Determinants of Contraceptive Availability at Medical Facilities in the Department of Veterans Affairs

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OBJECTIVE: To describe the variation in provision of hormonal and intrauterine contraception among Veterans Affairs (VA) facilities.

DESIGN: Key informant, cross-sectional survey of 166 VA medical facilities. Data from public use data sets and VA administrative databases were linked to facility data to further characterize their contextual environments.

PARTICIPANTS: All VA hospital-based and affiliated community-based outpatient clinics delivering services to at least 400 unique women during fiscal year 2000.

MEASUREMENTS: Onsite availability of hormonal contraceptive prescription and intrauterine device (IUD) placement.

RESULTS: Ninety-seven percent of facilities offered onsite prescription and management of hormonal contraception whereas 63% offered placement of IUDs. After adjusting for facility caseload of reproductive-aged women, 3 organizational factors were independently associated with onsite IUD placement: (1) onsite gynecologist (adjusted odds ratio [OR], 20.35; 95% confidence interval [CI], 7.02 to 58.74; P < .001); (2) hospital-based in contrast to community-based practice (adjusted OR, 5.49; 95% CI, 1.16 to 26.10; P=.03); and (3) availability of a clinician providing women's health training to other clinicians (adjusted OR, 3.40; 95% CI 1.19 to 9.76; P=.02).

CONCLUSIONS: VA's provision of hormonal and intrauterine contraception is in accordance with community standards, although onsite availability is not universal. Although contraception is a crucial component of a woman's health maintenance, her ability to obtain certain contraceptives from the facility where she obtains her primary care is largely influenced by the availability of a gynecologist. Further research is needed to determine how fragmentation of women's care into reproductive and nonreproductive services impacts access to contraception and the incidence of unintended pregnancy.

KEY WORDS: women's health; veterans; contraception; birth control; family planning; U.S. Department of Veterans Affairs.

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A ccess to and appropriate use of contraception continue to be important women's health concerns, as data demonstrate that almost 21% of all pregnancies end in abortion.¹ Previous research indicates that unintended pregnancies are largely because of contraceptive nonuse, inconsistent use, and reliance on ineffective contraceptive methods.² It is surprising then, that the intrauterine device (IUD), a safe, effective, and convenient form of long-term contraception, is so underutilized in the United States, being used by only 0.8% of contracepting women³—the lowest rate in any developed nation.⁴ Previous research has identified numerous patient- and provider-level barriers to IUD use. Among them are lack of knowledge, fear of side effects,⁵ lack of experience,⁶ fear of litigation,⁷ inconvenience of insertion,⁸ and misperception of the IUD as an abortifacient.⁶

Although not previously studied in detail, the variation with which the IUD is available in an individual practice may also factor into its use. Studies documenting variation in IUD availability are limited to observations in publicly funded U.S. agencies.^{9–11} The most recent national representative survey of family planning agencies found that only 51% offered IUD services onsite, and that IUD services were more commonly offered by hospital agencies and Planned Parenthood affiliates than community health centers or health departments.¹⁰ Others have found IUD availability to vary according to environmental factors, with greater availability in metropolitan rather than nonmetropolitan counties and in the Northeast and West than the Midwest or South.⁹ A smaller state survey of family planning clinics found that the most commonly reported barriers to adding onsite contraceptive services included such organizational factors as cost concerns, lack of trained providers, lack of equipment, and lack of time.¹¹

The Veterans Health Administration (VA) is the largest integrated health care system in the nation,¹² with women veterans representing a rising minority.¹³ Because of their growing numbers, Congressional eligibility reforms have mandated access to a full spectrum of gender-specific services for

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Domain	Measure		
Practice arrangements	Practice structure for women's primary care (e.g., separate women's health clinic versus designated women's provider in integrated women's and men's general primary care clinic) Frequency of assignment of female patients to same-gender providers Availability of onsite gynecologist Integration of women's and men's primary care services Hospital-based versus community-based practice Local authority over women's health care		
Resource sufficiency	Sufficiency of women's services' resources (e.g., space, equipment) Separate budget control point for women's health		
Education/training	Presence of local women's health expertise for training other clinicians		

Table 1. Conceptual Model of Intrauterine Device (IUD) Availability by Practice Organizational Factors

VA sites' female patients, including reproductive services.^{14,15} In response, individual VAs have developed a variety of practice models, including specialized women's health clinics and referrals to community providers, to assure delivery of women's health care.¹³ Although significant inroads have been made, little is known about women veterans' access to contraceptive services in VA settings. The objective of this research is to conduct the first assessment, outside of the publicly funded family planning agency setting, of service arrangements for IUD provision, using hormonal contraceptive service provision for comparison. Our second objective is to examine organizational and environmental factors associated with onsite IUD provision.

METHODS

Design and Data Sources

To assess the contribution of environmental and organizational factors to IUD service availability, we merged cross-sectional data from several secondary sources, including the 2001 VA Women Veterans Health Programs and Practices (WVHP) Survey, Area Resource File, 2000 U.S. Census, records on contraceptive state policy, and VA administrative data.

VA health care delivery is nationally structured into 22 (now 21) regional networks, each composed of a number of regionally clustered VA Medical Centers with affiliated Community-Based Outpatient Clinics (CBOCs). The WVHP Survey aimed to ascertain the structure, policies, and scope of women's health care through key informants at the network (Network Director, N=22), medical center (Chief of Staff, N=140), and clinic (Senior Clinician, N=166) levels, targeting sites that delivered outpatient care to 400+ women veterans in fiscal year 2000 (October 1, 1999 through September 30, 2000).^{13,15} Survey response rates were 100%, 91%, and 82%, respectively. Other survey details are described elsewhere.^{13,15}

Contextual factors were extracted from other secondary data sources. We merged the 1995 rural/urban continuum codes from the 2000 Area Resource File¹⁶ to each VA facility at the county level. We used geographic regions as designated by the U.S. Census Bureau.¹⁷ Information regarding contraceptive state laws and estimates of family planning clinic concentration and unmet need were obtained from public use datasets from the Alan Guttmacher Institute.^{18,19} Finally, we used the VA outpatient clinic database to measure facility-specific women veteran caseloads.²⁰ This project was approved by

the VA Greater Los Angeles Healthcare System's Institutional Review Board.

Outcome Measure

We examined the provision of 2 contraceptive services: (1) prescription and management of hormonal contraception; and (2) IUD placement. Data about the type (estrogen, progesterone) or route (injection, oral) of hormonal contraception were not available.

Clinic-level respondents were prompted to specify service arrangements as "available at that VA site," "only available at another VA site," "available through contract or fee-basis at a non-VA site," or "not available." We dichotomized this measure to focus on onsite provision (yes/no).

Organizational and Environmental Characteristics

Variable selection was based upon a conceptual model predicting that the capacity to provide IUD services onsite would be affected by the following factors: local practice arrangements, resource sufficiency, and education/training (Table 1). Using these domains, we mapped a series of organizational variables from the WVHP Survey: (1) type of women's health practice model; (2) hospital-based practice versus CBOC; (3) frequency of assignment to same-gender providers; (4) availability of an onsite gynecologist; (5) integration of women's with men's primary care services; (6) local authority over women's health care; (7) sufficiency of practice resources (e.g., space, equipment); (8) separate budget authority for women's health; and (9) presence of local women's health expertise for training other clinicians.

We examined the contribution of 4 women's health practice models¹³: (1) use of designated women's health providers in primary care, (2) separate women's health clinics for primary care, (3) use of both designated women's health providers and separate women's health clinics, and (4) neither arrangement. Integrated versus separate arrangements for women's and men's primary care were assessed along a 9-point ordinal scale, from completely integrated to completely separate.

We examined sufficiency of 5 practice resources: samegender providers, nursing staff, clinic space, clinical expertise in women's health, and equipment for pelvic exams (quantified within a range of "never" to "always" sufficient). We evaluated local clinical authority over women's health (from "little" to "complete") for 5 aspects of service delivery: determining staffing arrangements, establishing clinical policies, hiring staff, establishing referral guidelines, and setting clinical policies.

Under the assumption that the environment forms the context in which services are provided, thereby influencing both patient demand and organizational willingness to provide procedural services, we included 4 environmental variables in our analysis: (1) geographic region; (2) urbanization; (3) family planning clinic concentration in the surrounding county; and (4) whether the state in which the facility resided had enacted an Equity in Prescription Insurance and Contraceptive Coverage (EPICC) law. Although the VA is a federal agency, not subject to state laws, EPICC enactment serves as a contextual factor insofar as state laws characterize the state's political environment.

We controlled for the number of female patients between the ages of 18 (lower limit of VA patient eligibility) and 45 (standard upper limit of a woman's fertility) with at least 1 clinic visit in 2000.

Statistical Analysis

The unit of analysis was the clinical practice. We had complete data for the outcome variables at the clinic level for 126 facilities (76% final response rate). Respondents did not vary significantly from nonrespondents in geographic region or female caseload.

Item-level frequencies for hormonal and intrauterine service availability were calculated. We performed univariate analyses of each independent variable, ran logit plots of continuous and ordinal variables to assess linearity, and performed square root transformations for those with marked skew (e.g., female caseload). We then used bivariate analyses, including *t*-tests, χ^2 test, and Wilcoxon's rank sum tests (for ordinal data) to compare organizational and environmental characteristics of facilities with and without onsite IUD placement. We screened for predictors at a modest level of $\alpha = 0.2$ for potential use in the multivariate model.²¹

Missing item response was highest for survey data on the proportion of female patients assigned to a female primary care physician (73% complete) and on a separate women's health budget control point (72% complete). As the separate women's health budget control-point item was included on both clinic level and medical center level surveys, it was first imputed using medical center level data, resulting in 91% completeness. Other survey-derived independent variables were chiefly complete, with an average of 4 missing item responses per survey. We used hot-deck imputation for survey variables that screened in after bivariate analyses to generate a complete data set (n=126).^{22–23} We then performed forward stepwise logistic regression (P < .10) to select a model using the screened predictors. To address potential interactions, 3 prespecified interaction terms were included for potential subset selection: (1) women's health budget authority by onsite gynecologist; (2) women's health budget authority by volume of reproductive-aged female patients; and (3) onsite gynecologist by volume of reproductive-aged female patients. We performed 30 cross-validation runs and kept the independent variables appearing in the majority of runs for use in the final multivariate model.

To ensure the reliability of our multivariate model, we repeated hot-deck imputation of our incomplete dataset, obtain-

Table 2.	Characteristics	of VA	Facilities	(N=126)
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Domain	Mean or %	Standard Deviation
Female patient caseload		
Number of female patients between	745.5	406 to
ages 18 and 45*		1,099
Organizational characteristics		
Practice structure for women's primary c	are (%)	
Designated provider in general primary care	23.0	
Separate women's health clinic	28.7	
Designated provider in general	23.8	
primary care and separate		
women's health clinic		
No special arrangement	24.6	
Proportion of female patients assigned	4.6	1.3
to female primary care physician [†]		
Gynecologist onsite (%)	66.4	
Integration of women's and men's	4.1	2.9
primary care services [‡]		
Hospital-based practice (%)	89.7	
Authority of senior women's health physi	cian§	
Authority to set clinical policies	2.7	0.8
Authority to make staffing decisions	1.7	1.0
Authority to make hiring decisions	1.6	0.8
Authority to obtain additional resources	2.0	0.9
Authority to set referral guidelines	2.6	0.8
Sufficiency of women's services' resource	\mathbf{s}^{\parallel}	
Adequacy of clinical expertise	4.1	0.7
Adequacy of equipment	4.3	0.9
Adequacy of nursing staff	3.8	0.9
Adequacy of same gender providers	4.0	0.8
Adequacy of space	3.7	1.1
Separate budget control point for	21.7	
women's health (%)		
Clinician provides training to other	52.0	
clinicians about women's health		
issues (%)		
Environmental Characteristics		
Geographic region (%)		
Northeast	23.0	
Midwest	23.8	
South	31.0	
West	22.2	
Urbanization (%)		
Metropolitan: population at least 1 million	37.3	
Metropolitan: population 250,000 to 1,000,000	34.9	
Metropolitan: population less than 250,000	14.3	
Non-metropolitan: population	13.5	
State EPICC law [¶] (%)	31.6	
County family planning clinic	56.5	49 1
concentration* (FP clinics/100,000	00.0	10.1
women in need)		

*Median and interquartile range.

^{\dagger}Six-point Likert scale from none (score =1) to all (score =6).

[‡]Eight-point Likert scale from completely integrated (score =1) to completely separated (score =8).

[§]Four-point Likert scale from little or none (score =1) to complete authority (score =4).

^{||}Five-point Likert scale from never (score =1) to always (score =5).

⁶EPICC denotes Equity in Prescription Insurance and Contraceptive Coverage.

Data are based on actual responses prior to hot-deck imputation. Of 126 sites whose data were used in the analysis, complete data for each site ranged from N = 110 to N = 126 and percentages reflect that denominator.

Service	Onsite	Referral to Other VA Site	Referral to Contracted or Fee-Basis non-VA Site	Not Available
Prescription/management of hormonal contraception	97	1.5	1.5	0
Intrauterine device placement	63	13	22	2

Table 3. Contraceptive Service Availability in VA Medical Facilities (% of VA sites, N=126)

ing 5 datasets in which to run 5 versions of our final model based on the variables selected through the cross-validation runs.²³ Results reported represent averaged results of 5 imputation runs.

RESULTS

Facility Characteristics

The practices were roughly equally distributed across the United States, with a slightly larger percentage located in the South (31%) (Table 2). Most were located in large metropolitan areas with populations of 250,000 and up (72%). A minority (10.3%) were CBOCs. Practice arrangement models for delivery of care to women were present in roughly equal proportions (Table 2). Two thirds had an onsite gynecologist, practicing through either a women's health clinic or gynecology clinic. Sites with women's health clinics were more likely to have a gynecologist onsite (P=.007).

Contraceptive Service Provision

All facilities made some provision for prescription and management of hormonal contraception, with 97% offering the service onsite and 3% offering the service through referral to other VA sites or to contracted non-VA sites (Table 3). In comparison, 98% made some provision for IUD placement, with 63% offering the service onsite, 13% referring patients to another VA site, and 22% referring patients to a contracted non-VA site.

Bivariate Results

In unadjusted analyses, an onsite gynecologist (P<.001) and onsite staff member who provided training to other clinicians in women's health (P<.001) were associated with onsite IUD provision. Hospital-based facilities were more likely to provide IUDs onsite (P=.02) as were facilities that had separate budget authority for women's health (P=.004) and a greater degree of separated women's and men's primary care (P=.04). Greater authority to make staffing decisions related to local women's health care delivery was the only authority-related factor associated with greater onsite IUD provision (P=.03). None of the resource sufficiency items were significantly related to onsite IUD availability.

Multivariate Results

Controlling for the local caseload of reproductive-aged women, independent predictors of onsite IUD service were an onsite gynecologist (OR=20.35; P<.001), an onsite attending who provided women's health training (OR=3.40; P=.02), and a hospital-based rather than community-based clinic

(OR = 5.49; P = .03) (Table 4). Across the 5 imputed data sets, *P*-values varied by no more than .01 for any variable.

DISCUSSION

Nationally, the VA has arranged for contraceptive access to both hormonal and intrauterine methods of birth control for its female patients, with rates for onsite hormonal contraceptive provision equally as high as that offered overall in publicly funded family planning agencies and rates for intrauterine contraception somewhat higher than those of publicly funded family planning agencies.¹⁰ Although VA practice arrangements meet the letter of women's health care guidelines, these data highlight an important aspect of contraceptive access: the ease with which women are able to obtain their contraceptive of choice is largely determined by the services offered in local clinics where they obtain care. To wit, over a third of surveyed facilities relied on a referral system for IUD access. Referral systems, however, rely on the skills and knowledge of the referring clinician to appropriately counsel and select candidates for referral. Current data suggest that clinicians who do not perform IUD insertions are likely to lack these skills. A previous study of gynecologists, family, and general practitioners found that physicians without experience inserting the copper IUD not only did not perform insertions, but were also likely not to recommend the device to any of their patients.⁶ Another survey of internal medicine and family practice residents demonstrated that primary care residents are generally not well prepared to counsel women regarding reproductive issues such as family planning.²⁴ Lack of local expertise with the IUD may, therefore, effectively shift the knowledge burden onto the patient to inquire about and utilize this contraceptive, though prior studies demonstrate that a substantial minority of women have poor or limited knowledge about the IUD²⁵ and other methods.26,27

Despite the growth of VA women's health clinics over the past decade, the strongest predictor of onsite IUD placement was the presence of an onsite gynecologist. As the vast majority of VA primary care clinicians are general internists, gynecologists may be the only clinicians within a facility with the training to perform IUD insertions. Though contraception is a routine preventive service^{28,29} whose place, many experts argue, is within the realm of primary care, ^{30–32} our results demonstrate that access to specialists has been a necessary ingredient in VA's ability to offer onsite access to a wider range of contraceptives. Integration of family physicians with these skills may provide opportunities to further enhance IUD access in VA settings, decreasing reliance on specialty referrals, which have been shown to serve as a barrier to obtaining contraceptive services in the community.³³

Table 4	Predictors of	of Onsite	IUD Placement	(N = 126)
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Predictors	Unadjusted Model			Multivariate Model	
	N	OR	P-Value	OR (95% CI)	P-Value
Female patient caseload					
Number of female patients ages 18 to 45	126	1.08	.002	1.02 (.98 to 1.11)	.21
Organizational characteristics					
Practice structure for women's primary care	122				
No special arrangement		Reference			
Designated provider in general primary care		0.27	.02	_	_
Separate women's health clinic		2.0	.23	_	_
Designated provider in general primary care and separate women's health clinic		0.95	.93	—	—
Gynecologist onsite	125	22.9	<.001	20.35 (7.02 to 58.74)	<.001
Integration of women's and men's primary care services (scale 1 to 9)	126	1.14	.04	_	_
Hospital-based practice (CBOC as comparison)	126	4.44	.02	5.49 (1.16 to 26.10)	.03
Authority of senior women's health physician					
Authority to make staffing decisions	117	1.64	.03	_	_
Authority to make hiring decisions	120	1.37	.09	_	_
Sufficiency of women's services' resources					
(never-rarely-sometimes-usually-always)					
Adequacy of equipment	124	1.46	.08	_	_
Adequacy of space	124	1.32	.07	_	_
Separate budget control point for women's health	115	5.61	.004	_	_
Clinician providing training to other clinicians about women's health issues	123	6.32	<.001	3.40 (1.19 to 9.76)	.02
Environmental characteristics					
Geographic region	126				
Northeast		Reference			
Midwest		0.18	.006	_	_
South		0.27	.03	_	_
West		0.44	.02	_	_
Urbanization (non-metropolitan as comparison)	126				
Non-metropolitan: pop rural- to 20,000+		Reference			
Metropolitan: pop <250,000		0.90	.07	_	_
Metropolitan: pop 250,000 to 1,000,000		2.18	.18	_	_
Metropolitan: $pop > 1$ million		2.94	.07	—	_

The 13 variables listed above screened in for potential use in the multivariate model at a level of $\alpha = 0.2$. Adjusted results are reported for variables selected for the final multivariate model, controlling for the number of female patients between ages 18 and 45. Adjusted results represent the averages obtained from 5 different imputed data sets.

Similarly, we found that the availability of a clinician who provided training to other staff members in women's health significantly increased the odds that IUDs would be available. Sites with specialized women's health clinics are more likely to have such capacity. These results are consistent with other studies which document, conversely, that lack of provider training poses substantial barriers to adding contraceptive methods to a facility's repertoire of services.^{11,34}

Not surprisingly, hospital-based practices were more likely than CBOCs to provide IUDs onsite. Other studies report similar results.^{9,10} Notably, the establishment of CBOCs was 1 VA strategy for improving access to primary care by decreasing veterans' travel distance to services. In 1998, the average distance between a CBOC and its parent VA medical facility was still 70.7 miles.³⁵ Referrals to another facility to obtain contraception could incur significant opportunity costs for patients in time and travel. On the other hand, previous work has shown that the proportion of female patients is smaller at CBOCs than at their parent VA facility,^{36,37} which may, in part, account for the smaller likelihood and need that IUD services be available onsite. Certainly there exists a tension between the need to provide access to a contraceptive service and the need to ensure high-quality care for a procedure with

volume-related competency standards. Establishing referral systems for low-demand procedures requiring adequate skill level is a rational way to provide services, but suggests that mechanisms are needed to ensure referral efficiency and service quality for patients referred to non-VA sites. Unfortunately, data on the quality of women veterans' health services at non-VA contract sites are currently unavailable.

Interestingly, alternate practice arrangements for primary care delivery (e.g., designated women's health providers) did not independently predict onsite IUD availability. Hormonal contraception was provided regardless of the format of women's primary care, and IUD contraception did not vary based on the presence or absence of a women's health clinic for primary care. As gynecology clinics are typically distinct from most VA women's health clinics, which are instead commonly staffed by general internists and nurse practitioners, it appears that the staffing mix and degree to which women's health specialists are integrated into broader training programs are more important than the specific delivery model used. "Women's health centers" have become a blanket term to describe a diverse array of women's health care models-breast centers, primary care clinics, and family planning clinics³⁸—each catering to only a portion of women's health care needs. These models illustrate the fragmentation of women's health care delivery,^{32,38,39} where services and providers are partitioned along the lines of reproductive and non-reproductive care.⁴⁰ Although women's health centers have gained increasing attention as a potential remedy both in and outside the VA,¹⁴ with respect to contraceptive access, they may play their central role by piecing together needed expertise in a multidisciplinary fashion rather than delivering all services themselves.

Our analysis had several limitations. Although we demonstrated the association of several organizational characteristics to the availability of intrauterine contraception, such availability is also likely influenced by unmeasured physician characteristics. Most of the variables, including our outcome, were based on self-reported data. Under a Congressional mandate to provide comprehensive women's health care, respondents may have been more likely to bias their responses to reflect a greater level of service availability for women veterans. Additionally, our outcome measure was contraceptive availability, not utilization. Finally, these data reflect VA care patterns, where women comprise a minority of the population. Application of these findings to other health care organizations, where women are more likely to represent a majority of the patient population, is as yet unclear.

Contraceptive care is an integral component of health maintenance for women. We found that availability of hormonal contraception in the VA was almost ubiquitous. Intrauterine contraception, while offered less often, was still widely available. The first such assessment outside of the publicly funded family planning agency literature, our findings reiterate previous arguments that women's preventive reproductive health care is a specialized service. Our data offer insight into factors that influence the provision of comprehensive onsite contraceptive services, perhaps 1 potential solution to our country's high rate of unintended pregnancy. Further research is needed to determine how fragmentation of women's health services impacts access to contraception and, more importantly, the incidence of unintended pregnancy. Future work should explore the cost-effectiveness of alternate staffing and referral patterns, considering the potential value of partnerships between general internists, family physicians, and gynecologists in better integrating reproductive procedural services in VA women's health clinics and integrated primary care clinics.

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REFERENCES

1. Centers for Disease Control and Prevention. Estimated pregnancy rates for the United States, 1990-2000: an update. Natl Vital Stat Rep. 2004;53:1-10.

- 2. Trussel J, Vaughan B. Contraceptive failure, method-related discontinuation and resumption of use: results from the 1995 National Survey of Family Growth. Fam Plann Perspect. 1999;31:64–72, 93.
- 3. Piccinino LJ, Mosher WD. Trends in contraceptive use in the United States: 1982-1995. Fam Plann Perspect. 1998;30:4-10.
- 4. Population Information Program, Center for Communication Programs, the John Hopkins University. Population Reports, Series B, Number 6. Available at: http://www.infoforhealth.org/pr/b6/B6chap6. shtml#top. Accessed September 4, 2004.
- 5. Forrest JD. US women's perceptions of and attitudes about the IUD. Obstet Gynecol Surv. 1996;51(suppl):30-4.
- 6. Kooiker CH. Scutchfield FD. Barriers to prescribing the CopperT380A Intrauterine Device by physicians. West J Med. 1990;153:279-82.
- 7. Stanwood NL, Garrett JM, Konrad TR. Obstetrician-gynecologists and the intrauterine device: a survey of attitudes and practice. Obstet Gynecol. 2002:99:275-80.
- 8. Gupta S. A survey of GP views on intra-uterine contraception. Br J Fam Plann. 2000:26:81-4.
- 9. Frost JJ, Bolzan M. The provision of public-sector services by family planning agencies in 1995. Fam Plann Perspect. 1997;29:6-14.
- 10. Finer LB, Darroch JE, Frost JJ. U.S. agencies providing publicly funded contraceptive services in 1999. Perspect Sex Reprod Health. 2002:34:15-24.
- 11. Dobie SA, Lober L, Rosenblatt RA. Family planning service provision in rural areas: a survey in Washington State. Fam Plann Perspect. 1998; 30:139-47.
- 12. Kizer KW, Fonseca ML, Long LM. The Veterans healthcare system: preparing for the twenty-first century. Hospital and Health Services Administration. 1997;42:283-98.
- 13. 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 Centers. Women's Health Issues. 2003;13: 55-61.
- 14. U.S General Accounting Office. VA health care for women, progress made in providing services to women veterans. Washington, DC: Pub. No. GAO/HEHS-99-38, 1999.
- 15. Washington DL, Caffrey C, Goldzweig C, Simon B, Yano EM. Availability of comprehensive women's health care through Department of Veterans Affairs Medical Centers. Women's Health Issues. 2003; 13.50-4
- 16. National Center for Health Workforce, Analysis Bureau of Health Professions, Health Resources and Services Administration, Department of Health and Human Services. User Documentation for the Area Resource File (ARF) February 2002 Release. Available at: http:// www.pop.psu.edu/data-archive/codebooks/arf/USR0202.pdf. Accessed February 25, 2004.
- 17. U.S. Department of Commerce. Census Bureau 2000: Census regions and divisions of the United States. Available at: http://www.census.gov/ geo/www/us_regdiv.pdf. Accessed August 1, 2003.
- 18. Alan Guttmacher Institute. State policies in brief. Available at: http:// www.agi-usa.org/pubs/spib.html. Accessed April 10, 2003.
- 19. Frost JJ, Ranjit N, Manzella K, Darroch JE, Audam S. Family planning clinic services in the United States: patterns and trends in the late 1990s. Fam Plann Perspect. 2001;33:113-22.
- 20. Lamoreaux J. The organizational structure for medical information management in the Department of Veterans Affairs: an overview of major health care databases. Med Care. 1996;34(suppl):31-44.
- 21. Mickey RM, Greenland S. A study of the impact of confounder selection criteria on effect estimation. Am J Epidemiol. 1989;129: 125 - 37
- 22. Little RJ. Missing-data adjustments in large surveys. J Business Econ Stat. 1988;6:287-301.
- 23. Rubin DB. Multiple Imputation for Non-Response in Surveys. New York, NY: John Wiley & Sons, 1987.
- 24. Conway T, Su T, Mason E, Mueller C. Are primary care residents adequately prepared to care for women of reproductive age? Fam Plann Perspect. 1995;27:66-70.
- 25. Sable MR, Libbus MK, Chiu J. Factors affecting contraceptive use in women seeking pregnancy tests: Missouri, 1997. Fam Plann Perspect. 2000:32:124-31.
- 26. Silverman J, Torres A, Forrest JD. Barriers to contraceptive services. Fam Plann Perspect. 1987;19:94-102.
- 27. United States Preventive Services Task Force. USPSTF Ratings. Available at: http://www.usuhs.mil/fap/capcon/USPSTF.doc. Accessed October 3, 2004.

- Centers for Disease Control and Prevention. Healthy People 2000 Review 1997. Available at: http://www.cdc.gov/nchs/data/hp2000/ hp2k97.pdf. Accessed October 3, 2004.
- Hoffman E, Johnson K. Women's health and managed care: implications for the training of primary care physicians. JAMWA. 1995;50: 17–9.
- Jones EF, Forrest JD, Henshaw SK, Silverman J, Torres A. Unintended pregnancy, contraceptive practice and family planning services in developed countries. Fam Plann Perspect. 1988;20:53–67.
- Hoffman E, Maraldo P, Coons HL, Johnson K. The women-centered health care team: integrating perspectives from managed care, women's health, and the health professional workforce. Women's Health Issues. 1997;7:362–74.
- 32. Brown SS, Eisenberg L, eds. Committee on Unintended Pregnancy, Institute of Medicine. The Best Intentions: Unintended Pregnancy and the Well-Being of Children and Families. Washington, DC: The National Academies Press; 1995.
- Orr MT, Forrest JD. The availability of reproductive health services from U.S. private physicians. Fam Plann Perspect. 1985;17:63–9.

- Frost JJ. The availability and accessibility of the contraceptive implant from family planning agencies in the United States, 1991–1992. Fam Plann Perspect. 1994;26:4–10.
- Chapko MK, Borowsky SJ, Fortney JC, et al. Evaluation of the Department of Veterans Affairs community-based outpatient clinics. Med Care. 2002;40:555–60.
- Hedeen AN, Heagerty PJ, Fortney JC, Borowsky SJ, Walder DJ, Chapko MK. VA community-based outpatient clinics: quality of care performance measures. Med Care. 2002;40:570–7.
- Fortney JC, Borowsky SJ, Hedeen AN, Maciejewski ML, Chapko MK. VA community-based outpatient clinics: access and utilization performance measures. Med Care. 2002;40:561–9.
- Weisman CS, Curbow B, Khoury AJ. The national survey of women's health centers: current models of women-centered care. Women's Health Issues. 1995;5:103–17.
- Charney P. Women's health: an evolving mosaic. J Gen Int Med. 2000; 15:600–2, editorial.
- Clancy CM, Massion CT. American women's health care: a patchwork quilt with gaps. JAMA. 1992;14:1918–20.