



Original article

## Tailoring VA Primary Care to Women Veterans: Association with Patient-Rated Quality and Satisfaction

Donna L. Washington, MD, MPH<sup>a,b,\*</sup>, Bevanne Bean-Mayberry, MD, MHS<sup>a,b</sup>, Michael N. Mitchell, PhD<sup>a</sup>, Deborah Riopelle, MSPH<sup>a</sup>, Elizabeth M. Yano, PhD, MSPH<sup>a,c</sup>

<sup>a</sup> VA Greater Los Angeles Health Services Research and Development (HSR&D) Center of Excellence, Sepulveda, California

<sup>b</sup> Department of Medicine, University of California Los Angeles (UCLA) School of Medicine, Los Angeles, California

<sup>c</sup> Department of Health Services, UCLA School of Public Health, Los Angeles, California

Article history: Received 1 December 2010; Received in revised form 26 March 2011; Accepted 15 April 2011

### A B S T R A C T

**Background:** Primary care delivery models tailored to women's needs and preferences are associated with higher quality and satisfaction. Therefore, the U.S. Department of Veterans Affairs (VA) recommends adoption of designated providers for women in primary care clinics or women's health centers as the optimal models for women's primary care. We assessed women veterans' ratings of their VA health care quality, gender-related satisfaction, gender appropriateness, and VA provider skills in treating women, in relation to primary care model at VA sites nationwide.

**Methods:** Health care ratings were obtained from VA users in the 2008–2009 National Survey of Women Veterans. VA administrative data identified the site for each respondent's primary care. Facility data identified the site's primary care model for women. We conducted multilevel modeling to compare health care ratings for sites serving 300 or more women veterans who had adopted VA recommendations for women's primary care models (adopter sites), with non-adopter sites, and with small sites serving fewer women veterans, adjusting for patient characteristics.

**Results:** Adopter sites received higher adjusted ratings of gender-related satisfaction and perceptions of VA provider skills than non-adopter and small sites. Adopter sites also received higher adjusted ratings of gender appropriateness than small sites. Adjusted ratings of quality of care did not differ by type of site.

**Conclusion:** VA sites with primary care models tailored to women were rated higher on most dimensions of care. Facilitating establishment of these optimal care models at other sites is one strategy for improving women veterans' experiences with VA care. Research to identify other features of care associated with quality could inform ongoing VA quality transformation efforts.

Published by Elsevier Inc.

### Introduction and Background

Women are an extreme minority within Department of Veterans Affairs (VA) health care facilities, accounting for only 6% of VA health care users (Department of Veterans Affairs, VA Information Resource Center, 2010a). Historically, the VA has

been perceived by women veterans as being oriented toward male veterans, and prior research demonstrated gaps in VA access, services, and quality of care for women (Washington, Yano, Simon, & Sun, 2006; Washington, Kleimann, Michelini, Kleimann, & Canning, 2007; U.S. Government Accounting Office, 1982, 1992, 1999). Aiming to address these gaps by advancing new care models for delivery of comprehensive, integrated clinical care for women, in the mid 1990s the VA launched specialized comprehensive women's health centers in key academic medical centers throughout the United States (Bean-Mayberry, Yano, Bayliss, Navratil, Weisman, & Scholle, 2007). Outside the VA, at the same time, there was an impetus by the U.S. Department of Health and Human Services (DHHS) to develop National Centers of Excellence in Women's Health (Bean-Mayberry, Yano, Bayliss, et al., 2007a,b). Such care models have been shown to provide a higher quality of care than traditional

Funded by the Department of Veterans Affairs (VA) Health Services Research and Development (HSR&D) Service (#SDR-08-270) and the VA Office of Public Health and Environmental Hazards, Women Veterans Health Strategic Healthcare Group. Dr. Yano is supported by a VA HSR&D Research Career Scientist award (#RCS-05-195). Dr. Bean-Mayberry was supported by a VA HSR&D Research Career Development Transition award (#RCD 02-039) during this study.

\* Correspondence to: Donna L. Washington, MD, MPH, VA Greater Los Angeles Healthcare System, 11301 Wilshire Blvd., 111G, Los Angeles, CA 90073. Phone: 310-478-3711; fax: 310-268-4933.

E-mail address: donna.washington@va.gov (D.L. Washington).

primary care practices in the provision of recommended clinical preventive services and in patients' satisfaction with the care received (Anderson et al., 2002; Bean-Mayberry et al., 2003).

Located at only eight large sites, however, the original VA comprehensive women's health centers served only a small fraction of women veterans nationwide (Yano, Goldzweig, Canelo, & Washington, 2006). As a result, VA policymakers subsequently recommended the creation of women's health clinics or of designated primary care providers or teams for women as the optimal models for primary care delivery for women in all other VA medical centers (VAMCs; Yano, Washington, Goldzweig, Caffrey, & Turner, 2003). A national assessment of the organization of VA care for women found that by 2007, of the VAMCs and community-based outpatient clinics serving 300 or more women veterans, 67% had adopted women's health clinics as an organizational innovation for the delivery of gender-specific services; however, only 56% of these women's health centers delivered comprehensive primary care (Yano, Washington, & Bean-Mayberry, 2008; Yano et al., 2010). Larger, more complex sites were more likely to offer gender-specific services directly, rather than through referral to another site (Washington, Caffrey, Goldzweig, Simon, & Yano, 2003; Cope, Yano, Lee, & Washington, 2006; Seelig, Yano, Bean-Mayberry, Lanto, & Washington, 2008). In that assessment, models for women's primary care delivery were not evaluated at VA community clinics serving fewer than 300 women veterans (small caseload sites); however, other assessments of VA community clinics found that users of those sites had less VA primary care and specialty care use than users of larger VA sites (Liu et al., 2010).

Although optimal models for delivery of women's primary care (i.e., comprehensive women's health clinics and/or designated primary care providers for women) are linked with higher health care quality and satisfaction under ideal circumstances, it is unknown how diffusion of this organizational intervention into usual practice influences women's primary care performance across the VA. An assessment of primary care performance as it relates to how care is organized for women is also relevant for settings outside of the VA that are not specially designated DHHS National Centers of Excellence in Women's Health. Our objective was to determine the association of the type of women's primary care model with women veterans' experiences of care on a national scale. Specifically, we sought to compare ratings of care for sites that had adopted recommended models of care with ratings of care for non-adopter sites and for small caseload sites. We hypothesized that ratings of care would be highest for sites that had adopted VA recommended models of care.

## Methods

### *Study Design and Sample*

We conducted a secondary data analysis of linked individual-level and VA site-level cross-sectional data that are national in scope, representing all geographic regions and Veterans Integrated Service Networks. Individual survey data provided women veterans' ratings of their VA health care. The VA administrative data linked each woman veteran to the VA site she used for primary care. The VA site-level data provided characteristics of the site's practice model for delivery of primary care to women. The analytic sample was composed of women veterans who self-identified as VA users, had VA administrative data validation of VA use in the prior 12 months, and had

matching VA site-level data. This study was approved by the Institutional Review Board at the VA study site, and the survey by the U.S. Office of Management and Budget.

### *Data Sources*

The source for individual-level data was the National Survey of Women Veterans (NSWV). We fielded the NSWV from September 2008 to May 2009 to a population-based, stratified, random sample of women veterans. Stratification was based on VA ambulatory care use (VA user; VA nonuser) and period of military service, using previously described methods (Washington, Sun, & Canning, 2010). An advance information packet was mailed to each sampled veteran. Study interviewers screened respondents for study eligibility before obtaining consent and conducting a computer-assisted telephone interview. Potential respondents were offered study enrollment if they were not currently serving on active military duty, employed by the VA, or institutionalized. The NSWV enrolled 3,611 women veterans, and included 1,993 VA users (88% of screened and eligible VA users). Nonrespondents were more likely to have served during or after the Vietnam era. We focused on VA health care users as the subjects of this analysis. VA use was confirmed by survey responses regarding sites used for health care in the prior 12 months.

The VA National Patient Care Database Outpatient Clinic File provided VA utilization data for the NSWV VA health care user sample (Department of Veterans Affairs, VA Information Resource Center, 2010b). Linkage procedures have been described in detail elsewhere (Washington et al., 2010). The VA National Patient Care Database records include the VA site and clinics used. Because many VA users use more than one VA site for care, we assigned each woman veteran's VA site based on the site to which she made the greatest number of primary care visits in the prior 12 months.

The source for site-level data characterizing each VA sites' primary care delivery model for women was the 2006-2007 VHA Survey of Women Veterans Health Programs and Practices practice-level module (Yano et al., 2008). This was a nationwide census of all geographically distinct VA sites serving 300 or more unique women veterans. Sites serving fewer than 300 women veterans were not included in the census. We applied this caseload criterion to identify sites large enough to support comprehensive primary care programs, including separate women's health centers, if that was the desired practice model. The census employed a key informant approach in which the senior women's health clinician at each site responded for that site (response rate of 86%). This data source also provided the number of on-site women's health services for responding sites.

The 2008 Area Resource File provided characteristics of the areas in which facilities were located, including census region, large urban location, and percent of persons living in poverty. VA administrative data provided facility type (VAMC versus community-based outpatient clinic), size (total and female veteran caseload), and academic affiliation.

### *Measures*

Exposure, outcomes, and potential confounding measures are summarized in Table 1. The exposure of interest was the predominant practice model for delivery of primary care to women veterans at the VA site from which the respondent received the majority of her primary care. We categorized sites

**Table 1**  
Description of Measures

Type of Measure	Description
Site level: Independent variable—Women's primary care model at site (3 categories)	
Adopter site	Sites serving $\geq 300$ women veterans that have designated primary care providers for women and/or comprehensive women's health centers, i.e., tailored women's primary care models. These include VAMCs and CBOCs.
Non-adopter site	Sites serving $\geq 300$ women veterans that do not have designated providers or comprehensive women's health centers. These include VAMCs and CBOCs.
Small caseload site	Sites serving $< 300$ women veterans; women's primary care model was not assessed. These are all CBOCs.
Individual level: Dependent variables—Ratings of care	
Gender-related satisfaction scale	PCSSW care coordination and comprehensiveness scale (range, 1–5).
Gender appropriateness scale	Seven-item scale measuring perceptions of quality, experience, skills, continuity of care, and gender-sensitivity of VA providers and the VA environment (range, 1–4): Level of agreement (strongly agree to strongly disagree) with the following statements: In general, health care providers at the VA: are as good as private health care providers. lack experience. are skilled in treating women. are sensitive to the concerns of women patients. At the VA, you can see the same health care provider on most visits. At the VA, you may see a female health care provider if you wish. As a woman, I feel welcome at the VA.
VA provider skills scale	Single item measure of perception of VA providers' skills in treating women (range, 1–4): In general, health care providers at the VA are skilled in treating women.
Quality of care scale	CAHPS global rating of health care (range, 0–10): Using a number from 0 to 10, where "0" is the lowest quality health care and "10" is the highest quality health care, what number would you use to rate your VA health care in general, during the past 12 months?
Individual level: Control variables	
Age group	Categorized into 18–44, 45–64, or $\geq 65$ years old.
Education	Four-year college graduate versus less education.
Employment	Working (full or part time) versus not working.
Race/ethnicity	Self-reported race and ethnicity combined into two categories: Non-Hispanic White versus all others (i.e., racial/ethnic minority).
Insurance	None; Medicare with or without other insurance; other insurance only.
Overall health status	Single item global rating of health from the SF-12.
VA use prior 12 months	Total number of VA visits to any clinical setting dichotomized into $\geq 4$ versus $\leq 3$ .

*Abbreviations:* CAHPS, Consumer Assessment of Health Plans Survey; CBOC, community-based outpatient clinics; PCSSW, Primary Care Satisfaction Survey for Women; VA, U.S. Department of Veterans Affairs; VAMC, VA medical center.

on the basis of size and adoption of VA recommendations regarding practice model. The three types of sites—adopter, non-adopter, and small caseload—are described in Table 1. Outcome measures were composed of four ratings of care assessed as part of the NSWV (gender-related satisfaction, gender appropriateness, perception of VA provider's skills, and quality of care).

Gender-related satisfaction was measured with the Primary Care Satisfaction Survey for Women (PCSSW), a validated survey tool designed to assess satisfaction with primary care for aspects of health care that have been identified as being important to women, including the organization of women's primary care and women's changing needs across their life span (Scholle et al., 2000; Scholle, Weisman, Anderson, & Camacho, 2004). We administered the care coordination and comprehensiveness satisfaction scale, which measures women's ratings of the totality of their primary health care during the previous 12 months, including its coordination and scope. This scale contains 10 items each with a 5-point response option ranging from "not at all satisfied" to "extremely satisfied." For respondents answering at least 8 of the 10 items, we generated a PCSSW mean score by averaging their responses. The PCSSW mean score could range from 1 (worst possible satisfaction) to 5 (best possible satisfaction).

We conceptualized gender appropriateness as availability of high-quality, gender-sensitive care with high continuity. The NSWV measured seven items related to perceptions of quality, continuity of care, and the experience, skills, and gender-sensitivity of VA providers and the VA environment using 4-point scales of agreement (1 = strongly disagree to 4 = strongly agree) with statements about VA providers and care (Table 1). This scale incorporates perceptions of technical quality

of care, in contrast with the PCSSW, which focuses more on information needs and interpersonal health care quality. We combined the seven items into a gender-appropriateness scale with high internal consistency (coefficient alpha of 0.84). We hypothesized that items related to technical quality were driving much of this factor score, and are potentially mutable; therefore, we also examined individual ratings for one item in the scale as a separate outcome—agreement with the statement that, "In general, health care providers at the VA are skilled in treating women."

Quality of care was measured with the Consumer Assessment of Health Plans Survey global rating of health care, which is used by the National Committee for Quality Assurance for assessment of quality of care received in health plans (Agency for Healthcare Research and Quality, 2008; National Committee for Quality Assurance, 1999). Because many VA health care users also use other systems of care, we adapted this item to specifically elicit ratings of VA health care: "Using a number from 0 to 10, where 0 is the lowest quality health care and 10 is the highest quality health care, what number would you use to rate your VA health care in general, during the past 12 months?" We chose this outcome measure so that we could compare VA ratings with published quality of care ratings for other health care settings.

Control variables (Table 1) included individual characteristics assessed in the NSWV that may be associated with either ratings of care, or with health care use patterns influencing practice model exposure (Henderson & Weisman, 2005). For example, older age and better health status are associated with greater health care satisfaction in both veteran and non-veteran women (Washington, Yano, Simon, et al., 2006; Henderson & Weisman, 2005; Hall, Milburn, & Epstein, 1993). In general, greater

socioeconomic advantage (e.g., higher educational attainment) and minority racial or ethnic identification are associated with lower health care satisfaction (Henderson & Weisman, 2005). Among veteran women, being employed is associated with lower health care satisfaction (Washington, Yano, Simon, et al., 2006). Provider use patterns may be influenced in part by the type of health insurance, with greater dual VA and non-VA health care use among VA users with health insurance. Women making more visits have more opportunity to interact with health care providers and the health care system and may have different perspectives on care received. Thus, measures for the patient characteristics of age group, education level, employment, race/ethnicity, health insurance, overall health status, and total number of visits in the prior 12 months to any VA clinical setting were included in the analyses.

### Statistical Analysis

To compare facility characteristics for each type of site, we conducted two logistic regression analyses for each characteristic, varying the site type that was the reference group. This generated pairwise statistical comparisons among the three site types. To compare person-level characteristics of women veterans using each type of site, we conducted similar analyses.

To identify the association of site type with ratings of care, we modeled each of the four person-level outcomes (ratings of gender-related satisfaction, gender appropriateness, perceptions of VA provider skills, and health care quality) separately as a function of the three-category type of practice model for women's primary care at the VA site-level (adopter, non-adopter, small caseload). For the analysis, we therefore used a multilevel random intercepts linear regression model, using adopter sites as the reference group, and weighted by the person-level sampling probability weights (Raudenbush & Bryk, 2001). These weights were developed from the inverse of the probabilities of inclusion in the NSWV sample, with the probability of inclusion determined from the relative size of the survey stratum with respect to the population. Separate models were run in which no covariates were included (the unadjusted models), and in which person-level covariates were included (the adjusted models). Because our interest was in the differences in outcomes among the overarching practice models represented by the three site types (adopter, non-adopter, small caseload), we did not adjust for other facility characteristics.

The multilevel approach accounts for the multilevel structure of these data, and the weights account for the NSWV survey sampling design, to generalize results to the population from which the women veteran sample was drawn. Therefore, all results are described as population estimates. The multilevel models yielded differences in adjusted mean ratings for non-adopter versus adopter sites, and for small caseload versus adopter sites. These differences in means were added to the model intercepts to calculate adjusted mean ratings for each type of site. Multilevel models were conducted using MPlus version 5.1 (Muthén & Muthén, 2009). All other analyses were conducted using Stata version 11 (StataCorp, College Station, TX).

## Results

### VA Women's Primary Care Models

The analytic sample was composed of 1,749 women veterans using 404 VA health care sites who had matching information on

the sites' practice model for delivery of primary care to women ( $n = 113$  adopter sites,  $n = 75$  non-adopter sites, and  $n = 216$  small caseload sites). The facility characteristics underlying each type of site are given in Table 2. Adopter sites and small caseload sites were more likely than non-adopter sites to be located in the northeast. Adopter sites were more likely than small caseload sites to be in large urban areas and to have a greater percentage of persons in their areas living in poverty. Compared with non-adopter sites, adopter sites were also more likely to be academically affiliated VAMCs. No small caseload site was a VAMC. Adopter sites were the largest in terms of patient population. Adopter sites offered more on-site women's health services than non-adopter sites.

### Women Veteran Characteristics

Population estimates for use of each type of VA women's primary care model, and characteristics of the women veterans using each type of site are given in Table 3. Among women veteran VA users, 48.3% used adopter sites, 27.4% used non-adopter sites, and 24.3% used small caseload sites.

Sites varied in the demographic characteristics of their women veteran users (Table 3). Compared with users of small caseload sites, the odds of being age 18 to 44 were higher for users of adopter sites (odds ratio [OR], 1.9; 95% confidence interval [CI], 1.2–2.9) and of non-adopter sites (OR, 1.9; 95% CI, 1.1–3.0), and the odds of being age 65 or older were lower for users of adopter sites (OR, 0.5; 95% CI, 0.4–0.8) and of non-adopter sites (OR, 0.7; 95% CI, 0.50–0.96). Compared with users of small caseload sites, the odds of being non-Hispanic White (OR, 0.5; 95% CI, 0.4–0.8) or of having Medicare insurance (OR, 0.7; 95% CI, 0.50–0.97) were lower for users of adopter sites. Compared with users of small caseload sites, the odds of making four or more VA visits were higher for users of adopter sites (OR, 1.5; 95% CI, 1.1–2.1) and of non-adopter sites (OR, 1.5; 95% CI, 1.1–2.2). Characteristics of users of adopter and non-adopter sites were similar. Sites did not differ in their proportions of women veteran college graduates, currently employed, or those reporting excellent or very good overall health.

### Women Veterans' Ratings of Care by Women's Primary Care Model

Unadjusted and adjusted mean ratings of health care were similar; therefore, only the adjusted means are presented. Adjusted mean ratings of health care in the prior 12 months by women's primary care model are given in Table 4. Adjusting for differences in age, education, employment status, race/ethnicity, health insurance, overall health status, and the number of VA health care visits in the prior 12 months, gender-related satisfaction was higher for adopter sites (mean rating, 3.53; 95% CI, 3.44–3.62) compared with non-adopter sites (difference in means,  $-0.14$ ; 95% CI,  $-0.27$  to  $-0.01$ ;  $p = .03$ ), and with small caseload sites (difference in means,  $-0.21$ ; 95% CI,  $-0.34$  to  $-0.07$ ;  $p = .004$ ). In adjusted analysis, the gender appropriateness of care was similar between non-adopter and adopter sites, but lower in small caseload sites compared with adopter sites (difference in means,  $-0.11$ ; 95% CI,  $-0.20$  to  $-0.02$ ;  $p = .018$ ). Adjusted mean ratings of VA provider skills were higher for adopter sites (mean rating, 3.25; 95% CI, 3.16–3.33) compared with non-adopter sites (difference in means,  $-0.17$ ; 95% CI,  $-0.31$  to  $-0.03$ ;  $p = 0.016$ ), and with small caseload sites (difference in means,  $-0.17$ ; 95% CI,  $-0.031$  to  $-0.02$ ;  $p = .029$ ).

**Table 2**  
Facility Characteristics by Type of Women's Primary Care Model at VA Site

	Adopter Sites (≥300 Women Veterans)	Non-adopter Sites (≥300 Women Veterans)	Small Caseload Sites (<300 Women Veterans)
Number of sites (n = 404)	113	75	216
Census region (%)			
Northeast*	19.5	8.0	26.1
Midwest	23.0	24.0	19.1
South	35.4	40.0	32.1
West	22.1	28.0	22.8
Large urban location (%) <sup>†</sup>	43.4	38.7	31.5
Percent of persons in area living in poverty, % (mean [SD]) <sup>‡</sup>	14.3 (4.7)	13.9 (3.8)	13.0 (5.3)
VA Medical Center (%) <sup>§</sup>	81.2	75.2	0
Academic affiliation (%) <sup>¶</sup>	69.6	47.3	Not applicable
Number of unique veteran patients (mean [SD]) <sup>  </sup>	33,583 (20,918)	25,704 (17,105)	4,669 (5,438)
Number of unique women veteran patients (mean [SD]) <sup>**</sup>	2,861 (2,125)	2,341 (1,982)	257 (498)
Percent of veteran patients that are female (mean [SD]) <sup>††</sup>	8.2 (2.4)	8.5 (2.9)	5.0 (2.5)
Number of on-site women's health services (mean [SD]) <sup>‡‡</sup>	13.0 (3.7)	11.4 (4.3)	Not assessed

Abbreviations: SD, standard deviation; VA, U.S. Department of Veterans Affairs.

Note. Adopter sites denote VA sites serving ≥300 women veterans that have designated primary care providers for women (located in general primary care clinics or in separate but shared space) and/or women's health centers; non-adopter sites are VA sites serving ≥300 women veterans with other women's primary care models; women's primary care model was not assessed at sites serving <300 women veterans (small caseload sites).

\*  $p = .036$  for non-adopter versus adopter sites, and for non-adopter versus small caseload sites.

<sup>†</sup>  $p = .033$  for adopter versus small caseload sites.

<sup>‡</sup>  $p = .021$  for adopter versus small caseload sites.

<sup>§</sup>  $p = .008$  for adopter versus non-adopter sites; statistical tests were not calculated for comparisons with small caseload sites.

<sup>¶</sup>  $p = .003$  for adopter versus non-adopter sites.

<sup>||</sup>  $p < .001$  for each pairwise comparison.

<sup>\*\*</sup>  $p = .017$  for non-adopter versus adopter and non-adopter versus small caseload sites;  $p < .001$  for adopter versus small caseload sites.

<sup>††</sup>  $p < .001$  for adopter versus small caseload sites.

<sup>‡‡</sup> Twenty-two women's health services assessed (Washington et al., 2003);  $p = .008$  for adopter versus non-adopter sites.

Adjusting for individual characteristics, ratings of quality of care did not differ among women veterans by type of women's primary care model at the VA site that was primarily used.

## Discussion

Quality improvement studies evaluate whether practices can adopt organizational structural changes that improve delivery of appropriate care for practice populations. The current analysis can be considered a quality improvement study of VA's natural experiment in the diffusion of primary care models tailored for women. The exposure of interest in this study was the VA site, with women veterans' use of the model of care under study occurring under usual practice conditions. From the perspective of a VA facility, our analysis might be more informative for their ongoing practice management and planning than the early VA and DHHS effectiveness studies conducted in specially designated and resourced women's health centers (Anderson et al., 2002; Bean-Mayberry, Yano, Bayliss, et al., 2007). Those centers were fully funded at the time, clinic populations were sampled that were fully exposed to the model of care under study, and outcomes were targeted toward assessing the care delivered in that particular model of care (Anderson et al., 2002). Although those earlier studies answered the question of whether comprehensive women's primary care models improve care under optimal conditions, our study informs the question of what these models currently garner for VA sites in terms of patient ratings of care, given the typical availability of these practice arrangements, VA provider referral patterns, and women veteran utilization patterns. We found that gender-related satisfaction and VA provider skills in treating women were higher at adopter sites compared with all other sites, and gender appropriateness of care was higher at adopter sites compared with small caseload sites.

There are multiple mechanisms by which optimal women's primary care models may have an effect on women's experiences of care. Providers with concentrated women's health expertise may provide direct patient care. Localizing specialized women's health expertise in a women's health center, or identifying experts to whom other providers can consult, may increase women's health services availability beyond the clinical expert (Washington, Yano, Goldzwedi, & Simen, 2006). Prior research has also found that women veterans in VA settings prefer receiving primary and women's health care together from the same provider or setting, and that they prefer women-only settings (Washington, Yano, Simon, et al., 2006; Washington et al., 2007). An alternative explanation for the higher ratings for adopter sites, however, is that better performing sites might be more likely to adopt one of the recommended models for women's primary care. However, organizational characteristics linked to better performance, for example, use of computerized clinical reminders, are not more likely to be present in sites with women's health clinics (Bean-Mayberry, Yano, Caffrey, Altman, & Washington, 2007).

In contrast with the early effectiveness studies that defined optimal models of primary care delivery for women (Anderson et al., 2002; Bean-Mayberry et al., 2003; Bean-Mayberry, Yano, Bayliss, et al., 2007), we found that global ratings of health care quality did not differ among women veterans across sites with different types of VA women's primary care models. There are several potential explanations for this null effect. Some women veterans do not use the women's primary care services at their VA site, and this may be reflected by lower quality ratings overall (e.g., 8.17 for adopter sites) compared with a benchmark rating of 8.6 by women seen in private sector primary care practices (Anderson et al., 2007). To make the most effective use of the concentration of women's health expertise and the investment in resources to support separate women's primary care delivery

**Table 3**  
Population Estimates of Women Veterans' Characteristics by Type of Women's Primary Care Model at VA Site Used

	Adopter Sites (≥300 Women Veterans)	Non-Adopter Sites (≥300 Women Veterans)	Small Caseload Sites (<300 Women Veterans)
Women veteran sample size ( <i>n</i> = 1,749; weighted percent of population)	842 (48.3%)	569 (27.4%)	338 (24.3%)
Age group (yrs)			
18-44 <sup>*</sup>	25.2%	25.2%	15.3%
45-64	46.8%	42.6%	42.1%
≥65 <sup>†</sup>	27.9%	32.3%	42.6%
Education			
Less than college	65.4%	60.7%	63.4%
College graduate	34.7%	39.3%	36.6%
Employment			
Not working	59.0%	62.6%	62.4%
Working	41.1%	37.4%	37.6%
Race/ethnicity <sup>‡</sup>			
Racial/ethnic minority	35.7%	30.8%	22.9%
Non-Hispanic White	64.3%	69.2%	77.1%
Insurance			
Uninsured	41.2%	39.2%	36.1%
Medicare <sup>§</sup>	30.2%	31.4%	38.5%
Other insurance	28.5%	29.5%	25.4%
Overall health status			
Good, fair, or poor	72.0%	77.2%	74.8%
Excellent or very good	28.1%	22.8%	25.2%
Total visits to any VA clinical setting in prior 12 months <sup>  </sup>			
1-3	31.0%	30.2%	40.0%
≥4	69.0%	69.8%	60.0%

Abbreviation: VA, U.S. Department of Veterans Affairs.

Note. Adopter sites denote VA sites serving ≥300 women veterans that have designated primary care providers for women (located in general primary care clinics or in separate but shared space) and/or women's health centers; non-adopter sites are VA sites serving ≥300 women veterans with other women's primary care models; women's primary care model was not assessed at sites serving <300 women veterans (small caseload sites).

\* *p* = .008 for adopter versus small caseload sites; *p* = .012 for non-adopter versus small caseload sites.

† *p* < .001 for adopter versus small caseload sites; *p* = .029 for non-adopter versus small caseload sites.

‡ *p* = .002 for adopter versus small caseload sites.

§ *p* = .034 for adopter versus small caseload sites.

|| *p* = .025 for adopter versus small caseload sites; *p* = .24 for non-adopter versus small caseload sites.

models, factors that are associated with the use of these models should be examined in both research studies and as part of planned evaluation efforts of VA comprehensive primary care for women. Research directed at identifying the features of care associated with high ratings of care among women veteran could also inform ongoing VA efforts to transform primary care for women.

A limitation of this study was that our categorization of a VA health care user could include those whose VA use was solely for emergency, mental health, specialty, or other types of health care

beyond primary care and women's health. Women receiving care outside of primary care and women's health settings might have different expectations for their care. When asked about quality, women not receiving care in women's clinics might not be including gender-specific care in their assessments of primary care. If they are not enrolled in a clinic where these services are expected to be provided, they might not register that there are quality concerns when they are not offered. In addition, we did not control for health care utilization patterns (e.g., use of multiple specialty clinics) beyond number of VA visits. However,

**Table 4**  
Multilevel Models of Women Veterans' Adjusted Mean Ratings of Care, by Women's Primary Care Model at VA Site Used for Health Care in the Prior 12 Months<sup>\*</sup>

Site Category	Rating of Gender-Related Satisfaction with Care (range, 1-5), Mean (95% CI)	Rating of Gender Appropriateness of Care (range, 1-4), Mean (95% CI)	Rating of VA Provider Skills in Treating Women (range, 1-4), Mean (95% CI)	Global Rating of Health Care Quality (range, 0-10), Mean (95% CI)
Adopter sites (≥300 women veterans)	3.53 (3.44, 3.62)	3.43 (3.38, 3.49)	3.25 (3.16, 3.33)	8.17 (8.00, 8.34)
Non-adopter sites (≥300 women veterans)	3.39 (3.29, 3.49)	3.35 (3.28, 3.42)	3.08 (2.97, 3.19)	7.97 (7.77, 8.16)
Small caseload sites (<300 women veterans)	3.33 (3.21, 3.44)	3.33 (3.26, 3.40)	3.08 (2.96, 3.20)	7.94 (7.71, 8.17)
Differences in means between site categories (95% CI) [ <i>p</i> -value]				
Non-adopter-Adopter sites	-.14 (-.27, -.01) [.030]	-.09 (-.18, .01) [.070]	-.17 (-.31, -.03) [.016]	-.21 (-.47, .06) [.121]
Small caseload-Adopter sites	-.21 (-.34, -.07) [.004]	-.11 (-.20, -.02) [.018]	-.17 (-.31, -.02) [.029]	-.23 (-.51, .05) [.113]

Abbreviations: CI, confidence interval; VA, U.S. Department of Veterans Affairs.

\* Adjusted for individual sociodemographic characteristics, health status, and amount of VA use; gender-related satisfaction measured with Primary Care Satisfaction Survey for Women modified care coordination and comprehensiveness scale (range, 1-5); gender appropriateness and VA provider skills each measured with scales with 1-4 range; and quality of care measured with Consumer Assessment of Health Plans Survey global rating of health care (range, 0-10). Higher ratings are better on all scales.

effective primary care delivery likely influences the use of and coordination with other types of care, and most VA users are assigned primary care providers. There may also be unmeasured confounders that affect women's health care ratings.

Models of primary care for women at small caseload sites were not assessed. More research is needed about how those sites are delivering care, for example, to determine whether they have designated primary care providers for women, and how the availability of those providers compares with designated provider availability at adopter sites. An examination of the limits imposed by a small caseload on the ability of providers to maintain clinical proficiency in women's health care delivery should be the subject of future research. Such an inquiry could inform quality improvement interventions targeted to small caseload sites.

An important strength of this study was its focus on women veterans' perceptions of VA health care quality and satisfaction, as experienced with their usual health care utilization patterns under usual VA practice conditions. We found that the satisfaction with care women veterans experienced was very different under different women's primary care practice models. VA sites that have put into place primary care delivery arrangements tailored for women with designated providers, teams, or comprehensive women's health centers, have higher ratings from women veterans on most dimensions of care. As VA reaches out to disenfranchised women veterans, making their health care experience rewarding and satisfying is a vital step toward enhancing the patient-centeredness of their VA care. Facilitating establishment of recommended care models at other sites is one strategy for improving women veterans' experiences with VA care. Health care settings outside of the VA that aim to increase women's satisfaction with care should consider similar alterations in their primary care delivery arrangements for women.

However, our study also demonstrated that diffusion of models for comprehensive primary care for women is incomplete, and has not been sufficient to achieve nationwide uniformly high quality and satisfaction for women veteran VA users. This suggests that more directive actions are required to ensure system-wide uptake and complete implementation of comprehensive primary care for women. One year after the conclusion of the NSWV, the VHA Handbook defining services for women veterans at VA sites was revised to include a recommendation that every woman veteran has access to a VA primary care provider who can meet all of her primary care needs, including gender-specific care, in the context of an ongoing patient-clinician relationship (Department of Veterans Affairs, Veterans Health Administration, 2010c). Our findings provide support for this plan to transform VA quality improvement for women veterans from a nonsystematic diffusion of models of care to a national VA initiative to implement recommended models of comprehensive primary care delivery for women veterans. Barriers and facilitators to adoption of VA recommendations for women's primary care delivery are likely to differ between small and larger caseload sites; therefore, research to inform adoption of recommended models of care should be conducted in each of these settings. Research to identify other features of care associated with higher ratings of care as well as other measures of quality (e.g., chronic disease quality, preventive care), could also inform ongoing VA quality transformation efforts. The current study provides baseline data against which the impact of the transformative activities of this initiative can be benchmarked.

## Acknowledgments

Drs. Washington and Mitchell had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. The authors thank Mark Canning, Julia Yosef, Su Sun, Mingming Wang, and Ismelda Canelo of the VA Greater Los Angeles HSR&D Center of Excellence for assistance with survey fieldwork and data management, and Melissa Farmer, Lynn Soban, and Danielle Rose for critical review of the manuscript. The views expressed within are solely those of the authors, and do not necessarily represent the views of the U.S. Department of Veterans Affairs.

## References

- Agency for Healthcare Research and Quality (AHRQ). (2008). CAHPS Health Plan Survey 4.0: Adult Commercial Instrument, CAHPS® Health Plan Survey and Reporting Kit 2008. Rockville, MD. Available: <http://www.cahps.ahrq.gov/>.
- Anderson, R. T., Weisman, C. S., Camacho, F., Scholle, S. H., Henderson, J. T., & Farmer, D. F. (2007). Women's satisfaction with their ongoing primary health care services: A consideration of visit-specific and period assessments. *Health Services Research*, 42, 663-681.
- Anderson, R. T., Weisman, C. S., Scholle, S. H., Henderson, J. T., Oldendick, R., & Camacho, F. (2002). Evaluation of the quality of care in the Clinical Care Centers of the National Centers of Excellence in Women's Health. *Women's Health Issues*, 12, 309-326.
- Bean-Mayberry, B. A., Chang, C. H., McNeil, M. A., Whittle, J., Hayes, P. M., & Scholle, S. H. (2003). Patient satisfaction in women's clinics versus traditional primary care clinics in the Veterans Administration. *Journal of General Internal Medicine*, 18, 175-181.
- Bean-Mayberry, B., Yano, E. M., Bayliss, N., Navratil, J., Weisman, C. S., & Scholle, S. H. (2007). Federally funded comprehensive women's health centers: Leading innovation in women's healthcare delivery. *Journal of Women's Health*, 16, 1281-1290.
- Bean-Mayberry, B. A., Yano, E. M., Caffrey, C. D., Altman, L., & Washington, D. L. (2007). Organizational characteristics associated with the availability of women's health clinics for primary care in the Veterans Health Administration. *Military Medicine*, 172, 824-828.
- Cope, J. R., Yano, E. M., Lee, M. L., & Washington, D. L. (2006). Determinants of contraceptive availability at medical facilities in the Department of Veterans Affairs. *Journal of General Internal Medicine*, 21, S33-S39.
- Department of Veterans Affairs, VA Information Resource Center. (2010a). Medical SAS outpatient dataset. Available: <http://www.virec.research.va.gov>. Accessed November 29, 2010.
- Department of Veterans Affairs, VA Information Resource Center. (2010b). National patient care database (NPCD). Available: <http://www.virec.research.va.gov>. Accessed November 1, 2010.
- Department of Veterans Affairs, Veterans Health Administration. (2010c, May 21). VHA handbook 1330.01, Health care services for women veterans. Available: <http://www1.va.gov/>. Accessed November 24, 2010.
- Hall, J. A., Milburn, M. A., & Epstein, A. M. (1993). A causal model of health status and satisfaction with medical care. *Medical Care*, 31, 84-94.
- Henderson, J. T., & Weisman, C. S. (2005). Women's patterns of provider use across the lifespan and satisfaction with primary care coordination and comprehensiveness. *Medical Care*, 43, 826-833.
- Liu, C. F., Chapko, M., Bryson, C. L., Burgess, J. F., Jr., Fortney, J. C., Perkins, M., et al. (2010). Use of outpatient care in Veterans Health Administration and Medicare among veterans receiving primary care in community-based and hospital outpatient clinics. *Health Services Research*, 45, 1268-1286.
- Muthén, L. K., & Muthén, B. O. (2009). *Mplus Version 5.1*. Los Angeles, CA: Muthén & Muthén.
- National Committee for Quality Assurance. (1999). *HEDIS protocol for administering CAHPS 20H survey*. Washington, DC: HEDIS.
- Raudenbush, S. W., & Bryk, A. S. (2001). *Hierarchical linear models: Applications and data analysis methods (advanced quantitative techniques in the social sciences)*. Thousand Oaks, CA: Sage.
- Scholle, S. H., Weisman, C. S., Anderson, R., Weitz, T., Freund, K. M., & Binko, J. (2000). Women's satisfaction with primary care: A new measurement effort from the PHS National Centers of Excellence in Women's Health. *Women's Health Issues*, 10, 1-9.
- Scholle, S. H., Weisman, C. S., Anderson, R. T., & Camacho, F. (2004). The development and validation of the primary care satisfaction survey for women. *Women's Health Issues*, 14, 35-50.
- Seelig, M. D., Yano, E. M., Bean-Mayberry, B., Lanto, A. B., & Washington, D. L. (2008). Availability of gynecologic services in the Department of Veterans Affairs. *Women's Health Issues*, 18, 167-173.
- StataCorp. (2009). Stata: Release 11. Statistical Software. College Station, TX: StataCorp LP.

- U.S. Government Accounting Office. (1982). *Actions needed to ensure that female veterans have equal access to VA benefits*. Pub. No. GAO/HRD-82-98. Washington, DC: Author.
- U.S. Government Accounting Office. (1992). *VA health care for women: Despite progress, improvements needed*. Pub. No. GAO/HRD-92-93. Washington, DC: Author.
- U.S. Government Accounting Office. (1999). *VA health care for women, progress made in providing services to women veterans*. Pub. No. GAO/HEHS-99-38. Washington, DC: Author.
- Washington, D. L., Caffrey, C., Goldzweig, C., Simon, B., & Yano, E. M. (2003). Availability of comprehensive women's health care through Department of Veterans Affairs Medical Centers. *Women's Health Issues*, 13, 50–54.
- Washington, D. L., Yano, E. M., Simon, B., & Sun, S. (2006). To use or not to use—What influences why women veterans choose VA healthcare? *Journal of General Internal Medicine*, 21(Suppl 3), S11–S18.
- Washington, D. L., Yano, E. M., Goldzweig, C., & Simon, B. (2006). VA emergency health care for women: Condition—Critical or stable? *Women's Health Issues*, 16, 133–138.
- Washington, D. L., Kleimann, S., Michelini, A. N., Kleimann, K. M., & Canning, M. (2007). Women veterans' perceptions and decision-making about VA health care. *Military Medicine*, 172, 812–817.
- Washington, D. L., Sun, S., & Canning, M. (2010). Creating a sampling frame for population-based veteran research: Coverage and overlap of VA and non-VA databases. *Journal of Rehabilitation Research & Development*, 47, 763–771.
- Yano, E. M., Washington, D. L., Goldzweig, C., Caffrey, C., & Turner, C. (2003). The organization and delivery of women's health care in Department of Veterans Affairs Medical Centers. *Women's Health Issues*, 13, 55–61.
- Yano, E. M., Goldzweig, C., Canelo, I., & Washington, D. L. (2006). Diffusion of innovation in women's health care delivery: The Department of Veterans Affairs' adoption of women's health clinics. *Women's Health Issues*, 16, 226–235.
- Yano, E. M., Washington, D. L., & Bean-Mayberry, B. (2008). *Impact of practice structure on the quality of care for women veterans (final report)*. Sepulveda, CA: VA HSR&D Center of Excellence for the Study of Healthcare Provider Behavior.
- Yano, E. M., Hayes, P., Wright, S., Schnurr, P., Lipson, L., Bean-Mayberry, B., et al. (2010). Integration of women veterans into VA quality improvement research efforts: What researchers need to know. *Journal of General Internal Medicine*, 25(Suppl 1), 56–61.

---

### Author Descriptions

Donna L. Washington, MD, MPH, is Professor of Medicine at VA Greater Los Angeles HSR&D Center of Excellence and UCLA School of Medicine. Her research examines health care access and quality for women and racial/ethnic minorities, with a VA healthcare focus.

Bevanne Bean-Mayberry, MD, is an Assistant Professor of Medicine at the VA Greater Los Angeles HSR&D Center of Excellence and UCLA School of Medicine. Her research focus is veterans' health care at the intersection of gender and race.

Michael N. Mitchell, PhD, is a statistician at the VA Greater Los Angeles HSR&D Center of Excellence. Dr. Mitchell envisioned the UCLA Statistical Consulting Resource web site, wrote hundreds of web pages about Stata, and has written multiple books on STATA programming.

Deborah Riopelle, MSPH, is a health sciences specialist at the VA Greater Los Angeles HSR&D Center of Excellence with experience in public health and health services research. Her research interests include women's health and health care, and disaster preparedness.

Elizabeth M. Yano, PhD, MSPH, is Deputy Director of the VA Greater Los Angeles HSR&D Center of Excellence and Professor of Health Services at UCLA School of Public Health. Her research focuses on the influence of organization factors on quality of care.