

UCSF

UC San Francisco Previously Published Works

Title

Clinicians' perceptions and provision of hormonal contraceptives for HIV-positive and at-risk women in Southern Africa: an original research article

Permalink

<https://escholarship.org/uc/item/97r5379b>

Journal

Contraception, 90(4)

ISSN

0010-7824

Authors

Blanchard, Kelly
Chipato, Tsungai
Ramjee, Gita
[et al.](#)

Publication Date

2014-10-01

DOI

10.1016/j.contraception.2014.04.010

Peer reviewed



Published in final edited form as:

Contraception. 2014 October ; 90(4): 391–398. doi:10.1016/j.contraception.2014.04.010.

Clinicians' perceptions and provision of hormonal contraceptives for HIV positive and at-risk women in Southern Africa: an original research article

Kelly Blanchard^a, Tsungai Chipato^b, Gita Ramjee^c, Tzadza Nhemachena^b, Cynthia C Harper^d, and the Provider Study Writing Committee¹

^aIbis Reproductive Health, Cambridge, MA 02138 USA

^bUniversity of Zimbabwe College of Health Sciences, Harare, Zimbabwe

^cHIV Research Unit, Medical Research Council, Westville, 3630, South Africa

^dUniversity of California, San Francisco, Department of Obstetrics, Gynecology & Reproductive Sciences, San Francisco, CA, USA 94143-0744

Abstract

Objectives—To assess clinician provision of hormonal contraception for HIV positive and at-risk women in Southern Africa.

Study Design—We conducted a nationally representative survey of clinicians (n=1444) in HIV-prevalent settings in South Africa and Zimbabwe to evaluate evidence-based contraceptive care and clinician views of hormonal contraceptives for HIV positive and at-risk women. Multivariable logistic regression was used to analyze differences in contraceptive provision by professional training and practice setting.

Results—Most providers offered oral contraceptives (85%), but only a small minority considered them appropriate for women at risk of HIV (27%) or HIV positive women (25%). A higher proportion of clinicians considered injections appropriate for women at risk of HIV (42%) or HIV positive women (46%). Very few considered emergency contraceptives appropriate (13%). Multivariable results showed that family planning training and clinic as compared to hospital practices, were associated with evidence-based attitudes about contraception for HIV positive or at-risk women, and greater provision. There were no differences, however, between physicians and nurses or by HIV training.

© 2014 Elsevier Inc. All rights reserved.

Corresponding author: Kelly Blanchard, phone: 617-349-0040, kblanchard@ibisreproductivehealth.org.

¹Charles McCulloch, Daniel Grossman, Neetha Morar, Nancy S Padian, Sara Newmann. Affiliations in Appendix I.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Disclosure of Interests

We have no relevant financial, personal, political, intellectual, or religious interests to disclose.

Conclusions—These findings emphasize the need to improve clinicians’ awareness of evidence-based guidelines for hormonal contraception for women at high risk of HIV and HIV-positive women. Evidence-based information that oral contraception and injections are appropriate is essential. Contraceptive education should be integrated into HIV training to reach at-risk populations.

Implications—Oral and injectable hormonal contraception are appropriate for HIV positive and at-risk women; women and clinicians need evidence-based information to ensure women have access to these effective contraceptive methods.

Keywords

Contraception; family planning; HIV; Southern Africa

Introduction

Contraception is critical preventive health care for women. Use of contraception reduces unwanted pregnancy, and consequently maternal mortality and unsafe abortion [1–3]; it enables women to space pregnancies, leading to better health, economic and education outcomes for women and children [1,4–6]. Unmet need for contraception in developing countries remains high, especially among HIV positive women who experience high rates of unintended pregnancy [3,7–9]. HIV positive women may face special barriers to access to contraception, including misconceptions among clinicians about appropriate methods for them.

Little is known about how clinicians, including physicians and nurses, address contraceptive needs of women at risk of or infected with HIV in high-prevalence countries.

Misinformation can put women’s health at risk; women may not get information about or access to the full range of methods, reducing their chances of consistently using a method that meets their needs. This analysis used nationally generalizable data to assess clinicians’ hormonal contraception counseling and provision in Southern Africa. Our objective was to assess whether clinicians offer their at-risk or HIV positive patients evidence-based contraceptive care and to measure their how counseling and provision of hormonal contraception may differ based on women’s HIV status.

Materials and Methods

We surveyed nationally representative samples of physicians and nurses about pregnancy and HIV prevention counseling and provision in South Africa and Zimbabwe. Survey items were informed by formative research which included qualitative interviews with 60 providers and by previous survey research and the literature on contraception [8]. The surveys were pilot tested in each country for content and comprehension, and the final instrument covered professional training, practice setting, patient population, and provider knowledge, attitudes and clinical practices. The methods have been described in detail previously [8,10].

Sampling

We used a multi-stage, facility-based sampling scheme, where districts were randomly drawn with probability proportional to size, based on estimated numbers of physicians and nurses. In South Africa, 12 of 52 districts were drawn and in Zimbabwe 15 of 63 districts. A facility sample, stratified by facility type (clinic or hospital) was then randomly selected proportional to size within these districts. Facilities were considered eligible if they provided family planning or HIV/Sexually Transmitted Infection (STI) services. The sample of eligible facilities included 187 clinics (100 South Africa, 87 Zimbabwe) and 81 hospitals (30 South Africa, 51 Zimbabwe). Of these eligible facilities, 171 clinics (87 (87%) in South Africa and 84 (97%) in Zimbabwe) and 75 hospitals (29 (97%) in South Africa and 46 (90%) in Zimbabwe) participated in the study. Facility non-participation was largely due to inability to contact the facility or refusal. All clinicians in selected facilities who provided family planning or HIV/STI services were eligible to participate. Clinicians who were retired, inactive, or lived out of the country were excluded from the sample. The sample included 258 physicians and 1,714 nurses (220 physicians and 799 nurses in South Africa; 38 physicians and 915 nurses in Zimbabwe).

We received approvals for facility and provider recruitment at the national, provincial, district and facility levels, as needed. Surveys were completed in 2009 primarily by telephone in South Africa, due to country size, and were self-administered in Zimbabwe. The University of KwaZulu-Natal Biomedical Research Ethics Committee, the ethical review committee at the Medical Research Council of Zimbabwe, the Western Institutional Review board and the University of California, San Francisco Committee on Human Research reviewed and approved the study protocol. Participants provided verbal consent for telephone interviews and self-administered questionnaires included a statement that completing the questionnaire constituted consent to participate in the study.

Measures

The outcomes of interest in this analysis are provision of contraceptives by clinicians and their perceptions of the most appropriate contraception methods for their female patients who are at-risk of HIV or HIV positive. We measured whether clinicians currently provide oral contraceptive pills (yes/no), consider oral contraceptive pills appropriate for female patients at high risk of HIV (yes/no), and consider oral contraceptive pills appropriate for HIV infected female patients (yes/no). We also asked whether they provide contraceptive injections, NET_EN, Depo-Provera, (yes/no), consider injections appropriate for female patients at high risk of HIV (yes/no), or consider injections appropriate for HIV positive female patients (yes/no). We asked similar questions about emergency contraception. This analysis focused on counseling and provision of hormonal contraception.

We asked a series of survey questions about clinician counseling and attitudes and practices specifically for their patient populations at risk of HIV. We asked whether they routinely recommend dual methods to protect against pregnancy and HIV/STIs among different female patients, including women in general, married women, unmarried women, teenagers, and HIV positive women. We also asked clinicians what they discuss with HIV positive patients, including pregnancy desire, contraception, pregnancy termination, prevention of

mother-to-child HIV transmission (PMTCT), and antiretroviral treatment (ART) for HIV. To gauge whether clinicians feel they can influence health protective behaviors of their patients, we asked how much influence they feel they have on their patients' choice of contraceptive method, correct use of contraception, and method continuation (scale 1–10, low to high).

Demographic, professional and practice characteristics measured include gender, age, clinician type (physician, nurse), training in family planning (yes/no), training in HIV prevention (yes, no), facility type (clinic, hospital), practice location (urban, rural), proportion of female patients in need of contraception (none, some, half, most, all), and proportion of patients at risk of HIV (none, some, half, most, all).

Analysis

We present descriptive statistics by country, including proportions for categorical variables and means and standard deviations for continuous measures. We used multivariable logistic regression analysis to model provision of the most common hormonal methods, the oral contraceptive pill and the injectable, and attitudes about providing each of these methods to women at risk of HIV and HIV positive women. We assessed how clinician contraceptive practices and attitudes varied by relevant professional and practice characteristics to help to inform any needed contraceptive educational and training. All analyses are adjusted for the facility-based sampling scheme by using standard errors accounting for clustering at the facility level. Missing values are not included in analyses. Significance was defined as $p < 0.05$. We used Stata 11.0 (College Station, TX) to conduct analyses.

Results

A total of 1,444 clinicians responded to the survey (614 in South Africa, 830 in Zimbabwe) for a clinician response rate of 73.2%. The sample is largely female (85.5%), 86% are nurses and 14% are physicians, reflecting the large share of nurses providing primary health care in these countries. Ninety-nine percent of clinicians reported they served female patients needing contraception. Almost two-thirds were trained in family planning (63%) and even more were trained in HIV prevention (80%). While over half of clinicians have both family planning and HIV training (57%), it was more common for clinicians with family planning training to also have HIV training (90%), than for those with HIV training to be trained in family planning (70%). Physicians were more likely than nurses to report both HIV and family planning training (67% v. 56%). The sample had representation from urban (48%) and rural practices (52%), and from hospital-based (55%) and clinic practices (45%). Seventy percent of clinicians reported that most or all of their female patients needed contraception, and 70% also reported that most or all were at HIV risk. Forty-two percent report that most or all of their patients are HIV positive (see Table 1).

While most clinicians (89%) report that they routinely discuss pregnancy and HIV/STI prevention with female patients during the same visit, there is some variation in how frequently they recommend dual methods, ranging from 94% for HIV positive women to 69% for teenagers (see Table 2). Clinicians were more likely to report dual method counseling for unmarried women (86%) than for married women (76%). When asked what

they discussed with HIV patients about pregnancy and childbearing, 97% of clinicians responded that they discussed mother-to-child transmission, 93% ART and PMTCT, 86% contraception, 71% patient's desire for pregnancy, and 42% pregnancy termination; a greater proportion of clinicians in South Africa (60%) than Zimbabwe (29%) reported discussing pregnancy termination. In general, clinicians reported that they felt that they influence their patients' health protective behaviors, with medium-high reports for their influence on patients' choice of contraception (7.5 on a scale of 1 to 10); patients' correct use of contraception (8.2), and contraceptive continuation (7.7).

Relatively few clinicians reported that hormonal contraceptives are appropriate methods for female patients at high risk of HIV, including emergency contraceptive pills (Table 2). Only 27% of clinicians reported that they considered oral contraceptive pills appropriate for female patients at high risk of HIV, with a lower proportion in South Africa (22%) than Zimbabwe (30%). One quarter (25%) of clinicians considered oral contraceptive pills appropriate for HIV positive women, with an even greater difference between South Africa (12%) and Zimbabwe (35%). While a considerably higher proportion of clinicians considered injectables appropriate for female patients at high risk of HIV, it was still less than half (42%), although in the case of injectables, more clinicians in South Africa (59%) than Zimbabwe (30%) considered them appropriate for female patients at risk of HIV. A similar proportion considered injectables appropriate for HIV positive women (46%). Only 16% of providers considered emergency contraceptive pills to be appropriate for women at high risk of HIV and 13% for HIV positive women, with little difference by country. The large majority of clinicians currently offer oral contraceptive pills (85%) and injectables (87%) to their patients. They are by far the most frequently provided contraceptives, with only condoms more widely available (99%). Half of providers offer emergency contraception (EC).

The multivariable model of provision of oral contraceptive pills (Table 3, column 1) showed that clinicians in South Africa are significantly less likely to provide them than clinicians in Zimbabwe (OR 0.48 95% CI 0.28–0.82). Younger clinicians are slightly more likely to provide oral contraceptives (OR 0.98 CI 0.96 1.0). Clinicians who reported family planning training are significantly more likely to provide oral contraceptives, while those who reported HIV prevention training are less likely. Clinicians practicing in clinics and rural settings are significantly more likely to provide oral contraceptive pills. The proportion of patients in need of contraception was not associated with greater provision of oral contraceptives. In terms of clinician attitudes about oral contraceptive pills for patients at high risk of HIV or HIV positive women (Table 3, columns 2 and 3), clinicians in South Africa were less likely to consider them appropriate, while older clinicians and those practicing in clinics were significantly more likely to consider oral contraceptive pills appropriate. Clinicians trained in family planning were also significantly more likely to consider oral contraceptive pills appropriate methods for HIV positive women. Results for injectable contraceptives (Table 4) in general mirrored those for oral contraceptives, with younger age, family planning training and clinic/rural practice associated with offering the method and older age, family planning training and clinic practice associated with considering injectables appropriate for HIV positive women. Far more South African clinicians considered the injectable appropriate for women at high risk of HIV and HIV

positive women than clinicians in Zimbabwe (Table 4, columns 2 and 3).. Training in HIV prevention was not associated with provision of or attitudes toward oral contraceptives or injectables for HIV positive or at risk women, other than with *lower* provision of oral contraceptive pills.

Discussion

These data indicate that most clinicians in South Africa and Zimbabwe hold overly cautious views about hormonal contraceptives for women at risk of HIV and HIV positive women. The majority of nurses and physicians did not view oral contraceptives or injectable methods as appropriate for women at risk of HIV or HIV infected women. While there was significant media attention based on the findings of one study on the risks of hormonal contraceptives, scientific consensus supports that oral and injectable contraceptives are appropriate for high HIV prevalent populations [11–13]. According to the WHO Medical Eligibility Criteria for Contraceptive Use, the full range of contraceptive methods are appropriate for women at risk of or infected with HIV [9]. These nationally generalizable data highlight the important need for clinician education on hormonal contraceptives. All women, including HIV positive women, need access to the full range of safe, effective contraceptive options to promote their health and rights to decide when and whether to have children.

Although the vast majority of providers (89%) reported routinely discussing pregnancy prevention with their patients, only about one-quarter of clinicians thought the oral contraceptive pill was appropriate for women at high risk of HIV and 35% or less felt it was appropriate for HIV positive women. More providers reported the injectable was appropriate, but still less than half overall. Providers in South Africa were more likely to report the injectable was appropriate for both groups, and providers in Zimbabwe were more likely to report the pill was more appropriate. These differences largely reflect differences in the patterns of reported contraceptive method use overall which show that pill use is more common in Zimbabwe and injectable use more common in South Africa [14].

Similarly, although IUDs are highly effective contraceptive methods, a previous analysis showed very few providers reported that either the copper or levonorgestrel-releasing IUD was appropriate for at-risk or HIV positive women [10], despite data showing they are safe and acceptable among both groups of women [15–17]. Encouragingly South Africa's newly-released contraception guidelines emphasize long-acting methods, and the National Department of Health is moving forward with a national contraceptive implant introduction and revitalization of the IUD [18–20]. In Zimbabwe, there are plans to build on the long-standing implant program and provide training on the new single-rod implant. These efforts will hopefully increase access to long acting methods for all women, and also specifically address their safety and effectiveness for women at-risk or infected with HIV.

These low overall rates of support for these effective contraceptive methods for women at high risk of HIV or HIV positive women likely mean that women are not receiving information about the full range of methods. High rates of unintended pregnancy generally

and among HIV positive women specifically mean that improved contraceptive counseling and access is critical [21].

Results from multivariable analyses with training and practice setting can help to guide training efforts and show where scarce resources could be most effectively deployed. Family planning training was associated with more evidence-based views of contraceptives, as well as greater contraceptive provision. Given the vital importance of contraceptives for women's health in HIV prevalent populations, training in family planning should be supported as an essential investment, especially training based in the WHO Medical Eligibility Criteria for Contraception [9].

HIV prevention training, on the other hand, was not associated with provision of oral contraceptives or injectables, or support for use of the method among women at risk of HIV or HIV positive women. Most women and men receiving HIV prevention counseling and services also need education and access to safe and effective contraception. The need to link HIV prevention, treatment and care services with contraception is receiving increasing attention [5,22,23]. Coverage of contraception in HIV prevention and treatment training could potentially improve evidence-based contraceptive counseling and provision for women at risk of HIV and HIV positive women. Integrated services have the potential to expand health services ability to meet women's HIV and reproductive health care needs, and to more efficiently use limited health care resources[24]. Guidance on integration from agencies like the President's Emergency Program for AIDS Relief (PEPFAR) in the US should not only emphasize the need to link services, but also highlight the need to include the IUD and implant, and support training on the full range of methods for HIV prevention, treatment and care providers [25].

Despite high rates of reported recommended dual method use, and moderate to high assessments of provider influence on patients' behavior, dual method use in both South Africa and Zimbabwe is low [26,27]. Providers in Zimbabwe were less likely to recommend dual method use to teenagers, indicating a potential missed opportunity to help young women protect themselves from HIV and unwanted pregnancy. We also found in a separate analysis of data from this study [28], that providers were less willing to recommend condom use to married women, even in Zimbabwe and South Africa where HIV prevalence in the general population is 14.9% and 17.3%, respectively [29]. Continued efforts to assess how to improve dual method use and support providers to talk with young and married women about dual method used are critical. Promoting male and female condom use along with other highly effective contraceptives is an area that should receive research and program attention.

Finally, few providers in both countries considered EC appropriate for women at high risk of HIV (16%) or HIV positive women (13%); higher proportions of providers reported offering EC (South Africa 64%, Zimbabwe 41%). EC can reduce the risk of pregnancy among women who have had unprotected sex and who do not wish to become pregnant. Levonorgestrel EC is safe and effective for all women and should be included in counseling and both family planning and HIV prevention training. For women who need emergency

contraception and want long-term contraception coverage, copper IUDs should also be considered [30,31].

This study had limitations. Providers were asked to report about their practices and we cannot rule out response bias, particularly for questions about how often they discuss pregnancy and HIV prevention with patients. We also did not collect detailed information on the timing or content of family planning or HIV prevention training. The study's main strength is the generalizable findings from clinicians on their provision of contraceptives and attitudes about appropriate methods for women based on age, marital status, and HIV risk or status. The study included a large sample size of clinicians and a robust probability sampling strategy. We surveyed both physicians and nurses and included rural and urban as well as hospital and clinic based providers. This is the only study we are aware of that has measured contraception and HIV provision practices among a representative sample of providers in Southern Africa.

These findings emphasize the need to improve providers' awareness and support for contraception among women at high risk of HIV and HIV positive women. Access to a wide range of contraceptive methods is important for women to protect their health and implement decisions about their families. These results can help to inform ongoing efforts to integrate family planning and HIV care across the region by showing the importance of provider training in evidence-based contraceptive care.

Expanding access to the full range of safe and effective contraceptive methods among women at risk of HIV and HIV positive women is critical to meeting the ambitious FP 2020 goal of significantly reducing unmet need by 2020. Existing safe and effective hormonal contraceptive methods are a critical tool in our efforts to meet women's contraceptive needs. Provider family planning and HIV training should emphasize the full range of safe and effective methods, including hormonal methods like the pill and the contraceptive injection.

Acknowledgments

Funding

This project was funded by NIH/NICHD R01 HD046027. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the NIH.

References

1. Cleland J, Bernstein S, Ezeh A, Faundes A, Glasier A, Innis J. Family planning: a political issue. *Lancet*. 2006; 368:1810–1827. [PubMed: 17113431]
2. Ahmed S, Li Q, Liu L, Tsui AO. Maternal deaths averted by contraceptive use: an analysis of 172 countries. *Lancet*. 2012; 380(9837):111–125. [PubMed: 22784531]
3. Singh, S.; Darroch, JE. Adding it up: costs and benefits of contraceptive services. New York: Guttmacher Institute and United Nations Population Fund (UNFPA); Jun. 2012 Available from: <http://www.guttmacher.org/pubs/AIU-2012-estimates.pdf>
4. Sonfield A. What women already know: documenting the social and economic benefits of family planning. *Guttmacher Policy Review*. 2013; 16(1)
5. Coleman I, Lemmon GT. Family Planning and U.S. Foreign Policy. New York: Council on Foreign Relations; Apr. 2011

6. Wilcher R, Cates W. Reaching the underserved: family planning for women with HIV. *Studies in Family Planning*. 2010; 41(2):125–128. [PubMed: 21466112]
7. The World Bank. Unmet need for contraception. Washington, DC: The World Bank; 2010. Available from: <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTHEALTHNUTRITIONANDPOPULATION/EXTPHAAG/0,,contentMDK:22546157~pagePK:64229817~piPK:64229743~theSitePK:672263,00.html>.
8. Harper CC, Holt K, Nhemachena T, Chipato T, Ramjee G, Stratton L, et al. Willingness of clinicians to integrate microbicides into HIV prevention practices in Southern Africa. *AIDS Behav*. 2012; 16:1821–1829. [PubMed: 22210482]
9. World Health Organization (WHO). Medical eligibility for contraceptive use. 4th ed. Geneva, Switzerland: WHO; 2010. Available from: http://whqlibdoc.who.int/publications/2010/9789241563888_eng.pdf.
10. Morse, J.; Chipato, T.; Blanchard, K.; Nhemachena, T.; Ramjee, G.; McCulloch, C., et al. Provision of long-acting reversible contraception in HIV prevalent countries: Results from nationally representative surveys in Southern Africa. Vol. 120. *BJOG: An International Journal of Obstetrics and Gynaecology*; Oct. 11 p. 1386-1394.
11. World Health Organization (WHO). Hormonal contraception and HIV. Technical Statement. Geneva, Switzerland: WHO; 2012. Available from: http://whqlibdoc.who.int/hq/2012/WHO_RHR_12.08_eng.pdf.
12. Phillips SJ, Curtis KM, Polis CB. Effect of hormonal contraceptive methods on HIV disease progression: a systematic review. *AIDS*. 2013; 27(5):787–794. [PubMed: 23135169]
13. Polis CB, Curtis KM. Use of hormonal contraceptives and HIV acquisition in women; a systematic review of the epidemiological evidence. *Lancet Infect Dis*. Sep; 2013 13(9):797–808. [PubMed: 23871397]
14. Population Reference Bureau (PRB). Contraceptive use among married women ages 15–49, by method mix. Washington, DC: PRB Family Planning Worldwide; 2008. Available from: www.prb.org/DataFinder/Topic/Rankings.aspx?ind=35.
15. Kancheva Landolt N, Phanuphak N, Teeratakulpisarn N, Kriengsinoyot R, Ahluwalia J, Pinyakorn S, et al. Uptake and continuous use of copper intrauterine device in a cohort of HIV-positive women. *AIDS Care*. 2013 Epub ahead of print.
16. Sinei SK, Morrison CS, Sekadde-Kigonde C, Allen M, Kokonya D. Complications of use of intrauterine devices among HIV-1-infected women. *Lancet*. 1998; 351(9111):1238–1241. [PubMed: 9643743]
17. Stringer EM, Kaseba C, Levy J, Sinkala M, Goldenberg RL, Chi BH, Matongo I, et al. A randomized trial of the intrauterine contraceptive device vs hormonal contraception in women who are infected with the human immunodeficiency virus. *American Journal of Obstetrics and Gynecology*. 2007; 197144(2):e1–e8. [PubMed: 17689627]
18. National Department of Health. National Contraception and Fertility Planning Policy and Service Delivery Guidelines 2012. Pretoria: Department of Health; 2013.
19. National Department of Health. National Contraception Clinical Guidelines 2012. Pretoria: Department of Health; 2013.
20. National Department of Health: Republic of South Africa. Newsletter of the HIV, TB and MNCWH cluster. HIV, TB and MNCWH News. Aug.2013 Available from: http://www.hst.org.za/sites/default/files/Branch%20newsletter%20final%20edit%2013%20August_1.pdf.
21. Guttmacher Institute. Unplanned pregnancy common worldwide. New York, NY: Guttmacher Institute; May 10. 2013 Available from: http://www.guttmacher.org/media/nr/abortww_nr.html.
22. Harrington EK, Newmann SJ, Onono M, Schwartz KD, Bukusi EA, Cohen CR, et al. Fertility intentions and interest in integrated family planning services among women living with HIV in Nyanza Province, Kenya: a qualitative study. *Infectious Diseases in Obstetrics and Gynecology*. 2012:809682. [PubMed: 22844189]
23. Kuhlmann AS, Gavin L, Galavotti C. The integration of family planning with other health services: A literature review. *International Perspectives on Sexual and Reproductive Health*. 2010; 36(4): 189–196. [PubMed: 21245025]

24. Grossman D, Onono M, Newmann SJ, Blat C, Bukusi EA, Shade SB, et al. Integration of family planning services into HIV care and treatment in Kenya: a cluster-randomized trial. *AIDS*. 2013; 27:S77–s88. [PubMed: 24088687] Suppl
25. The President’s Emergency Plan for AIDS Relief. PEPFAR blueprint: creating an AIDS-free generation. The Office of the Global AIDS Coordinator. 2012 Available from: <http://www.pepfar.gov/documents/organization/201386.pdf>.
26. Seutlwadi L, Peltzer K. The use of dual or two methods for pregnancy and HIV prevention amongst 18–24-year-olds in a cross-sectional study conducted in South Africa. *Contraception*. 2013; 87(6):782–789. [PubMed: 23121823]
27. Magwali TL, Steiner MJ, Toms H, Brown JM. How are condoms used in a family planning setting: evidence from Zimbabwe. *Central Africa Journal of Medicine*. 2005; 51(7–8):79–84.
28. Holt K, Blanchard K, Chipato T, Nhemachena T, Blum M, Stratton L, et al. A nationally-representative survey of health care provider counseling and provision of the female condom in South Africa and Zimbabwe. *BMJ Open*. 2013; 3(3)
29. The World Bank. UNAIDS and WHO’s Report on the Global AIDS Epidemic. Washington, DC: The World Bank; 2013. Prevalence of HIV, total (% of population ages 15°C49). Available from: http://data.worldbank.org/indicator/SH.DYN.AIDS.ZS?order=wbapi_data_value_2011+wbapi_data_value+wbapi_data_value-last&sort=asc.
30. Armstrong C. ACOG recommendations on emergency contraception. *Am Fam Physician*. Nov 15.2010 82(10):1278. [PubMed: 21121541]
31. International Consortium for Emergency Contraception. The intrauterine device (IUD) for emergency contraception. New York, NY: International Consortium for Emergency Contraception; Sep. 2012 Available from: http://www.cecinfo.org/custom-content/uploads/2012/12/IUD_FactSheet_2012.pdf

Appendix I

Charles McCulloch, Division of Biostatistics, Department of Epidemiology and Biostatistics, University of California, San Francisco, San Francisco, CA 94107-1762 USA

Daniel Grossman, Ibis Reproductive Health, Oakland, CA 94612 USA

Neetha Morar, HIV Prevention Research Unit, Medical Research Council, Westville, 3630, South Africa

Nancy S Padian, University of California, Berkeley, School of Public Health, Berkeley, CA, USA

Sara Newmann, University of California, San Francisco, Department of Obstetrics, Gynecology & Reproductive Sciences, San Francisco, San Francisco, CA, USA 94143-0744

Table 1

25 Clinician, practice, and patient-related characteristics of participants (N=1444)

	South Africa (n=614)	Zimbabwe (n=830)	Total (N=1444)
Gender, n (%)			
Female	547 (89.8)	674 (82.3)	1221 (85.5)
Male	62 (10.2)	145 (17.7)	207 (14.5)
Age, median years (range)	43 (23–69)	39 (20–74)	41 (20–74)
Clinician Type, n (%)			
Nurse	528 (86.0)	792 (95.4)	1320 (91.4)
Physician	86 (14.0)	38 (4.6)	124 (8.6)
Training in Family Planning, n (%)	399 (66.0)	503 (61.3)	902 (63.3)
Training in HIV Prevention, n (%)	510 (84.4)	629 (77.1)	1139 (80.2)
Type of Facility, n (%)			
Hospital	309 (50.3)	484 (58.6)	793 (55.1)
Clinic	305 (49.7)	342 (41.4)	647 (44.9)
Location, n (%)			
Urban	315 (51.3)	375 (45.4)	690 (47.9)
Rural	299 (48.7)	451 (54.6)	750 (52.1)
Proportion of female patients needing contraception, n(%)			
Some	108 (17.8)	126 (15.7)	234 (16.6)
Half	79 (13.0)	105 (13.0)	184 (13.0)
Most/All	419 (69.1)	574 (71.3)	993 (70.4)
Proportion of patients at STI risk, n(%)			
Some	100 (16.4)	239 (29.5)	339 (23.9)
Half	112 (18.4)	139 (17.2)	251 (17.7)
Most/All	397 (65.2)	432 (53.3)	829 (58.4)
Proportion of patients at HIV risk, n(%)			
Some	46 (7.6)	175 (21.5)	221 (15.6)
Half	92 (15.1)	112 (13.8)	204 (14.4)
Most/All	470 (77.3)	524 (64.6)	994 (70.0)
Proportion of patients HIV positive, n (%)			
Some	148 (24.7)	367 (44.3)	515 (36.9)
Half	132 (22.0)	160 (20.1)	292 (20.9)
Most/All	320 (53.3)	269 (33.8)	589 (42.2)
Routine counseling of condoms with female patients n (%)	542 (89.9)	652 (80.1)	1,194 (84.3)

Table 2

Clinician contraceptive practices and beliefs in HIV prevalent countries (N=1444)

	South Africa (n=614)	Zimbabwe (n=830)	Total (N=1444)
CLINICIAN COUNSELING			
Routinely talks about pregnancy and HIV/STI prevention during same visit (usually/always), n(%)	536 (89.9)	718 (88.2)	1,254 (88.9)
Routinely recommends dual methods to protect against pregnancy and HIV/STIS to...., n(%)			
Women in general	535 (89.5)	634 (77.7)	1,169 (82.7)
Married women	491 (82.5)	580 (71.5)	1,071 (76.2)
Unmarried women	536 (90.1)	673 (82.9)	1,209 (85.9)
Female teenagers	542 (91.4)	432 (53.5)	974 (69.5)
HIV positive women	554 (93.1)	773 (95.1)	1,327 (94.3)
Clinician discusses with HIV positive patients...			
Pregnancy desire	476 (80.1)	525 (64.7)	1,001 (71.3)
Contraception	523 (88.1)	689 (85.0)	1,212 (86.3)
Pregnancy termination	354 (59.6)	237 (29.2)	591 (42.1)
Mother-to-child transmission	566 (95.3)	791 (97.5)	1,357 (96.6)
Therapies, ART and PMTCT	548 (92.3)	764 (94.2)	1,312 (93.4)
CLINICIAN ATTITUDES and PRACTICES			
Influence on patients' choice of contraception (scale 1–10), mean (SD)	7.4 (2.4)	7.6 (2.2)	7.5 (2.3)
Influence on patients' correct use of contraception (scale 1–10), mean (SD)	7.7 (2.3)	8.5 (1.4)	8.2 (2.1)
Influence on patients' contraceptive continuation (scale 1–10), mean (SD)	7.3 (2.6)	8.0 (2.1)	7.7 (2.4)
Clinician considers contraceptive method appropriate for women at high risk of HIV			
Oral contraceptive pill, n (%)	130 (21.8)	248 (30.4)	378 (26.8)
Injection (Depo-Provera/NET-EN), n (%)	350 (58.6)	244 (29.9)	594 (42.0)
Vaginal ring	20 (3.3)	54 (6.6)	74 (5.2)
Transdermal patch	37 (6.2)	31 (3.8)	68 (4.8)
Contraceptive implant	25 (4.2)	186 (22.8)	211 (14.9)
Levonorgestrel-releasing IUD	19 (3.2)	24 (2.9)	43 (3.0)
Copper IUD	27 (4.5)	30 (3.7)	57 (4.0)
Emergency contraceptive pill	106 (17.8)	120 (14.7)	226 (16.0)
Male condom, n (%)	566 (94.8)	737 (90.3)	1,303 (92.2)
Female condom	503 (84.2)	800 (98.0)	1,303 (92.2)
Clinician considers contraceptive method appropriate for HIV positive female patients			
Oral contraceptive pill, n (%)	74 (12.4)	282 (34.6)	356 (25.2)
Injection (Depo-Provera), n (%)	353 (59.3)	293 (35.9)	646 (45.8)
Vaginal ring	19 (3.2)	53 (6.5)	72 (5.1)

	South Africa (n=614)	Zimbabwe (n=830)	Total (N=1444)
Transdermal patch	34 (5.7)	39 (4.8)	73 (5.2)
Contraceptive implant	29 (4.9)	235 (28.8)	264 (18.7)
Levonorgestrel-releasing IUD	18 (3.0)	30 (3.7)	48 (3.4)
Copper IUD	24 (4.0)	44 (5.4)	57 (4.0)
Emergency contraceptive pill	69 (11.6)	111 (13.6)	180 (12.8)
Male condom, n (%)	565 (95.0)	711 (87.1)	1,276 (90.4)
Female condom	519 (87.2)	794 (97.3)	1,303 (92.2)
Provision of Contraceptives, n (%)			
Oral contraceptive pill	482 (79.4)	720 (89.1)	1,202 (85.0)
Injectible (Depo-Provera/NET-EN)	520 (85.7)	715 (88.5)	1,235 (87.3)
Contraceptive implant	17 (2.8)	207 (25.6)	224 (15.8)
Levonorgestrel-releasing IUD	14 (2.3)	49 (6.1)	63 (4.4)
Copper IUD	95 (15.7)	106 (13.1)	201 (14.2)
Emergency contraceptive pill	389 (64.1)	332 (41.1)	721 (51.0)
Male condom	599 (98.7)	796 (98.5)	1,395 (98.6)
Female condom	483 (79.6)	756 (93.6)	1,239 (87.6)

Table 3

Clinician provision and beliefs for oral contraceptive pills: multivariable logistic regression

ORAL CONTRACEPTIVES (OC)	Provides oral contraceptives	Considers OC appropriate for woman at high risk of HIV	Considers OC appropriate for HIV infected women
	OR [95% CI]	OR [95% CI]	OR [95% CI]
CLINICIAN			
Country			
Zimbabwe (reference)	—	—	—
South Africa	0.48** [0.28 0.82]	0.50*** [0.36 0.68]	0.23*** [0.15 0.34]
Age (years)	0.98* [0.96 1.00]	1.03*** [1.02 1.04]	1.02*** [1.01 1.04]
Professional Training			
Physician (reference)	—	—	—
Nurse	0.64 [0.34 1.20]	0.51 [0.25 1.02]	0.79 [0.43 1.46]
Trained in Family Planning	1.74** [1.18 2.55]	1.25 [0.93 1.68]	1.50* [1.09 2.06]
Trained in HIV Prevention	0.59* [0.38 0.89]	0.98 [0.69 1.40]	0.93 [0.62 1.49]
PRACTICE & PATIENT POPULATION			
Type of Facility			
Hospital (reference)	—	—	—
Clinic	4.72*** [2.55 8.75]	1.97*** [1.40 2.76]	1.78*** [1.25 2.53]
Urban Location	0.39*** [0.22 0.69]	0.86 [0.62 1.20]	0.74 [0.52 1.05]
Proportion of Female Patients in need of Contraception			
Some (reference)	—	—	—
Half	1.33 [0.73 2.45]	0.82 [0.50 1.35]	0.67 [0.39 1.13]
Most/All	1.38 [0.91 2.08]	0.96 [0.65 1.41]	0.89 [0.59 1.34]
Proportion of patients at risk of HIV			
Some (reference)	—	—	—
Half	0.79 [0.37 1.69]	0.89 [0.55 1.45]	0.94 [0.56 1.57]
Most/All	0.59 [0.32 1.09]	0.90 [0.62 1.31]	0.98 [0.66 1.46]
N	1,304	1,301	1,299
Model Chi-Square(df)	$X^2 (11) = 58.2$	$X^2 (11) = 83.9$	$X^2 (11) = 90.0$

* p 0.05;

** p 0.01;

*** p 0.001

Table 4

Clinician Practices and Beliefs for Injectable Contraception: multivariable logistic regression

INJECTIBLES	Provides Injectable	Considers Injectable appropriate for woman at high risk of HIV	Considers Injectable appropriate for HIV infected women
	OR [95% CI]	OR [95% CI]	OR [95% CI]
CLINICIAN			
Country			
Zimbabwe (reference)	—	—	—
South Africa	0.91 [0.53 1.55]	3.20*** [2.36 4.35]	2.66*** [1.92 3.67]
Age (years)	0.98* [0.96 1.00]	1.03*** [1.02 1.04]	1.02*** [1.01 1.04]
Professional Training			
Physician (reference)	—	—	—
Nurse	0.99 [0.44 2.21]	1.22 [0.77 1.95]	1.24 [0.84 1.83]
Trained in Family Planning	1.61** [1.15 2.26]	1.28 [0.96 1.70]	1.38* [1.07 1.77]
Trained in HIV Prevention	0.67 [0.41 1.08]	1.00 [0.70 1.45]	0.89 [0.63 1.24]
PRACTICE & PATIENT POPULATION			
Type of Facility			
Hospital (reference)	—	—	—
Clinic	3.55*** [1.96 6.40]	1.90*** [1.36 2.66]	1.76** [1.24 2.50]
Urban Location	0.29*** [0.16 0.53]	0.89 [0.65 1.22]	0.96 [0.68 1.35]
Proportion of Female Patients in need of Contraception			
Some (reference)	—	—	—
Half	1.37 [0.73 2.56]	0.93 [0.60 1.45]	0.85 [0.56 1.31]
Most/All	1.83** [1.19 2.81]	1.37 [0.96 1.97]	1.21 [0.85 1.74]
Proportion of patients at risk of HIV			
Some (reference)	—	—	—
Half	0.76 [0.42 1.35]	0.60* [0.37 0.97]	0.59* [0.39 0.90]
Most/All	0.70 [0.42 1.17]	0.78 [0.54 1.11]	0.75 [0.53 1.07]
N	1,304	1,301	1,299
Model Chi-Square(df)	$X^2 (11) = 52.4$	$X^2 (11) = 141.4$	$X^2 (11) = 101.0$

* p 0.05;

** p 0.01;

*** p 0.001