

VA Location and Structural Factors Associated with On-Site Availability of Reproductive Health Services

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INTRODUCTION: With the increasing number of women Veterans enrolling in the Veterans Health Administration (VA), there is growing demand for reproductive health services. Little is known regarding the on-site availability of reproductive health services at VA and how this varies by site location and type.

OBJECTIVE: To describe the on-site availability of hormonal contraception, intrauterine device (IUD) placement, infertility evaluation or treatment, and prenatal care by site location and type; the characteristics of sites providing these services; and to determine whether, within this context, site location and type is associated with on-site availability of these reproductive health services.

METHODS: We used data from the 2007 Veterans Health Administration Survey of Women Veterans Health Programs and Practices, a national census of VA sites serving 300 or more women Veterans assessing practice structure and provision of care for women. Hierarchical models were used to test whether site location and type (metropolitan hospital-based clinic, non-metropolitan hospital-based clinic, metropolitan community-based outpatient clinic [CBOC]) were associated with availability of IUD placement and infertility evaluation/treatment. Non-metropolitan CBOCs were excluded from this analysis ($n=2$).

RESULTS: Of 193 sites, 182 (94 %) offered on-site hormonal contraception, 97 (50 %) offered on-site IUD placement, 57 (30 %) offered on-site infertility evaluation/treatment, and 11 (6 %) offered on-site prenatal care. After adjustment, compared with metropolitan hospital based-clinics, metropolitan CBOCs were less likely to offer on-site IUD placement (OR 0.33; 95 % CI 0.14, 0.74).

CONCLUSION: Compared with metropolitan hospital-based clinics, metropolitan CBOCs offer fewer specialized reproductive health services on-site. Additional research is needed regarding delivery of specialized reproductive health care services for women Veterans in CBOCs and clinics in non-metropolitan areas.

KEY WORDS: women veterans; reproductive health; reproductive health services; Department of Veterans Affairs.

Abbreviations

VA	Veterans Health Administration, Department of Veterans Affairs
CBOC	Community-based outpatient clinic
VISN	Veterans Integrated Service Network
IUD	Intrauterine device
WVHP	Veterans Health Administration Survey of Women Veterans Health Programs and Practices

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INTRODUCTION

Comprehensive women's healthcare includes basic reproductive health services, such as hormonal contraception, and specialized services, such as infertility evaluation/treatment and prenatal and obstetric care.^{1,2} As the number of women Veterans enrolling in the Veterans Health Administration (VA) has increased, so has the demand for basic and specialized reproductive health services.³⁻⁶ While all VA sites are required to provide basic women's health services on-site, specialized services may be delivered through referral to another VA site or through non-VA purchased (fee basis) or contract care from community (non-VA) providers. Specific specialized services, such as prenatal care, are almost exclusively provided through these mechanisms.^{2,7-9}

On-site availability of reproductive services may be influenced by the practice context, including the site environment and organizational features such as practice

structure, size, and resources.^{2,8,10} Previous reports indicate that while the majority of sites serving a large number of women Veterans are hospital-based and located in large urban areas,¹¹ approximately 14 % of VA sites serving at least 400 women are located in non-metropolitan areas.¹² Non-metropolitan areas have a documented shortage of reproductive service providers,¹³ and women Veterans may face significant barriers to obtaining reproductive health services in these communities. VA community-based outpatient clinics (CBOCs) provide basic primary care for Veterans.¹⁴ Compared with hospital based clinics, CBOCs frequently serve fewer women Veterans and are often located in non-metropolitan areas.^{14,15} Site location and type may jointly influence on-site availability of reproductive health services for women Veterans,¹⁶ and lack of on-site availability of reproductive health care services may delay care for women Veterans. Equal access to needed services for all Veterans is a VA priority.

Currently, little is known regarding the on-site availability of reproductive health services for women Veterans, particularly those served by CBOCs or sites in non-metropolitan areas. Therefore, the objectives of this study were to: 1) describe the overall on-site availability of hormonal contraceptives, intrauterine device (IUD) placement, infertility evaluation/treatment, and prenatal care, by site location and type; 2) describe the characteristics of sites providing these reproductive health services; and 3) to examine, within this context, whether site location and type is associated with on-site availability of specialized reproductive services.

METHODS

Study Design

We used cross-sectional survey data from the 2007 Veterans Health Administration Survey of Women Veterans Health Programs and Practices (WVHP) merged with the Area Resource File and VA administrative records. The protocol received institutional review board (IRB) approval from VA Greater Los Angeles and an exemption from IRB review by VA Puget Sound Health Care System.

Data Source

The WVHP survey queried informants at the health care system (Chief of Staff, $n=123$), and practice (senior clinician, $n=195$) levels at sites serving at least 300 unique women Veterans. Chiefs of Staff identified senior women's health clinicians most responsible for or knowledgeable regarding the women's health care delivery. Response rates for Chiefs of Staff and senior clinicians were 93 % and

86 % respectively. This analysis included data from 193 sites and utilized the senior clinician portion of the survey, with the exception of the variable regarding a separate budget for the women's health program at a site, which used the Chief of Staff module when the senior clinician response was missing.

Study Variables

Primary outcomes were on-site availability of 1) hormonal contraception, 2) IUD placement, 3) infertility evaluation/treatment, and 4) prenatal care. Senior clinicians were asked to specify whether a given service was "available at this VA site," "only available at another VA site," "available through contract or fee-basis on-site," "available through contract or fee-basis off-site," "not available," or available through some "other arrangement." A service was considered to be available on-site if a response was either "available at this VA site" or "available through contract or fee-basis on-site."

The primary exposure combined site location and type (metropolitan hospital-based clinic, non-metropolitan hospital-based clinic, metropolitan CBOC). Location was defined as metropolitan or non-metropolitan using data from the Area Resource File.¹⁷ Non-metropolitan CBOCs ($n=2$) were excluded from the analysis.

Independent variables included elements of practice context and organization.^{8,10} Variables related to practice context were the geographic region (Northeast, Midwest, South, and West) in which each VA site was located, as designated by the US Census Bureau, and VA regional networks known as Veterans Integrated Service Networks (VISN) ($n=21$).

Variables related to organization of the practice included: practice size, structure for providing care to women Veterans, and resource availability. Practice size was defined as the number of unique women Veterans with at least one visit to the site in the year preceding the survey (2006) ($<$ median [1,209], \geq median [1,209]). The structure for providing care to women Veterans was characterized by the presence of specialized models for gender-specific care. Specialized models for gender-specific care were not mutually exclusive and included presence of a separate women's clinic for primary care (yes, no) or gynecology clinic (yes, no). Resource availability included informant ratings of the sufficiency of resources and personnel; availability of formal training in women's health; availability of a separate budget for women's health; and change in resource availability over the preceding two years. Informants rated the sufficiency of resources for the following items: overall clinical expertise in women's health, availability of same gender-providers, nursing staff, administrative and support staff, clinic space,

examination rooms properly equipped for pelvic examinations and pap smears, female attendants to chaperone gender-sensitive examinations, and budget or funding for the women's health program. Responses were dichotomized as "always or usually sufficient" and "sometimes, rarely, or never sufficient". Informants reported if formal training in women's health was available at their site (yes, no). Combining the practice and Chief of Staff level responses, we determined whether there was a separate budget for the women's health program at each site. Finally, informants reported whether resources for women Veterans' care had increased, decreased, or remained unchanged in the past 2 years.

Statistical Analysis

We compared characteristics of sites with and without onsite availability of hormonal contraception, IUD placement, infertility evaluation/treatment, or prenatal care. Continuous variables were compared via students *t*-test; categorical variables were compared via the χ^2 test or if cell sizes were < 5 using the Fischer exact test. Random effects models were used to examine association of site type and location with on-site availability of IUD placement and infertility evaluation/treatment.¹⁸ Two levels of independent variables were considered: VISN

was considered a level two variable since multiple sites are nested within a single VISN, while all other variables were considered level one variables. Results from models adjusting for VISN and practice size. Adjustments for variables regarding structure for providing care to women Veterans and resource availability were not made, as these characteristics were potentially consequences of site type and location.¹⁹ Due to the extremely small number of facilities offering prenatal care ($n=11$), we did not include availability of prenatal care as a separate outcome.

RESULTS

Site Characteristics

Table 1 shows the characteristics of the surveyed sites, including practice context and organization. Of the 193 sites included in the analysis, 106 (55 %) were metropolitan hospital-based clinics, 23 were non-metropolitan hospital-based clinics (12 %), and 64 were metropolitan CBOCs (33 %). The median practice size at geographically distinct sites was 1,209 (interquartile range: 605–2,212). Compared with metropolitan hospital-based clinics, non-metropolitan hospital-based clinics and metropolitan CBOCs served fewer women Veterans, were less likely to have a separate primary care women's health or gynecology clinic, and

Table 1. Characteristics of VA Sites Serving ≥ 300 Unique Women Veterans in 2006 by Site Location and Type (N=193)

	Total	Metropolitan hospital	Non-metropolitan hospital	Metropolitan CBOC
<i>n</i>	193	106	23	64
<i>Practice context</i>				
Region n (%)				
Northeast	30 (16)	23 (22)	2 (9)	5 (8)
Midwest	44 (23)	25 (24)	8 (35)	11 (17)
South	73 (38)	38 (36)	7 (30)	28 (43)
West	46 (24)	20 (19)	6 (26)	20 (31)
<i>Organization of the practice</i>				
$\geq 1,209$ women Veterans in 2006 ^a				
Women's health clinic for primary care n (%)	130 (67)	84 (79)	16 (70)	30 (47)
Gynecology clinic n (%)	85 (44)	59 (56)	8 (35)	18 (28)
Women's health resources: always or usually sufficient n (%) ^a				
Clinical expertise	160 (84)	88 (85)	20 (87)	52 (83)
Same gender providers	154 (82)	90 (86)	17 (77)	47 (76)
Nursing staff	142 (74)	78 (74)	17 (74)	47 (75)
Administrative and support staff	108 (57)	60 (57)	10 (44)	38 (60)
Clinic space	125 (66)	68 (65)	18 (78)	39 (63)
Properly equipped examination rooms	183 (96)	101 (97)	22 (96)	60 (95)
Female attendants	163 (86)	91 (88)	22 (96)	50 (79)
Budget or funding	73 (46)	42 (47)	8 (42)	23 (46)
Formal women's health training n (%)	16 (8)	12 (12)	0	4 (6)
Separate budget or control point n (%)	32 (17)	25 (24)	3 (13)	4 (7)
Change in women's health resources over the last 2 years n (%)				
Increased	62 (33)	10 (39)	7 (31)	15 (24)
Unchanged	102 (54)	47 (45)	12 (52)	43 (68)
Decreased	26 (13)	17 (16)	4 (17)	5 (8)

^aMissing data: $\geq 1,209$ women Veterans in 2006, one missing; clinical expertise, three missing; same gender providers, four missing; nursing staff, two missing; administrative and support staff, two missing; clinic space, four missing; properly equipped examination rooms, three missing; female attendants, three missing; budget or funding, 35 missing; formal women's health training, two missing; separate budget or control point, five missing; change in resources over the last 2 years, three missing

were less likely to have a separate budget for the women’s health program.

On-Site Availability of Reproductive Health Services

Table 2 indicates the on-site availability of the four reproductive health services. Overall, 94 % of sites offered on-site hormonal contraception, 50 % offered on-site IUD placement, 30 % offered on-site infertility evaluation/treatment, and 6 % offered on-site prenatal care. Of the 11 sites not offering hormonal contraception on-site, five provided this service at another VA site and six offered it through fee-basis or contract providers (data not shown). Compared with metropolitan hospitals, a smaller percentage of non-metropolitan hospital-based clinics and metropolitan CBOCs offered on-site IUD placement. Metropolitan CBOCs were the least likely to offer infertility evaluation/treatment, but non-metropolitan hospital-based clinics were the most likely to offer on-site infertility evaluation only.

Compared with sites not offering hormonal contraception, those offering this service were more likely to have a

separate women’s health clinic for primary care, and to report sufficient clinical expertise, availability of same gender providers, and properly equipped exam rooms (Table 3). Compared with sites not offering on-site IUD placement, those offering this service were more likely to serve more women Veterans, have a separate women’s health clinic for primary care or gynecology clinic, report sufficient women’s health clinical expertise, and have a separate women’s health program budget (Table 3). Compared with sites not offering on-site infertility evaluation/treatment, those offering these services served more women Veterans, were more likely to include a separate gynecology clinic, report sufficient women’s health clinical expertise, and to have increased funding for women’s health in the prior 2 years (Table 4). Compared with sites not offering prenatal care, those offering this service were more likely to have a formal women’s health training program (Table 4).

After adjusting for VISN and practice size, compared with metropolitan hospital-based clinics, non-metropolitan hospital-based clinics had lower odds of offering on-site IUD placement (OR 0.57; 95 % CI 0.20, 1.62), but higher odds of offering on-site infertility evaluation/treatment (OR 1.42; 95 % CI 0.48, 4.22), although these associations did

Table 2. On-Site Availability of Individual Reproductive Health Care Services and Combinations of Services by Site Location and Type

	Total	Metropolitan hospital	Non-metropolitan hospital	Metropolitan CBOC
<i>n</i>	193	106	23	64
<i>Individual services n (%)</i>				
Hormonal contraception	182 (94)	102 (96)	22 (96)	58 (91)
IUD placement	97 (50)	70 (66)	9 (39)	18 (28)
Infertility evaluation or treatment	57 (30)	39 (37)	8 (35)	10 (16)
Infertility evaluation only	29 (15)	19 (18)	5 (22)	5 (8)
Infertility treatment only	6 (3)	6 (6)	0	0
Infertility evaluation or treatment	22 (11)	14 (13)	3 (13)	5 (8)
Prenatal care	11 (6)	7 (7)	0	4 (6)
<i>Number of services out of four n (%)</i>				
None	10 (5)	3 (3)	1 (4)	6 (9)
One	74 (38)	29 (27)	11 (48)	34 (53)
Two	56 (29)	35 (33)	5 (22)	16 (25)
Three	51 (26)	37 (35)	6 (26)	8 (13)
Four	2 (1)	2 (2)	0	0
<i>Combinations of services</i>				
<i>One service (n=74)</i>				
Hormonal contraception	73 (99)	28 (97)	11 (100)	34 (100)
IUD placement	1 (1)	1 (3)	0	0
Infertility evaluation or treatment	0	0	0	0
Prenatal care	0	0	0	0
<i>Two services (n=56)</i>				
Hormonal contraception and IUD placement	47 (84)	31 (89)	3 (60)	13 (81)
Hormonal contraception and prenatal care	1 (2)	1 (3)	0	0
Hormonal contraception and infertility evaluation or treatment	8 (14)	3 (8)	2 (40)	3 (19)
IUD placement and prenatal care	0	0	0	0
IUD placement and infertility evaluation or treatment	0	0	0	0
Prenatal care and infertility evaluation or treatment	0	0	0	0
<i>Three services (n=51)</i>				
Hormonal contraception, IUD placement, and infertility evaluation or treatment	43 (84)	29 (88)	5 (100)	4 (50)
Hormonal contraception, IUD placement, and prenatal care	4 (8)	3 (8)	0	1 (12)
Hormonal contraception, prenatal care, and infertility evaluation or treatment	4 (8)	1 (3)	0	3 (38)
IUD placement, infertility evaluation or treatment, and prenatal care	0	0	0	0

Table 3. Characteristics of Sites by On-Site Availability of Hormonal Contraception and IUD Placement, (N=193)

Availability:	Hormonal contraception		IUD placement			
	No	Yes	p	No	Yes	p
<i>n</i>	11	182		96	97	
<i>Practice context</i>						
Region n (%)						
Northeast	1 (9)	29 (16)	0.31	16 (17)	14 (14)	0.65
Midwest	1 (9)	43 (24)		25 (26)	19 (20)	
South	4 (36)	69 (38)		34 (35)	39 (40)	
West	5 (46)	41 (23)		21 (22)	25 (26)	
<i>Organization of the practice</i>						
≥ 1,209 women Veterans in 2006	5 (46)	92 (51)	0.73	29 (30)	68 (71)	< 0.001
Women's health clinic for primary care n (%)	2 (18)	128 (70)	0.001	52 (54)	78 (80)	< 0.001
Gynecology clinic n (%)	2 (18)	83 (46)	0.12	19 (20)	66 (68)	< 0.001
Resources: always or usually sufficient n (%)						
Clinical expertise	6 (55)	154 (86)	0.01	77 (81)	83 (87)	0.02
Same gender providers	6 (55)	145 (83)	0.02	76 (80)	78 (83)	0.60
Nursing staff	6 (55)	136 (76)	0.12	68 (72)	74 (77)	0.38
Administrative and support staff	5 (46)	103 (57)	0.45	56 (59)	52 (54)	0.51
Clinic space	7 (64)	118 (66)	1.00	66 (70)	59 (62)	0.24
Properly equipped examination rooms	7 (78)	176 (97)	0.04	89 (95)	94 (97)	0.72
Female attendants	7 (70)	156 (87)	0.16	77 (83)	86 (87)	0.25
Budget or funding	3 (38)	70 (47)	0.73	36 (49)	37 (44)	0.56
Formal women's health training n (%)	1 (9)	15 (8)	1.00	4 (4)	12 (13)	0.07
Separate budget or control point n (%)	1 (9)	31 (18)	0.69	10 (11)	22 (23)	0.03
Change in resources over the last 2 years n (%)						
Increased	1 (9)	61 (34)	0.20	26 (27)	36 (38)	0.35
Decreased	2 (18)	21 (13)		14 (15)	12 (13)	
Unchanged	8 (73)	94 (53)		54 (58)	48 (50)	

not reach statistical significance. After adjustment, compared with metropolitan hospital-based clinics, metropolitan CBOCs had 67 % lower odds of offering on-site IUD placement (OR 0.33; 95 % CI 0.14, 0.74). Similar, although

not statistically significant, associations were observed comparing metropolitan CBOCs with metropolitan hospital-based clinics with respect to on-site infertility evaluation/treatment (OR 0.43; 95 % CI 0.17, 1.11).

Table 4. Characteristics of Sites by On-Site Availability of Infertility Evaluation/Treatment and Prenatal Care, (N=193)

Availability:	Infertility evaluation/treatment		Prenatal care			
	No	Yes	p	No	Yes	p
<i>n</i>	136	57		182	11	
<i>Practice context</i>						
Region n (%)						
Northeast	22 (16)	8 (14)	0.93	26 (14)	4 (36)	n/a ^a
Midwest	32 (24)	12 (21)		44 (24)	0	
South	51 (38)	22 (39)		73 (40)	0	
West	31 (23)	15 (26)		39 (21)	7 (64)	
<i>Organization of the practice</i>						
≥ 1,209 women Veterans in 2006	58 (43)	39 (68)	0.001	88 (49)	9 (82)	0.06
Women's health clinic for primary care n (%)	86 (63)	44 (77)	0.06	123 (68)	7 (64)	0.75
Gynecology clinic n (%)	51 (38)	34 (60)	0.01	80 (44)	5 (46)	0.92
Resources: always or usually sufficient n (%)						
Clinical expertise	106 (80)	54 (95)	0.01	151 (84)	9 (82)	0.69
Same gender providers	104 (78)	50 (89)	0.08	146 (82)	8 (73)	0.43
Nursing staff	99 (74)	43 (75)	0.82	137 (76)	5 (46)	0.03
Administrative and support staff	83 (62)	25 (44)	0.02	101 (56)	7 (64)	0.76
Clinic space	86 (65)	39 (68)	0.66	117 (66)	8 (73)	0.75
Properly equipped examination rooms	130 (98)	53 (93)	0.20	173 (97)	10 (91)	0.35
Female attendants	116 (87)	47 (83)	0.39	158 (88)	5 (46)	0.001
Budget or funding	49 (45)	24 (48)	0.76	69 (47)	4 (36)	0.55
Formal women's health training n (%)	12 (9)	4 (7)	0.78	13 (7)	3 (30)	0.04
Separate budget or control point n (%)	18 (14)	14 (25)	0.07	32 (18)	0	n/a ^a
Change in resources over the last 2 years n (%)						
Increased	15 (11)	11 (20)		59 (33)	3 (30)	n/a ^a
Decreased	82 (61)	20 (36)		26 (14)	0	
Unchanged	38 (28)	24 (44)	0.01	95 (52)	7 (70)	

^an/a not applicable due to cell size of zero

DISCUSSION

While almost all surveyed VA sites offered hormonal contraception on-site, the on-site availability of specialized reproductive health services, including IUD placement, infertility evaluation/treatment, and prenatal care, varied considerably. However, 11 of the surveyed sites, including metropolitan and non-metropolitan hospitals and metropolitan CBOCS, did not offer hormonal contraception on-site, which is a basic reproductive health service. Lack of on-site provision of effective contraception may delay care and lead to increased risk of unplanned pregnancy.²⁰ Compared with metropolitan hospital-based clinics, metropolitan CBOCs were less likely to offer specialized reproductive health services. In seeking to provide comprehensive reproductive health care for women Veterans, VA must consider the cost of providing these services on-site and the optimal means of ensuring the highest quality of care. Although the number of women Veterans in VA is increasing, they remain a numerical minority in VA, and, particularly at CBOCS, it may not be feasible to offer all specialized reproductive health services on-site.

Metropolitan CBOCs were least likely to have organizational features that facilitated on-site provision of specialized reproductive care, such as separate women's health clinics for primary care or women's gynecology clinics.¹² Women receiving care at CBOCs may have to travel long distances to obtain reproductive health services if they are referred to another VA site.¹⁴ While use of non-VA (fee basis) or contract care may minimize travel distances, the efficiency and quality of these services is not well understood. Introduction of innovative modalities, such as telegynecology or telematernity care, may improve access to certain reproductive health services. Incorporating specialized models for gender-specific care within metropolitan CBOCs may increase availability and access to specialized reproductive health services for women Veterans. Given the low volume of women patients, it may never be feasible to offer certain specialized reproductive health services (i.e. prenatal care) on-site.

Compared with metropolitan hospital-based clinics, non-metropolitan hospital-based clinics may be more likely to offer on-site infertility evaluation/treatment. Non-metropolitan hospital-based clinics were almost as likely as their metropolitan counterparts to contain a separate women's clinic for primary care, but much less likely to have a gynecology clinic. Infertility treatments are typically delivered by obstetrician gynecologist specialists; however, infertility evaluation may have been facilitated at non-metropolitan hospitals by the presence of providers at women's clinics. Alternatively, large metropolitan hospital-based clinics may opt to purchase such services in the community, while non-metropolitan hospital-based clinics may order laboratory tests for infertility evaluation on-site and only refer patients out once a need for infertility treatment is established.

Strengths of this study included the high response rate and large number of healthcare organizations. There are

important limitations to our study. First, although rural setting was not an exclusion criterion, the survey was intentionally designed to query facilities with 300 or more women Veterans, which likely differentially excluded rural sites. This is particularly important, given earlier findings indicating that facilities with smaller women Veteran caseloads receive lower ratings for gender-related satisfaction and appropriateness compared with larger sites that incorporated tailored women's primary care models.¹¹ Second, it is possible that respondents may have been more likely to report availability of certain services due to social desirability bias or ambiguity of definitions of multi-faceted services, such as infertility evaluation or treatment. Third, we were unable to determine distances between sites, which may impact on-site availability of specialized reproductive health services. Finally, this data may not reflect ongoing, rapid changes in care delivery.²¹

CONCLUSION

Metropolitan CBOCs are less likely than their similarly located hospital counterparts to offer specialized reproductive services on-site. Future studies should evaluate delivery of specialized reproductive health care services for women Veterans in CBOCs and clinics in non-metropolitan areas.

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REFERENCES

1. World Health Organization Reproductive Health. http://www.who.int/topics/reproductive_health/en/. Accessed November 16, 2012.
2. Washington DL, Caffrey C, Goldzweig C, Simon B, Yano EM. Availability of comprehensive women's health care through Department of Veterans Affairs Medical Center. *Wom Health Issues*. 2003;13(2):50-4.

3. VA health care for women: despite progress, improvements needed. Washington, D.C. 1992.
4. VA health care for women, progress made in providing services to women veterans. Washington, D.C. 1999.
5. **Friedman SA, Phibbs CS, Schmitt SK, Hayes PM, Herrera L, Frayne SM.** New women veterans in the VHA: a longitudinal profile. *Wom Health Issues.* 2011;21(4 Suppl):S103-11. doi:10.1016/j.whi.2011.04.025.
6. **Mattocks KM, Skanderson M, Goulet JL, Brandt C, Womack J, Krebs E, et al.** Pregnancy and mental health among women veterans returning from Iraq and Afghanistan. *J Wom Health (Larchmt).* 2010;19(12):2159-66. doi:10.1089/jwh.2009.1892.
7. **Seelig MD, Yano EM, Bean-Mayberry B, Lanto AB, Washington DL.** Availability of gynecologic services in the department of veterans affairs. *Wom Health Issues.* 2008;18(3):167-73. doi:10.1016/j.whi.2007.12.006.
8. **Yano EM, Washington DL, Goldzweig C, Caffrey C, Turner C.** The organization and delivery of women's health care in Department of Veterans Affairs Medical Center. *Wom Health Issues.* 2003;13(2):55-61.
9. **Bean-Mayberry BA, Yano EM, Caffrey CD, Altman L, Washington DL.** Organizational characteristics associated with the availability of women's health clinics for primary care in the Veterans Health Administration. *Mil Med.* 2007;172(8):824-8.
10. **Hogg W, Rowan M, Russell G, Geneau R, Muldoon L.** Framework for primary care organizations: the importance of a structural domain. *Int J Qual Health Care.* 2008;20(5):308-13. doi:10.1093/intqhc/mzm054.
11. **Washington DL, Bean-Mayberry B, Mitchell MN, Riopelle D, Yano EM.** Tailoring VA primary care to women veterans: association with patient-rated quality and satisfaction. *Wom Health Issues.* 2011;21(4 Suppl):S112-9. doi:10.1016/j.whi.2011.04.004.
12. **Cope JR, Yano EM, Lee ML, Washington DL.** Determinants of contraceptive availability at medical facilities in the Department of Veterans Affairs. *J Gen Intern Med.* 2006;21(Suppl 3):S33-9. doi:10.1111/j.1525-1497.2006.00372.x.
13. **Bushy A.** Health issues of women in rural environments: an overview. *J Am Med Wom Assoc.* 1998;53(2):53-6.
14. **Chapko MK, Borowsky SJ, Fortney JC, Hedeem AN, Hoegle M, Maciejewski ML, et al.** Evaluation of the Department of Veterans Affairs community-based outpatient clinics. *Med Care.* 2002;40(7):555-60. doi:10.1097/01.MLR.0000017786.48590.5C.
15. **Fortney JC, Borowsky SJ, Hedeem AN, Maciejewski ML, Chapko MK.** VA community-based outpatient clinics: access and utilization performance measures. *Med Care.* 2002;40(7):561-9. doi:10.1097/01.MLR.0000017787.25488.CE.
16. **Weeks WB, Yano EM, Rubenstein LV.** Primary care practice management in rural and urban Veterans Health Administration settings. *J Rural Health.* 2002;18(2):298-303.
17. United States Department of Agriculture. <http://www.ers.usda.gov/Briefing/Rurality/NewDefinitions/>. Accessed November 16, 2012
18. **Bryk AS, Raudenbush SW.** Hierarchical linear models. Newbury Park: Sage Publications; 1992.
19. **Rothman K, Greenland S.** Modern epidemiology. 2nd ed. Philadelphia: Lippincott Williams and Wilkins; 1998.
20. **Leeman L.** Medical barriers to effective contraception. *Obstetrics and gynecology clinics of North America.* 2007;34(1):19-29, vii. doi:10.1016/j.ogc.2007.01.003.
21. VHA Handbook 1330.01: Health Care Services For Women. 2010.