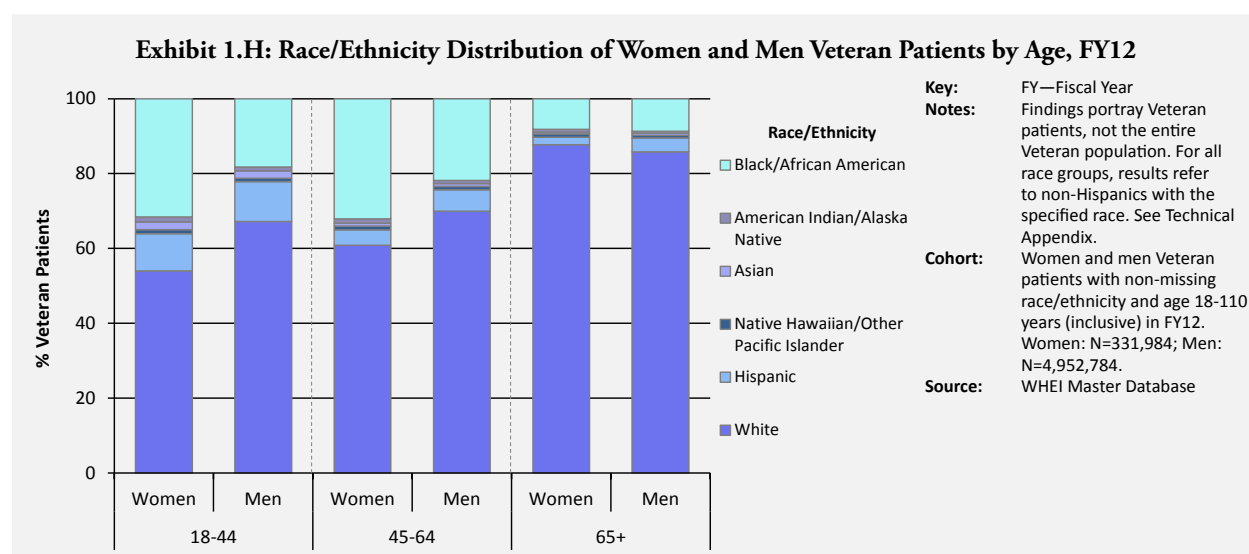


Exhibit 1.H also shows the gender comparison of the racial/ethnic composition of Veteran patients by age. A substantially higher proportion of women than men in the youngest and middle age groups were Black/African American (18-44: 32% vs. 18%; 45-64: 32% vs. 22%). Conversely, in the youngest and middle age groups, a lower proportion of women than men were White (18-44: 54% vs. 67%, 45-64: 61% vs. 70%). However, among Veterans in the oldest age group, a slightly higher proportion of women than men were White (65+: 88% vs. 86%). Across age groups, a lower proportion of women Veterans compared to men were Hispanic (18-44: 10% vs. 11%, 45-64: 4% vs. 6%, 65+: 2% vs. 4%). Among the remaining racial/ethnic groups, there were no gender differences in the proportion of women and men Veterans who were American Indian/Alaska Native (18-44: 1% vs. 1%, 45-64: 1% vs. 1%, 65+: 1% vs. <1%<sup>44</sup>); Asian (18-44: 2% vs. 2%, 45-64: 1% vs. 1%, 65+: <1% vs. 1%); and Native Hawaiian/Other Pacific Islander (18-44: 1% vs. 1%, 45-64: 1% vs. 1%, 65+: 1% vs. 1%).

**NOTES TO INTERPRETATION:** The race/ethnicity categories reported in this Sourcebook are mutually exclusive. All individuals with indication of Hispanic ethnicity are included in the “Hispanic” race/ethnicity group regardless of their race. The remaining race/ethnicity categories contain Veteran patients who have identified as “non-Hispanic,” but for simplicity, the label identifies only the race. For example, “White” is used as shorthand for non-Hispanic White, and “Black/African American” is used as shorthand for non-Hispanic Black or African American. Also, note that only a single race/ethnicity category was assigned to each patient; only 1% of FY12 VHA patients identified as multi-racial in VHA data.

## IMPLICATIONS

Women Veteran patients are much more heterogeneous on race/ethnicity than are men, and women in the youngest age groups represent particularly diverse racial/ethnic groups. VHA providers can apply this finding by ensuring that services are not only gender-sensitive but also culturally-sensitive.

44 Proportions below 0.5% are presented as “<1%.”

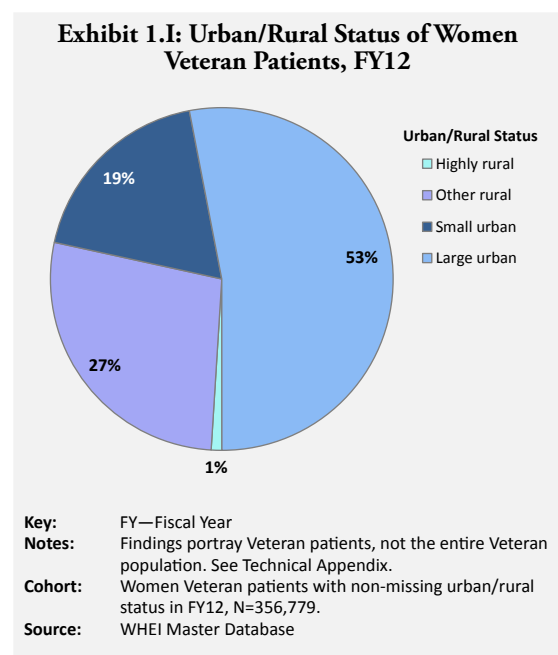


## Urban/Rural Status

For initiatives aimed at optimizing access to care for special subgroups of Veterans residing in rural or urban areas, VHA classifies geographic areas as “highly rural,” “other rural,” and “urban.”<sup>45</sup> Sourcebook Volume 3 further subdivides the “urban” category into “large urban” areas (a Metropolitan Statistical Area with at least 500,000 residents) and “small urban” areas (all other urban areas).



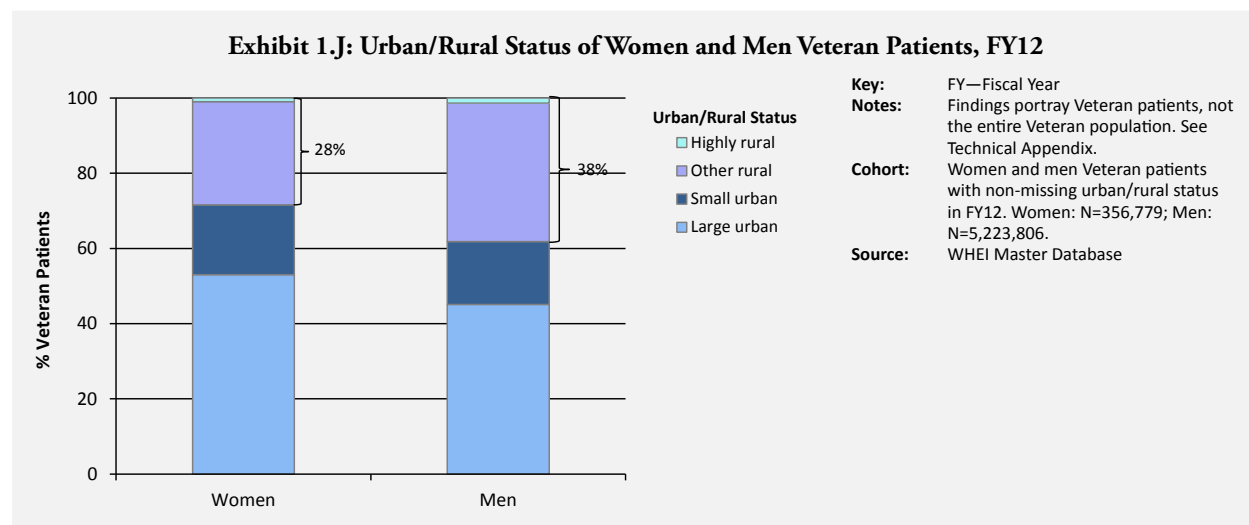
**Urban/rural status, overall and by age, FY12.** Over a quarter (28%) of all women Veteran patients resided in a rural area in FY12 (Exhibit 1.I).<sup>46</sup> There were 3,565 women (1%) residing in highly rural areas, and 97,891 women (27%) residing in other rural areas. Conversely, 72% of women Veteran patients had an urban address, with 189,252 women (53%) in large urban areas and 66,071 women (19%) in small urban areas.



Compared to older women Veterans, a moderately higher proportion of women who were younger than 45 years old lived in small or large urban areas (18–44: 75%; 45–64: 70%; 65+: 66%; data not shown graphically). Conversely, among the three age groups, the highest proportion of rural dwellers was seen among women Veterans age 65 or older. However, women 45–64 years old, who made up 46% of all women Veteran patients in FY12, represented the largest group of rural dwellers numerically (18–44: 37,539; 45–64: 49,578; 65+: 14,337).

- 45 In the VHA definition, a patient is “highly rural” if his/her address lies in a county with < 7 residents per square mile (on average). Also in the VHA definition, a patient is “urban” if his/her address meets the following two criteria for a U.S. Census urbanized area: 1) 50,000 or more people in the urban nucleus and 2) Urban core has at least 1,000 residents per square mile (may also have adjoining territory with at least 500 residents per square mile). A patient living in any other remaining area is “rural” in the VHA definition. Source: Spoon M, Greer N, Su J, Fitzgerald P, Rutks I, and Wilt TJ. Rural vs. Urban Ambulatory Health Care: A Systematic Review. VA-ESP Project #09-009, 2011.
- 46 Note that in FY10, 36% of women Veteran VHA patients lived in a rural area, whereas in FY12, 28% lived in rural area, suggesting that the proportion of women VHA patients residing in rural areas has declined over this period. The reason for this decline in the proportion of women Veteran patients living in rural areas since FY10 is unclear; while this could potentially reflect access issues for women residing in rural areas or migration of rural women Veterans to more urban areas, it could also potentially reflect changes over this period in what communities the U.S. Census classifies as rural. Longitudinal trends in rural residence of women Veteran patients merit monitoring. Source: Frayne SM, Phibbs CS, Friedman SA, Saechao F, Berg E, Balasubramanian V, Bi X, Iqbal S, Mattocks K, Haskell S, Zephyrin L, Torgal A, Whitehead A, Hayes PM. Sourcebook: Women Veterans in the Veterans Health Administration. Volume 2. Sociodemographics and Use of VHA and Non-VHA Care (Fee). Women’s Health Services, Veterans Health Administration, Department of Veterans Affairs, Washington DC. October 2012.

**Urban/rural status, by gender, FY12.** Exhibit 1.J compares the proportion of women and men Veteran VHA patients by their urban/rural status. In FY12, a higher proportion of women than men Veterans lived in small urban or large urban areas (72% vs. 62%) while a lower proportion of women than men Veterans lived in highly rural or other rural areas (28% vs. 38%).



### IMPLICATIONS

Unlike most health care organizations, VHA has a mission to provide care to every Veteran eligible for services, regardless of how remote the Veteran's residence is. This duty extends to the care of women Veterans as well. Although a lower proportion of women than men live in rural areas, many women do live in rural areas: across all age categories, at least a quarter of women Veteran patients live in rural areas. This highlights the challenge of ensuring high-quality, equitable, gender-specific VHA primary care services in areas remote from the main VHA facility, where numerically low numbers of women reside. It also suggests a possible niche for programs that extend access to women's health screening and specialty care (e.g., outreach screening programs, telemedicine, etc.). Furthermore, a moderately higher proportion of women age 65 years or older live in rural areas, highlighting the need for gender-specific geriatric care in these areas.

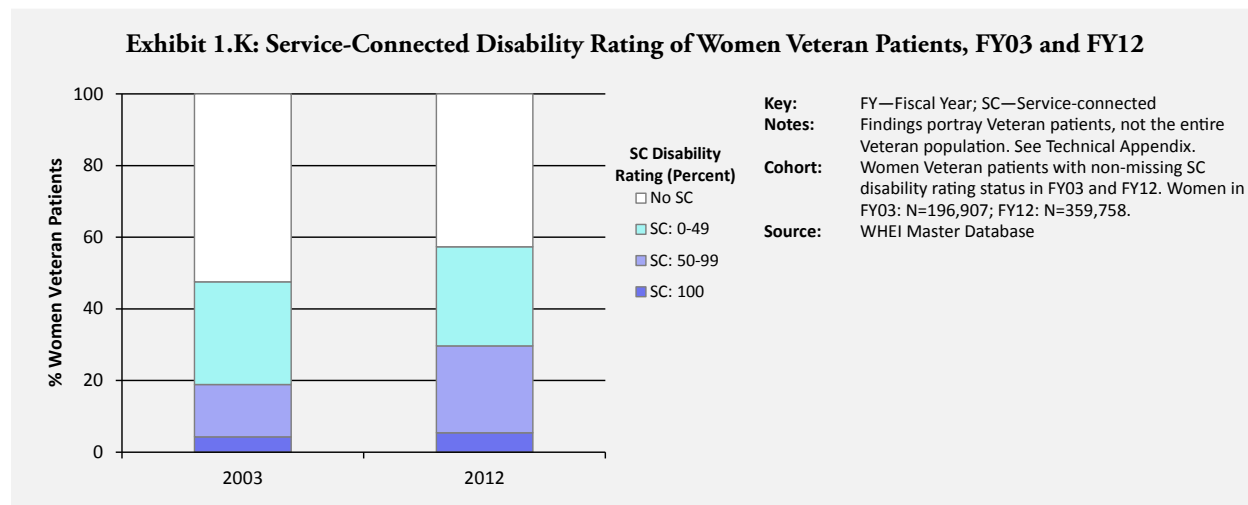
## Service-Connected Disability Rating Status

SC disability rating indicates an injury or illness deemed to have been incurred or aggravated while serving in the armed forces. The Veterans Benefits Administration (VBA) reviews disability compensation claims using a multi-step process. VBA first determines whether the disability was incurred or aggravated during active military service—if so, the Veteran receives an "SC" disability rating status. The Veteran's SC disability is then assessed and rated for severity from 0 to 100 percent.<sup>47</sup>

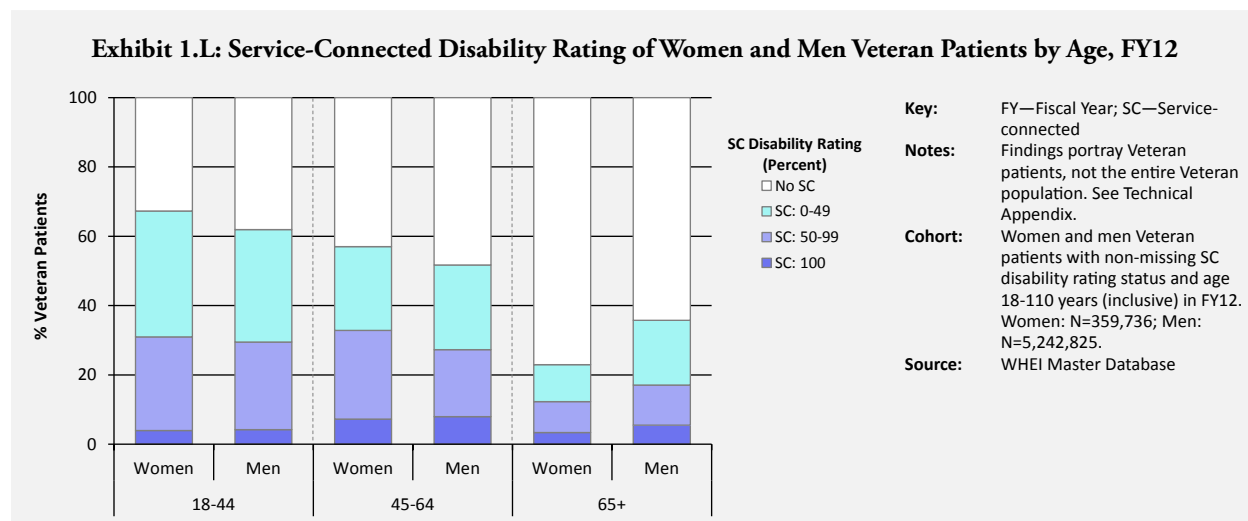
**SC disability rating, FY12.** More than half (57%) of women Veteran patients in FY12 had an SC disability rating (Exhibit 1.K). Among all women Veterans using VHA in FY12, 19,487 (5%) had a rating of 100 percent. Almost a third of women Veterans in VHA (30%, or 106,591 women) had an SC disability rating of 50 percent or higher.

<sup>47</sup> To enhance the clarity and readability of this report, an editorial decision has been made to spell out "percent" in reference to SC disability ratings, e.g. "SC disability rating of 70 percent." In all other measures of percentage, the percent symbol (%) is used. Also note that "0 percent" refers to a patient who does have SC disability status, but whose severity rating is 0 (zero) percent; this is distinct from a patient who has no SC disability status.

**Changes in proportion of women with service-connected disability rating over time, FY03 vs. FY12.** The proportion of women with an SC disability rating increased over the decade, from 48% in FY03 to 57% in FY12 (Exhibit 1.K). This increase was most pronounced in the 45-64 age group (FY03 versus FY12: 18-44 years: 62% vs. 67%; 45-64 years: 48% vs. 57%; 65+ years: 17% vs. 23%; data not shown graphically).



**Service-connected disability rating by age, FY12.** Exhibit 1.L shows that 67% of women Veteran patients who were 18–44 years old had an SC disability rating, compared with 57% of those who were 45–64 years old and 23% of those who were 65+ years old. More women Veteran patients in the 45–64 year old age groups had an SC disability rating of 100 percent compared to the other age groups (18–44: 4%; 45–64: 7%; 65+: 3%).



**Women compared to men, FY12.** A higher proportion of women Veteran patients than men had an SC disability rating (data not shown graphically): 57% of women Veterans had any SC disability rating, compared with 46% of men. Among Veteran patients, 30% of women and 23% of men had an SC disability rating of 50 percent or higher.

As Exhibit 1.L also shows, when stratified by age, a higher proportion of women than men in the youngest (18-44 years) and middle (45-64 years) age groups had any SC disability rating. A higher proportion of women than men in these age groups also had an SC disability rating of 50 percent or



higher. Among Veterans in the 18-44 age group, 67% of women compared to 62% of men had SC disability rating status, and 31% of women compared to 29% of men had an SC rating of 50 percent or higher. Among those age 45-64 years old, 57% of women compared to 52% of men Veterans had SC disability rating status; 33% of women compared to 27% of men had an SC rating of 50 percent or higher. A lower proportion of women than men in the 65+ age group had an SC disability rating (women: 23% vs. men: 36%).

**NOTES TO INTERPRETATION:** First, an SC disability rating can result from a variety of exposures including, but not limited to, combat. The administrative data used for this report do not indicate the diagnoses associated with an individual's SC disability rating, thus no conclusions can be drawn from this data regarding potential gender-related differences in the causes of SC disability. Second, these data show the proportion of women and men VHA patients who carry SC disability rating status. These data do not show the total number of Veterans nationally who carry SC disability rating status: Veterans who do not use VHA care are excluded from the cohort examined here. Therefore, no conclusions can be drawn about what proportion of all women and men Veterans in the U.S. population carry SC disability rating status. Third, these data identify only Veterans who have been formally granted an SC disability rating status; VHA patients who have a military service-related illness or disability, but who have not applied for an SC disability rating, are not identified in these data as having an SC disability rating. Likewise, Veterans who have only recently applied for an SC disability rating will appear in the database as "non-SC" until the time, if any, that they are granted an SC disability rating and VHA is updated regarding this change. Fourth, higher proportions of VHA patients with SC disability ratings in one group compared to another group (e.g., women versus men) could imply either that the proportion of Veterans applying for and being granted an SC disability rating is greater in that group, or that Veterans in that group who have an SC disability rating are more likely to be using VHA services. Similarly, higher proportions of VHA patients in one group compared to another group carrying higher SC disability ratings could imply either that the proportion of Veterans applying for and being granted higher SC disability ratings is greater in that group, or that Veterans in that group who have higher SC disability ratings are more likely to be using VHA services.

## IMPLICATIONS

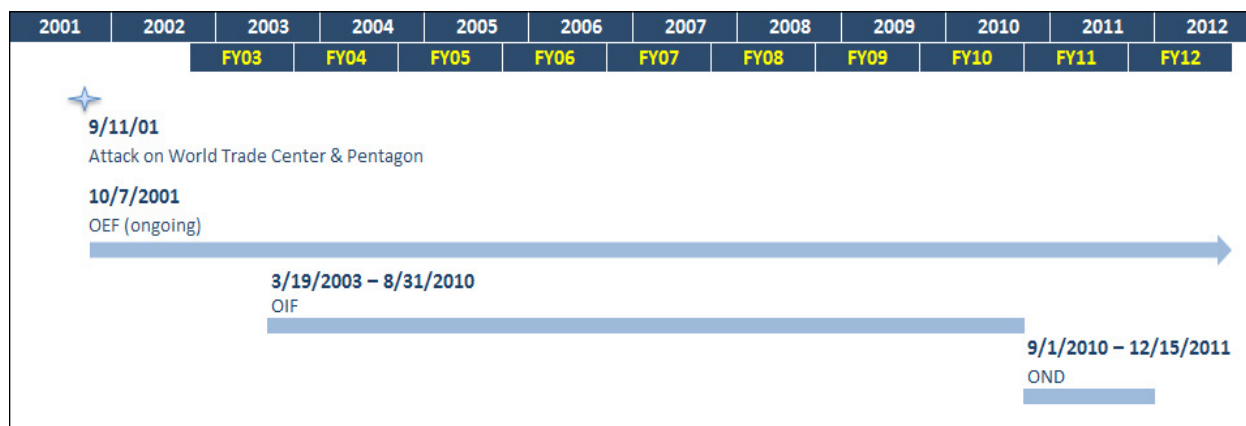
The proportion of women Veteran patients with any SC disability rating, as well as the proportion with SC disability ratings of 50 percent<sup>48</sup> or more, has increased over the decade. More than half of women Veteran patients now carry an SC disability rating, some of whom are very young. These women will be eligible for lifelong VHA care for their SC conditions.

<sup>48</sup> To enhance the clarity and readability of this report, an editorial decision has been made to spell out "percent" in reference to service-connected disability ratings, e.g. "SC disability rating of 70 percent." In all other measures of percentage, the percent symbol (%) is used. Also note that "0 percent" refers to a patient who does have service-connected disability rating status, but whose severity rating is 0 (zero) percent; this is distinct from a patient who has no service-connected disability rating.

## OEF/OIF/OND Status

On September 11, 2001, the World Trade Center and the Pentagon were attacked, marking the start of the OEF/OIF/OND era. Exhibit 1.M displays the dates of the specific conflicts. As these conflicts have progressed, a growing number of OEF/OIF/OND Veterans have returned from service, many of whom are joining VHA. The Department of Defense's (DOD) OEF/OIF/OND Roster identifies OEF/OIF/OND Veterans as those who have been deployed to OEF/OIF/OND combat zones, or served in support of OEF/OIF/OND.<sup>49</sup> This section is based on Veterans identified in the Roster who have received VHA care.

**Exhibit 1.M: Timeline of OEF/OIF/OND Conflicts**



**Key:** FY—Fiscal Year; OEF/OIF/OND—Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn

**Source for Dates:**

U.S. Library of Congress. Congressional Research Service. 2012. U.S. Periods of War and Dates of Current Conflicts, by Barbara Salazar Torreon. CRS Report RS21405. Washington, DC: Office of Congressional Information and Publishing, December 28, 2012.

**OEF/OIF/OND status by gender, FY12.** Among the 362,014 women Veteran patients in FY12, roughly 19% or 67,522 women served at least one OEF/OIF/OND tour. This is notably higher than the proportion of men Veteran patients in FY12 who served at least one OEF/OIF/OND tour (9% or 463,868 men). The difference in these proportions is likely due to the increasing representation of women in the military over time, such that women most recently discharged from military service constitute an increasing share of VHA patients.

<sup>49</sup> Source: VA Information Resource Center. OEF/OIF/OND Roster. Hines, IL: U.S. Dept. of Veterans Affairs, Health Services Research and Development Service, VA Information Resource Center, Sept. 2011.



**OEF/OIF/OND status by age and gender, FY12.** As seen in Exhibit 1.N, among women Veteran patients who were 18-44 years old in FY12, 56,932, or 37% were OEF/OIF/OND Veterans, and among women Veterans who were 45-64 years old in FY12, 10,525 or 6% were OEF/OIF/OND Veterans. Among the youngest Veteran patients (18-44 years old), a lower proportion of women than men were OEF/OIF/OND Veterans (37% vs. 53%). In contrast, a slightly higher proportion of 45-64 year old women than men served in OEF/OIF/OND (6% vs. 4%).

**Exhibit 1.N: OEF/OIF/OND Status of Women and Men Veteran Patients by Age, FY12**

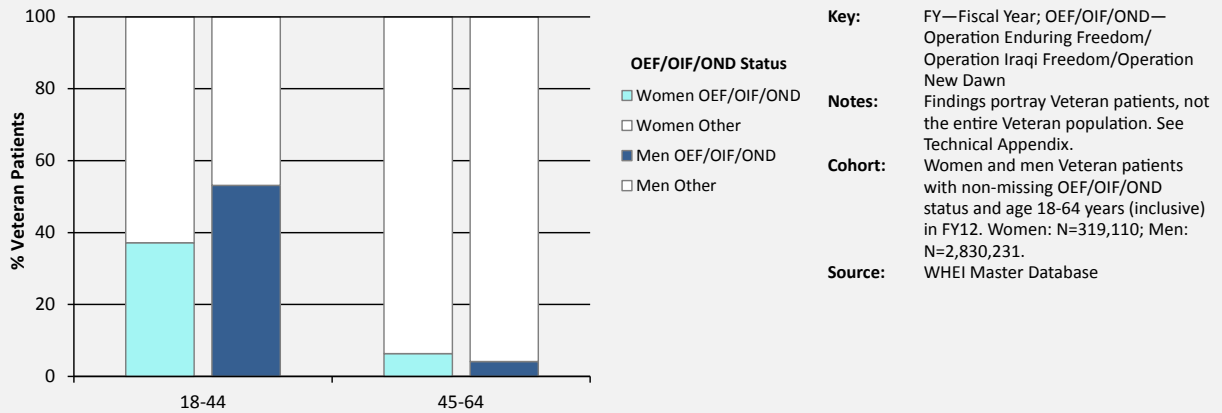
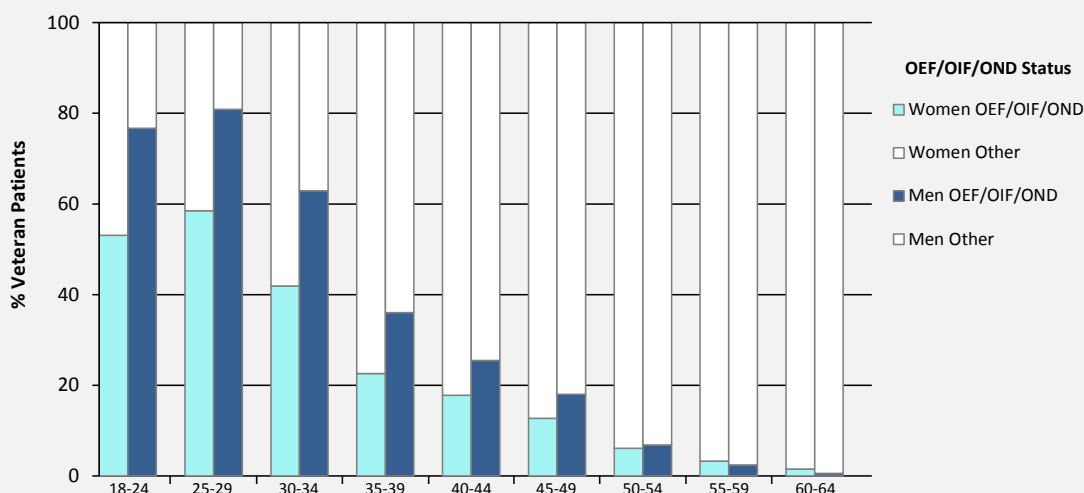


Exhibit 1.O displays the proportion of Veterans with OEF/OIF/OND status for women and men Veteran patients by finer age groups. Within every age group presented in Exhibit 1.O below age 55, a lower proportion of women than men were OEF/OIF/OND Veterans in FY12. This difference is more pronounced within the youngest Veterans (18-24: 53% vs. 77%; 25-29: 59% vs. 81%; 30-34: 42% vs. 63%; 35-39: 23% vs. 36%; 40-44: 18% vs. 25%) than in the middle age group. Note that the size of these age cohorts varied. Specifically, the number (and proportion) of all women Veteran patients falling into distinct age groups was 18-24: 13,543 (4%); 25-29: 36,112 (10%); 30-34: 36,305 (10%); 35-39: 29,781 (8%); 40-44: 37,471 (10%); 45-49: 43,519 (12%); 50-54: 51,140 (14%); 55-59: 43,970 (12%); 60-64: 27,269 (8%); and 65+: 42,882 (12%).

**Exhibit 1.O: OEF/OIF/OND Status of Women and Men Veteran Patients by Fine Age Group, FY12**



**Key:** FY—Fiscal Year; OEF/OIF/OND—Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn  
**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix.  
**Cohort:** Women and men Veteran patients with non-missing OEF/OIF/OND status and age 18-64 years (inclusive) in FY12. Women: N=319,110; Men: N=2,830,231.  
**Source:** WHEI Master Database

**OEF/OIF/OND status by age and service-connected disability rating status, FY12.** Across all ages combined, 61% of OEF/OIF/OND women Veteran patients had an SC disability rating. When stratified by age, 59% of OEF/OIF/OND women Veterans age 18-44 years old and 72% of OEF/OIF/OND women Veterans age 45-64 years old had an SC disability rating (data not shown graphically). Further break down of age into finer increments confirmed that lower proportions of women in the youngest age groups (18-24 and 25-29) had an SC disability rating compared to older OEF/OIF/OND women Veteran patients (18-24: 36%; 25-29: 56%; 30-34: 65%; 35-39: 69%; 40-44: 71%; 45-49: 74%; 50-54: 72%; 55-59: 66%; 60-64: 72%).

Among the subpopulation of OEF/OIF/OND women Veteran patients with an SC disability rating, the level of SC disability was higher among older women: 49% of women age 18-44 years compared to 63% of all other groups of women had an SC disability rating of 50 percent or higher (data not shown graphically). More specifically, a higher proportion of OEF/OIF/OND women Veterans in the 50-54 age group than OEF/OIF/OND women Veterans in other age groups had an SC disability rating of 50 percent or higher (18-24: 40%; 25-29: 44%; 30-34: 47%; 35-39: 55%; 40-44: 61%; 45-49: 63%; 50-54: 65%; 55-59: 62%; 60-64: 64%).

**NOTES TO INTERPRETATION:** Data reflect only Veterans who use VHA, and not all Veterans. OEF/OIF/OND combat Veterans are eligible for care without co-pays for conditions related to their combat for 5 years after the date of their last military discharge,<sup>50</sup> regardless of whether they have been granted an SC disability rating,<sup>51</sup> this may increase access to VHA for OEF/OIF/OND Veterans, even if they do not carry an SC disability rating status. Also, OEF/OIF/OND Veterans recently discharged from the military who have an SC disability may be counted in these analyses as non-SC if their SC applications are still being processed. The data reported in this Sourcebook reflect a point in time and may underrepresent SC disability for individuals who may later receive an SC disability rating.

**OEF/OIF/OND status over time and by gender, FY03–FY12.** Exhibit 1.P shows the number and proportion of women Veteran patients who have returned from OEF/OIF/OND tours beginning in FY03 (one year after the start of the OEF conflict), and continuing over the next 10 years. The proportion of women using VHA in any given year who have served in OEF/OIF/OND has grown substantially between FY03 (1%) and FY12 (19%). The increase from 1,611 OEF/OIF/OND women Veterans using VHA during 2003 to 67,522 OEF/OIF/OND women Veterans using VHA during 2012 represents an increase of 65,911 women, more than a 40-fold increase.

Exhibit 1.P also conveys that the increasing number of women returning from OEF/OIF/OND tours does not fully explain the decade-long trend in increasing numbers of women Veterans seeking VHA care. The number of women Veteran patients *not* involved with the OEF/OIF/OND conflicts also grew over the decade, from 199,020 in 2003 to 294,492 in 2012, or by about 48%.

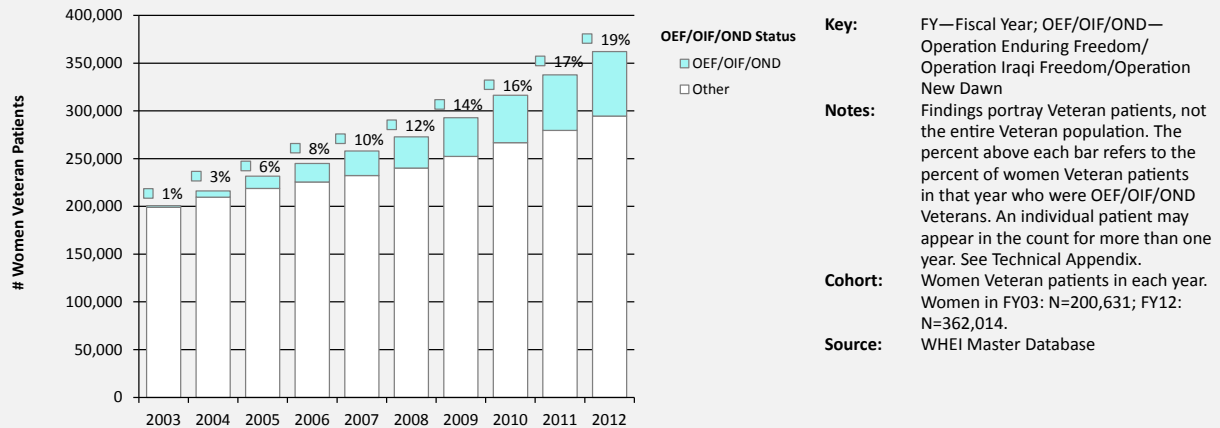
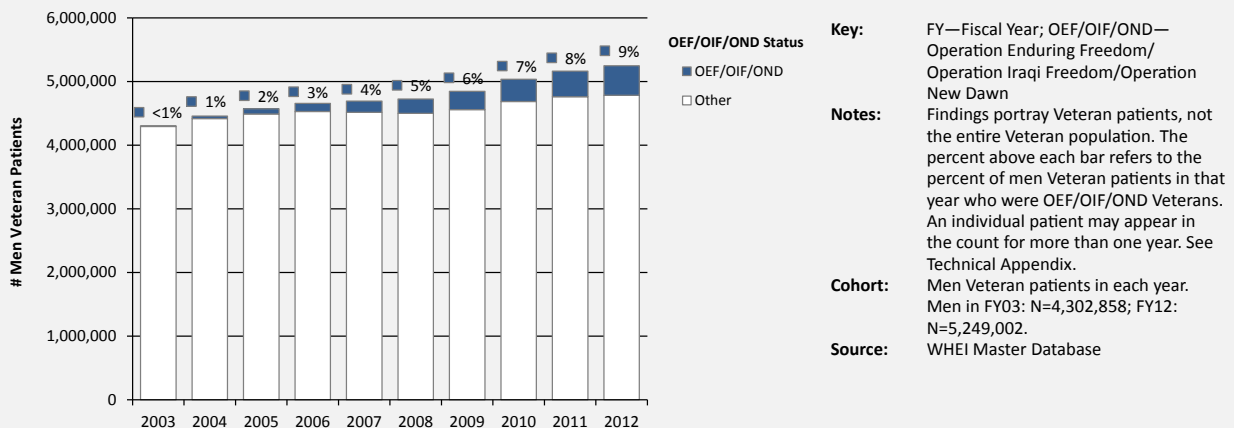
Exhibit 1.Q, showing the increase in the proportions of all men Veteran patients who have served in the OEF/OIF/OND conflicts over the past decade, is provided for comparison. Among all men Veteran patients, the proportion who served in an OEF/OIF/OND tour increased from <1% in 2003 to 9% in 2012. The number of OEF/OIF/OND men Veteran patients increased from 9,309 in 2003 to 463,868 in 2012, a 49-fold increase.

---

50 After 5 years from the date of last military discharge, OEF/OIF/OND combat Veterans continue to be eligible for care in VHA but may be subject to co-pays, depending on income and other factors.

51 Veterans Health Administration. Combat Veterans Health Care Benefits and Copay Exemption Post-discharge from Military Services: VHA Directive. 2008-054. Washington, D.C.: U.S. Dept. of Veterans Affairs, Veterans Health Administration, Sept., 2008. Rescinded or Expiration Date: 09/30/2013. (Accessed June 6, 2013.).



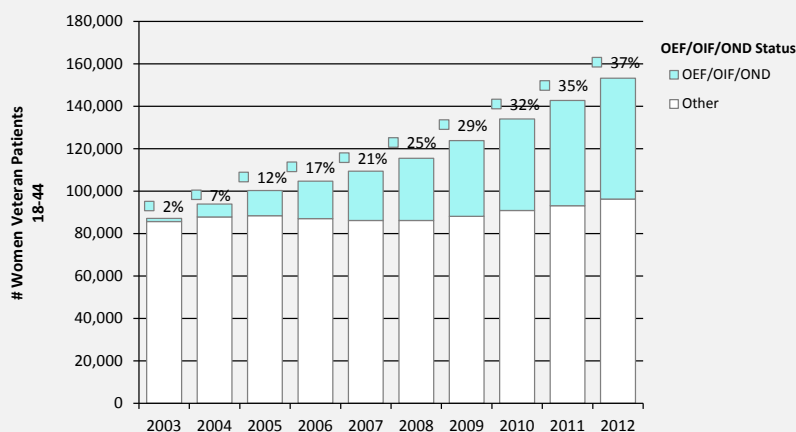
**Exhibit 1.P: OEF/OIF/OND Status of Women Veteran Patients, FY03-FY12****Exhibit 1.Q: OEF/OIF/OND Status of Men Veteran Patients, FY03-FY12**

**OEF/OIF/OND status over time, by age, FY03–FY12.** Exhibits 1.R and 1.S further break down longitudinal trends in the number of OEF/OIF/OND women Veterans seeking VHA care (and their proportion as a share of all women Veteran patients receiving VA care in any particular year), first focusing on those who were 18-44 years old in each year, and second focusing on those who were 45-64 years old in each year.

Exhibit 1.R reveals that among the 87,112 women Veteran patients in the 18-44 year old age group in 2003, 2% (1,425 women) served in OEF/OIF/OND. Ten years later, when 153,212 women Veteran patients were 18-44 years old, the proportion who had served in OEF/OIF/OND had increased to 37% (56,932 women).

Exhibit 1.S shows that the number and proportion of women Veterans who were 45-64 years old and who had served in OEF/OIF/OND conflicts also grew between 2003 and 2012, from 186 (<1% of 72,665 women) to 10,525 (6% of 165,898 women).

**Exhibit 1.R: OEF/OIF/OND Status of Women Veteran Patients Age 18-44, FY03-FY12**



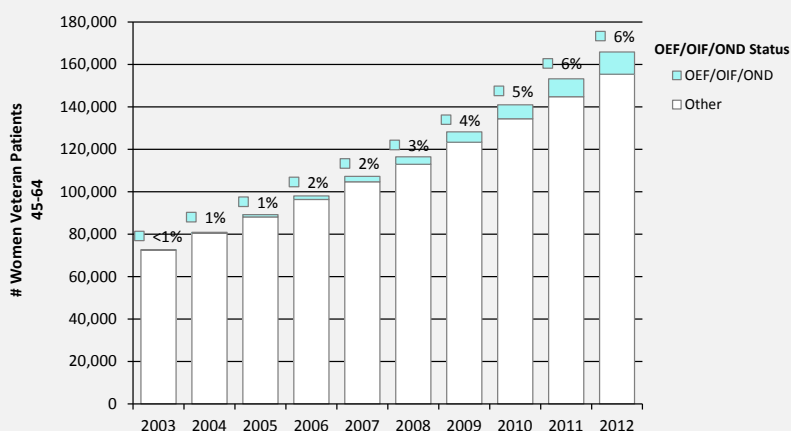
**Key:** FY—Fiscal Year; OEF/OIF/OND—Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn

**Notes:** Findings portray Veteran patients, not the entire Veteran population. The percent above each bar refers to the percent of women Veteran patients in that year who were OEF/OIF/OND Veterans. An individual patient may appear in the count for more than one year. See Technical Appendix.

**Cohort:** Women Veteran patients with non-missing OEF/OIF/OND status and age 18-44 years (inclusive), FY03- FY12. Women in FY03: N=87,112; FY12: N=153,212.

**Source:** WHEI Master Database

**Exhibit 1.S: OEF/OIF/OND Status of Women Veteran Patients Age 45-64, FY03-FY12**



**Key:** FY—Fiscal Year; OEF/OIF/OND—Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn

**Notes:** Findings portray Veteran patients, not the entire Veteran population. The percent above each bar refers to the percent of women Veteran patients in that year who were OEF/OIF/OND Veterans. An individual patient may appear in the count for more than one year. See Technical Appendix.

**Cohort:** Women Veteran patients with non-missing OEF/OIF/OND status and age 45-64 years (inclusive), FY03- FY12. Women in FY03: N=72,665; FY12: N=165,898.

**Source:** WHEI Master Database

**NOTES TO INTERPRETATION:** For all exhibits in this section showing the number of Veteran patients by year, the darker part of the bar represents OEF/OIF/OND Veterans who used VHA in that year, regardless of whether or not they used VHA in any prior years. That is, OEF/OIF/OND Veterans represented in one year of data are not necessarily new to VHA in that year, but instead may also be represented in prior years' counts.

## IMPLICATIONS

OEF/OIF/OND women Veterans have represented an increasing share of women Veteran VHA patients in each year since 2003, and many have an SC disability rating. While data on the specific causes of their disability are not available in this report, gender differences in the medical profile of OEF/OIF/OND Veterans have been reported previously,<sup>52,53,54</sup> suggesting that VHA will need to tailor care to the distinct health care needs of women in this newest generation of Veterans. Conversely, many OEF/OIF/OND women Veterans do *not* have SC disability status. Some of them may have SC claims in process or may have plans to submit an SC claim. However, others may not have any major disabilities, perhaps related in part to favorable pre-deployment health (a “healthy warrior effect”<sup>55</sup>). VHA clinicians will need to continue to be attuned to potential disabilities in recently returned women Veterans, while at the same time recognizing that OEF/OIF/OND women Veterans have had a range of military experiences, translating into diversity in post-deployment health status.

The increasing number of OEF/OIF/OND women Veterans has contributed to part of the overall increase in the number of women Veteran patients over the past decade. This applies primarily among the substantial share of women 18-44 years old, and to a lesser degree, to those 45-64 years old. Young women recently returned from war may become lifelong VHA patients. It will be critical to ensure that, upon joining VHA, they connect promptly with the spectrum of health care services that they need, in an effort to enhance their current health-related quality of life, and in an effort to reduce illness burden later in life.

A substantial proportion of women are non-OEF/OIF/OND Veterans. While expected for the older cohort of women, this finding holds even among those younger than 25 years old. Based on their young age, these women must have served in the military recently, but not in OEF/OIF/OND (i.e., they were not deployed to an OEF/OIF/OND combat zone and were not directly in support of the OEF/OIF/OND mission). While the specifics of their service are not known, perhaps some women were deployed to other conflicts or to peacetime duties abroad, or provided stateside service not directly in support of the OEF/OIF/OND mission. Alternatively, perhaps some of these women had health issues with identification or onset occurring early in military service, making them ineligible for deployment to a war zone.<sup>56,57</sup> Awareness of the diversity of roles women may have experienced during military service will prepare VHA to welcome all women following military discharge.

52 Haskell SG, Mattocks K, Goulet JL, et al. The burden of illness in the first year home: do male and female VA users differ in health conditions and healthcare utilization. *Women's Health Issues* 2011 Jan-Feb; 21(1):92-7.

53 Frayne SM, Chiu VY, Iqbal S, et al. Medical care needs of returning veterans with PTSD: Their other burden. *Journal of General Internal Medicine* 2011;26(1):33-39.

54 Kimerling R, Street AE, Pavao J, et al. Military-related sexual trauma among Veterans Health Administration patients returning from Afghanistan and Iraq. *American Journal of Public Health* 2010;100(8):1409-12.

55 Larson GE, Highfill-McRoy RM, Booth-Kewley S. Psychiatric diagnoses in historic and contemporary military cohorts: combat deployment and the healthy warrior effect. *American Journal of Epidemiology* 2008;167(11):1269-1276.

56 Smith TC, Zamorski M, Smith B, et al. The physical and mental health of a large military cohort: baseline functional health status of the Millennium Cohort. *BMC Public Health* 2007;7:340.

57 Baiocchi D. Measuring Army Deployments to Iraq and Afghanistan, Santa Monica, Calif.: RAND Corporation, RR-145-A, 2013. (Accessed May 28, 2013 at [http://www.rand.org/pubs/research\\_reports/RR145](http://www.rand.org/pubs/research_reports/RR145).)



## Part 2. Total Utilization: VHA or Non-VA (Fee) Medical Care, Combined, FY12

### Overview of Parts 2, 3, and 4

Like Sourcebook Volume 2,<sup>58</sup> Sourcebook Volume 3 provides information on both utilization at VHA facilities and utilization paid for by VHA but provided by non-VHA providers, through Non-VA (Fee) Medical Care.<sup>59</sup> Sourcebook Volume 3 extends this information in three main ways. First, it provides more recent utilization data (FY12). Second, it shows utilization data stratified by patients' race/ethnicity and OEF/OIF/OND status. Third, it has less exhibits throughout Parts 2, 3, and 4. This was done to accommodate the addition of four new sections, Part 5 through Part 8, in Sourcebook Volume 3.

As described below, Sourcebook Volume 3 presents outpatient utilization data in three parts:

Part 2—Total VHA utilization, which describes all outpatient VHA **and** Non-VA (Fee) Medical Care

Part 2 describes utilization in terms of *days* of outpatient care (total across VHA plus Non-VA [Fee] Medical Care settings, combined) among VHA patients.

Part 3—Utilization of VHA care, which describes outpatient care given **within VHA facilities only**

Part 3 describes utilization in terms of *days* of outpatient VHA care among VHA patients.

Part 3 also describes utilization in terms of numbers of VHA *encounters*:

- Encounters, overall, among VHA patients
- Encounters of specific types (face-to-face, primary care, gynecology care, mental health/SUD care, telephone care, Clinical Video Telehealth, Home Telehealth, and Store & Forward Telehealth) among outpatients

Part 4— Utilization of **Non-VA (Fee) Medical Care**, which describes outpatient care given by non-VHA providers but reimbursed through VHA. VHA can purchase these services outside VHA when needed services are not available to the patient at a VHA facility (e.g., due to staffing or distance factors). While both women and men Veterans may be eligible for Non-VA (Fee) Medical Care services, some facilities may rely heavily on Non-VA (Fee) Medical Care for some gender-specific services that are not available on site, either because a nearby VHA facility lacks the necessary volume to support a program (e.g.,

---

58 Frayne SM, Phibbs CS, Friedman SA, Saechao F, Berg E, Balasubramanian V, Bi X, Iqbal S, Mattocks K, Haskell S, Zephyrin L, Torgal A, Whitehead A, Hayes PM.. Sourcebook: Women Veterans in the Veterans Health Administration. Volume 2. Sociodemographics and Use of VHA and Non-VA Care (Fee). Women's Health Services, Veterans Health Administration, Department of Veterans Affairs, Washington DC. October 2012. Download: [http://www.womenshealth.va.gov/WOMENSHEALTH/docs/SourcebookVol2\\_508c\\_FINAL.pdf](http://www.womenshealth.va.gov/WOMENSHEALTH/docs/SourcebookVol2_508c_FINAL.pdf).

59 Note that the official term for care overseen by the National Non-VA Medical Care Program Office (NNPO) is actually "Non-VA Medical Care," but this Sourcebook uses the convention of adding the word "Fee" in parentheses to this term so as to distinguish this type of non-VA care from other types of care that VA patients might receive outside of VA (e.g., care funded through Medicare, private insurance, etc.).

mammography equipment or highly specialized gynecologic oncology services) or because VHA does not routinely provide the service on site (e.g., obstetric services). Therefore, Non-VA (Fee) Medical Care has the potential to be of particular relevance to women Veteran patients. Non-VA (Fee) Medical Care can occur in outpatient or inpatient settings, but only *outpatient* Non-VA (Fee) Medical Care utilization is presented in Sourcebook Volume 3.

Part 4 describes utilization in terms of *days* of Non-VA (Fee) Medical Care among VHA patients.

Part 4 also describes utilization in terms of numbers of Non-VA (Fee) Medical Care *services*:

- Services, overall, among VHA patients
- Services of a specific type (mammography) among *outpatients*

All three parts include data on “days of care.”<sup>60</sup> Parts 3 and 4 are further divided into sections that report encounter<sup>61</sup> and service<sup>62</sup> counts, overall and by specific types of care.

Most main analyses are presented by gender (except in the case of gender-specific services) and by age and race/ethnicity, and are also presented for the OEF/OIF/OND Veteran subgroup.

Parts 2, 3 and 4 contain FY12 updates to the FY10 data reported in Sourcebook Volume 2.<sup>63</sup> The findings in this report suggest a high degree of year-to-year stability in women Veterans’ total outpatient care, total primary care, and mental health/SUD care use. One notable exception highlighted in Part 3 is a continuing desirable trend towards more women receiving comprehensive primary care. Further description of this finding appears on page 55.

**Denominators.** Most percentages presented for the utilization results described in Parts 2, 3, and 4 include all VHA *patients* in the denominator. The exception is that percentages referring to utilization of specific types of care include only patients who use outpatient VHA and/or Non-VA (Fee) Medical Care, here referred to as “*outpatients*.” Exhibit 2.A defines the “Patient” and “Outpatient” denominators.

---

60 In Parts 2, 3, and 4, “days” are defined as the total number of days on which a patient had at least one outpatient encounter or service in FY12. Days with more than one encounter (in VHA) and/or service (through Non-VA [Fee] Medical Care) are counted only once. Patients can have a minimum of 0 and maximum of 366 days of care in FY12 because 2012 was a leap year.

61 In Part 3, “encounters” are defined as the number of visits to different VHA outpatient clinics in FY12.

62 In Part 4, “services” are defined as the number of services provided to a patient by a Non-VA (Fee) Medical Care provider in FY12. Note that VHA utilization databases and Non-VA (Fee) Medical Care utilization databases are structured differently. For example, in VHA utilization data, a patient’s visit to a Gynecology Clinic (at which she sees the gynecologist who performs an office procedure), would count as a single “encounter.” In contrast, the same visit in the Non-VA (Fee) Medical Care system could be recorded as multiple “services.” These might include the gynecologist’s service to evaluate the patient, the office procedure performed during the visit, and the supplies used during the procedure. See Technical Appendix, Section 9.6 for more details.

63 Sourcebook Volume 1 reports FY09 data, and Sourcebook Volume 2 reports FY10 data. Sourcebook Volume 3 focuses on FY12 data, in some cases compared to prior years of data. In Part 1 (section on “Cohort Size”), the number of women using VHA in FY11 is also presented.

**Exhibit 2.A: Description of Denominators for Utilization Data**

Denominator Name	N*, Women, FY12	Definition	How Patients Are Identified
"Patients"	362,014	Users of any VHA care	Patient appears in the FY12 ADUSH Enrollment File, and the Enrollment File identifies the patient as having used any VHA care in FY12 <sup>†</sup>
"Outpatients"	357,394	Users of outpatient VHA care and/or outpatient Non-VA (Fee) Medical Care	Patient appears in the FY12 VHA Outpatient Event file OR the Non-VA (Fee) Medical Care Outpatient Services file (or both)

\* Analyses comparing women to men use separate denominators for women and men. Denominators change slightly when reporting results by age or race/ethnicity, because women and men with missing data are excluded. Analyses of OEF/OIF/OND patients are limited to the subset with OEF/OIF/OND service.

† See Technical Appendix, Section 9.3.2 for an explanation of how VHA users were identified in the ADUSH Enrollment File. In this file, use of VHA care refers to use of outpatient VHA care, outpatient Non-VA (Fee) Medical Care, inpatient VHA care, inpatient Non-VA (Fee) Medical Care, or one of several other categories of care.

**NOTES TO INTERPRETATION:** Three general notes should be kept in mind when interpreting utilization data throughout Sourcebook Volume 3. First, it is important to recognize that some women and men Veteran VHA patients use health care services outside of VHA (e.g., reimbursed through Medicare, Medicaid, private insurance, etc.). The use presented in this report may underestimate the total amount of care women Veteran patients receive from all of the health care sources they use, combined. Second, long-term nursing home care and VHA pharmacy services are not included in any counts of utilization.<sup>64</sup> Third, when interpreting differences in utilization based on gender, race/ethnicity, etc., it is important to recognize that these analyses present raw comparisons of proportions, without comment on the statistical significance of those differences, and without adjustment for patient characteristics such as number of medical conditions, which can influence conclusions regarding between-group differences in use of VHA services.<sup>65</sup>

<sup>64</sup> Services provided in Vet Centers, which offer readjustment counseling services, are also not included. For more information, see <http://www.vetcenter.va.gov/index.asp> (Accessed September 2013).

<sup>65</sup> Frayne SM, Yu W, Yano EM, et al. Gender and use of care: planning for tomorrow's Veterans Health Administration. *J Women's Health* 2007;16(8):1188-1199.

## Total Outpatient Care

### *Definition of Terms*

- *Total Outpatient Days* refers to the number of unique days in FY12 on which a patient received any kind of outpatient care (i.e., all encounter/service types appearing in the VHA or Non-VA [Fee] Medical Care outpatient files) at a VHA facility and/or through the Non-VA (Fee) Medical Care system. VHA facilities can include a medical center or a VHA community based outpatient clinic (CBOC). Non-VA (Fee) Medical Care is delivered by providers in the private sector, reimbursed by VHA. If a patient received multiple services on a single day, whether at a VHA facility, through Non-VA (Fee) Medical Care, or both, then that day is counted only once.

**Total outpatient days.**<sup>66</sup> Among the 362,014 women Veteran patients in FY12, about 99% had at least one day of outpatient care through a VHA facility or Non-VA (Fee) Medical Care in that year. This indicates that only a very small proportion (1%) of women VHA patients used other types of VHA-funded care (e.g., inpatient care, pharmacy services, etc.) as their exclusive type of VHA-funded care in FY12. A minority of women Veterans (9%) received VHA services on only one day in FY12, while a substantial proportion (65%) received VHA services on 6 or more different days, including 42% who received care on 12 or more days.

A comparison of total outpatient days of service for women and men finds that the same proportion of women and men Veteran patients had some days of service (at least one day of VHA or Non-VA [Fee] Medical Care). However, a higher proportion of women than men received VHA outpatient services on 6 or more different days (6 or more days: 65% vs. 58%) and a higher proportion of women than men likewise fell into the most frequent level of outpatient utilization (12 or more days: 42% vs. 34%).

The proportion of women Veteran patients with any outpatient days varied slightly across the three age groups (18–44, 45–64, and 65+ years old). A slightly lower proportion of the oldest women Veterans had any outpatient days (18–44: 99%; 45–64: 99%; 65+: 97%). Regular use (six or more days) occurred most among the large group of women Veterans in the middle age group (18–44: 59%; 45–64: 71%; 65+: 60%) as did frequent use (12 or more days) (18–44: 35%; 45–64: 48%; 65+: 38%).

Within each age group, comparable proportions of women and men used any outpatient VHA and/or outpatient Non-VA (Fee) Medical Care. However, within each age group, regular use (six or more days) of outpatient VHA/Non-VA (Fee) Medical Care was more common among women than men, especially among the youngest patients (18–44: 59% vs. 48%; 45–64: 71% vs. 65%; 65+: 60% vs. 54%). The same was true of frequent use (12 or more days), and these gender differences were likewise largest among the youngest patients (18–44: 35% vs. 26%; 45–64: 48% vs. 41%; 65+: 38% vs. 31%).

---

### IMPLICATIONS

---

Across all age groups, women use the full range of outpatient services<sup>67</sup> more heavily than do men. As VHA projects resources needed for the future care of the growing population of women Veterans, women's heavier utilization needs to be taken into account, especially for women in the 45–64 year old age group since they tend to use outpatient services particularly heavily.

---

<sup>66</sup> Data in the Total Outpatient Care section is not shown graphically.

<sup>67</sup> As noted in Part 2, counts of services here include any type of encounter recorded in the VHA Outpatient Event file or any type of service recorded in the Non-VA (Fee) Medical Care outpatient file. This includes in-person services (e.g., visits with a clinician, laboratory or radiology encounters, etc.) as well as telephone and telehealth modalities.



**NOTES TO INTERPRETATION:** *Non-VA (Fee) Medical Care data caveats should be understood when interpreting this section. VHA data capture different units of care than do Non-VA (Fee) Medical Care data. In VHA data, the unit is the encounter (or visit) in a particular clinic, whereas in Non-VA (Fee) Medical Care data the unit is the individual service.<sup>68</sup> Since multiple services can be provided during a single clinic encounter, summing a woman's VHA clinic encounters together with her Non-VA (Fee) Medical Care services does not produce a meaningful aggregate.<sup>69</sup> Therefore, to present total VHA and Non-VA (Fee) Medical Care data together, Sourcebook Volume 3 uses days of care as an alternative "common denominator" unit of service that can be derived from both sets of data and combined for a meaningful measure of total outpatient care.*

*Although using "days" of care allows for integration of VHA and Non-VA (Fee) Medical Care data, this approach is expected to under-count FY12 Non-VA (Fee) Medical Care outpatient use for two reasons: 1) In some cases, Non-VA (Fee) Medical Care data do not report all of the dates on which services were provided; and 2) data contained in the FY12 Non-VA (Fee) Medical Care file do not comprehensively capture all days of Non-VA (Fee) Medical Care provided in FY12. These caveats are explained in the next two paragraphs. The Technical Appendix, Section 9.6, contains additional description of how the Non-VA (Fee) Medical Care data are structured differently from VHA data.*

*First, accurate measurement of "days" in Non-VA (Fee) Medical Care is hindered by the fact that not all distinct Non-VA (Fee) Medical Care procedures rendered have a date associated with them in the data. Each Non-VA (Fee) Medical Care record reports a treatment date, a procedure (CPT code), and information about how many times a patient received that procedure in association with that particular record (i.e., a count of the number of "units" of care provided).<sup>70</sup> For example, a record with January 15, 2012 as the date of service and with 15 minutes of rehabilitative therapy as the type of service might indicate that the number of units of services provided was six. It is not possible to distinguish whether these units of service refer to the date of the record (e.g., in this case, that six 15-minute physical therapy services occurred on January 15, 2012), versus whether some of these services occurred later in the month (e.g., in this case, that perhaps two of these 15-minute services occurred on January 15, 2012, and the remaining four 15-minute services were distributed on unknown dates, later in the month). In such cases, the number of unique days over which these procedures were performed cannot be determined. By counting the number of unique days recorded in the Non-VA (Fee) Medical Care data for a given patient, the data in Sourcebook Volume 3 exclude the additional days on which the same procedure might have been repeated. This provides a conservative count (i.e., an under-count) of the number of days on which each person received Non-VA (Fee) Medical Care outpatient care, and thus an under-count of the total days of VHA or Non-VA (Fee) Medical Care outpatient care.*

---

68 Instead of the clinic stop codes used to describe VHA data, Non-VA (Fee) Medical Care databases use the Current Procedural Terminology (CPT) coding system, also used by Medicare and private insurers. In this report, any reference to CPT codes includes Healthcare Common Procedure Coding System (HCPCS) codes, which are codes created by Centers for Medicare & Medicaid Services (CMS) to capture healthcare services that are not classified in the CPT coding system.

69 In VHA utilization data, a patient's visit to a Gynecology Clinic (at which she sees the gynecologist who performs an office procedure), would count as single "encounter." In contrast, the same visit in the Non-VA (Fee) Medical Care system could be recorded as multiple "services." These might include the gynecologist's service to evaluate the patient, the office procedure performed during the visit, and the supplies used for the procedure. See Technical Appendix, Section 9.6, for more details.

70 This caveat applies only to the 41% of Non-VA (Fee) Medical Care records where the "unit" is greater than 1, based on the Volume Indicator field in FY12 Non-VA (Fee) Medical Care outpatient data. In contrast, the remaining 59% of Non-VA (Fee) Medical Care records have a "unit" of 1. For these records, the treatment date unambiguously corresponds to the day the service was provided, and the count of days is accurate.

*Second, the FY12 Non-VA (Fee) Medical Care data reported in Sourcebook Volume 3 capture care reimbursed in FY12. Due to administrative delays, not all services provided in FY12 are reimbursed in FY12.<sup>71</sup> For example, a patient may receive Non-VA (Fee) Medical Care services late in FY12, and VHA may pay the Non-VA (Fee) Medical Care provider in FY13; in this case, the FY12 instance of care will be recorded in the FY13 Non-VA (Fee) Medical Care file, and will not appear in counts for Volume 3. Thus the FY12 Non-VA (Fee) Medical Care data do not completely capture all care provided in FY12. However, the FY12 Non-VA (Fee) Medical Care data do include some care provided in prior fiscal years (mostly FY11), which was reimbursed in FY12. Sourcebook Volume 3 calculations of total days of care make the assumption that the same quantity of Non-VA (Fee) Medical Care payments are delayed each year, and count any record appearing in the FY12 Non-VA (Fee) Medical Care file as FY12 Non-VA (Fee) Medical Care utilization, even if that care actually occurred in a prior year. In reality, because of ongoing growth of the number of patients in VHA, this approach probably underestimates the number of patients actually receiving Non-VA (Fee) Medical Care in FY12 (since the number of FY12 services reimbursed in FY13 would be greater than the number of FY11 services reimbursed in FY12).*

---

71 In the raw FY12 Non-VA (Fee) Medical Care outpatient file, 74% of records reflect FY12 care, 24% reflect FY11 care, and 2% reflect care prior to FY11.

## Part 3. VHA Utilization, FY12

### VHA Outpatient Care

Part 3 examines the portion of care that occurs at VHA facilities (primarily in VHA medical centers and CBOCs). Non-VA (Fee) Medical Care is not considered in Part 3.

#### *Definition of Terms*

- *VHA outpatient days* count the total number of unique days on which a patient received any kind of outpatient care at a VHA facility in FY12. If a patient had multiple encounters on a single day, that day is counted only once.
- *VHA outpatient encounters* count the total number of visits during which a patient received any kind of outpatient service at a VHA facility in FY12. If a patient visits two or more different clinics (e.g., a primary care clinic followed by a cardiology clinic) on a single day, each visit counts as a separate encounter (see Technical Appendix, Section 9.5).
- Both *VHA outpatient days* and *VHA outpatient encounters* count all services appearing in the FY12 VHA Outpatient Event file. VHA outpatient services include the full spectrum of in-person and telephone visits that a patient might have with a health care provider (including but not limited to physicians, nurse practitioners, psychologists, physical therapists, etc.) as well as laboratory testing, radiology studies, and other medical procedures. Outpatient care may occur at a VHA medical center, at a VHA CBOC, in the patient's home, or by telephone.

Like the Total Outpatient Care section, these counts exclude days on inpatient units, days on which filled prescriptions were the only source of VHA care, or days with contracted long-term nursing home care. Unlike the data reported in the "Total Outpatient Care" section, counts of VHA outpatient days and encounters exclude Non-VA (Fee) Medical Care.

Part 3 also includes data on a special case of outpatient service utilization: *VHA face-to-face outpatient encounters*. This covers services provided by a clinician able to make a diagnosis. Face-to-face encounters with a clinician include Clinical Video Telehealth, but exclude other telehealth, telephone, secure messaging, lab, and some radiology encounters.

**VHA outpatient days.** Among the 362,014 women Veteran patients in FY12, about 98% had at least one day of outpatient care at a VHA facility.<sup>72</sup> Of these, 9% received only a single day of VHA services, while a larger proportion (62%) received VHA services on 6 or more different days, including 39% who received care on 12 or more different days (data not shown graphically). On average, women Veterans with any VHA outpatient care (N=354,402) came to the VHA for care on 14.2 different days in FY12. On average, women Veterans in the middle age group (45-64 years old) with any VHA outpatient care

---

<sup>72</sup> Among the 7,612 women Veteran patients with no VHA outpatient care, 39% received outpatient care through Non-VA (Fee) Medical Care, and are thus covered in other sections. Of the women with no VHA or Non-VA (Fee) Medical Care outpatient care, 4% received inpatient care in VHA and 10% received inpatient care in Non-VA (Fee) Medical Care. The remainder presumably had prescription care or contract care as their only sources of VHA care.



came to the VHA for care on more days than women Veterans in the youngest and oldest age groups (18-44: 11.8 days; 45-64: 16.7 days; 65+: 12.9 days). On average, men Veterans with any VHA outpatient care (N=5,121,933) came to the VHA for care on 12.3 different days in FY12.

The same proportions of women and men Veteran patients had at least one day of service at a VHA facility (98%). However, a higher proportion of women than men (39% vs. 33%) had frequent use (12

or more days; data not shown graphically).

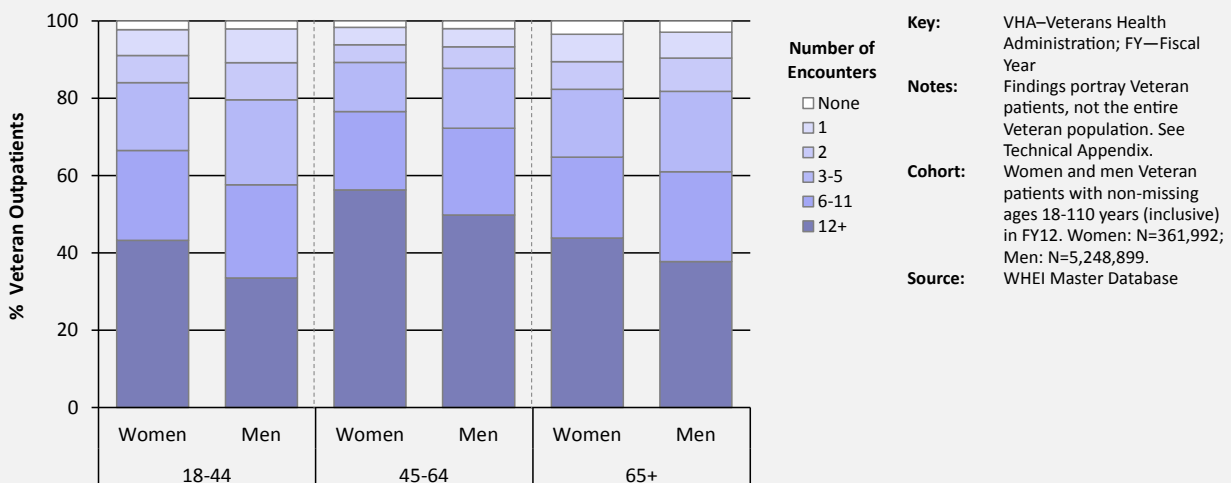
**VHA outpatient encounters.** The next sections examine *encounters* (rather than days of care).

In FY12, 98% of women Veteran patients, or 354,402 women, had at least one VHA outpatient encounter. Nearly half of women Veteran patients had 12 or more VHA outpatient encounters (49%). The remainder had 1–11 VHA outpatient encounters in FY12 (1 encounter: 6%, 2 encounters: 6%, 3–5 encounters: 15%, 6–11 encounters: 22%; data not shown graphically).

Comparing women Veterans' use of VHA outpatient encounters to men Veterans' use in FY12 reveals that nearly the same proportions of women and men had at least one VHA outpatient encounter. However, as noted when examining VHA outpatient days by gender, a higher proportion of women than men (49% vs. 42%) had frequent use (12 or more encounters; data not shown graphically).

Comparing use of VHA outpatient encounters by gender and age groups (Exhibit 3.A) finds that almost all women and men in each age group had at least one VHA outpatient encounter. A higher proportion of women who were 45–64 years old had frequent (12 or more) VHA outpatient encounters (18–44: 43%; 45–64: 56%; 65+: 44%). A higher proportion of women than men in all three age groups used VHA outpatient encounters frequently (18–44: 43% vs. 34%; 45–64: 56% vs. 50%; 65+: 44% vs. 38%).

**Exhibit 3.A: Proportion of Women and Men Veteran Patients by VHA Outpatient Encounters and Age, FY12**



**VHA face-to-face encounters with a clinician.** In FY12, 96% of the 362,014 women Veteran patients had at least one face-to-face outpatient encounter with a clinician (data not shown graphically). Women Veteran patients' use of face-to-face services in FY12 was distributed as follows: 4% had zero encounters, 13% had 1 encounter, 10% had 2 encounters, 21% had 3-5 encounters, 22% had 6–11 encounters, and 30% had 12 or more encounters. The average number of encounters among women Veterans with at least one face-to-face encounter with a clinician was 12.3 encounters in FY12.

## Primary Care

### *Definition of Terms*

This report uses the term *total primary care encounters*<sup>73</sup> to refer to care received in either of the following two settings in which women may receive VHA primary care services:

- *General primary care encounters* refer to primary care provided in a general medical clinic. Such clinics provide preventive care and care for a wide range of gender-neutral conditions (such as diabetes or upper respiratory tract infections) and gender-specific issues (such as cervical cancer screening and menstrual disorders). In FY12, while implementation of Comprehensive Women's Health Care (i.e., having both gender-neutral primary care services and gender-specific primary care services from a *single* designated women's health provider)<sup>74</sup> was still in process, providers in such clinics may have referred women to a different provider for such gender-specific services.<sup>75</sup> Additionally, note that some instances of care provided in a women's health clinic are also inadvertently counted as general primary care encounters, due to inconsistencies in how women's health clinic care was coded in FY12 (see below).
- *Women's health clinic encounters* refer to primary care services provided in a clinic designed specifically for women. These clinics provide comprehensive primary care services to women (i.e., care for both gender-neutral and gender-specific conditions).<sup>76</sup>

**NOTE ABOUT CODING OF PRIMARY CARE VISITS FOR WOMEN:** *There is variability in how different VHA facilities code primary care for women. This leads to an important caveat about women's health clinic data in this report: While estimates of "total primary care" (the sum of general primary care and women's health clinic) are reliable, the proportion of that care occurring in women's health clinics cannot be estimated with confidence in FY12 data.*

**NOTE ABOUT PRIMARY CARE BY TELEPHONE:** *VHA increasingly provides some primary care services by telephone. However, in this report, counts of general primary care and women's health clinic encounters do not include these telephone services. Instead, we report use of telephone services separately at the end of Part 3.*

**NOTE ABOUT DENOMINATOR:** *In contrast to analyses presented in prior sections in which the denominator was "patients" (defined in Exhibit 2.A), the following sections (use of total primary care, gynecology care, mental health care, telephone care, and telehealth care) all use "outpatients" as the denominator. This includes people who use VHA outpatient care and/or Non-VA (Fee) Medical Care outpatient care.*

---

<sup>73</sup> For the purposes of Sourcebook Volume 3, the terms "total primary care" and "any primary care" are used interchangeably.

<sup>74</sup> Veterans Health Administration. Health Care Services for Women Veterans (VHA Handbook 1330.01). Washington, DC: Department of Veterans Affairs, 2010.

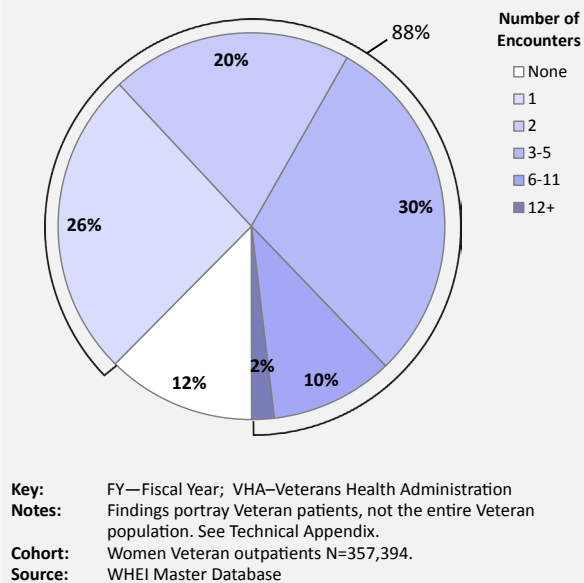
<sup>75</sup> Ibid.

<sup>76</sup> A limited number of encounters with providers who are not strictly primary care providers (such as a psychologist embedded in the women's health clinic primary care team) may be captured with clinic "stop code" 322, and thus included in the count of women's health clinic encounters.

**Total primary care (general primary care and women’s health clinic combined) encounters.**

Among women Veteran outpatients in FY12, 88% were seen by a VHA primary care provider in a general primary care setting and/or in a women’s health clinic setting (see Technical Appendix, Section 9.5, for clinic code specifications). Regarding total primary care visits in VHA in FY12, 26% of women Veterans had exactly 1 visit, 50% had 2–5, and 12% had 6 or more (Exhibit 3.B). Among women Veterans who used any VHA primary care in FY12 (general primary care and women’s health clinic combined; N=313,030), the average number of visits to any primary care clinic was 3.2 visits. Among men Veterans who received VHA primary care in any primary care clinic in FY12 (N=4,578,579), the average number of visits to any primary care clinic was 3.0 per man (data not shown graphically).

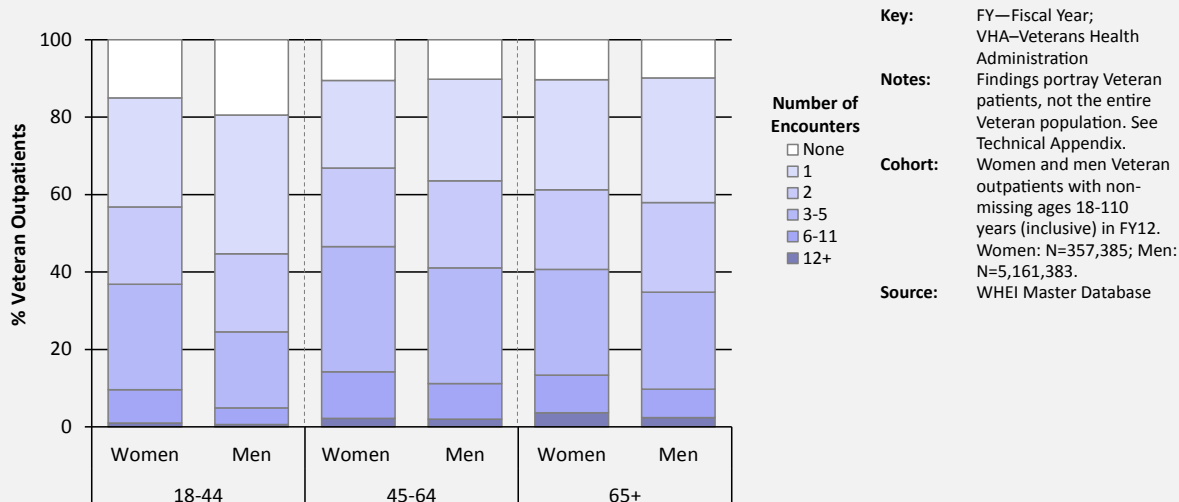
**Exhibit 3.B: Proportion of Women Veteran Outpatients by Total VHA Primary Care Encounters, FY12**



Comparing women Veterans’ total primary care encounters to that of men Veterans, for FY12, finds that among both women and men Veteran outpatients, a similar proportion (88% versus 89%) had any primary care use in FY12 (data not shown graphically). Among Veteran outpatients, a greater proportion of women than men had at least three total primary care visits in FY12 (42% vs. 36%), and a greater proportion of women than men had at least six total primary care visits (12% vs. 10%; data not shown graphically).

Exhibit 3.C demonstrates that, among women Veterans, total primary care use varied by age group. A slightly lower proportion of women in the youngest age group had any primary care use (18-44: 85%; 45-64: 89%; 65+: 90%). However, use of two or more visits was most common in the middle age group: Among women 45–64 years old, 67% had two or more total primary care visits in FY12, compared with 57% of 18–44 year olds and 61% of 65+ year olds.

Exhibit 3.C also compares women to men. Within each age group, more women than men were regular users of any primary care (i.e., at least three visits in FY12); this was seen among 18–44 year olds (37% vs. 25%), 45–64 year olds (47% vs. 41%), and 65+ year olds (41% vs. 35%).

**Exhibit 3.C: Proportion of Women and Men Veteran Outpatients by Total VHA Primary Care Encounters and Age, FY12**

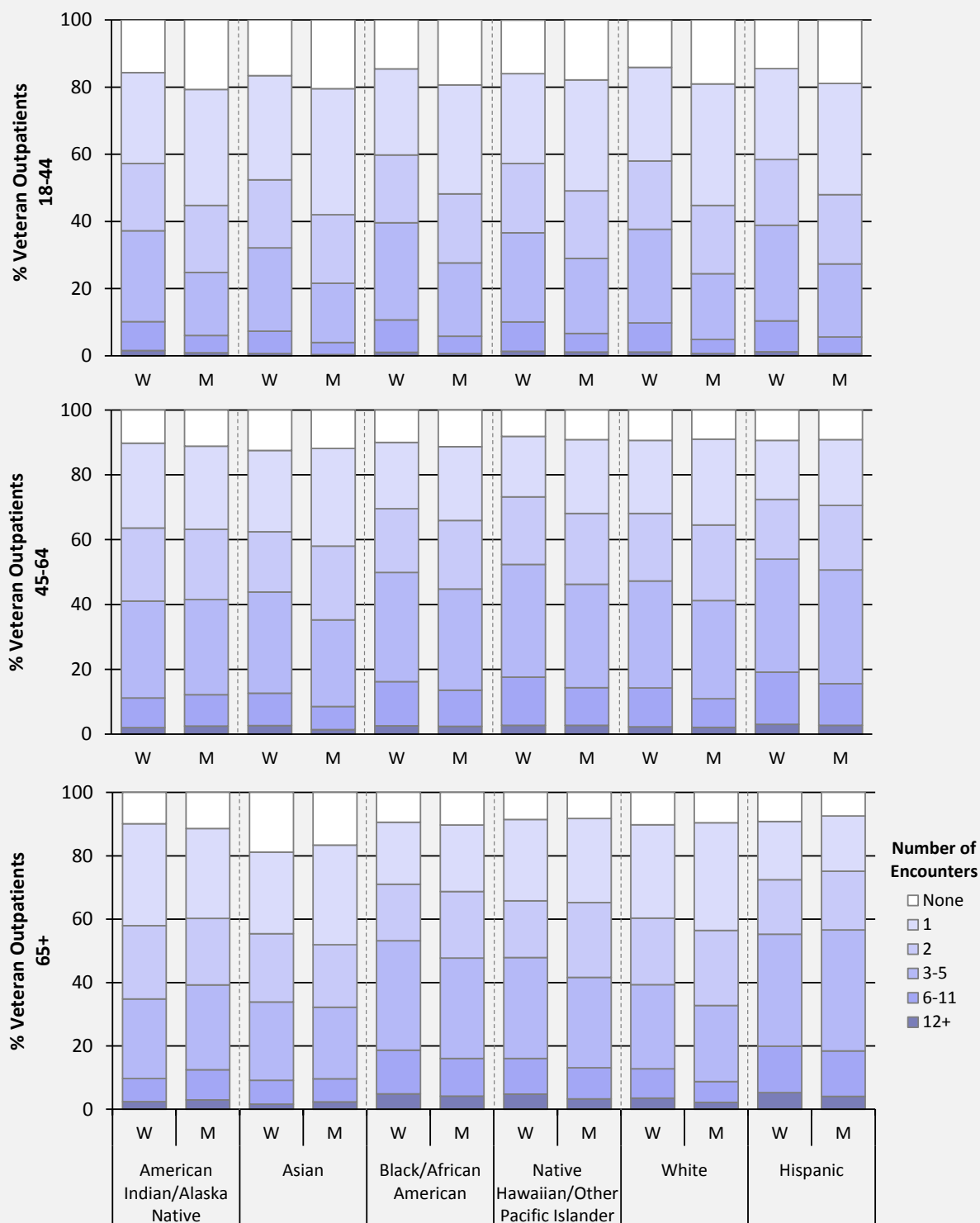
The three charts that make up Exhibit 3.D display information about women and men Veterans' use of VHA total primary care stratified by race/ethnicity and age. The top chart in the exhibit provides data on Veterans who were 18-44 years old, the middle chart provides data on Veterans who were 45-64 years old, and the bottom chart provides data on Veterans who were 65 years old or older.

The charts in Exhibit 3.D also show that, generally, compared to older women (45-64 and 65+ years), lower proportions of the youngest women (18-44 year olds) had any primary care visits in FY12. Moreover, this finding was mostly consistent among women from each race/ethnicity category. Among 18-44 year old women Veterans, the proportion with any primary care visits in FY12 ranged from 83% for Asian women to 86% for White and Hispanic women (American Indian/Alaska Native: 84%; Black/African American: 85%; Native Hawaiian/Other Pacific Islander: 84%). Among 45-64 year old women Veterans, the proportion with any primary care visits in FY12 ranged from 88% for Asian women to 92% for Native Hawaiian/Other Pacific Islander women (American Indian/Alaska Native: 91%; Black/African American: 90%; White: 91%; Hispanic: 91%). Finally, among women 65 years old or older, the proportion with any primary care visits in FY12 ranged from 81% for Asian women to 91% for Black/African American, Native Hawaiian/Other Pacific Islander, and Hispanic women (American Indian/Alaska Native: 89%; White: 90%).

Within every age group in Exhibit 3.D, there was variation in the proportion of women Veterans with three or more total primary care visits across race/ethnicities in FY12. Among 18-44 year olds, the proportion ranged from 32% for Asian women to 40% for Black/African American women (American Indian/Alaska Native: 37%; Native Hawaiian/Other Pacific Islander: 37%; White: 38%; Hispanic: 39%). Among 45-64 year olds, these proportions were even more heterogeneous, ranging from 44% for Asian women to 54% for Hispanic women (American Indian/Alaska Native: 47%; Black/African American: 50%; Native Hawaiian/Other Pacific Islander: 52%; White: 47%). Among women 65 years old or older, these proportions varied even more across race/ethnicities than the analogous proportions for younger women, ranging from 34% for Asian women to 55% for Hispanic women (American Indian/Alaska Native: 44%; Black/African American: 53%; Native Hawaiian/Other Pacific Islander: 48%; White: 39%).



**Exhibit 3.D: Proportion of Women and Men Veteran Outpatients by Total VHA Primary Care Encounters, Race/Ethnicity, and Age, FY12**



**Key:** FY—Fiscal Year; VHA—Veterans Health Administration; M—Men; W—Women

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix.

**Cohort:** Women and men Veteran outpatients with non-missing race/ethnicity and age 18-110 years (inclusive) in FY12. Women: N=327,964; Men: N=4,870,131.

**Source:** WHEI Master Database

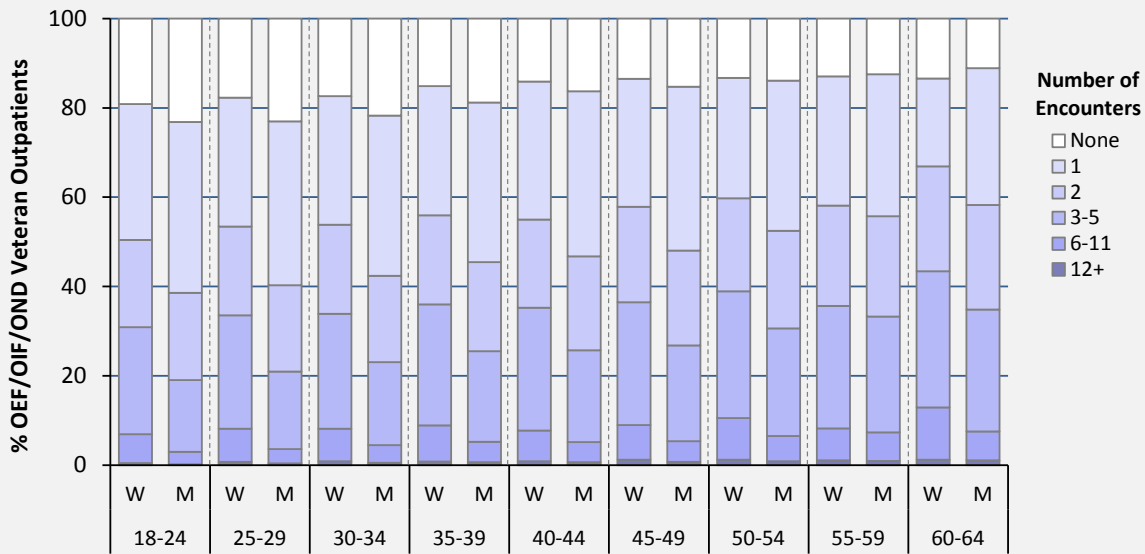


The differences in use of both any primary care and regular primary care (3+ visits) between women and men from the same race/ethnicity varied within each of the three age groups, as shown in Exhibit 3.D. Among 18-44 year olds in FY12, higher proportions of women than men Veterans used any primary care within each race/ethnicity category (American Indian/Alaska Native: 84% vs. 79%; Asian: 83% vs. 80%; Black/African American: 85% vs. 81%; Native Hawaiian/Other Pacific Islander: 84% vs. 82%; White: 86% vs. 81%; Hispanic: 86% vs. 81%). For 18-44 year olds, Exhibit 3.D shows even more substantial differences between women and men in the proportion of Veterans with three or more primary care visits (American Indian/Alaska Native: 37% vs. 25%; Asian: 32% vs. 22%; Black/African American: 40% vs. 28%; Native Hawaiian/Other Pacific Islander: 37% vs. 29%; White: 38% vs. 24%; Hispanic: 39% vs. 27%).

Among 45-64 year olds in FY12, comparable proportions of women and men in each race/ethnicity category had any primary care use (American Indian/Alaska Native: 91% vs. 89%; Asian: 88% vs. 88%; Black/African American: 90% vs. 89%; Native Hawaiian/Other Pacific Islander: 92% vs. 91%; White: 91% vs. 91%; Hispanic: 91% vs. 91%), but higher proportions of women than men in all race/ethnicity categories had three or more primary care visits (American Indian/Alaska Native: 47% vs. 41%; Asian: 44% vs. 35%; Black/African American: 50% vs. 45%; Native Hawaiian/Other Pacific Islander: 52% vs. 46%; White: 47% vs. 41%; Hispanic: 54% vs. 51%) (Exhibit 3.D).

Among Veterans 65 years old or older, comparable proportions of women and men in each race/ethnicity category had any primary care use in FY12 (American Indian/Alaska Native: 89% vs. 89%; Asian: 81% vs. 83%; Black/African American: 91% vs. 90%; Native Hawaiian/Other Pacific Islander: 91% vs. 92%; White: 90% vs. 90%; Hispanic: 91% vs. 93%). For 65+ year olds, higher proportions of women than men were regular primary care users (three or more visits) in all but one race/ethnicity category (American Indian/Alaska Native: 44% vs. 39%; Asian: 34% vs. 32%; Black/African American: 53% vs. 48%; Native Hawaiian/Other Pacific Islander: 48% vs. 42%; White: 39% vs. 33%). A lower proportion of women than men had regular primary care use among Hispanic Veterans in the 65+ years age group (55% vs. 57%) (Exhibit 3.D).



**Exhibit 3.E: Proportion of OEF/OIF/OND Women and Men Veteran Outpatients by Total VHA Primary Care Encounters and Age, FY12**

**Key:** FY—Fiscal Year; M—Men; OEF/OIF/OND—Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn; VHA—Veterans Health Administration; W—Women

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix

**Cohort:** Women and men OEF/OIF/OND Veteran outpatients with non-missing age 18-64 years (inclusive) in FY12. Women: N=67,457; Men: N=462,867

**Source:** WHEI Master Database

Exhibit 3.E reports total primary care use for OEF/OIF/OND Veterans by gender and fine age group (18-24, 25-29, 30-34, etc.). It shows that the proportion of OEF/OIF/OND women Veterans who used any primary care in FY12 in each age group was the same or slightly higher than in the previous age group (18-24: 81%; 25-29: 82%; 30-34: 83%; 35-39: 85%; 40-44: 86%; 45-49: 87%; 50-54: 87%; 55-59: 87%; 60-64: 87%). Among the older age groups, it shows generally incrementally higher or constant proportions of women with regular primary care use (three or more visits) (18-24: 31%; 25-29: 34%; 30-34: 34%; 35-39: 36%; 40-44: 35%; 45-49: 36%; 50-54: 39%; 55-59: 36%; 60-64: 43%).

Comparing any primary care use between women and men OEF/OIF/OND Veterans, Exhibit 3.E reveals that substantially higher proportions of women than men under 40 years old used any primary care (18-24: 81% vs. 77%; 25-29: 82% vs. 77%; 30-34: 83% vs. 78%; 35-39: 85% vs. 81%). Although higher proportions of women than men between 40 and 54 years old (inclusive) used any primary care, the size of these differences was smaller than the differences observed among the youngest Veterans (18-39). Further, the gender difference among 40-54 year olds shrunk with increasing age (40-44: 86% vs. 84%; 45-49: 87% vs. 85%; 50-54: 87% vs. 86%). Among the oldest Veterans shown in Exhibit 3.E, slightly lower proportions of women than men had any primary care use in FY12 (55-59: 87% vs. 88%; 60-64: 87% vs. 89%).

Exhibit 3.E also shows that across every age group, substantially higher proportions of women than men OEF/OIF/OND Veterans used primary care three or more times in FY12 (18-24: 31% vs. 19%; 25-29: 34% vs. 21%; 30-34: 34% vs. 23%; 35-39: 36% vs. 26%; 40-44: 35% vs. 26%; 45-49: 36% vs. 27%; 50-54: 39% vs. 31%; 55-59: 36% vs. 33%; 60-64: 43% vs. 35%).

***NOTE TO INTERPRETATION:** As noted earlier, the proportions presented in Part 3 of this Sourcebook are descriptive. Since they do not control for the numerous patient characteristics (e.g., health status, alternative sources of care, etc.) and provider characteristics (e.g., specialty clinic availability, practice style, etc.) that may influence utilization, these analyses do not lead to conclusions about disparities in care either across race/ethnicities or by OEF/OIF/OND status.*

---

### IMPLICATIONS

---

Nearly 90% of women Veteran outpatients see a VHA primary care provider, with use of any primary care varying by age. However, within each age group, use of any primary care is largely constant across most race/ethnicities. VHA's efforts to ensure that all patients are connected with a primary care provider appear to be successfully reaching women Veterans.

The small group not receiving primary care merits further scrutiny to determine whether they have unmet primary care needs, whether they are receiving primary care outside VHA, or whether they are relatively healthy and have lower care needs.

Women are disproportionately represented among heavy users of primary care (i.e., 12% of women vs. 10% of men had at least six primary care visits in FY12), despite women's younger average age. These findings support the concept that clinicians with a large number of women in their patient panels will likely require adjustments in panel size and scheduling profiles to ensure that women have sufficient access to care. Further, implementation of VHA's PACT initiative<sup>77</sup> should be adapted to account for women Veterans' needs, customizing care arrangements and services where appropriate.

---

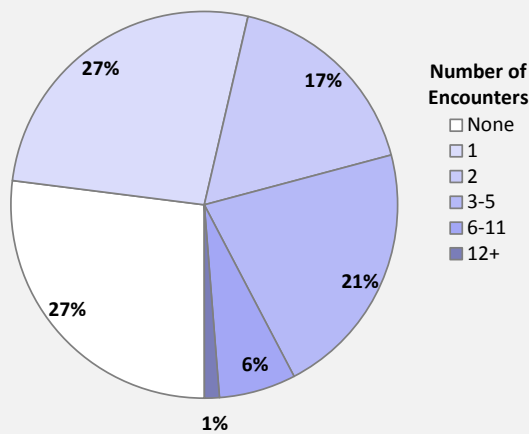
---

<sup>77</sup> PACT is VHA's patient-centered medical home initiative. Current research is examining approaches to tailoring PACT to women Veterans: Yano E and Rubenstein L, "Implementation of VA Women's Health Patient Aligned Care Teams (WH-PACTs)", VA HSR&D CRE 12-026.

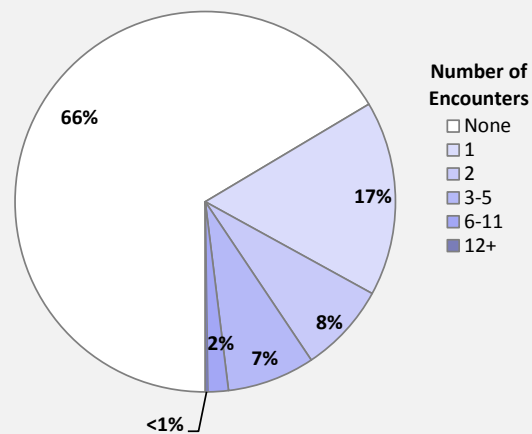
**General primary care encounters.** Exhibit 3.F<sup>78</sup> shows that 73% of women Veteran outpatients received at least some of their primary care in a general primary care clinic in FY12. Although 27% of women Veterans visited a general primary care clinic only once in FY12, 46% visited at least twice, and 29% visited at least three times.

**Women's health clinic encounters.** Exhibit 3.G shows that compared to their use of general primary care clinics, fewer women received any of their primary care in women's health clinics: 34% of women Veteran outpatients received at least some of their primary care services in FY12 in a women's health clinic. (See Definition of Terms, page 47, and Note About Coding of Primary Care Visits for Women, page 47 for limitations of women's health clinic data.) Among all women Veteran outpatients, 17% had exactly one women's health clinic visit. Among women Veterans who received primary care only in a women's health clinic setting in FY12 (N=119,910), the average number of women's health clinic visits was 2.2 per woman.

**Exhibit 3.F: Proportion of Women Veteran Outpatients by VHA Primary Care Clinic Encounters, FY12\***



**Exhibit 3.G: Proportion of Women Veteran Outpatients by VHA Women's Health Clinic Encounters, FY12**



**Key:** FY—Fiscal Year; VHA—Veterans Health Administration

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix.

**Cohort:** Women Veteran outpatients in FY12, N=357,394.

**Source:** WHEI Master Database

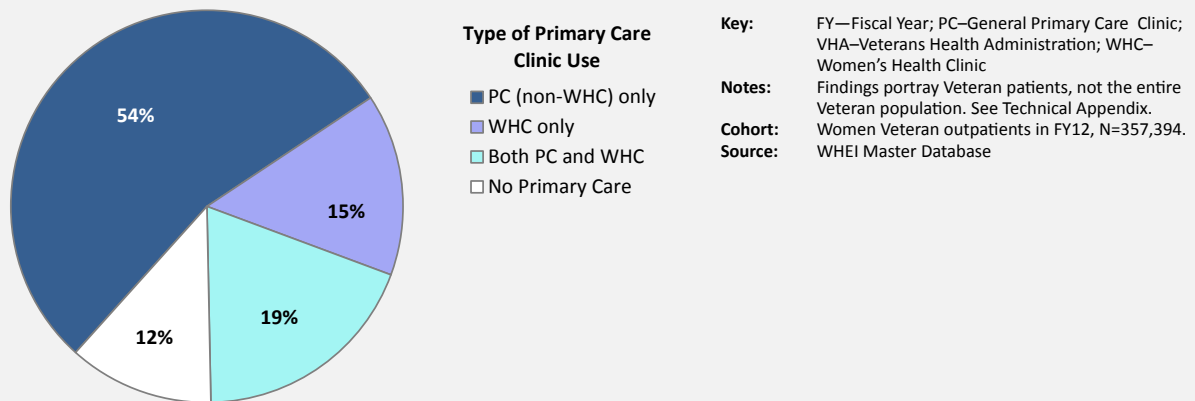
\*Due to rounding, percentages do not sum to 100%.

**NOTES TO INTERPRETATION:** The results for general primary care and women's health clinic should be interpreted with substantial caution due to variability in the ways different VHA facilities code primary health care for women (see Definition of Terms, page 47, for information about coding variability for women's health care). For example, the fact that so many women's health clinic users made only one visit to a women's health clinic in FY12 may reflect the fact that, at some facilities, women's health clinics have historically been used (in part or in whole) to provide gender-specific services like Pap smears (cervical cancer screening) to women who receive the rest of their primary care in general primary care clinics. Likewise, the proportion of women using a women's health clinic may actually be higher than reported here, because some facilities denote care received in women's health clinic with the codes used under the general primary care definition.

<sup>78</sup> Due to rounding, aggregated numbers reported in the text may be different than the sum of numbers shown in Exhibit 3.F.

With these caveats in mind, in FY12, among women Veteran outpatients, 54% received primary care in general primary care clinics only (and not in women’s health clinics); 15% received primary care in women’s health clinics only; 19% received primary care in both settings; and 12% received no primary care (Exhibit 3.H). It is notable that, in concert with VHA policy, the proportion of women Veteran outpatients who had both general primary care and women’s health clinic use has been progressively decreasing (FY09: 24%; FY10: 22%; FY11: 20%; FY12: 19%).

**Exhibit 3.H: Proportion of Women Veteran Outpatients by Which VHA Primary Care Clinics They Use, FY12**



### IMPLICATIONS

VHA policy now sets the expectation that women will receive Comprehensive Women’s Health Care (i.e., having both gender-neutral primary care services and gender-specific primary care services from a single designated women’s health provider) to reduce fragmentation of care. Women who receive all their primary care from a designated women’s health provider in a general primary care clinic or in a women’s health clinic receive Comprehensive Women’s Health Care, while those receiving primary care in *both* general primary care and women’s health clinics may not be receiving this model of care. Technical issues with the coding of women’s health clinic care preclude precise estimation of how many women have already transitioned to care consistent with this new policy. However, while it is promising that the proportion apparently receiving care in dual settings was lower in FY12 than it had been in FY09, the fact that 19% of women received care in both general primary care and women’s health clinic settings in FY12 motivates a continued push towards a system that ensures that all women have access to Comprehensive Women’s Health Care.

The proportion of women Veterans receiving primary care in women’s health clinics differed between those who were less than 65 years old and those who were 65 years old or older (Exhibit 3.I). Among women Veteran outpatients 18–44 years old or 45–64 years old, about 35% had at least one primary care visit in a women’s health clinic in FY12. Among women Veterans 65+ years old, only 22% attended a women’s health clinic in FY12. The reason for the lower rate of women’s health clinic use in the oldest age group is unknown, but could reflect historical issues (e.g., they may have enrolled in VHA years ago, before women’s health clinics were widely available, and prefer to continue with their established provider), or could reflect actual differences in care (e.g., lower rates of receipt of gender-specific services). Future work will need to explore the reason for this observed difference.

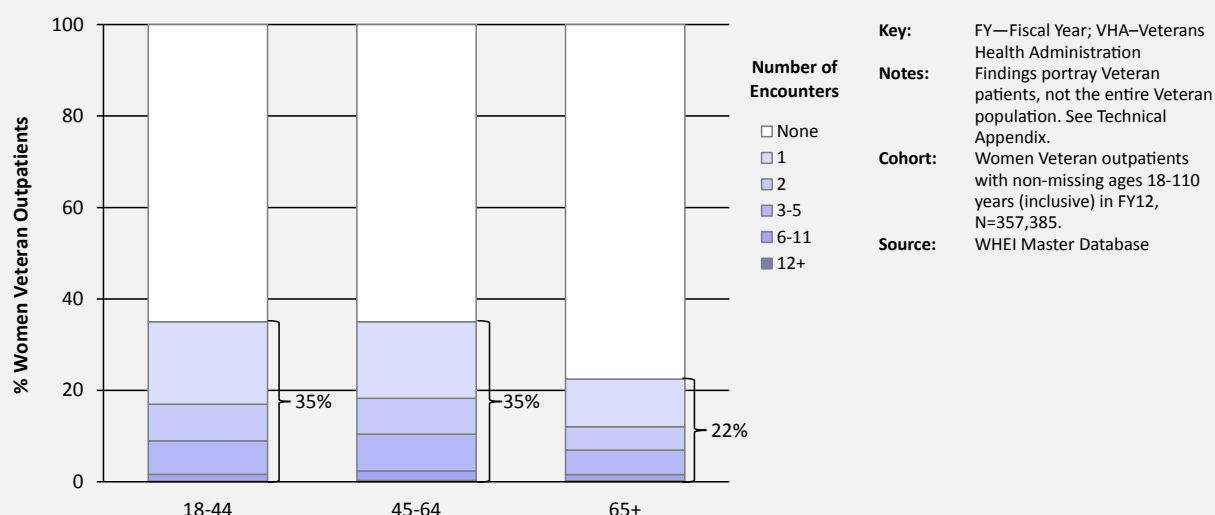
**Exhibit 3.I: Proportion of Women Veteran Outpatients by VHA Women's Health Clinic Encounters and Age, FY12**

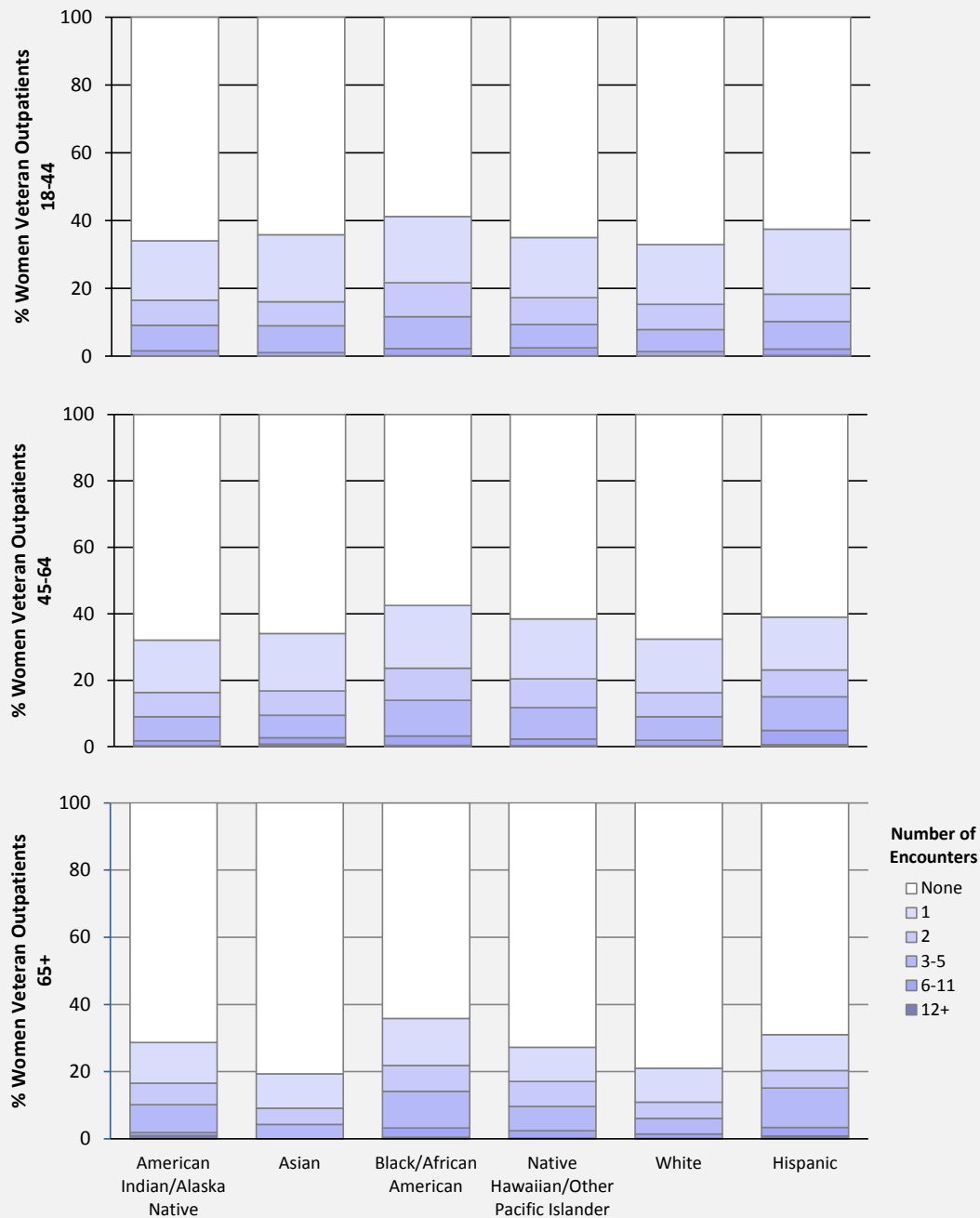
Exhibit 3.J examines whether use of women's health clinics by women Veterans in the same age group varied across different race/ethnicities in FY12. The exhibit reveals that among 18-44 year olds, the proportion of women Veterans who used women's health clinics at least once in FY12 varied slightly across race/ethnicities, ranging from 33% for White women to 41% for Black/African American women (American Indian/Alaska Native: 34%; Asian: 36%; Native Hawaiian/Other Pacific Islander: 35%; Hispanic: 37%). The proportion of women in this age group with three or more women's health clinic visits also varied slightly across race/ethnicities, ranging from 8% for White women to 12% for Black/African American women (American Indian/Alaska Native, Asian, and Native Hawaiian/Other Pacific Islander: 9%; Hispanic: 10%).

Exhibit 3.J also shows that, compared to 18-44 year old women, the proportion of 45-64 year olds with any women's clinic use in FY12 varied more by race/ethnicity, ranging from 32% for American Indian/Alaska Native and White women to 43% for Black/African American women (Asian: 34%; Native Hawaiian/Other Pacific Islander: 38%; Hispanic: 39%). The proportion of 45-64 year old women with three or more women's health clinic visits varied across race/ethnicities slightly more than the comparable proportions in the younger age group, ranging from 9% for American Indian/Alaska Native, Asian, and White women to 15% for Hispanic women (Black/African American: 14%; Native Hawaiian/Other Pacific Islander: 12%).

Finally, Exhibit 3.J identifies substantial variation in any women's health clinic use across race/ethnicities among the oldest women Veterans (65 years old or older) in FY12, from 19% for Asian women to 36% for Black/African American women (American Indian/Alaska Native: 29%; Native Hawaiian/Other Pacific Islander: 27%; White: 21%; Hispanic: 31%). Similarly, substantial variation in the proportion of women with three or more women's health clinic visits is evident across the race/ethnicities, ranging from 4% for Asian women to 15% for Hispanic women (American Indian/Alaska Native: 10%; Black/African-American: 14%; Native Hawaiian/Other Pacific Islander: 10%; White: 6%).

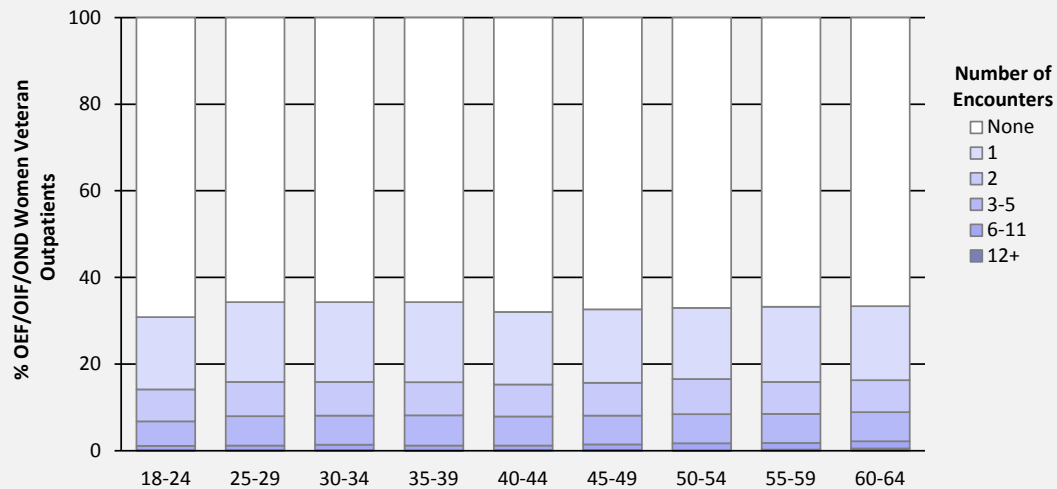
**NOTE TO INTERPRETATION:** Not every VHA facility has a women's health clinic/women's health center. Among the potential contributors to observed racial/ethnic differences in women's health clinic use are differences in the racial/ethnic composition of facilities that do versus do not have a women's health clinic. This merits further inquiry.

**Exhibit 3.J: Proportion of Women Veteran Outpatients by VHA Women's Health Clinic Encounters, Race/Ethnicity, and Age, FY12**



**Key:** FY—Fiscal Year; VHA—Veterans Health Administration  
**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix.  
**Cohort:** Women Veteran outpatients with non-missing race/ethnicity and age 18-110 years (inclusive) in FY12. N=327,964.  
**Source:** WHEI Master Database



**Exhibit 3.K: Proportion of OEF/OIF/OND Women Veteran Outpatients by VHA Women's Health Clinic Encounters and Age, FY12**

**Key:** FY—Fiscal Year; OEF/OIF/OND—Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn; VHA—Veterans Health Administration  
**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix.  
**Cohort:** OEF/OIF/OND women Veteran outpatients with non-missing age 18-64 years (inclusive) in FY12, N=67,457.  
**Source:** WHEI Master Database

Exhibit 3.K shows women's health clinic use among OEF/OIF/OND women Veteran outpatients by age groups (18-24, 25-29, 30-34, etc.). It reveals that in FY12, comparable proportions of OEF/OIF/OND women Veterans in each age group received some primary care in women's health clinics, though proportions were slightly lower in 18-24 year olds than in older age groups: 18-24: 31%; 25-29: 34%; 30-34: 34%; 35-39: 34%; 40-44: 32%; 45-49: 33%; 50-54: 33%; 55-59: 33%; 60-64: 33%. Similarly, comparable proportions of OEF/OIF/OND women Veterans in each age group visited a women's health clinic three or more times in FY12 (18-24: 7%; 25-29: 8%; 30-34: 8%; 35-39: 8%; 40-44: 8%; 45-49: 8%; 50-54: 8%; 55-59: 9%; 60-64: 9%).

## Gynecology Care

In addition to gender-specific care provided in primary care settings, VHA provides gender-specific specialty care to women in gynecology clinics (clinic "stop code" 404).

**Gynecology clinic encounters.** In FY12, about 13% (N=44,823) of women Veteran outpatients attended gynecology clinic at least once. Those women Veterans who did attend a gynecology clinic attended an average of 1.7 times during FY12 (data not shown graphically).

Among women 18–44 years old, 16% attended gynecology clinic at least once; in contrast, 11% of 45–64 year olds and 4% of 65+ year olds attended gynecology clinic.

**NOTE:** A very small number of women Veterans (N=1,054) obtained care at least once in a related clinic, women's surgery clinic (clinic "stop code" 426).



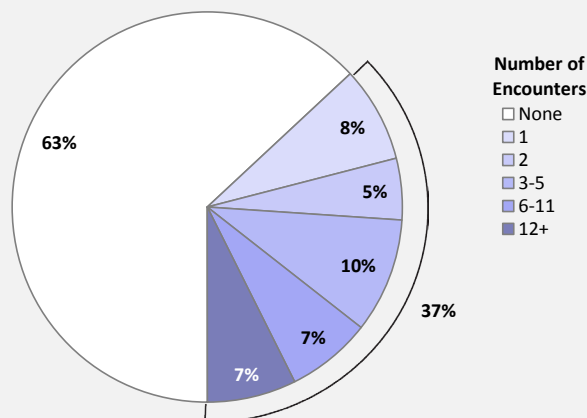
## Mental Health/SUD Care

### Definition of Terms

- *Mental health/SUD care encounters* refer to visits to specialty clinics staffed by mental health professionals (such as psychiatrists or psychologists) with expertise in mental health and/or SUDs. These clinics evaluate and treat patients with mental health conditions and/or SUDs.<sup>79</sup>

**NOTE ABOUT DEFINITIONS:** The definitions for both mental health care encounters and SUD care encounters are based solely on clinic stop codes and do not consider diagnosis. This leads to several important caveats. First, the proportions of women Veterans who had a visit in one of these settings should not be interpreted as specifying mental health/SUD condition prevalence. That is, some patients who visit a mental health/SUD clinic do not have a mental health condition. For example, some patients are referred to a mental health clinic (such as a mental health clinic embedded in the primary care setting) to assess for possible mental health conditions, but prove not to meet criteria for a diagnosis. Likewise, some patients without mental health conditions receive behavioral health care (such as smoking cessation or help with sleep hygiene) or outreach services (such as social services for homelessness) in mental health clinic settings. Second, mental health treatments provided in other clinical settings are not counted here as mental health utilization. For example, primary care providers may manage uncomplicated depression with antidepressants and brief interventions that do not require referral to a mental health clinic; such mental health treatment provided in primary care settings would not count toward the total estimate of mental health/SUD care in VHA. Third, the SUD care encounters definition is restricted to SUD specialty care. Some SUD care additionally occurs in general mental health clinics, counted here as general mental care. Fourth, the rate of use of mental health/SUD services reported here may underestimate actual need for services. For example, some patients receiving care in primary care settings may have undetected mental health conditions, or may have recognized mental health conditions but decline a referral to mental health/SUD specialty services.

**Exhibit 3.L: Proportion of Women Veteran Outpatients by VHA Mental Health/SUD Encounters, FY12**

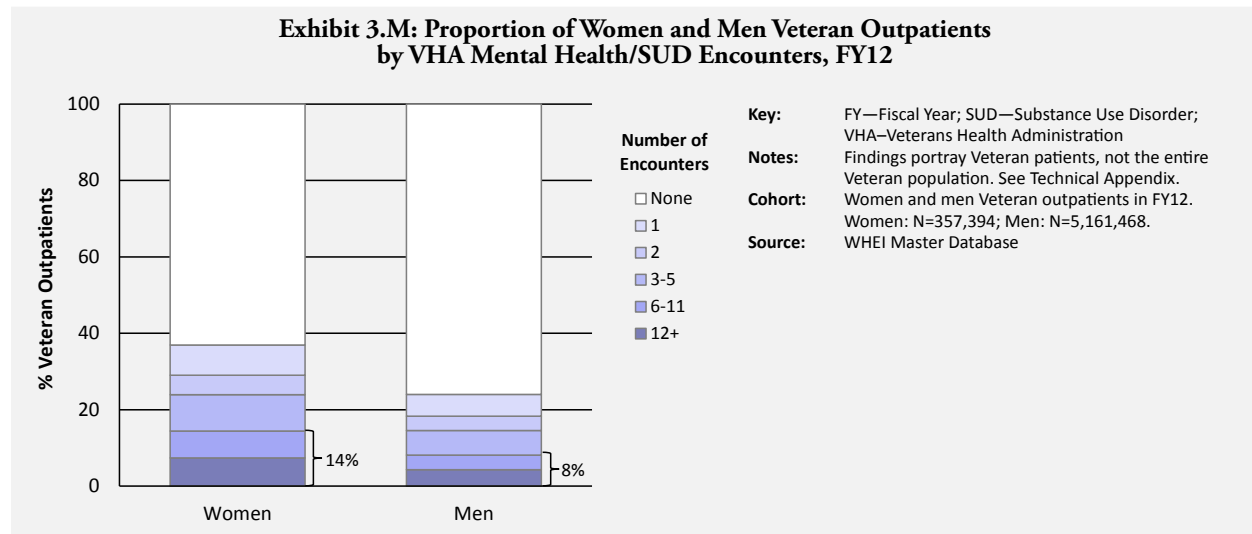


**Key:** FY—Fiscal Year; SUD—Substance Use Disorder; VHA—Veterans Health Administration  
**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix.  
**Cohort:** Women Veteran outpatients in FY12, N=357,394.  
**Source:** WHEI Master Database

**Mental health/SUD care encounters.** Among women Veteran outpatients, 37% used any mental health/SUD service in a VHA clinic in FY12. For those who used these services, use tended to be moderate or frequent. Among women Veteran outpatients, 8% had 1 visit, 15% had 2–5 visits, 7% had 6–11 visits, and 7% had 12 or more visits (Exhibit 3.L). Those women Veterans who attended VHA mental health/SUD clinics in FY12 (N=132,012) averaged 9.4 mental health visits during the year.

79 The definition of mental health/SUD care encounters used in this Sourcebook differs slightly from the definition used by VA Mental Health's Northeast Program Evaluation Center (NEPEC). This variation may lead to a reported difference when Sourcebook estimates of mental health encounters are compared to estimates provided by NEPEC.

Exhibit 3.M compares mental health utilization levels between women and men Veteran outpatients in FY12. Overall, a higher proportion of women than men used any mental health/SUD services. Among women versus men Veteran outpatients, 37% vs. 24% had any mental health/SUD visit, 14% vs. 8% had 6 or more visits in FY12, and 7% vs. 4% had 12 or more visits in FY12.



### IMPLICATIONS

Many women Veteran patients use mental health/SUD services, and among those who do, they tend to have multiple visits. Further, a far greater proportion of women than men use any mental health/SUD care (37% vs. 24%) and likewise a far greater proportion of women than men use mental health/SUD care at least six times (14% vs. 8%). VHA is recognized for its longstanding expertise in mental health/SUD and for its ongoing efforts to remain a leader in mental health care (e.g., through integration of mental health in primary care, increases in mental health care capacity, research funding, provider training, etc.). It appears that such services may be of particular importance for a substantial subset of women Veterans. Recent research assesses whether mental health/SUD service delivery systems require any adaptations to ensure they optimally meet women Veterans' treatment needs; given the large number of women using these services, such inquiry is timely.

Use of mental health/SUD care by women Veteran outpatients varied substantially by age group. The youngest women were most likely to have at least one mental health/SUD visit (18-44: 41%; 45-65: 39%; 65+: 16%) (Exhibit 3.N).

The group of women Veterans most likely to have multiple mental health/SUD visits during a one year period was the middle age group (45–64 years old). Among all outpatient women Veterans, 15% of 18–44 year olds, 17% of 45–64 year olds, and 5% of 65+ year olds had six or more mental health/SUD visits in FY12 (Exhibit 3.N).

Exhibit 3.N also shows that among the middle and older age groups of Veterans, a higher proportion of women than men had at least one mental health/SUD care visit in FY12 (45–64: 39% vs. 32%; 65+: 16% vs. 12%). Within the 18–44 year old age group, a similar proportion of women and men used mental health/SUD care (41% vs. 42%).

Within each age group, the same or a slightly higher proportion of women than men had six or more mental health/SUD visits in FY12. The difference was most pronounced in the 45–64 year old age group: comparing women to men, six or more mental health/SUD visits were made by 15% vs. 14% of 18–44 year olds, 17% vs. 12% of 45–64 year olds, and 5% vs. 3% of 65+ year olds (adding together the proportions of women with 6–11 encounters plus the proportions of those with 12+ encounters) (Exhibit 3.N).

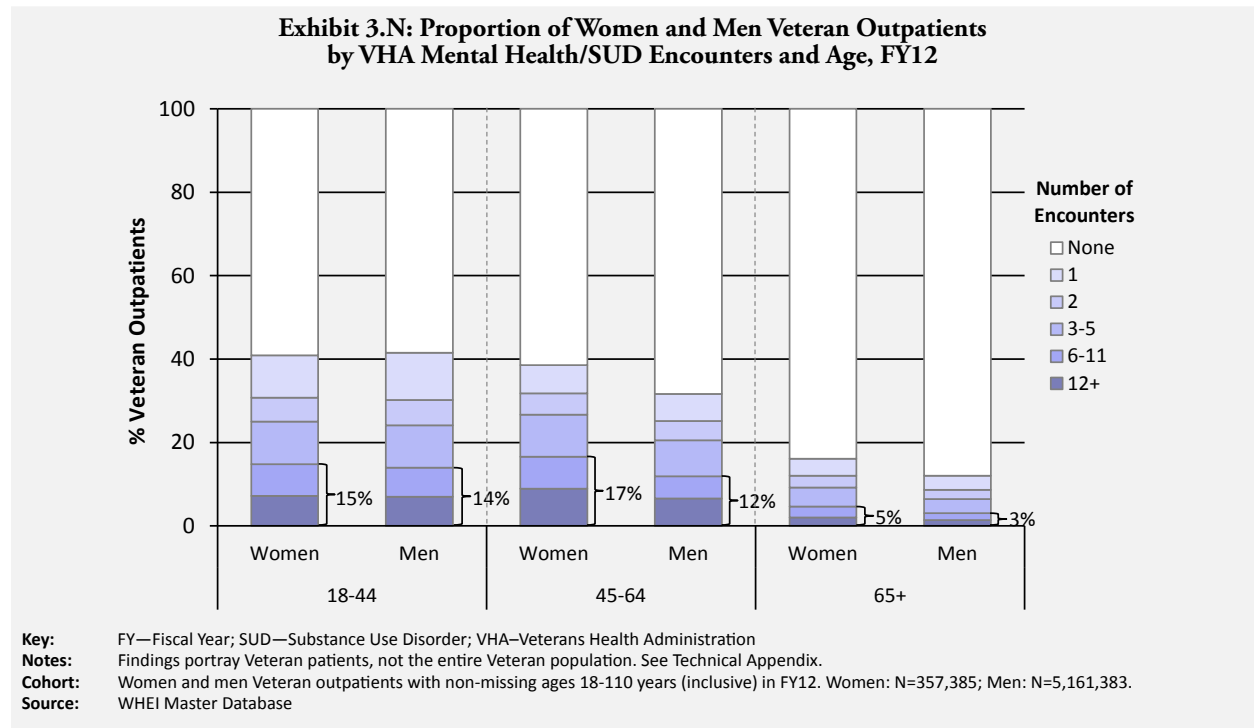
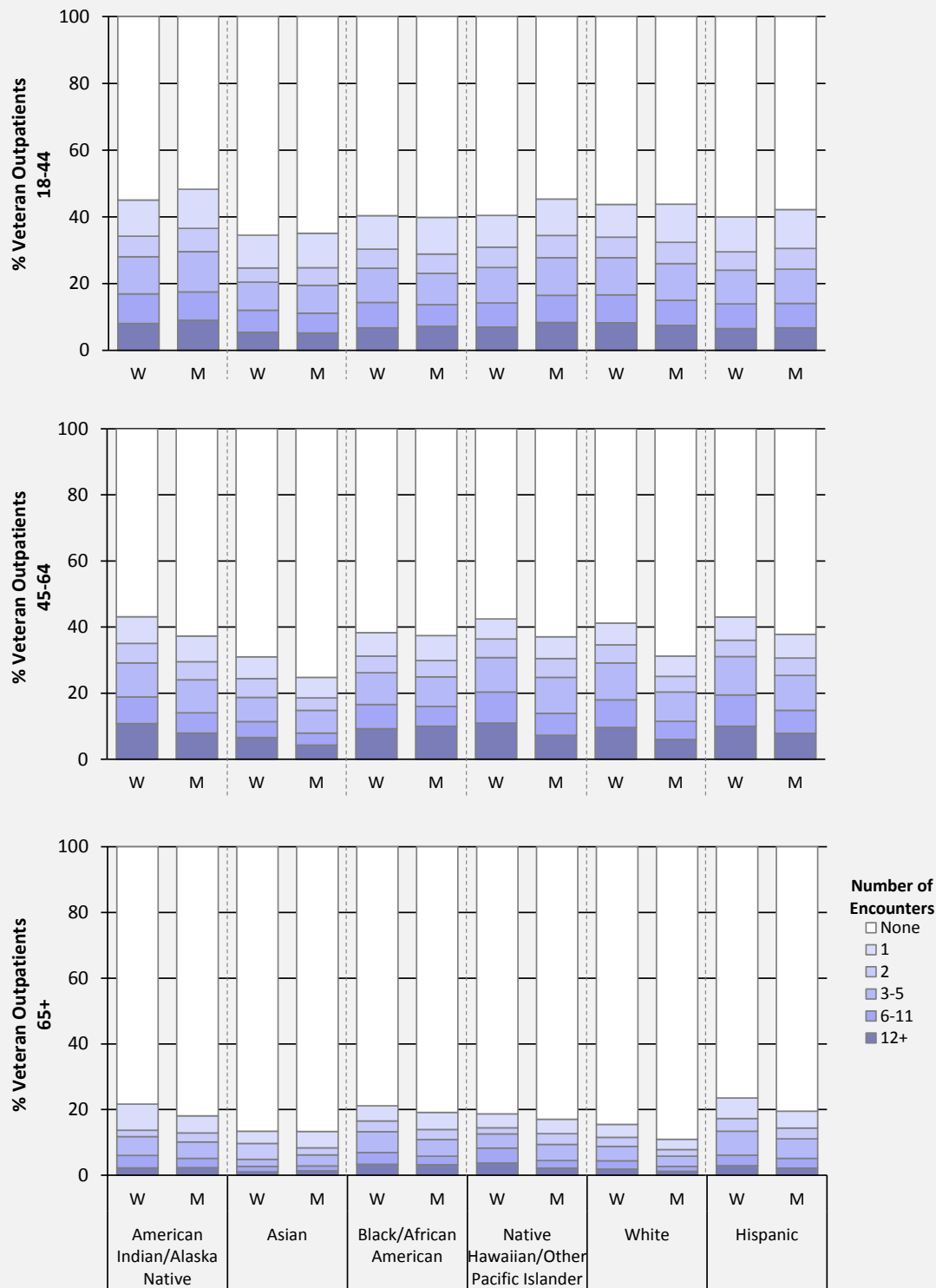


Exhibit 3.O shows mental health/SUD utilization in FY12 by race/ethnicity, gender, and age, with ages 18 to 44, 45 to 64 and 65+ displayed in the top, middle and bottom charts, respectively.

Among 18-44 year olds, the proportion of women with any mental health/SUD care ranged from 35% for Asian women to 45% for American Indian/Alaska Native women (Black/African American: 40%; Native Hawaiian/Other Pacific Islander: 40%; White: 44%; Hispanic: 40%). In the same age group, the proportions with six or more mental health/SUD visits ranged from 12% for Asian women to 17% for American Indian/Alaska Native and White women (Black/African American: 14%; Native Hawaiian/Other Pacific Islander: 14%; Hispanic: 14%) (Exhibit 3.O).

Among 45-64 year olds, the proportion of women with any mental health/SUD care ranged from 31% for Asian women to 43% for American Indian/Alaska Native and Hispanic women (Black/African American: 38%; Native Hawaiian/Other Pacific Islander: 42%; White: 41%). In the same age group, the proportions with six or more mental health/SUD visits ranged from 11% for Asian women to 20% for Native Hawaiian/Other Pacific Islander women (American Indian/Alaska Native: 19%; Black/African American: 17%; White: 18%; Hispanic: 19%) (Exhibit 3.O).

**Exhibit 3.O: Proportion of Women and Men Veteran Outpatients by VHA Mental Health/SUD Encounters, Race/Ethnicity, and Age, FY12**



**Key:** FY—Fiscal Year; M—Men; SUD—Substance Use Disorder; VHA—Veterans Health Administration; W—Women

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix.

**Cohort:** Women and men Veteran outpatients with non-missing race/ethnicity and age 18-110 years (Inclusive) in FY12. Women: N=327,964; Men: N=4,870,131.

**Source:** WHEI Master Database

Among women age 65 years old or older, the proportion of women with any mental health/SUD care ranged from 13% for Asian women to 24% for Hispanic women (American Indian/Alaska Native: 22%; Black/African American: 21%; Native Hawaiian/Other Pacific Islander: 19%; White: 16%). In the same age group, the proportions with six or more mental health/SUD visits ranged from 3% for Asian women to 8% for, Native Hawaiian/Other Pacific Islander women (American Indian/Alaska Native: 6%; Black/African American: 7%; White: 4%; Hispanic: 6%) (Exhibit 3.O).

Exhibit 3.O additionally reveals that among 18-44 year old women and men Veterans of the same race/ethnicity, the same or lower proportion of women than men had any mental health/SUD visits (American Indian/Alaska Native: 45% vs. 48%; Asian: 35% vs. 35%; Black/African American: 40% vs. 40%; Native Hawaiian/Other Pacific Islander: 40% vs. 45%; White: 44% vs. 44%; Hispanic: 40% vs. 42%). Among 18-44 year old women and men Veterans of the same race/ethnicity, the same or slightly lower proportion of women than men had six or more mental health/SUD visits for some groups (American Indian/Alaska Native: 17% vs. 18%; Black/African American: 14% vs. 14%; Native Hawaiian/Other Pacific Islander: 14% vs. 17%; Hispanic: 14% vs. 14%) and a higher proportion of women than men had six or more mental health/SUD visits for other groups (Asian: 12% vs. 11%; White: 17% vs. 15%) in FY12.

Among 45-64 year old Veterans of the same race/ethnicity, higher proportions of women than men had any mental health/SUD visits (American Indian/Alaska Native: 43% vs. 37%; Asian: 31% vs. 25%; Black/African American: 38% vs. 37%; Native Hawaiian/Other Pacific Islander: 42% vs. 37%; White: 41% vs. 31%; Hispanic: 43% vs. 38%) and six or more mental health/SUD visits (American Indian/Alaska Native: 19% vs. 14%; Asian: 11% vs. 8%; Black/African American: 17% vs. 16%; Native Hawaiian/Other Pacific Islander: 20% vs. 14%; White: 18% vs. 11%; Hispanic: 19% vs. 15%) in FY12 (Exhibit 3.O).

Among women and men 65 years old or older of the same race/ethnicity, the same or higher proportions of women than men had any mental health/SUD visits (American Indian/Alaska Native: 22% vs. 18%; Asian: 13% vs. 13%; Black/African American: 21% vs. 19%; Native Hawaiian/Other Pacific Islander: 19% vs. 17%; White: 16% vs. 11%; Hispanic: 24% vs. 20%). Among women and men 65 years old or older of the same race/ethnicity, a higher proportion of women than men had six or more mental health/SUD visits (American Indian/Alaska Native: 6% vs. 5%; Black/African American: 7% vs. 6%; Native Hawaiian/Other Pacific Islander: 8% vs. 4%; White: 4% vs. 3%; Hispanic: 6% vs. 5%) except for Asian women versus men (3% vs. 3%) in FY12 (Exhibit 3.O).

***NOTES TO INTERPRETATION:** The extent to which factors such as cultural differences, condition prevalence, or disease severity contribute to observed differences across subgroups (e.g., differences in utilization by gender, age, race/ethnicity) is not assessed in these analyses.*

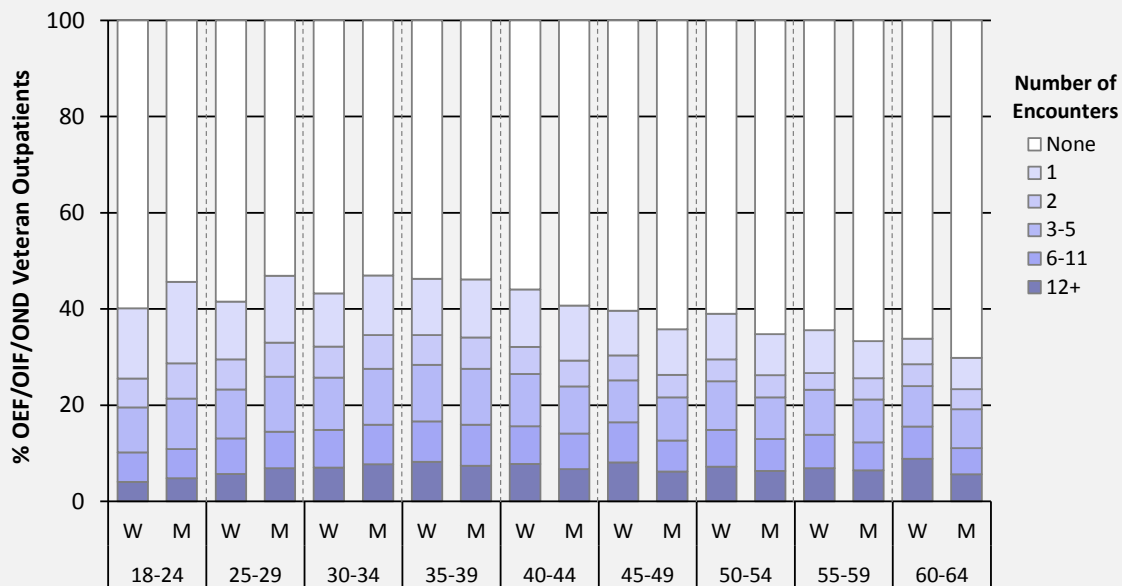
Exhibit 3.P displays data on mental health/SUD care use in FY12 among women and men Veterans who served on OEF/OIF/OND tours of duty, stratified by fine age groups (18-24, 25-29, 30-34, 35-39, etc.). As with other OEF/OIF/OND analyses, patients with age 65+ years were not examined in this analysis. In the first four age groups, the proportion of OEF/OIF/OND women Veterans with at least one mental health/SUD visit increased slightly with advancing age: 18-24: 40%; 25-29: 42%; 30-34: 43%; 35-39: 46%. This ascending trend reversed direction across the remaining age groups: 40-44: 44%; 45-49: 40%; 50-54: 39%; 55-59: 36%; 60-64: 34%.

Exhibit 3.P also shows that use of six or more mental health/SUD visits followed a similar pattern across the age groups. In the first four age groups, the proportion of OEF/OIF/OND women Veterans in each age group with six or more mental health/SUD visits was slightly larger than in the preceding age group: 18-24: 10%; 25-29: 13%; 30-34: 15%; 35-39: 17%. These proportions remained the same or decreased with increasing age across the next four age groups (40-44: 16%; 45-49: 16%; 50-54: 15%; 55-59: 14%), though increased slightly in the oldest age group (60-64: 16%).

Comparing women and men OEF/OIF/OND Veterans' use of mental health/SUD care, Exhibit 3.P shows that gender differences varied across age groups. A lower proportion of women than men used any mental health/SUD care among 18-24 year olds (40% vs. 46%), 25-29 year olds (42% vs. 47%), and 30-34 year olds (43% vs. 47%). Equal proportions of 35-39 year old women and men had at least one mental health/SUD visit in FY12 (46% vs. 46%). In each of the subsequent age groups, higher proportions of women than men had at least 1 mental health/SUD visit (40-44: 44% vs. 41%; 45-49: 40% vs. 36%; 50-54: 39% vs. 35%; 55-59: 36% vs. 33%; 60-64: 34% vs. 30%) (Exhibit 3.P).

Similar comparisons of the proportion of women and men OEF/OIF/OND Veterans with six or more mental health/SUD visits in FY12 reveal a comparable pattern. A slightly lower proportion of women than men had six or more mental health/SUD visits among 18-24 year olds (10% vs. 11%), 25-29 year olds (13% vs. 14%), and 30-34 year olds (15% vs. 16%). In each of the subsequent age groups, higher proportions of women than men had six or more mental health/SUD visits (35-39: 17% vs. 16%; 40-44: 16% vs. 14%; 45-49: 16% vs. 13%; 50-54: 15% vs. 13%; 55-59: 14% vs. 12%; 60-64: 16% vs. 11%) (Exhibit 3.P).

**Exhibit 3.P: Proportion of Women and Men OEF/OIF/OND Veteran Outpatients by VHA Mental Health/SUD Encounters and Age, FY12**



**Key:** FY—Fiscal Year; M—Men; OEF/OIF/OND—Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn; SUD—Substance Use Disorder; VHA—Veterans Health Administration; W—Women  
**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix.  
**Cohort:** OEF/OIF/OND women and men Veteran outpatients with non-missing age 18-64 years (inclusive) in FY12. Women: N=67,457; Men: N=462,867.  
**Source:** WHEI Master Database

---

**IMPLICATIONS**

---

Women who served in OEF/OIF/OND utilize substantial mental health/SUD care. Understanding and providing for the mental health/SUD care needs of these women continues to be a priority.

---

**Substance use disorder care encounters.** Among all women Veteran outpatients, a small number of women Veterans (2%, N=7,769), had specialty SUD encounters. Of these, 5,630 women (2%) had 2 or more SUD encounters, and 2,767 (1%) had 12 or more encounters (data not shown graphically). Women receiving some SUD treatment in FY12 (N=7,769) had, on average, 15.2 SUD encounters in FY12.

A similar proportion of women versus men Veterans had any specialty SUD encounters (2% vs. 2%), as well as 2 or more encounters (2% vs. 2%) and 12+ encounters (1% vs. 1%).

The 7,769 women receiving care in SUD clinics in FY12 represented 2% of 18–44 year olds, 3% of 45–64 year olds, and <1% of 65+ year olds. The 125,490 men receiving care in SUD clinics represented 5% of 18-44 year olds, 4% of 45-64 year olds, and <1% of 65+ year olds.

Use of SUD clinics also varied by race/ethnicity (data not shown graphically). Within most race/ethnicities, the proportion of patients using these clinics was greatest among women Veteran patients 18-44 years old (American Indian/Alaska Native: 4%; Asian: 1%; Black/African American: 2%; Native Hawaiian/Other Pacific Islander: 2%; White: 3%; Hispanic: 2%), and 45-64 years old (American Indian/Alaska Native: 3%; Asian: 1%; Black/African American: 3%; Native Hawaiian/Other Pacific Islander: 3%; White: 3%; Hispanic: 2%) and lowest among women Veteran patients 65+ years old (American Indian/Alaska Native: <1%; Asian: 0%; Black/African American: 1%; Native Hawaiian/Other Pacific Islander: 0%; White: <1%; Hispanic: <1%). Similar patterns (though with higher proportions using SUD services) were seen among men 18-44 years old (American Indian/Alaska Native: 7%; Asian: 2%; Black/African American: 5%; Native Hawaiian/Other Pacific Islander: 4%; White: 5%; Hispanic: 4%), 45-64 years old (American Indian/Alaska Native: 5%; Asian: 2%; Black/African American: 8%; Native Hawaiian/Other Pacific Islander: 3%; White: 3%; Hispanic: 4%) and 65+ years old (American Indian/Alaska Native: 1%; Asian: <1%; Black/African American: 1%; Native Hawaiian/Other Pacific Islander: <1%; White: <1%; Hispanic: 1%).

Among OEF/OIF/OND Veteran patients, the proportion using SUD services varied by gender and fine age group (data not shown graphically). The proportion using SUD services tended to be lower among women (18-24: 2%; 25-29: 2%; 30-34: 2%; 35-39: 2%; 40-44: 2%; 45-49: 2%; 50-54: 1%; 55-59: 1%; 60-64: <1%) than among men (18-24: 4%; 25-29: 5%; 30-34: 5%; 35-39: 4%; 40-44: 3%; 45-49: 2%; 50-54: 2%; 55-59: 2%; 60-64: 1%).



## Telephone and Telehealth Care<sup>80</sup>

To enhance access, VHA offers several types of remote health care services:<sup>81</sup> *Telephone* service (e.g., a patient's telephone encounter with a primary care provider or other provider), *Clinical Video Telehealth* (real-time video encounter between a patient and a clinician who are at different locations), *Home Telehealth* (which could include, for example, use of a special device to transmit patient vital signs to a VHA clinician), and *Store & Forward Telehealth* (where stored clinical information, such as an image of a skin lesion, is sent to a clinician at another site for evaluation). Another type of remote health care service, Secure Messaging, is not a focus of this Sourcebook.<sup>82</sup> See Technical Appendix, Section 9.5 for more details.

**Telephone.** Among women Veteran outpatients in FY12, 63% had Telephone visits. Regarding Telephone use in VHA in FY12, 19% of women Veterans had exactly one visit, 29% had 2–5, and 15% had six or more. Among women Veterans who used any VHA Telephone care in FY12 (N=225,384), the average number of visits via Telephone was 4.6 visits. Among men Veteran outpatients in FY12, 55% had Telephone encounters. Among men Veterans who used any VHA Telephone care in FY12 (N=2,834,992), the average number of visits via Telephone was 4.2 visits.

**Clinical Video Telehealth.** Among women Veteran outpatients in FY12, 3% had Clinical Video Telehealth visits. Among women Veterans who used any VHA Clinical Video Telehealth in FY12 (N=10,768), the average number of visits via Clinical Video Telehealth was 5.1 visits. Among men Veteran outpatients in FY12, 3% had Clinical Video Telehealth visits. Among men Veterans who used any VHA Clinical Video Telehealth in FY12 (N=134,904), the average number of visits via Clinical Video Telehealth was 4.6 visits.

**Home Telehealth.** Among women Veteran outpatients in FY12, 3% had Home Telehealth visits. Among women Veterans who used any VHA Home Telehealth in FY12 (N=10,790), the average number of visits via Home Telehealth was 11.2 visits. Among men Veteran outpatients in FY12, 3% had Home Telehealth visits. Among men Veterans who used any VHA Home Telehealth in FY12 (N=135,249), the average number of visits via Home Telehealth was 13.3 visits.

**Store & Forward Telehealth.** Among women Veteran outpatients in FY12, 3% had Store & Forward Telehealth encounters. Among women Veterans who used any VHA Store & Forward Telehealth in FY12 (N=9,298), the average number of encounters via Store & Forward Telehealth was 1.9 visits. Among men Veteran outpatients, 4% had Store & Forward Telehealth encounters. Among men Veterans who used any VHA Store & Forward Telehealth in FY12 (N=231,620), the average number of visits via Store & Forward Telehealth was 1.9 visits.

---

<sup>80</sup> Data in this section are not shown graphically.

<sup>81</sup> For additional information, see: <http://www.telehealth.va.gov/>.

<sup>82</sup> For additional information, see: <https://www.myhealth.va.gov/index.html>.



## IMPLICATIONS

Telephone services have long been available to Veterans as a means of communicating with their health care teams, and remain the most frequently used form of remote communication between patients and their VHA providers. Telephone services are particularly important for women: more women than men contact their VHA care teams by phone (63% vs. 55%), and among those who do contact VHA via phone, women do so with higher frequency than men (average telephone encounters 4.6 vs. 4.2). This high volume of telephone-based care suggests that sufficient capacity of providers with time carved out to respond promptly to telephone queries is essential, especially in clinics caring for substantial numbers of women Veterans.

A small proportion of women Veterans have begun to use recently introduced technologies: Clinical Video Telehealth (3% of women), Home Telehealth (3% of women), and Store & Forward Telehealth (3% of women), as of FY12. These technological innovations are quite new. Therefore, uptake is likely to increase in the years to come as Veterans and clinicians become increasingly comfortable with these new tools.

---



## Part 4. Non-VA (Fee) Medical Care Utilization, FY12

**N**on-VA (Fee) Medical Care represents services provided by community-based, non-VHA providers but reimbursed by VHA. Non-VA (Fee) Medical Care can occur in outpatient and inpatient settings; however, Sourcebook Volume 3 describes only utilization through outpatient (and not inpatient) Non-VA (Fee) Medical Care. Non-VA (Fee) Medical Care services are intended to supplement services at VHA facilities in special circumstances. For example, VHA may determine that an eligible patient should receive a needed clinical service through Non-VA (Fee) Medical Care if the service is not available in VHA, or if the service is available in VHA but at excessive distance from the patient's home.

While both women and men Veterans are eligible for Non-VA (Fee) Medical Care, some facilities may rely heavily on Non-VA (Fee) Medical Care for some female gender-specific services that are not available on-site, either because the facility lacks the necessary volume to support a program (e.g., mammography equipment or specialized gynecologic oncology services) or because VHA does not routinely provide the service (e.g., obstetric care). Therefore, utilization of Non-VA (Fee) Medical Care has the potential to be of particular relevance to women.

### Non-VA (Fee) Medical Care Outpatient Care

#### *Definition of Terms*

- *Non-VA (Fee) Medical Care Outpatient Days* estimate the total number of unique days on which patients received any kind of outpatient care through the Non-VA (Fee) Medical Care system in FY12.<sup>83,84</sup> If a patient received multiple services on one day, that day is counted only once.
- *Non-VA (Fee) Medical Care Outpatient Services* estimate the total number of unique outpatient services that patients received through the Non-VA (Fee) Medical Care system in FY12.<sup>85</sup> A "service" is based upon CPT procedure codes in the Non-VA (Fee) Medical Care files, e.g., a clinic visit, a lab test, a radiology study, a surgical procedure, a medication, or a supply. If a patient received multiple services on a single day, each service is counted separately.

---

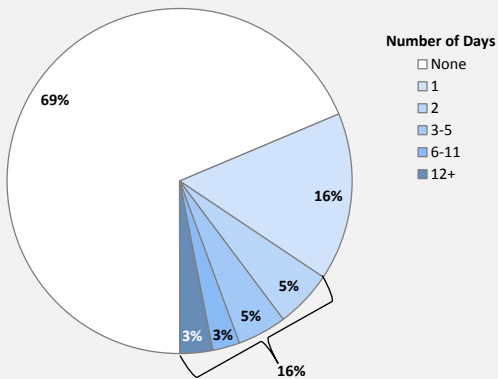
83 i.e., all service types appearing in the Non-VA (Fee) Medical Care Outpatient Services file.

84 As explained in Part 2, Notes to Interpretation (pages 43–44), the FY12 Non-VA (Fee) Medical Care encounter file contains a record of services reimbursed in FY12. This includes care received in FY12 and care received in previous years (26% of services in the FY12 file were provided prior to the start of FY12). Likewise, it excludes care received in FY12 that was reimbursed after FY12. Because of ongoing growth in numbers of Veterans seeking VHA care, the volume of services in later years has consistently tended to exceed the volume in prior years. Thus the net effect is that WHEI's approach to counting Non-VA (Fee) Medical Care, which draws upon only the FY12 Non-VA (Fee) Medical Care Outpatient Services file, provides a conservative (low) estimate of Non-VA (Fee) Medical Care actually provided in FY12.

85 i.e., all service types appearing in the Non-VA (Fee) Medical Care Outpatient Services file.

**NOTE ABOUT DENOMINATOR:** The following sections on “Non-VA (Fee) Medical Care Outpatient Days” and “Non-VA (Fee) Medical Care Outpatient Services” use the denominator “patients.” This includes all Veteran users of any VHA care in FY12 (see Part 2, Exhibit 2.A). This is the same denominator used for reporting data on Total Outpatient Days (VHA/Non-VA [Fee] Medical Care) and on VHA Outpatient Days.

**Exhibit 4.A: Proportion of Women Veteran Patients by Non-VA (Fee) Medical Care Outpatient Days, FY12\***



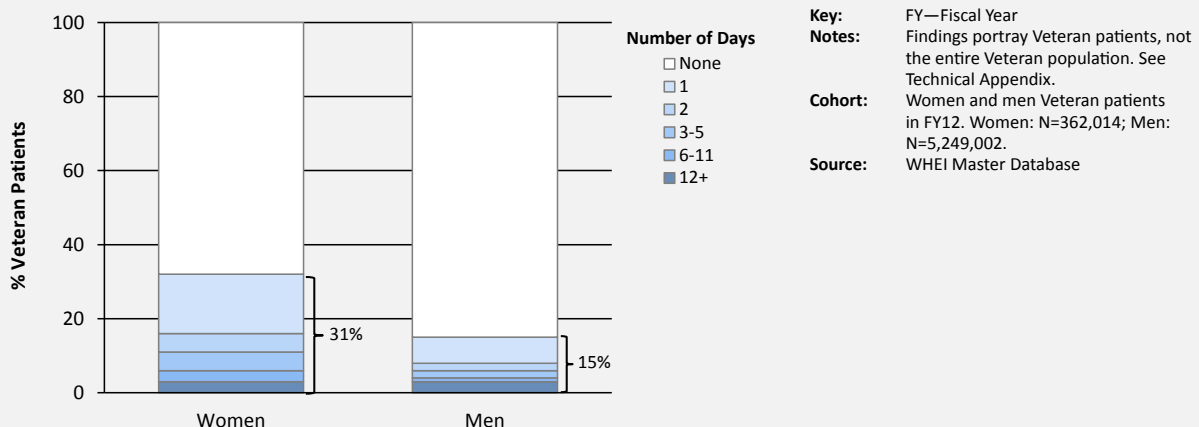
**Key:** FY—Fiscal Year  
**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix.  
**Cohort:** Women Veteran patients in FY12, N=362,014.  
**Source:** WHEI Master Database  
 \* Due to rounding, percentages do not sum to 100%.

**Non-VA (Fee) Medical Care outpatient days.** Among the 362,014 women Veteran patients in FY12, VHA provided Non-VA (Fee) Medical Care for a third (31%) of them, or 113,518 women. As Exhibit 4.A shows, a substantial proportion of women Veteran patients (16%) received Non-VA (Fee) Medical Care services on only one day in FY12, and a similar proportion (16%) received Non-VA (Fee) Medical Care services on two or more days (2 days: 5%; 3–5 days: 5%; 6–11 days: 3%; 12 or more days: 3%). On average, women Veterans with at least one day of Non-VA (Fee) Medical Care outpatient care used Non-VA (Fee) Medical Care services on 7.5 different days in FY12.

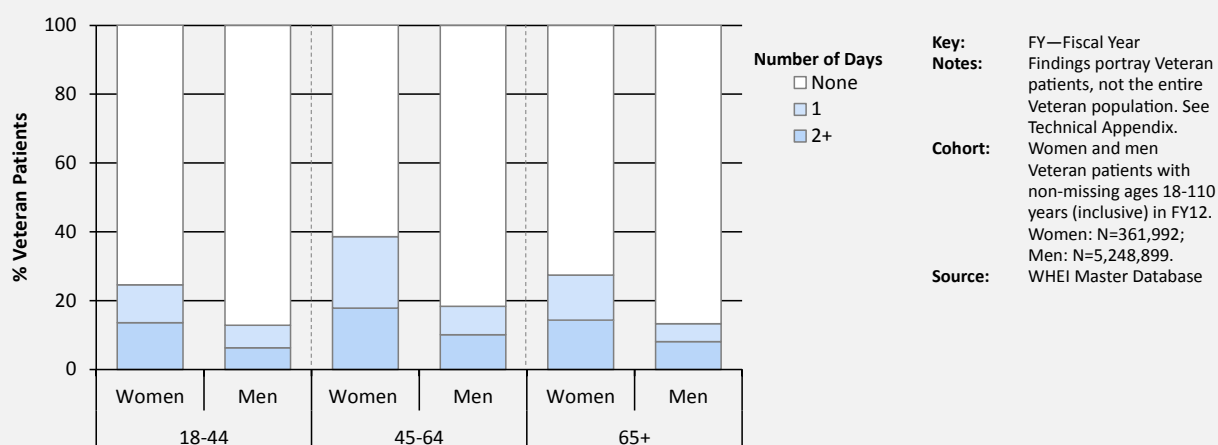
Use of Non-VA (Fee) Medical Care was substantially more common among women than men. As Exhibit 4.B shows, twice as many women Veterans as men Veterans had at least one day of Non-VA (Fee) Medical Care (31% vs. 15%). Women were more likely than men to have exactly 1 day of Non-VA (Fee) Medical Care (16% vs. 7%), and were also

more likely to have between 2 and 11 days of Non-VA (Fee) Medical Care over the year (13% vs. 6%). Only at the highest frequency of use (12 or more days) were the proportions of women versus men equal (3% vs. 3%).

**Exhibit 4.B: Proportion of Women and Men Veteran Patients by Non-VA (Fee) Medical Care Outpatient Days, FY12**



**Key:** FY—Fiscal Year  
**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix.  
**Cohort:** Women and men Veteran patients in FY12. Women: N=362,014; Men: N=5,249,002.  
**Source:** WHEI Master Database

**Exhibit 4.C: Proportion of Women and Men Veteran Patients by Non-VA (Fee) Medical Care Outpatient Days and Age, FY12**

Among women Veteran patients, use of *any* Non-VA (Fee) Medical Care varied substantially by age. Exhibit 4.C shows that among women age 45–64 years old, 39% had at least one day of Non-VA (Fee) Medical Care in FY12. This was higher than the proportions of 18–44 year olds and 65+ year olds who had at least one day of Non-VA (Fee) Medical Care (18–44: 25%; 65+: 27%). Women age 45–64 were also more likely than the youngest and oldest women to have Non-VA (Fee) Medical Care services on two or more different days (18–44: 14%; 45–64: 18%; 65+: 14%). However, on average, in FY12, women Veterans who were 65+ years old used Non-VA (Fee) Medical Care on more days than those who were 18–44 years old or 45–64 years old (18–44: 5.1 days; 45–64: 6.6 days; 65+: 19.9 days; data not shown graphically).

Across every age group, a higher proportion of women than men used Non-VA (Fee) Medical Care, and this difference was particularly pronounced among the middle age group (18–44: 25% vs. 13%; 45–64: 39% vs. 18%; 65+: 27% vs. 13%). Also in every age group, the same or a slightly higher proportion of women than men received Non-VA (Fee) Medical Care on two or more different days (18–44: 14% vs. 6%; 45–64: 18% vs. 10%; 65+: 14% vs. 8%) (Exhibit 4.C).

### IMPLICATIONS

Nearly one of every three women Veteran patients receives at least some care through the Non-VA (Fee) Medical Care system. Among women Veterans, those who use Non-VA (Fee) Medical Care are about equally divided between those who use exactly one day of Non-VA (Fee) Medical Care and those who use multiple days. Within all age groups, higher proportions of women than men use Non-VA (Fee) Medical Care, both in single-day use and multiple-day use.<sup>86</sup> Ongoing efforts to examine the quality of such care and to identify optimal approaches to coordination between VHA and Non-VA (Fee) Medical Care are of great relevance for women as they navigate between distinct sources of care.<sup>87</sup>

<sup>86</sup> Some facilities may send lab specimens to private labs for processing and interpretation. These services may appear in the Non-VA (Fee) Medical Care data and be counted in our data as Non-VA (Fee) Medical Care services, even though they do not represent cases of women Veterans actually visiting Non-VA (Fee) Medical Care providers for in-person care. However, this cannot explain the higher Non-VA (Fee) Medical Care use among women than men, since only 761 women (0.2% of women Veteran patients) had Non-VA (Fee) Medical Care lab care as their only type of Non-VA (Fee) Medical Care in FY12.

<sup>87</sup> Bastian L, Mattocks K, Principal Investigators. Evaluation of Quality and Coordination of Outsourced Care for Women Veterans. Veterans Health Administration, HSR&D grant CRE 12-008.

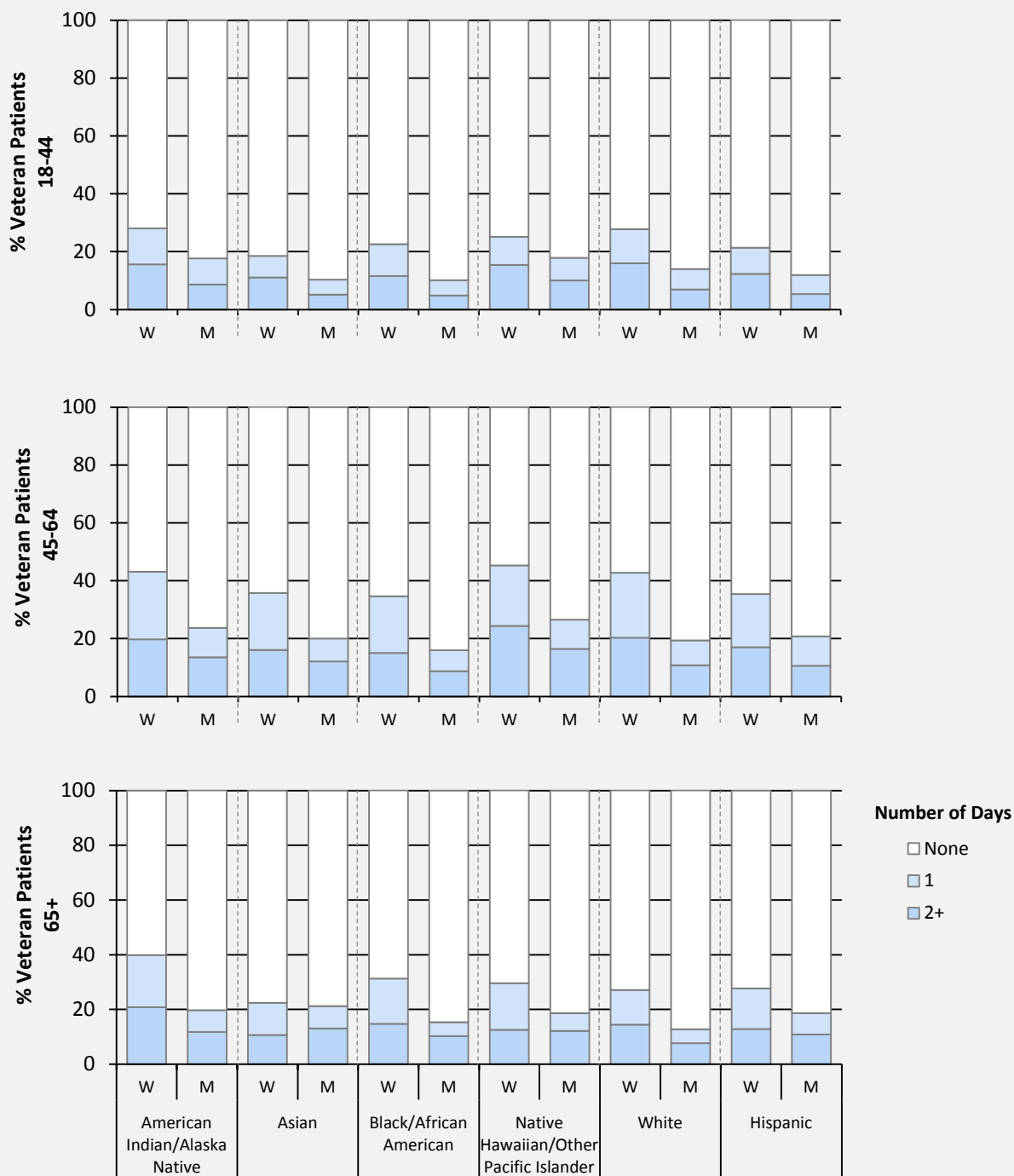
Exhibit 4.D reports days of Non-VA (Fee) Medical Care use by age, race/ethnicity, and gender for Veteran patients in FY12. Each age group appears in a separate chart within the exhibit, with 18-44 year olds in the top chart, 45-64 year olds in the middle chart, and those 65 years old or older in the bottom chart. As seen in Exhibit 4.D, for most race/ethnicity categories, the highest proportion of women using any days of Non-VA (Fee) Medical Care were 45-64 years old, followed by women 65 years or older and then by women 18-44 years old. This was true of American Indian/Alaska Native, Asian, Black/African American, Native Hawaiian/Other Pacific Islander, and Hispanic women Veterans but not of White women Veterans. Exhibit 4.D also demonstrates that within each age group, women Veterans' days of Non-VA (Fee) Medical Care use varied across race/ethnicity categories, and that there was more variation among some age groups than among others.

Among 18-44 year old women Veteran patients in FY12, American Indian/Alaska Native and White women Veterans had the highest proportions of Non-VA (Fee) Medical Care users (both had 28%). In FY12, 18-44 year old women Veterans from the other race/ethnicity categories had the following proportions of Non-VA (Fee) Medical Care users: Asian: 19%; Black/African American: 23%; Native Hawaiian/Other Pacific Islander: 25%; and Hispanic: 21% (Exhibit 4.D).

Among 45-64 year old women Veteran patients in FY12, Native Hawaiian/Other Pacific Islander women Veterans had the highest proportion of Non-VA (Fee) Medical Care users (45%). In FY12, 45-64 year old women Veterans from the other race/ethnicity categories had the following proportions of Non-VA (Fee) Medical Care users: American Indian/Alaska Native: 43%; Asian: 36%; Black/African American: 35%; White: 43%; and Hispanic: 35% (Exhibit 4.D).

The largest differences between race/ethnicity categories in women Veterans' days of Non-VA (Fee) Medical Care occurred among women who were 65 years or older. Among these women in FY12, American Indian/Alaska Natives had the highest proportion of Non-VA (Fee) Medical Care users (40%). In FY12, women Veterans who were 65+ years old from the other race/ethnicity categories had the following proportions of Non-VA (Fee) Medical Care users: Asian: 22%; Black/African American: 31%; Native Hawaiian/Other Pacific Islander: 30%; White: 27%; Hispanic: 28% (Exhibit 4.D).

**Exhibit 4.D: Proportion of Women and Men Veteran Patients by Non-VA (Fee) Medical Care Outpatient Days, Race/Ethnicity, and Age, FY12**



**Key:** FY—Fiscal Year; M—Men, W—Women

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix.

**Cohort:** Women and men Veteran patients with non-missing race/ethnicity and age 18-110 years (inclusive) in FY12. Women: N=331,984; Men: N=4,952,784.

**Source:** WHEI Master Database

The three charts that make up Exhibit 4.D also compare days of Non-VA (Fee) Medical Care use between women and men, stratified by age and race/ethnicity. The finding that higher proportions of women than men have any days of Non-VA (Fee) Medical Care is consistent across the age and race/ethnicity strata, although the magnitude of the difference in Non-VA (Fee) Medical Care use varies by age and race/ethnicity category. The difference in any Non-VA (Fee) Medical Care use between women and men is greatest among 45-64 year olds within every race/ethnicity category except American Indian/Alaska Native Veterans, where the greatest difference in any Non-VA (Fee) Medical Care use is among the 65+ age group. In FY12, among 45-64 year olds, a higher proportion of women than men had any days of Non-VA (Fee) Medical Care in each race/ethnicity category: American Indian/Alaska Native: 43% vs. 24%; Asian: 36% vs. 20%; Black/African American: 35% vs. 16%; Native Hawaiian/Other Pacific Islander: 45% vs. 27%; White: 43% vs. 19%; and Hispanic: 35% vs. 21%. The gender difference in Non-VA (Fee) Medical Care use was maintained but somewhat smaller among 18-44 year olds, with higher proportions of women than men Veterans having any days of Non-VA (Fee) Medical Care in FY12 within each race/ethnicity category: American Indian/Alaska Native: 28% vs. 18%; Asian: 19% vs. 10%; Black/African American: 23% vs. 10%; Native Hawaiian/Other Pacific Islander: 25% vs. 18%; White: 28% vs. 14%; and Hispanic: 21% vs. 12%. The gender difference in Non-VA (Fee) Medical Care use was also seen among Veterans 65 years old or older, with higher proportions of women than men having any days of Non-VA (Fee) Medical Care use in FY12 within each race/ethnicity category: American Indian/Alaska Native: 40% vs. 20%; Asian: 22% vs. 21%; Black/African American: 31% vs. 15%; Native Hawaiian/Other Pacific Islander: 30% vs. 19% ; White: 27% vs. 13%; and Hispanic: 28% vs. 19%.

Similar to the finding that any days of Non-VA (Fee) Medical Care use was higher in women Veterans than in men Veterans across age by race/ethnicity groups, Exhibit 4.D also shows that receipt of two or more days of Non-VA (Fee) Medical Care services was generally higher among women than among men. However, this difference was generally less substantial than the difference in any Non-VA (Fee) Medical Care use and, among the 65+ year old age group this difference disappeared among Native Hawaiian/Other Pacific Islander women and reversed among Asian women.

***NOTES TO INTERPRETATION:** Various factors could contribute to differences in Non-VA (Fee) Medical Care utilization by race/ethnicity. For example, if the distribution of race/ethnicity at VHA facilities that rely more heavily upon Non-VA (Fee) Medical Care services for its patients differs from the distribution of race/ethnicity at other VHA facilities, then an apparent race/ethnicity-related difference in Non-VA (Fee) Medical Care use could actually reflect these geographic factors.*

---

### IMPLICATIONS

---

Among women Veteran patients age 45-64 years, a particularly high proportion of Native Hawaiian/Other Pacific Islander women use Non-VA (Fee) Medical Care services, and among women 65+ years old, a particularly high proportion of American Indian/Alaska Native women use these services. Some women in these groups may reside in more remote areas such as rural Indian Reservations,<sup>88</sup> Alaska or outlying Pacific Islands, where availability of Non-VA (Fee) Medical Care services may augment access to care, in part by reducing distance travelled.<sup>89</sup> Provision of services through the Non-VA (Fee) Medical Care system may also enhance ability to meet the requirements of VHA policy which states that women should be able to receive mammography services within 50 miles of home.<sup>90</sup>

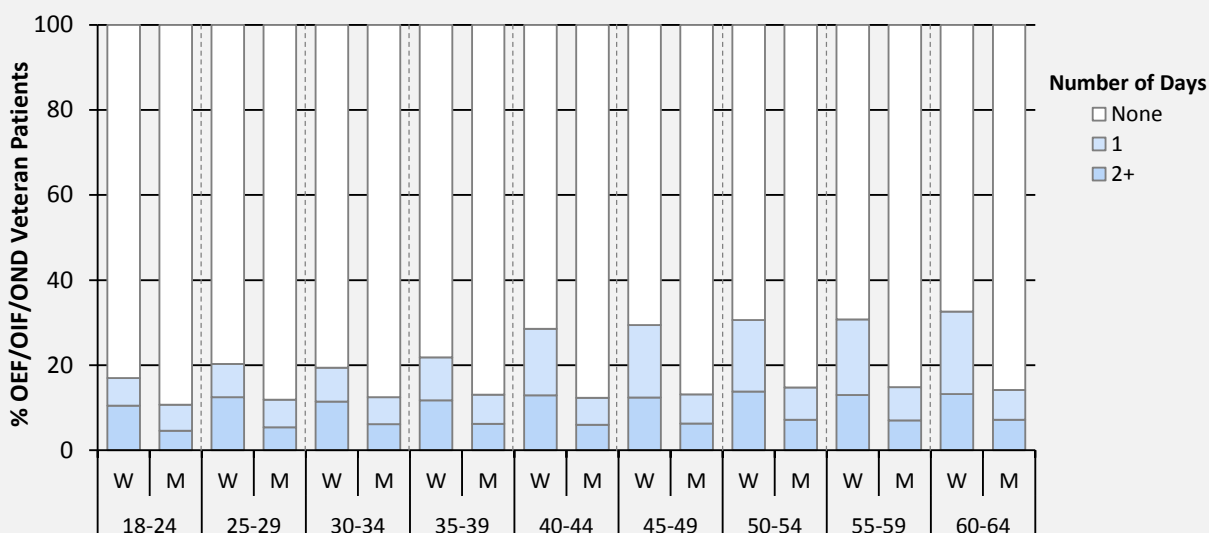
---

88 For example, see: <http://www.nps.gov/nagpra/DOCUMENTS/ResMap.htm>.

89 Mooney C, Zwanziger J, Phibbs CS, Schmitt S. Is travel distance a barrier to veterans' use of VA hospitals for medical surgical care? *Soc Sci Med* 2000;50(12):1743-1755.

90 Veterans Health Administration. Health Care Services for Women Veterans (VHA Handbook 1330.01). Washington, DC: Department of Veterans Affairs, 2010.



**Exhibit 4.E: Proportion of OEF/OIF/OND Women and Men Veteran Patients by Non-VA (Fee) Medical Care Outpatient Days and Age, FY12**

**Key:** FY—Fiscal Year; M—Men; OEF/OIF/OND—Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn; W—Women  
**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix.  
**Cohort:** OEF/OIF/OND women and men Veteran patients with non-missing ages 18-64 years (inclusive) in FY12. Women: N=67,457; Men: N=462,871.  
**Source:** WHEI Master Database

Exhibit 4.E presents the days of Non-VA (Fee) Medical Care use for OEF/OIF/OND Veteran patients in FY12 by gender and by age group. For women, the proportion with any Non-VA (Fee) Medical Care use<sup>91</sup> in FY12 mostly grew steadily larger for each consecutive age group (18-24: 17%; 25-29: 20%; 30-34: 19%; 35-39: 22%) up until age 40-44 years old, when the proportion jumped up substantially (40-44: 29%) and then continued to increase gradually (45-49: 29%; 50-54: 31%; 55-59: 31%; 60-64: 33%).

In Exhibit 4.E, for each age group, a higher proportion of women than men OEF/OIF/OND Veteran patients used any Non-VA (Fee) Medical Care (one or more days) in FY12 (18-24: 17% vs. 11%; 25-29: 20% vs. 12%; 30-34: 19% vs. 13%; 35-39: 22% vs. 13%; 40-44: 29% vs. 12%; 45-49: 29% vs. 13%; 50-54: 31% vs. 15%; 55-59: 31% vs. 15%; 60-64: 33% vs. 14%). While the gender difference in one or more days of Non-VA (Fee) Medical Care use was observed in every age group, it grew widest among Veterans age 40 years or older. This was largely driven by the fact that the proportion of women Veterans with exactly one day of Non-VA (Fee) Medical Care use jumped from 10% for 35-39 year olds to 16% for 40-44 year olds and slowly grew over the remaining age groups, while the proportion of men Veterans with exactly one day of Non-VA (Fee) Medical Care use remained fairly constant across the entire age spectrum.

Also in Exhibit 4.E, across every age group, a higher proportion of women than men OEF/OIF/OND Veterans used two or more days of Non-VA (Fee) Medical Care in FY12 (18-24: 11% vs. 5%; 25-29: 12% vs. 5%; 30-34: 11% vs. 6%; 35-39: 12% vs. 6%; 40-44: 13% vs. 6%; 45-49: 12% vs. 6%; 50-54: 14% vs. 7%; 55-59: 13% vs. 7%; 60-64: 13% vs. 7%). Compared to gender differences in use of one or more days of Non-VA (Fee) Medical Care, the gender differences in use of two or more days of Non-VA (Fee) Medical Care was much more stable across the age groups in FY12.

91 i.e., with 1 day or with 2+ days of Non-VA (Fee) Medical Care use (the sum of the two colored components of each bar).

---

## IMPLICATIONS

---

Receipt of mammography services through the Non-VA (Fee) Medical Care system likely accounts for some of the higher rate of use of Non-VA (Fee) Medical Care services among OEF/OIF/OND women age 40 years and over. However, even among those under age 40 years (who account for 74% of OEF/OIF/OND women Veterans), more women than men OEF/OIF/OND Veterans use Non-VA (Fee) Medical Care services. Women recently returned from the OEF/OIF/OND conflicts could face especially complex challenges as they reintegrate into civilian life. For some of them, Non-VA (Fee) Medical Care services could represent an added layer of complexity, making it particularly important that VHA assist them with coordination of care. At the same time, Non-VA (Fee) Medical Care services could represent a boon for OEF/OIF/OND women Veterans, making it possible for them to receive needed services close to home, work or school, within their familiar local communities.

---

**Non-VA (Fee) Medical Care outpatient services.** Whereas the prior section examined *days* of Non-VA (Fee) Medical Care, the remainder of Part 4 examines *services* provided through the Non-VA (Fee) Medical Care system. Among women Veteran patients in FY12, 31% had at least one service performed by a Non-VA (Fee) Medical Care provider. A small proportion of women patients had exactly 1 service performed (3%), while larger proportions had 2–5 services (15%) or 6+ services (13%; data not shown graphically).<sup>92</sup>

A higher proportion of women than men Veteran patients had *any* Non-VA (Fee) Medical Care services in FY12 (31% vs. 15%; data not shown graphically). This substantial difference reflects higher proportions of women than men using Non-VA (Fee) Medical Care services within nearly every level of utilization, except for 1 service (exactly 1 service: 3% vs. 3%; exactly 2 services: 7% vs. 2%; 3–5 services: 8% vs. 3%; 6–11 services: 5% vs. 2%; 12 or more services: 9% vs. 6%; data not shown graphically).

***NOTE TO INTERPRETATION:** A general consideration is warranted about counts of Non-VA (Fee) Medical Care services when interpreting this and subsequent sections: Non-VA (Fee) Medical Care “services” represent a different unit of care than the “encounters” reported in Part 3 (VHA Utilization). Each VHA encounter encompasses an entire clinical visit, which may include more than one service. This is an important fact to consider when comparing utilization data in the VHA utilization versus Non-VA (Fee) Medical Care utilization sections. See Technical Appendix, Sections 9.5 and 9.6 for further details.*

---

<sup>92</sup> Note that women who received two or more services could have received multiple services on one day, or could have received services on multiple days. For example, a woman who received a mammogram and a breast ultrasound on one day would have received two services. A woman who received an office visit with a cardiologist, an EKG, and an injection on one day, plus a home nursing care visit on another day, would have received a total of four services.

## Mammography Services through the Non-VA (Fee) Medical Care System

The text and charts in this section describe the proportions of women Veterans receiving Non-VA (Fee) Medical Care mammography services in FY12. Mammography services are of interest in Non-VA (Fee) Medical Care because some VHA facilities do not have a mammography unit on-site and use the Non-VA (Fee) Medical Care system to provide this key service, because mammography is part of routine preventive care for women Veterans, and because Sourcebook Volume 2 found mammography to be one of the most common services provided to women Veterans under the Non-VA (Fee) Medical Care system. Sourcebook Volume 2 contains detail about other specific services not examined in Sourcebook Volume 3.

***NOTES TO INTERPRETATION:** Sourcebook Volume 3 examines mammography services through the Non-VA (Fee) Medical Care system. It does not attempt to capture the totality of mammography that women Veteran patients receive (e.g., at VHA facilities, through global contracts, and/or arranged by women outside of VHA through Medicare or private providers).*

### Definition of Terms

- Any mammography service refers to receipt of at least one screening or diagnostic mammogram through a Non-VA (Fee) Medical Care provider.

***NOTE ABOUT DENOMINATOR:** This section uses the “outpatient” denominator, which includes all Veteran patients who used VHA and/or Non-VA (Fee) Medical Care outpatient care in FY12. Using this denominator facilitates comparison between utilization of specific types of care in VHA versus Non-VA (Fee) Medical Care. However, it also means that many patients within the denominator had no Non-VA (Fee) Medical Care use.*

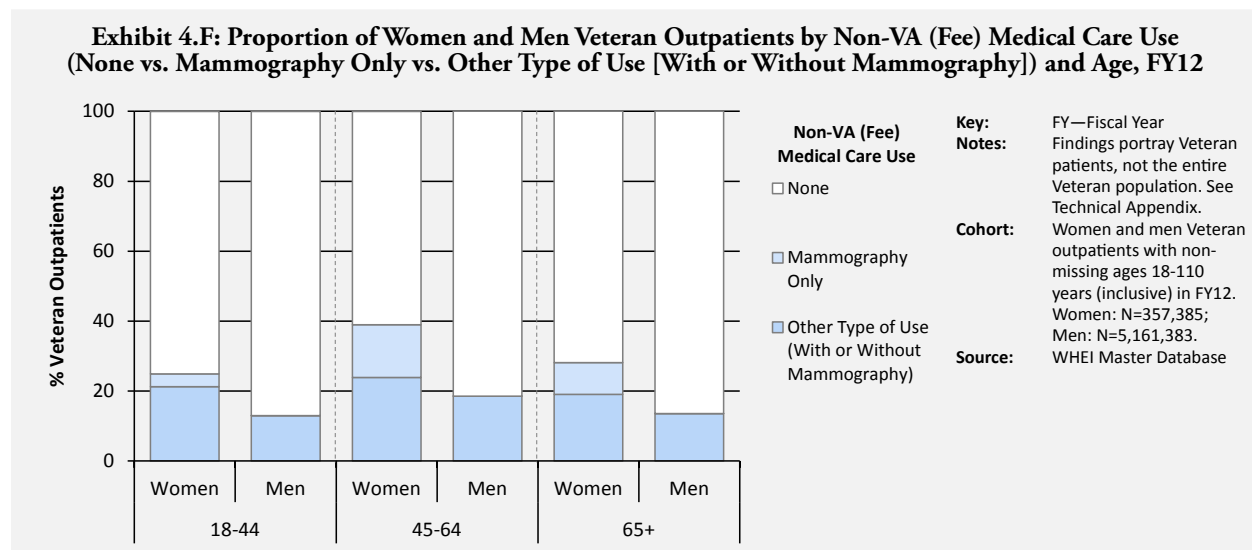
**Any mammography service.** Among women Veteran outpatients, 16%, or 58,698 women, had any mammography service (at least one screening or diagnostic mammogram) in Non-VA (Fee) Medical Care in FY12 (data not shown graphically).



Exhibit 4.F shows Non-VA (Fee) Medical Care service use among women and men Veterans by age group. This is similar to Exhibit 4.C except that it focuses on outpatients and that here, for women, the bar is divided to show those whose *only* Non-VA (Fee) Medical Care service was mammography, versus those who received *any other services* through Non-VA (Fee) Medical Care (whether or not they also received mammography services).<sup>93</sup>

For a particularly large proportion of women Veteran outpatients who were 45 years old or older, mammography services were the *only* care that they obtained in Non-VA (Fee) Medical Care: mammography only versus other Non-VA (Fee) Medical Care use varied by age group (18–44: 4% vs. 21%; 45–64: 15% vs. 24%; and 65+: 9% vs. 19%) (Exhibit 4.F).

For comparison purposes, Exhibit 4.F also reports Non-VA (Fee) Medical Care use for men Veteran outpatients in FY12. (For men, “mammography only” is a very small group and is not shown in the exhibit.) The darkest bar in this exhibit shows that even after excluding women for whom mammography services were the only type of Non-VA (Fee) Medical Care services, a higher proportion of women than men in all age groups used Non-VA (Fee) Medical Care in FY12 (18–44: 21% vs. 13%; 45–64: 24% vs. 19%; and 65+: 19% vs. 14%).



### IMPLICATIONS

Women 45-64 years old more commonly use Non-VA (Fee) Medical Care services than do women in other age groups. This is explained partly by women eligible for mammography screening, which VHA frequently provides off-site through the Non-VA (Fee) Medical Care system. However, even after excluding women whose only use of the Non-VA (Fee) Medical Care system was for mammography services, women in the 45-64 year old age group still are more likely to use Non-VA (Fee) Medical Care services than are other women Veterans—this may reflect either gender-specific care (e.g., specialized gynecological services) or care for gender-neutral health care needs (e.g., dialysis or physical therapy). Furthermore, even after excluding women Veterans whose only use of the Non-VA (Fee) Medical Care system is for mammography services, more women than men Veterans use Non-VA (Fee) Medical Care services in all age groups. This suggests that, even aside from mammography services, Non-VA (Fee) Medical Care is of particular relevance to women.

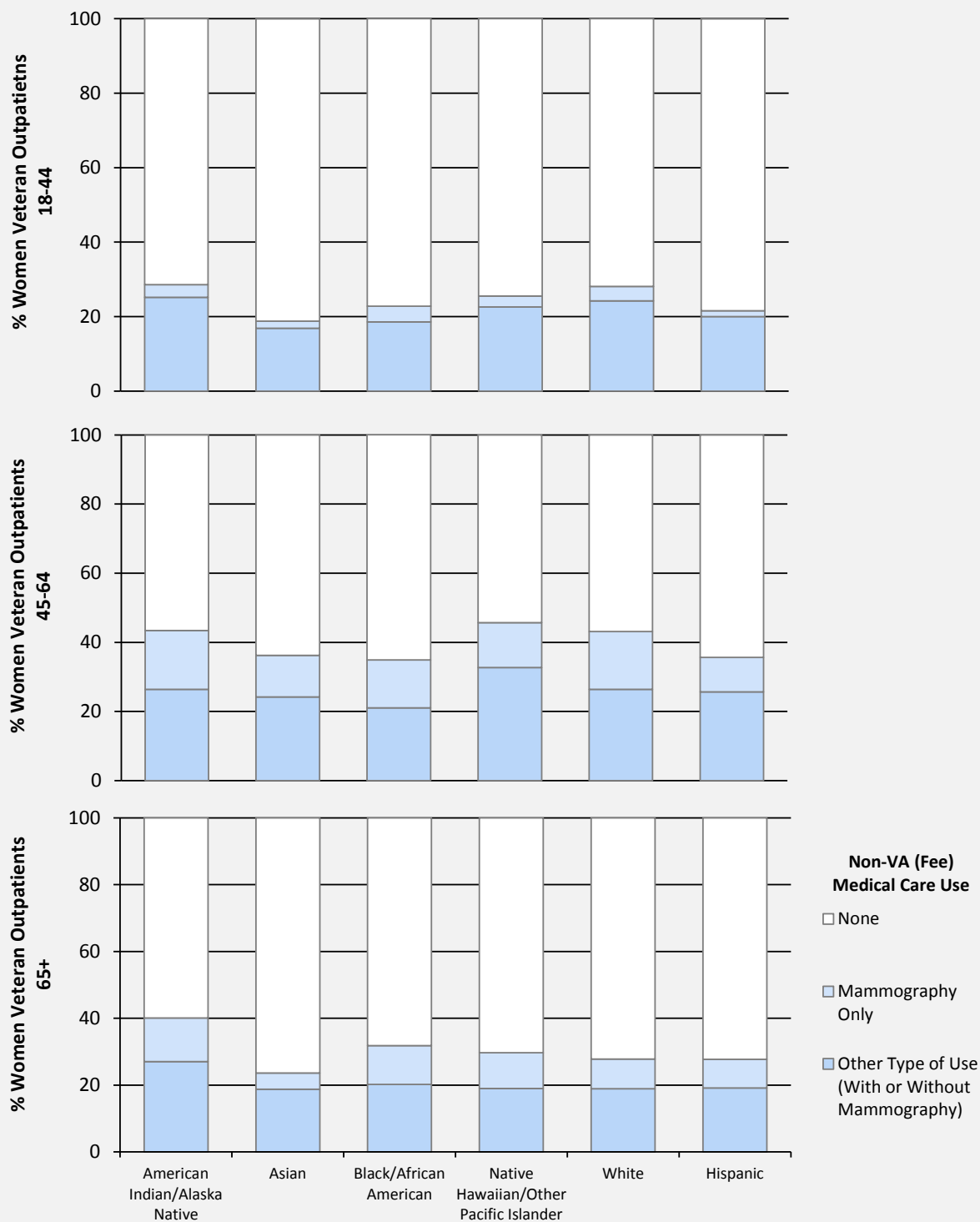
<sup>93</sup> Note: Women counted as having used other Non-VA (Fee) Medical Care may have used mammography services in addition to non-mammography services through Non-VA (Fee) Medical Care. For example, a woman with a screening mammogram and an office consultation would appear in the “Other Type of Use” proportion, as would a woman who had an office consultation only, while a woman with a screening mammogram only would appear in the “Mammography only” proportion.

Exhibit 4.G presents data on Non-VA (Fee) Medical Care services for women Veteran outpatients in FY12 by age group (with each age group reported in a separate chart) and race/ethnicity. As shown in the top chart, among 18-44 year olds, the proportion of women Veterans whose only use of Non-VA (Fee) Medical Care was for mammography services varied slightly across race/ethnicity groups, from 2% for Asian and Hispanic women; to 3% for American Indian/Alaska Native and Native Hawaiian/Other Pacific Islander women; to 4% for Black/African American and White women. Within the same age group, the proportion of women with other Non-VA (Fee) Medical Care use in FY12 varied more across the race/ethnicity groups: Asian: 17%; Black/African American: 19%; Hispanic: 20%; Native Hawaiian/Other Pacific Islander: 23%; White: 24%; American Indian/Alaska Native: 25%.

In the 45-64 year old age group, the proportion of women whose only use of Non-VA (Fee) Medical Care in FY12 was for mammography services varied by race/ethnicity. Use of Non-VA (Fee) Medical Care for mammography services only was greatest for American Indian/Alaska Native and White women (17% vs. Asian: 12%; Black/African American: 14%; Native Hawaiian/Other Pacific Islander: 13%; Hispanic: 10%). Variation also existed in the proportion of women in this age group with other Non-VA (Fee) Medical Care use in FY12: Black/African American: 21%; Asian: 24%; American Indian/Alaska Native, Hispanic and White: 26%; Native Hawaiian/Other Pacific Islander: 33% (Exhibit 4.G).

Exhibit 4.G also reports that the proportions of women 65 years old or older whose only use of Non-VA (Fee) Medical Care in FY12 was for mammography services varied by race/ethnicity, from 5% for Asian women; to 9% for White and Hispanic women; to 11% for Native Hawaiian/Other Pacific Islander women; to 12% for Black/African American women; to 13% for American Indian/Alaska Native women. Among this age group, a substantially higher proportion of American Indian/Alaska Native women (27%) than women from other race/ethnicity categories (Asian, Native Hawaiian/Other Pacific Islander, White, and Hispanic: 19%; Black/African American: 20%) used other Non-VA (Fee) Medical Care services.

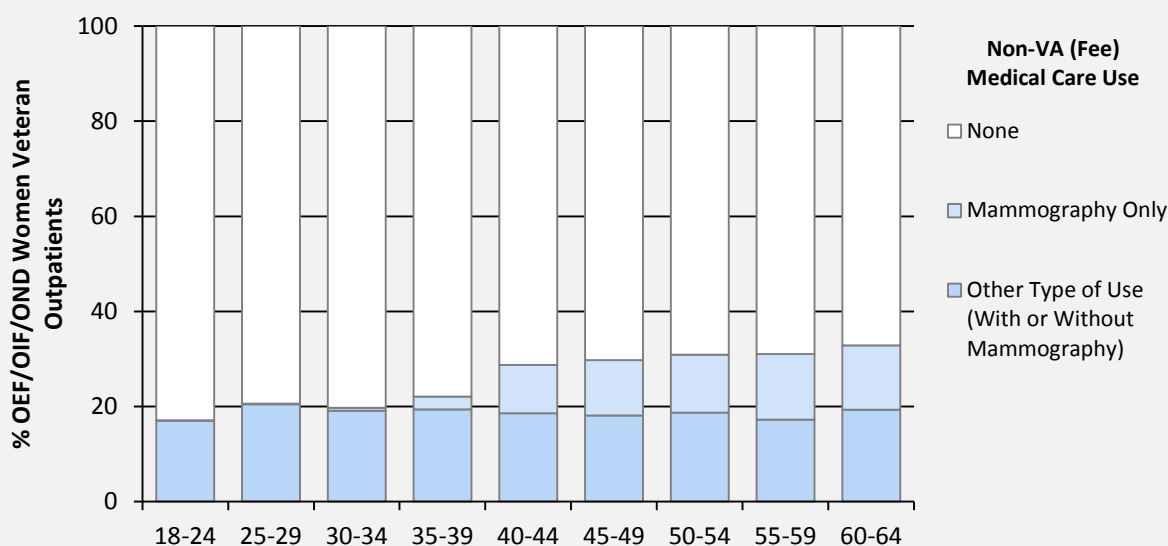
**Exhibit 4.G: Proportion of Women Veteran Outpatients by Non-VA (Fee) Medical Care Use (None vs. Mammography Only vs. Other Type of Use [With or Without Mammography]), Race/Ethnicity, and Age, FY12**



**Key:** FY—Fiscal Year  
**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix.  
**Cohort:** Women Veteran outpatients with non-missing race/ethnicity and age 18-110 years (inclusive) in FY12. N=327,964.  
**Source:** WHEI Master Database

Exhibit 4.H shows Non-VA (Fee) Medical Care service use among women Veterans who served in OEF/OIF/OND tours, by fine age group (18-24, 25-29, 30-34, 35-39, etc.). The colored portion of bar represents the proportion of OEF/OIF/OND women who used any Non-VA (Fee) Medical Care services in FY12: this colored portion of the bar is divided to represent the proportion of women who used Non-VA (Fee) Medical Care services for mammography and no other services (lighter colored portion of the bar), and the proportion who used Non-VA (Fee) Medical Care for purposes other than mammography services (whether or not they also used it for mammography services) (darker colored portion of the bar).

**Exhibit 4.H: Proportion of OEF/OIF/OND Women Veteran Outpatients by Non-VA (Fee) Medical Care Use (None vs. Mammography Only vs. Other Type of Use [With or Without Mammography]) and Age, FY12**



**Key:** FY—Fiscal Year; OEF/OIF/OND—Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn  
**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix.  
**Cohort:** OEF/OIF/OND women Veteran outpatients with non-missing ages 18-64 years (inclusive) in FY12, N=66,652.  
**Source:** WHEI Master Database

Exhibit 4.H shows that among OEF/OIF/OND women Veterans, the proportion using any Non-VA (Fee) Medical Care services was lower among women younger than 40 years of age (18-24: 17%; 25-29: 21%; 30-34: 20%; 35-39: 22%) and substantially higher among women age 40 years or older (40-44: 29%; 45-49: 30%; 50-54: 31%; 55-59: 31%; 60-64: 33%).

The higher proportion of older women (40-64 year olds) who used Non-VA (Fee) Medical Care can be explained by the higher proportion of women in this age group than among the younger women (18-39 year olds) who used Non-VA (Fee) Medical Care for mammography services only. The lighter colored bars in Exhibit 4.H show that few younger women used Non-VA (Fee) Medical Care only for mammography services (18-24: <1%; 25-29: <1%; 30-34: 1%; 35-39: 3%); whereas, in the older age groups, mammography services were the sole service sought in Non-VA (Fee) Medical Care for substantial proportions of women (40-44: 10%; 45-49: 12%; 50-54: 12%; 55-59: 14%; 60-64: 14%).

The darkest bar in Exhibit 4.H reveals that the proportion of OEF/OIF/OND women Veteran outpatients who used Non-VA (Fee) Medical Care for purposes other than mammography services was similar across the age groups (18-24: 17%; 25-29: 20%; 30-34: 19%; 35-39: 19%; 40-44: 19%; 45-49: 18%; 50-54: 19%; 55-59: 17%; 60-64: 19%).





## Part 5. Cost of Care, FY12

Sourcebook Volume 3, unlike prior volumes, provides an overview of how the utilization of VHA and Non-VA (Fee) Medical Care services described in the prior sections translates into health care costs. Unlike the utilization data presented in Parts 2, 3, and 4 of this Sourcebook, which focus on outpatient VHA and outpatient Non-VA (Fee) Medical Care utilization, these cost results additionally draw upon *inpatient* VHA and *inpatient* Non-VA (Fee) Medical Care data.

### *Definition of Terms*

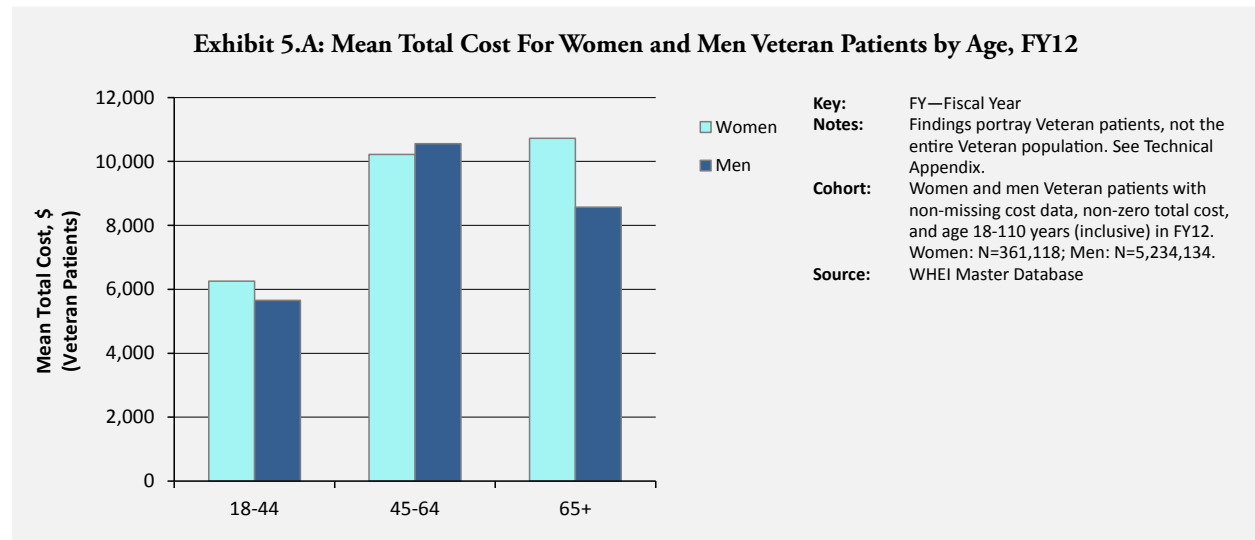
- *VHA Outpatient Cost* refers to the total cost of all outpatient care received at any VHA facility in FY12. Outpatient care may occur at a VHA medical center, a VHA CBOC, in the patient's home, or by telephone. In addition to encounters with health care providers and observation stays, it includes other services such as laboratory, radiology, pharmacy, and prosthetics.
- *VHA Inpatient Cost* refers to the total cost of all inpatient care received at any VHA facility in FY12. If an inpatient stay crossed the fiscal year boundary, only the portion of the stay that fell in FY12 is included. Acute care, long-term care, and residential care are all included.
- *Non-VA (Fee) Medical Care Cost* refers to the total cost of all Non-VA (Fee) Medical Care services, including outpatient, inpatient, pharmacy, and patient travel, that was paid for by VHA in FY12. This includes payments in FY12 for services that occurred in FY12, as well as payments in FY12 for some services that actually were provided in previous fiscal years.<sup>94</sup> Note: Part 4 of this Sourcebook characterizes use of Non-VA (Fee) Medical Care *outpatient* services only, whereas this section examines cost of all Non-VA (Fee) Medical Care services, in aggregate.
- *Total Cost* refers to the sum of the costs for the three types of care: VHA outpatient care, VHA inpatient care, and Non-VA (Fee) Medical Care.

---

<sup>94</sup> In the raw FY12 Non-VA (Fee) Medical Care outpatient file, 74% of records reflect FY12 care, 24% reflect FY11 care, and 2% reflect care prior to FY11. Also, some Non-VA (Fee) Medical Care services delivered in FY12 do not appear in the FY12 Non-VA (Fee) Medical Care file because that care was reimbursed in a subsequent year. See Technical Appendix (Part 9) for further details about this file.

## Total Cost

The mean total cost per woman Veteran patient in FY12 was \$8,601, which is lower than the \$8,984 mean total cost per man (data not shown graphically). Exhibit 5.A compares the mean total costs for women and men Veterans by age group. Among women Veterans, patients age 18-44 had the lowest total cost (\$6,254) while patients age 65+ years had the highest (\$10,726). Compared to men in the same age group, women age 18-44 had higher cost (\$6,254 vs. \$5,655), women age 45-64 had slightly lower cost (\$10,219 vs. \$10,557), and women age 65+ had much higher cost (\$10,726 vs. \$8,573).

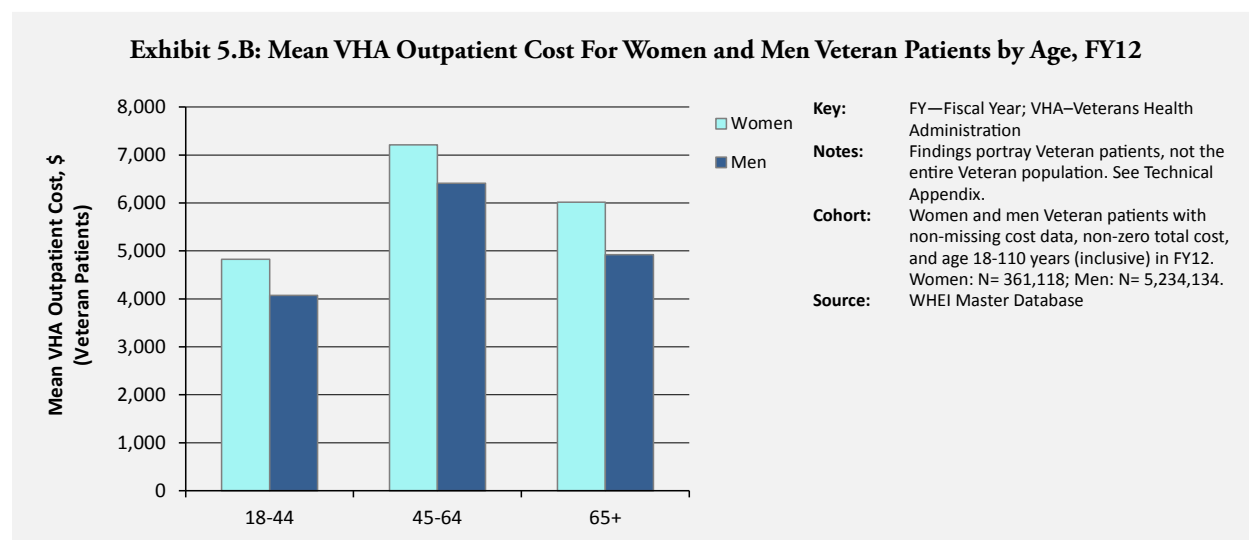


## VHA Outpatient Cost

Although total costs were slightly lower for women Veterans than men Veterans, mean VHA *outpatient* costs in FY12 were higher for women than for men (\$6,062 vs. \$5,412) (data not shown graphically).

When stratified by age, as shown in Exhibit 5.B, mean VHA outpatient costs were highest for women Veteran patients age 45-64 (18-44: \$4,827; 45-64: \$7,213; 65+: \$6,014). Within every age group, mean VHA outpatient costs for women were approximately \$800-\$1,100 higher than mean VHA outpatient costs for men (18-44: \$4,827 vs. \$4,071; 45-64: \$7,213 vs. \$6,412; 65+: \$6,014 vs. \$4,923). The biggest difference was seen among Veterans age 65+ years old, where women had a mean cost of \$6,014 compared to \$4,923 for men.

Exhibit 5.B represents mean VHA outpatient cost across the entire population of Veteran patients, whether or not they actually received outpatient care. However, mean costs for the subset of patients who actually received outpatient care were very similar (data not shown), because nearly all patients (98%) received some form of VHA outpatient care in FY12.



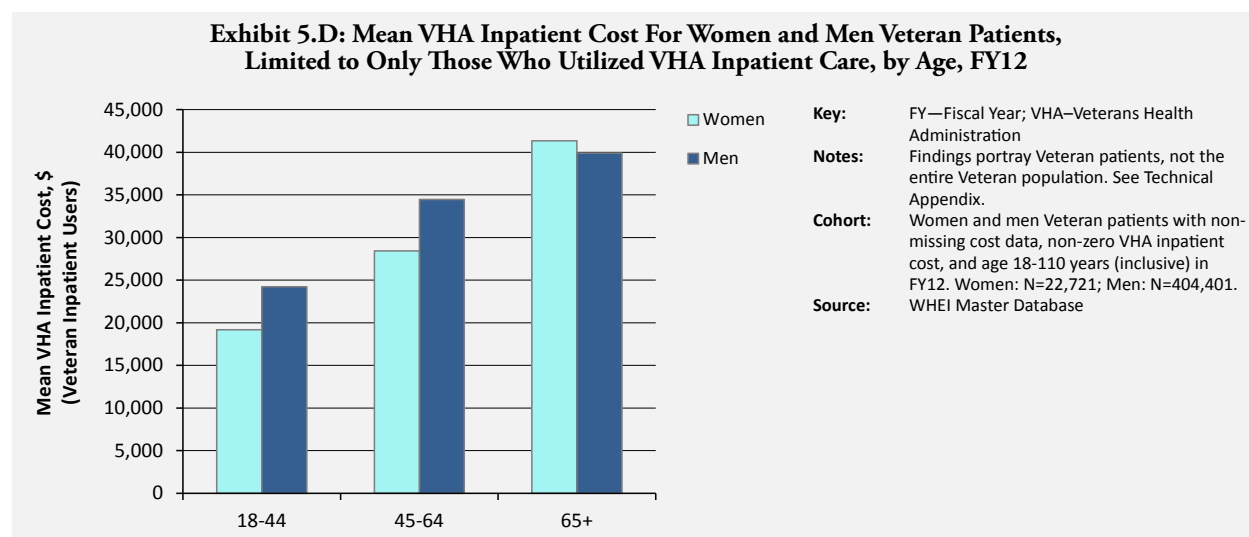
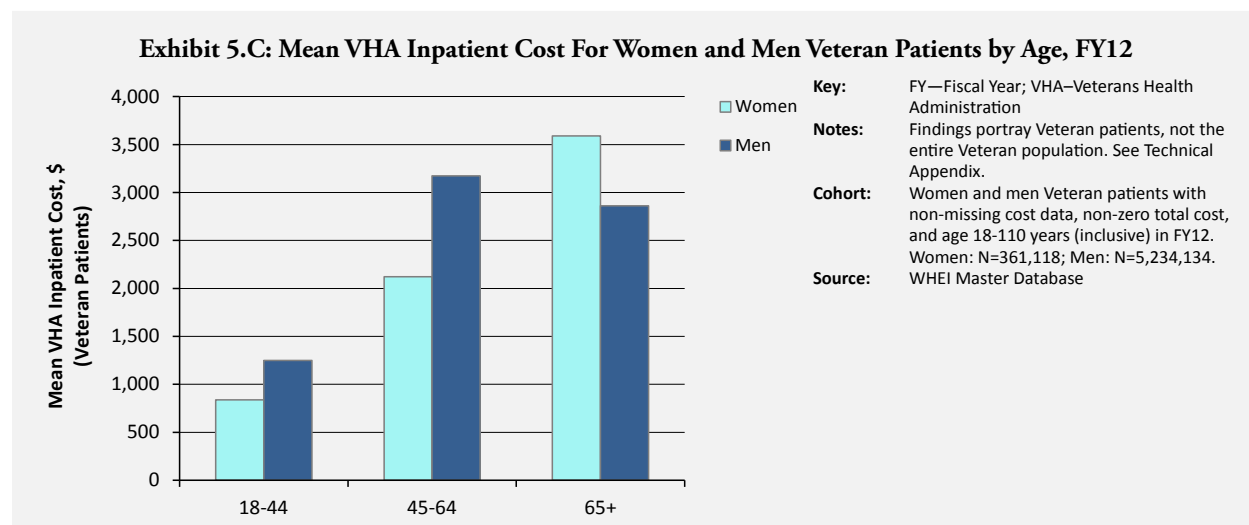
### IMPLICATIONS

Despite the tendency for chronic diseases to develop with advancing age, women in the middle age group (women 45-64 years old, who also represent the largest subgroup of women Veterans in VHA) have higher average cost of outpatient VHA care per patient than do women in the oldest age group (65+ years old). The higher cost seen in the middle age group parallels the higher utilization levels of this group.

## VHA Inpatient Cost

Exhibits 5.C and 5.D show the mean cost of VHA inpatient care. Exhibit 5.C shows VHA inpatient cost averaged across the population of *all* Veteran patients (including those who had no inpatient utilization), while Exhibit 5.D shows the mean VHA inpatient cost among only those who *received* VHA inpatient services. The proportion of patients who used VHA inpatient care in FY12 was much lower for women age 18-44 than for women age 65+ years (18-44: 4.4%; 45-64: 7.5%; 65+: 8.7%).

For women, mean inpatient costs increased progressively with age. This was true for the full population of women Veteran patients (18-44: \$837; 45-64: \$2,121; 65+: \$3,589, Exhibit 5.C) and for the subgroup of women who used VHA inpatient care (18-44: \$19,179; 45-64: \$28,441; 65+: \$41,352, Exhibit 5.D). These two exhibits also show that women Veterans in the youngest and middle age groups had lower VHA inpatient costs than men, but women in the oldest age group (65+) had higher costs than men.



**NOTES TO INTERPRETATION:** Throughout this report, reported gender differences in cost represent raw differences, not adjusted for other patient characteristics such as burden of illness. Also note that the vertical axis scale varies across exhibits in Part 5; for example, the Exhibit 5.C vertical axis has its maximum at \$4,000, whereas the Exhibit 5.D vertical axis has its maximum at \$45,000.

---

**IMPLICATIONS**

---

In contrast to the VHA outpatient setting (where average costs are greatest for the middle age group), in the VHA inpatient setting, not surprisingly, the *oldest* age group of women (65+ years old) has the highest costs of any group of women. In fact, in this oldest age group, women's VHA inpatient costs actually exceed those of men. Among women Veterans, VHA inpatient costs are lower than outpatient costs in each age group, when averaged across *all* patients. In contrast, the average per-person inpatient costs for the *subgroup* of women who do receive inpatient care exceed the average per-person outpatient costs among all patients.

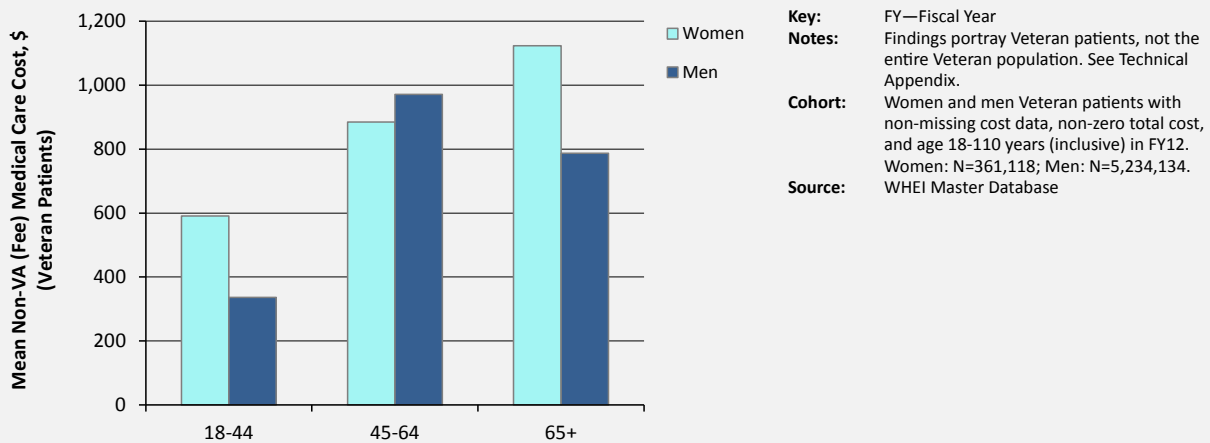
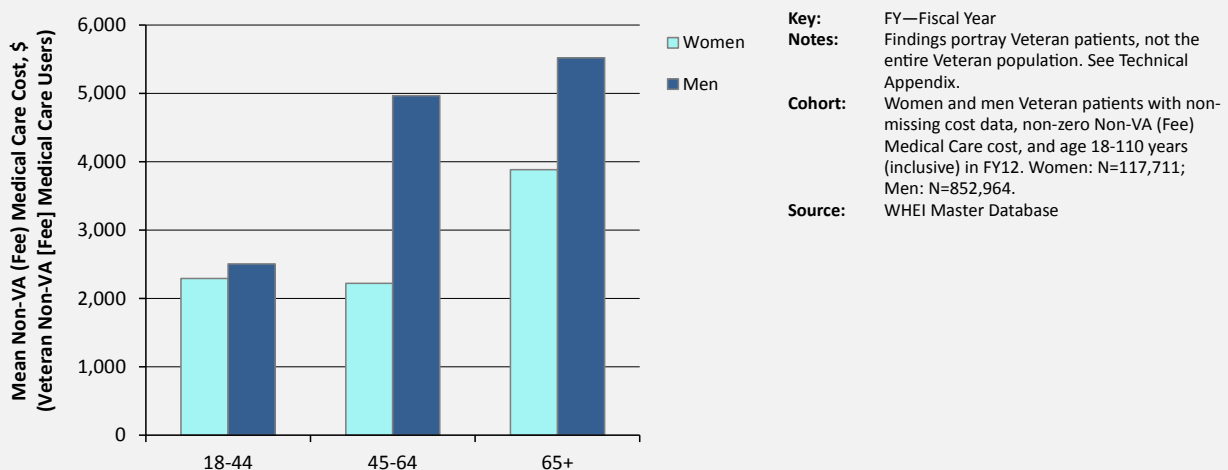
---

**Non-VA (Fee) Medical Care Cost**

Exhibit 5.E shows Non-VA (Fee) Medical Care costs averaged across the *entire* population of Veteran patients. Among women Veterans, mean costs increased uniformly across the three age groups (18-44: \$590; 45-64: \$885; 65+: \$1,123). Compared to men, women's costs were higher than men's in the youngest and oldest age groups, but lower than men's for Veterans in the middle age group (18-44: \$590 vs. \$336; 45-64: \$885 vs. \$971; 65+: \$1,123 vs. \$787).

However, the pattern changed when only patients who actually *received* Non-VA (Fee) Medical Care services in FY12 were considered (Exhibit 5.F). Among patients who used Non-VA (Fee) Medical Care services, mean costs were nearly identical for women age 18-44 (\$2,294) and women age 45-64 (\$2,219) but much higher for women age 65+ (\$3,883).

Exhibit 5.F also compares mean Non-VA (Fee) Medical Care costs between women and men. Although the proportion of women using any Non-VA (Fee) Medical Care service in FY12 was double that of men (see Part 4), the mean costs for women who did use Non-VA (Fee) Medical Care were very similar to the mean costs for men who used Non-VA (Fee) Medical Care in the 18-44 year old age group (\$2,294 vs. \$2,505) but lower for women than men among those age 65+ years (\$3,883 vs. \$5,520). The largest gender difference among Non-VA (Fee) Medical Care users occurred in the 45-64 year old age group, where women's mean cost was less than half that of men (\$2,219 vs. \$4,924).

**Exhibit 5.E: Mean Non-VA (Fee) Medical Care Cost For Women and Men Veteran Patients by Age, FY12****Exhibit 5.F: Mean Non-VA (Fee) Medical Care Cost For Women and Men Veteran Patients, Limited to Only Those Who Utilized Non-VA (Fee) Medical Care, by Age, FY12**

### IMPLICATIONS

For women 18-44 years old or 65+ years old, average Non-VA (Fee) Medical Care costs are higher in women than men. However, when analyses are limited to the subset of patients who received at least one Non-VA (Fee) Medical Care service, the pattern flips and costs are lower in women than in men in all age ranges.

# Part 6. Health Profile - Overview

## Overview of Parts 6, 7 and 8

Parts 6, 7, and 8 focus on the health profile of women Veterans, based upon diagnoses recorded during outpatient visits and inpatient stays at VHA facilities (in VHA Medical Centers and CBOCs or through Non-VA (Fee) Medical Care).

To characterize the health profile of women Veterans, we aggregated International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis codes appearing in VHA outpatient/inpatient files and in Non-VA (Fee) Medical Care outpatient/inpatient files into clinically meaningful “*conditions*,” and then grouped conditions into broad “*domains*” (e.g., Cardiovascular, Mental Health, etc.). The nosology used in this Sourcebook drew upon multiple sources, including Agency for Healthcare Research & Quality’s Clinical Classifications Software,<sup>95</sup> the ICD-9-CM classification system,<sup>96</sup> and approaches used by other VHA offices. The Technical Appendix, Section 9.8, describes in detail how over 15,000 ICD-9-CM diagnosis codes were mapped to 202 conditions, which were then grouped into 17 major condition domains.

### *Definition of Terms*

- *Conditions* – ICD-9-CM diagnosis codes were grouped into clinically meaningful “conditions.”
- *Domains* – Conditions were grouped into broad, higher-order major disease “domains.”

In the primary mapping process, each condition was mapped uniquely to a single domain. The groupings displayed in Part 7, Exhibits 7.A to 7.Q, reflect the primary mapping for each condition. In the secondary mapping process, some conditions were secondarily mapped to an additional domain; in that case, the condition was counted toward the frequency of the primary domain *and* toward the frequency of the secondary domain.<sup>97</sup>

Part 6 provides an overview of domain frequencies for women overall, by age group, and by rank order, and compared to men.

Part 7 presents the frequency of each of the 202 medical conditions in women (and in men) by age group, age-adjusted odds ratios for the gender comparisons, and ranking of the top 20 conditions in women by age group.

Part 8 presents domain frequencies with some major subpopulations: by race/ethnicity, by urban/rural status, or by SC rating, and within women who served in OEF/OIF/OND.

---

95 Healthcare Cost and Utilization Project (HCUP) Clinical Classification Software (CCS). Agency for Healthcare Research and Quality. Rockville, MD, 2012.

96 Hart AC, Stegman MS, Ford B. (Eds.) ICD-9-CM for Hospitals-Volumes 1, 2, & 3. (6th ed.). INGENIX, 2010.

97 See Technical Appendix Section 9.8 for further explanation of the condition mapping process and the domain mapping process.

**NOTES TO INTERPRETATION OF FINDINGS IN PARTS 6, 7, AND 8:** *It is important to keep several caveats in mind while reviewing the results below.*

*First, the rates of medical conditions reported here refer to Veterans who use VHA and/or Non-VA (Fee) Medical Care, and not all Veterans. Veterans who seek care through VHA may have a different health profile than Veterans who receive all their care outside VHA.<sup>98</sup>*

*Second, these data do not represent true prevalence of disease in a strict epidemiologic sense. Instead, they reflect the proportion of Veteran VHA patients who have diagnosed conditions recorded in VHA and/or Non-VA (Fee) Medical Care administrative databases during a one-year period. The administrative databases are populated with ICD-9-CM diagnosis codes entered by clinical staff on encounter forms in outpatient VHA or Non-VA (Fee) Medical Care settings, or by abstractors pulling hospital discharge diagnoses in inpatient VHA or Non-VA (Fee) Medical Care settings. Therefore, these diagnoses have the advantage of reflecting clinical assessments on the complete universe of VHA patients. However, they may underestimate true condition prevalence among VHA patients. For example:*

*Underestimation of condition prevalence could occur via under-identification of diseases. If a clinician does not recognize the presence of a condition, he/she will not include it in the medical record. Clinicians may be prone to fail to detect some diseases/symptoms more than others.*

*Even if a clinician identifies a condition, it may not be recorded in the administrative data, again leading to underestimation of condition prevalence. This could happen if the condition was not treated at that visit or during that inpatient stay.<sup>99</sup> This could also happen if the condition was in fact treated at an outpatient visit, but some other condition(s) was/were recorded as the reason(s) for the visit.<sup>100</sup>*

*Similarly, since conditions are recorded in the context of a clinical encounter, patients who make fewer visits to the clinic (or who have fewer hospital stays) will have less opportunity to have a diagnosis recorded, if present. Therefore, under-estimation of condition prevalence may be an issue of greater magnitude for infrequent users of health care, for patients who have only recently begun to use VHA services, or for patients who left VHA care (through attrition or death) partway through the year.*

*Some Veterans use VHA care (in some cases supplemented with Non-VA [Fee] Medical Care) for part of their health care needs, and other health care delivery systems for other needs. Conditions identified in these other health care settings (e.g., funded through Medicare, Medicaid or private insurance) are not captured in the available administrative databases. Underestimation of condition prevalence could be an issue for some Veterans with such dual health care system utilization.*

98 Washington DL, Davis TD, Der-Martirosian C, Yano EM. PTSD Risk and mental health care engagement in a multi-war era community sample of women veterans. *J Gen Intern Med* 2013;28(7):894-900.

99 For example, a primary care clinician might note on the patient's medical history or in her problem list that she has a specific chronic condition, but might not record the condition on the encounter form for a particular visit because that condition was not a focus of the visit.

100 The VHA outpatient encounter form is embedded in the electronic medical record and provides a pick-list of conditions previously entered on the patient's problem list. The clinician has the option to select one (or more) of these conditions as the reason(s) for the visit, or to enter a text search for an ICD-9-CM diagnosis not appearing on the patient's problem list. If more than one condition was addressed at a particular visit, a clinician might potentially be inclined to select a condition that was treated at the visit from the pick-list of the patient's known conditions, or to do a text search for a familiar ICD-9-CM code that the clinician diagnoses frequently—therefore, it is possible that such common or chronic conditions might have a somewhat greater opportunity to appear in the administrative data. Furthermore, while the VHA outpatient encounter form has fields for multiple diagnoses, only a single diagnosis is needed to close the form. Therefore, a busy primary care provider who addressed several issues during a single visit (e.g., diabetes management, hypertension monitoring, treatment of chronic low back pain, and counseling regarding abnormal vaginal bleeding) might potentially streamline effort by entering only one or two of these conditions on the encounter form.



While under-estimation of rates of various conditions is expected to be a more important issue, note that over-estimation of condition prevalence could also occur. This could happen, for example, if a “rule-out” diagnosis was coded as presence of that condition (e.g., if “rule-out myocardial infarction” was coded as “myocardial infarction”). Furthermore, occasional inaccuracies in ICD-9-CM data are also inevitable, due to data entry errors.

To partially address under-estimation of rates of various conditions, we have developed a “high sensitivity” algorithm for identification of conditions (see Technical Appendix, Section 9.8). To partially address over-estimation of rates of various conditions, we have developed a “high specificity” algorithm for identification of conditions (see Technical Appendix). Rates of conditions when applying the high sensitivity and high specificity algorithms are available in an [On-line Appendix](#).<sup>101</sup>

Third, there are limitations to the specificity of the source data from which conditions were derived. A clinician coding a treated condition could describe it with a very specific ICD-9-CM code or with a very general ICD-9-CM code.<sup>102</sup> Similarly, the clinician might pick an ICD-9-CM code describing the patient’s symptom or an ICD-9-CM code reflecting the disease that caused that symptom.<sup>103</sup> Such differences in clinicians’ coding practices could in some cases affect conclusions about patients’ conditions. However, this is expected to be much less of an issue for domains, intentionally developed to be much less granular than conditions.<sup>104</sup> For this reason, domains are the primary focus of this Sourcebook; the Sourcebook presents more limited information about conditions, for descriptive purposes.

Fourth, decisions made about how to map ICD-9-CM codes to particular conditions can impact the observed rates of conditions and the rank order of conditions. Algorithms that lump broad groups of ICD-9-CM codes into a relatively small number of conditions will tend to yield relatively high rates of those conditions, whereas more granular algorithms that map finer groups of ICD-9-CM codes to a larger set of more specific conditions will tend to yield relatively lower rates of conditions.<sup>105</sup> As has been demonstrated in prior work,<sup>106</sup> distinct algorithms can yield different conclusions about the rank order of conditions.<sup>107</sup> However, in general, no matter how broadly or finely conditions are defined, all of the corresponding ICD-9-CM codes are subsumed under the broad domain.<sup>108</sup> In other words, in general, while estimates for particular conditions may be more dependent upon algorithm choice, estimates for broad domains should be relatively independent of algorithm choice.

101 See On-Line Appendix to Sourcebook Volume 3, available on the Women’s Health Services web site, <http://www.womenshealth.va.gov/WOMENSHEALTH/sourcebookvol3onlineappendix.asp>.

102 For example, a clinician seeing a patient for hematemesis caused by a gastric ulcer could use a specific ICD-9-CM code (e.g., “gastric ulcer,” which we would map to the condition “Gastroduodenal Ulcer”) or a general ICD-9-CM code (e.g., “gastric disease not otherwise specified” which we would map to the condition “Gastrointestinal System Disorders – Other”).

103 For example, a clinician seeing a patient for hematemesis caused by a gastric ulcer could code the visit with an ICD-9-CM code for the symptom, hematemesis (which we would map to the condition “Gastrointestinal Hemorrhage”), or with an ICD-9-CM code for gastric ulcer (which we would map to the condition “Gastroduodenal Ulcer”), or both (which we would map to both). The Gastrointestinal domain would capture comprehensively each of these approaches to coding.

104 For example, in the case of a patient with hematemesis caused by a gastric ulcer, the ICD-9-CM codes for “gastric ulcer,” “hematemesis” or “gastric disease not otherwise specified” would all map to the domain, “Gastrointestinal.”

105 For example, one approach could be to create a single composite “joint disorders” condition, whereas another (used in this Sourcebook) could be to create three separate, more descriptive conditions: “Joint Disorders – Upper Extremity,” “Joint Disorders – Lower Extremity,” and “Joint Disorders – Unspecified or Multiple Joints.” The former approach would identify a rate of “joint disorders” higher than the rate of any of our three finer-granularity conditions.

106 Balasubramanian V, Saechao F, Finlay AK, Phibbs CS, Haskell SG, Zephyrin L, Frayne SM. Condition Taxonomies: Implications for Women Veterans Health Research. Poster presented at Gender and Health Interest Group Meeting, Annual Meeting of AcademyHealth, Baltimore, MD, June 22 2013.

107 For example, joint disorders would be more likely to appear as one of the most common conditions if all three types of joint disorder were collapsed into a single “joint disorders” condition than if the three types of joint disorder (“Joint Disorders – Upper Extremity,” “Joint Disorders – Lower Extremity,” and “Joint Disorders – Unspecified or Multiple Joints”) were presented separately.

108 For example, all three types of joint disorders would fall under the “Musculoskeletal” domain.

*Fifth, this report presents age-adjusted odds ratios as an estimate of differences in rates of diagnosed conditions between women versus men. These odds ratios do not adjust for characteristics other than age (such as race/ethnicity) which can also influence risk for some conditions, and which can likewise vary by gender. Other factors could also bias odds ratio estimates, such as gender differences in utilization (since patients who use VHA more heavily or who rely on VHA as their main source of care will have more opportunities to have their diagnoses recorded) or gender differences in rates of screening for disease. Furthermore, for high-frequency domains or conditions, odds ratios over-estimate relative differences between women versus men; relative risk ratios for domains/conditions in women versus men provide a more conservative estimate. Relative risk ratios (and their 95% confidence intervals) are provided in an [On-line Appendix](#).<sup>109</sup>*

*Sixth, we report here the types of diagnosed conditions in Veteran patients, not the types of care they received for those conditions. Veterans may or may not have received specialty care or testing related to a particular condition.<sup>110</sup>*

*Seventh, consistent with VHA's emphasis upon patient-centered care, this Sourcebook treats some symptoms (such as "headache" or "malaise and fatigue") that are coded as diagnoses by providers, as conditions. Similarly, it treats some health risk factors (such as Tobacco Use Disorder or Housing Insufficiency) as conditions. However, a symptom was counted only if a clinician noted the symptom with an ICD-9-CM diagnosis code. Furthermore, the available data sources used for this Sourcebook do not capture other patient-centered measures of health status such as functional status or health-related quality of life.*

---

109 See On-Line Appendix to Sourcebook Volume 3, available on the Women's Health Services web site, <http://www.womenshealth.va.gov/WOMENSHEALTH/sourcebookvol3onlineappendix.asp>

110 For example, Veterans with a Substance Use Disorder (SUD) condition may or may not have received care in a SUD specialty care clinic, and women Veterans with a reproductive organ condition may or may not have received care in a Gynecology clinic.

## Domain Frequencies Among Women Veteran Patients

Exhibit 6.A presents the 17 major domains of diagnosed medical conditions (diseases or symptoms), organized primarily by organ system. Overall, for women Veteran patients who used VHA in FY12, the top five domains, in rank order, were: *Musculoskeletal* (55.9% of women Veteran patients had at least one condition in the Musculoskeletal domain), *Endocrine/Metabolic/Nutritional* (50.6%), *Mental Health/SUD* (44.5%), *Cardiovascular* (37.3%), and *Reproductive Health* (31.2%);<sup>111</sup> next most common for women were *Respiratory* (31.1%), *Sense Organ* (30.9%), and *Gastrointestinal* (30.6%).

Overall, for men Veteran patients, the top five domains were *Endocrine/Metabolic/Nutritional* (64.5%), *Cardiovascular* (62.7%), *Musculoskeletal* (48.5%), *Sense Organ* (42.1%), and *Gastrointestinal* (34.7%); the next most common domains for men were *Mental Health/SUD* (31.4%), *Respiratory* (26.6%), and *Reproductive Health* (24.3%).

**Exhibit 6.A: Domain Frequencies Among Women and Men Veteran Patients, FY12**

Domain	Women % N= 362,014	Men % N= 5,249,002
Infectious Disease	28.0	20.5
Endocrine/Metabolic/Nutritional	50.6	64.5
Cardiovascular	37.3	62.7
Respiratory	31.1	26.6
Gastrointestinal	30.6	34.7
Urinary	14.5	16.1
Reproductive Health	31.2	24.3
Breast	6.9	0.3
Cancer	4.9	10.5
Hematologic/Immunologic	9.4	10.4
Musculoskeletal	55.9	48.5
Neurologic	28.9	23.4
Mental Health/SUD	44.5	31.4
Sense Organ	30.9	42.1
Dental	10.3	8.0
Dermatologic	21.9	21.6
Other	47.1	45.0

**Key:** FY—Fiscal Year; SUD—Substance Use Disorder

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix.

**Cohort:** Women and men Veteran patients in FY12. Women: N=362,014; Men: N=5,249,002.

**Source:** WHEI Master Database

<sup>111</sup> The domain “Other” was excluded from our description of the top five domains because this domain represents a heterogeneous group of conditions that do not have meaningful associations with each other. Therefore, knowing the overall frequency of this domain does not provide interpretable information. For this domain, it is more important to examine the individual conditions separately.

### Top five domains in women and men Veteran patients by age – examining domains by rank order and by gender

Given the importance of age as a risk factor for many health conditions, all remaining sections stratify descriptive results by age group. Exhibit 6.B presents the top five domains for women and men Veterans in each age group.

- Among women Veteran patients age 18-44 years old, the top five domains were: Musculoskeletal, Mental Health/SUD, Reproductive Health, Endocrine/Metabolic/Nutritional, and Infectious Disease.
- Among women Veteran patients 45-64 years old, the top five domains were: Musculoskeletal, Endocrine/Metabolic/Nutritional, Mental Health/SUD, Cardiovascular, and Sense Organ.
- Among women Veteran patients age 65 years or older, the top five domains were: Endocrine/Metabolic/Nutritional, Cardiovascular, Musculoskeletal, Sense Organ, and Gastrointestinal.

**Exhibit 6.B: Top Five Domain Frequencies Among Women and Men Veteran Patients by Age, FY12**

Rank	Top Five Domains for Ages 18-44	%	Top Five Domains for Ages 45-64	%	Top Five Domains for Ages 65+	%
	<b>Women (N=153,212)</b>		<b>Women (N=165,898)</b>		<b>Women (N=42,882)</b>	
1	Musculoskeletal*	50.1	Musculoskeletal*	61.7	Endocrine/Metabolic/ Nutritional*	73.8
2	Mental Health/SUD*	46.2	Endocrine/Metabolic/ Nutritional*	61.7	Cardiovascular	70.6
3	Reproductive Health	41.0	Mental Health/SUD*	47.7	Musculoskeletal*	54.2
4	Endocrine/Metabolic/ Nutritional*	32.0	Cardiovascular	47.6	Sense Organ	45.9
5	Infectious Disease	27.9	Sense Organ	37.4	Gastrointestinal	36.6
	<b>Men (N=705,644)</b>		<b>Men (N=2,124,587)</b>		<b>Men (N=2,418,668)</b>	
1	Musculoskeletal*	51.5	Endocrine/Metabolic/ Nutritional*	66.4	Cardiovascular	74.8
2	Mental Health/SUD*	45.2	Cardiovascular	62.4	Endocrine/Metabolic/ Nutritional*	72.1
3	Endocrine/Metabolic/ Nutritional*	32.6	Musculoskeletal*	54.6	Sense Organ	49.7
4	Gastrointestinal	22.7	Mental Health/SUD*	40.9	Musculoskeletal*	42.3
5	Cardiovascular	22.1	Sense Organ	40.6	Gastrointestinal	34.3

\* The top three domains for women Veteran patients overall are presented for both women and men in dark blue shading with asterisks. Note that the top three domains for women overall were Musculoskeletal, Endocrine/Metabolic/Nutritional, and Mental Health/SUD and for men overall were Endocrine/Metabolic/Nutritional, Cardiovascular and Musculoskeletal.

**Key:** FY—Fiscal Year; SUD—Substance Use Disorder

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix. The domain “Other” was excluded from rankings due to the heterogeneous nature of the domain.

**Cohort:** Women and men Veteran patients with non-missing ages 18-110 (inclusive) in FY12. Women: N=361,992; Men: N=5,248,899.

**Source:** WHEI Master Database

As seen in Exhibit 6.B, within each age group there were similarities and differences in the pattern regarding which domains were most common for women versus men. In patients 18-44 years old, Musculoskeletal and Mental Health/SUD were the most frequent domains for both women and men, and frequencies were very similar by gender (Musculoskeletal: 50.1% vs. 51.5%; Mental Health/SUD: 46.2% vs. 45.2%). Women and men also had similar frequencies for Endocrine/Metabolic/Nutritional (32.0% vs. 32.6%). Women and men differed in the other two domains that comprised their top five – in particular, for women 18-44 years old, Reproductive Health was the third most common domain (affecting 41.0% of women 18-44 years old), whereas for men, it was the 12th most common domain (affecting 8.1% of men in this age group<sup>112</sup>).

For patients 45-64 years old, women and men had the same five most-common domains, although their rank order differed somewhat. For women, Musculoskeletal was again the most common domain and this domain was higher ranked and more frequent in women than in men (61.7% vs. 54.6%). Mental Health/SUD conditions were also higher ranked and more frequent in women than in men (47.7% vs. 40.9%), whereas Cardiovascular conditions were lower ranked and substantially less frequent in women than in men (47.6% vs. 62.4%).

For patients 65+ years old, the most common domains were even more similar across genders than in the two younger age groups. For both women and men, Endocrine/Metabolic/Nutritional and Cardiovascular domains ranked #1 or #2, and both were very frequent (Endocrine/Metabolic/Nutritional: 73.8% vs. 72.1%; Cardiovascular: 70.6% vs. 74.8%). More women than men had Musculoskeletal conditions (54.2% vs. 42.3%).

***NOTES TO INTERPRETATION:** Because women Veteran patients are, on average, much younger than men Veteran patients, and because some medical conditions are highly age-dependent, it is helpful to examine conditions and domains within age strata. However, even within an age stratum, age distribution varies by gender, and may account for some of the observed differences. In an effort to address this issue, Exhibit 6.C (below) presents the age-adjusted odds ratio (AOR) for each domain; for the regression model used to estimate AOR, age is specified in finer (5-year) increments.*

---

112 Frequency of the Reproductive Health domain in men is reported in Exhibit 6.C. Note: for both women and men, urethral conditions appear in the Urinary (not Reproductive Health) domain. Otherwise, reproductive health conditions in men appear in the Reproductive Health domain.

## Domain frequencies for women and men Veteran patients by age – examining gender differences

Exhibit 6.C presents the 17 major condition domains for women and men by age group, and the AOR for each domain in women compared to men.<sup>113</sup>

**Exhibit 6.C: Domain Frequencies Among Women and Men Veteran Patients by Age, and Age-adjusted Odds Ratio (AOR) of Each Domain for Women Versus Men, FY12**

Domain	AOR	Women %			Men %		
		18-44 N=153,212	45-64 N=165,898	65+ N=42,882	18-44 N=705,644	45-64 N=2,124,587	65+ N=2,418,668
Infectious Disease	<b>1.50</b>	27.9	29.0	23.9	17.2	24.4	17.9
Endocrine/Metabolic/ Nutritional	<b>1.03</b>	32.0	61.7	73.8	32.6	66.4	72.1
Cardiovascular	<b>0.72</b>	16.9	47.6	70.6	22.1	62.4	74.8
Respiratory	<b>1.45</b>	27.2	34.8	31.0	19.8	28.3	27.1
Gastrointestinal	1.00	22.3	36.8	36.6	22.7	39.2	34.3
Urinary	<b>1.50</b>	10.5	16.0	23.6	5.3	13.8	21.3
Reproductive Health	<b>2.30</b>	41.0	27.3	11.4	8.1	21.8	31.3
Breast	<b>25.32</b>	4.9	8.4	8.2	0.3	0.3	0.3
Cancer	<b>1.05</b>	1.7	6.1	11.9	0.9	7.5	15.9
Hematologic/Immunologic	<b>1.47</b>	7.5	10.1	13.4	2.8	9.1	13.8
Musculoskeletal	<b>1.18</b>	50.1	61.7	54.2	51.5	54.6	42.3
Neurologic	<b>1.48</b>	27.6	29.6	30.4	20.1	22.4	25.1
Mental Health/SUD	<b>1.20</b>	46.2	47.7	26.1	45.2	40.9	19.0
Sense Organ	<b>0.97</b>	19.6	37.4	45.9	20.6	40.6	49.7
Dental	<b>1.18</b>	9.3	12.7	5.0	8.4	10.7	5.5
Dermatologic	<b>1.22</b>	18.9	24.1	23.7	15.0	22.9	22.3
Other	<b>0.94</b>	43.7	52.1	40.3	46.5	53.0	37.5

**Key:** AOR—Age-adjusted Odds Ratio; FY—Fiscal Year; SUD—Substance Use Disorder

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix. Each AOR represents a logistic regression for a single domain (17 total regressions) in women versus men, controlling for age (in five-year increments). Because of the large sample size, even very small gender differences tend to be statistically significant; the focus here is upon clinically meaningful differences, rather than statistically significant differences. However, the Exhibit presents statistically significant ( $p < 0.05$ ) AORs in bold face text.

**Cohort:** Women and men Veteran patients with non-missing ages 18-110 (inclusive) in FY12. Women: N=361,992 Men: N=5,248,899.

**Source:** WHEI Master Database

As seen in Exhibit 6.C, adjusting for age, women Veterans had similar or greater odds ( $\text{AOR} \geq 1.0$ ) for almost every domain compared to men Veterans (14 out of 17 domains). Domains demonstrating a more extreme gender difference (e.g.,  $\text{AORs} \geq 1.50$  or  $< 0.67$ ) are particularly noteworthy. Adjusting for age, women Veterans (compared to men Veterans) had greater odds of having a condition in the following domains: Breast ( $\text{AOR} = 25.32$ ), Reproductive Health ( $\text{AOR} = 2.30$ ), Infectious Disease ( $\text{AOR} = 1.50$ ), and Urinary ( $\text{AOR} = 1.50$ ). Women had lower odds (compared to men) of having a condition in the Cardiovascular domain, though the magnitude of this difference was only moderate ( $\text{AOR} = 0.72$ ).

Gender differences in domain frequency varied by age group for several domains. For example, among 18-44 year olds, the Musculoskeletal domain had a slightly lower frequency in women than in men (50.1% vs. 51.5%), but this domain had much higher frequencies in women than men for patients 45-64 years old (61.7% vs. 54.6%) or 65+ years old (54.2% vs. 42.3%). In another example, women had higher rates of Cancer compared to men in patients 18-44 years old (1.7% vs. 0.9%) but had lower rates of Cancer compared to men in patients 65+ years old (11.9% vs. 15.9%).

<sup>113</sup> Throughout Sourcebook Volume 3, age-adjusted odds ratios are presented without their 95% confidence interval; the convention used here is to present an AOR in bold face text in the table if it is statistically significant at  $p < 0.05$ . However, 95% confidence intervals are presented in an On-line Appendix, available on the Women's Health Services web site, <http://www.womenshealth.va.gov/WOMENSHEALTH/sourcebookvol3onlineappendix.asp>.

*NOTES TO INTERPRETATION: Because domains represent broad aggregates of conditions, gender differences evident at the condition level may be masked at the domain level. For example, there is essentially no gender difference in the Endocrine/Metabolic/Nutritional domain (AOR 1.03); however, some of this domain's component conditions differ markedly by gender, as demonstrated subsequently in Exhibit 7.B (e.g., Osteoporosis: AOR 9.63; Thyroid Disorders: AOR 3.47; Diabetes Mellitus: AOR 0.68).*

---

### IMPLICATIONS

---

For all but three condition domains, women are as likely as men or more likely than men to have a condition in the domain, after accounting for age. This is consistent with prior literature finding that women Veterans in VHA have a burden of illness at least as great as that of men.<sup>114</sup>

Overall, for women Veteran VHA patients the top five domains, in rank order, are: Musculoskeletal, Endocrine/Metabolic/Nutritional, Mental Health/SUD, Cardiovascular, and Reproductive Health.

- Musculoskeletal conditions are among the leading contributors to the health profile of women Veterans and are likewise more common in women than in men (in particular for those age 45 years and older); programs addressing pain and functional status in women Veterans are highly relevant.
  - Endocrine/Metabolic/Nutritional conditions become increasingly common as women age. Several common conditions in this domain (e.g., Diabetes Mellitus, Lipid Disorders and Overweight/Obesity) are risk factors for disease in other organ systems.
  - Mental Health/SUD conditions are among the top three domains for women under age 65 years, and are more common in women than in men, consistent with women's high rate of utilization of mental health/SUD clinics.
  - Cardiovascular conditions are modestly less common in women than men (after adjusting for age), but they fall within the top five domains for women 45 years and older. With cardiovascular disease being the leading cause of death for women in the United States,<sup>115</sup> it merits close attention by clinicians.
  - Reproductive Health conditions are the third most frequent domain among women under age 45 years and likewise require gender-tailored comprehensive primary care and specialty care services, with attention to women's privacy needs.
- 

---

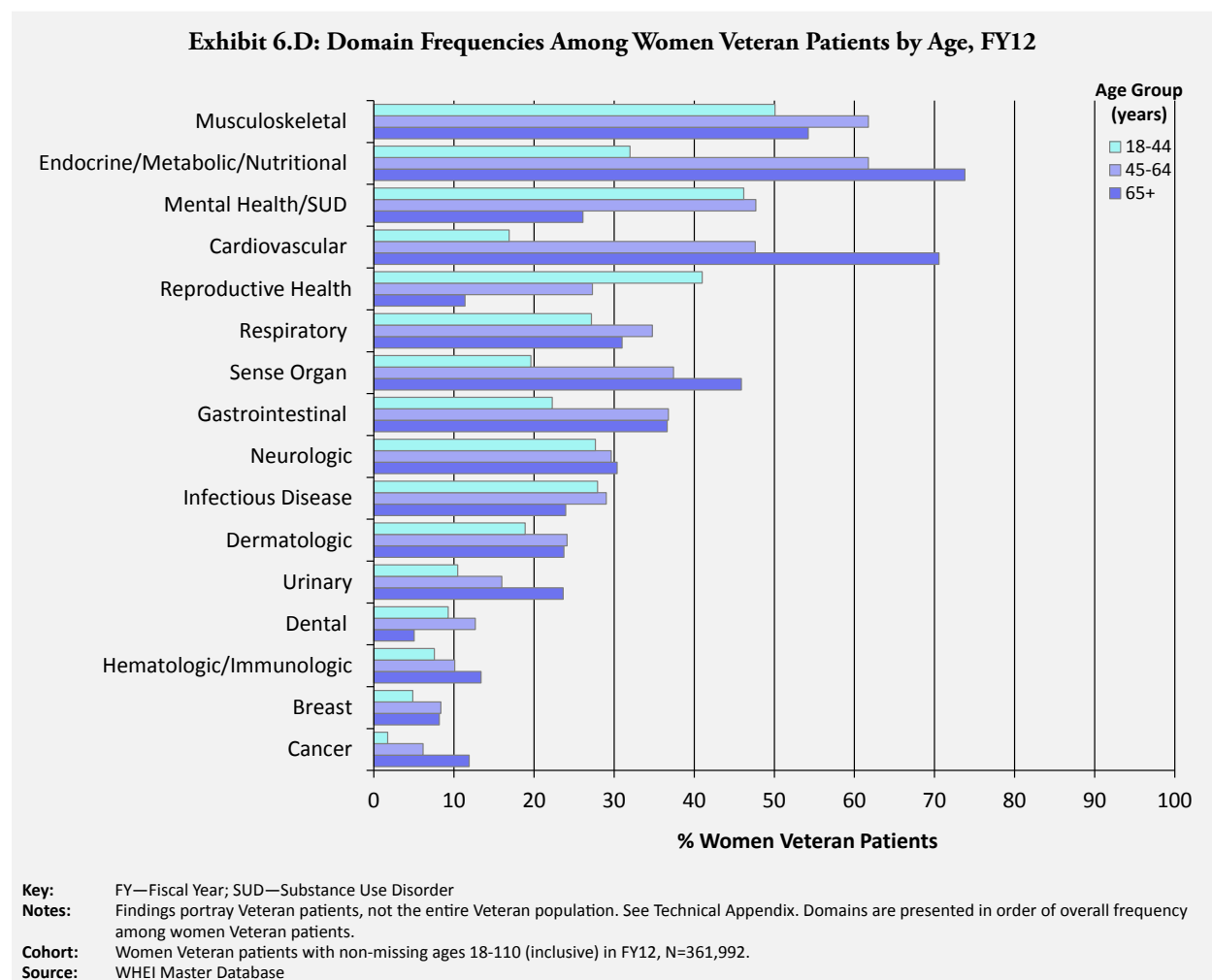
114 Frayne SM, Parker VA, Christiansen CL, Loveland S, Seaver MR, Kazis LE, Skinner KM: Health status among 28,000 women veterans. The VA Women's Health Program Evaluation Project. *J Gen Intern Med* 2006;21 Suppl 3:S40-6.

115 Mosca L, Benjamin EJ, Berra K, et al. Effectiveness-based guidelines for the prevention of cardiovascular disease in women - 2011 update. A guideline from the American Heart Association. *Circulation* 2011; 123(11):1243-62.



### Domain frequencies for women Veteran patients by age – examining age differences

Focusing on women Veteran patients only, there were also notable differences in rates for many domains across the three age groups. Exhibit 6.D presents the frequency of each domain (except the “Other” domain) for the three age groups of women Veteran patients in FY12.



As seen in Exhibit 6.D, the only domain for which women in the youngest age group (18-44 years old) had the highest frequency was Reproductive Health. In contrast, the frequency was highest for patients 45-64 years old (although sometimes with only small between-age group differences) for multiple domains, including Infectious Disease, Respiratory, Musculoskeletal, Mental Health/SUD, and Dental. Patients 65+ years old had the highest frequency for several other domains: Endocrine/Metabolic/Nutritional, Cardiovascular, Urinary, Cancer, Hematologic/Immunologic, and Sense Organ. For a few domains, there was very little difference (<1%) between the middle age group (45-64 years old) and the oldest age group (65+ years old), including Gastrointestinal, Breast, Neurologic, and Dermatologic domains.

When comparing across the three age groups, several domains showed a markedly higher frequency in the two older age groups than in the youngest age group. For example, far more women in the older age groups than in the youngest age group had Endocrine/Metabolic/Nutritional conditions (18-44: 32.0%;



45-64: 61.7%; 65+: 73.8%). The same was true for Cardiovascular conditions (18-44: 16.9%; 45-64: 47.6%; 65+: 70.6%).

Although occurring at overall lower frequencies, other domains were also more frequent in the older age groups than the younger age groups. Urinary conditions increased progressively across the three age groups (18-44: 10.5%; 45-64: 16.0%; 65+: 23.6%). Cancer diagnoses likewise increased progressively across the three groups (18-44: 1.7%; 45-64: 6.1%; 65+: 11.9%).

Conversely, the frequency of some domains decreased with age.<sup>116</sup> Mental Health/SUD domain frequency was similar in the two younger age groups but declined sharply in women 65+ years old (18-44: 46.2%, 45-64: 47.7%, 65+: 26.1%). Similarly, the Reproductive Health domain declined markedly with advancing age (18-44: 41.0%, 45-64: 27.3%, 65+: 11.4%).<sup>117</sup>

---

## IMPLICATIONS

---

Health care systems design must account for women's distinct needs across the life span.

For women in their reproductive years (18-44 years old), Reproductive Health conditions are among the top three domains, suggesting that access to high quality reproductive health services is critical for the rapidly expanding population of young women Veterans in VHA.

Women in the middle age group (45-64 years old), who represent the largest subgroup of women Veterans, have an especially heavy burden of disease, and have higher rates than other age groups of diverse conditions, from Musculoskeletal to Mental Health/SUD conditions. For women suffering from more than one of these conditions simultaneously, the impact of comorbidity upon care management plans and the need for care coordination must be taken into account.

For older women (65+ years old), later-life chronic diseases such as Cardiovascular and Endocrine/Metabolic/Nutritional conditions become dominant sources of morbidity and require comprehensive disease management. This oldest age group also leads the other age groups in Sense Organ conditions—patient-provider interactions must be sensitive to these physical limitations, and assistive devices to enhance vision or hearing may help some women with activities of daily living.

---

---

116 Note: It is not known whether this decline in older women represents a survivor effect (i.e., healthier women are more likely to survive into old age), a cohort effect (i.e., lower risk factors for these conditions in women from an earlier era), an illness trajectory effect (i.e., the natural history of some conditions may be to improve over time, perhaps with treatment), or some other explanation.

117 Note: We cannot exclude the possibility that some instances of Menopausal Disorders or other conditions common to women in the older age groups are not recorded in these databases, which could lead to under-counts of Reproductive Health conditions in the older age groups.



# Part 7. Health Profile - Conditions

**M**ost of Part 7 examines frequency of the specific conditions that together constitute the domains described in Part 6. The last section in Part 7 presents the rank of the top 20 conditions within each age group.

## Condition Frequencies

In this section, for each domain we present an exhibit with the conditions that are primarily mapped to that domain (Exhibits 7.A to 7.Q); if additional conditions are secondarily mapped to that domain, we comment on that in a footnote to the exhibit.<sup>118</sup> Following each exhibit is text which presents selected highlights. Specifically, we present the three most common conditions within each domain, by age group; for the five domains that rank highest for women (and for Cancer<sup>119</sup>), we additionally present all conditions with frequencies of at least 2%.<sup>120</sup> We then present highlights of the gender comparisons (age-adjusted Odds Ratios), focusing on conditions that are substantially more common in women than in men (e.g., AOR  $\geq 1.50$ ) and conditions that are substantially less common in women than in men (e.g., AOR  $< 0.67$ ).<sup>121</sup>

In this section, domains are presented in the following order:

- |                                    |                            |
|------------------------------------|----------------------------|
| A. Infectious Disease              | J. Hematologic/Immunologic |
| B. Endocrine/Metabolic/Nutritional | K. Musculoskeletal         |
| C. Cardiovascular                  | L. Neurologic              |
| D. Respiratory                     | M. Mental Health/SUD       |
| E. Gastrointestinal                | N. Sense Organ             |
| F. Urinary                         | O. Dental                  |
| G. Reproductive Health             | P. Dermatologic            |
| H. Breast                          | Q. Other                   |
| I. Cancer                          |                            |

---

118 Please see Technical Appendix, Section 9.8, for the mapping of each condition to its primary domain and, where applicable, to its secondary domain.

119 Cancer's domain rank is 16th overall, but because of its potential impact on morbidity and mortality, additional detail is presented for Cancer as well.

120 In the case of Cancer, we present conditions with frequencies even lower than 2%.

121 All AORs highlighted in bold face text in the Part 7 exhibits are statistically significant (i.e.,  $p < 0.05$ ); for readability, the 95% Confidence Interval around each AOR is not presented in this Sourcebook but is available in an On-line Appendix to Sourcebook Volume 3 (Available on the Women's Health Services web site, <http://www.womenshealth.va.gov/WOMENSHEALTH/sourcebookvol3onlineappendix.asp>). Each AOR represents a logistic regression for a single condition (202 total regressions) in women versus men (with men as the reference group), with the model controlling for age (in five-year increments).

## Infectious Disease Conditions

(Domain rank = 10th overall for women Veterans)

**Exhibit 7.A: Condition Frequencies for Infectious Disease Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12\***

Condition	AOR	Women %			Men %		
		18-44 N=153,212	45-64 N=165,898	65+ N=42,882	18-44 N=705,644	45-64 N=2,124,587	65+ N=2,418,668
HIV/AIDS	<b>0.26</b>	0.1	0.3	0.0	0.6	0.8	0.1
Tuberculosis	<b>1.12</b>	0.1	0.2	0.1	0.1	0.1	0.1
Mycoses	<b>0.79</b>	2.4	4.4	7.0	3.3	6.3	7.3
Infections – Other	<b>1.21</b>	3.7	4.2	4.2	3.1	3.7	3.2

\* Infectious Disease domain conditions representing systemic infections (such as HIV disease) or infection of an unspecified organ system are listed in this Exhibit. Other infectious diseases secondarily mapping to the Infectious Disease domain (but listed under the organ system to which they primarily map) are: Pneumonia (Respiratory domain); Respiratory System Infections - Other (Respiratory domain); Hepatitis C (Gastrointestinal domain); Urinary Tract Infection (Cystitis/Urethritis/Pyelonephritis) (Urinary domain); Sexually Transmitted Infections (Reproductive Health domain); Vaginitis and Other Pelvic Inflammatory Conditions (Reproductive Health domain); Osteomyelitis/Infectious Arthritis (Musculoskeletal domain); Skin Infection (Dermatologic domain).

**Key:** AOR—Age-adjusted Odds Ratio; FY—Fiscal Year; HIV/AIDS—Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome  
**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix. Each AOR represents a logistic regression for a single condition in women versus men, controlling for age. Because of the large sample size, even very small gender differences tend to be statistically significant; the focus here is upon clinically meaningful differences, rather than statistically significant differences. However, the Exhibit presents statistically significant ( $p < 0.05$ ) AORs in bold face text.

**Cohort:** Women and men Veteran patients with non-missing ages 18-110 (inclusive) in FY12. Women: N=361,992; Men: N=5,248,899.  
**Source:** WHEI Master Database

### Condition rank by age for women Veteran patients:

For women 18-44 years old, the most common Infectious Disease conditions were:

1. Respiratory System Infections - Other<sup>122</sup> (11.7%)
2. Vaginitis and Other Pelvic Inflammatory Conditions<sup>123</sup> (7.6%)
3. Urinary Tract Infection (Cystitis/Urethritis/Pyelonephritis)<sup>124</sup> (5.3%)

For women 45-64 years old, the most common Infectious Disease conditions were:

1. Respiratory System Infections – Other (12.3%)
2. Urinary Tract Infection (Cystitis/Urethritis/Pyelonephritis) (5.6%)
3. Vaginitis and Other Pelvic Inflammatory Conditions (3.8%)

For women 65+ years old, the most common Infectious Disease conditions were:

1. Urinary Tract Infection (Cystitis/Urethritis/Pyelonephritis) (8.1%)
2. Respiratory System Infections - Other (6.4%)
3. Skin Infections (3.0%)<sup>125</sup>

**Comparing women and men Veteran patients.** Adjusting for age, women Veterans (compared to men Veterans) had greater odds of: Urinary Tract Infection (Cystitis/Urethritis/Pyelonephritis) (AOR = 3.85), Sexually Transmitted Infections (AOR = 1.78), and Respiratory System Infections - Other (AOR = 1.71). Adjusting for age, women Veterans were less likely than men Veterans to have HIV/AIDS (AOR = 0.26) and Osteomyelitis/Infectious Arthritis (AOR = 0.57).

<sup>122</sup> Respiratory System Infections - Other is mapped primarily to the Respiratory domain, and secondarily to the Infectious Disease domain.

<sup>123</sup> Vaginitis and Other Pelvic Inflammatory Conditions are mapped primarily to the Reproductive Health domain, and secondarily to the Infectious Disease domain.

<sup>124</sup> Urinary Tract Infection (Cystitis/Urethritis/Pyelonephritis) is mapped primarily to the Urinary domain, and secondarily to the Infectious Disease domain.

<sup>125</sup> Skin Infections is mapped primarily to the Dermatologic domain, and secondarily to the Infectious Disease domain.

**Other comments.** For women Veterans, Urinary Tract Infection (Cystitis/Urethritis/Pyelonephritis) tended to increase in frequency across the three age groups, whereas Reproductive Health infections (Sexually Transmitted Infections, Vaginitis and Other Pelvic Inflammatory Conditions) tended to decrease in frequency across the three age groups.

---

#### IMPLICATIONS

---

The finding that, after accounting for age, odds of diagnosed HIV/AIDS was nearly four-fold lower in women than in men could reflect true gender difference in disease or alternatively could reflect lower rates of detection in women. Universal screening for HIV is recommended for all Veterans.<sup>126</sup> Further attention to screening for and treatment of HIV has the potential to benefit not only the woman Veteran but also her sexual partners and her offspring.

---

---

<sup>126</sup> Qaseem A, Snow V, Shekelle P, Hopkins, R. Owens, D. K. Screening for HIV in health care settings: A guidance statement from the American College of Physicians and HIV Medicine Association. *Annals of Internal Medicine* 2009;150(2):125-131.

## Endocrine/Metabolic/Nutritional Conditions

(Domain rank = 2nd overall for women Veterans)

**Exhibit 7.B: Condition Frequencies for *Endocrine/Metabolic/Nutritional* Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12\***

Condition	AOR	Women %			Men %		
		18-44 N=153,212	45-64 N=165,898	65+ N=42,882	18-44 N=705,644	45-64 N=2,124,587	65+ N=2,418,668
Diabetes Mellitus	<b>0.68</b>	2.9	15.4	22.2	4.4	25.4	29.5
Lipid Disorders	<b>0.70</b>	10.7	38.7	52.0	19.7	50.3	57.2
Overweight/Obesity	<b>1.24</b>	15.8	22.8	13.2	13.9	19.3	11.6
Thyroid Disorders	<b>3.47</b>	6.6	15.2	23.3	2.0	5.4	9.1
Osteoporosis	<b>9.63</b>	0.2	3.4	16.6	0.1	0.6	1.7
Vitamin D Deficiency	<b>1.83</b>	4.2	6.7	5.9	2.3	3.8	3.7
Fluid and Electrolyte Disorders	<b>1.14</b>	1.5	3.6	5.4	1.2	4.0	4.1
Endocrine, Metabolic and Nutritional Disorders - Other	<b>0.90</b>	4.9	10.0	11.6	5.3	12.4	11.9

\* All Endocrine/Metabolic/Nutritional domain conditions are listed in this Exhibit, except for: Pregnancy Complicated by Diabetes Mellitus (listed under Reproductive Health, the domain to which it is primarily mapped), and Cancer – Thyroid (listed under Cancer, the domain to which it is primary mapped).

**Key:** AOR—Age-adjusted Odds Ratio; FY—Fiscal Year

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix. Each AOR represents a logistic regression for a single condition in women versus men, controlling for age. Because of the large sample size, even very small gender differences tend to be statistically significant; the focus here is upon clinically meaningful differences, rather than statistically significant differences. However, the Exhibit presents statistically significant ( $p < 0.05$ ) AORs in bold face text.

**Cohort:** Women and men Veteran patients with non-missing ages 18-110 (inclusive) in FY12. Women: N=361,992; Men: N=5,248,899.

**Source:** WHEI Master Database

### Condition rank by age for women Veteran patients:

For women 18-44 years old, the most common Endocrine/Metabolic/Nutritional conditions were:

1. Overweight/Obesity (15.8%)
2. Lipid Disorders (10.7%)
3. Thyroid Disorders (6.6%)

Next most common were Endocrine, Metabolic and Nutritional Disorders – Other (4.9%), Vitamin D Deficiency (4.2%), and Diabetes Mellitus (2.9%).

For women 45-64 years old, the most common Endocrine/Metabolic/Nutritional conditions were:

1. Lipid Disorders (38.7%)
2. Overweight/Obesity (22.8%)
3. Diabetes Mellitus (15.4%)

Next most common were Thyroid Disorders (15.2%), Endocrine, Metabolic and Nutritional Disorders – Other (10.0%), Vitamin D Deficiency (6.7%), Fluid and Electrolyte Disorders (3.6%), and Osteoporosis (3.4%).

For women 65+ years old, the most common Endocrine/Metabolic/Nutritional conditions were:

1. Lipid Disorders (52.0%)
2. Thyroid Disorders (23.3%)
3. Diabetes Mellitus (22.2%)

Next most common were Osteoporosis (16.6%), Overweight/Obesity (13.2%), Endocrine, Metabolic and Nutritional Disorders – Other (11.6%), Vitamin D Deficiency (5.9%), and Fluid and Electrolyte Disorders (5.4%).

**Comparing women and men Veteran patients.** Adjusting for age, women Veterans (compared to men Veterans) had greater odds of: Osteoporosis (AOR = 9.63), Thyroid Disorders (AOR = 3.47), Cancer – Thyroid (AOR = 3.21)<sup>127</sup> and Vitamin D Deficiency (AOR = 1.83). Although of a smaller magnitude, women Veterans had a greater odds of Overweight/Obesity (AOR = 1.24) compared to men Veterans.

**Other comments.** Overall, 50.6% of women Veterans had an Endocrine/Metabolic/Nutritional condition (N=183,041). In general, several Endocrine/Metabolic/Nutritional conditions were quite frequent in women Veteran patients, and many of these conditions increased progressively across the three age groups. For example, the rate of Diabetes Mellitus increased across the three age groups, from 2.9% in women 18-44 years old, to 15.4% in women 45-64 years old and 22.2% in women 65+ years old. Similarly, there were large increases by age for Lipid Disorders, from 10.7% in women 18-44 years old, to 38.7% in women 45-64 years old and 52.0% in women 65+ years old.

---

### IMPLICATIONS

---

Among the youngest cohort of women (18-44 years old), nearly one in six carries a diagnosis of Overweight/Obesity, suggesting that this group is not spared from the national obesity epidemic despite having been relatively recently in military service where fitness is a priority. Since these data identify only women who received an ICD-9-CM diagnosis, the proportion of women in this age group actually meeting criteria (Body Mass Index  $\geq 25$ ) is likely higher. Intervention in this young cohort of women may help to avert complications of Overweight/Obesity (e.g., cardiovascular disease and diabetes). Indeed, since diabetes has major impacts on health and affects more than one out of every five women Veteran patients age 65 years or older, such preventive measures earlier in life need to be a priority.

Odds of a Thyroid Disorder are more than three-fold higher in women than men. While the frequency of Thyroid Disorder increases with advancing age, this condition is quite common even among the youngest women Veterans. VHA providers need to be aware of symptoms of hypo- and hyperthyroidism and be attentive to special considerations in reproductive-age women, such as dose adjustment in pregnancy.

Osteoporosis rates are much higher (nearly 10-fold greater odds) in women Veterans than in men Veterans, and are especially high in women 65+ years old. Preventive measures in young women may reduce risk of osteoporosis later in life. VHA providers must be aware of screening older women and those with risk factors for osteoporosis; appropriate technology must be in place to ensure timely diagnosis and treatment. For women with osteoporosis, fall risk assessment may reduce fracture risk.

---

---

127 Cancer – Thyroid is mapped primarily to the Cancer domain and secondarily to the Endocrine/Metabolic/Nutritional domain.

## Cardiovascular Conditions

(Domain rank = 4th overall for women Veterans)<sup>128</sup>

**Exhibit 7.C: Condition Frequencies for Cardiovascular Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12\***

Condition	AOR	Women %			Men %		
		18-44 N=153,212	45-64 N=165,898	65+ N=42,882	18-44 N=705,644	45-64 N=2,124,587	65+ N=2,418,668
Hypertension	<b>0.69</b>	9.4	38.4	61.4	15.4	53.4	63.6
Chest Pain/Angina	<b>1.11</b>	3.4	7.0	5.0	3.3	6.7	3.9
Acute Myocardial Infarction	<b>0.53</b>	0.0	0.2	0.6	0.1	0.7	0.6
Coronary Artery Disease - Other	<b>0.37</b>	0.3	3.3	12.9	0.7	12.6	26.2
Heart Failure	<b>0.66</b>	0.3	1.7	6.5	0.5	4.1	7.2
Valvular Disease	<b>1.26</b>	0.8	1.9	4.9	0.5	2.0	4.3
Atrial Fibrillation/Flutter	<b>0.60</b>	0.1	0.7	7.9	0.3	2.8	9.3
Arrhythmia/Conduction Disorder - Other	<b>1.07</b>	2.7	3.9	6.5	1.9	4.5	7.2
Cardiac Conditions - Other	0.97	0.5	1.2	1.2	0.5	1.4	1.2
Cerebrovascular Accident/Transient Ischemic Attack	<b>0.84</b>	0.3	1.9	5.5	0.3	3.2	5.9
Cerebrovascular Disease - Other	<b>0.95</b>	0.2	1.1	3.4	0.2	1.6	3.2
Aortic Aneurysm	<b>0.32</b>	0.0	0.1	0.8	0.0	0.7	2.3
Pulmonary Embolism or Deep Vein Thrombosis	<b>0.95</b>	0.5	1.1	2.0	0.4	1.4	1.7
Vascular Disease - Other	<b>0.81</b>	0.9	3.1	7.0	0.9	5.2	7.8
Circulatory System Conditions - Other	<b>0.85</b>	1.9	3.3	3.9	2.7	4.0	3.8

\* All Cardiovascular domain conditions are listed in this Exhibit, except for Pregnancy Complicated by Hypertension (listed under Reproductive Health, the domain to which it is primarily mapped).

**Key:** AOR—Age-adjusted Odds Ratio; FY—Fiscal Year

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix. Each AOR represents a logistic regression for a single condition in women versus men, controlling for age. Because of the large sample size, even very small gender differences tend to be statistically significant; the focus here is upon clinically meaningful differences, rather than statistically significant differences. However, the Exhibit presents statistically significant ( $p < 0.05$ ) AORs in bold face text.

**Cohort:** Women and men Veteran patients with non-missing ages 18-110 (inclusive) in FY12. Women: N=361,992; Men: N=5,248,899.

**Source:** WHEI Master Database

### Condition rank by age for women Veteran patients:

For women 18-44 years old, the most common Cardiovascular conditions were:

1. Hypertension (9.4%)
2. Chest Pain/Angina (3.4%)
3. Arrhythmia/Conduction Disorder - Other (2.7%)

For women 45-64 years old, the most common Cardiovascular conditions were:

1. Hypertension (38.4%)
2. Chest Pain/Angina (7.0%)
3. Arrhythmia/Conduction Disorder - Other (3.9%)

Next most common were Circulatory System Conditions – Other (3.3%), Coronary Artery Disease – Other (3.3%), and Vascular Disease – Other (3.1%).

<sup>128</sup> The frequencies of conditions reported here may differ modestly from the frequencies reported in Cardiovascular Disease reports published by Women's Health Services, due to small differences in the approach to condition mapping.



For women 65+ years old, the most common Cardiovascular conditions were:

1. Hypertension (61.4%)
2. Coronary Artery Disease – Other (12.9%)
3. Atrial Fibrillation/Flutter (7.9%)

Next most common were Vascular Disease – Other (7.0%), Heart Failure (6.5%), Arrhythmia/Conduction Disorder – Other (6.5%), Cerebrovascular Accident/Transient Ischemic Attack (5.5%), Chest Pain/Angina (5.0%), Valvular Disease (4.9%), Circulatory System Conditions – Other (3.9%), Cerebrovascular Disease – Other (3.4%), and Pulmonary Embolism or Deep Vein Thrombosis (2.0%).

**Comparing women and men Veteran patients.** Adjusting for age, women Veterans (compared to men Veterans) had a lower odds of: Coronary Artery Disease - Other (AOR = 0.37), Aortic Aneurysm (AOR = 0.32), Acute Myocardial Infarction (AOR = 0.53), Atrial Fibrillation/Flutter (AOR = 0.60), and Heart Failure (AOR = 0.66). Most other Cardiovascular condition rates were relatively similar between women and men.

**Other comments.** Overall, for women Veteran patients, 37.3% had a Cardiovascular condition (N=135,126). For women Veterans, by far the most common cardiovascular condition across all three age groups was Hypertension, and this condition progressively increased across the three age groups (18-44: 9.4%, 45-64: 38.4%, 65+: 61.4%).

## IMPLICATIONS

In the Cardiovascular domain—the fourth most common body system to be affected for women Veteran patients—Hypertension is the most common condition in each age group, especially among older women. Rates of major Cardiovascular conditions are high among women age 65 years or older (e.g., Acute Myocardial Infarction: 0.6%; Coronary Artery Disease - Other: 12.9%; Heart Failure: 6.5%; Cerebrovascular Accident/Transient Ischemic Attack: 5.5%). Therefore, risk reduction—through attention to hypertension and other cardiac risk factors—is critical so as to prevent onset or progression of Cardiovascular disease, the leading cause of mortality in the general population of women.<sup>129</sup>

Among older women (65+ years old), Atrial Fibrillation/Flutter is common (7.9%); this condition may require complex disease management approaches, such as close monitoring of anticoagulation therapy, so as to reduce risk of stroke and subsequent disability.



<sup>129</sup> Mosca L, Benjamin EJ, Berra K, et al., Effectiveness-Based Guidelines for the Prevention of Cardiovascular Disease in Women - 2011 update. A Guideline from the American Heart Association. *Circulation* 2011;123(11): 1243-62.

## Respiratory Conditions

(Domain rank = 6th overall for women Veterans)

**Exhibit 7.D: Condition Frequencies for *Respiratory* Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12\***

Condition	AOR	Women %			Men %		
		18-44 N=153,212	45-64 N=165,898	65+ N=42,882	18-44 N=705,644	45-64 N=2,124,587	65+ N=2,418,668
Chronic Obstructive Pulmonary Disease	<b>0.78</b>	0.5	5.3	11.3	0.6	9.2	12.5
Asthma	<b>2.29</b>	6.4	8.4	5.5	3.4	3.2	2.5
Sarcoidosis	<b>1.77</b>	0.2	0.6	0.2	0.2	0.3	0.1
Pneumonia	<b>0.86</b>	0.4	1.1	2.0	0.4	1.6	1.9
Respiratory System Infections - Other	<b>1.71</b>	11.7	12.3	6.4	7.3	7.2	4.4
Allergic and Other Chronic Sinusitis/Rhinitis	<b>1.68</b>	12.5	14.4	8.5	8.2	8.3	6.5
Dyspnea, Cough and Other Respiratory Symptoms	<b>1.18</b>	4.4	7.4	7.7	3.9	6.9	6.0
Respiratory Conditions - Other	<b>0.92</b>	2.1	4.1	5.6	2.3	5.2	5.5

\* All Respiratory domain conditions are listed in this Exhibit, except for Cancer – Bronchopulmonary (listed under Cancer, the domain to which it is primarily mapped).

**Key:** AOR—Age-adjusted Odds Ratio; FY—Fiscal Year

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix. Each AOR represents a logistic regression for a single condition in women versus men, controlling for age. Because of the large sample size, even very small gender differences tend to be statistically significant; the focus here is upon clinically meaningful differences, rather than statistically significant differences. However, the Exhibit presents statistically significant ( $p < 0.05$ ) AORs in bold face text.

**Cohort:** Women and men Veteran patients with non-missing ages 18-110 (inclusive) in FY12. Women: N=361,992; Men: N=5,248,899.

**Source:** WHEI Master Database

### Condition rank by age for women Veteran patients:

For women 18-44 years old, the most common Respiratory conditions were:

1. Allergic and Other Chronic Sinusitis/Rhinitis (12.5%)
2. Respiratory System Infections – Other (11.7%)
3. Asthma (6.4%)

For women 45-64 years old, the most common Respiratory conditions were:

1. Allergic and Other Chronic Sinusitis/Rhinitis (14.4%)
2. Respiratory System Infections – Other (12.3%)
3. Asthma (8.4%)

For women 65+ years old, the most common Respiratory conditions were:

1. Chronic Obstructive Pulmonary Disease (11.3%)
2. Allergic and Other Chronic Sinusitis/Rhinitis (8.5%)
3. Dyspnea, Cough and Other Respiratory Symptoms (7.7%)

**Comparing women and men Veteran patients.** Adjusting for age, women Veterans (compared to men Veterans) had greater odds of: Asthma (AOR = 2.29), Sarcoidosis (AOR = 1.77), Respiratory System Infections – Other (1.71), and Allergic and Other Chronic Sinusitis/Rhinitis (AOR = 1.68).

**Other comments.** Respiratory System Infections – Other were very common, and some of them could be potentially prevented through vaccination (e.g., for Influenza or Pneumococcus). It is likely that these infections often represent self-limited diseases. While Chronic Obstructive Pulmonary Disease increased progressively with age, Asthma rates were highest in the middle age group.

---

#### IMPLICATIONS

---

Allergies and Other Chronic Sinusitis/Rhinitis are the most common Respiratory ailments among women under age 65 years, potentially impacting quality of life. Meanwhile, more than one in nine women Veteran patients age 65 years or older carries a diagnosis of Chronic Obstructive Pulmonary Disease; this condition is typically tobacco-related, and thus preventable, so VHA providers must assiduously screen for tobacco use, referring women Veteran smokers to tobacco cessation programs.

---

## Gastrointestinal Conditions

(Domain rank = 8th overall for women Veterans)

**Exhibit 7.E: Condition Frequencies for *Gastrointestinal* Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12\***

Condition	AOR	Women %			Men %		
		18-44 N=153,212	45-64 N=165,898	65+ N=42,882	18-44 N=705,644	45-64 N=2,124,587	65+ N=2,418,668
Esophageal Disorders	<b>1.06</b>	9.8	19.2	21.0	10.9	18.5	19.1
Nausea and Vomiting	<b>2.05</b>	2.5	2.5	1.7	1.2	1.3	0.8
Gastroduodenal Ulcer	<b>0.93</b>	0.3	0.8	1.1	0.3	0.9	1.1
Gastric/Duodenal Disorders - Other	<b>1.25</b>	1.8	2.9	2.2	1.5	2.4	1.6
Gastrointestinal Hemorrhage	<b>0.79</b>	1.2	1.8	1.6	1.6	2.3	1.5
Polyp, Colorectal	<b>0.74</b>	0.5	4.7	4.2	0.6	7.6	6.1
Diverticulosis and Diverticulitis	<b>0.93</b>	0.3	2.3	3.1	0.4	3.1	2.9
Inflammatory Bowel Disease	<b>1.08</b>	0.5	0.7	0.6	0.6	0.6	0.6
Diarrhea, Constipation and Functional Bowel Disorders	<b>1.99</b>	6.7	8.2	8.0	3.7	4.0	4.4
Hernia	<b>0.68</b>	1.0	2.1	2.1	1.6	3.2	2.7
Hemorrhoids	1.01	1.7	3.3	1.9	1.6	3.4	1.8
Hepatitis C	<b>0.37</b>	0.3	2.1	0.4	0.5	5.7	0.7
Liver Disease – Other	<b>0.49</b>	1.2	3.0	1.7	3.7	5.1	2.0
Biliary Tract Disease	<b>1.56</b>	0.8	1.1	1.0	0.4	0.9	0.7
Pancreatic Disorders	<b>0.78</b>	0.2	0.6	0.4	0.3	0.7	0.4
Gastrointestinal System Disorders – Other	<b>1.29</b>	4.4	6.6	5.9	3.5	5.5	4.2

\* All Gastrointestinal domain conditions are listed in this Exhibit, except for: Cancer – Esophagus; Cancer – Gastric; Cancer – Colorectal; Cancer – Anal; Cancer – Hepatobiliary; and Cancer – Pancreatic (all listed under Cancer, the domain to which they are primary mapped).

**Key:** AOR—Age-adjusted Odds Ratio; FY—Fiscal Year

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix. Each AOR represents a logistic regression for a single condition in women versus men, controlling for age. Because of the large sample size, even very small gender differences tend to be statistically significant; the focus here is upon clinically meaningful differences, rather than statistically significant differences. However, the Exhibit presents statistically significant ( $p < 0.05$ ) AORs in bold face text.

**Cohort:** Women and men Veteran patients with non-missing ages 18-110 (inclusive) in FY12. Women: N=361,992; Men: N=5,248,899.

**Source:** WHEI Master Database

### Condition rank by age for women Veteran patients:

For women 18-44 years old, the most common Gastrointestinal conditions were:

1. Esophageal Disorders (9.8%)
2. Diarrhea, Constipation and Functional Bowel Disorders (6.7%)
3. Gastrointestinal System Disorders – Other (4.4%)

For women 45-64 years old, the most common Gastrointestinal conditions were:

1. Esophageal Disorders (19.2%)
2. Diarrhea, Constipation and Functional Bowel Disorders (8.2%)
3. Gastrointestinal System Disorders – Other (6.6%)

For women 65+ years old, the most common Gastrointestinal conditions were:

1. Esophageal Disorders (21.0%)
2. Diarrhea, Constipation and Functional Bowel Disorders (8.0%)
3. Gastrointestinal System Disorders – Other (5.9%)

**Comparing women and men Veteran patients.** Adjusting for age, women Veterans (compared to men Veterans) had greater odds of: Nausea and Vomiting (AOR = 2.05), Diarrhea, Constipation and Functional Bowel Disorders (AOR = 1.99), and Biliary Tract Disease (AOR = 1.56). Adjusting for age, women Veterans (compared to men Veterans) were less likely to have: Cancer – Hepatobiliary (AOR = 0.31), Hepatitis C (AOR = 0.37), Cancer – Esophagus (AOR = 0.48), Liver Disease – Other (AOR = 0.49), and Cancer – Gastric (AOR = 0.55).<sup>130</sup>

**Other comments.** For women Veterans, the most common Gastrointestinal condition across all three age groups was Esophageal Disorders. Esophageal Disorders were even more common in the two older age groups than in the youngest age group (18-44: 9.8%, 45-64: 19.2%, 65+: 21.0%).

---

### IMPLICATIONS

---

Women are more likely than men to have Gastrointestinal symptoms (e.g., diarrhea or constipation and nausea/vomiting). It is not clear whether this represents higher rates of patient care-seeking for symptoms, higher rates of provider coding of symptoms in administrative data, or higher prevalence of symptoms in women.

Although a diagnosis of Hepatitis C is relatively rare in women of reproductive age (0.3% in women 18-44 years old), VHA clinicians should offer screening to all women with risk factors for Hepatitis C, and, for those testing positive, remain vigilant to the teratogenic effects of medications used to treat it.

---

---

130 Cancer – Hepatobiliary, Cancer – Esophagus, and Cancer – Gastric are mapped primarily to the Cancer domain and secondarily to the Gastrointestinal domain.

## Urinary Conditions

(Domain rank = 12th overall for women Veterans)

**Exhibit 7.F: Condition Frequencies for *Urinary* Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12\***

Condition	AOR	Women %			Men %		
		18-44 N=153,212	45-64 N=165,898	65+ N=42,882	18-44 N=705,644	45-64 N=2,124,587	65+ N=2,418,668
Renal Failure or Nephropathy	<b>0.57</b>	0.5	2.3	7.2	0.9	5.2	10.4
Calculus of Urinary Tract	<b>0.71</b>	1.1	1.2	0.8	1.3	1.9	1.5
Hematuria	<b>0.86</b>	0.8	1.6	1.3	0.8	2.0	2.2
Kidney/Ureter Diseases – Other	<b>0.72</b>	0.3	0.8	1.6	0.4	1.4	2.2
Urinary Tract Infection (Cystitis/Urethritis/ Pyelonephritis)	<b>3.85</b>	5.3	5.6	8.1	0.9	1.9	2.9
Urinary Incontinence	<b>4.24</b>	2.1	5.7	8.6	0.5	1.4	2.7
Urinary Symptoms - Other	<b>1.37</b>	1.7	2.2	2.3	0.9	1.9	2.7
Urinary Conditions - Other	1.02	1.2	2.0	2.4	0.8	2.4	3.4

\* All Urinary domain conditions are listed in this Exhibit, except for: Cancer – Renal; and Cancer – Bladder, which are listed under Cancer, the domain to which they are primary mapped.

**Key:** AOR—Age-adjusted Odds Ratio; FY—Fiscal Year

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix. Each AOR represents a logistic regression for a single condition in women versus men, controlling for age. Because of the large sample size, even very small gender differences tend to be statistically significant; the focus here is upon clinically meaningful differences, rather than statistically significant differences. However, the Exhibit presents statistically significant ( $p < 0.05$ ) AORs in bold face text.

**Cohort:** Women and men Veteran patients with non-missing ages 18-110 (inclusive) in FY12. Women: N=361,992; Men: N=5,248,899.

**Source:** WHEI Master Database

### Condition rank by age for women Veteran patients:

For women 18-44 years old, the most common Urinary conditions were:

1. Urinary Tract Infection (Cystitis/Urethritis/Pyelonephritis) (5.3%)
2. Urinary Incontinence (2.1%)
3. Urinary Symptoms - Other (1.7%)

For women 45-64 years old, the most common Urinary conditions were:

1. Urinary Incontinence (5.7%)
2. Urinary Tract Infection (Cystitis/Urethritis/Pyelonephritis) (5.6%)
3. Renal Failure or Nephropathy (2.3%)

For women 65+ years old, the most common Urinary conditions were:

1. Urinary Incontinence (8.6%)
2. Urinary Tract Infection (Cystitis/Urethritis/Pyelonephritis) (8.1%)
3. Renal Failure or Nephropathy (7.2%)

**Comparing women and men Veteran patients.** Adjusting for age, women Veterans (compared to men Veterans) had greater odds of: Urinary Incontinence (AOR = 4.24) and Urinary Tract Infection (Cystitis/Urethritis/Pyelonephritis) (AOR = 3.85). Adjusting for age, women Veterans (compared to men) had lower odds of: Cancer – Bladder (AOR = 0.30) and Cancer – Renal (AOR = 0.47).<sup>131</sup>

**Other comments.** While Urinary Tract Infections and Urinary Incontinence were top conditions for women across the life span, Renal Failure or Nephropathy increased substantially as women aged.

<sup>131</sup> Cancer – Bladder and Cancer – Renal are mapped primarily to the Cancer domain and secondarily to the Urinary domain.

### IMPLICATIONS

A large number of women (18-44 year old: 2.1%; 45-64 year old: 5.7%; 65+ year old: 8.6%) suffer from Urinary Incontinence; these numbers may represent an under-estimate, as Urinary Incontinence sometimes goes undiagnosed. Odds of Urinary Incontinence are more than four times higher in women than in men. Screening, diagnosis and treatment are critical, especially since urinary incontinence can be a risk factor for falls and social isolation.

Among women 65+ years old, over 7% have Renal Failure or Nephropathy. In these individuals, controlling Hypertension (a very common condition in women Veterans) and exercising caution around use of Non-Steroidal Anti-inflammatory Drugs (often used for Musculoskeletal conditions, also very common conditions among women Veterans) can slow progression.

---

## Reproductive Health Conditions

(Domain rank = 5th overall for women Veterans)<sup>132</sup>

**Exhibit 7.G: Condition Frequencies for *Reproductive Health* Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12\* †**

Condition	AOR	Women %			Men %		
		18-44 N=153,212	45-64 N=165,898	65+ N=42,882	18-44 N=705,644	45-64 N=2,124,587	65+ N=2,418,668
Male Genital Disorders	-	-	-	-	2.3	10.2	19.3
Sexually Transmitted Infections	<b>1.78</b>	3.0	1.4	0.3	1.6	0.6	0.2
Vaginitis and Other Pelvic Inflammatory Conditions	-	7.6	3.8	1.3	-	-	-
Cervical Dysplasia/Atypical Squamous Cells of Uncertain Significance (ASCUS)	-	3.8	1.2	0.2	-	-	-
Endometriosis	-	1.6	0.4	0.0	-	-	-
Menstrual Disorders	-	10.8	3.5	0.1	-	-	-
Fibroids	-	2.2	2.5	0.2	-	-	-
Ovarian Cyst	-	1.9	0.9	0.2	-	-	-
Polycystic Ovaries	-	1.6	0.1	0	-	-	-
Benign Gynecologic Neoplasms - Other	-	0.6	0.9	0.3	-	-	-
Prolapse of Female Genital Organs	-	0.3	1.0	1.3	-	-	-
Reproductive Organ Disorders – Other	-	9.2	7.5	3.1	-	-	-
Sexual Dysfunction	<b>0.11</b>	1.1	0.8	0.2	3.9	11.3	7.0
Contraceptive Care Management‡	<b>21.36</b>	14.1	1.3	0.1	0.6	0.1	0.0
Infertility	<b>15.92</b>	1.5	0.1	0.0	0.1	0.0	0.0
Menopausal Disorders	-	1.7	12.9	5.8	-	-	-
Miscarriage	-	0.6	0.0	0.0	-	-	-
Ectopic Pregnancy	-	0.1	0.0	0.0	-	-	-
Pregnancy or Delivery – Normal §	-	5.1	0.0	0.0	-	-	-
Pregnancy with Obstetrical Complications or Prolonged	-	3.8	0.1	0.0	-	-	-
Pregnancy Complicated by Diabetes Mellitus	-	0.4	0.0	0.0	-	-	-
Pregnancy Complicated by Hypertension	-	0.3	0.0	0.0	-	-	-
Pregnancy Complicated by Other Medical Conditions	-	1.5	0.0	0.0	-	-	-

\* All Reproductive Health domain conditions are listed in this Exhibit, except for: Cancer – Cervical; Cancer – Uterine; Cancer – Ovarian; Cancer – Female Reproductive – Other; Carcinoma in Situ – Cervical; Carcinoma in Situ – Female Reproductive – Other; Cancer – Prostate; and Cancer – Testicular (all listed under Cancer, the domain to which they are primary mapped).

† For conditions that can occur only in women, the cell for AOR and the cells for men are marked with a dash. For conditions that can occur only in men, the cell for AOR and the cells for women are marked with a dash.

‡ Contraceptive Care Management is treated as a “condition,” because it is such a common and important health issue for women. This is the only medical procedure that is treated as a condition in this Sourcebook; other procedures (such as cervical cancer screening or breast cancer screening) are not treated as conditions. This procedure is counted towards the frequencies listed here only if a clinician enters one of the ICD-9-CM diagnosis codes mapping to Contraceptive Care Management on an encounter form.

§ There are some women with “Pregnancy or Delivery – Normal” who additionally have received a diagnosis for one of the other pregnancy conditions; the pregnancy conditions are not mutually exclusive.

**Key:** AOR - Age-adjusted Odds Ratio; FY—Fiscal Year

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix. Each AOR represents a logistic regression for a single condition in women versus men, controlling for age. Because of the large sample size, even very small gender differences tend to be statistically significant; the focus here is upon clinically meaningful differences, rather than statistically significant differences. However, the Exhibit presents statistically significant ( $p < 0.05$ ) AORs in bold face text.

**Cohort:** Women and men Veteran patients with non-missing ages 18-110 (inclusive) in FY12. Women: N=361,992; Men: N=5,248,899.

**Source:** WHEI Master Database

132 Frequencies of conditions reported here may differ modestly from frequencies reported in Reproductive Health reports published by Women’s Health Services, due to small differences in approach to condition mapping; for example, in this Sourcebook, Urinary conditions and Breast conditions are not mapped to Reproductive Health.



**NOTES TO INTERPRETATION:** A very small number of women were coded with men-only conditions and men coded with women-only conditions (not shown in Exhibit); this may be legitimate (in transgender patients), or may represent errors in gender coding or errors in ICD-9-CM coding.<sup>133</sup>

### Condition rank by age for women Veteran patients:

For women 18-44 years old, the most common Reproductive Health conditions were:

1. Contraceptive Care Management (14.1%)
2. Menstrual Disorders (10.8%)
3. Reproductive Organ Disorders - Other (9.2%)

Next most common were Vaginitis and Other Pelvic Inflammatory Conditions (7.6%), Pregnancy or Delivery – Normal (5.1%), Pregnancy with Obstetrical Complications or Prolonged (3.8%), Cervical Dysplasia/ASCUS (3.8%), Sexually Transmitted Infections (3.0%), and Fibroids (2.2%).

For women 45-64 years old, the most common Reproductive Health conditions were:

1. Menopausal Disorders (12.9%)
2. Reproductive Organ Disorders - Other (7.5%)
3. Vaginitis and Other Pelvic Inflammatory Conditions (3.8%)

Next most common were Menstrual Disorders (3.5%) and Fibroids (2.5%).

For women 65+ years old, the most common Reproductive Health conditions were:

1. Menopausal Disorders (5.8%)
2. Reproductive Organ Disorders - Other (3.1%)
3. Prolapse of Female Genital Organs (1.3%)

**Comparing women and men Veteran patients.** Most of the Reproductive Health conditions were gender-specific, and therefore no comparisons can be made. For the remaining conditions, women Veterans (compared to men Veterans) had greater odds of: Infertility (AOR = 15.92) and Sexually Transmitted Infections (AOR = 1.78). Adjusting for age, women Veterans (compared to men Veterans) were far less likely to carry a diagnosis of Sexual Dysfunction (AOR = 0.11). Women also had greater odds than men of Contraceptive Care Management (AOR = 21.36).<sup>134</sup>

**Other comments.** Overall, 31.2% of women Veteran patients had a Reproductive Health condition (N=112,941). Not surprisingly, the leading conditions for women in their reproductive years (18-44 years old), which included Contraceptive Care Management and Menstrual Disorders, differed from the leading conditions in older women, which included Menopausal Disorders.

Overall, 10,568 women Veterans (3.0%; data not shown in Exhibit) received any diagnosis code for pregnancy in VHA or Non-VA (Fee) Medical Care outpatient or inpatient administrative records during this one year period, based on presence of at least one of the following conditions: Miscarriage, Ectopic Pregnancy, Pregnancy or Delivery – Normal, Pregnancy with Obstetrical Complications or Prolonged,

133 Also, while a few ICD-9-CM codes mapping to Reproductive Organ Disorders – Other are gender-neutral and could apply to men as well as women, the frequencies for men (very low) and the AOR (very high) are not presented for this condition. This condition includes any ICD-9-CM codes for female reproductive organ disorders not subsumed under another condition, as well as ICD-9-CM codes for unspecified reproductive organ conditions (such as V45.77, “acquired absence of genital organs”). The latter could apply to both women and men, and so a small number of men did have Reproductive Organ Disorders - Other.

134 The Contraceptive Care Management “condition” consists of V-codes; among the high-frequency V-codes in women were “contraceptive management,” “contraceptive surveillance,” “IUD in situ,” “IUD surveillance,” “insertion of IUD,” “prescription – oral contraceptive,” and “tubal ligation status.” The V-code for “sterilization” could apply to either women or men. One V-code mapped to this condition was specific to men: “vasectomy status.”



Pregnancy Complicated by Diabetes Mellitus, Pregnancy Complicated by Hypertension, and Pregnancy Complicated by Other Medical Conditions.

Pregnancy diagnoses occurred primarily in women age 18-44 years. Of women 18-44 years old, 6.7% received any diagnosis code for pregnancy (data not shown in Exhibit); among them, more than half (3.8%) received a diagnosis code for Pregnancy with Obstetrical Complication or Prolonged.

Of women age 45-64, 0.2% received any diagnosis code for pregnancy (data not shown in Exhibit). The most frequent pregnancy condition for this age group was Pregnancy with Obstetrical Complications or Prolonged (0.1% of women 45-64).

### IMPLICATIONS

Issues directly relating to reproduction, including Contraceptive Care Management and pregnancy (Pregnancy or Delivery – Normal or Pregnancy with Obstetrical Complications or Prolonged) are common among women in the reproductive age group (under age 45 years). VHA providers at the front lines of care for women must be facile with addressing or triaging these dimensions of health; training provided through VHA's Women's Health Mini-residency Program targets these issues, along with other aspects of women's health care. Providers can take advantage of VHA's prescription formulary, which includes oral or injected contraceptive medications, and can seek gynecology consultation for other forms of contraception (including Intrauterine Devices and sterilization). Because VHA provides pregnancy care to women primarily through the Non-VA (Fee) Medical Care system, and because some women Veteran VHA patients may instead choose to seek pregnancy-related services outside VHA (e.g., through Medicaid or private insurance), novel approaches to care coordination may enhance cross-system continuity as women navigate between providers within and outside of VHA. Among women under age 45 years, almost 7% have a pregnancy diagnosis within a one year period: providers in every department – including Primary Care, Emergency Department, Urgent Care, Medical-Surgical Specialty Care, Mental Health, Pharmacy, and Radiology, among others – must keep the possibility of pregnancy in mind when treating women of child-bearing age who present for non-pregnancy-related services.

Menstrual Disorders serious enough to generate a recorded diagnosis in the administrative data afflict over one in ten women under age 45 years, and are the second leading condition in this age group. These conditions require attention as they can adversely affect quality of life, can lead to days missed from work or other responsibilities, and can potentially contribute to iron deficiency.

For women age 45 years and older (and especially for those 45-64 years old), Menopausal Disorders are the most frequent Reproductive Health condition. Menopause benefits from a biopsychosocial approach to care that addresses a range of manifestations, from loss of bone strength and increase in cardiovascular risk to hot flashes, sleep disturbances and changes in sexual function.

While Sexually Transmitted Infections have relatively low frequency (3.0% of women age 18-44 years, 1.4% of women age 45-64 years, and 0.3% of women age 65+ years), these can be occult, so providers must take a sexual history and screen for Sexually Transmitted Infections when indicated. This is important from a public health standpoint (to reduce transmission) and, especially in the case of Gonorrhea or Chlamydia, to preserve subsequent fertility.

The age-adjusted odds of receiving a Sexual Dysfunction diagnosis is ten-fold lower in women than in men. It is not clear whether women actually have lower prevalence of Sexual Dysfunction, versus whether they are less likely to raise this issue with their providers, versus whether providers are less likely to record a Sexual Dysfunction diagnosis in women. This points to the relevance of taking a thorough sexual history.

## Breast Conditions

(Domain rank = 15th overall for women Veterans)

**Exhibit 7.H: Condition Frequencies for *Breast* Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12\***

Condition	AOR	Women %			Men %		
		18-44 N=153,212	45-64 N=165,898	65+ N=42,882	18-44 N=705,644	45-64 N=2,124,587	65+ N=2,418,668
Breast Conditions, Benign or Unknown	<b>14.98</b>	4.4	5.3	2.7	0.3	0.3	0.3
Breast Conditions, Abnormal Radiologic Findings	<b>250.96</b>	0.5	1.5	0.7	0.0	0.0	0.0

\* All Breast domain conditions are listed in this Exhibit, except for: Cancer – Breast; and Carcinoma in Situ – Breast, Ductal or Lobular, which are listed under Cancer, the domain to which they are primary mapped.

**Key:** AOR—Age-adjusted Odds Ratio; FY—Fiscal Year

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix. Each AOR represents a logistic regression for a single condition in women versus men, controlling for age. Because of the large sample size, even very small gender differences tend to be statistically significant; the focus here is upon clinically meaningful differences, rather than statistically significant differences. However, the Exhibit presents statistically significant ( $p < 0.05$ ) AORs in bold face text.

**Cohort:** Women and men Veteran patients with non-missing ages 18-110 (inclusive) in FY12. Women: N=361,992; Men: N=5,248,899.

**Source:** WHEI Master Database

### Condition rank by age for women Veteran patients:

For women 18-44 years old, the most common Breast conditions were:

1. Breast Conditions, Benign or Unknown (4.4%)
2. Breast Conditions, Abnormal Radiologic Findings (0.5%)
3. Cancer – Breast (0.3%)<sup>135</sup>

For women 45-64 years old, the most common Breast conditions were:

1. Breast Conditions, Benign or Unknown (5.3%)
2. Cancer – Breast (2.8%)
3. Breast Conditions, Abnormal Radiologic Findings (1.5%)

For women 65+ years old, the most common Breast conditions were:

1. Cancer – Breast (5.7%)
2. Breast Conditions, Benign or Unknown (2.7%)
3. Breast Conditions, Abnormal Radiologic Findings (0.7%)

**Comparing women and men Veteran patients.** As expected, women Veterans (compared to men Veterans) were much more likely to have any of the Breast conditions, including Breast Cancer.

**Other comments.** The rate of benign breast conditions and radiologic findings was greatest in the middle age group, whereas the rate of breast cancer increased progressively with age. As shown earlier (Exhibit 6.C), the overall proportion of women with any condition within the Breast domain was greatest among those 45-64 years old (18-44: 4.9%; 45-64: 8.4%; 65+: 8.2%).

## IMPLICATIONS

In every age group, Breast conditions are common among women. Below age 65 years, benign Breast conditions dominate, whereas in women 65 years or older, Breast Cancer is the leading Breast condition. Breast cancer requires complex, team-based care that includes, for example, surgeons, medical oncologists, radiation oncologists, and mental health or social work clinicians. Care of some breast conditions is often conducted outside VA through Non-VA (Fee) Medical Care, making care coordination particularly relevant.

<sup>135</sup> Cancer – Breast is mapped primarily to the Cancer domain, and secondarily to the Breast domain.

## Cancer Conditions

(Domain rank = 16th overall for women Veterans)

**Exhibit 7.I: Condition Frequencies for *Cancer* Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12\***

Condition	AOR	Women %			Men %		
		18-44 N=153,212	45-64 N=165,898	65+ N=42,882	18-44 N=705,644	45-64 N=2,124,587	65+ N=2,418,668
Cancer - Cervical	-	0.2	0.3	0.2	-	-	-
Cancer - Uterine	-	0.0	0.2	0.4	-	-	-
Cancer - Ovarian	-	0.1	0.2	0.3	-	-	-
Cancer - Female Reproductive - Other	-	0.0	0.1	0.2	-	-	-
Carcinoma in Situ - Cervical†	-	0.3	0.1	0.0	-	-	-
Carcinoma in Situ - Female Reproductive - Other†	-	0.0	0.1	0.1	-	-	-
Cancer – Breast	<b>152.81</b>	0.3	2.8	5.7	0.0	0.0	0.0
Carcinoma in Situ – Breast, Ductal or Lobular†	<b>163.43</b>	0.0	0.2	0.3	0.0	0.0	0.0
Lymphomas	<b>0.80</b>	0.1	0.3	0.6	0.1	0.4	0.6
Leukemias	<b>0.60</b>	0.0	0.1	0.4	0.1	0.3	0.6
Multiple Myeloma	<b>0.64</b>	0.0	0.0	0.1	0.0	0.1	0.2
Cancer - Brain/Nervous System	<b>0.78</b>	0.0	0.1	0.1	0.1	0.1	0.1
Cancer - Head and Neck	<b>0.36</b>	0.0	0.2	0.2	0.1	0.6	0.7
Cancer - Thyroid	<b>3.21</b>	0.2	0.4	0.3	0.1	0.1	0.1
Cancer - Bronchopulmonary	<b>0.81</b>	0.0	0.3	1.1	0.0	0.7	1.2
Cancer - Esophagus	<b>0.48</b>	0.0	0.0	0.1	0.0	0.1	0.2
Cancer - Gastric	<b>0.55</b>	0.0	0.0	0.1	0.0	0.1	0.1
Cancer - Colorectal	<b>0.79</b>	0.0	0.4	1.4	0.1	0.7	1.5
Cancer - Anal	<b>1.68</b>	0.0	0.0	0.0	0.0	0.0	0.0
Cancer - Hepatobiliary	<b>0.31</b>	0.0	0.1	0.1	0.0	0.2	0.1
Cancer - Pancreatic	<b>0.72</b>	0.0	0.0	0.1	0.0	0.1	0.1
Cancer - Renal	<b>0.47</b>	0.0	0.1	0.3	0.0	0.4	0.6
Cancer - Bladder	<b>0.30</b>	0.0	0.1	0.5	0.0	0.5	1.5
Cancer - Prostate	-	-	-	-	0.0	2.8	8.7
Cancer - Testicular	-	-	-	-	0.1	0.1	0.0
Cancer - Bone/Connective Tissue	1.03	0.0	0.1	0.1	0.0	0.1	0.1
Melanoma	<b>0.92</b>	0.2	0.4	0.7	0.1	0.6	1.0
Carcinoma in Situ - Other†	<b>0.44</b>	0.0	0.0	0.0	0.0	0.1	0.1
Cancer - Other and Unspecified Primary	0.96	0.2	1.0	1.5	0.2	1.4	1.8

\* For conditions that can occur only in women, the cell for AOR and the cells for men are marked with a dash. For conditions that can occur only in men, the cell for AOR and the cells for women are marked with a dash.

† Carcinoma in Situ is included in the Cancer domain for purposes of this report

**Key:** AOR—Age-adjusted Odds Ratio; FY—Fiscal Year

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix. Each AOR represents a logistic regression for a single condition in women versus men, controlling for age. Because of the large sample size, even very small gender differences tend to be statistically significant; the focus here is upon clinically meaningful differences, rather than statistically significant differences. However, the Exhibit presents statistically significant ( $p < 0.05$ ) AORs in bold face text.

**Cohort:** Women and men Veteran patients with non-missing ages 18-110 (inclusive) in FY12. Women: N=361,992; Men: N=5,248,899.

**Source:** WHEI Master Database

**NOTES TO INTERPRETATION:** A very small number of women were coded with men-only conditions and men coded with women-only conditions (not shown in Exhibit); this may be legitimate (in transgender patients), or may represent errors in gender coding or errors in ICD-9-CM coding.

Cancer rates presented here represent the percent of patients for whom a cancer ICD-9-CM diagnosis code was recorded at least once during FY12 in their VHA and/or Non-VA (Fee) Medical Care adminis-

*trative records. These do not necessarily represent new (incident) cancer cases. In fact, these rates may include some patients whose cancer is in remission; for example, a clinician monitoring a patient for cancer recurrence might list a cancer diagnosis as a reason for the visit.*

*Carcinoma in Situ can in some cases represent a condition managed as cancer (e.g., ductal breast carcinoma in situ) and in other cases can represent a non-cancer condition (e.g., cervical carcinoma in situ). However, because the latter is serious and on the pathway toward cancer, all carcinoma in situ is grouped in this report within the Cancer domain. While this would tend to lead to an over-estimation of the rate of true cancer (i.e., when the Cancer domain is considered as a whole), only 0.4% of women had a carcinoma-in-situ condition, so these conditions do not contribute in a major way to the estimate of the proportion of women Veteran VHA patients with Cancer (4.9% overall).*

### **Condition rank by age for women Veteran patients:<sup>136</sup>**

For women 18-44 years old, the most common Cancer conditions were:

1. Cancer – Breast (0.3%)
2. Cancer – Thyroid (0.2%)
3. Cancer – Cervical (0.2%)

Next most common was Melanoma (0.2%).

For women 45-64 years old, the most common Cancer conditions were:

1. Cancer – Breast (2.8%)
2. Cancer – Thyroid (0.4%)
3. Melanoma (0.4%)

Next most common were Cancer – Colorectal (0.4%), Cancer – Cervical (0.3%), Cancer – Bronchopulmonary (0.3%), Lymphomas (0.3%), Carcinoma in Situ - Breast, Ductal or Lobular (0.2%), Cancer – Ovarian (0.2%), Cancer – Uterine (0.2%), and Cancer – Head and Neck (0.2%).

For women 65+ years old, the most common Cancer conditions were:

1. Cancer – Breast (5.7%)
2. Cancer – Colorectal (1.4%)
3. Cancer – Bronchopulmonary (1.1%)

Next most common were Melanoma (0.7%), Lymphomas (0.6%), Cancer – Bladder (0.5%), Cancer – Uterine (0.4%), Leukemias (0.4%), Cancer – Ovarian (0.3%), Cancer – Thyroid (0.3%), Carcinoma in Situ – Breast, Ductal or Lobular (0.3%), Cancer – Renal (0.3%), Cancer – Cervical (0.2%), Cancer – Head and Neck (0.2%), and Cancer – Female Reproductive – Other (0.2%).

**Comparing women and men Veteran patients.** For gender-specific cancers, gender comparisons were not possible. For non-gender specific cancers, adjusting for age, women Veterans (compared to men Veterans) had markedly greater odds of Breast Cancer (AOR = 152.81) and Carcinoma in Situ of the Breast (AOR = 163.43); women also had greater odds of: Cancer – Thyroid (AOR = 3.21) and Cancer – Anal (AOR = 1.68). For non-gender specific cancers, adjusting for age, female Veterans (compared to men Veterans) had lower odds of: Cancer – Bladder (AOR = 0.30), Cancer – Hepatobiliary (AOR = 0.31), Cancer – Head and Neck (AOR = 0.36), Cancer – Renal (AOR = 0.47), Cancer – Esophagus (AOR = 0.48), and Cancer – Gastric (AOR = 0.55).

<sup>136</sup> Carcinoma in Situ (Cervical, or Female Reproductive – Other, or Other) is not included in the ranking, because it typically would not be considered a true cancer. Cancer – Other and Unspecified Primary is not included in the ranking, because it reflects a mixture of different types of cancer, including unspecified metastatic cancer.

**Other comments.** Overall, 9,859 women Veterans (2.8%) had cancer of the reproductive organs and/or breast cancer (data not shown in Exhibit). These conditions included Cancer – Cervical, Cancer – Uterine, Cancer – Ovarian, Cancer – Female Reproductive – Other, Cancer – Breast, and Carcinoma in Situ – Breast, Ductal or Lobular.

For women age 18-44 years, 0.6% had any type of reproductive organ cancer and/or breast cancer. For women 45-64, 3.6% had any type of reproductive organ cancer and/or breast cancer. For women 65 years or older, 6.7% had any type of reproductive cancer and/or breast cancer.

In general, almost all types of cancer were highest in women 65+ years old, including Breast cancer, Cancer - Colorectal, Cancer - Bronchopulmonary, Melanoma, and Lymphomas.

---

### IMPLICATIONS

---

Overall, nearly 18,000 (5%) women Veteran patients in VHA have an indication of cancer in the FY12 administrative data, and nearly 10,000 (3%) have an indication of reproductive organ or breast cancer. Cancer rates increase with age, such that among women 65+ years old, almost 6% have an ICD-9-CM diagnosis code for Cancer - Breast: across VHA, women with this condition require highly specialized treatment coordinated across multiple fields of expertise. Also common in women 65+ years old are Cancer - Colorectal (1.4%) (for which regular screening is critical) and Cancer - Bronchopulmonary (1.1%) (much of which can be prevented through smoking cessation). In all age groups, Cancer - Thyroid is a frequent cause of cancer in women and, after adjusting for age, has three-fold higher odds in women than in men.

---

## Hematologic/Immunologic Conditions

(Domain rank = 14th overall for women Veterans)

**Exhibit 7.J: Condition Frequencies for *Hematologic/Immunologic* Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12\***

Condition	AOR	Women %			Men %		
		18-44 N=153,212	45-64 N=165,898	65+ N=42,882	18-44 N=705,644	45-64 N=2,124,587	65+ N=2,418,668
Anemia	<b>1.78</b>	6.3	7.8	10.5	1.5	5.9	10.3
Thrombocytopenia	<b>0.51</b>	0.2	0.5	0.7	0.3	1.2	1.4
Coagulation and Hemorrhagic Disorders	<b>1.20</b>	0.4	0.6	0.8	0.2	0.7	0.7
Hematologic/Immunologic Conditions – Other	0.98	1.0	1.9	2.3	0.9	2.2	2.3

\* All Hematologic/Immunologic domain conditions are listed in this Exhibit, except for: Lymphomas; Leukemias; and Multiple Myeloma (all listed under Cancer, the domain to which they are primary mapped).

**Key:** AOR—Age-adjusted Odds Ratio; FY—Fiscal Year

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix. Each AOR represents a logistic regression for a single condition in women versus men, controlling for age. Because of the large sample size, even very small gender differences tend to be statistically significant; the focus here is upon clinically meaningful differences, rather than statistically significant differences. However, the Exhibit presents statistically significant ( $p < 0.05$ ) AORs in bold face text.

**Cohort:** Women and men Veteran patients with non-missing ages 18-110 (inclusive) in FY12. Women: N=361,992; Men: N=5,248,899.

**Source:** WHEI Master Database

### Condition rank by age for women Veteran patients:

For women 18-44 years old, the most common Hematologic/Immunologic conditions were:

1. Anemia (6.3%)
2. Hematologic/Immunologic Conditions – Other (1.0%)
3. Coagulation and Hemorrhagic Disorders (0.4%)

For women 45-64 years old, the most common Hematologic/Immunologic conditions were:

1. Anemia (7.8%)
2. Hematologic/Immunologic Conditions – Other (1.9%)
3. Coagulation and Hemorrhagic Disorders (0.6%)

For women 65+ years old, the most common Hematologic/Immunologic conditions were:

1. Anemia (10.5%)
2. Hematologic/Immunologic Conditions – Other (2.3%)
3. Coagulation and Hemorrhagic Disorders (0.8%)

**Comparing women and men Veteran patients.** Adjusting for age, women Veterans had 1.78 greater odds of having Anemia than men Veterans. The gender difference for Anemia was especially pronounced among Veterans 18-44 (Women: 6.3% vs. Men: 1.5%). Adjusting for age, women Veterans (compared to men Veterans) were less likely to have Thrombocytopenia (AOR = 0.51).

**Other comments.** Anemia increases with age.

## IMPLICATIONS

Women are nearly twice as likely as men to have Anemia. In addition to causes common among men (such as gastrointestinal blood loss, Vitamin B12 deficiency, chronic renal disease, etc.), clinicians must consider other causes in women, including menstrual losses.



## Musculoskeletal Conditions

(Domain rank = 1st overall for women Veterans)

**Exhibit 7.K: Condition Frequencies for *Musculoskeletal* Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12\***

Condition	AOR	Women %			Men %		
		18-44 N=153,212	45-64 N=165,898	65+ N=42,882	18-44 N=705,644	45-64 N=2,124,587	65+ N=2,418,668
Connective Tissue Disease	<b>6.01</b>	0.9	1.5	1.0	0.1	0.3	0.2
Rheumatoid Arthritis and Related Disease	<b>2.54</b>	0.5	1.7	2.1	0.2	0.8	1.0
Inflammatory Spondyloarthropathies	<b>1.44</b>	0.5	0.6	0.3	0.4	0.4	0.2
Polymyalgia Rheumatica	<b>1.84</b>	0.0	0.1	0.5	0.0	0.1	0.3
Vasculitis	<b>1.54</b>	0.0	0.1	0.2	0.0	0.1	0.1
Gout/Crystal Arthropathies	<b>0.20</b>	0.1	0.6	1.8	1.0	3.8	5.1
Spine Disorders - Cervical	<b>1.36</b>	7.9	10.1	4.2	6.0	6.9	3.1
Spine Disorders - Lumbosacral	0.99	20.5	23.4	14.6	22.4	20.9	11.6
Spine Disorders - Other/Unspecified	<b>1.13</b>	9.5	11.4	7.5	9.4	9.1	4.9
Joint Disorders - Upper Extremity	<b>0.96</b>	8.6	13.3	8.6	11.6	11.8	6.4
Joint Disorders - Lower Extremity	<b>1.28</b>	21.0	25.0	17.4	20.0	17.9	11.5
Joint Disorders - Unspecified or Multiple Joints	<b>1.30</b>	9.9	20.9	23.3	9.4	17.0	15.6
Foot Deformities	<b>1.51</b>	3.2	5.3	4.5	2.3	3.5	2.9
Fracture - Hip	<b>1.40</b>	0.1	0.1	0.6	0.0	0.1	0.3
Fracture - Other	<b>1.06</b>	1.7	2.9	3.5	2.6	2.3	1.4
Osteomyelitis/Infectious Arthritis	<b>0.57</b>	0.1	0.2	0.3	0.1	0.5	0.4
Amputation	<b>0.29</b>	0.1	0.2	0.3	0.3	0.8	0.7
Myasthenia Gravis/Myoneuronal Disorders	<b>1.16</b>	0.0	0.1	0.1	0.0	0.1	0.1
Myalgia/Myositis - Unspecified	<b>3.96</b>	4.7	6.8	2.7	1.6	1.4	0.6
Musculoskeletal Conditions - Other	<b>1.79</b>	8.7	15.3	15.2	6.8	8.6	6.1

\* All Musculoskeletal domain conditions are listed in this Exhibit, except for Cancer – Bone/Connective Tissue (listed under Cancer, the domain to which is it primarily mapped).

**Key:** AOR—Age-adjusted Odds Ratio; FY—Fiscal Year

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix. Each AOR represents a logistic regression for a single condition in women versus men, controlling for age. Because of the large sample size, even very small gender differences tend to be statistically significant; the focus here is upon clinically meaningful differences, rather than statistically significant differences. However, the Exhibit presents statistically significant ( $p < 0.05$ ) AORs in bold face text.

**Cohort:** Women and men Veteran patients with non-missing ages 18-110 (inclusive) in FY12. Women: N=361,992; Men: N=5,248,899.

**Source:** WHEI Master Database

### Condition rank by age for women Veteran patients:

For women 18-44 years old, the most common Musculoskeletal conditions were:

1. Joint Disorders – Lower Extremity (21.0%)
2. Spine Disorders – Lumbosacral (20.5%)
3. Joint Disorders – Unspecified or Multiple Joints (9.9%)

Next most common were Spine Disorders – Other/Unspecified (9.5%), Musculoskeletal Conditions – Other (8.7%), Joint Disorders – Upper Extremity (8.6%), Spine Disorders – Cervical (7.9%), Myalgia/Myositis - Unspecified (4.7%), and Foot Deformities (3.2%).



For women 45-64 years old, the most common Musculoskeletal conditions were:

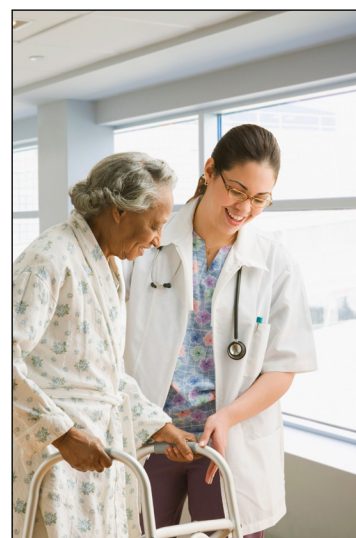
1. Joint Disorders – Lower Extremity (25.0%)
2. Spine Disorders – Lumbosacral (23.4%)
3. Joint Disorders – Unspecified or Multiple Joints (20.9%)

Next most common were Musculoskeletal Conditions – Other (15.3%), Joint Disorders – Upper Extremity (13.3%), Spine Disorders – Other/Unspecified (11.4%), Spine Disorders – Cervical (10.1%), Myalgia/Myositis – Unspecified (6.8%), Foot Deformities (5.3%), and Fracture – Other (2.9%).

For women 65+ years old, the most common Musculoskeletal conditions were:

1. Joint Disorders – Unspecified or Multiple Joints (23.3%)
2. Joint Disorders – Lower Extremity (17.4%)
3. Musculoskeletal Conditions – Other (15.2%)

Next most common were Spine Disorders – Lumbosacral (14.6%), Joint Disorders – Upper Extremity (8.6%), Spine Disorders – Other/Unspecified (7.5%), Foot Deformities (4.5%), Spine Disorders – Cervical (4.2%), Fracture – Other (3.5%), Myalgia/Myositis – Unspecified (2.7%), and Rheumatoid Arthritis and Related Disease (2.1%).



**Comparing women and men Veteran patients.** Adjusting for age, women Veterans (compared with men Veterans) had greater odds of: Connective Tissue Disease (AOR = 6.01), Myalgia/Myositis – Unspecified (AOR = 3.96), Rheumatoid Arthritis and Related Disease (AOR = 2.54), Polymyalgia Rheumatica (AOR = 1.84), Musculoskeletal Conditions – Other (AOR = 1.79), Vasculitis (AOR = 1.54), and Foot Deformities (AOR = 1.51).

Adjusting for age, women Veterans (compared with men Veterans) had lower odds of: Gout/Crystal Arthropathies (AOR = 0.20) and Amputation (AOR = 0.29).

**Other comments.** For women Veterans, 55.9% had a Musculoskeletal condition (N=202,421). Many of the Musculoskeletal conditions (e.g., Joint Disorders, Spine Disorders) were common among all three age groups of women. Myalgia/Myositis – Unspecified (18-44: 4.7%; 45-64: 6.8%; 65+: 2.7%) and Foot Deformities (18-44: 3.2%; 45-64: 5.3%; 65+: 4.5%) were also very common. Hip fractures and other types of fractures were less common, but increased across the three age groups (hip fracture: 18-44: 0.1%; 45-64: 0.1%; 65+: 0.6%; other fractures: 18-44: 1.7%; 45-64: 2.9%; 65+: 3.5%). Rheumatoid Arthritis and Related Disease also increased across the three age groups (18-44: 0.5%; 45-64: 1.7%; 65+: 2.1%), whereas Connective Tissue Disease was most frequent in the middle age group (18-44: 0.9%; 45-64: 1.5%; 65+: 1.0%).

## IMPLICATIONS

Musculoskeletal conditions are the leading cause of morbidity in women Veteran VHA patients: over 200,000 women Veterans in VHA have a Musculoskeletal diagnosis in the FY12 administrative records. Spine and joint disorders are extraordinarily common, making VHA's emphasis upon pain as "the 5th vital sign" highly relevant to women. VHA specialists and primary care providers need skills in caring for women's Musculoskeletal conditions, which may require pharmacologic, non-pharmacologic and/or team-based approaches to care. Connective Tissue Disease is substantially more common in women than in men, and should be considered in women with clinical presentations suggesting multi-system disease.

## Neurologic Conditions

(Domain rank = 9th overall for women Veterans)

**Exhibit 7.L: Condition Frequencies for *Neurologic* Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12\***

Condition	AOR	Women %			Men %		
		18-44 N=153,212	45-64 N=165,898	65+ N=42,882	18-44 N=705,644	45-64 N=2,124,587	65+ N=2,418,668
Multiple Sclerosis	<b>2.88</b>	0.6	1.1	0.5	0.2	0.3	0.2
Epilepsy/Convulsions	<b>0.92</b>	1.3	1.8	1.4	1.3	1.9	1.3
Parkinson's Disease	<b>0.54</b>	0.0	0.1	0.9	0.0	0.4	1.6
Intracranial Hemorrhage	<b>0.77</b>	0.0	0.1	0.2	0.1	0.2	0.2
Traumatic Brain Injury	<b>0.43</b>	1.7	1.1	0.6	5.1	1.2	0.5
Dementia	<b>1.05</b>	0.1	0.4	7.0	0.1	0.8	5.3
Cognitive Disorders - Other	<b>0.81</b>	1.5	2.2	4.9	3.1	2.3	3.5
Spinal Cord Injury	<b>0.57</b>	0.1	0.3	0.3	0.3	0.5	0.3
Paralysis - Other	<b>0.93</b>	0.2	0.4	0.4	0.2	0.5	0.4
Headache	<b>2.41</b>	19.9	14.1	4.0	10.2	4.8	1.6
Dizziness/Vertigo	<b>1.49</b>	2.2	3.5	4.3	1.5	2.6	3.1
Peripheral Nerve Disorders	<b>1.04</b>	2.5	5.0	4.7	2.3	5.4	4.6
Carpal Tunnel Syndrome	<b>1.74</b>	2.1	3.5	1.4	1.2	1.9	1.0
Nervous System Symptoms/Disorders – Other	<b>1.22</b>	4.0	6.7	8.0	3.4	6.0	6.3

\* All Neurologic domain conditions are listed in this Exhibit, except for Cerebrovascular Accident/Transient Ischemic Attack (listed under Cardiovascular, the domain to which it is primarily mapped), and Cancer – Brain/Nervous System (listed under Cancer, the domain to which it is primary mapped).

**Key:** AOR—Age-adjusted Odds Ratio; FY—Fiscal Year

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix. Each AOR represents a logistic regression for a single condition in women versus men, controlling for age. Because of the large sample size, even very small gender differences tend to be statistically significant; the focus here is upon clinically meaningful differences, rather than statistically significant differences. However, the Exhibit presents statistically significant ( $p < 0.05$ ) AORs in bold face text.

**Cohort:** Women and men Veteran patients with non-missing ages 18-110 (inclusive) in FY12. Women: N=361,992; Men: N=5,248,899.

**Source:** WHEI Master Database

### Condition rank by age for women Veteran patients:

For women 18-44 years old, the most common Neurologic conditions were:

1. Headache (19.9%)
2. Nervous System Symptoms/Disorders – Other (4.0%)
3. Peripheral Nerve Disorders (2.5%)

For women 45-64 years old, the most common Neurologic conditions were:

1. Headache (14.1%)
2. Nervous System Symptoms/Disorders – Other (6.7%)
3. Peripheral Nerve Disorders (5.0%)

For women 65+ years old, the most common Neurologic conditions were:

1. Nervous System Symptoms/Disorders – Other (8.0%)
2. Dementia (7.0%)
3. Cerebrovascular Accident/Transient Ischemic Attack<sup>137</sup> (5.5%)

<sup>137</sup> Cerebrovascular Accident/Transient Ischemic Attack is mapped primarily to the Cardiovascular domain, and secondarily to the Neurologic domain.

**Comparing women and men Veteran patients.** Adjusting for age, women Veterans (compared with men Veterans) had greater odds of: Multiple Sclerosis (AOR = 2.88), Headache (AOR = 2.41), and Carpal Tunnel Syndrome (AOR = 1.74). Adjusting for age, women Veterans (compared with men Veterans) had lower odds of Traumatic Brain Injury (AOR = 0.43), Parkinson's Disease (AOR = 0.54) and Spinal Cord Injury (AOR = 0.57).

**Other comments.** Dementia increased markedly with age (18-44: 0.1%; 45-64: 0.4%; 65+: 7.0%). The proportion of women with headaches was very high among those under age 65 years, and then dropped substantially (18-44: 19.9%; 45-64: 14.1%; 65+: 4.0%), whereas Dizziness/Vertigo increased progressively with age (18-44: 2.2%; 45-64: 3.5%; 65+: 4.3%). Younger women had higher rates of Traumatic Brain Injury than older women (18-44: 1.7%; 45-64: 1.1%; 65+: 0.6%), but lower rates of Spinal Cord Injury (18-44: 0.1%; 45-64: 0.3%; 65+: 0.3%).

---

### IMPLICATIONS

---

With Dementia affecting 7.0% of women Veteran patients age 65 years or older and Cerebrovascular Accident/Transient Ischemic Attack affecting 5.5%, some will be candidates for VHA's network of Community Living Centers or VHA's Geriatrics Research, Education & Clinical Centers; meanwhile, their family members may benefit from VHA caregiver initiatives such as Respite programs. Older women with Dementia or who have had a stroke may require input from VHA social workers to point them to resources in VHA and in the local community; this input may be of particular importance for those women with limited social support.

While only 1.7% of women under age 45 years have received a diagnosis of Traumatic Brain Injury in their administrative records (substantially lower than the 5.1% seen in the same age group of men), this condition—which can be related to military service, such as from combat exposure—may have far-reaching impact upon day-to-day function. VHA has state-of-the-art services for Veterans with Traumatic Brain Injury, including regional Polytrauma Centers.

---

## Mental Health/Substance Use Disorder Conditions

(Domain rank = 3rd overall for women Veterans)

**Exhibit 7.M: Condition Frequencies for *Mental Health/SUD* Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12**

Condition	AOR	Women %			Men %		
		18-44 N=153,212	45-64 N=165,898	65+ N=42,882	18-44 N=705,644	45-64 N=2,124,587	65+ N=2,418,668
Major Depressive Disorder	<b>1.83</b>	12.3	14.1	4.9	7.7	7.3	2.4
Depression, Possible - Other	<b>1.46</b>	25.6	27.7	15.3	20.4	19.4	9.3
PTSD	<b>0.97</b>	17.2	15.2	3.8	21.7	14.3	5.3
Acute Stress Disorders	<b>2.33</b>	0.6	0.7	0.3	0.3	0.2	0.1
Anxiety Disorders - Other	<b>1.46</b>	17.1	15.0	7.9	13.7	9.3	4.6
Adjustment Disorders	<b>1.04</b>	5.4	3.7	1.6	5.7	2.7	1.0
Bipolar Disorders	<b>1.77</b>	5.6	6.6	2.0	3.5	3.0	0.8
Schizophrenia	<b>0.86</b>	1.0	2.6	1.4	1.5	2.7	0.7
Psychotic Disorders - Other	<b>0.87</b>	0.8	1.2	1.1	1.1	1.2	0.7
Alcohol Use Disorders	<b>0.40</b>	4.4	5.3	1.1	10.2	11.1	2.8
Drug Use Disorders	<b>0.48</b>	3.6	4.6	0.4	7.1	7.3	0.7
Eating Disorders	<b>10.66</b>	0.6	0.4	0.1	0.0	0.0	0.0
Dissociative Disorders	<b>3.96</b>	0.1	0.2	0.0	0.0	0.0	0.0
Personality Disorders	<b>1.93</b>	2.9	3.2	0.7	1.6	1.3	0.2
Conduct/Impulse Control Disorders	<b>0.58</b>	0.3	0.3	0.1	0.6	0.4	0.1
Somatoform Disorders	<b>1.87</b>	0.9	1.2	0.3	0.5	0.5	0.1
Attention Deficit Disorder/Hyperkinetic Disorder	<b>1.09</b>	2.2	1.1	0.1	2.4	0.5	0.1
Psychiatric Disorders - Nonspecific	<b>0.84</b>	1.9	2.2	0.7	2.5	2.1	0.6

**Key:** AOR—Age-adjusted Odds Ratio; FY—Fiscal Year; PTSD—Posttraumatic Stress Disorder; SUD—Substance Use Disorder  
**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix. Each AOR represents a logistic regression for a single condition in women versus men, controlling for age. Because of the large sample size, even very small gender differences tend to be statistically significant; the focus here is upon clinically meaningful differences, rather than statistically significant differences. However, the Exhibit presents statistically significant ( $p < 0.05$ ) AORs in bold face text.  
**Cohort:** Women and men Veteran patients with non-missing ages 18-110 (inclusive) in FY12. Women: N=361,992; Men: N=5,248,899.  
**Source:** WHEI Master Database

### Condition rank by age for women Veteran patients:

For women 18-44 years old, the most common Mental Health conditions were:

1. Depression, Possible - Other (25.6%)
2. PTSD (17.2%)
3. Anxiety Disorders - Other (17.1%)

Next most common were Major Depressive Disorder (12.3%), Bipolar Disorders (5.6%), Adjustment Disorders (5.4%), Alcohol Use Disorders (4.4%), Drug Use Disorders (3.6%), Personality Disorders (2.9%), and Attention Deficit Disorder/Hyperkinetic Disorder (2.2%).

### For women 45-64 years old, the most common Mental Health conditions were:

1. Depression, Possible - Other (27.7%)
2. PTSD (15.2%)
3. Anxiety Disorders - Other (15.0%)

Next most common were Major Depressive Disorder (14.1%), Bipolar Disorders (6.6%), Alcohol Use Disorders (5.3%), Drug Use Disorders (4.6%), Adjustment Disorders (3.7%), Personality Disorders (3.2%), Schizophrenia (2.6%), and Psychiatric Disorders - Nonspecific (2.2%).

For women 65+ years old, the most common Mental Health/SUD conditions were:

1. Depression, Possible - Other (15.3%)
2. Anxiety Disorders - Other (7.9%)
3. Major Depressive Disorder (4.9%)

Next most common were PTSD (3.8%) and Bipolar Disorders (2.0%).

**Comparing women and men Veteran patients.** Adjusting for age, women Veterans had greater odds of: Eating Disorders (AOR = 10.66), Dissociative Disorders (AOR = 3.96), Acute Stress Disorders (AOR = 2.33), Personality Disorders (AOR = 1.93), Somatoform Disorders (AOR = 1.87), Major Depressive Disorder (AOR = 1.83), and Bipolar Disorders (AOR = 1.77) than men Veterans.

Adjusting for age, women Veterans had lower odds of Alcohol Use Disorders (AOR = 0.40), Drug Use Disorders (AOR = 0.48), and Conduct/Impulse Control Disorders (AOR = 0.58) than men Veterans.

**Other comments.** Overall, 44.5% of women Veteran VHA patients (N=161,065) had at least one condition in the Mental Health/SUD domain. Rates of Mental Health/SUD conditions tended to be lower in women 65 years or older compared to the two younger age groups. Rates of Mental Health conditions, such as PTSD, Major Depressive Disorder, and Anxiety Disorders, were often two to three times higher in the two younger age groups compared to women 65+ years of age.

In addition to examining Alcohol Use Disorders and Drug Use Disorders separately, we examined rates of SUD in aggregate (i.e., Alcohol Use Disorder and/or Drug Use Disorder). Overall, 23,342 women Veteran patients (6.4%) had an SUD (data not presented in Exhibit). For women 18-44 years old, 6.4% had an SUD. For women 45-64 years old, 7.8% had an SUD. For women 65 years old or older, 1.4% had an SUD. Overall, 476,795 men Veterans (9.1%) had an SUD.

## IMPLICATIONS

Overall, nearly 45% of women Veteran VHA patients (more than 160,000 nationally) have a Mental Health/SUD condition, based on FY12 ICD-9-CM code data. In addition to presenting in mental health specialty care settings, these conditions may also present in primary care settings, providing additional opportunities for intervention or referral.

Across the life span, depression (Major Depressive Disorder or Depression, Possible - Other) and PTSD or Anxiety Disorders - Other are among the most common Mental Health/SUD conditions for women Veterans and, except for PTSD, are more common among women than men. Among women Veterans who use VHA services, 17.2% of those 18-44 years old, 15.2% of those 45-64 years old, and 3.8% of those 65+ years old have an ICD-9-CM diagnosis code for PTSD, based upon FY12 administrative data. After accounting for age, women are as likely as men to have a diagnosis of PTSD (age-adjusted odds ratio 0.97). Women may develop PTSD due to combat trauma, military sexual trauma, or other types of trauma; as women are increasingly exposed to combat, some have theorized that rates of PTSD in women could rise.<sup>138</sup>

While less common, Eating Disorders and Dissociative Disorders are diagnosed substantially more frequently in women Veteran VHA patients than in men, and may require evaluation by clinicians with specialized expertise in these areas.

<sup>138</sup> Maguen, S., Ren, L., Bosch, J. O., et al. Gender Differences in Mental Health Diagnoses Among Iraq and Afghanistan Veterans Enrolled in Veterans Affairs Health Care. *American Journal of Public Health* 2010;100: 2450-2456.

## Sense Organ Conditions

(Domain rank = 7th overall for women Veterans)

**Exhibit 7.N: Condition Frequencies for *Sense Organ* Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12**

Condition	AOR	Women %			Men %		
		18-44 N=153,212	45-64 N=165,898	65+ N=42,882	18-44 N=705,644	45-64 N=2,124,587	65+ N=2,418,668
Blindness/Low Vision	0.99	0.5	1.0	3.9	0.6	1.3	2.8
Refraction Disorders	<b>1.17</b>	10.0	22.6	18.5	8.2	21.4	18.1
Glaucoma	1.01	1.3	6.3	10.5	1.3	7.3	10.2
Cataract	<b>1.05</b>	0.5	10.9	23.3	0.6	14.7	22.4
Eye Disorders - Other	<b>1.29</b>	7.8	17.3	22.8	6.4	15.3	19.3
Hearing Problems	<b>0.51</b>	3.8	6.0	15.9	8.4	12.6	24.6
Ear Disorders - Other	<b>1.13</b>	3.5	4.4	5.5	2.9	4.2	5.8

**Key:** AOR—Age-adjusted Odds Ratio; FY—Fiscal Year

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix. Each AOR represents a logistic regression for a single condition in women versus men, controlling for age. Because of the large sample size, even very small gender differences tend to be statistically significant; the focus here is upon clinically meaningful differences, rather than statistically significant differences. However, the Exhibit presents statistically significant ( $p < 0.05$ ) AORs in bold face text.

**Cohort:** Women and men Veteran patients with non-missing ages 18-110 (inclusive) in FY12. Women: N=361,992; Men: N=5,248,899.

**Source:** WHEI Master Database

### Condition rank by age for women Veteran patients:

For women 18-44 years old, the most common Sense Organ conditions were:

1. Refraction Disorders (10.0%)
2. Eye Disorders - Other (7.8%)
3. Hearing Problems (3.8%)

For women 45-64 years old, the most common Sense Organ conditions were:

1. Refraction Disorders (22.6%)
2. Eye Disorders - Other (17.3%)
3. Cataract (10.9%)

For women 65+ years old, the most common Sense Organ conditions were:

1. Cataract (23.3%)
2. Eye Disorders - Other (22.8%)
3. Refraction Disorders (18.5%)

**Comparing women and men Veteran patients.** Adjusting for age, women and men had similar odds for all Sense Organ conditions, except that odds of Hearing Problems were lower in women than in men.

**Other comments.** As expected, the rate of Sense Organ conditions increased with age and was generally highest in women 65 years old or older, particularly for Cataract, Glaucoma, and Hearing Problems.

## IMPLICATIONS

Many women Veteran patients have disorders of vision or hearing. To maximize communication in clinical encounters, clinicians must be sensitive to the possibility that patients may require accommodations for vision or hearing limitations. Screening for and treating these issues may enhance Veterans' functional status and independence, as well as their self-management of other chronic conditions. VHA services for blindness or low vision and VHA audiology services can help such Veterans remain engaged with society.

## Dental Conditions

(Domain rank = 12th overall for women Veterans)

**Exhibit 7.O: Condition Frequencies for *Dental* Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12**

Condition	AOR	Women %			Men %		
		18-44 N=153,212	45-64 N=165,898	65+ N=42,882	18-44 N=705,644	45-64 N=2,124,587	65+ N=2,418,668
Dental Caries	<b>1.16</b>	6.0	8.3	2.9	5.5	7.0	3.6
Gingivitis/Periodontitis	<b>1.13</b>	3.4	5.6	2.1	3.2	4.9	2.5
Loss of Teeth	<b>1.20</b>	1.5	3.8	1.8	1.3	3.6	2.2
Dental Disorders – Other	<b>1.27</b>	7.4	9.9	3.7	6.3	7.6	4.0

**Key:** AOR—Age-adjusted Odds Ratio; FY—Fiscal Year

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix. Each AOR represents a logistic regression for a single condition in women versus men, controlling for age. Because of the large sample size, even very small gender differences tend to be statistically significant; the focus here is upon clinically meaningful differences, rather than statistically significant differences. However, the Exhibit presents statistically significant ( $p < 0.05$ ) AORs in bold face text.

**Cohort:** Women and men Veteran patients with non-missing ages 18-110 (inclusive) in FY12. Women: N=361,992; Men: N=5,248,899.

**Source:** WHEI Master Database

### Condition rank by age for women Veteran patients:

For women 18-44 years old, the most common Dental conditions were:

1. Dental Disorders - Other (7.4%)
2. Dental Caries (6.0%)
3. Gingivitis/Periodontitis (3.4%)

For women 45-64 years old, the most common Dental conditions were:

1. Dental Disorders - Other (9.9%)
2. Dental Caries (8.3%)
3. Gingivitis/Periodontitis (5.6%)

For women 65+ years old, the most common Dental conditions were:

1. Dental Disorders - Other (3.7%)
2. Dental Caries (2.9%)
3. Gingivitis/Periodontitis (2.1%)

**Comparing women and men Veteran patients.** Adjusting for age, women Veterans had modestly higher rates of all Dental conditions compared to men Veterans.

## IMPLICATIONS

Dental Caries and Gingivitis/Periodontitis are common across age groups. True prevalence of these conditions is likely substantially higher than the rates identified here, because most VHA patients would not be eligible for dental care, and thus would have less opportunity to have a diagnosis recorded. Oral health is an integral component of total body health, and primary care providers would do well to encourage their patients to seek regular, ongoing preventive dental care. Because OEF/OIF/OND Veterans currently are eligible for dental screening within six months of separation from the military, provider education may help to promote timely referral.



## Dermatologic Conditions

(Domain rank = 11th overall for women Veterans)

**Exhibit 7.P: Condition Frequencies for *Dermatologic* Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12\***

Condition	AOR	Women %			Men %		
		18-44 N=153,212	45-64 N=165,898	65+ N=42,882	18-44 N=705,644	45-64 N=2,124,587	65+ N=2,418,668
Skin Cancer (Non-Melanoma)	<b>0.76</b>	0.2	1.1	3.1	0.2	2.0	4.3
Skin Ulcer, Chronic	<b>0.65</b>	0.1	0.6	1.8	0.2	1.3	1.7
Skin Infection	<b>0.91</b>	2.6	3.5	3.0	2.9	3.9	2.5
Psoriasis	<b>0.83</b>	0.6	0.9	1.0	0.7	1.2	1.1
Dermatologic Disorders - Other	<b>1.32</b>	16.9	21.3	20.0	12.3	18.9	18.6

\* All Dermatologic domain conditions are listed in this Exhibit, except for Melanoma (listed under Cancer, the domain to which it is primarily mapped).

**Key:** AOR—Age-adjusted Odds Ratio; FY—Fiscal Year

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix. Each AOR represents a logistic regression for a single condition in women versus men, controlling for age. Because of the large sample size, even very small gender differences tend to be statistically significant; the focus here is upon clinically meaningful differences, rather than statistically significant differences. However, the Exhibit presents statistically significant ( $p < 0.05$ ) AORs in bold face text.

**Cohort:** Women and men Veteran patients with non-missing ages 18-110 (inclusive) in FY12. Women: N=361,992; Men: N=5,248,899.

**Source:** WHEI Master Database

### Condition rank by age for women Veteran patients:

For women 18-44 years old, the most common Dermatologic conditions were:

1. Dermatologic Disorders - Other (16.9%)
2. Skin Infection (2.6%)
3. Psoriasis (0.6%)

For women 45-64 years old, the most common Dermatologic conditions were:

1. Dermatologic Disorders - Other (21.3%)
2. Skin Infection (3.5%)
3. Skin Cancer (Non-Melanoma) (1.1%)

For women 65+ years old, the most common Dermatologic conditions were:

1. Dermatologic Disorders - Other (20.0%)
2. Skin Cancer (Non-Melanoma) (3.1%)
3. Skin Infection (3.0%)

**Comparing women and men Veteran patients.** Adjusting for age, women Veterans had lower odds for Skin Ulcer, Chronic (AOR = 0.65).

**Other comments.** Non-Melanoma Skin Cancers increased substantially with age (18-44: 0.2%; 45-64: 1.1%, 65+: 3.1%).

## IMPLICATIONS

Dermatologic conditions are fairly common, but many are acute or self-limited. With VHA's new Telehealth technology (including Video Telehealth and Store & Forward), it can be possible for dermatologists to review an image of a skin lesion for women at remote locations.



## Other Conditions

(The “Other” domain was not ranked due to its heterogeneous nature)

**Exhibit 7.Q: Condition Frequencies for *Other* Domain Among Women and Men Veteran Patients by Age, and AOR of Each Condition for Women Versus Men, FY12**

Condition	AOR	Women %			Men %		
		18-44 N=153,212	45-64 N=165,898	65+ N=42,882	18-44 N=705,644	45-64 N=2,124,587	65+ N=2,418,668
Sleep Apnea	<b>0.55</b>	3.0	7.1	4.1	7.9	10.1	5.7
Sleep Disturbance - Other	<b>1.07</b>	7.9	8.2	5.5	8.9	6.4	4.3
Malaise and Fatigue	<b>1.68</b>	2.3	2.7	2.6	1.2	1.8	1.7
Syncope	<b>1.03</b>	0.8	1.0	1.3	0.6	1.2	1.1
Abdominal Pain	<b>1.97</b>	7.7	6.9	4.0	3.5	4.0	2.2
Chronic Pain Syndromes	<b>1.23</b>	3.5	5.7	3.1	3.2	4.2	1.9
Allergies and Urticaria	<b>2.07</b>	3.2	3.2	1.7	1.5	1.5	1.0
Edema	<b>1.45</b>	0.9	2.5	4.8	0.4	2.3	3.3
Symptoms - Other	<b>1.22</b>	2.0	3.3	4.4	1.7	3.0	3.1
Tobacco Use Disorder	<b>0.70</b>	11.4	17.8	6.8	16.7	21.8	7.6
Tobacco Use History	<b>0.72</b>	1.0	1.5	1.2	1.4	2.2	1.6
Poisoning	<b>1.11</b>	0.4	0.5	0.2	0.4	0.4	0.2
Injuries and Conditions Due to External Causes - Other	<b>1.18</b>	7.2	9.1	8.5	7.3	7.1	5.6
Effects of Surgical Procedures or Medical Care	<b>1.23</b>	1.1	1.9	1.7	0.7	1.8	1.5
Housing Insufficiency	<b>0.75</b>	4.2	4.1	0.8	4.3	4.7	0.6
Psychosocial Factors - Other	<b>1.02</b>	8.3	8.6	6.4	9.1	6.8	3.7
Residual Codes	<b>0.96</b>	8.2	11.3	11.8	7.4	13.5	13.7

**Key:** AOR—Age-adjusted Odds Ratio; FY—Fiscal Year

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix. Each AOR represents a logistic regression for a single condition in women versus men, controlling for age. Because of the large sample size, even very small gender differences tend to be statistically significant; the focus here is upon clinically meaningful differences, rather than statistically significant differences. However, the Exhibit presents statistically significant ( $p < 0.05$ ) AORs in bold face text.

**Cohort:** Women and men Veteran patients with non-missing ages 18-110 (inclusive) in FY12. Women: N=361,992; Men: N=5,248,899.

**Source:** WHEI Master Database

**NOTES TO INTERPRETATION:** The “Other” domain consists of symptoms, health risk factors, psychosocial factors, external factors, and residual conditions that do not fit within another major condition.<sup>139,140</sup>

### Condition rank by age for Women Veteran patients:<sup>141</sup>

For women 18-44 years old, the most common Other conditions were:

1. Tobacco Use Disorder (11.4%)
2. Psychosocial Factors – Other (8.3%)
3. Sleep Disturbance – Other (7.9%)

<sup>139</sup> The rate of tobacco use documented in this Sourcebook may under-estimate true prevalence of tobacco use, as clinicians may not code this health risk behavior on the clinical encounter form.

<sup>140</sup> Housing Insufficiency frequencies should not be used to estimate the proportion of Veteran VHA patients who are homeless, since it detects only Veterans who received a diagnosis code for housing insufficiency as part of a medical encounter. Also see: Montgomery AE, Fargo JD, Byrne TH, Kane VR, Culhane DP. Universal screening for homelessness and risk for homelessness in the Veterans Health Administration. *American Journal of Public Health* 2013;103 Suppl 2:S210-S211.

<sup>141</sup> Residual Codes are not included in the condition ranking for the Other domain, due to the heterogeneous nature of this condition, which consists of ICD-9-CM codes not elsewhere mapped to a condition.

For women 45-64 years old, the most common Other conditions were:

1. Tobacco Use Disorder (17.8%)
2. Injuries and Conditions Due to External Causes – Other (9.1%)
3. Psychosocial Factors – Other (8.6%)

For women 65+ years old, the most common Other conditions were:

1. Injuries and Conditions Due to External Causes – Other (8.5%)
2. Tobacco Use Disorder (6.8%)
3. Psychosocial Factors – Other (6.4%)

**Comparing women and men Veteran patients.** Adjusting for age, women Veterans (compared to men Veterans) had greater odds of: Allergies and Urticaria (AOR = 2.07), Abdominal Pain (AOR = 1.97), and Malaise and Fatigue (AOR = 1.68). Adjusting for age, women Veterans (compared to men Veterans) had lower odds of Sleep Apnea (AOR = 0.55).

**Other comments.** Tobacco Use Disorder was substantially higher in the two younger age groups than in the oldest age group (18-44: 11.4%; 45-64: 17.8%; 65+: 6.8%). The same was true for Housing Insufficiency (18-44: 4.2%; 45-64: 4.1%; 65+: 0.8%).

---

### IMPLICATIONS

---

Despite several decades of anti-tobacco public health campaigns, tobacco use remains high among women Veterans across all age groups, especially among those 18-44 or 45-64 years old; true prevalence of tobacco use may be higher than the estimates provided in this Sourcebook. Tobacco use puts women at risk for many adverse health effects, including pregnancy complications, lung cancer, and cardiovascular disease. Continued commitment to women (e.g., via telephone-based care, group visits, one-on-one counseling) will be important for helping women smokers to quit.

---

## Top 20 Conditions for Women Veterans by Age Group, FY12

Exhibit 7.R presents the top twenty most common conditions for women Veterans across the three age groups, independent of domain.

For women 18-44 years old, the top five most common conditions overall were:

1. Depression, Possible – Other
2. Joint Disorders – Lower Extremity
3. Spine Disorders – Lumbosacral
4. Headache
5. PTSD

For women 45-64 years old, the top five most common conditions overall were:

1. Lipid Disorders
2. Hypertension
3. Depression, Possible – Other
4. Joint Disorders – Lower Extremity
5. Spine Disorders – Lumbosacral

For women 65+ years old, the top five most common conditions overall were:

1. Hypertension
2. Lipid Disorders
3. Cataract
4. Thyroid Disorders
5. Joint Disorders – Unspecified or Multiple Joints

For women 18-44 years old, Mental Health conditions tended to be very common (i.e., 3 of the top 10 conditions). For women 45-64 years old, Musculoskeletal conditions tended to be very common (i.e., 3 of the top 10 conditions). For women 65 years old or older, Sense Organ conditions tended to be very common (i.e., 3 of the top 10 conditions).

**Exhibit 7.R: Top Twenty Condition Frequencies Among Women Veteran Patients by Age, FY12**

Rank	Top Conditions in Women Veteran VHA Patients, by age group, FY12					
	18-44 N=153,212	%	45-64 N=165,898	%	65+ N=42,882	%
1	Depression, Possible - Other	25.6	Lipid Disorders	38.7	Hypertension	61.4
2	Joint Disorders - Lower Extremity	21.0	Hypertension	38.4	Lipid Disorders	52.0
3	Spine Disorders - Lumbo-sacral	20.5	Depression, Possible - Other	27.7	Cataract	23.3
4	Headache	19.9	Joint Disorders - Lower Extremity	25.0	Thyroid Disorders	23.3
5	PTSD	17.2	Spine Disorders - Lumbo-sacral	23.4	Joint Disorders - Unspecified or Multiple Joints	23.3
6	Anxiety Disorders - Other	17.1	Overweight/Obesity	22.8	Eye Disorders - Other	22.8
7	Dermatologic Disorders - Other	16.9	Refraction Disorders	22.6	Diabetes Mellitus	22.2
8	Overweight/Obesity	15.8	Dermatologic Disorders - Other	21.3	Esophageal Disorders	21.0
9	Contraceptive Care Management	14.1	Joint Disorders - Unspecified or Multiple Joints	20.9	Dermatologic Disorders - Other	20.0
10	Allergic and Other Chronic Sinusitis/Rhinitis	12.5	Esophageal Disorders	19.2	Refraction Disorders	18.5
11	Major Depressive Disorder	12.3	Tobacco Use Disorder	17.8	Joint Disorders - Lower Extremity	17.4
12	Respiratory System Infections - Other	11.7	Eye Disorders - Other	17.3	Osteoporosis	16.6
13	Tobacco Use Disorder	11.4	Diabetes Mellitus	15.4	Hearing Problems	15.9
14	Menstrual Disorders	10.8	Musculoskeletal Conditions - Other	15.3	Depression, Possible - Other	15.3
15	Lipid Disorders	10.7	Thyroid Disorders	15.2	Musculoskeletal Conditions - Other	15.2
16	Refraction Disorders	10.0	PTSD	15.2	Spine Disorders - Lumbo-sacral	14.6
17	Joint Disorders - Unspecified or Multiple Joints	9.9	Anxiety Disorders - Other	15.0	Overweight/Obesity	13.2
18	Esophageal Disorders	9.8	Allergic and Other Chronic Sinusitis/Rhinitis	14.4	Coronary Artery Disease - Other	12.9
19	Spine Disorders - Other/Unspecified	9.5	Major Depressive Disorder	14.1	Residual Codes	11.8
20	Hypertension	9.4	Headache	14.1	Endocrine, Metabolic and Nutritional Disorders - Other	11.6

**Key:** FY—Fiscal Year; PTSD—Posttraumatic Stress Disorder

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix.

**Cohort:** Women Veteran patients with non-missing ages 18-110 (inclusive) in FY12, N=361,992.

**Source:** WHEI Master Database

## Part 8. Health Profile - Subpopulations

### Domain Frequencies Among Subpopulations of Women Veteran Patients

When planning systems of care for women, it is helpful to consider the health profile and medical care needs of some special populations of women Veteran VHA patients. The following presents information about age-stratified domain frequencies for women Veteran VHA patients by race/ethnicity, by urban/rural status, and by service-connected disability rating status, as well as overall and age-stratified frequencies within the subset of women Veterans who served in OEF/OIF/OND.<sup>142</sup>

#### Race/Ethnicity

As Exhibit 8.A demonstrates, the top three domains, by race/ethnicity and age group, were as follows.

#### Domain rank by age for *American Indian/Alaska Native* women Veteran patients:

For women 18-44 years old, the most common domains were:

1. Mental Health/SUD (51.6%)
2. Musculoskeletal (50.5%)
3. Reproductive Health (40.8%)

For women 45-64 years old, the most common domains were:

1. Musculoskeletal (66.0%)
2. Endocrine/Metabolic/Nutritional (62.2%)
3. Mental Health/SUD (52.2%)

For women 65+ years old, the most common domains were:

1. Endocrine/Metabolic/Nutritional (75.0%)
2. Cardiovascular (68.7%)
3. Musculoskeletal (63.6%)

#### Domain rank by age for *Asian* women Veteran patients:

For women 18-44 years old, the most common domains were:

1. Musculoskeletal (43.2%)
2. Reproductive Health (38.6%)
3. Mental Health/SUD (37.6%)

---

<sup>142</sup> Broad age groups are used for age strata, except in the case of the OEF/OIF/OND subpopulation, for whom fine age groups are used.

For women 45-64 years old, the most common domains were:

1. Musculoskeletal (56.7%)
2. Endocrine/Metabolic/Nutritional (52.8%)
3. Sense Organ (41.9%)

For women 65+ years old, the most common domains were:

1. Endocrine/Metabolic/Nutritional (62.2%)
2. Cardiovascular (56.6%)
3. Musculoskeletal (49.5%)

**Domain rank by age for *Black/African American* women Veteran patients:**

For women 18-44 years old, the most common domains were:

1. Musculoskeletal (51.7%)
2. Reproductive Health (44.4%)
3. Mental Health/SUD (44.2%)

For women 45-64 years old, the most common domains were:

1. Musculoskeletal (64.0%)
2. Endocrine/Metabolic/Nutritional (61.7%)
3. Cardiovascular (58.4%)

For women 65+ years old, the most common domains were:

1. Cardiovascular (79.6%)
2. Endocrine/Metabolic/Nutritional (75.8%)
3. Musculoskeletal (62.8%)

**Domain rank by age for *Hispanic* women Veteran patients:**

For women 18-44 years old, the most common domains were:

1. Musculoskeletal (49.8%)
2. Reproductive Health (44.2%)
3. Mental Health/SUD (44.0%)

For women 45-64 years old, the most common domains were:

1. Endocrine/Metabolic/Nutritional (65.4%)
2. Musculoskeletal (65.2%)
3. Mental Health/SUD (51.5%)

For women 65+ years old, the most common domains were:

1. Endocrine/Metabolic/Nutritional (80.1%)
2. Cardiovascular (71.7%)
3. Musculoskeletal (59.6%)

**Domain rank by age for *Native Hawaiian/Other Pacific Islander* women Veteran patients:**

For women 18-44 years old, the most common domains were:

1. Musculoskeletal (49.4%)
2. Mental Health/SUD (45.4%)
3. Reproductive Health (38.6%)

For women 45-64 years old, the most common domains were:

1. Musculoskeletal (67.1%)
2. Endocrine/Metabolic/Nutritional (66.4%)
3. Mental Health/SUD (50.6%)

For women 65+ years old, the most common domains were:

1. Endocrine/Metabolic/Nutritional (80.5%)
2. Cardiovascular (72.3%)
3. Musculoskeletal (60.8%)

**Domain rank by age for *White* women Veteran patients:**

For women 18-44 years old, the most common domains were:

1. Musculoskeletal (52.1%)
2. Mental Health/SUD (51.4%)
3. Reproductive Health (41.2%)

For women 45-64 years old, the most common domains were:

1. Endocrine/Metabolic/Nutritional (64.3%)
2. Musculoskeletal (63.2%)
3. Mental Health/SUD (52.5%)

For women 65+ years old, the most common domains were:

1. Endocrine/Metabolic/Nutritional (73.9%)
2. Cardiovascular (70.2%)
3. Musculoskeletal (53.5%)

**Other comments.** In every age group, Black/African American women had the highest rates of Cardiovascular conditions. Musculoskeletal conditions were common in all, although there was variability by race/ethnicity group. Mental Health/SUD conditions and Endocrine/Metabolic/Nutritional conditions were also common across race/ethnicity groups, but the pattern of associations varied by age group.

*NOTES TO INTERPRETATION: Women in the Unknown race/ethnicity group tended to have relatively low rates of conditions. Because frequent users of VHA services will tend to have more contacts with VHA at which to have their race/ethnicity recorded, the subgroup of individuals with Unknown race/ethnicity may be enriched with women who had relatively few health care encounters in FY12 (including women new to VHA), and who thus may have had less opportunity to have diagnoses entered into the system.*

**Exhibit 8.A: Domain Frequencies in Women Veteran Patients by Race/Ethnicity and Age, FY12**

Domain	18-44 (%)						
	American Indian or Alaska Native	Asian	Black or African American	Hispanic	Native Hawaiian or other Pacific Islander	White	Unknown
	N= 1,886	N= 2,855	N= 44,012	N= 13,912	N= 1,477	N= 75,179	N= 13,891
Infectious Disease	26.9	22.8	30.9	28.7	26.8	28.4	16.6
Endocrine/Metabolic/Nutritional	29.6	25.5	35.4	30.3	32.8	32.2	23.2
Cardiovascular	14.1	11.7	24.4	11.6	16.9	14.6	12.2
Respiratory	26.9	23.6	28.6	26.0	26.1	28.4	17.9
Gastrointestinal	21.4	17.1	22.7	21.4	19.6	23.9	14.4
Urinary	9.8	8.2	10.6	10.7	10.8	11.2	6.1
Reproductive Health	40.8	38.6	44.4	44.2	38.6	41.2	26.3
Breast	4.0	2.7	5.6	4.8	4.5	4.8	3.2
Cancer	1.9	1.5	1.4	1.4	2.0	2.1	0.9
Hematologic/Immunologic	7.3	4.8	12.7	6.3	6.8	5.3	5.1
Musculoskeletal	50.5	43.2	51.7	49.8	49.4	52.1	35.9
Neurologic	27.7	22.2	29.6	26.2	26.5	28.7	18.2
Mental Health/SUD	51.6	37.6	44.2	44.0	45.4	51.4	27.8
Sense Organ	20.0	20.1	21.4	20.0	20.3	19.5	13.6
Dental	8.8	9.8	9.7	9.0	9.6	9.9	4.9
Dermatologic	17.0	18.9	19.8	19.2	18.7	19.7	11.4
Other	47.6	35.6	45.1	41.4	45.2	46.5	27.7

Domain	45-64 (%)						
	American Indian or Alaska Native	Asian	Black or African American	Hispanic	Native Hawaiian or other Pacific Islander	White	Unknown
	N= 1,737	N= 1,154	N= 48,253	N= 6,231	N= 1,513	N= 91,460	N= 15,550
Infectious Disease	31.5	21.2	31.0	31.0	33.3	30.0	16.2
Endocrine/Metabolic/Nutritional	62.2	52.8	61.7	65.4	66.4	64.3	45.2
Cardiovascular	45.5	39.9	58.4	43.8	49.3	44.8	32.7
Respiratory	36.8	29.9	35.7	35.4	36.9	36.4	21.9
Gastrointestinal	36.4	28.2	35.7	38.7	39.4	39.6	23.0
Urinary	17.6	12.8	15.0	17.4	18.7	17.6	8.8
Reproductive Health	27.7	23.0	30.1	29.1	27.2	26.9	20.1
Breast	8.7	8.7	8.8	10.1	8.9	8.4	5.9
Cancer	6.2	4.4	5.1	6.1	6.4	7.1	3.6
Hematologic/Immunologic	9.2	7.3	13.9	9.7	11.0	8.8	5.9
Musculoskeletal	66.0	56.7	64.0	65.2	67.1	63.2	44.4
Neurologic	32.0	28.0	29.9	32.6	33.8	31.1	18.3
Mental Health/SUD	52.2	34.9	44.9	51.5	50.6	52.5	27.1
Sense Organ	38.3	41.9	40.6	41.3	41.1	37.4	25.3
Dental	13.8	14.2	15.1	14.7	15.7	12.5	5.1
Dermatologic	25.4	22.1	23.8	23.6	27.8	25.8	15.3
Other	56.8	41.5	52.7	53.7	56.0	54.8	33.1



**Exhibit 8.A: Domain Frequencies in Women Veteran Patients by Race/Ethnicity and Age, FY12 (continued)**

Domain	65+ (%)						
	American Indian or Alaska Native	Asian	Black or African American	Hispanic	Native Hawaiian or other Pacific Islander	White	Unknown
	N= 316	N= 196	N= 3,460	N= 853	N= 375	N= 37,115	N= 567
Infectious Disease	29.7	16.8	30.6	27.4	29.6	23.3	12.9
Endocrine/Metabolic/Nutritional	75.0	62.2	75.8	80.1	80.5	73.9	45.7
Cardiovascular	68.7	56.6	79.6	71.7	72.3	70.2	45.9
Respiratory	37.3	28.6	34.7	33.9	34.4	30.7	17.3
Gastrointestinal	37.3	25.5	38.5	38.9	36.8	36.7	16.9
Urinary	19.6	18.4	24.0	21.9	25.6	23.9	12.0
Reproductive Health	13.3	10.7	13.9	15.1	13.3	11.1	7.9
Breast	7.9	8.7	9.8	8.7	9.9	8.0	4.9
Cancer	9.8	10.7	11.9	13.2	14.4	12.0	4.8
Hematologic/Immunologic	11.4	9.7	17.4	14.8	12.8	13.1	6.0
Musculoskeletal	63.6	49.5	62.8	59.6	60.8	53.5	34.0
Neurologic	30.7	19.9	32.5	34.7	31.7	30.3	16.6
Mental Health/SUD	30.7	16.3	27.8	31.8	30.1	25.9	15.3
Sense Organ	45.6	45.4	52.0	53.7	44.3	45.4	30.5
Dental	8.5	7.7	10.1	8.6	6.9	4.4	2.8
Dermatologic	24.4	16.8	25.7	25.3	25.1	23.7	13.1
Other	41.8	33.2	47.3	46.0	45.3	39.8	25.6

**Key:** FY—Fiscal Year; SUD—Substance Use Disorder

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix.

**Cohort:** Women Veteran patients with non-missing ages 18-110 (inclusive) in FY12, N=361,992.

**Source:** WHEI Master Database

## IMPLICATIONS

VHA's initiatives to address Cardiovascular disease in women should include efforts focused on Black/African American women, because in every age group they have the highest rates of Cardiovascular conditions.

## Urban/Rural Status

As Exhibit 8.B demonstrates, the top three domains, by urban/rural status and age group were as follows.

### Domain rank by age for *highly rural* women Veteran patients:

For women 18-44 years old, the most common domains were:

1. Musculoskeletal (53.1%)
2. Mental Health/SUD (47.4%)
3. Reproductive Health (40.6%)

For women 45-64 years old, the most common domains were:

1. Musculoskeletal (60.2%)
2. Endocrine/Metabolic/Nutritional (60.1%)
3. Mental Health/SUD (43.7%)

For women 65+ years old, the most common domains were:

1. Endocrine/Metabolic/Nutritional (71.3%)
2. Cardiovascular (66.9%)
3. Musculoskeletal (52.4%)

### Domain rank by age for *other rural* women Veteran patients:

For women 18-44 years old, the most common domains were:

1. Musculoskeletal (53.2%)
2. Mental Health/SUD (49.2%)
3. Reproductive Health (38.9%)

For women 45-64 years old, the most common domains were:

1. Endocrine/Metabolic/Nutritional (64.5%)
2. Musculoskeletal (62.8%)
3. Mental Health/SUD (47.9%)

For women 65+ years old, the most common domains were:

1. Endocrine/Metabolic/Nutritional (75.3%)
2. Cardiovascular (70.5%)
3. Musculoskeletal (54.9%)

### Domain rank by age for *small urban* women Veteran patients:

For women 18-44 years old, the most common domains were:

1. Musculoskeletal (52.3%)
2. Mental Health/SUD (48.3%)
3. Reproductive Health (40.4%)

For women 45-64 years old, the most common domains were:

1. Endocrine/Metabolic/Nutritional (64.2%)
2. Musculoskeletal (63.6%)
3. Mental Health/SUD (49.3%)

For women 65+ years old, the most common domains were:

1. Endocrine/Metabolic/Nutritional (74.7%)
2. Cardiovascular (70.3%)
3. Musculoskeletal (53.0%)

**Domain rank by age for *large urban* women Veteran patients:**

For women 18-44 years old, the most common domains were:

1. Musculoskeletal (48.4%)
2. Mental Health/SUD (44.5%)
3. Reproductive Health (42.6%)

For women 45-64 years old, the most common domains were:

1. Musculoskeletal (60.9%)
2. Endocrine/Metabolic/Nutritional (59.7%)
3. Cardiovascular (47.8%)

For women 65+ years old, the most common domains were:

1. Endocrine/Metabolic/Nutritional (72.8%)
2. Cardiovascular (71.1%)
3. Musculoskeletal (54.5%)

**Other comments.** In both rural and urban areas, women Veteran VHA patients tended to have high rates of Musculoskeletal, Endocrine/Metabolic/Nutritional, Mental Health/SUD, and Reproductive Health conditions. Women in highly rural areas tended to have somewhat *lower* rates of Cardiovascular conditions and Hematologic/Immunologic conditions.

Women in highly rural areas tended to have somewhat *higher* rates of Breast disease, at least among those age 45 years or older. Among women under age 65 years, those in highly rural or other rural areas had slightly higher rates of Cancer diagnoses.

**Exhibit 8.B: Domain Frequencies in Women Veteran Patients by Urban/Rural Status and Age, FY12**

Domain	18-44 (%)			
	Highly rural	Other rural	Small urban	Large urban
	N= 1,133	N= 36,406	N= 28,928	N= 84,545
Infectious Disease	26.5	26.5	27.9	28.9
Endocrine/Metabolic/Nutritional	33.0	34.9	33.8	30.4
Cardiovascular	13.9	17.4	17.6	16.6
Respiratory	26.0	27.7	28.2	26.9
Gastrointestinal	23.5	24.3	22.9	21.5
Urinary	11.5	10.8	10.6	10.4
Reproductive Health	40.6	38.9	40.4	42.6
Breast	4.8	4.8	4.9	4.9
Cancer	1.9	1.9	1.5	1.7
Hematologic/Immunologic	5.1	6.9	8.3	7.7
Musculoskeletal	53.1	53.2	52.3	48.4
Neurologic	27.4	29.2	29.2	26.8
Mental Health/SUD	47.4	49.2	48.3	44.5
Sense Organ	18.9	19.4	19.7	19.9
Dental	8.6	9.3	9.2	9.4
Dermatologic	17.1	17.7	19.0	19.6
Other	45.2	45.6	44.1	43.2

Domain	45-64 (%)			
	Highly rural	Other rural	Small urban	Large urban
	N= 1,794	N= 47,784	N= 29,573	N= 84,378
Infectious Disease	27.8	27.6	29.7	29.8
Endocrine/Metabolic/Nutritional	60.1	64.5	64.2	59.7
Cardiovascular	42.2	47.8	48.1	47.8
Respiratory	33.3	35.1	35.9	34.4
Gastrointestinal	38.3	38.6	37.9	35.5
Urinary	16.6	16.3	16.2	15.8
Reproductive Health	28.5	26.6	27.0	28.0
Breast	9.8	8.3	8.6	8.4
Cancer	6.3	6.6	5.9	6.0
Hematologic/Immunologic	7.2	9.0	10.8	10.6
Musculoskeletal	60.2	62.8	63.6	60.9
Neurologic	28.1	29.9	30.0	29.6
Mental Health/SUD	43.7	47.9	49.3	47.3
Sense Organ	33.9	36.5	37.1	38.3
Dental	11.4	11.6	12.6	13.4
Dermatologic	23.6	23.7	24.0	24.6
Other	52.8	52.5	52.2	52.0

**Exhibit 8.B: Domain Frequencies in Women Veteran Patients by Urban/Rural Status and Age, FY12 (continued)**

Domain	65+ (%)			
	Highly rural	Other rural	Small urban	Large urban
	N= 638	N= 13,699	N= 7,568	N= 20,325
Infectious Disease	22.3	22.3	23.6	25.3
Endocrine/Metabolic/Nutritional	71.3	75.3	74.7	72.8
Cardiovascular	66.9	70.5	70.3	71.1
Respiratory	31.2	31.6	29.9	31.0
Gastrointestinal	34.3	37.7	35.9	36.3
Urinary	24.9	23.0	22.8	24.4
Reproductive Health	11.8	12.1	11.1	11.0
Breast	10.5	8.0	7.9	8.4
Cancer	12.5	11.5	11.0	12.5
Hematologic/Immunologic	9.9	13.0	12.4	14.2
Musculoskeletal	52.4	54.9	53.0	54.5
Neurologic	28.1	28.4	28.6	32.7
Mental Health/SUD	27.1	24.7	26.7	26.8
Sense Organ	44.2	43.1	43.7	48.8
Dental	5.5	4.1	4.8	5.7
Dermatologic	24.0	22.7	21.8	25.2
Other	42.6	39.8	38.5	41.5

**Key:** FY—Fiscal Year; SUD—Substance Use Disorder

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix.

**Cohort:** Women Veteran patients with non-missing urban/rural status and age 18-110 (inclusive) in FY12, N=354,771.

**Source:** WHEI Master Database

## IMPLICATIONS

In general, the patterns of illness in women Veteran patients do not vary substantially by urban/rural status, except that highly rural women may have modestly less Cardiovascular Disease and Hematologic/Immunologic conditions, and modestly more Breast Disease (for those 45+ years old). Highly rural and other rural women, like other women, have substantial rates of diverse conditions. For example, among highly rural women Veteran patients, Reproductive Health conditions affect 40.6% of 18-44 year olds, 28.5% of 45-64 year olds, and 11.8% of 65+ year olds; for this reason, VHA gender-specific care must be designed to reach even women in remote areas. Similarly, among highly rural women, 47.4% of 18-44 year olds, 43.7% of 45-64 year olds, and 27.1% of 65+ year olds have been diagnosed with a Mental Health/SUD condition—VHA's Tele-Mental Health initiatives may benefit them.

### Service-Connected Disability Rating Status

As Exhibit 8.C demonstrates, the top three domains, by SC disability rating status and age group were as follows.

#### **Domain rank by age for women Veteran patients with *no* SC status:**

For women 18-44 years old, the most common domains were:

1. Reproductive Health (38.9%)
2. Mental Health/SUD (37.0%)
3. Musculoskeletal (36.2%)

For women 45-64 years old, the most common domains were:

1. Endocrine/Metabolic/Nutritional (61.3%)
2. Musculoskeletal (54.7%)
3. Cardiovascular (48.6%)

For women 65+ years old, the most common domains were:

1. Endocrine/Metabolic/Nutritional (73.6%)
2. Cardiovascular (71.0%)
3. Musculoskeletal (51.5%)

#### **Domain rank by age for women Veteran patients with an *SC rating of 0-49 percent*:**

For women 18-44 years old, the most common domains were:

1. Musculoskeletal (52.4%)
2. Reproductive Health (40.5%)
3. Mental Health/SUD (38.4%)

For women 45-64 years old, the most common domains were:

1. Musculoskeletal (62.5%)
2. Endocrine/Metabolic/Nutritional (58.5%)
3. Cardiovascular (43.7%)

For women 65+ years old, the most common domains were:

1. Endocrine/Metabolic/Nutritional (71.6%)
2. Cardiovascular (66.8%)
3. Musculoskeletal (57.2%)

#### **Domain rank by age for women Veteran patients with an *SC rating of 50-99 percent*:**

For women 18-44 years old, the most common domains were:

1. Mental Health/SUD (63.2%)
2. Musculoskeletal (62.1%)
3. Reproductive Health (44.1%)

For women 45-64 years old, the most common domains were:

1. Musculoskeletal (71.1%)
2. Endocrine/Metabolic/Nutritional (63.6%)
3. Mental Health/SUD (55.6%)

For women 65+ years old, the most common domains were:

1. Endocrine/Metabolic/Nutritional (76.9%)
2. Cardiovascular (70.9%)
3. Musculoskeletal (69.2%)

**Domain rank by age for women Veteran patients with an SC rating of 100 percent:**

For women 18-44 years old, the most common domains were:

1. Mental Health/SUD (78.0%)
2. Musculoskeletal (61.3%)
3. Endocrine/Metabolic/Nutritional (47.4%)

For women 45-64 years old, the most common domains were:

1. Mental Health/SUD (73.4%)
2. Endocrine/Metabolic/Nutritional (68.8%)
3. Musculoskeletal (68.4%)

For women 65+ years old, the most common domains were:

1. Endocrine/Metabolic/Nutritional (76.3%)
2. Cardiovascular (71.9%)
3. Musculoskeletal (66.3%)

**Other comments.** Among women Veterans with a SC disability rating, the proportion of women included in a domain increased (for the majority of domains) as SC disability rating increased. For example, 26.2 percent of women Veterans with an SC disability rating of 0-49 percent had an Infectious Disease condition compared to 30.6% of women with an SC disability rating of 50-99 percent and 36.3 percent of women with an SC disability rating of 100 percent. Among women Veterans with any SC disability rating status, women with a rating of 0-49 percent were far less likely than those with a rating of 100 percent to have a Mental Health/SUD condition, within each age group (18-44: 38.4% vs. 78.0%; 45-64: 38.8% vs. 73.4%; 65+: 25.8% vs. 60.3%).

***NOTES TO INTERPRETATION:** It is important to recognize that the numbers displayed in Exhibit 8.C are the proportion of women at various levels of SC disability rating who have conditions in a particular domain. These numbers are not the proportion of women whose reason for SC disability is a condition falling within the domain. The databases used for this Sourcebook do not contain information about the conditions causing a patient's SC disability. Additionally, note that women with an SC disability rating may have greater eligibility for some VHA services; this could potentially increase their utilization of those services, and thus the opportunity for their diagnoses to be recorded in the administrative databases used for this report. In particular, far more women with high SC disability ratings had a Dental condition, but this is presumably an artifact of eligibility regulations (i.e., in general, only Veterans with a high disability rating are eligible for VHA Dental services).*

**Exhibit 8.C: Domain Frequencies in Women Veteran Patients by SC Rating Status and Age, FY12**

Domain	18-44 (%)			
	No SC	SC 0-49	SC 50-99	SC 100
	N = 49,753	N= 55,257	N= 41,169	N= 6,019
Infectious Disease	25.6	26.6	31.5	36.2
Endocrine/Metabolic/Nutritional	25.8	31.3	38.1	47.4
Cardiovascular	13.7	16.0	20.2	28.6
Respiratory	21.9	26.4	33.4	36.2
Gastrointestinal	16.5	20.5	29.4	38.1
Urinary	8.6	9.2	13.0	20.0
Reproductive Health	38.9	40.5	44.1	43.3
Breast	4.1	4.8	5.6	7.4
Cancer	1.4	1.5	1.9	4.6
Hematologic/Immunologic	6.5	7.3	8.4	12.8
Musculoskeletal	36.2	52.4	62.1	61.3
Neurologic	18.2	25.1	39.9	45.4
Mental Health/SUD	37.0	38.4	63.2	78.0
Sense Organ	15.6	18.1	24.5	33.1
Dental	5.7	5.4	13.6	44.9
Dermatologic	15.7	18.2	22.4	27.8
Other	39.6	39.6	51.7	62.7

Domain	45-64 (%)			
	No SC	SC 0-49	SC 50-99	SC 100
	N= 70,793	N= 39,846	N= 42,126	N= 12,017
Infectious Disease	29.2	25.7	29.9	36.2
Endocrine/Metabolic/Nutritional	61.3	58.5	63.6	68.8
Cardiovascular	48.6	43.7	48.3	53.2
Respiratory	33.0	32.2	38.4	41.4
Gastrointestinal	34.6	32.9	41.0	47.7
Urinary	15.3	13.0	17.2	25.1
Reproductive Health	26.3	26.7	29.5	28.0
Breast	8.0	7.8	8.9	10.5
Cancer	6.4	5.2	5.8	8.7
Hematologic/Immunologic	9.7	9.4	10.4	13.9
Musculoskeletal	54.7	62.5	71.1	68.4
Neurologic	24.4	26.3	37.4	44.0
Mental Health/SUD	43.6	38.8	55.6	73.4
Sense Organ	32.5	35.6	43.8	49.7
Dental	4.7	5.1	21.0	54.4
Dermatologic	22.6	22.3	26.6	30.3
Other	51.7	46.5	54.5	64.5



**Exhibit 8.C: Domain Frequencies in Women Veteran Patients by SC Rating Status and Age, FY12 (continued)**

Domain	65+ (%)			
	No SC	SC 0-49	SC 50-99	SC 100
	N= 32,950	N= 4,548	N= 3,808	N= 1,450
Infectious Disease	22.5	25.0	29.6	37.4
Endocrine/Metabolic/Nutritional	73.6	71.6	76.9	76.3
Cardiovascular	71.0	66.8	70.9	71.9
Respiratory	29.3	32.6	39.2	43.0
Gastrointestinal	35.0	37.1	44.4	50.6
Urinary	23.2	21.9	25.7	34.1
Reproductive Health	10.5	12.6	16.2	14.5
Breast	7.8	8.6	9.8	10.8
Cancer	11.8	11.7	11.6	15.9
Hematologic/Immunologic	13.0	12.6	14.7	19.7
Musculoskeletal	51.5	57.2	69.2	66.3
Neurologic	29.0	30.0	36.2	46.0
Mental Health/SUD	22.7	25.8	42.2	60.3
Sense Organ	43.6	51.0	56.8	52.8
Dental	1.7	2.7	22.1	42.2
Dermatologic	22.3	25.7	30.2	32.9
Other	38.2	41.9	49.5	58.3

**Key:** FY—Fiscal Year; SC—Service-connected; SUD—Substance Use Disorder

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix.

**Cohort:** Women Veteran patients with non-missing service-connected status and age 18-110 (inclusive) in FY12, N=359,736.

**Source:** WHEI Master Database

## IMPLICATIONS

Across multiple body systems, rates of conditions increase (often substantially) with increasing SC disability rating. This is particularly true for Mental Health/SUD conditions, the most common domain among women Veteran patients with an SC rating of 100 percent who are under age 65 years old. In women with this high level of SC disability, 78.0% of 18-44 year olds, 73.4% of 45-64 year olds, and 60.3% of 65+ year olds have a Mental Health/SUD condition, although this is not necessarily the reason for their SC disability rating.

## OEF/OIF/OND Status

As Exhibit 8.D demonstrates, the top three domains within OEF/OIF/OND women Veterans, in aggregate, are as follows.

### Overall Domain Rank for OEF/OIF/OND women Veteran Patients:

For all OEF/OIF/OND women Veteran patients, the most common domains were:

1. Musculoskeletal (48.3%)
2. Mental Health/SUD (45.7%)
3. Reproductive Health (39.2%)

**Exhibit 8.D: Domain Frequencies in OEF/OIF/OND Women Veteran Patients, Overall, FY12**

Domain	OEF/OIF/OND (%) Women Veteran Patients (All)
	N= 67,522
Infectious Disease	24.5
Endocrine/Metabolic/Nutritional	28.5
Cardiovascular	14.6
Respiratory	24.0
Gastrointestinal	20.2
Urinary	8.9
Reproductive Health	39.2
Breast	4.4
Cancer	1.6
Hematologic/Immunologic	5.9
Musculoskeletal	48.3
Neurologic	25.5
Mental Health/SUD	45.7
Sense Organ	20.2
Dental	9.7
Dermatologic	18.2
Other	41.5

**Key:** FY—Fiscal Year; OEF/OIF/OND—Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn; SUD—Substance Use Disorder

**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix.

**Cohort:** OEF/OIF/OND women Veteran patients with non-missing ages 18-110 (inclusive) in FY12, N=67,522.

**Source:** WHEI Master Database

As Exhibit 8.E demonstrates, the top three domains within OEF/OIF/OND women Veterans, by fine age group,<sup>143</sup> are as follows.

### Domain Rank by age for OEF/OIF/OND women Veteran Patients:

For women 18-24 years old, the most common domains were:

1. Reproductive Health (42.1%)
2. Mental Health/SUD (40.0%)
3. Musculoskeletal (39.8%)

<sup>143</sup> Women 65+ years old are included in the aggregate data for OEF/OIF/OND women Veteran patients (i.e., in Exhibit 8.D). However, they are not shown in the fine age group breakdowns, because so few women from that war era currently fall into the oldest age group.

For women 25-29 years old, the most common domains were:

1. Reproductive Health (46.3%)
2. Mental Health/SUD (45.4%)
3. Musculoskeletal (42.9%)

For women 30-34 years old, the most common domains were:

1. Mental Health/SUD (48.0%)
2. Musculoskeletal (47.1%)
3. Reproductive Health (42.0%)

For women 35-39 years old, the most common domains were:

1. Musculoskeletal (53.2%)
2. Mental Health/SUD (50.7%)
3. Reproductive Health (35.9%)

For women 40-44 years old, the most common domains were:

1. Musculoskeletal (54.4%)
2. Mental Health/SUD (46.9%)
3. Endocrine/Metabolic/Nutritional (35.8%)

For women 45-49 years old, the most common domains were:

1. Musculoskeletal (58.1%)
2. Mental Health/SUD (43.7%)
3. Endocrine/Metabolic/Nutritional (42.9%)

For women 50-54 years old, the most common domains were:

1. Musculoskeletal (60.6%)
2. Endocrine/Metabolic/Nutritional (47.8%)
3. Mental Health/SUD (43.7%)

For women 55-59 years old, the most common domains were:

1. Musculoskeletal (62.6%)
2. Endocrine/Metabolic/Nutritional (53.0%)
3. Mental Health/SUD (39.8%)

For women 60-64 years old, the most common domains were:

1. Endocrine/Metabolic/Nutritional (64.0%)
2. Musculoskeletal (63.5%)
3. Cardiovascular (51.3%)

**Other comments.** For OEF/OIF/OND women Veteran patients in every fine age group, Musculoskeletal conditions were among the top three domains, and for women in every fine age group except 60-64 years old, Mental Health/SUD conditions were among the top three. For those under age 40 years, Reproductive Health conditions were consistently in the top three, and for those age 40 years and higher, Endocrine/Metabolic/Nutritional conditions were consistently in the top three. For those age 60 years or older, Cardiovascular conditions were also in the top three.

The proportion of OEF/OIF/OND women Veterans with Musculoskeletal conditions increased progressively across age groups. The proportion of OEF/OIF/OND women Veterans with Endocrine/Metabolic/Nutritional, Cardiovascular, Urinary, Cancer, Musculoskeletal, and Sense Organ conditions also increased with increasing age. The proportion of OEF/OIF/OND women Veterans with Mental Health/SUD conditions ranged from 39.8% of women age 55-59 to 50.7% of women age 35-39; overall the highest rate was among women in the 25-44 year old age range.

**Exhibit 8.E: Domain Frequencies in OEF/OIF/OND Women Veteran Patients by Fine Age Group, FY12**

Domain	OEF/OIF/OND Women Veteran Patients (Age 18-64 Only) (%)								
	18-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
	N=7,193	N=21,134	N=15,208	N=6,732	N=6,665	N=5,544	N=3,116	N=1,448	N=417
Infectious Disease	24.3	27.6	26.1	23.7	19.3	19.6	20.0	19.0	22.3
Endocrine/Metabolic/Nutritional	15.0	21.0	27.0	33.7	35.8	42.9	47.8	53.0	64.0
Cardiovascular	5.3	8.1	11.5	17.2	21.5	27.6	35.1	38.2	51.3
Respiratory	19.2	22.7	24.5	25.8	25.1	26.9	26.7	26.2	31.7
Gastrointestinal	14.1	17.1	19.2	22.4	23.2	26.4	31.2	28.7	36.9
Urinary	7.1	8.4	8.5	9.2	9.8	10.1	11.1	11.5	14.1
Reproductive Health	42.1	46.3	42.0	35.9	30.2	28.8	26.4	21.9	21.3
Breast	2.2	3.3	3.6	4.7	6.4	8.0	7.1	7.5	5.5
Cancer	0.6	1.0	1.2	1.5	2.0	2.9	4.2	4.7	5.3
Hematologic/immunologic	3.5	4.6	6.0	7.0	8.3	8.8	6.9	6.3	7.4
Musculoskeletal	39.8	42.9	47.1	53.2	54.4	58.1	60.6	62.6	63.5
Neurologic	19.1	23.4	26.5	30.3	29.1	28.7	27.3	23.9	23.7
Mental Health/SUD	40.0	45.4	48.0	50.7	46.9	43.7	43.7	39.8	42.0
Sense Organ	15.6	16.9	17.5	19.6	23.1	29.9	34.0	35.9	44.6
Dental	11.1	8.2	8.0	10.2	11.4	12.5	12.9	13.2	13.9
Dermatologic	15.3	18.2	19.2	17.3	18.0	18.6	19.4	20.4	23.7
Other	39.9	40.8	41.9	43.7	41.1	41.5	44.7	40.5	45.8

**Key:** FY—Fiscal Year; OEF/OIF/OND—Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn; SUD—Substance Use Disorder  
**Notes:** Findings portray Veteran patients, not the entire Veteran population. See Technical Appendix.  
**Cohort:** OEF/OIF/OND women Veteran patients with non-missing ages 18-64 (inclusive) in FY12, N=67,457.  
**Source:** WHEI Master Database

## IMPLICATIONS

Among OEF/OIF/OND women Veteran patients the top three domains, in rank order, are: Musculoskeletal (48.3%), Mental Health/SUD (45.7%), and Reproductive Health (39.2%). While these Veterans returning from war need access to care for the full range of conditions, clinical services targeting pain, mental health or SUD issues, and gender-specific conditions may be particularly important.

## Part 9. Technical Appendix

9.1 Data Sources .....	153
9.2 Cohort Creation .....	155
9.3 Algorithms for Sociodemographic Characteristics .....	156
9.3.1 Veterans .....	157
9.3.2 VHA Users .....	157
9.3.3 Sex .....	158
9.3.4 Age .....	158
9.3.5 Race/Ethnicity Status.....	159
9.3.6 Urban/Rural Status .....	164
9.3.7 Service-Connected Disability Rating .....	164
9.3.8 OEF/OIF/OND Status Indicator .....	164
9.4 Algorithms for Total Utilization (VHA or Non-VA [Fee] Medical Care) .....	165
9.5 Algorithms for VHA Utilization .....	165
9.5.1 Outpatient Care Encounters .....	167
9.5.2 Face-to-face Outpatient Care Encounters .....	167
9.5.3 Primary Care Clinics (Other Than Women’s Health Clinic) .....	168
9.5.4 Women’s Health Clinics .....	168
9.5.5 Gynecology and Related Care .....	168
9.5.6 Mental Health Care Clinics .....	168
9.5.7 SUD Care Clinics .....	170
9.5.8 Telephone and Telehealth .....	170
9.6 Algorithms for Non-VA (Fee) Medical Care Utilization .....	171
9.6.1 Non-VA (Fee) Medical Care Utilization: Overview .....	171
9.6.2 Data Processing of Non-VA (Fee) Medical Care Outpatient File .....	172
9.6.3 Non-VA (Fee) Medical Care Outpatient Utilization Variable Creation .....	175
9.7 Algorithms for Calculating Cost Variables.....	176
9.7.1 VHA Outpatient Care .....	176
9.7.2 VHA Inpatient Care .....	177
9.7.3 Non-VA (Fee) Medical Care.....	178
9.7.4 Calculation of Total Cost Per Patient.....	178
9.7.5 Missing Cost Data .....	178
9.7.6 Calculation of Summary Statistics.....	179
9.8 Algorithms for Medical and Mental Health Conditions and Domains .....	179
9.8.1 Phase 1: Rule for Mapping ICD-9-CM Codes to Conditions .....	180
9.8.2 Phase 2: Rule for Mapping Conditions to Domains .....	183

9.8.3	Phase 3: Generating Person-Level Variables for Each Condition Within Each Data Source .....	185
9.8.4	Phase 4: Generating Final Person-Level Variables for Each Condition Across Data Sources .....	188
9.8.5	Phase 5: Generating Final Person-Level Variables for Each Domain .....	189
9.9	Data Quality Control .....	189
9.9.1	Consistency .....	189
9.9.2	Missing Data .....	190
9.9.3	Analysis of Duplicate Stop Codes in VHA Data .....	194
9.9.4	Years of Service for Records Appearing in FY12 Non-VA (Fee) Medical Care Outpatient Data Files .....	195
9.9.5	Analysis of Duplicate Non-VA (Fee) Medical Care Outpatient File Records, FY12 .....	196
9.9.6	Analysis of Non-VA (Fee) Medical Care Outpatient File Volume Indicator Field, FY12 .....	199

## 9.1 Data Sources

Data for Sourcebook Volume 3 came from centralized VHA administrative data files. The source files used to create the Sourcebook database are:<sup>144</sup>

**ADUSH Fiscal Year-End Enrollment File (FY00-FY12).** These VHA enrollment data files are maintained by the office of the Assistant Deputy Under Secretary for Health and contain records of patient characteristics (sex, Veteran status, VHA user status, date of birth, SC disability status, etc.). Enrollment files used span a 13-year period from fiscal year 2000 through fiscal year 2012.<sup>145</sup> Sourcebook Volume 3 refers to this as the “ADUSH Enrollment File.”

### VHA Medical SAS Datasets

**a. VHA Outpatient Event and Visit Files (Medical SAS Outpatient Datasets, FY00–FY12).** The Outpatient Event (SE) file contains a record for every encounter the patient has with VHA (e.g., clinic visits, telephone encounters, lab test encounters, radiology encounters, etc.); there can be more than one encounter on a given day. Each record contains information about the encounter (e.g., date of care, VA facility, clinic types, diagnoses associated with the visit, procedures performed at the visit, etc.). The Outpatient Visit (SF) file consolidates records of SE file encounters into one record per day of care, and provides additional information about patients (e.g., sex, date of birth, etc.).

- i. MDPPRD.MDP.SAS.SEyy (SE)
- ii. MDPPRD.MDP.SAS.SFyy (SF)

**b. VHA Inpatient Main and Bed Section Files (Medical SAS Inpatient Datasets, FY00–FY12).**

These VHA inpatient stay files contain a record for every admission to a VHA facility. This includes admissions to acute care settings (e.g., medical/surgical, psychiatric, etc.), observation bed stays, and extended care stays. The inpatient stay files include patient demographic data as well as information on diagnoses, procedures, and surgeries performed while an inpatient.

- i. MDPPRD.MDP.SAS.PMyy
- ii. MDPPRD.MDP.SAS.PMOyy
- iii. MDPPRD.MDP.SAS.XMyy
- iv. MDPPRD.MDP.SAS.CENSUS.PMyy
- v. MDPPRD.MDP.SAS.CENSUS.PMOyy
- vi. MDPPRD.MDP.SAS.CENSUS.XMyy
- vii. MDPPRD.MDP.SAS.PByy
- viii. MDPPRD.MDP.SAS.PBOyy
- ix. MDPPRD.MDP.SAS.XByy
- x. MDPPRD.MDP.SAS.CENSUS.PByy
- xi. MDPPRD.MDP.SAS.CENSUS.PBOyy
- xii. MDPPRD.MDP.SAS.CENSUS.XByy

This Sourcebook refers to files i-vi, above (the Medical SAS Inpatient Main files) as the “Inpatient Main files.” This Sourcebook refers to files vii-xii, above (the Medical SAS Inpatient Bed Section files) as

<sup>144</sup> Detailed descriptions of source datasets can be found on the VA Information Resource Center website (available at: <http://vaww.virec.research.va.gov/Intro/DS-DT-Index.htm>) and the VA Health Economics Resource Center website (available at: <http://www.herc.research.va.gov/Data/default.asp>).

<sup>145</sup> FY12 is October 1, 2011, through September 30, 2012.

“Inpatient Bed Section files.” The Inpatient Bed Section files are used in this Sourcebook only as part of the Conditions identification algorithm.

**VHA Vital Status File (FY12Q4).** The VHA Vital Status File (VSF) contains mortality and demographic data, including race and ethnicity data from Medicare, for all Veterans who are enrolled in VHA, who received VHA care since 1992, or who have received Veterans Benefits Association (VBA) compensation or pension benefits since 2002.

**VA OEF/OIF/OND Roster (FY12Q1).** The DOD, Manpower Data Center (DMDC) maintains a cumulative roster of all Veterans who have been deployed to the OEF/OIF/OND mission or those who have served in support of the missions, and whose most recent military discharge occurred after October 1, 2001. VA Environmental Epidemiology Service maintains the VA OEF/OIF/OND Roster. The Roster includes the subset of these Veterans who were enrolled in VHA prior to the date the VA OEF/OIF/OND Roster was updated—we used the version updated on October 2012.

**PSSG Enrollee File (FY12).** Maintained by the Planning Systems Support Group, these data indicate geographic characteristics, including urban/rural status of patients’ residences.

**DSS National Data Extracts (FY12).** The DSS is the cost accounting system for the Department of Veterans Affairs. The NDEs are a set of data files containing the costs of VHA-provided inpatient and outpatient encounters. Three NDEs, each from fiscal year 2012, were accessed to produce the cost statistics for VHA care in this Sourcebook:

- a. **OPAT and OPAT2.** The DSS outpatient NDEs (OPAT, OPAT2) contain costs for VHA outpatient clinic encounters, as well as outpatient laboratory, pharmacy, ancillary services, prosthetics, and other services. Costs for care provided by some non-VA long term care facilities (such as state Veterans homes) are also included. Outpatient records are split into two sets of files. The OPAT2 files contain records for encounters that have been assigned cost values between -1 and 1, while all other encounters are found in the OPAT files.
- b. **TRT.** The DSS Inpatient Treating Specialty file (TRT) contains information on all VHA inpatient (acute care and extended care) stays. All costs incurred during the fiscal year are included, even if the patient has not yet been discharged at the end of the fiscal year.

**Non-VA (Fee) Medical Care Files (FY12).** Care provided in Non-VA facilities but paid for by VA is recorded in the Non-VA (Fee) Medical Care files. The file for a given fiscal year contains a record for each service reimbursed in that fiscal year, along with other information (e.g., date of service, type of service, diagnoses associated with the service, amount paid to the service provider, etc.). Payments made in a given fiscal year may reflect services provided in that fiscal year or in previous years.<sup>146</sup>

- a. **Non-VA (Fee) Medical Care Outpatient Services File.** Called “MDPPRD.MDP.SAS.FEN. FY12. MED,” the Non-VA (Fee) Medical Care Outpatient Services file reflects services provided through the Non-VA (Fee) Medical Care system. It includes services provided by non-VHA providers in FY12 or services provided in prior years that VHA reimbursed in FY12.<sup>147</sup>

---

<sup>146</sup> Therefore, some records contained in Non-VA (Fee) Medical Care files reflect care provided in FY11 or earlier. Conversely, some care provided in FY12 will not appear in the FY12 Non-VA (Fee) Medical Care files but instead will appear in a subsequent year’s file.

<sup>147</sup> Physician services provided on an outpatient basis appear in this Non-VA (Fee) Medical Care Outpatient Services file, while physician services provided to patients in an inpatient setting appear in the Inpatient Ancillary file.



**b. Non-VA (Fee) Medical Care Inpatient Stay and Ancillary Files.** The Non-VA (Fee) Medical Care Inpatient Stay file contains a record for each submitted invoice not exceeding the allowable Medicare Diagnostic Related Group (DRG) payment. The Inpatient Ancillary file contains records for services whose reimbursement exceeds the Medicare DRG amount as well as for physician care provided in the inpatient setting.

- i. MDPPRD.MDP.SAS.FEN.FYyy.INPT
- ii. MDPPRD.MDP.SAS.FEN.FYyy.INPT.ANCIL

**c. Non-VA (Fee) Medical Care Pharmacy Services File.** The MDPPRD.MDP.SAS.FEN.FY12.PHR file contains records of payments for prescription medications and pharmacy supplies.

**d. Non-VA (Fee) Medical Care Travel Expense File (FY12).** The MDPPRD.MDP.SAS.FEN.FY12.TVL file contains records for payments made to eligible Veterans for travel expenses incurred in order to receive VA care.<sup>148</sup>

All programming was performed using SAS 9.2®, and all programs were independently validated by at least one other data analyst. Data presented in this Sourcebook were analyzed for program evaluation purposes.<sup>149</sup>

## 9.2 Cohort Creation

**Overview.** We first describe construction of the WHEI Master Database for each VA fiscal year, which includes one record for each person who appears in the ADUSH Enrollment File for that fiscal year. We then describe how, for Sourcebook Volume 3, we selected Veteran VHA users in each fiscal year from the WHEI Master Database to create the Base Cohort of Veteran VHA patients for each fiscal year.

**WHEI Master Database.** We created person-level analytical files with one observation for each person found in the ADUSH Enrollment File. The resulting WHEI Master Database includes the following types of people:

- Veterans and non-Veterans
- Users and non-users of VHA care
- Women and men

Each is identified in the WHEI Master Database by scrambled Social Security Number. Various record-level files described in Technical Appendix, Section 9.1 were used to create multiple person-level variables for each individual; variable specifications are described in subsequent sections. Year-specific variables indicate whether an individual was a VHA user or a Veteran in a given year, since these are characteristics that may change over time. Exhibit 9.A shows the number of people in the WHEI Master Database in each year examined: the number within the WHEI Master Database, and the number in the Base Cohort (i.e., the number within the WHEI Master Database who were Veteran VHA users).<sup>150</sup>

---

148 Information about eligibility for VA travel expense reimbursement can be obtained at the following VA website: [http://www.va.gov/health-benefits/access/Beneficiary\\_travel.asp](http://www.va.gov/health-benefits/access/Beneficiary_travel.asp).

149 These program evaluation analyses are for non-research purposes. Research publications and presentations derived from these data are covered by an approval by the Stanford University Institutional Review Board and the VA Palo Alto Health Care System Research and Development Service.

150 The definitions of variables for Veteran, VHA user and sex are intended to replicate as closely as possible the definitions used by the VHA Support Service Center (VSSC) in their data report cubes, so as to maximize compatibility between data appearing in various VHA reports.

**Base Cohort for Sourcebook Volume 3.** To create the Base Cohort for each fiscal year, we selected all women and men Veterans<sup>151</sup> who, based on the ADUSH Enrollment File, used VHA for outpatient and/or inpatient care and/or Non-VA (Fee) Medical Care services and/or non-VA contract care and/or pharmacy services at least once in the years being examined, from FY03–FY12.<sup>152</sup>

**Exhibit 9.A: Number of People in WHEI Master Database and in Base Cohort for Sourcebook Volume 3, by Year**

Fiscal Year	WHEI Master Database / Total Number (Veterans and non-Veterans, VHA users and non-users, women and men)	Base Cohort / Total Number (Veterans only, VHA users only, women and men)*
2003	7,581,489	4,505,433
2004	7,915,775	4,677,720
2005	8,206,947	4,802,582
2006	8,238,168	4,901,827
2007	8,394,406	4,950,501
2008	8,563,192	4,998,184
2009	8,869,648	5,140,379
2010	9,216,578	5,351,873 <sup>†</sup>
2011	9,554,370	5,501,426
2012	9,825,784	5,613,091

\* These numbers include those with missing sex values. For example, in FY12, there are 5,613,091 Veteran VHA users in the WHEI Master Database. This is 2,075 more people than the 5,611,016 women plus men Veteran users reported in Sourcebook Volume 3, because of missing sex data. Sex was not available for 2,075 Veteran users in FY12.

† The number of Veteran VHA patients in FY10 reported in Sourcebook Volume 3 (N=5,351,873) differs slightly from the number of Veteran VHA patients in FY10 reported in Sourcebook Volume 2 (N= 5,354,652). This is due to changes in the WHEI Veteran algorithm. As of FY10, ADUSH Enrollment Files no longer use the “ELIG” variable to determine Veteran status, and so WHEI has modified the Sourcebook Volume 3 Veteran status algorithm to be consistent with the ADUSH Enrollment Files’ Veteran status algorithm. Using the Volume 2 Veteran definition, we had identified 316,903 women Veteran patients in FY10. Throughout Sourcebook Volume 3, we report on 316,414 women Veteran patients in FY10 (instead of the 316,903 women Veteran patients reported in Sourcebook Volume 2) to reflect changes in the Veteran algorithm, as well as changes in the sex variable algorithm described in Technical Appendix, Section 9.3.3.

## 9.3 Algorithms for Sociodemographic Characteristics

The Base Cohort created for the Sourcebook series includes person-level sociodemographic variables derived from data in the ADUSH Enrollment File (in some cases supplemented with data from the VHA Medical SAS Datasets, VHA VSF, and VA OEF/OIF/OND Roster)<sup>153</sup> for each year from FY00–FY12. These variables include Veteran status, sex, date of birth, race/ethnicity, urban/rural status, SC disability rating status, and OEF/OIF/OND status.

151 Non-Veterans who use VHA services are not included in the current Sourcebook. Previous work (Frayne SM., Yano EM, Nguyen VQ, et al. Gender disparities in Veterans Health Administration care: Importance of accounting for veteran status. *Med Care* 2008;46 (5):549-553) has found that, in FY02, nearly half the women in the SE data files were non-Veterans, and the majority of these non-Veterans were employees. Employees appear in the database primarily due to their encounters with Employee Health (e.g., for mandatory tuberculosis screening or for influenza vaccines). Other non-Veterans who use VHA services include some active duty military personnel and some eligible spouses of Veterans. They are not a focus of Sourcebook Volume 3 but represent a subgroup of women seen in primary care and other settings.

152 Because the ADUSH Enrollment File counts use of non-VA contract care and pharmacy services as instances of VHA utilization, a small number of patients whose only use of VHA services is through non-VA contract care or outpatient pharmacy services are included in the cohort examined in Sourcebook Volume 3. In FY12, only 1.1% (3,979) of women Veterans who were identified as VHA users by ADUSH Enrollment Files had no utilization of VHA outpatient or inpatient care or Non-VA (Fee) Medical Care (and thus were presumably VHA users by virtue of non-VA contract care or pharmacy services only). Because the analyses in Sourcebook Volume 3 do not draw upon VHA’s contract care or pharmacy files, we do not explicitly characterize these types of utilization, even though those patients are included in our total counts of VHA patients.

153 Data sources are described in Section 9.1 of this Technical Appendix.

### 9.3.1 Veterans

Two methods were employed to identify Veterans (yes/no variable) in each year over the 10-year period (FY03-FY12). Because true changes in Veteran status can occur, we did not require that Veteran status for a given individual be consistent across years.

FY03–FY09: Identified using fields labeled “PRIO1\_8” and “ELIG”.

A patient is considered a Veteran if either of the following is true:

1. PRIO1\_8 value is NOT missing OR
2. PRIO1\_8 value IS missing, AND the first letter of the ELIG field value is NOT=“N”.

FY10–FY12: A patient is considered a Veteran if the PRIO1\_8 value is NOT missing. (Note that in FY10, the “ELIG” field in the ADUSH Enrollment File became obsolete as a Veteran identifier.)

### 9.3.2 VHA Users

VHA users were identified from ADUSH Enrollment Files using a year-specific user field labeled “FYyy”, and the following cost fields:

FY03–FY07: DSSCNHCOST; DSSFEECOST; DSSLTCCOST; DSSMEDCOST; DSSNVACOST;  
DSSOPCCOST; DSSPSYCOST; DSSSURCOST; CNHCOST; FEECOST; LTCCOST;  
MEDCOST; NVACOST; OPCCOST; PSYCOST; SURCOST

FY08–FY12: DSSCNHCOST; DSSFEECOST; DSSLTCCOST; DSSMEDCOST; DSSNVACOST;  
DSSOPCCOST; DSSPSYCOST; DSSSURCOST; ARCCNHCOST; ARCFEECOST;  
ARCLTCCOST; ARCMEDCOST; ARCNVACOST; ARCOPCCOST; ARCPSYCOST;  
ARCSURCOST

A person was considered to be a VHA user in a particular fiscal year if both the following were true:

1. “FYyy=1” for the specified year<sup>154</sup> AND
2. Sum of all cost fields is >0 for the specified year.

All others were non-users. The term “user” is synonymous with the term “patient” in this Sourcebook.

---

154 This designation in ADUSH Enrollment Files indicates that the patient appeared in a FYyy utilization file for VHA outpatient services, VHA inpatient services, VA pharmacy services, Non-VA (Fee) Medical Care outpatient or inpatient services, or non-VA contract care.

### 9.3.3 Sex

The sex variable algorithm used in Sourcebook Volume 3 differs slightly from the sex variable reported in Sourcebook Volumes 1 and 2. WHEI revised the sex algorithm to include the most recent sex value across the source files based on the assumption that more recent values typically reflect “corrected” values. Also, unlike the sex variable in past Sourcebook Volumes, which incorporated only data from ADUSH Enrollment Files and SF files, the sex variable in this Sourcebook additionally incorporates sex data from the Inpatient Main files. Creating the cross-year sex variable reported in Volume 3 involved a multi-step process.

In Step 1, we assigned the patient’s sex, SEX\_FINAL, based on the SEX\_BEST value in the current year (FY12) ADUSH Enrollment File.

In Step 2, individuals without a SEX\_FINAL value after applying Step 1 were assigned the most recent non-missing sex value from the current year (FY12) SF file.

In Step 3, individuals without a SEX\_FINAL value after applying Step 2 were assigned the most recent non-missing sex value from the current year (FY12) Medical SAS Inpatient Main files.

In Step 4, for individuals without a SEX\_FINAL value after applying Step 3, we repeated Steps 1-3 for FY11, and then continued to fill in missing data iteratively using the same approach by searching prior years’ files in reverse year order, back to FY00.

FY06–FY11: Identified using ADUSH Enrollment File field labeled “SEX\_BEST.”<sup>155</sup>

FY00–FY05: Identified using ADUSH Enrollment File field labeled “SEX.”

Together, steps 1-4 minimized missing sex values, while relying on the most recent sex data available in the ADUSH Enrollment Files and the VHA Medical SAS Datasets for FY00-FY12.

See Technical Appendix, Section 9.9.1 for the proportion of people who had at least one instance of discrepant sex values across the 13-year period. See Technical Appendix, Section 9.9.2 for the proportion of people in each fiscal year who were missing sex values at each step.

### 9.3.4 Age

The age variable algorithm in Sourcebook Volume 3 differs slightly from the algorithm reported in Sourcebook Volumes 1 and 2. In Sourcebook Volume 3, the age variable includes the most recent DOB value across the source files based on the assumption that more recent values typically reflect “corrected” values. Also, unlike the age variable in past Sourcebook Volumes, which incorporated only data from ADUSH Enrollment Files and SF files, the age variable in this Sourcebook additionally incorporates date of birth data from the Inpatient Main files. Creating the Sourcebook Volume 3 age variable for FY12 involved five steps.

In Step 1, we assigned a DOB value, DOB\_FINAL, based on the DOB\_BEST value in the current year (FY12) ADUSH Enrollment File.

---

<sup>155</sup> Since FY06, the VA Information Resource Center (VIREC) Vital Status Files include derived sociodemographic fields, including SEX\_BEST and DOB\_BEST, which incorporate information from multiple data sources and thus represent more complete/accurate data. ADUSH Enrollment Files use these fields from FY06 onward.

In Step 2, individuals without a DOB\_FINAL value after applying Step 1 were assigned the most recent non-missing, within-range value of DOB from the current year (FY12) SF file.

In Step 3, individuals without a DOB\_FINAL value after applying Step 2 were assigned the most recent non-missing, within-range BORNDAY value from the current year (FY12) Inpatient Main files.

In Step 4, for individuals without a DOB\_FINAL value after applying Step 3, we repeated Steps 1-3 for FY11, and then continued to fill in missing data iteratively using the same approach by searching prior years' files in reverse year order, back to FY00.

FY06–FY11: Identified using ADUSH Enrollment Files field labeled “DOB\_BEST.”

FY00–FY05: Identified using ADUSH Enrollment File field labeled “DOB.”

Together, Steps 1-4 minimized missing DOB values, while relying on the most recent DOB data available in ADUSH Enrollment Files and the VHA Medical SAS Datasets for FY00-FY12.

In Step 5, we calculated age in a given year by subtracting the DOB (identified in Steps 1-4) from the first day of the fiscal year (in days) and then dividing the result by 365.25 to determine the age in years. When this calculation resulted in a decimal, the final age value was rounded down to the nearest integer. For example, an age of 47.788 was rounded down to 47.

See Technical Appendix, Section 9.9.2 for the proportion of people in each fiscal year who were missing DOB values at each step.

### 9.3.5 Race/Ethnicity Status

**Overview.** Several different VHA files contain information about race/ethnicity: the VHA Medical SAS Datasets, the VA OEF/OIF/OND Roster, and the VHA VSF. By combining data across files and across years, it is possible to reduce the number of patients with missing race/ethnicity values.<sup>156</sup> However, race/ethnicity data is structured quite differently across data sources, or even across years within a single data source. Therefore, to make it possible to combine data from different sources, it is necessary to perform within-source, within-year data processing to achieve a standardized data structure across sources and years. We first explain how we mapped race data from different sources to a common set of response options, to be applied to our “WHEI\_RACE” variable, and how we mapped ethnicity data from different sources to a common set of response options, to be applied to our “WHEI\_ETHNICITY” variable. We then describe how we combined data within each data source and across data sources to reduce missing data as we populated the WHEI\_RACE variable and the WHEI\_ETHNICITY variable. Finally, we explain how we linked our WHEI\_RACE variable and our WHEI\_ETHNICITY variable to create a composite variable called WHEI\_RACE/ETHNICITY.

---

<sup>156</sup> The VA Information Resource Center provides guidance on working with race and ethnicity data in VHA data which WHEI consulted in creating this Sourcebook (VA Information Resource Center. VIREC Technical Report: VA Race Data Quality. Hines, IL: U.S. Dept. of Veterans Affairs, Health Services Research and Development Service, VA Information Resource Center, Sept. 2011).

**Mapping algorithm to standardize race and ethnicity categories across sources and across years.** Since race and ethnicity classification schema are not uniform across data sources, we constructed standardized categories and mapped values from each source to these standardized categories, as detailed in Exhibits 9.B and 9.C. This mapping algorithm allowed us to assign standardized values to WHEI\_RACE (6 race categories: American Indian/Alaska Native; Asian; Black/African American; Native Hawaiian/Other Pacific Islander; White; and Unknown) and to WHEI\_ETHNICITY (3 ethnicity categories: Hispanic; non-Hispanic; and Unknown).

**Exhibit 9.B: Mapping of “Race” Values**

Data Sources	VHA Medical SAS Datasets		VHA Medical SAS Datasets		VA OEF/OIF/OND Roster Source: Department of Defense	VHA Vital Status File Source: Medicare	WHEI_RACE Values*
	RACE1-RACE7 (SF, FY04-FY12)	RACE1-RACE6 (Inpatient Main, FY03-FY12)	RACE (SF, FY00-FY03, and FY04-FY12†)	RACE (Inpatient Main, FY00-FY02, and FY03-FY12‡)	RACE, ETHNICITY	CMS_RACE	
Race Values from Original Source File	American Indian or Alaska Native		American Indian		<b>Race</b> =(Other OR Unknown <sup>  </sup> ) AND <b>Ethnicity</b> =(Aleut, Eskimo, OR U.S./Canadian Indian tribes)	North American Native	<b>American Indian/Alaska Native</b>
	Asian		Asian		<b>Race</b> =(Other OR Unknown) AND <b>Ethnicity</b> =(Asian Indian, Chinese, Filipino, Guamanian, Japanese, Korean, Vietnamese, OR Other Asian Descent)	Asian	<b>Asian</b>
	Black or African American		Hispanic Black; Black		Black	Black	<b>Black/African American</b>
	Native Hawaiian or Other Pacific Islander				<b>Race</b> =(Other OR Unknown) AND <b>Ethnicity</b> =(Melanesian, Micronesian, Polynesian, OR Other Pacific Islander Descent)		<b>Native Hawaiian/Other Pacific Islander</b>
	White		Hispanic White; White		White	White	<b>White</b>
	Unknown; Declined to Answer; Missing		Unknown; Missing		<b>Race</b> =Hispanic OR <b>Race</b> =(Other OR Unknown) AND <b>Ethnicity</b> =(Other, None, OR Unknown)	Hispanic; Other; Unknown	<b>Unknown §</b>

\* Within each data source within each fiscal year, during data processing we replaced the race value found in the original data source file with this reassigned WHEI\_RACE value.

† Starting in FY04, RACE values in the SF file were no longer being populated, although the previously-populated legacy value was carried forward in subsequent years' files.

‡ Starting in FY03, RACE values in the Medical SAS Inpatient Main files were no longer being populated, although the previously-populated legacy value was carried forward in subsequent years' files.

§ Unknown includes (a) “Unknown,” “Declined to Answer,” or “Missing,” or (b) Race coded as Hispanic without any modifier (i.e., not specified as Hispanic White or Hispanic Black), or (c) “Other” or “Unknown” Race combined with “Other,” “None,” or “Unknown” Ethnicity.

|| For 0.02% of individuals in the WHEI Master Database, OEF/OIF/OND Roster Ethnicity=[(Aleut, Eskimo, OR U.S./Canadian Indian tribes) OR (Asian Indian, Chinese, Filipino, Guamanian, Japanese, Korean, Vietnamese, OR Other Asian Descent) OR (Melanesian, Micronesian, Polynesian, OR Other Pacific Islander Descent)] AND OEF/OIF/OND Roster Race=[(White) OR (Black)]. Note that these individuals' WHEI\_RACE would be White or Black/African American, respectively (and not American Indian/Alaska Native, Asian or Native Hawaiian/Other Pacific Islander, respectively).

**Exhibit 9.C: Mapping of “Ethnicity” Values**

Data Sources	VHA Medical SAS Datasets		VHA Medical SAS Datasets		VA OEF/OIF/OND Roster Source: Department of Defense	VHA Vital Status File Source: Medicare		WHEI_ETHNICITY Values*
Fields	ETHNIC (SF, FY04-FY12)	ETHNIC (In-patient Main, FY03-FY12)	RACE (SF, FY00-FY03 and FY04-FY12†)	RACE (Inpatient Main, FY00-FY02 and FY03-FY12‡)	ETHNICITY	CMS_RACE		
Ethnicity Values from Original Source File	Hispanic or Latino		Hispanic White, Hispanic Black		Puerto Rican; Mexican; Cuban; Latin American with Hispanic Descent; Other Hispanic Descent	Hispanic	Reassigned Ethnicity Values	Hispanic
	Not Hispanic or Latino		American Indian§		Asian Indian; Chinese; Filipino; Guamanian; Japanese; Korean; Vietnamese; Other Asian descent; Aleut; Eskimo; U.S./Canadian Indian tribes; Melanesian; Micronesian; Polynesian; Other Pacific Islander descent	North American Native§		Non-Hispanic
			Asian§			Asian§		
			Black			Black§		
			White			White§		
	Unknown; Declined to Answer; Missing		Unknown; Missing		Other; None; Unknown	Other; Unknown		Unknown

\* Within each data source within each fiscal year, we replaced the ethnicity value found in the original data source file with this WHEI reassigned ethnicity value during data processing.

† Starting in FY04, RACE values in the SF file were no longer being populated, although the previously-populated legacy value was carried forward in subsequent years' files.

‡ Starting in FY03, RACE values in the Inpatient Main files were no longer being populated, although the previously-populated legacy value was carried forward in subsequent years' files.

§ Although it is possible that individuals with these race values could be Hispanic, WHEI mapped these to “non-Hispanic” due to the fact that “Hispanic” was a response option in these files but was not selected for the individual.

|| Includes “Unknown,” “Declined to Answer,” “Missing,” “Other,” and “None.”

**Addressing missing data for race.** Applying the mapping algorithm described in Exhibit 9.B, we created a person-level race variable, WHEI\_RACE, that minimized missing values by incorporating data from multiple sources and multiple years.

In Step 1, we populated WHEI\_RACE with the most recent, non-missing RACE1 value in the current year (FY12) SF file. If RACE1 was missing, we sequentially used any non-missing RACE2-RACE7 value.<sup>157</sup>

In Step 2, individuals without a WHEI\_RACE value after applying Step 1 were assigned the most recent, non-missing RACE1 value in any of the current year (FY12) Inpatient Main files. If RACE1 was missing, we sequentially used any non-missing RACE2-RACE6 value from those files.

In Step 3, individuals without a WHEI\_RACE value after applying Step 2 were assigned the most recent, non-missing RACE value in the current year (FY12) SF file.<sup>158</sup>

In Step 4, individuals without a WHEI\_RACE value after applying Step 3 were assigned the most recent, non-missing RACE value in any of the current year (FY12) Inpatient Main files.<sup>159</sup>

157 The values for the RACE1-RACE7, RACE1-RACE6, and ETHNIC variables additionally contain information on the method by which race/ethnicity information was collected, i.e., whether race/ethnicity was self-identified by the patient, identified by an observer (such as a clinic clerk), identified by a proxy, or whether the method of collection of data was unknown by the patient or missing. The WHEI race and ethnicity algorithms did not attempt to distinguish between these different data collection methods, and simply assigned a value based on the most recent, non-missing race and ethnicity values. The values “Declined to Answer” and “Unknown” were considered to be missing values.

158 Note that starting in FY04, RACE values in the SF file were no longer being populated, although the previously-populated legacy value was carried forward in subsequent years' files.

159 Note that starting in FY03, RACE values in the Inpatient Main files were no longer being populated, although the previously-populated legacy value was carried forward in subsequent years' files.

In Step 5, individuals without a WHEI\_RACE value after applying Step 4 were assigned the RACE value from the OCT2012 VA OEF/OIF/OND Roster (a cumulative file), if that value was not missing or unknown.

In Step 6, individuals without a WHEI\_RACE value after applying Step 5 were assigned the CMS\_RACE value from the VHA VSF (a cumulative file updated in the fourth quarter of FY12) if that value was non-missing.

In Step 7, for individuals still without a WHEI\_RACE value after applying Step 6, we repeated Steps 1-4 for FY11, and then continued to fill in missing data iteratively using the same approach by searching prior years' files in reverse year order, back to FY04. (Steps 5 and 6 did not apply to these prior years because the VA OEF/OIF/OND Roster and the VSF are cumulative files.)

In Step 8, for individuals still without a WHEI\_RACE value after applying Step 7, we repeated Steps 3 and 4 for FY03, and then continued to fill in missing data iteratively using the same approach by searching prior years' files in reverse year order, back to FY00. (Steps 1 and 2 did not apply because RACE1-RACE7 were not available in FY03 and earlier SF files, and RACE1-RACE6 were not available in FY02 and earlier Inpatient Main files.)

Note that only a single WHEI\_RACE value was assigned to each patient.

See Technical Appendix, Section 9.9.2 for the proportion of people who were missing race values at each step.

**Addressing missing data for ethnicity.** Applying the mapping algorithm described in Exhibit 9.C, we likewise created a person-level ethnicity variable, WHEI\_ETHNICITY, that minimized missing values by incorporating data from multiple sources and multiple years.

In Step 1, we populated WHEI\_ETHNICITY with the most recent, non-missing ETHNIC value in the current year (FY12) SF file.

In Step 2, individuals without a WHEI\_ETHNICITY value after applying Step 1 were assigned the most recent, non-missing ETHNIC value in any of the current year (FY12) Inpatient Main files.

In Step 3, individuals without a WHEI\_ETHNICITY value after applying Step 2 were assigned an ethnicity value from the most recent, non-missing RACE value in the current year (FY12) SF files.<sup>160</sup>

In Step 4, individuals without a WHEI\_ETHNICITY value after applying Step 3 were assigned an ethnicity value from the most recent, non-missing RACE value in any of the current year (FY12) Inpatient Main files.<sup>161</sup>

In Step 5, individuals without a WHEI\_ETHNICITY value after applying Step 4 were assigned an ethnicity value from the ETHNICITY value from the OCT2012 VA OEF/OIF/OND Roster (a cumulative file) if that value was not missing or unknown.

In Step 6, individuals without a WHEI\_ETHNICITY value after applying Step 5 were assigned the ethnicity value from the CMS\_RACE field from the FY12Q4 VHA VSF (a cumulative file), if that value was non-missing.

---

<sup>160</sup> RACE contains legacy data from prior to 2004 when race and ethnicity were reported in the same variable. Note that starting in FY04, RACE values in the SF file were no longer being populated, although the previously-populated value was carried forward in subsequent years' files.

<sup>161</sup> Note that starting in FY03, RACE values in the Inpatient Main files were no longer being populated, although the previously-populated value was carried forward in subsequent years' files.



In Step 7, for individuals without a WHEI\_ETHNICITY value after applying Step 6, we repeated Steps 1-4 for FY11, and then continued to fill in missing data iteratively using the same approach by searching prior years' files in reverse year order, back to FY04. (Steps 5 and 6 did not apply to these prior years because the VA OEF/OIF/OND Roster and the VSF are cumulative files.)

In Step 8, for individuals without a WHEI\_ETHNICITY after applying Step 7, we repeated steps 3 and 4 for FY03, and then continued to fill in missing data iteratively using the same approach by searching prior years' files in reverse year order, back to FY00. (Steps 1 and 2 did not apply because ETHNIC was not available in FY03 and earlier SF files nor in FY02 and earlier Inpatient Main files.)

Note that only a single WHEI\_ETHNICITY value was assigned to each patient.

See Technical Appendix, Section 9.9.2 for the proportion of people who were missing ethnicity values at each step.

**Creating a combined, person-level race/ethnicity variable.** Finally, we combined our person-level WHEI\_RACE variable with our person-level WHEI\_ETHNICITY variable to create a single, person-level WHEI\_RACE/ETHNICITY variable, using the mapping strategy described in Exhibit 9.D. This approach aligns with the approach used by The Statistical Policy Division, Office of Information and Regulatory Affairs, of the Office of Management and Budget, which parallels one approach used for U.S. Census data.<sup>162,163</sup> Individuals whose WHEI\_ETHNICITY value was Hispanic were considered to have Hispanic WHEI\_RACE/ETHNICITY. Of those remaining, individuals with “Unknown” WHEI\_RACE were mapped to “Unknown” WHEI\_RACE/ETHNICITY. All others with known WHEI\_RACE were mapped to the corresponding non-Hispanic category.

**Exhibit 9.D: Mapping of WHEI\_RACE and WHEI\_ETHNICITY to WHEI\_RACE/ETHNICITY**

WHEI_RACE (From Exhibit 9.B)	WHEI_ETHNICITY (From Exhibit 9.C)	WHEI_RACE/ETHNICITY (combined)
American Indian/Alaska Native	Hispanic	<b>Hispanic</b>
Asian	Hispanic	
Black/African American	Hispanic	
Native Hawaiian/Other Pacific Islander	Hispanic	
White	Hispanic	
Unknown	Hispanic	
American Indian/Alaska Native	Non-Hispanic OR Unknown	<b>American Indian/Alaska Native – non-Hispanic</b>
Asian	Non-Hispanic OR Unknown	<b>Asian – non-Hispanic</b>
Black/African American	Non-Hispanic OR Unknown	<b>Black/African American – non-Hispanic</b>
Native Hawaiian/Other Pacific Islander	Non-Hispanic OR Unknown	<b>Native Hawaiian/Other Pacific Islander – non-Hispanic</b>
White	Non-Hispanic OR Unknown	<b>White – non-Hispanic</b>
Unknown	Non-Hispanic OR Unknown	<b>Unknown</b>

**Note:** All individuals with indication of Hispanic ethnicity are included in the “Hispanic” race/ethnicity group regardless of their race. The remaining race/ethnicity categories contain Veteran patients who have identified as “non-Hispanic,” but for simplicity, the labels reported in the main text identifies only the race. For example, in the text, “American Indian/Alaska Native – non-Hispanic” is shortened to “American Indian/Alaska Native.”

162 Office of Management and Budget, Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity, 30 October 1997, <http://www.whitehouse.gov/omb/fedreg/1997standards.html> (Accessed September 2013).

163 2010 Census Redistricting Data (Public Law 94-171) Summary File—Technical Documentation/prepared by the U.S. Census Bureau, 2011.

### 9.3.6 Urban/Rural Status

The urban/rural variable draws on the field “URH” in the FY12 PSSG Enrollee File, which indicates the urban/rural status of the last known address in FY12 for each enrollee. PSSG defines its URH field using three categories: A “highly rural” address is in a county with <7 residents per square mile (on average); a “rural” address is in any other non-urban area (renamed “other rural” in Sourcebook Volume 3); an “urban” address must have both 50,000 or more people in the urban nucleus and have an urban core with at least 1,000 residents per square mile.<sup>164</sup> The urban/rural variable in Sourcebook Volume 3 further subdivides the “urban” category into “large urban” (county is in a Metropolitan Statistical Area with at least 500,000 residents) and “small urban” areas (all other urban areas).

See Technical Appendix, Section 9.9.2 for the proportion of people who were missing urban/rural values in FY12.

### 9.3.7 Service-Connected Disability Rating

The SC disability rating variable is based on the field “SCPER” in the ADUSH Enrollment File. Like the Veteran field, SCPER can potentially change across years for legitimate reasons (i.e., if the individual’s SC disability rating changes). If the SCPER field was populated in the ADUSH Enrollment File for a particular fiscal year, we assigned the ADUSH Enrollment File SCPER value to the individual for that fiscal year. If the SCPER field was missing for that fiscal year, we considered the individual as not having an SC disability rating in that fiscal year. We created a variable indicating whether the individual had an SC disability rating in FY12 (yes/no). For those who did have an SC disability rating in FY12, we also created a variable indicating the level of the SC disability rating: 0-49 percent disability rating, 50-99 percent disability rating, or 100 percent disability rating.<sup>165</sup>

See Technical Appendix, Section 9.9.2 for the proportion of people who were missing SC values in each fiscal year (FY03-FY12).

### 9.3.8 OEF/OIF/OND Status Indicator

The OEF/OIF/OND status variable reported in this Sourcebook is based on the VA OEF/OIF/OND Roster. We created a dichotomous person-level OEF/OIF/OND indicator variable using the October 2012 Roster.

A member of the Base Cohort for a particular fiscal year (FYyy) was given a value of 1 for the OEF/OIF/OND indicator variable if:

1. She/he appeared in the October 2012 Roster, AND
2. She/he had a beginning date of first deployment in Afghanistan or Iraq<sup>166</sup> (BEG\_F\_DEP\_DTE) that occurred during or prior to FYyy.

All others were given a value of 0. There were no missing values for the OEF/OIF/OND indicator variable.

For example, a Veteran who received VHA care in FY04 who had a beginning date of first deployment, according to the VA OEF/OIF/OND Roster, in FY03 would be considered an OEF/OIF/OND Veteran in FY04, whereas a Veteran who received VHA care in FY04 who had a beginning date of first deployment in FY05

---

164 Spooont M, et al. 2011. Rural vs. Urban Ambulatory Health Care: A Systematic Review [Internet]. Washington (DC): Department of Veterans Affairs (US); 2011 May.

165 Note that “0 percent” refers to a patient who does have an SC disability rating, but whose severity rating is 0 (zero) percent; this is distinct from a patient who has no SC disability rating.

166 One individual with a beginning date of first deployment before September 11, 2001, was excluded from our analyses.

would not be counted as an OEF/OIF/OND Veteran in FY04. If she/he returned to VHA for care in FY06, she/he would then be counted as an OEF/OIF/OND Veteran in FY06.

## 9.4 Algorithms for Total Utilization (VHA or Non-VA [Fee] Medical Care)

**Generating count of days of VHA or Non-VA (Fee) Medical Care.** The WHEI Master Database has a single variable that counts the number of days on which either *VHA or Non-VA (Fee) Medical Care* was used. This is the most accurate count we can provide for total aggregate care across VHA and Non-VA (Fee) Medical Care because number of days provides a common quantifiable unit, making this a better alternative than attempting to aggregate data across clinic stop encounters in VHA (see Technical Appendix, Section 9.5 for more information about VHA utilization files) and Current Procedural Terminology (CPT)<sup>167</sup> based services in Non-VA (Fee) Medical Care (see Technical Appendix, Section 9.6 for more information about Non-VA [Fee] Medical Care utilization files). In creating this composite variable, any day on which a patient used VHA care counts as “one day,” and any day on which a patient used Non-VA (Fee) Medical Care counts as “one day.” If a patient used both VHA and Non-VA (Fee) Medical Care on the same day, then that day is counted only once.

## 9.5 Algorithms for VHA Utilization

### VHA outpatient utilization:

Outpatient utilization variables are derived from the Medical SAS VHA Outpatient Event (SE) files.

**Generating count of days of VHA care.** The WHEI Master Database contains a variable counting *total days* on which a patient received any VHA outpatient care in FY12. This variable was created for each patient by adding up the number of unique values of outpatient encounter dates, indicated by the VIZDAY field in the SE file. If a patient had multiple VHA encounters on the same date, that day was counted only once.

**Generating count of VHA outpatient encounters.** The WHEI Master Database also contains variables counting the number of VHA *encounters* (rather than days) a patient had within a specific type of care. Clinic “stop codes” (codes indicating clinic type) identify the clinical setting in which the patient received care.<sup>168</sup> This report examines the following specific types of outpatient care:

- **Total Outpatient Care** refers to any type of outpatient care (i.e., all clinic stop codes are considered outpatient care).
- **Face-to-Face Outpatient Care** represents face-to-face care with a clinician (such as primary care visits, mental health visits, other specialty care visits, rehabilitation care visits, etc.) and encounters with a clinician via real-time clinical video (i.e., Clinical Video Telehealth). Other types of encounters that do not involve a face-to-face visit with a clinician (such as lab tests, radiology tests, and telephone encounters) are not included in this type of care.
- **Total Primary Care** refers to primary care received in general medical clinics or in Women’s Health Clinics.

---

<sup>167</sup> American Medical Association. Current Procedural Terminology (CPT®) 2010 Professional Edition.

<sup>168</sup> “Stop codes” are clinic type codes, which are used to identify outpatient care in VHA. Each type of clinic has a unique three-digit code. The codes are entered into the local VHA VISTA system for each patient encounter (e.g., a clinic visit, a radiology procedure, a clinical telephone encounter). The data gathered through VISTA are aggregated into SE files in the national SAS Medical Datasets.

- **General Primary Care Clinic** refers to primary care received in a general medical clinic or equivalent setting. In addition to providing preventive care and care for gender-neutral conditions, such clinics sometimes provide gender-specific care to women (such as cervical cancer screening and breast exams), and sometimes refer women to a different clinic for gender-specific services.
- **Women's Health Clinic** refers to primary care services received in a clinic designed specifically for women. Such clinics provide comprehensive primary care services to women (i.e., preventive health care, care for gender-neutral conditions, and care for gender-specific conditions). *Note:* Historically, prior to FY10, stop code 322<sup>169</sup> was sometimes used to describe care for gender-specific conditions (such as cervical cancer screening and breast exams) provided in a clinic (e.g., a "pap clinic") for women receiving most of their primary care in non-gender-specific general primary care clinics. While the VHA coding manual now defines this type of clinic as 704, some facilities may not yet have fully implemented this coding change.
- **Gynecology and Related Care** refers to gynecology clinic and women's ambulatory surgery clinic.
- **Mental Health/SUD Care** refers to care received in mental health or SUD clinics (e.g., psychiatry visits, psychology visits, individual or group therapy, SUD treatment, and mental health/SUD rehabilitation treatment programs). It also includes visits with mental health providers embedded in primary care settings. *Note:* This category does not include services provided by primary care providers for mental health conditions or SUDs. Screening for these conditions occurs in primary care settings, and patients may receive pharmacotherapy or brief interventions for these conditions from primary care providers as well. Also note that the mental health/SUD category does not include services provided in Social Work Clinic.<sup>170</sup>
- **SUD Care** refers to treatment received in SUD clinics. SUD care represents a subset of the care category above (Mental Health/SUD care). *Note:* This category does not capture any SUD care provided in general mental health clinics or in primary care clinics.
- **Telephone Care** refers to a telephone encounter with a clinician.
- **Clinical Video Telehealth (CVT)** refers to care provided by a clinician through real-time clinic-based video telehealth, with the patient in one location and the clinician in a different location.<sup>171</sup>
- **Home Telehealth** employs special devices that connect to a patient's telephone to transmit information (such as symptoms or vital signs) directly to a VHA clinician.<sup>172</sup>
- **Store & Forward Telehealth** involves obtaining clinical information (such as images, video, sound, or data), storing it and then forwarding it to a clinician at another location for evaluation. For example, an image of a skin lesion could be forwarded to a dermatologist, an image of a retina could be forwarded to an ophthalmologist, or a radiologic image could be forwarded to a radiologist.<sup>173</sup>

169 Starting in FY10 and continuing through FY12, the women's health clinic stop code (322) is officially described in the VHA coding manual as follows: "Records patient visit for primary care services provided to women through a coordinated, interdisciplinary provision of medical, nursing, psychosocial, and allied health services for disease treatment and prevention and health promotion and education, referral for specialty, rehabilitation, and other levels of care, follow-up and overall care management by a Comprehensive Women's Health Primary Care Provider and support team. Includes provider and support services. Comprehensive Women's Health Centers and Women's Health clinics may have shared space. Subspecialty services may also be provided in the same physical location."

170 This is a change from Sourcebook Volume 2, which counted Social Work Clinic as one of the mental health/SUD stop codes. This modification was made because further investigation for Sourcebook Volume 3 revealed that the preponderance of Social Work Clinic encounters were associated with a diagnosis indicative of a need for social services (such as housing instability or employment difficulties) rather than a mental health diagnosis. Thus, services provided by a social work clinician would count as mental health/SUD care if associated with a mental health/SUD clinic stop code, but services provided by a social work clinician within a Social Work clinic would not. In addition to deleting Social Work Clinic, several other smaller-volume stop codes were also modified in Sourcebook Volume 3.

171 For additional information, see: <http://www.telehealth.va.gov/real-time/index.asp>.

172 For additional information, see: <http://www.telehealth.va.gov/ccht/index.asp>.

173 For additional information, see: <http://www.telehealth.va.gov/sft/index.asp>.

For each type of care, the WHEI Master Database contains a count of the total number of encounters occurring for a patient in one fiscal year (for each year FY00–FY12), regardless of whether those encounters occurred on the same day. Of note, while we exclude duplicate records (encounters by the same person on the same day at the same facility to the same clinic stop code), more than one encounter may legitimately occur on a single day. For example, a patient may visit a primary care clinic, cardiology clinic, podiatry clinic, and the outpatient laboratory all on the same day. Using our approach, all but the lab visit would count toward that patient’s “face-to-face outpatient care” tally, and the primary care visit would count toward the “primary care” tally. It is important to capture all visits occurring on each day (rather than simply counting total number of days on which care was received), because some patients try to schedule as much care as possible on a single day (e.g., to minimize travel to the care setting or to minimize time away from work or care giving). The frequency of duplicate records is described in Technical Appendix, Section 9.9.3.

**Outpatient care variables stop codes.** The specific clinic stop codes from the SE file (CL field) used to create counter variables for each type of care are listed here.

### 9.5.1 Outpatient Care Encounters

Any stop code in the CL field (CL captures primary stop codes).

### 9.5.2 Face-to-face Outpatient Care Encounters<sup>174</sup>

Any of the following stop codes in the CL field: 101, 102, 110, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 130, 131, 135, 142, 144, 149, 152, 153, 156, 157, 158, 159, 160, 162, 165, 170, 171, 172, 173, 174, 175, 176, 177, 179, 180, 184, 185, 186, 187, 188, 190, 191, 195, 196, 197, 198, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 213, 214, 215, 217, 218, 219, 220, 222, 230, 240, 250, 290, 291, 292, 293, 294, 295, 296, 297, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 340, 345, 348, 349, 350, 351, 352, 353, 369, 370, 372, 373, 394, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 418, 419, 420, 422, 426, 427, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 448, 450, 457, 480, 481, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 516, 519, 520, 521, 522, 523, 524, 525, 529, 531, 532, 533, 534, 535, 538, 539, 540, 547, 548, 550, 551, 552, 553, 554, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 571, 572, 573, 574, 575, 576, 577, 578, 580, 581, 582, 583, 588, 589, 590, 591, 592, 593, 594, 595, 596, 598, 599, 602, 603, 604, 606, 607, 608, 610, 644, 645, 648, 650, 651, 652, 653, 654, 655, 656, 658, 670, 680, 681, 690, 691, 692, 693, 701, 704, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 718, 720, 725, 726, 727, 728, 730, 731, 802, 999

### 9.5.3 Primary Care Clinics (Other Than Women’s Health Clinic)<sup>175</sup>

Any of the following stop codes in the CL field (unless indicated in a footnote):

160323 Clinical Pharmacy Primary Care Medicine<sup>176</sup>

<sup>174</sup> In previous versions of the Sourcebook, counts of face-to-face encounters had excluded records where the Current Procedural Terminology (CPT) code field indicated a laboratory code. In FY10, VHA implemented Patient Aligned Care Teams (PACT), a patient-centered medical home model that emphasizes providing comprehensive, patient-centered care and increased coordination by a team of primary care providers and clinic staff. Since members of the PACT team may sometimes perform within-clinic lab testing (such as blood sugar checks), and since such testing may also occur in some other clinics, Sourcebook Volume 3 does not exclude such services if they occur in the setting of a face-to-face outpatient care stop code.

<sup>175</sup> Stop code labels come from VA documentation, and so in general no effort has been made here to spell out these abbreviations.

<sup>176</sup> 160323 is a code combining two different clinics, where 160 is the primary stop code (in the CL field) and 323 is the secondary stop code (in the CLC field).

170	Home-based Primary Care - Physician
171	Home-based Primary Care - Nursing (RN or LPN)
172	Home-based Primary Care - Physician Extender (NP, CNS, PA)
301	General Internal Medicine
310323	Infectious Disease Primary Care Medicine <sup>177</sup>
318	Geriatric Clinic
323	Primary Care Medicine <sup>178</sup>
348	Primary Care Group
350	Geriatric Primary Care
704	Pap Smear Clinic <sup>179</sup>

#### 9.5.4 Women's Health Clinics

Any of the following stop codes in the CL field (unless indicated in a footnote):

160322	Clinical Pharmacy Women's Clinic <sup>180</sup>
322	Women's Clinic

#### 9.5.5 Gynecology and Related Care

Any of the following stop codes in the CL field:

404	Gynecology
426	Women's Surgery

#### 9.5.6 Mental Health Care Clinics

Any of the following stop codes in the CL field:

156	Home Based Primary Care - Psychologist
157	Home Based Primary Care - Psychiatrist
292	Observational Psychiatry
502	Mental Health - Individual
503	Mental Health Residential Care
504	Intensive Psychiatric Community Care Medical Center VI
505	Day Treatment - Individual
506	Day Hospital - Individual
509	Psychiatry - Individual
510	Psychology (PSO) - Individual
512	Mental Health Consultation
516	Posttraumatic Stress Disorder Group
519	Substance Use Disorder / Posttraumatic Stress Disorder Teams <sup>181</sup>
524	Active Duty Sex Trauma

---

177 3103323 is a code combining two different clinics, where 310 is the primary stop code (in the CL field) and 323 is the secondary stop code (in the CLC field).

178 323 is the stop code most commonly used for primary care clinics.

179 While this clinic provides care to women only, it is included in primary care clinics (rather than women's health clinics) because it represents only one element of primary care; in this report, "Women's Health Clinic" is reserved for care provided as part of comprehensive women's health care.

180 160322 is a code combining two different clinics, where 160 is the primary stop code (in the CL field) and 322 is the secondary stop code (in the CLC field).

181 Clinic stop code 519 "Substance Use Disorder/ Posttraumatic Stress Disorder Teams" is not included in the SUD category because we are unable to determine which visits represent SUD care and which represent Posttraumatic Stress Disorder care; instead, it is counted in the broader "Mental health care clinics" category.

525	Women's Stress Disorder Treatment Teams
529	Health Care for Homeless Veterans
532	Psychosocial Rehabilitation - Individual
533	Mental Health Intervention Biomedical Care - Individual
534	Mental Health Integrated Care
535	Mental Health Vocational Assistance - Individual
539	Mental Health Integrated Care Group
540	Posttraumatic Stress Disorder Clinical Team - Individual
550	Mental Hygiene - Group
552	Mental Health Intensive Case Management
553	Day Treatment - Group
554	Day Hospital - Group
557	Psychiatry - Group
558	Psychology - Group
559	Psycho / Social Rehab - Group
561	Posttraumatic Stress Disorder Clinical Team - Group
562	Posttraumatic Stress Disorder - Individual
564	Mental Health Team Case Management
567	Mental Health Intensive Case Management Group
568	Mental Health Compensated Work Therapy / Supported Employment Face-To-Face
571	Serv-Mental Health - Individual
572	Serv-Mental Health - Group
573	Mental Health Incentive Therapy Face-To-Face
574	MH Compensated Work Therapy / Transitional Work Experience Face-To-Face
575	Mental Health Vocational Assistance - Group
576	Psychogeriatric Clinic - Individual
577	Psychogeriatric Clinic - Group
580	Posttraumatic Stress Disorder Day Hospitalization
582	Psychosocial Rehabilitative and Recovery Center - Individual
583	Psychosocial Rehabilitative and Recovery Center - Group
588	Residential Rehabilitation Treatment Programs Aftercare Individual
590	Community Outreach Homeless Vets By Staff Other than HCHV and RRTP Pro- grams Services
591	Incarcerated Veterans Reentry
592	Veterans Justice Outreach
593	Residential Rehabilitation Treatment Programs Outreach Services
595	Residential Rehabilitation Treatment Programs Aftercare – VA
596	Residential Rehabilitation Treatment Programs Admission Screening Services
598	Residential Rehabilitation Treatment Programs Pre-Admit Individual
599	Residential Rehabilitation Treatment Programs Pre-Admit Group

### **9.5.7 Substance Use Disorder (SUD) Care Clinics**

Any of the following stop codes in the CL field:

513	SUD - Individual
514	SUD - Home Visit

523	Opioid Substitution
547	Intense Substance Use Disorder - Group
548	Intense Substance Use Disorder - Individual
560	Substance Use Disorder – Group

### 9.5.8 Telephone and Telehealth

#### Telephone:

Any of the following stop codes in the CL field:

103	Telephone Triage
147	Telephone / Ancillary
148	Telephone / Diagnostic
178	Home Based Primary Care / Telephone
181	Telephone / Dental
182	Telephone Case Management
199	Polytrauma Phone
216	Telephone Rehab Supp
221	Telephone Visit Pri Only
229	Telephone / Blind Rehab Program
324	Telephone / Medicine
325	Telephone / Neurology
326	Telephone / Geriatrics
338	Telephone Primary Care
424	Telephone / Surgery
425	Telephone / Prosth / Ortho
428	Telephone / Optometry
527	Telephone / General Psychiatry
528	Telephone HCMI
530	Telephone / HUD-VASH
536	Telephone / MH Vocational Assistance
537	Telephone Psyc / Soc Rehab
542	Telephone / PTSD
545	Phone Substance Use Disorder
546	Telephone / MHICM
579	Tel / Psychogeriatrics
584	PRRC Tele
597	Telephone RRTP
611	Telephone Dialysis
729	TELEPHONE – RRTP



**Clinical Video Telehealth:**

Any of the following stop codes in the CLC field (CLC captures secondary stop codes):

179	Real-Time Video Care 2nd
644	National Center Real Time Clinical Video - Telehealth - Patient Site
645	National Center Real Time Clinical Video - Telehealth - Provider Site
648	Real Time Clinical Video Telehealth with Non-VAMC Location - Provider Site
690	Real Time Clinical Video Telehealth - Patient Site
692	Gen Telehealth RT Same Station
693	Gen Telehealth RT Different Station

**Home Telehealth:**

Any of the following stop codes in the CLC field:

371	CCHT Screening
683	HT Non-Video Monitoring
684	HT Non-Video Intervention
685	HT Program Patients
686	Telephone by HT Staff

**Store & Forward Telehealth:**

Any of the following stop codes in the CLC field:

694	Store & Forward Telehealth
695	Store & Forward Same Station
696	Store & Forward Different Station
698	Store & Forward Telehealth from Non-VAMC Location – Provider Site

## 9.6 Algorithms for Non-VA (Fee) Medical Care Utilization

### 9.6.1 Non-VA (Fee) Medical Care Utilization: Overview

Non-VA (Fee) Medical Care utilization variables are derived using the FY12 Non-VA (Fee) Medical Care Outpatient Services file.

*NOTES ABOUT NON-VA (FEE) MEDICAL CARE DATA: Due to differences in organization between the FY12 Non-VA (Fee) Medical Care outpatient data and the FY12 VHA outpatient data, additional processing is required to create utilization variables for this Sourcebook. This processing and the decisions behind the processing are summarized below.*

The FY12 Non-VA (Fee) Medical Care Outpatient Services file includes only services that were *reimbursed* by VHA in FY12. Exhibit 9.E shows three possible combinations of the year in which a service was provided and the year in which the service was reimbursed (and thus appeared in Non-VA [Fee] Medical Care outpatient data).






Scenario 1 shows a service both provided and reimbursed in FY12.


Scenario 2 shows a service provided in FY11 but which appeared in the FY12 Non-VA (Fee) Medical Care Outpatient Services file rather than FY11 Non-VA (Fee) Medical Care Outpatient Services file due to a lag

between service provision and service reimbursement,<sup>182</sup> and thus we refer to it as an “extra” service in the FY12 Non-VA (Fee) Medical Care Outpatient Services file.

Scenario 3 shows a similar lag, where the service was provided in FY12 but was reimbursed in FY13; this service appears in the FY13 file but not in the FY12 file, and thus we refer to it as being “excluded” from the FY12 Non-VA (Fee) Medical Care file.

**Exhibit 9.E: Three Scenarios Observed in FY12 Non-VA (Fee) Medical Care Outpatient Data**

	FY11	FY12	FY13
Scenario 1: Service provided in FY12 and appears in FY12 Non-VA (Fee) Medical Care file.			
Scenario 2: Service provided in FY11 and appears in FY12 Non-VA (Fee) Medical Care file (“extra”).			
Scenario 3: Service provided in FY12 and appears in FY13 Non-VA (Fee) Medical Care file (“excluded”).			

 Record reimbursement date, indicating the fiscal year of Non-VA (Fee) Medical Care file in which record appears.

 Fiscal year in which service occurred.

WHEI decided to create Non-VA (Fee) Medical Care utilization variables based on care reimbursed in FY12, with two justifications: First, for administrative purposes, it may be useful to track the volume of services that were reimbursed in FY12, rather than the services that were provided in FY12. Second, for program evaluation purposes, volume of services *reimbursed* in FY12 appears to be an acceptable proxy for services *provided* in FY12. WHEI estimates that the number of “extra” services in the FY12 file (those provided prior to FY12 but reimbursed in FY12) will approximately compensate for the “excluded” services in the FY12 file (those provided in FY12 but reimbursed after FY12). However, annual increases in the numbers of Veterans in VHA and corresponding increases in service volume each year may mean that the number of FY12 services “excluded” exceeds the number of “extra” FY11 services included. Therefore, approximating services provided in FY12 using the FY12 Non-VA (Fee) Medical Care outpatient data most likely undercounts the services actually provided in Non-VA (Fee) Medical Care in FY12.

### 9.6.2 Data Processing of Non-VA (Fee) Medical Care Outpatient File

Before creating day- and person-level service count variables, WHEI modified the raw record-level Non-VA (Fee) Medical Care data to improve the accuracy of the final variables in two ways:

1. To ensure that “multiple records” (where the same person received the same service from the same provider on the same day) were counted only once, and
2. To account for the “VOLUMIND” (Volume Indicator) in Non-VA (Fee) Medical Care data, which counts how many times a service occurs.

<sup>182</sup> In the raw FY12 Non-VA (Fee) Medical Care outpatient file, 74% of records reflect FY12 care, 24% reflect FY11 care, and 2% reflect care prior to FY11. See Technical Appendix, Section 9.9.4 for further description quantifying records reflecting treatment from prior years.

Note that records with DISAMT=0 or missing were not excluded, which represents a difference from the approach used in Sourcebook Volume 2.<sup>183</sup>

These two modifications are explained below.

**Multiple records.** WHEI's initial investigation of the FY12 Non-VA (Fee) Medical Care outpatient file revealed that over one million records appeared to be part of a set of multiple records. While records in the outpatient fee data typically use one single record to describe a single service for a particular patient on the same day and from the same provider, multiple records occur when there is more than one record describing a single person receiving the same service (CPT field) from the same provider (NPI and VENDID fields) on the same day (TREATDAY field). To avoid over-counting services, WHEI identified three categories of sets of duplicate records:

1. Where additional records showed a second “part” of the same service, as indicated by a modifier in the CPTMD1-CPTMD4 fields of the Non-VA (Fee) Medical Care data. For example, a record set might include one record for the professional component and another for the technical component of an x-ray; another record set might include one record for an arthroscopic surgery on the left knee and another for the same surgery on the right knee, with the surgeries occurring in tandem.
2. Where additional records showed additional quantities. For example, this might include CPT codes indicating additional volume units of a drug or saline solution, additional minutes of a physical therapy visit, additional miles of emergency transport, etc.
3. Where additional records showed additional administrative processing or re-processing. For example, this could be due to a payment adjustment, etc.

Despite appearing on different rows of data, each of the multiple records in these sets was interpreted as representing a *part* of a single service. Regardless of how many multiples there were, WHEI added the costs across the multiple records so that cost information in the original records would be captured, and then retained only one record from each set of multiple records. This processing reduced the number of records used in counts of services from 25,374,963 to 23,850,817.

*NOTE: Data processing related to multiple records changed the number of records but did not change the total number of people in the Non-VA (Fee) Medical Care outpatient data. Technical Appendix Section 9.9.5 presents a flow chart containing the number of records resolved at each step of multiple record processing.*

**Volume indicator.** One feature that distinguishes the way utilization is recorded in Non-VA (Fee) Medical Care data (in contrast to VHA data) is that a count of the number of “units” of a service is recorded in a field called “VOLUMIND.” This field’s values indicate how many times a service is repeated over a month. For example, a record for a patient who had six physical therapy sessions in a month might have a VOLUMIND=6 (assuming the same CPT code was used in each session).<sup>184</sup>

---

183 In Sourcebook Volume 2, we excluded records in the FY10 Non-VA (Fee) Medical Care outpatient file when the payment amount (DISAMT field) value was missing or had a value of 0, to ensure that counts of utilization reflected only services that were reimbursed by VHA. In FY11, VHA implemented Medicare pricing for some Non-VA (Fee) Medical Care payments and also began sending \$0 line items to Central Fee for data/informational purposes. Due to these changes, the number of Non-VA (Fee) Medical Care records with DISAMT equal to \$0 or missing increased from 804,508 records (4% of records) in FY10 to 4,955,776 records (19% of records) in FY12. Although a small percentage of these records could possibly reflect denied line items, the majority of records represent bundled payments (J. Enderle, personal communication, June 17, 2013). Rather than seriously undercounting Non-VA (Fee) Medical Care days of care and services that VHA Veteran patients received in FY12 by continuing to exclude records with \$0 or missing payment amounts, WHEI has modified our raw record-level Non-VA (Fee) Medical Care data processing: we now include all records in the Non-VA (Fee) Medical Care outpatient data file (i.e., records with DISAMT>\$0 as well as records with DISAMT=\$0 or missing).

184 Alternatively, the same six physical therapy visits could each be recorded in six separate records, each with a VOLUMIND of 1.

*Impact on counts of days of care.* By condensing the information from six nearly identical records into a single record, the VOLUMIND field economizes data space, but also introduces complexity into calculation of day-level counts of service use. When VOLUMIND=1, there was no ambiguity: The specified service was provided one time on the specific day recorded. However, when VOLUMIND is greater than 1, then multiple services could be concentrated on one single day (the service date in the record) or could be dispersed across different days (the service date in the record plus other days). It is not possible to tell which scenario occurred for any given record. For example, suppose that a record has January 15, 2012, as the date of service, 15 minutes of physical therapy services as the type of service, and VOLUMIND=6. It is not possible to distinguish whether these six units of service refer to the date of the record (e.g., in this case, that six 15-minute physical therapy services occurred on January 15, 2012) versus whether some of these services occurred later in the month (e.g., perhaps two of these 15-minute services occurred on January 15, 2012, and the remaining four 15-minute services were distributed later in the month). Without knowing the actual number of days on which patients received Non-VA (Fee) Medical Care services, it was not possible to accurately count all days of service on which care was provided. WHEI did not attempt to address this when creating the day count variable, and thus the resulting variable undercounts the true number of days on which outpatient Non-VA (Fee) Medical Care was provided.

*Impact on counts of services provided.* WHEI's service count variables, which count the number of Non-VA (Fee) Medical Care services received by each Non-VA (Fee) Medical Care patient, were calculated by summing together each person's VOLUMIND values across the person's records. These count variables were therefore highly dependent on VOLUMIND values. In the event of an inadvertent data entry error on VOLUMIND (either too large or too small), a simple sum would generate over- or under- counts of services, respectively. An early investigation found that in FY12 Non-VA (Fee) Medical Care files, 154,603 records had a VOLUMIND larger than 100, and 3,179 had a VOLUMIND larger than 1,000. Although a high volume may be reasonable for some types of care (e.g., multiple units of drugs or supplies, etc.), for other types of care it is likely unreasonable (e.g., biopsy, most surgical procedures, etc.).

Therefore, to reduce the risk of introducing such an error, for records with a VOLUMIND greater than 1, WHEI developed a hierarchy of rules that identify records that likely contain data entry errors and created a "modified VOLUMIND" variable that was used to calculate best estimates for the final service count variables. This section provides a text summary of the steps used to modify the VOLUMIND, while the Technical Appendix Section 9.9.6 documents the steps in greater detail.

The WHEI-modified Volume Indicator value was set to 1 when the original VOLUMIND contained the same numerical values as the diagnosis code, payment amount, or CPT code (these were judged to be data entry errors) (N=4,250 records),<sup>185</sup> or when the CPT code indicated an anesthesia service<sup>186</sup> (N=53,448 records).

For remaining records with VOLUMIND greater than 1, WHEI divided each record's cost (payment amount field in the Non-VA [Fee] Medical Care data) by the number of units (VOLUMIND) to calculate an "observed unit cost", which could then be compared to an expected unit cost for the specific service.<sup>187</sup> When observed unit cost was substantially smaller than expected (N=2,517,277 records), we hypothesized that the recorded number of units (VOLUMIND) was higher than the actual number of

---

185 For example, if the CPT code was 97853 and the VOLUMIND was 97,853, the VOLUMIND was judged a data entry error and reset to 1.

186 We found that during FY12, VOLUMIND values on records for anesthesia services reflected the duration of the service in minutes, rather than the number of services. For this reason, we set VOLUMIND\_mod = 1 for anesthesia services.

187 Phibbs CS, Scott JY, Flores NE, Barnett PG. HERC's Outpatient Average Cost Dataset for VA Care: Fiscal Year 2010 Update. Guidebook. Menlo Park, CA. VA Palo Alto, Health Economics Resource Center, 2011.

units.<sup>188</sup> Therefore, in these records the VOLUMIND values were considered data entry errors, and the modified Volume Indicator value was set to 1.<sup>189</sup> An additional handful of remaining records (N=5,083) with original VOLUMIND greater than 1 were also given modified Volume Indicators equal to 1 because their original values seemed to indicate more service than a single person could receive in a month (e.g., a code that indicates “per diem” being provided more than 31 times in a month). It is probable that by employing these rules, some records without data entry errors were erroneously modified, with the overall effect of undercounting total services. However, these rules for modifying the VOLUMIND value are expected to result in more reliable results than would have been generated if no modifications had been made to the VOLUMIND value.

In contrast to the examples of correcting data entry errors discussed above, when the CPT code was a drug, supply, dental procedure, or travel distances, a Volume Indicator greater than 1 was considered legitimate. However, because we did not want to count each unit as a distinct service, the Volume Indicator for these CPT codes was also ultimately set to 1 (N=2,895,510 records). For a complete list of steps applied to create a modified Volume Indicator, see Technical Appendix, Section 9.9.6.

*NOTE: The processing done by WHEI to modify the VOLUMIND field did not change the number of records or the number of people in the raw Non-VA (Fee) Medical Care outpatient data.*

### 9.6.3 Non-VA (Fee) Medical Care Outpatient Utilization Variable Creation

**Generating count of days of Non-VA (Fee) Medical Care.** The WHEI Master Database contains a variable that counts total days on which a patient had any Non-VA (Fee) Medical Care outpatient care recorded in the FY12 file. This variable was created for each patient by adding up the number of unique values of the TREATDAY field in the FY12 Non-VA (Fee) Medical Care outpatient file after the file processing steps described above were completed. If a patient received multiple services on the same date, that day was counted only once for this variable. Also not counted were days where the CPT code was invalid (N=476 records).

**Generating count of Non-VA (Fee) Medical Care services.** The WHEI Master Database also contains variables counting the number of Non-VA (Fee) Medical Care outpatient services received (rather than days) within a specific type of care. CPT codes identify the type of service the patient received. Sourcebook Volume 3 reports total Non-VA (Fee) Medical Care outpatient care, measured by a variable that counts any service that appears in the processed FY12 Non-VA (Fee) Medical Care Outpatient Services file.

**Generating indicator for whether mammography services were provided through Non-VA (Fee) Medical Care.** Mammography services are sometimes provided through Non-VA (Fee) Medical Care rather than at a woman’s local VHA facility. Therefore, WHEI created an indicator for whether or not a woman received any mammography service through the Non-VA (Fee) Medical Care system.<sup>190</sup>

---

188 The alternative hypothesis would be that the recorded payment was smaller than the actual payment, but this is unlikely because actual payments issued are recorded in the Non-VA (Fee) Medical Care Outpatient Services file.

189 There were also cases where the observed unit cost was larger than the expected unit cost, which would happen if the recorded payment was larger than the actual payment or if the recorded number of units (VOLUMIND) was smaller than the actual number of units. In these cases, setting the modified VOLUMIND to 1 would have worsened the problem, so the VOLUMIND was not modified for these records.

190 Sourcebook Volume 3 provides only information about total counts of services received through Non-VA (Fee) Medical Care and about whether or not women received mammography services through Non-VA (Fee) Medical Care. For additional detail regarding women Veterans’ utilization of specific types of services, please refer to Sourcebook Volume 2, which examines Non-VA (Fee) Medical Care in greater detail. Also note that Sourcebook Volume 3 contains information about receipt of mammography services through Non-VA (Fee) Medical Care, but does not report on women’s receipt of mammography services within VHA, and does not include information about any mammography services that women VHA patients may receive elsewhere, e.g., through Medicare or other payors; therefore, Sourcebook Volume 3 does not attempt to capture the totality of mammography services that women Veterans receive.

**Defining mammography.** Mammography includes screening mammography and diagnostic mammography. Potential mammography CPT codes were first selected using a text search for the terms “mammogram,” “mammo,” “mamm,” “mast,” “brst,” and “breast” in the CPT descriptions of all CPT codes that appeared in the FY09 or FY10 Non-VA (Fee) Medical Care outpatient file.<sup>191</sup> We then added to this master candidate codes list all codes classified as “mammography” in the FY11 Clinical Classifications Software (CCS) of the Agency for Healthcare Research and Quality. Next we reviewed the CPT codebook for any potentially overlooked CPT codes numerically close to the selected master list of candidate codes. Clinical experts reviewed the master list of candidate codes and selected codes for screening mammography and diagnostic mammography. This process yielded 20 mammography CPT codes.

CPT codes:

Screening mammography: 76083, 76084, 76085, 76092, 77052, 77057, G0202, G0203, S8075

Diagnostic mammography: 76082, 76090, 76091, 77051, 77055, 77056, G0204, G0205, G0206, G0207, G0236

## 9.7 Algorithms for Calculating Cost Variables

Cost statistics presented in Part 5 of Sourcebook Volume 3 were derived from the DSS NDEs and the Non-VA (Fee) Medical Care files. See Technical Appendix, Section 9.1 for a description of these files. To create the final total costs per woman Veteran patient, we first calculated costs for each type of care: VHA outpatient care, VHA inpatient care, and Non-VA (Fee) Medical Care. In calculating costs, we attempted to identify outliers and correct for what appeared to be the largest data errors. Remaining errors and outliers are rare enough that the effect on the reported population statistics is expected to be negligible.

### 9.7.1 VHA Outpatient Care

Costs of VHA outpatient care were derived from the DSS outpatient (OPAT and OPAT2) NDEs. Each record in the OPAT and OPAT2 files corresponds to an outpatient encounter and contains the date of the encounter (VIZDAY field), the clinic stop code, and the total cost of the encounter (OCST\_TOT field). Records with a date that fell before fiscal year 2012 were deleted (0.003% of all records). Over 89% of the deleted records had zero cost. A record was deemed to be an outlier and the cost was adjusted if it met one of the following criteria:

- a. For clinic stop code 651 (State Nursing Home Days) – if station was 586 and cost was greater than or equal to \$100,000, then cost was divided by 30 to correct a data error (per instructions from the DSS Program Office).
- b. For clinic stop code PHA (Pharmacy) – if cost was greater than or equal to \$50,000, then cost was replaced by the national average cost for all pharmacy encounters.<sup>192</sup>
- c. For all other clinic stop codes – if cost was greater than or equal to \$100,000, then cost was replaced by the national average cost for the appropriate clinic stop code.<sup>193</sup>

---

191 To update the list of mammography CPT codes for FY12, we performed a text search for the same terms among the CPT codes that appeared in the FY12 Non-VA (Fee) Medical Care outpatient file. After clinical review of the resulting CPT codes, no new CPT codes were added to the mammography definition.

192 The cut-off value is arbitrary but was chosen in an attempt to filter out the most impactful errors.

193 Ibid.

Outlier adjustment affected just 0.01% of patients who received VHA outpatient care.

For each patient, total costs were summed across all records.<sup>194</sup>

### 9.7.2 VHA Inpatient Care

Costs of VHA inpatient care were derived from the DSS TRT NDE. Each record in the TRT file corresponds to a segment of an inpatient stay, where segments are defined by treating specialty (also known as bed section) and calendar month. For example, if a stay crosses a calendar month boundary, two TRT records are generated, corresponding to the portions of the stay which occurred within each calendar month. Similarly, if a stay includes care in more than one bed section, each bed section stay generates its own TRT record (or multiple records if the bed section stay crosses calendar month boundaries). Therefore each record in the TRT file represents care delivered in a single bed section and lasting at most one calendar month. Each record contains the start and stop dates for the treatment period, the treating specialty code (also known as the bed section code), and the total cost of the care incurred during that period (TCST\_TOT field). Approximately 0.4% of the records in the FY12 file were found to have invalid treatment dates and were deleted. This included 4,451 records with treatment start and stop dates and treating specialty code missing (all of these records had zero cost), as well as 11 records with both treatment start and stop days which fell before fiscal year 2012. If the treatment start date was valid but the treatment stop date was missing, indicating that the patient had not yet been discharged at the end of the calendar month, the stop date was set to the last day of the month in which the treatment period started. The number of treatment days for each record was calculated based on the treatment start and stop dates.

A record was deemed to be an outlier if it met one of the following criteria:

- a. For acute medical stays<sup>195</sup> – if cost per treatment day was greater than or equal to \$25,000.<sup>196</sup>
- b. For surgery stays<sup>197</sup> – if  $(\text{cost} - \$100,000)/(\text{treatment days})$  was greater than or equal to \$10,000.<sup>198</sup>
- c. For all other stays – if cost per treatment day was greater than or equal to \$10,000.<sup>199</sup>

Outlier costs were replaced by the product of the number of treatment days and the national cost per day for the appropriate treating specialty. This adjustment affected 0.09% of patients who received VHA inpatient care.

For each patient, total number of treatment days was summed across all records. Adjustments were made if the total number of treatment days, summed across all categories of care, exceeded 366 days (most commonly arising when a patient in a long-term care facility has an “overlapping” short-term acute-care stay). The adjustment algorithm examined the number of days of long-term and residential care versus acute care and adjusted treatment days for each type of care separately, so that the total treatment days would be no more than 366 days. Costs for each type of care were then adjusted

---

194 After summing, it was discovered that one “patient” had more than 5,000 laboratory encounters over the course of the year, in nearly every VISN. This patient was deleted, as it appeared this patient was actually a dummy SCRSSN used for laboratory reference testing rather than an actual person. (Note: this SCRSSN does not appear in the WHEI cohort.)

195 Acute medical stays are defined as treating specialty codes 1-19, 24, 30, 31, 34, 83, 1E, 1F, 1H, 1J, AD, N, UN, blank.

196 The cut-off value is arbitrary, but was chosen in an attempt to filter out the most significant errors.

197 Surgery stays are defined as treating specialty codes 48-63, 65, 78, 97, 1G.

198 The cut-off value is arbitrary, but was chosen in an attempt to filter out the most significant errors.

199 Ibid.



proportionately to the adjustment in treatment days.<sup>200</sup> This adjustment affected 0.5% of patients who received VHA inpatient care; 92% of these involved an adjustment of less than 30 days.

For each patient, total costs were summed across all records.

### 9.7.3 Non-VA (Fee) Medical Care

Costs of Non-VA (Fee) Medical Care were derived from five separate Non-VA (Fee) Medical Care files.

1. **Outpatient Care.** Total disbursed amount (DISAMT field) was summed across all records in the Non-VA (Fee) Medical Care Outpatient Services file. All records were included, regardless of the treatment date, so that the resulting total represents costs paid during the fiscal year, as opposed to costs incurred. Since Non-VA (Fee) Medical Care costs are reviewed before payment, it was not considered necessary to check for outliers.
2. **Inpatient Care.** Total disbursed amount (DISAMT field) was summed across all records in the Non-VA (Fee) Medical Care Inpatient Stay file. All records were included, regardless of the dates of the treatment period.
3. **Inpatient Ancillary Care.** Total disbursed amount (DISAMT field) was summed across all records in the Non-VA (Fee) Medical Care Inpatient Ancillary file, regardless of treatment date.
4. **Pharmacy Costs.** Total disbursed amount (DISAMT field) was summed across all records in the Non-VA (Fee) Medical Care Pharmacy Services file, regardless of treatment date.
5. **Travel Costs.** Total disbursed amount (DISAMT field) was summed across all records in the Non-VA (Fee) Medical Care Travel Expense file, regardless of date.

Costs from all five Non-VA (Fee) Medical Care files were summed for each patient.

### 9.7.4 Calculation of Total Cost Per Patient

After calculating total VHA inpatient, total VHA outpatient, and total Non-VA (Fee) Medical Care costs for each patient, these costs were combined into a single record per patient. If a patient had no cost data for a specific category of care, then cost for that category was set to zero. The total cost for each patient was calculated as the sum of the costs of the various categories of care.

### 9.7.5 Missing Cost Data

No DSS or Non-VA (Fee) Medical Care cost data of any kind were found for 3,171 (0.06%) of the patients in the WHEI cohort. The majority of these (87%) were patients who received care only in Manila (station 358). This occurs because DSS does not assign costs to care provided in Manila, therefore these patients are not found in the DSS NDEs.

Another 12,601 patients had records in the DSS or Non-VA (Fee) Medical Care datasets, but had total annual cost equal to zero. These patients were also treated as having missing cost data. About 80% of these patients had records of outpatient care in the OPAT2 file with zero cost and no other records. The remaining 20% had zero-cost records in the Non-VA (Fee) Medical Care files and no other records. This situation can arise due to bundled services or cancelled fee-basis payments.

In this Sourcebook, patients with missing cost data or with total cost equal to zero are not included in the denominator of any reported summary statistics related to cost.

---

<sup>200</sup> The issue of overlapping stays may also affect patients whose number of treatment days is less than 366; however, our goal was to adjust only for the most significant errors. For a discussion of this issue, see Frayne SM, Berg E, Holmes TH, Laungani et al. Mental illness-related disparities in length of stay: algorithm choice influences results. *J Rehabil Res Dev* 2010;47(8): 709–18.



### 9.7.6 Calculation of Summary Statistics

Mean costs and the sum of costs were calculated by gender and age category across all patients in the WHEI cohort for whom cost data were available. Means were calculated two different ways: 1) for all patients, including those with zero cost *for the specified category of care*; and 2) for only those patients who received the category of care, i.e., those whose cost for that category was non-zero.

## 9.8 Algorithms for Medical and Mental Health Conditions and Domains

A major new component of Sourcebook Volume 3 is characterization of the medical and mental health conditions of women Veterans. To do this, we used International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis codes appearing in VHA outpatient/inpatient files and in Non-VA (Fee) Medical Care outpatient/inpatient files. In the outpatient setting, the clinician records the ICD-9-CM diagnosis/diagnoses addressed at the visit on an encounter form, which is then incorporated into the patient's administrative records. In the inpatient setting, coders typically abstract admitting diagnoses and discharge diagnoses appearing in the patient's medical record, which are then incorporated as ICD-9-CM codes into the patient's administrative records. To capitalize on this existing clinical data, we aggregated the more than 15,000 ICD-9-CM diagnosis codes into 202 clinically meaningful "**conditions**," and then grouped conditions into 17 broad "**domains**:" Infectious Disease; Endocrine/Metabolic/Nutritional; Cardiovascular; Respiratory; Gastrointestinal; Urinary; Reproductive Health; Breast; Cancer; Hematologic/Immunologic; Musculoskeletal; Neurologic; Mental Health/SUD; Sense Organ; Dental; Dermatologic; and Other conditions. This section describes five phases of variable creation.

- *Phase 1* involved developing a rule for mapping ICD-9-CM codes to conditions.
- *Phase 2* involved developing a rule for mapping conditions to domains.
- *Phase 3* was database processing to generate person-level indicators (and, in the case of outpatient data, counts) for presence of each condition within each data source (VHA outpatient, VHA inpatient, Non-VA [Fee] Medical Care outpatient, and Non-VA [Fee] Medical Care inpatient).
- *Phase 4* synthesized information across data sources, applying a primary algorithm for identification of presence/absence of each condition for each patient (Step 1), and then applying secondary algorithms ("high sensitivity" algorithm, "high specificity" algorithm) to determine presence/absence of each condition for each patient (Step 2). Only results from the primary algorithm (Step 1) are presented in this Sourcebook; results of the "high sensitivity" and "high specificity" condition analyses are available in an On-line Appendix to Sourcebook Volume 3, available on the Women's Health Services web site, <http://www.womenshealth.va.gov/WOMENSHEALTH/sourcebookvol3onlineappendix.asp>.
- *Phase 5* generated patient-level variables indicating, for each domain, whether or not the patient had at least one condition falling within the domain.

Detailed description of these phases follows.

### 9.8.1 Phase 1: Rule for Mapping ICD-9-CM Codes to Conditions

There are two major reasons for the decision to map ICD-9-CM codes to broader “conditions”. First, attempting to present the frequency of each individual ICD-9-CM diagnosis code would be more confusing than illuminating, as there are well over 15,000 ICD-9-CM diagnosis codes. Second, in many cases a clinician coding the diagnosis responsible for the patient’s visit or hospital stay could legitimately apply one of several ICD-9-CM codes to reflect the presenting condition. For example, if the clinician identifies migraine headache as the patient’s diagnosis at a visit, then the clinician could code the reason for that visit as ICD-9-CM 346.00 (“migraine with aura, without mention of intractable migraine”), as ICD-9-CM 346.90 (“migraine, unspecified, without mention of intractable migraine”), or as ICD-9-CM 784.0 (“headache”), among other options, all to describe the same clinical presentation. Similarly, a clinician seeing a patient for diabetes mellitus might correctly code the reason for the visit as ICD-9-CM 250.60 (“diabetes type II or unspecified type, with neurological manifestations”), as ICD-9-CM 250.90 (“diabetes type II or unspecified type, with unspecified complication”), or as ICD-9-CM 357.2 (“polyneuropathy in diabetes”), among other options. In other words, to present data from a single ICD-9-CM diagnosis code may be to apply a higher level of granularity of results than typical clinician coding practices would support. Therefore, it is necessary to aggregate ICD-9-CM codes into groupings meaningful to the purpose of the work being pursued.

Fortunately, a widely-used approach to aggregating ICD-9-CM codes exists. The Agency for Healthcare Research and Quality (AHRQ) sponsors the Healthcare Cost and Utilization Project (HCUP) to develop Clinical Classification Software (CCS) that categorizes all ICD-9-CM diagnosis codes into a set of clinically meaningful groups, each reflecting a single condition.<sup>201</sup> For Sourcebook Volume 3, the CCS approach serves as the foundation for the WHEI strategy for mapping ICD-9-CM codes to conditions; the multi-step process WHEI used to tailor the CCS approach to the needs of this report is described next.

In Step 1, WHEI used as a starting point an existing mapping strategy. Starting with the 2008 version of CCS,<sup>202</sup> a prior research study<sup>203</sup> made modifications to CCS’s mapping strategy based upon clinical input, to enhance its suitability for describing burden of illness in women Veteran VHA patients. Details of how that mapping strategy was developed are available elsewhere—note that some ICD-9-CM codes (pediatric illnesses, congenital conditions, E codes, and codes reflecting a procedure rather than a diagnosis) were not mapped to a condition in that prior work. The 237 conditions (222 medical conditions<sup>204</sup> plus 15 mental health conditions<sup>205</sup>) from this prior work constituted the Step 1 working list of conditions.

In Step 2, Women’s Health Services’ Cardiovascular Health Workgroup—composed of cardiologists, primary care providers, policy-makers and women’s health researchers—carefully reviewed the Step 1 working list and through an iterative group consensus process refined the cardiovascular conditions on that list. Careful development of these conditions was considered a high priority, given that cardiovascular disease remains the leading cause of death for women. Their work is described in a report on women Veterans’ cardiovascular health.<sup>206</sup>

201 Healthcare Cost and Utilization Project (HCUP) Clinical Classification Software (CCS). November 2013. Agency for Healthcare Research and Quality, Rockville, MD. [www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp](http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp).

202 Healthcare Cost and Utilization Project (HCUP) Clinical Classification Software (CCS). Agency for Healthcare Research and Quality. Rockville, MD; 2008.

203 VA HSR&D SHP 08-161 (PI: Rachel Kimerling PhD; Co-PI: Susan Frayne MD, MPH)

204 Frayne SM, Chiu VY, Iqbal S, et al. Medical care needs of returning veterans with PTSD: their other burden. *Journal of General Internal Medicine* 2011;26(1):33-39. Also see that manuscript’s On-Line Appendix 2 for a complete list of all 222 conditions.

205 The mapping strategy for mental health conditions used in that study—similarly representing a modified version of the CCS mapping strategy—additionally drew upon mapping algorithms developed for other prior studies: VA HSR&D IIR 04-248, and NIDDK 1 R01 DK071202.

206 Whitehead AM, Davis MB, Duvernoy C, Safdar B, Nkonde-Price C, Iqbal S, Balasubramanian V, Frayne SM, Friedman SA, Hayes, PM, Haskell, SG. The State of Cardiovascular Health in Women Veterans. Volume 1: VA Outpatient Diagnoses and Procedures in FY 10. Women’s Health Services, Veterans Health Administration, Department of Veterans Affairs, Washington, DC. October 2013.

In Step 3, Women’s Health Services’ Reproductive Health Workgroup—composed of gynecologists, primary care providers, policy-makers and women’s health researchers—similarly reviewed the Step 1 working list and used an iterative group consensus process, combined with review of American College of Obstetrics & Gynecology coding guidelines,<sup>207</sup> to refine the reproductive health conditions on that list. Careful development of these conditions was considered a priority because female-specific reproductive health conditions are unique to women and require a specialized health care delivery infrastructure, falling under the purview of Women’s Health Services. The work of the Reproductive Health Workgroup is described in a reproductive health report.<sup>208</sup>

In Step 4, the WHEI team resolved any overlap between condition lists generated by these two workgroups. For example, “Hypertension in Pregnancy” appeared on both the Cardiovascular Health Workgroup list and on the Reproductive Health Workgroup list. This resulted in a working list of 268 conditions at the end of Step 4.

In Step 5, a VHA primary care women’s health provider/researcher reviewed all of the CCS 2008 ICD-9-CM codes (and their associated CCS conditions) that had not been incorporated into our Step 1 working list of conditions. (These represented mostly childhood conditions, congenital abnormalities, E codes, and medical procedures that do not actually reflect a diagnosis.) We either mapped these codes to the corresponding CCS condition or, in consultation with VHA women’s health clinicians and experts from Steps 2 and 3, we mapped the code to one of our Step 4 conditions. There were 316 conditions at the end of Step 5.

In Step 6, a VHA primary care women’s health provider/researcher reviewed all of the CCS 2012 ICD-9-CM codes (and their associated CCS conditions) that had not been mapped by the end of Step 5. (These represented new ICD-9-CM codes that had not been in existence in 2008.) As in Step 5, our default was to map these ICD-9-CM codes to the corresponding CCS condition, but the clinical reviewer queried other clinicians with relevant expertise for any potentially controversial mappings.

In Step 7, a VHA primary care women’s health provider/researcher conducted a global consistency review of the ICD-9-CM codes mapped to each condition as of the end of Step 6. This review was intended to confirm that our mapping had yielded clinically meaningful groups of ICD-9-CM codes, and that the grouping logic was consistent across conditions—if not, any necessary adjustments were made. The review also identified conditions that needed to be “lumped” with other conditions and conditions that needed to be “split” into more than one condition. To facilitate lumping and splitting, the reviewer referred to existing nosologies (such as the CCS nosology, the ICD-9-CM nosology, and the nosologies defined by the table of contents structure of major medical textbooks). For every ICD-9-CM code, we also determined the number of women who had at least one instance of that code in FY12 in the VHA outpatient file, in the VHA inpatient files, in the Non-VA (Fee) Medical Care outpatient file, and in the Non-VA (Fee) Medical Care inpatient file. The reviewer additionally consulted these ICD-9-CM code-level frequencies when making decisions about lumping or splitting: ICD-9-CM codes with particularly high frequency were inspected to assess whether they merited inclusion in a new condition, and conversely if a condition contained only very low frequency ICD-9-CM codes, the condition was assessed for possible lumping with another condition. The reviewer also considered the codes numerically close to the ICD-9-CM code being examined, assessing whether or not the code should be grouped with codes close

---

207 American College of Obstetricians & Gynecologists. *OB/GYN Coding Manual: Components of Correct Procedural Coding*. American Medical Association, 2010. Print.

208 Zephyrin LC, Katon J, Hoggatt KJ, Balasubramanian V, Saechao F, Frayne SM, Mattocks KM, Feibus K, Galvan IV, Hickman R, Hayes PM, Haskell SG, Yano EM. *State of Reproductive Health In Women Veterans - VA Reproductive Health Diagnoses and Organization of Care*. Women’s Health Services, Veterans Health Administration, Department of Veterans Affairs, Washington, DC. February 2014.

to it in the ICD-9-CM hierarchy. For difficult grouping decisions, the reviewer also consulted with clinical experts, textbooks, and other reference materials.

In Step 8, we checked our mapping against other sources. Our intention was to make a particular effort to maximize consistency of our approach to condition mapping with the approaches used by other national VHA program offices and VHA Quality Enhancement Research Initiatives (QUERI), to the extent possible. On occasion, this was not possible. For example, in some cases the algorithm of one office differed from that of another office—in that case we attempted to rely on the algorithm of the office primarily responsible for oversight of care for that condition. Likewise, in some cases the algorithm of an office involved mapping a single ICD-9-CM code to more than one condition—because our approach, like that of CCS, required that an ICD-9-CM code be mapped uniquely to a single condition, we converted such double-mappings to single-mappings. We received detailed condition specification algorithms from the following: VA Mental Health's Northeast Program Evaluation Center (NEPEC) (for a number of the major mental health conditions examined in this Sourcebook); the Military Sexual Trauma Support Team, the Program Evaluation Resource Center (PERC), and the Substance Use Disorder QUERI (for additional checks of mental health and substance use disorder conditions); Office of Geriatrics and Extended Care (for dementia); Polytrauma and Blast-Related Injuries QUERI (for Traumatic Brain Injury, TBI); Chronic Heart Failure QUERI (for heart failure) and Spinal Cord Injury QUERI (for Spinal Cord Injury). We also reviewed key publications of the Diabetes QUERI (for diabetes mellitus<sup>209</sup>) and the Stroke QUERI (for stroke<sup>210</sup>). Several investigators also generously shared their ICD-9-CM mapping algorithms for specific conditions with us. Cross-checking against these various sources led to final adjustments to our algorithm for mapping ICD-9-CM codes to conditions, yielding 234 conditions at the end of Step 8.

In Step 9, we pruned the list of conditions to include only those relevant to Sourcebook Volume 3. While the final list of conditions available at the end of Step 8 mapped every ICD-9-CM code to a condition, not all of these conditions are of interest for this report. We deleted “conditions” representing E codes because they describe a mechanism of injury or type of accident rather than a condition—an additional ICD-9-CM code should accompany the E code to specify the type of injury sustained, and that is the code retained for this report. We deleted “conditions” representing neonatal codes because our focus is upon the mother and not the newborn. We also deleted “conditions” that did not actually represent presence of a medical condition, many of which were composed of V codes.<sup>211</sup> For example, in general, we deleted “conditions” reflecting receipt of a medical procedure; these conditions contained ICD-9-CM codes such as V70.0 “routine general medical examination at a health care facility” or V54.89 “other orthopedic aftercare” or V76.10 “breast screening unspecified” or V57.1 “care involving other physical therapy”. One exception to this approach is that we did count contraceptive counseling (which is technically a medical procedure) as one of the conditions reported in this Sourcebook, because of its particular relevance to the medical care of women. We also deleted other “conditions” not indicating presence of a medical condition, such as conditions containing ICD-9-CM codes describing family history (e.g., V17.1 “family

209 Miller DR, Safford MM, Pogach LM. Who has diabetes? Best estimates of diabetes prevalence in the Department of Veterans Affairs based on computerized patient data. *Diabetes Care* 2004;27(Suppl 2):B10-21.

210 Reker DM, Rosen AK, Hoenig H, et al. The hazards of stroke case selection using administrative data. *Med Care* 2002;40(2):96-104.

211 While the majority of V codes were mapped to conditions not included in this Sourcebook, some were mapped to conditions that were included, because these ICD-9-CM codes indicated presence of a medical condition. Illustrative examples include: V07.4 “hormone replacement therapy (postmenopausal)” was mapped to Menopausal Disorders; V10.05 “personal history of malignant neoplasm of large intestine” was mapped to Cancer - Colorectal; V15.41 “personal history of physical abuse” was mapped to Psychosocial Factors – Other; V22.1 “supervision of other normal pregnancy” was mapped to Pregnancy or Delivery - Normal; V25.09 “other general counseling and advice on contraceptive management” was mapped to Contraceptive Care Management; V41.2 “problems with hearing” was mapped to Hearing Problems; V43.3 “heart valve replaced by other means” was mapped to Valvular Disease; V58.11 “encounter for antineoplastic chemotherapy” was mapped to Cancer - Other and Unspecified Primary; V60.0 “lack of housing” was mapped to Housing Insufficiency; V62.82 “bereavement uncomplicated” was mapped to Psychosocial Factors – Other; V69.0 “lack of physical exercise” was mapped to Residual Codes; V85.35 “body mass index 35.0-35.9, adult” was mapped to Overweight/Obesity.

history of stroke [cerebrovascular]”) or non-disease clinical observations (e.g., 795.5 “nonspecific reaction to tuberculin skin test without active tuberculosis”).

Sourcebook Volume 3 reports on a total of 12,851 ICD-9-CM codes mapped to a total of **202 conditions**. These 202 conditions are presented in this Sourcebook.

### 9.8.2 Phase 2: Rule for Mapping Conditions to Domains

Applying clinical expertise and drawing upon the broad groupings developed by CCS, a panel of VHA women’s health primary care providers and researchers grouped these 202 conditions into 17 broad “domains” that primarily represent organ systems. Each condition received a primary mapping to a single domain. Primary mappings are reflected in Part 7, Exhibits 7.A to 7.Q, which list every condition categorized by its primary domain. Some conditions also were secondarily mapped to another domain; in that case, the condition was counted toward the frequency of the primary domain and toward the frequency of the secondary domain. These secondary mappings are listed below, by domain. The 17 domains are as follows.

1. **Infectious Disease domain.** Systemic infections and unspecified infections receive primary mapping to Infectious Disease. Infections of a specific organ system are primarily mapped to that organ system, and secondarily mapped to Infectious Disease. For example, the condition “Hepatitis C” is primarily mapped to the Gastrointestinal domain, and secondarily mapped to the Infectious Disease domain.<sup>212</sup> The conditions secondarily mapped to Infectious Disease for total Infectious Diseases counts were the following:
  - Pneumonia (primary domain: Respiratory)
  - Respiratory System Infections - Other (primary domain: Respiratory)
  - Hepatitis C (primary domain: Gastrointestinal)
  - Urinary Tract Infection (Cystitis/Urethritis/Pyelonephritis) (primary domain: Urinary)
  - Sexually Transmitted Infections (primary domain: Reproductive Health)
  - Vaginitis and Other Pelvic Inflammatory Conditions (primary domain: Reproductive Health)
  - Osteomyelitis/Infectious Arthritis (primary domain: Musculoskeletal)
  - Skin Infection (primary domain: Dermatologic)
2. **Endocrine/Metabolic/Nutritional domain.** Endocrine, metabolic and nutritional disorders are primarily mapped to this domain. Conditions secondarily mapped to this domain were the following:
  - Pregnancy Complicated by Diabetes Mellitus (primary domain: Reproductive Health)
  - Cancer – Thyroid (primary domain: Cancer)
3. **Cardiovascular domain.** This refers to conditions that affect the heart and other parts of the cardiovascular system, including cerebrovascular and peripheral vascular conditions. One condition was secondarily mapped to this domain.
  - Pregnancy Complicated by Hypertension (primary domain: Reproductive Health)
4. **Respiratory domain.** This includes conditions that affect the lungs and upper respiratory tract. One condition was secondarily mapped to this domain.
  - Cancer – Bronchopulmonary (primary domain: Cancer)

---

<sup>212</sup> In a limited number of instances (specified here), conditions were counted toward the total domain count of more than one domain. However, individual ICD-9-CM codes were not counted toward more than one condition.

5. **Gastrointestinal domain.** This refers to conditions that affect the digestive system. Conditions secondarily mapped to this domain are as follows:
  - Cancer – Esophagus (primary domain: Cancer)
  - Cancer – Gastric (primary domain: Cancer)
  - Cancer – Colorectal (primary domain: Cancer)
  - Cancer – Anal (primary domain: Cancer)
  - Cancer – Hepatobiliary (primary domain: Cancer)
  - Cancer – Pancreatic (primary domain: Cancer)
6. **Urinary domain.** This refers to conditions of the kidneys, bladder, or other parts of the urinary system. Conditions secondarily mapped to this domain are as follows:
  - Cancer – Renal (primary domain: Cancer)
  - Cancer – Bladder (primary domain: Cancer)
7. **Reproductive Health domain.** This encompasses genital tract conditions, pregnancy-related conditions, and other conditions related to reproductive health. Conditions secondarily mapped to this domain are as follows:
  - Cancer – Cervical (primary domain: Cancer)
  - Cancer – Uterine (primary domain: Cancer)
  - Cancer – Ovarian (primary domain: Cancer)
  - Cancer – Female Reproductive – Other (primary domain: Cancer)
  - Carcinoma in Situ – Cervical (primary domain: Cancer)
  - Carcinoma in Situ – Female Reproductive – Other (primary domain: Cancer)
  - Cancer – Prostate (primary domain: Cancer)
  - Cancer – Testicular (primary domain: Cancer)
8. **Breast domain.** This includes breast conditions and abnormal breast findings. Conditions secondarily mapped to this domain are as follows:
  - Cancer – Breast (primary domain: Cancer)
  - Carcinoma in Situ – Breast, Ductal or Lobular (primary domain: Cancer)
9. **Cancer domain.** All cancer diagnoses and all carcinoma in situ diagnoses<sup>213</sup> are primarily mapped to the Cancer domain. Whenever applicable, cancers are secondarily mapped to the organ system to which they refer.
10. **Hematologic/Immunologic domain.** This refers to disorders of the blood or immune system. Conditions secondarily mapped to this domain are as follows:
  - Lymphomas (primary domain: Cancer)
  - Leukemias (primary domain: Cancer)
  - Multiple Myeloma (primary domain: Cancer)
11. **Musculoskeletal domain.** This includes rheumatologic and musculoskeletal conditions. One condition is secondarily mapped to this domain.
  - Cancer – Bone/Connective Tissue (primary domain: Cancer)

---

<sup>213</sup> Carcinoma in Situ can in some cases represent a condition managed as cancer (e.g., ductal breast carcinoma in situ) and in other cases can represent a non-cancer condition (e.g., cervical carcinoma in situ). However, because the latter is serious and on the pathway toward cancer, all Carcinoma in Situ is grouped within the Cancer domain.

- 12. Neurologic domain.** This refers to conditions of the brain and nervous system. Conditions secondarily mapped to this domain are as follows:
- Cerebrovascular Accident/Transient Ischemic Attack (primary domain: Cardiovascular)
  - Cancer – Brain/Nervous System (primary domain: Cancer)
- 13. Mental Health/SUD domain.** This domain consists of mental health conditions, SUDs, and nonspecific psychiatric disorders. Note that general psychosocial factors and Tobacco Use Disorder are mapped to the Other domain, not to the Mental Health/SUD domain.
- 14. Sense Organs domain.** This includes conditions that affect the eyes or ears.
- 15. Dental domain.** This refers to dental disorders.

*NOTE: Most Veteran VHA patients are not eligible to receive dental care by a VHA provider; therefore frequencies of dental disorders among Veteran VHA patients may represent an under-count of true condition prevalence.*

- 16. Dermatologic domain.** This refers to conditions affecting the skin. One condition is secondarily mapped to this domain.
- Melanoma (primary domain: Cancer)
- 17. Other domain.** This domain includes miscellaneous diagnoses not mapped to other domains, such as symptoms, conditions due to external causes, and psychosocial factors.

### 9.8.3 Phase 3: Generating Person-Level Variables for Each Condition Within Each Data Source

In this phase, we processed raw record-level data from the four FY12 source files (VHA outpatient, VHA inpatient, Non-VA [Fee] Medical Care outpatient, and Non-VA [Fee] Medical Care inpatient files), with a goal of generating six person-level variables for each of the 202 conditions: count variables for each of the outpatient files, and indicator variables for each of the source files. For example, in the case of the condition “Diabetes Mellitus,” the goal of Phase 3 was to create six variables, as follows:

1. From the VHA outpatient file: a person-level *count variable* indicating the number of times any Diabetes Mellitus ICD-9-CM code appeared in the file, and a person-level *indicator variable (yes/no)* indicating whether at least one instance of a Diabetes Mellitus ICD-9-CM code appeared in the file;
2. From the VHA inpatient file: a person-level *indicator variable (yes/no)* indicating whether at least one instance of a Diabetes Mellitus ICD-9-CM code appeared in the file;
3. From the Non-VA (Fee) Medical Care outpatient file: a person-level *count variable* indicating the number of times any Diabetes Mellitus ICD-9-CM code appeared in the file, and a person-level *indicator variable (yes/no)* indicating whether at least one instance of a Diabetes Mellitus ICD-9-CM code appeared in the file; and
4. From the Non-VA (Fee) Medical Care inpatient file: a person-level *indicator variable (yes/no)* indicating whether at least one instance of a Diabetes Mellitus ICD-9-CM code appeared in the file.

The source files used for database processing were:

1. VHA outpatient files (FY12 for base algorithm described in Phase 4 Step 1; FY11 and FY12 for the high sensitivity and high specificity algorithms described in Phase 4 Step 2)
  - SE files

2. VHA inpatient files (FY12 for base algorithm described in Phase 4 Step 1 and for high specificity algorithm described in Phase 4 Step 2; FY11 and FY12 for the high sensitivity algorithm described in Phase 4 Step 2)
  - Acute, Extended Care, and Observation files (Main)
  - Acute, Extended Care, and Observation files (Bed Section)
  - Acute, Extended Care, and Observation files (Census)
3. Non-VA (Fee) Medical Care outpatient files (FY12 for base algorithm described in Phase 4 Step 1; FY11 and FY12 for the high sensitivity and high specificity algorithms described in Phase 4 Step 2)
  - Outpatient Services file
4. Non-VA (Fee) Medical Care inpatient files (FY12 for base algorithm described in Phase 4 Step 1 and for high specificity algorithm described in Phase 4 Step 2; FY11 and FY12 for the high sensitivity algorithm described in Phase 4 Step 2)
  - Inpatient Stay file
  - Inpatient Ancillary file

Creating these person-level variables involved modifying the raw record-level files in four steps, described next.

**Step 1: Exclude outpatient records not representing a face-to-face encounter with a clinician.** In the outpatient files,<sup>214</sup> we excluded records that did not represent a face-to-face encounter with a clinician (based upon clinic stop codes for VHA outpatient records and CPT codes for Non-VA [Fee] Medical Care outpatient records), such as Laboratory encounters<sup>215</sup> and most Radiology encounters,<sup>216,217</sup> telephone encounters, Store & Forward encounters, Home Telehealth encounters, and Secure Messaging encounters. The resulting outpatient files contained only records for face-to-face encounters with a clinician, i.e., settings in which a diagnosis can legitimately be made by a clinician. See Technical Appendix, Section 9.5 for the types of encounters that are considered face-to-face encounters in the VHA outpatient setting.

**Step 2: Elongate the record-level file.** To address the fact that a single utilization record may contain more than one ICD-9-CM diagnosis field (and that the number of diagnosis fields differs in different source files), we created an elongated file with one non-missing ICD-9-CM diagnosis per record. For instance, a single record with 10 diagnoses in the raw data file was elongated into 10 records, each with a single diagnosis, while all of the other fields remained constant.

***NOTE:** Non-VA (Fee) Medical Care outpatient files have only one diagnosis per record. However, after WHEI's initial processing of Non-VA (Fee) Medical Care outpatient files, there is more than one diagnosis field per record; this is a byproduct of our approach to deleting duplicated records without deleting information about diagnoses. See Technical Appendix, Section 9.6 for more explanation of this process.*

This step was completed for all VHA/Non-VA (Fee) Medical Care outpatient/inpatient files. The outpatient files required one additional step of processing (Step 3), whereas the inpatient files required no further processing beyond this Step (Step 2).

---

214 Step 1 was not necessary for inpatient files, because all inpatient stays are considered face-to-face encounters with a clinician.

215 Among all records with a laboratory clinic stop code in the FY12 VHA outpatient file, 87% were missing ICD-9-CM codes across all diagnosis fields.

216 Among all records with a radiology clinic stop in the FY12 VHA outpatient file, 68% were missing ICD-9-CM codes across all diagnosis fields.

217 Some Radiology encounters were considered face-to-face encounters with a clinician, such as invasive radiology procedures that require a Radiologist evaluation (and thus a clinical diagnosis) prior to performing the procedure



**Step 3: Process duplicates in outpatient data.** To avoid inflating the count of instances of an ICD-9-CM code in outpatient data, we processed duplicate records in these elongated VHA and Non-VA (Fee) Medical Care outpatient files in the manner below.

1. VHA outpatient files: Records with same person, date, STA5A, clinic stop code, and ICD-9-CM code were treated as duplicates. The final file retained only one of the duplicate records. Note that if two records appeared on the same day but were associated with different clinic stop codes, we did not treat those as duplicate records, because patients may schedule multiple independent visits with different providers on a single day.
2. Non-VA (Fee) Medical Care outpatient files: Records with same person, date, STA6A, and ICD-9-CM code were treated as duplicates. Note that records with duplicate CPT codes on the same day had already been deleted in a prior step of Non-VA (Fee) Medical Care database processing.

It was not necessary to process duplicates or overlapping admissions in VHA inpatient files nor in Non-VA (Fee) Medical Care inpatient files because we were only interested in whether there was *at least one instance* of the condition in the fiscal year (i.e., we did not need to generate count variables for inpatient conditions).

**Step 4: Create person-level variables for each condition *within* data sources:**

- Person-level count variables: Using the outpatient record-level files generated at the end of Step 3, for each of the 202 conditions we generated a person-level variable indicating a count of the number of records containing an ICD-9-CM code mapping to that condition within the VHA outpatient file, and a person-level variable indicating a count of the number of records containing an ICD-9-CM code mapping to that condition within the Non-VA (Fee) Medical Care outpatient file.
- Person-level indicator variables: For each of the 202 conditions we generated a person-level variable indicating whether an ICD-9-CM code mapping to the condition appeared at least once in any VHA outpatient record (yes/no), and we generated a person-level variable indicating whether an ICD-9-CM code mapping to the condition appeared at least once in any Non-VA (Fee) Medical Care outpatient record (yes/no). Using the inpatient record-level files generated at the end of Step 1, for each of the 202 conditions we generated a person-level variable indicating whether an ICD-9-CM code mapping to the condition appeared at least once in any VHA inpatient record (yes/no), and we generated a person-level variable indicating whether an ICD-9-CM code mapping to the condition appeared at least once in any Non-VA (Fee) Medical Care inpatient record (yes/no).

Step 4 yielded two person-level, file-specific count variables for each condition, and four person-level, file-specific indicator variables for each condition.

#### 9.8.4 Phase 4: Generating Final Person-Level Variables for Each Condition Across Data Sources

To generate the final person-level variable for each condition, we created an additional across-file condition indicator variable (yes/no for presence of the condition) that synthesized information from the within-file person-level condition variables.

##### Step 1: Generating final person-level variable for each condition *across* data sources (Base Algorithm):

All analyses presented in this Sourcebook use the following *Base Algorithm* for conditions.

A patient is considered to have a particular condition if she/he has **at least one instance of an ICD-9-CM code mapped to the condition in FY12 in an outpatient record (VHA or Non-VA [Fee] Medical Care files, limited to face-to-face visits with a clinician) or in an inpatient record (VHA or Non-VA [Fee] Medical Care files).**

##### Step 2: Generating final person-level variable for each condition *across* data sources (High Sensitivity and High Specificity Algorithms):

For each condition, we additionally generated a person-level variable indicating presence of the condition using a “high sensitivity” definition, and a person-level variable indicating presence of the condition using a “high specificity” definition. Data from these algorithms are not presented in this Sourcebook, and are included only in the Sourcebook Volume 3 [On-line Appendix](#).<sup>218</sup>

##### High Sensitivity Algorithm:

- Presence of at least **one** instance of the condition in the VHA or Non-VA (Fee) Medical Care outpatient or VHA or Non-VA (Fee) Medical Care inpatient files in FY11-FY12

Comment: By using a wider (two-year) condition ascertainment window, this high sensitivity definition is designed to more comprehensively capture conditions that may be recorded with lower frequency in outpatient encounters, and conditions present in patients who use VHA services less frequently.

##### High Specificity Algorithm:

- Presence of at least **one** instance of the condition in FY12 **AND** at least **one** confirmatory instance of the condition in FY12 or FY11 in VHA or Non-VA (Fee) Medical Care outpatient files, **OR**
- Presence of at least **one** instance of the condition in VHA or Non-VA (Fee) Medical Care inpatient files in the FY12

Comment: This is a stricter definition of presence of a condition: for outpatient conditions, it requires two instances of a diagnosis code (at least one of them in the current fiscal year), although it does allow for a two-year ascertainment window for the second diagnosis code. This approach reduces the risk that a “rule-out” diagnosis will be counted as presence of the condition. It will also tend to reduce the rate of identification of acute or self-limited conditions. Note that a single instance of an inpatient diagnosis code suffices for identifying presence of a condition.

---

218 Available on the Women’s Health Services web site, <http://www.womenshealth.va.gov/WOMENSHEALTH/sourcebookvol3onlineappendix.asp>.

### 9.8.5 Phase 5: Generating Final Person-Level Variables for Each Domain

Finally, using the Base Algorithm person-level condition variables generated in Step 1 of Phase 4, and applying the mapping strategy described in Phase 2, for each of the 17 domains we created a person-level indicator variable (yes/no) indicating whether the patient had at least one condition falling within that domain.

Similarly, using the high sensitivity and high specificity condition variables generated in Step 2 of Phase 4, for each of the 17 domains we created a person-level indicator (yes/no) for high sensitivity domain and high specificity domain; the high sensitivity and high specificity domain analyses are not presented in the Sourcebook, and are instead presented in the [On-line Appendix](#).<sup>219</sup>

## 9.9 Data Quality Control

### 9.9.1 Consistency

*Cross-year consistency of sex variable.* Each individual in the WHEI Master Database has between one and 13 different year-specific sex variables, depending on the number of years in which she/he was in the annual ADUSH files (FY00–FY12). We investigated how many VHA Veteran users had inconsistent values for sex. We calculated the proportion of all patients in the FY03–FY12 Base Cohorts whose records were either all consistent (100%), mostly consistent (51–99% of records indicate one sex), or consistent half the time (50% of records indicate one sex).

The results are shown in Exhibit 9.F. Very few cases of discrepant sex occurred; in only 0.2% of cases was there inconsistency in coding of sex across years. Most instances of a change in the patient’s sex from one year to another year most likely reflect data entry errors: the wrong sex is entered one year, and then the error is corrected in a subsequent year. True changes in the patient’s sex (e.g., through change in the patient’s preferred gender) are likely less common. While these databases do not allow us to distinguish between data entry errors and true changes in gender, in both cases it seems reasonable to assign the last-recorded sex value to the patient.

**Exhibit 9.F: Percent of Individuals in WHEI Master Database by Cross-Year Consistency of Sex Variable, FY03–FY12 (Among Base Cohort Women and Men, N=9,313,153)<sup>220</sup>**

Variable	Consistency across 10 years (FY03–FY12)		
	100%	51–99%	50%
SEX	99.78	0.20	0.03

**Note:** “100%” means that 100% of records were consistent, “51–99%” means that 51–99% of records were consistent, and “50%” means that an equal number of records listed the patient as female or male.

Although the proportion of Veteran VHA users in the database with inconsistent sex values is small, accurately ascertaining whether patients are women or men is critical to the purpose of this Sourcebook. Technical Appendix, Section 9.3.3 describes the algorithm used to improve consistency and completeness in the sex variable.

219 Available on the Women’s Health Services web site, <http://www.womenshealth.va.gov/WOMENSHEALTH/sourcebookvol3onlineappendix.asp>.

220 The WHEI database spans FY00–FY12. For creation of some variables, the full FY00–FY12 period is used, e.g., for checks of cross-year data consistency in sex. However, for parsimony, multi-year data tables in Technical Appendix, Section 9.9 focus only on the period FY03–FY12.

## 9.9.2 Missing Data

Missing data were assessed for all analytical variables.

Exhibit 9.G shows the number and proportion of Veteran VHA users missing sex values in ADUSH, SF and Medical SAS Inpatient Main files. The column labeled “2012” shows the first three steps of our algorithm for creation of the sex variable. (See Technical Appendix, Section 9.3.3 for more explanation of these steps.) Specifically, for FY12, in Step 1 we created a sex variable using ADUSH data: 4,584 patients were missing a sex value after Step 1. In Step 2, for people who were still missing a sex value, we assigned the most recent non-missing sex value from the FY12 SF file: this resolved sex for some additional cases, such that only 2,080 patients were missing a sex value after Step 2. In Step 3, for those patients who were still missing sex, we assigned the most recent non-missing sex value from the FY12 Medical SAS Inpatient Main file. In the case of FY12, this did not resolve any additional instances of missing sex.

To create the final sex variable, for the 2,080 patients whose sex was still missing at the end of Step 3, we then continued with Step 4 (*not displayed in Exhibit 9.G*) which, as described in Section 9.3.3, involved repeating Steps 1-3 for FY11, and then continuing to fill in missing data iteratively using the same approach by searching prior years’ files in reverse year order, back to FY00. At the end of Step 4, after searching all data sources for all prior years (FY00-FY11), sex was determined for an additional five Veteran VHA users. Therefore, the final count of women and men reported in this Sourcebook does not include the small group of FY12 Veteran VHA users (N=2,075) whose sex could not be determined even after searching across the FY00-FY12 ADUSH, SF and Medical SAS Inpatient Main files. At the end of all data processing steps, sex was missing for 0.04% of FY12 Veteran VHA users.

In addition to displaying Steps 1-3 for FY12, Exhibit 9.G additionally displays within-year rates of missing sex data for FY03-FY11, to provide a perspective on the completeness of earlier years of data. Each column examines a single fiscal year of data. For example, among Veteran VHA users in the FY03 ADUSH file, 66,547 were missing sex. After supplementing with FY03 SF file data, only 14,780 were missing sex, and after additionally supplementing with Medical SAS Inpatient Main file data, 14,547 were missing sex, based on FY03 data alone.

**Exhibit 9.G: Number of Individuals Missing a Sex Value in Each Fiscal Year by Step of Sex Variable Creation Algorithm (Among Base Cohort—Women and Men)**

		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
		N= 4,505,433	N= 4,677,720	N= 4,802,582	N= 4,901,827	N= 4,950,501	N= 4,998,184	N= 5,140,379	N= 5,351,873	N= 5,501,426	N= 5,613,091
Step 1: ADUSH sex value	# missing	66,547	90,840	79,310	243	384	1,521	1,421	2,235	1,575	4,584
	(%)	1.5	1.9	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Step 2: Supplement with SF	# missing	14,780	16,457	14,913	236	370	913	609	760	1,131	2,080
	(%)	0.3	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Step 3: Supplement with Inpatient Main files	# missing	14,547	16,220	14,691	236	370	913	609	760	1,131	2,080
	(%)	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Key: SF—VHA Outpatient Visit file

Similarly, Exhibit 9.H shows the number and proportion of Veteran VHA users in the database missing date of birth (DOB) data in ADUSH, SF and Medical SAS Inpatient Main files. The column labeled “2012” shows the first three steps of our algorithm for creation of the age variable. (See Technical Appendix, Section 9.3.4 for more explanation of these steps.) Specifically, for FY12, in Step 1 we created a DOB variable using ADUSH data: 4,852 patients were missing DOB after Step 1. In Step 2, for people who were still missing a DOB value, we assigned the most recent non-missing DOB value from the FY12 SF file: this resolved DOB for some additional cases, such that only 2,071 patients were missing DOB after Step 2. In Step 3, for those patients who were still missing DOB, we assigned the most recent non-missing DOB value from the FY12 Inpatient Main file. In the case of FY12, this did not resolve any additional instances of missing DOB.

To create the final DOB variable, for the 2,071 patients whose DOB was still missing at the end of Step 3, we then continued with Step 4 (*not displayed in Exhibit 9.H*) which, as described in Section 9.3.4, involved repeating Steps 1-3 for FY11, and then continuing to fill in missing data iteratively using the same approach by searching prior years’ files in reverse year order, back to FY00. At the end of Step 4, after searching all data sources for all prior years (FY00-FY11), DOB was determined for an additional 8 Veteran VHA users. Therefore, the final count of women and men with non-missing age reported in this Sourcebook does not include the small group of FY12 Veteran VHA users (N=2,063) whose date of birth could not be determined even after searching across the FY00-FY12 ADUSH, SF and Inpatient Main files. At the end of all data processing steps, age was missing for 0.01% of women and 0.00% of men Veteran VHA users in FY12.

In addition to displaying Steps 1-3 for FY12, Exhibit 9.H additionally displays within-year rates of missing DOB data for FY03-FY11, to provide a perspective on the completeness of earlier years of data. Each column examines a single fiscal year of data. For example, among Veteran VHA users in the FY03 ADUSH file, 66,630 were missing DOB. After supplementing with FY03 SF file data, only 14,849 were missing DOB, and after additionally supplementing with Medical SAS Inpatient Main file data, 14,617 were missing DOB, based upon FY03 data alone.

**Exhibit 9.H: Number of Individuals Missing a Date of Birth (DOB) Value in Each Fiscal Year by Step of DOB Variable Creation Algorithm (Among Base Cohort—Women and Men)**

		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
		N= 4,505,433	N= 4,677,720	N= 4,802,582	N= 4,901,827	N= 4,950,501	N= 4,998,184	N= 5,140,379	N= 5,351,873	N= 5,501,426	N= 5,613,091
Step 1: ADUSH DOB value	# missing	66,630	90,926	79,517	292	422	1,581	1,521	2,353	1,617	4,852
	(%)	1.5	1.9	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Step 2: Supplement with SF	# missing	14,849	16,511	14,982	279	398	968	701	866	1,166	2,071
	(%)	0.3	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Step 3: Supplement with Inpatient Main files	# missing	14,617	16,276	14,760	279	397	967	701	866	1,166	2,071
	(%)	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0

**Key:** DOB—date of birth; SF—VHA Outpatient Visit file

Exhibits 9.I and 9.J show the numbers and proportions of people in the FY12 Base Cohort who were missing race and ethnicity values, respectively, in each step of variable creation over the 13 year period (FY00-FY12). At the end of all data processing steps, combined race/ethnicity was missing for 8.3% of women and 5.6% of men Veteran VHA users in FY12.

**Exhibit 9.I: Number of Individuals Missing a Race Value by Step of WHEI\_RACE Variable Creation Algorithm (Among FY12 Base Cohort—Women and Men, N=5,613,091)**

Step	Source, Field, Year	# resolved	% resolved (at this step)	# missing	% missing (cumulative)
Step 1	SF RACE1-RACE7, FY12	4,439,443	79.1	1,173,648	20.9
Step 2	Inpatient Main RACE1-RACE6, FY12	3,673	0.1	1,169,975	20.8
Step 3	SF RACE, FY12	213,732	3.8	956,243	17.0
Step 4	Inpatient Main RACE, FY12	0	0.0	956,243	17.0
Step 5	OEF/OIF/OND Roster RACE, OCT2012	57,482	1.0	898,761	16.0
Step 6	VHA Vital Status File CMS_RACE, FY12Q4	449,672	8.0	449,089	8.0
Step 7	Repeat Steps 1-4, FY11-FY04	73,463	1.3	375,626	6.7
Step 8	Repeat steps 3-4, FY03-FY00	6,785	0.1	368,841	6.6

**Key:** VHA—Veterans Health Administration; SF—VHA Outpatient Visit file; OEF/OIF/OND—Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn

**Note:** After pulling in the most recent, non-missing Race1-Race7 values from the FY12 SF file in Step 1, 20.9% of Veteran VHA patients in FY12 were missing a race value. In Step 2, we supplemented race values from the RACE1-RACE6 variable in the FY12 Inpatient Main files and resolved race values for an additional 0.1% of Veteran VHA patients. After pulling in additional race values from the FY12 SF (Step 3) and Inpatient Main files (Step 4), the OCT2012 OEF/OIF/OND Roster (Step 5), and the FY12Q4 VHA VSF (Step 6), 8.0% of FY12 Veteran VHA patients were still missing a race value. In Step 7, we repeated Steps 1-4 with FY11 data and continued to fill in missing race data iteratively back to FY04, which decreased the proportion of patients with missing race to 6.7%. In Step 8, we repeated Steps 3 and 4 using FY03 data and then continued to fill in missing race data iteratively using race data from FY02 going back to FY00. At the end of these steps, there were 368,841 FY12 Veteran VHA users (6.6%) still missing a race value. See Technical Appendix, Section 9.3.5 for complete algorithm.

**Exhibit 9.J: Number of Individuals Missing an Ethnicity Value by Step of WHEI\_ETHNICITY Variable Creation Algorithm (Among FY12 Base Cohort—Women and Men, N=5,613,091)**

Step	Source, Field, Year	# resolved	% resolved (at this step)	# missing	% missing (cumulative)
Step 1	SF ETHNIC, FY12	4,758,154	84.8	854,937	15.2
Step 2	Inpatient Main ETHNIC, FY12	2,552	0.1	852,385	15.2
Step 3	SF RACE, FY12	133,226	2.4	719,159	12.8
Step 4	Inpatient Main RACE, FY12	0	0.0	719,159	12.8
Step 5	OEF/OIF/OND Roster ETHNICITY, OCT2012	10,186	0.2	708,973	12.6
Step 6	VHA Vital Status File CMS_RACE, FY12Q4	343,767	6.1	365,206	6.5
Step 7	Repeat Steps 1-4, FY11-FY04	71,518	1.3	293,688	5.2
Step 8	Repeat steps 3-4, FY03-FY00	4,373	0.1	289,315	5.2

**Key:** VHA—Veterans Health Administration; SF—VHA Outpatient Visit file; OEF/OIF/OND—Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn

**Note:** After pulling in the most recent, non-missing ETHNIC value from the FY12 SF file in Step 1, 15.2% of Veteran VHA patients in FY12 were missing an ethnicity value. In Step 2, we supplemented ethnicity values from the ETHNIC variable in the FY12 Inpatient Main files and resolved ethnicity values for an additional 0.1% of Veteran VHA patients. After pulling in additional race and ethnicity values from the FY12 SF (Step 3) and Inpatient Main files (Step 4), the OCT2012 OEF/OIF/OND Roster (Step 5), and the FY12Q4 VHA VSF (Step 6), 6.5% of FY12 Veteran VHA patients were still missing an ethnicity value. In Step 7, we repeated Steps 1-4 with FY11 data and continued to fill in missing ethnicity data iteratively through FY04, which decreased the proportion of patients with missing ethnicity to 5.2%. In Step 8, we repeated Steps 3 and 4 using FY03 data and then continued to fill in missing race data iteratively using race data from FY02 going back to FY00. At the end of these steps, there were 289,315 FY12 Veteran VHA users (5.2%) still missing an ethnicity value. See Technical Appendix, Section 9.3.5 for complete algorithm.

Exhibit 9.K shows the number and proportion of Veteran VHA users who were missing population density data for FY12 (for determination of urban/rural status), by sex. Less than one percent (0.6%) of Veteran VHA users in FY12 were missing an urban/rural value.

**Exhibit 9.K: Number of Individuals Missing an Urban/Rural Value in FY12  
(Among FY12 Base Cohort—Women and Men, N=5,613,091)**

	Women	Men	Unknown Sex	Total
#	5,235	25,196	2,024	32,445
%	1.5	0.5	97.5	0.6

**Key:** VHA—Veterans Health Administration; PSSG—Planning Systems Support Group

**Note:** After creating an urban/rural variable using the URH field in the PSSG Enrollee File, there were 32,445 Veteran VHA users missing an urban/rural value in FY12. See Technical Appendix, Section 9.3.6 for complete algorithm.

Exhibit 9.L shows the number and proportion of Veteran VHA users in the database who were missing data for SC disability rating in each fiscal year from FY03-FY12. Less than one percent (0.2%) of Veteran VHA users in FY12 were missing an SC value.

**Exhibit 9.L: Number of Individuals Missing a Service-Connected Rating in Each Fiscal Year  
(Among Base Cohort—Women and Men)**

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
	N=	N=	N=	N=	N=	N=	N=	N=	N=	N=
	4,505,433	4,677,720	4,802,582	4,901,827	4,950,501	4,998,184	5,140,379	5,351,873	5,501,426	5,613,091
#	58,333	62,705	59,064	66,332	75,583	88,151	9,450	8,058	19,253	8,334
%	1.3	1.3	1.2	1.4	1.5	1.8	0.2	0.2	0.4	0.2

**Key:** VHA—Veterans Health Administration

**Note:** After creating an SC variable using the SCPER field, there were 8,334 Veteran VHA users missing an SC value in FY12. See Technical Appendix, Section 9.3.7 for complete algorithm.

The Base Cohort consisted of Veteran users. Therefore, Veteran status and user status were not missing for any individuals nor was OEF/OIF/OND status missing for any Veteran VHA users because patients were either on the VA OEF/OIF/OND Roster or they were not.

### 9.9.3 Analysis of Duplicate Stop Codes in VHA Data

In this Sourcebook, counts of stop code utilization exclude records with duplicate stop codes recorded in the same station on the same day (see Technical Appendix, Section 9.5). Among all FY12 encounters that were duplicates, we examined which stop codes accounted for the highest volume of duplicates. In FY12, 8.2% of all outpatient encounters were duplicates. Exhibit 9.M shows that nearly half these duplicates were laboratory (stop code 108). This is not surprising since patients may often have more than one lab service on a given day. The second most common duplicate stop code was primary care encounters (stop code 323).

**Exhibit 9.M: Clinic Stops with High Rates of Duplicate Records**

Stop code	Clinic Stop	Frequency	Proportion of all duplicates
108	LABORATORY	3,949,133	46.1
323	PRIM CARE/MED	796,869	9.3
560	SUBST ABUSE-GRP	282,080	3.3
547	INTEN SUBS ABUSE TRT	234,155	2.7
502	MENTAL HEALTH-IND	213,106	2.5
105	X-RAY	202,737	2.4
583	PRRC GRP	188,923	2.2
180	DENTAL	135,892	1.6
407	OPHTHALMOLOGY	115,481	1.4
130	EMERGENCY DEPT	115,065	1.3
408	OPTOMETRY	114,618	1.3
103	TELEPHONE TRIAGE	101,833	1.2
513	SUBST ABUSE-IND	91,294	1.1
429	OUTPAT CARE IN O.R.	64,336	0.8
523	OPIOID SUBSTITUTION	61,179	0.7
202	REC THERAPY SERVICES	59,692	0.7
147	PHONE/ANCILLARY	47,428	0.6
301	GENERAL INT MED	47,116	0.6
107	EKG	46,297	0.5
150	COMPUT TOMOGRAPHY (CT)	45,794	0.5



### 9.9.4 Years of Service for Records Appearing in FY12 Non-VA (Fee) Medical Care Outpatient Data Files

As explained in the Technical Appendix, Section 9.6, not all records in the FY12 Non-VA (Fee) Medical Care outpatient data file have a service date that falls within October 1, 2011, and September 31, 2012 (i.e., FY12). The top row of Exhibit 9.N shows the number and percentage of FY12 Non-VA (Fee) Medical Care outpatient records that reflect services that were provided in FY12. The rows below show the numbers and percentages of records for services that were provided in FY11 and in prior years (to FY05).<sup>221</sup> Most of the services recorded in the FY12 Non-VA (Fee) Medical Care outpatient file (74%) were provided in FY12. However, almost a quarter of the services in the FY12 file (24%) were provided in FY11. A total of 407,469 records (2%<sup>222</sup> of all FY12 Non-VA [Fee] Medical Care outpatient file records) reflect services provided in FY05–FY10.

**Exhibit 9.N: Number of Records in FY12 Non-VA (Fee) Medical Care Outpatient Data Files by Year of Service, Out of 25,374,963 Total Records Appearing in FY12 Non-VA (Fee) Medical Care File**

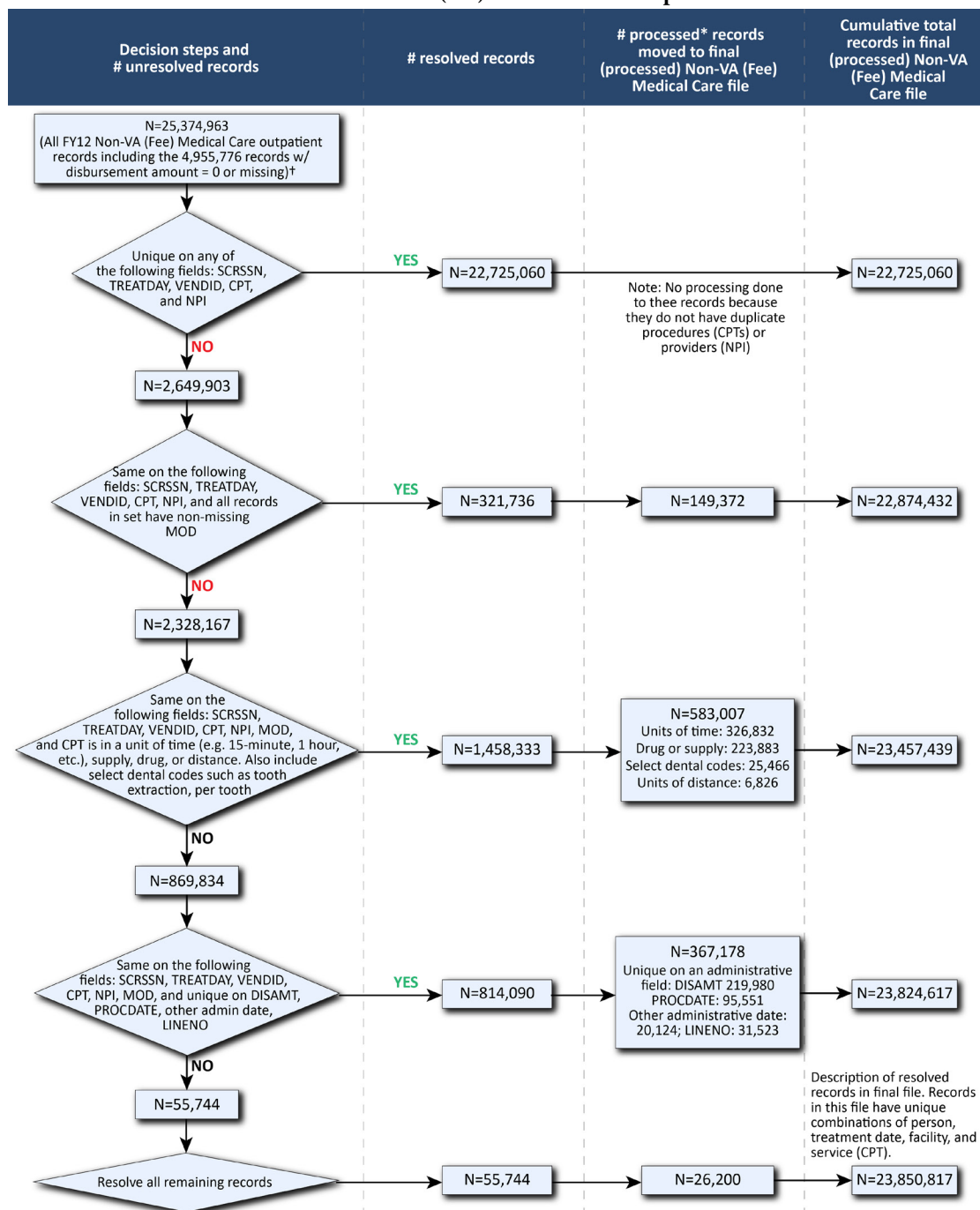
Fiscal year of service	Number of FY12 Non-VA (Fee) Medical Care outpatient records, by fiscal year within which the service for the FY12 record was provided	
	Number of records	% of all records
2012	18,793,410	74.1
2011	6,174,080	24.3
2010	341,214	1.3
2009	54,120	0.2
2008	9,950	0.0
2007	1,447	0.0
2006	719	0.0
2005	19	0.0

<sup>221</sup> Four records in the FY12 Non-VA (Fee) Medical Care outpatient file contain service dates in FY00; no records contain service dates in FY01–FY04.

<sup>222</sup> The sum of the Exhibit 9.N percentages for FY05–FY10 rounds to 2%.

### 9.9.5 Analysis of Duplicate Non-VA (Fee) Medical Care Outpatient File Records, FY12

**Exhibit 9.O: Steps Taken by WHEI to Define and Resolve Multiple Records in the FY12 Non-VA (Fee) Medical Care Outpatient File**



\* "Processed" refers to the data consolidation step where multiple records were combined into one record for inclusion in the final data file of resolved Non-VA (Fee) Medical Care records. Through this process, costs were summed across individual records, and the sum was retained in the final single record. In cases where each record had a different diagnosis, each different diagnosis was retained in a separate field within the modified, consolidated record.

† This flowchart differs slightly from the flowchart described in Sourcebook Volume 2. In Sourcebook Volume 2, we had excluded records in the FY10 Non-VA (Fee) Medical Care outpatient file when the payment amount (DISAMT variable) value was missing or had a value of 0. For Sourcebook Volume 3, WHEI included all records in the Non-VA (Fee) Medical Care outpatient data file (i.e., records with DISAMT>0 as well as records with DISAMT=0 or missing). See Technical Appendix, Section 9.6 for complete algorithm.

**Key:** FY=Fiscal Year; SCRSSN=scrambled SSN; TREATDAY=Day on which service was provided; VENDID=ID of provider; CPT=Current Procedural Terminology; NPI=National Provider ID; MOD=CPT modifier; DISAMT=Disbursement (payment) amount; PROCDATE=Date on which claim was processed; LINENO=Line item number on claim

Exhibit 9.O shows the rules used to identify sets of multiple records (i.e., possible duplicate records) in the FY12 Non-VA (Fee) Medical Care outpatient data, as well as the number of records identified at each step, the number of records that remained after processing, and a cumulative count of records that are ultimately considered resolved and put in the final, processed data file. Record sets were processed by summing DISAMT values across the records in the set, retaining diagnosis data from distinct records in additional data fields, and then consolidating the multiple records into one single record.

The flow chart begins by pulling all records in the FY12 Non-VA (Fee) Medical Care Outpatient Service file. Among them, the next step was to select records that did not occur in multiple record sets. Most records (N=22,725,060) reflected unique combinations of person, service date, provider facility, service, and provider, and thus constituted distinct records rather than multiple records. These singleton records required no further processing and were moved directly into the final data set.

Among the remaining 2,649,903 records, we proceeded to Step 2, where we looked first for records where all the values in the modifier field (“MOD” field) were present, indicating that the nature of the service required multiple records. Examples of this are record sets with one record for the professional component and another for the technical component of an x-ray, or record sets with one record for an arthroscopic surgery on the left knee and another for the same surgery on the right knee. We identified 321,736 records, which resulted in 149,372 records processed at Step 2.

Most of the remaining records were resolved in Step 3 (N=1,458,333 records were identified, and after processing, N=583,007 records remained). In Step 3, we identified records by searching for CPT codes describing units of time, including per minute, hour, or day (N=326,832 records), supplies and drugs per unit (N=223,883), and distance per mile (N=6,826), as well as select dental codes such as tooth extraction, per tooth (N=25,466). Although it made sense that these codes would have multiple records (e.g., one record for the first 50 ml of a drug, additional records for each additional 50 ml), counting each of these related records individually would give an over-count of distinct Non-VA (Fee) Medical Care instances of care. Therefore, records in multiple record sets were processed by combining the group of related records into one single record. For example, if a patient had two records on a particular service date, each with a CPT code indicating 15 minutes of physical therapy, we assumed that the patient received a single (30 minute) instance of physical therapy care on that day, and we collapsed the two records into one.

Step 4 identified multiple record sets that had unique values on administrative fields such as payment amount (DISAMT), process date (PROCDATE), and line number (LINENO). Records that were otherwise identical but had unique values on these fields were believed to be duplicated for administrative purposes rather than to identify a distinct medical service, and thus were treated as duplicates. The fifth step resolved the remaining 55,744 multiple records by processing them in the same way as the records identified in previous steps.

Exhibit 9.P shows the process through which WHEI modified the VOLUMIND field in the raw Non-VA (Fee) Medical Care Outpatient Services file to create VOLUMIND\_mod. The left hand side of the chart shows a series of criteria for record selection at that step, and the right hand side of the chart shows the value used for the final VOLUMIND\_mod variable, either equal to the original VOLUMIND field, or equal to 1.

The first step identified records where VOLUMIND equaled 1. We retained this original value in the new VOLUMIND\_mod variable.

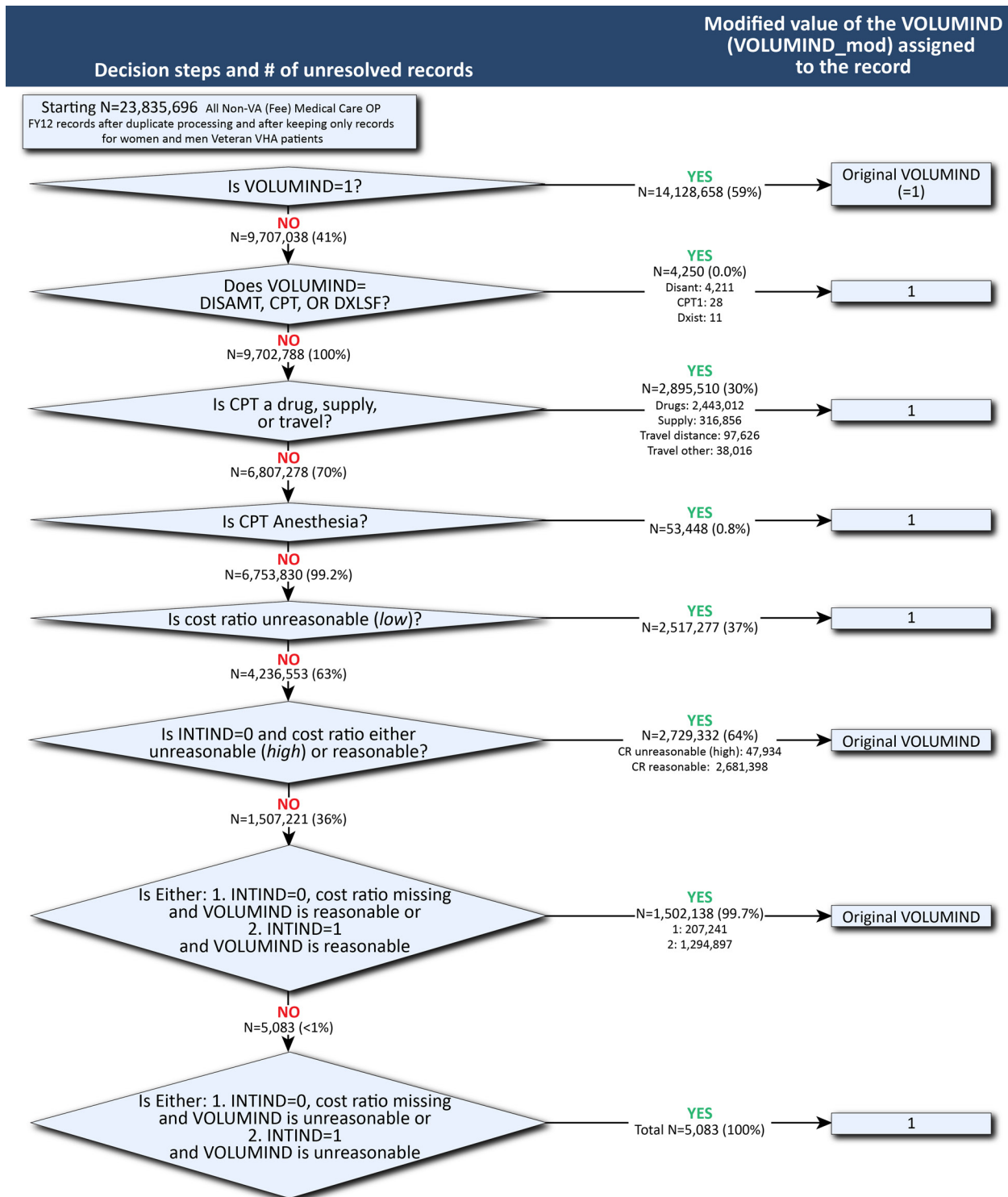
Next, we identified records where VOLUMIND equaled one of the other quasi-numeric values in the record. We reasoned that a VOLUMIND equal to a CPT or Diagnosis ICD9 value was likely a data entry error. Also, except for services with a unit cost of exactly \$1, the VOLUMIND should not equal the disbursement amount (DISAMT field). All 4,250 records identified at this step were given a VOLUMIND\_mod value = 1. The same modification was made for the 2,895,510 records where the CPT value indicated a drug, supply, or an ambulance transportation CPT, since we did not want our count estimates to be biased upward by counts of individual units of these services (e.g., each 5 ml of a drug or hydrating fluid, or each mile traveled by ambulance, etc.). We also found that during FY12, VOLUMIND values on records for anesthesia services reflected the duration of the service in minutes, rather than the number of services. For this reason, we set VOLUMIND\_mod = 1 for anesthesia services.

In Step 5, to further help identify additional records with VOLUMIND values that were unreasonably high, we calculated an “observed unit cost” for each record by dividing the DISAMT by the VOLUMIND. We compared the result to an established unit cost for each CPT, developed by VHA’s HERC. This comparison gave us a useful standard by which we gauged whether our unit cost was much smaller than the expected unit cost as provided by HERC (i.e., if our observed unit cost was less than 30% of the expected unit cost). Since we assumed that the DISAMT value was correct (the amount VHA reimbursed the outside provider for Non-VA [Fee] Medical Care), an observed unit cost that was smaller than expected suggested the VOLUMIND was too big. The 2,517,277 records identified in Step 5 were given a VOLUMIND\_mod equal to 1.

Step 6 used an additional field from the raw Non-VA (Fee) Medical Care outpatient files, called INTIND, which is an indicator of whether or not the record reflects a **contract** service. The rule in this step identified all records that were not contract records and also had either an observed unit cost that was much larger than expected, or an observed unit cost that was close to what we expected. It set all these records’ VOLUMIND\_mod values equal to the original VOLUMIND. When the observed unit cost was larger than expected, we interpreted it to mean that the VOLUMIND was too small, and we could not correct it by setting VOLUMIND\_mod equal to 1. Similarly, when the observed unit cost was close to the expected unit cost, we interpreted the VOLUMIND to be accurate. In both cases, VOLUMIND\_mod equaled the original VOLUMIND. The reason for restricting the remaining records evaluated to non-contract records was based on the concern that there may be cases where an individual record represented care for multiple people. In these cases, the observed unit cost might be close to the expected unit cost, but the total volume of services would actually be more than one person is expected to use in a single month.

## 9.9.6 Analysis of Non-VA (Fee) Medical Care Outpatient File Volume Indicator Field, FY12

### Exhibit 9.P: Processing of Non-VA (Fee) Medical Care Outpatient Data Volume Indicator Field



To address the possible case of multi-person contract records, Steps 7 and 8 identified the remaining records where the contract record indicator, INTIND, equals 1, and they evaluate the face validity of the original VOLUMIND value directly. Fewer than 2 million records remained at this point in the flow chart, and a substantially smaller number of unique CPTs existed. Upon inspecting the CPTs that occurred within this pool of records, we developed five thresholds for the maximum number of services that one person could use over one month, depending on the CPT value. The threshold VOLUMIND values<sup>223</sup> were: 31 for services that were in units of one day or involving home visits (equivalent of one day of service for every day of the month); 124 for services in units of 1 hour (equivalent of 4 hours/day/month); 496 for services in units of 15 minutes (equivalent of 4 hours/day/month); five for other remaining services (as an intermediate global threshold); and finally, 31 for all other remaining records (final global threshold). For example, if a mammography imaging record had a VOLUMIND of 38, we determined that the VOLUMIND value exceeded the allowable threshold of 31, and we set VOLUMIND\_mod equal to one.

All the 1,502,138 records with a VOLUMIND value below the appropriate thresholds were considered reasonable, regardless of whether the record was a contract service or not. As a result, VOLUMIND\_mod for these records was set equal to the original VOLUMIND values at Step 7. Step 8 resolved the remaining 5,083 records that had unreasonable VOLUMIND values by setting VOLUMIND\_mod for these records equal to one.

---

223 Threshold indicates the maximum VOLUMIND value.



**IB 10-597**  
**P96645**