

The Link Between Reproductive Life Plan Assessment And Provision of Preconception Care At Publicly Funded Health Centers

CONTEXT: Federal and clinical guidelines recommend integrating reproductive life plan assessments into routine family planning encounters to increase provision of preconception care. Yet, the prevalence of clinical protocols and of relevant practices at publicly funded health centers is unknown.

METHODS: Administrators and providers at a nationally representative sample of publicly funded health centers that provide family planning services were surveyed in 2013–2014; data from 1,039 linked pairs were used to explore the reported prevalence of reproductive life plan protocols, frequent assessment of patients' reproductive life plan and frequent provision of preconception care. Chi-square tests and multivariable general linear models were used to examine differences in reports of protocols and related practices.

RESULTS: Overall, 58% of centers reported having reproductive life plan assessment protocols, 87% reported frequently assessing reproductive life plans and 55% reported frequently providing preconception care. The proportions reporting protocols were lower in community health centers than in other center types (32% vs. 52–91%), in primary care centers than in those with another focus (33% vs. 77–80%) and in centers not receiving Title X funding than in those with such support (36% vs. 77%). Reported existence of a written protocol was positively associated with reported frequent assessment (prevalence ratio, 1.1), and the latter was positively associated with reported frequent preconception care (1.4).

CONCLUSION: Further research is needed on associations between written protocols and clinical practice, and to elucidate the preconception care services that may be associated with reproductive life plan assessment.

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A reproductive life plan is a roadmap to help individuals achieve their goals for healthy childbearing.^{1–5} The Centers for Disease Control and Prevention (CDC) and the U.S. Department of Health and Human Services Office of Population Affairs (OPA) recommend that all women, men and couples be encouraged to have a reproductive life plan; the American College of Obstetricians and Gynecologists and the American Academy of Family Physicians encourage health care providers to assess women's reproductive life plans at every patient encounter.^{6–9} The reproductive life plan serves as a triage tool for clinicians by prioritizing and appropriately targeting the content of preconception care during clinical encounters to match patients' reproductive goals. For example, whereas women who are not actively trying to get pregnant may require only routine preventive care and contraceptive counseling, extra emphasis on preconception care and risk factor reduction may be indicated for women who desire pregnancy.

The CDC and OPA define preconception care as “a set of interventions that aim to identify and modify biomedical, behavioral, and social risks to a woman's health or pregnancy outcome through prevention and management.”^{6(p. 3)} Preconception care is an important public health priority and a Healthy People 2020 strategy for preventing adverse pregnancy outcomes such as unintended pregnancy,

pregnancy loss, birth defects and even infant death.^{6,10} It includes a broad range of evidence-based screenings and clinical interventions, which should be integrated into primary care and preventive care health care visits to potentially decrease the risk of adverse pregnancy outcomes and improve women's health overall.^{6,11,12}

When developing federal recommendations for providing quality family planning services, the CDC and OPA reviewed existing recommendations for clinical preconception health services^{11,13} and identified screenings for which the evidence was strongest: medical history, sexual health, intimate partner violence, alcohol and drug use, tobacco use, immunizations, depression, folic acid intake, body mass index, blood pressure, diabetes and reproductive life plan.⁷ Moreover, the guidelines note that the recommended services are important because they contribute to women's and men's health and well-being regardless of their pregnancy intention.⁷ Like all other family planning services, they should be offered in a client-centered manner.

Clinical protocols for reproductive life planning have the potential to routinize reproductive life plan assessment during preventive and primary care clinic visits, and increased reproductive life plan assessment may translate into increased provision of preconception care. Yet, surveillance of written protocols for and actual provision of

By Cheryl L. Robbins, Loretta Gavin, Marion W. Carter and Susan B. Moskosky

Cheryl L. Robbins is epidemiologist, Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion; and Marion W. Carter is health scientist, Division of STD Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention—both at the Centers for Disease Control and Prevention, Atlanta. Loretta Gavin is senior health scientist, and Susan B. Moskosky is acting director, Office of Population Affairs, U.S. Department of Health and Human Services, Rockville, MD.

reproductive life plan assessment is lacking. A study based on encounter data from multiple clinical sites within a single county of Cincinnati estimated that 42% of women who were seeking gynecologic services unrelated to pregnancy received reproductive life plan counseling.¹⁴

We are unaware of any studies that have examined associations between written protocols and actual reproductive life plan assessment or between reproductive life plan assessment and provision of preconception care. Estimates from epidemiologic studies relying on postpartum women's retrospective reports suggest that one-third of such women receive preconception care.^{15–17} While relatively few studies have examined associations between having and implementing clinical protocols, the benefits of adopting and using clinical protocols for controlling blood pressure have been elucidated,¹⁸ and similar benefits can be assumed for reproductive life plan assessment protocols.

The objectives of this study were to describe the reported existence of written protocols for reproductive life plan assessment and of frequent assessment of reproductive life plans in publicly funded health centers that provide family planning care; to describe health center characteristics associated with reporting such protocols and assessments; to examine associations between reports of written protocols and of frequent assessment; and to explore associations between reports of frequent assessment and of frequent provision of preconception care.

METHODS

Data

In 2013–2014, we surveyed a nationally representative, random sample of 4,000 publicly funded U.S. health centers that provided family planning services. The sample, derived from a Guttmacher Institute database, comprised community health centers, Planned Parenthood centers, hospital-based clinics, health departments and other health centers that offered family planning care; half received Title X funding, while the other half received other types of public funding.^{*19} Each sampled clinic received a mailed survey package containing two questionnaires—one to be completed by a randomly selected family planning provider at the clinic, and the second by the clinic administrator. Respondents also had the option to complete the survey online. We sent reminder mailings and made follow-up telephone calls to nonrespondents. The response rate, calculated on the basis of recommendations from the Council of American Survey Research Organizations,²⁰ was 51% for the provider survey and 49% for the administrator survey.

In all, 1,681 providers and 1,615 administrators completed surveys; we were able to link 1,312 administrator surveys with a provider survey from the same center. Of the linked records, 213 were missing data on one or more

outcome, and 60 were missing data on other covariates included in our models. The analytic sample comprised the 1,039 linked pairs for which we had complete data.

The CDC's institutional review board approval was not needed as this project was approved as public health practice.

Measures

Reproductive life plan assessment was defined as “asking about clients' intentions regarding the number and timing of pregnancies in the context of their personal values and life goals.” A binary outcome for having a written clinical protocol to assess clients' reproductive life plans during contraceptive counseling was created from the administrator survey data.

Frequent reproductive life plan assessment was based on responses to the following question in the provider survey: “In the past month, when counseling your typical female patients of reproductive age on family planning, how often have you (or your clinical team) assessed the patient's reproductive life plan (i.e., asked about their intentions regarding the number and timing of pregnancies in the context of their personal values and life goals)?” Response options were presented as a Likert scale: “very often,” “often,” “not often” or “never.” Responses of “very often” and “often” were combined and classified as frequent reproductive life plan assessment.

Frequent provision of preconception care was based on the following question in the administrator survey: “In the past 3 months, about how often did your health center provide preconception health care for women?” Notably, preconception health care was not defined. Response options were presented as a Likert scale: “never,” “rarely,” “occasionally” or “frequently.” Our analyses compared responses of “frequently” with all others combined.

Health center characteristics of interest were type of center (community health center, health department, Planned Parenthood, other), center focus (reproductive health, primary care, other), Title X funding (yes, no), service area (mostly urban or suburban, mostly rural, combination) and annual family planning caseload (less than 1,000, 1,000–4,999, or 5,000 or more). Twenty-one percent of centers reported an “other” focus, and some of these wrote in descriptions; write-in responses were reviewed and, when appropriate, recoded to reflect reproductive health or primary care.

Analysis

We estimated the reported prevalence of having written protocols for reproductive life plan assessment and of frequent reproductive life plan assessment, stratified by health center characteristics. We then estimated the prevalence of reports of frequent provision of preconception care, stratified by reports of written protocols and frequent assessment. Pearson chi-square tests were used to assess differential distributions; significance was assessed at $p < .05$.

*Title X is a federal program that provides subsidized family planning services for low-income women and men; other sources of public funding are state appropriations, Medicaid and Title V (the federal-state maternal and child health block grant).

We used multivariable general linear models with Poisson distribution to explore associations between health center characteristics and reports of frequent reproductive life plan assessment; associations between reports of reproductive life plan assessment protocols and of frequent assessment; and associations between reports of frequent assessment and of frequent provision of preconception care. We hypothesized that any potential association between protocols and preconception care is indirect, occurring through actual practice of reproductive life plan assessment; therefore, we did not examine multivariable associations between protocols and preconception care. All models controlled for health center characteristics; results are presented as adjusted prevalence ratios and 95% confidence intervals. We assessed multicollinearity in these analyses by examining variance inflation factors, which are measures of inflation to the standard error. The mean variance inflation factor was 2.0, and all mean variance inflation factors were less than 4.0, signifying that the variables were not highly correlated and collinearity does not threaten the validity of our analyses.

We considered alternate ways of maximizing usable data in analyses, and the alternatives did not affect results. Data were weighted to correct for nonresponse and differential probability of selection into the sample by health center type. Data were also weighted to ensure that the health centers with linked administrator and provider data represented the original sample frame of health centers. We compared respondents who were excluded with those who were included to understand how missing data might affect results.* All analyses were conducted using the weighted data and STATA 13 to adjust for the complex survey design and nonresponse.

RESULTS

Roughly half of the health centers were health department facilities, had a reproductive health focus and served mostly rural areas; the majority received Title X support and served fewer than 5,000 family planning clients annually (Table 1). Overall, 58% of administrators reported that their health centers had written protocols for reproductive life plan assessment during family planning counseling with female clients. The reported prevalence was significantly lower for community health centers than for other center types (32% vs. 52–91%), lower for health centers focused on primary care than for those with another focus (33% vs. 77–80%), and lower for health centers that did not receive Title X funding than for ones that received such support (36% vs. 77%).

Some 87% of providers reported frequent reproductive life plan assessment during family planning counseling with female clients in the previous month (Table 2). In bivariate analyses, associations between health center characteristics and frequent reproductive life plan assessment by providers mirrored those between health center characteristics and reproductive life plan protocols.

TABLE 1. Among a nationally representative sample of publicly funded U.S. health centers that provide family planning services, percentage reporting having written protocols for assessing patients' reproductive life plan, by selected characteristics, 2013–2014

Characteristic	N	%
Total	1,039	58.0 (0.01)
Type of center		***
Community health center	198	32.3 (0.03)
Health department	497	77.0 (0.02)
Planned Parenthood	125	90.8 (0.02)
Hospital/other	219	51.7 (0.03)
Health center focus		***
Reproductive health	576	76.7 (0.02)
Primary care	326	33.3 (0.02)
Other	137	79.6 (0.04)
Receipt of Title X funding		***
Yes	747	76.5 (0.01)
No	292	36.1 (0.03)
Service area		
Mostly urban/suburban	285	59.1 (0.03)
Mostly rural	535	56.9 (0.02)
Combination	219	59.1 (0.03)
Annual family planning caseload		
<1,000	482	54.1 (0.02)
1,000–4,999	414	61.7 (0.02)
≥5,000	143	60.8 (0.04)

***In chi-square tests, differences by category are significant at $p < .001$.
Note: Figures in parentheses are standard errors.

Additionally, a greater proportion of providers in health centers with written protocols than of those in health centers without such protocols reported that they had frequently assessed reproductive life plans in the previous month (93% vs. 80%). In multivariable analysis, the reported presence of a reproductive life plan assessment protocol at the health center level was the only characteristic that remained significant (prevalence ratio, 1.1). However, marginally significant results suggest that the prevalence of frequent assessment was reduced in centers with a primary care focus and elevated in ones that received Title X support.

Frequent provision of preconception care at the health center level was reported by 55% of health center administrators. In bivariate analyses, frequent preconception care was more often reported by administrators reporting written reproductive life plan assessment protocols (60%) than by those not reporting such protocols (49%). It was also more likely among health centers where providers reported frequent reproductive life plan assessment than among those where such assessment reportedly rarely or never occurred (58% vs. 38%). The latter association remained in the multivariable model (prevalence ratio, 1.4).

*Excluded centers were more likely than included ones to be community health centers, to be primary care settings and to have small family planning caseloads; they were less likely to receive Title X funding, and to report written protocols for reproductive life plan assessment and frequent provision of preconception care.

TABLE 2. Percentage of centers reporting frequent reproductive life plan assessment, and percentage reporting frequent provision of preconception care, by selected characteristics; and prevalence ratios from multivariable general linear models assessing correlates of such reporting

Characteristic	%	Prevalence ratio
FREQUENT REPRODUCTIVE LIFE PLAN ASSESSMENT†		
Total	87.4 (0.01)	
Type of center	***	
Community health center (ref)	80.6 (0.03)	1.00
Health department	92.3 (0.01)	1.00 (0.92–1.09)
Planned Parenthood	90.4 (0.02)	0.94 (0.85–1.03)
Hospital/other	88.3 (0.02)	1.02 (0.94–1.12)
Health center focus	***	
Reproductive health (ref)	92.2 (0.01)	1.00
Primary care	80.5 (0.02)	0.94 (0.87–1.00)
Other	95.2 (0.02)	1.04 (0.99–1.09)
Receipt of Title X funding	***	
Yes	92.3 (0.01)	1.06 (1.00–1.13)
No (ref)	81.7 (0.02)	1.00
Service area		
Mostly urban/suburban (ref)	88.6 (0.02)	1.00
Mostly rural	85.8 (0.02)	0.97 (0.91–1.04)
Combination	89.5 (0.03)	1.00 (0.94–1.07)
Family planning caseload		
<1,000	85.2 (0.02)	0.94 (0.87–1.00)
1,000–4,999	88.3 (0.02)	0.96 (0.90–1.02)
≥5,000 (ref)	92.5 (0.02)	1.00
Has written protocol for reproductive life plan assessment	***	
Yes	92.8 (0.01)	1.10 (1.04–1.17)
No (ref)	79.9 (0.02)	1.00
FREQUENT PROVISION OF PRECONCEPTION CARE‡		
Total	55.3 (0.02)	
Has written protocol for reproductive life plan assessment	***	
Yes	59.9 (0.02)	na
No	49.0 (0.03)	na
Frequently provides reproductive life plan assessment	***	
Yes	57.9 (0.02)	1.38 (1.09–1.75)
No (ref)	37.7 (0.05)	1.00

***In chi-square tests, differences by category are significant at $p < .001$. †Denotes that assessment was reportedly offered “very often” or “often” (as opposed to “not often” or “never”) during family planning counseling with female clients in the previous month. ‡Denotes that care was reportedly offered “frequently” (as opposed to “never,” “rarely” or “occasionally”) in the past three months; the multivariable model controls for all clinic characteristics included in the model for frequent assessment except having a written protocol of reproductive life plan assessment. Notes: Figures in parentheses are standard errors (in the percentage column) or 95% confidence intervals (in the prevalence ratio column). ref=reference group in the multivariable model. na=applicable, because differences were not assessed in the multivariable model.

DISCUSSION

Reproductive life plan assessment is potentially an important gateway to the delivery of preconception care. This study begins to characterize aspects of this relationship with data reported by providers and administrators of family planning services. Bivariate results suggest that the existence of written protocols for reproductive life plan assessment and frequent performance of such assessment are related to health centers’ characteristics. Our multivariable findings indicate that reports of having protocols and of frequent assessment are positively associated, and that the latter are positively associated

with reports of frequent provision of preconception care to female clients.

The proportion of administrators in our survey who reported frequent provision of preconception care within their health centers (55%) is substantially higher than the proportions of postpartum women who have reported receiving such care in earlier work (32–33%).^{15–17} Results from earlier studies of the administrator survey data were similar to ours: Some 53% of respondents reported frequent preconception care,¹⁹ and 81% reported occasional or frequent preconception care;²¹ these proportions are also higher than estimates based on postpartum women’s reports. Our estimate of the prevalence of frequent reproductive life plan assessment according to providers’ self-reported practice (87%) was more than twice that from the Cincinnati study based on encounter data (42%).¹⁴

The gap between women’s reported receipt of preconception care and providers’ reports of frequently providing such care may be attributed to variability in the interpreted meaning of preconception care. The notion of preconception care has evolved from the traditional concept of a pregnancy planning visit to the current recommendation for every health care system contact to address women’s reproductive health choices and well-woman care.^{22,23} Estimates based on postpartum women’s self-report come from surveys that asked about specific counseling content before the most recent pregnancy that resulted in a live birth.^{15–17} By contrast, in our study, administrators were asked to estimate the frequency of delivery of preconception care in the previous three months, and preconception care was undefined.

It was not surprising that in bivariate analyses, Title X-funded health centers were far more likely than others to report having written protocols for reproductive life plan assessment. In multivariable analysis, there was some suggestion of an association between Title X funding and frequent provision of reproductive life plan assessment. OPA provides Title X grantees with institutional supports to ensure that all personnel have the knowledge, skills and abilities to promote preconception care, including training in reproductive life plan assessment. And the CDC and OPA’s recommendations for the provision of quality family planning services,⁷ published after our survey was completed, clarify how to effectively deliver preconception care services.

By the same token, community health centers have not historically been a large part of the Title X network, as their main focus is primary care, rather than reproductive health. For this reason, we were not surprised by the relatively low reported prevalence of written protocols for reproductive life plan assessment and of frequent provision of such assessment among community health centers in bivariate results. Our study suggests the unrealized potential that community health centers and primary care providers represent for increasing provision of preconception care and integrating it into routine health care visits.

No published studies that we are aware of have examined associations between health center characteristics and

written protocols for, or frequent provision of, reproductive life plan assessment. Further examination of the underlying reasons for providers' reports of suboptimal reproductive life plan assessment and preconception care in primary care-focused health centers is needed. Our study suggests that clinical protocols for reproductive life plan assessment may be associated with more frequent assessments. The evidence base supporting the effectiveness of reproductive life plan assessment for increasing preconception care is relatively new and limited,²⁴ and therefore additional epidemiologic studies are needed to fill this void in the literature.

Limitations

The findings should be interpreted with caution and in the context of the study's limitations. Self-reported, subjective assessments of frequency of reproductive life plan assessment and preconception care may be affected by desirability bias. Furthermore, since the response options for the scales were undefined, responses are subject to participants' interpretation of their meaning; for example, understanding of "frequently" may vary from "every patient" to "every day." Misspecification is also possible because preconception care was not defined in the survey, and administrators may have interpreted it in broad, subjective ways. At the same time, administrators lacking reproductive health expertise may not recognize that many preventive services their health centers offer constitute preconception care, and therefore may have underreported such care. However, while misspecification could affect the point estimates, we have no reason to think it would affect the nature and direction of associations. Also, the data do not address the quality or content of the written protocols for reproductive life plan assessment. Selection bias is possible, as the sample may not have been as random as intended. Respondents with missing data were excluded; the excluded sample was overrepresented by community health centers, health centers focused on primary care and those with small family planning caseloads. Additionally, response rates (49% for the administrator survey and 51% for the provider survey) were suboptimal, although higher than those in most health care provider surveys.²⁵ To limit potential nonresponse bias, weights were used in all analyses to increase the representativeness of estimates. Finally, because the study was cross-sectional, temporality cannot be determined, and endogeneity is possible.

Conclusion

Our findings suggest that the value of written protocols for increasing reproductive life plan assessment and preconception care merits attention. Additional epidemiologic and implementation research is needed to develop the evidence base for translating research into practice. Studies are needed to confirm the associations that we found between report of having written protocols and reported implementation of reproductive life plan assessment, and to elucidate the specific preconception care services that may be asso-

ciated with such assessment. Program evaluation research is needed to identify best practices. Qualitative research could clarify facilitators of and barriers to reproductive life plan assessment and preconception care delivery.

REFERENCES

1. Files JA et al., Developing a reproductive life plan, *Journal of Midwifery & Women's Health*, 2011, 56(5):468–474.
2. Biermann J et al., Promising practices in preconception care for women at risk for poor health and pregnancy outcomes, *Maternal and Child Health Journal*, 2006, 10(Suppl. 5):S21–S28.
3. Moos MK et al., The impact of a preconceptional health promotion program on intendedness of pregnancy, *American Journal of Perinatology*, 1996, 13(2):103–108.
4. Stern J et al., Introducing reproductive life plan-based information in contraceptive counselling: an RCT, *Human Reproduction*, 2013, 28(9):2450–2461.
5. Mittal P, Dandekar A and Hessler D, Use of a modified reproductive life plan to improve awareness of preconception health in women with chronic disease, *Permanente Journal*, 2014, 18(2):28–32.
6. Johnson K et al., Recommendations to improve preconception health and health care—United States, *Morbidity and Mortality Weekly Report*, 2006, Vol. 55, No. RR-6.
7. Gavin L et al., Providing quality family planning services: Recommendations of CDC and the U.S. Office of Population Affairs, *Morbidity and Mortality Weekly Report*, 2014, Vol. 63, No. RR-4.
8. American College of Obstetricians and Gynecologists' Committee on Health Care for Underserved Women, ACOG committee opinion no. 654: reproductive life planning to reduce unintended pregnancy, *Obstetrics & Gynecology*, 2016, 127(2):415.
9. Wilkes J, AAFP releases position paper on preconception care, *American Family Physician*, 2016, 94(6):508–510.
10. US Department of Health and Human Services, Healthy People 2020, 2016, https://www.cdc.gov/nchs/healthy_people/hp2020.htm.
11. Jack BW et al., The clinical content of preconception care: an overview and preparation of this supplement, *American Journal of Obstetrics & Gynecology*, 2008, 199(6, Suppl 2):S266–S279.
12. Temel S et al., Evidence-based preconceptional lifestyle interventions, *Epidemiologic Reviews*, 2014, 36(1):19–30.
13. Lu MC, Recommendations for preconception care, *American Family Physician*, 2007, 76(3):397–400.
14. Bommaraju A, Malat J and Mooney JL, Reproductive life plan counseling and effective contraceptive use among urban women utilizing Title X services, *Women's Health Issues*, 2015, 25(3):209–215.
15. Williams L et al., Associations between preconception counseling and maternal behaviors before and during pregnancy, *Maternal and Child Health Journal*, 2012, 16(9):1854–1861.
16. Oza-Frank R et al., Trends and factors associated with self-reported receipt of preconception care: PRAMS, 2004–2010, *Birth*, 2014, 41(4):367–373.
17. Connor KA et al., Preconception health promotion among Maryland women, *Maternal and Child Health Journal*, 2014, 18(10):2437–2445.
18. Frieden TR, King SM and Wright JS, Protocol-based treatment of hypertension: a critical step on the pathway to progress, *Journal of the American Medical Association*, 2014, 311(1):21–22.
19. Carter MW et al., Four aspects of the scope and quality of family planning services in US publicly funded health centers: results from a survey of health center administrators, *Contraception*, 2016, 94(4):340–347.

20. Council of American Survey Research Organizations, On the definition of response rates, 1982, http://c.ymcdn.com/sites/www.casro.org/resource/resmgr/docs/casro_on_definitions_of_resp.pdf.
21. Robbins CL et al., Preconception care in publicly-funded U.S. clinics that provide family planning services, *American Journal of Preventive Medicine*, 2016, 51(3):336–343.
22. Conry JA, Every woman, every time, *Obstetrics & Gynecology*, 2013, 122(1):3–6.
23. Crawford C, AAFP urges family physicians to integrate preconception care into patient visits, *Annals of Family Medicine*, 2016, 14(2):180–181.
24. Bellanca HK and Hunter MS, One Key Question®: Preventive reproductive health is part of high quality primary care, *Contraception*, 2013, 88(1):3–6.
25. McLeod CC et al., Health care provider surveys in the United States, 2000–2010: a review, *Evaluation & the Health Professions*, 2013, 36(1):106–126.

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Author contact: ggf9@cdc.gov

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