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## Pregnancy Intentions among Women Living with HIV in the United States

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### Abstract

**Background**—The number of HIV-infected women giving birth in the U.S. is increasing. Research on pregnancy planning in HIV-infected women is limited.

**Methods**—Between January 1 and December 30, 2012, pregnant women with a known HIV diagnosis prior to conception at 12 U.S. urban medical centers completed a survey including the London Measure of Unplanned Pregnancy (LMUP) scale. We assessed predictors of LMUP category (unplanned/ambivalent versus planned pregnancy) using bivariate and multivariable analyses.

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**Results**—Overall, 172 women met inclusion criteria and completed a survey. Based on self-report using the LMUP scale, 23% of women had an unplanned pregnancy, 58% were ambivalent and 19% reported a planned pregnancy. Women were at lower risk for an unplanned or ambivalent pregnancy if they had previously given birth since their HIV diagnosis (adjusted Relative Risk = 0.67, 95% CI 0.47-0.94,  $p=0.02$ ), had seen a medical provider in the year before the index pregnancy (aRR 0.60, 95% CI 0.46-0.77,  $p<0.01$ ), or had a patient-initiated discussion of pregnancy intentions in the year prior to the index pregnancy (aRR = 0.63, 95% CI 0.46-0.77,  $p<0.01$ ). Unplanned or ambivalent pregnancy was not associated with age, race/ethnicity, or educational level.

**Conclusions**—In this multi-site U.S. cohort, patient-initiated pregnancy counseling as well as being engaged in medical care prior to pregnancy were associated with a decreased probability of unplanned or ambivalent pregnancy. Interventions that promote health-care engagement among HIV-infected women and integrate contraception and preconception counseling into routine HIV care may decrease the risk of unplanned pregnancy among HIV-infected women in the U.S.

## Keywords

Pregnancy intention; HIV; pregnancy; serodiscordant; serodifferent

## Background

There are approximately 280,000 HIV-infected women in the U.S. and an estimated 140,000 serodifferent couples (in which only one member of the partnership has HIV) living in the U.S.<sup>1,2</sup> The number of HIV-infected women giving birth in the U.S. increased by approximately 30% between 2000 to 2006.<sup>3</sup> Research on pregnancy intention in HIV-infected women is limited.<sup>4-6</sup> To address prevention of sexual HIV transmission, a family planning discussion may focus on condoms in order to prevent both pregnancy and HIV/sexually transmitted infection (STI) transmission. Though condoms decrease the risk of STI transmission, they are only 83% effective in preventing pregnancy<sup>7</sup> and counterproductive for couples who desire pregnancy.<sup>8</sup> Hence, prevention of HIV transmission through condoms and a woman's desire for pregnancy are in clear conflict. Additionally, recent research indicates that antiretroviral (ARV) use by an HIV-infected partner reduces HIV transmission risk by 96% in serodifferent heterosexual couples.<sup>9</sup> Preexposure prophylaxis (PrEP) has been shown to reduce HIV transmission by 62-73%; a 90% reduction is reported with confirmed adherence to PrEP.<sup>10,11</sup> With improved options for safe conception and risk of perinatal HIV transmission potentially at less than 1% for women with undetectable viral load at delivery, there is now greater opportunity for providers and patients to engage in patient-centered conversations on how HIV-infected women can both achieve pregnancy safely and avoid perinatal HIV transmission.<sup>1,12,13</sup> Given the limited data on pregnancy intentions among HIV-infected women in the US, we sought to assess pregnancy intentions and factors associated with unplanned pregnancies in this multi-site cohort of HIV-infected pregnant women in the United States.

## Methods

### Study population and recruitment

The HIV and Obstetrics Pregnancy Education Study (HOPES) was a multi-site cross-sectional study of HIV-infected pregnant women presenting to obstetric or HIV-related care from Jan 1, 2012 to Dec 31, 2012. Each study site participated for a total of 6-months within the allotted study time period. A request for participation was enlisted on the University of California San Francisco-Infectious Disease Society for Obstetrics and Gynecology Reproductive Infectious Disease listserv. Researchers from 12 academic medical centers

agreed to collaborate. Institutional Review Board approval or exemption was completed at each of the 12 sites.

Study personnel at each site consecutively approached HIV-infected pregnant women who were 18 years or older, able to read English or Spanish and whose HIV infection status was known prior to the current pregnancy. Participating women completed the anonymous study survey and placed it in a pre-stamped and addressed envelope which was directly mailed to the coordinating site. Participants received \$10 gift cards for completion of the survey. All sites returned a study log listing the number of HIV-infected women treated in their clinic during the 6 month interval as well as non-identifying descriptive data such as the time of HIV diagnosis (prior to pregnancy or during current pregnancy) and preferred language.

## Survey

The study survey included the London Measure of Unplanned Pregnancy (LMUP), a psychometrically validated index of pregnancy intentions designed to be used in women who are already pregnant. The LMUP has been validated in English and Spanish in low literacy settings.<sup>14,15</sup> The survey also assessed respondents' socio-demographic and clinical characteristics including age, race/ethnicity, education, parity, parity since HIV diagnosis, relationship with the biological father, awareness of HIV status of the biological father, disclosure of participant HIV status to biological father, having seen a health care provider or having discussed pregnancy intention, contraception or condom use prior to pregnancy, and ARV use in the year prior to pregnancy.

## Analysis

Respondents' socio-demographic and clinical characteristics, listed in Table 1, were described using medians and ranges and frequencies. Due to survey questions left unanswered, missing data was acknowledged by description of denominator for all frequencies. LMUP scores (0-12) were initially categorized according to criteria put forth by Geraldine Barrett and colleagues.<sup>14</sup> Scores 0-3 represent an unplanned pregnancy, 4-9 an ambivalent pregnancy, and 10-12 a planned (or highly planned) pregnancy.<sup>14</sup> After examining the distribution of scores in our sample, scores were transformed into a dichotomous variable with levels "unplanned/ambivalent pregnancy" and "planned pregnancy" to facilitate the identification of characteristics associated with pregnancies that were not fully planned.

Bivariate and multivariable-adjusted relative risks between patient characteristics and the dichotomous pregnancy intention outcome (unplanned/ambivalent pregnancy vs. planned pregnancy) were estimated using log-linear statistical models. All multi-level categorical variables were collapsed into clinically meaningful dichotomous variables prior to being entered into the models. In consideration of the modest sample size, only demographic characteristics and variables with a statistically significant bivariate association of  $p < 0.05$  were included in the multivariable model. Crude and adjusted RRs were estimated using the modified Poisson method, which allows for estimation of robust error variance for dichotomous outcomes.<sup>16</sup> All analyses were conducted using SAS version 9.2 (Cary, North Carolina).

## Results

Between Jan 1, 2012 to December 31, 2012, 324 HIV-infected women received prenatal care at 12 tertiary care medical centers based on a composite of the study logs from each site. Of these, 243 met study inclusion criteria - 67 women were excluded because they were

diagnosed in the index pregnancy and 14 could not read English or Spanish. We received surveys from 71% (172/243) of eligible participants.

Approximately one-third (37%, 63/172) of participants reported that they were diagnosed with HIV during a previous pregnancy. The median age at HIV diagnosis was 22 years (range 0-34). The median age of respondents at time of survey completion was 28 years (range 18-42) with the majority of women self-identifying as Black, parous and having received high school education or beyond. (Table 1)

Most (77%, 132/171) of the participants reported having only one sexual partner in the last year (range 1-6). Nearly all participants (92%, 156/169) were able to identify the biological father and only about one-third (31%, 45/143) of those identified partners were reportedly also HIV-infected. The majority (74%, 124/167) of women reported disclosure of HIV serostatus to all of their sexual partners. (Table 1)

Participants were asked about health care utilization in the year prior to the index pregnancy. The majority (86%, 149/172) of women reported that they had seen medical providers in the year prior to pregnancy, including a primary care provider (34%, 59/172), HIV specialist (77%, 132/172) or obstetrician/gynecologist (29%, 49/172). About half of the respondents who saw a provider reported seeing multiple providers (47%, 70/149). Forty-four of the 49 women who saw an obstetrician/gynecologist also saw an HIV provider. Most women reported ARV therapy in the year prior to pregnancy (81%, 127/156). Approximately half (45%, 70/154) of participants had initiated a conversation with their provider about interest in pregnancy, and 60% (93/154) of women reported that a health care provider had talked to them about their interest in pregnancy. The majority of women reported that a health care provider had talked to them about contraception/birth control (81%, 127/156) or condom use (97%, 152/157) to prevent HIV/STI transmission. (Table 1)

### London Measure of Unplanned Pregnancy Scoring

Using the standardized LMUP scoring rubric, 23% of women had an unplanned pregnancy, 58% were ambivalent and 19% reported a planned pregnancy. Responses to each of the six questions comprising the LMUP survey are found in Table 2. Most (68%) women were using no or inconsistent contraception in the month they became pregnant. About half (48%) acknowledged that their pregnancy had occurred at not quite the right time and about half (52%) felt that they had not intended to get pregnant. In fact, 54% stated that just before they became pregnant they did not want to have a baby. Only 36% reported that both members of the couple discussed and agreed on the pregnancy prior to this index pregnancy. Lastly, 36% percent of respondents did not specifically prepare for the pregnancy such as seeking medical advice, taking prenatal vitamins, promoting healthy habits or decreasing substance use.

In bivariate analysis, having had one or more births since HIV diagnosis (RR 0.81, 95% CI, 0.75-0.87,  $p<0.01$ ), having had a provider-initiated discussion about pregnancy intentions (RR 0.85, 95% CI, 0.73-1.00,  $p=0.05$ ), having had a patient-initiated discussion about pregnancy intentions (RR 0.70 95% CI, 0.59-0.83,  $p<0.01$ ), having seen a medical provider in the year prior to pregnancy (RR 0.81 95% CI, 0.72-0.92,  $p<0.01$ ), having disclosed their HIV status to their male partner (RR 0.78 95% CI, 0.71-0.86,  $p<0.01$ ) or knowing the identity of the biological father (RR 0.79 95% CI, 0.73-0.86,  $p<0.01$ ) were all associated with a lower risk of having an unplanned/ambivalent index pregnancy. (Table 3) In a logistic regression model controlling for age, race and all independent variables with significant bivariate associations, births since HIV diagnosis (aRR 0.67, 95% CI, 0.47-0.94,  $p=0.02$ ), having seen a health care provider (aRR 0.60, 95% CI, 0.46-0.77,  $p<0.01$ ) and having a patient-initiated pregnancy discussion (aRR 0.63, 95% CI, 0.46-0.77,  $p<0.01$ ) in the year

prior to pregnancy remained associated with a decreased risk of unplanned or ambivalent pregnancy. (Table 3)

## Discussion

In this US-based, multicenter, cross-sectional study, we found that the majority of pregnancies among HIV-infected women were unplanned or ambivalent. Access to medical care and discussion of fertility intentions were associated with a decreased risk of an unplanned/ambivalent pregnancy.

A strength of this study is that it included participants from several sites across the U.S.. The generalizability of these data are limited given only academic medical centers and sites with clinician-investigators with special interests in HIV and pregnancy were included. Therefore, findings from this study may be biased towards planning pregnancies and discussion of pregnancy intentions compared to the HIV-infected population as a whole. Additionally, though our study sites were across the U.S., most participants were from the southern part of the U.S. and most participants self-described as non-Hispanic Black. However, this may be a strength of the study as the numbers of HIV infections in Black women are rising, particularly in the southern U.S.<sup>17</sup> Previous research also indicates that Black women, in general, are disproportionately affected by unplanned pregnancy compared to other racial groups.<sup>18,19</sup>

A potential limitation of this study is social desirability bias. Women who are already pregnant may not recall or wish to recall any negative feelings they may have had regarding the index pregnancy. In order to diminish this bias, we used the validated LMUP scale which is specifically designed to assess pregnancy intentions retrospectively. Another potential limitation of this observational study could be unexpected and unmeasured predictors of pregnancy intention. Given the small sample size, we may have lacked power to definitively rule out certain associations with unplanned or ambivalent pregnancies.

This study supports previously published research describing limited discussion of preconception issues by HIV care providers based on reports from HIV-infected women in the U.S.<sup>20-22</sup> A survey of 181 women attending an HIV clinic in Baltimore demonstrated that only 67% of women had a general discussion about pregnancy; 31% had a personalized discussion, and the majority of all discussions were patient-initiated.<sup>4</sup> A comparison study between practices in the U.S. and Brazil also demonstrated lack of communication on the part of providers regarding pregnancy intentions in both locations.<sup>21</sup> A strength of our study is that we report a modifiable variable associated with unplanned/ambivalent pregnancy and that this finding should motivate providers to discuss these topics.

Our study showed that having had a prior birth since HIV diagnosis was associated with a decreased risk unplanned pregnancy. We can speculate that this may be related to increased knowledge regarding low risk of transmission of HIV during pregnancy from past experience and, therefore, less ambivalence or fear regarding planning for a future pregnancy. Indeed, though the risk of perinatal HIV transmission is low, there is still significant stigma that women perceive related to child bearing, including fears of negative consequences towards themselves or their children related to HIV serostatus disclosure.<sup>23-25</sup> A survey of 700 HIV-infected women geographically distributed across the U.S. reported that only 57% of the 159 pregnant women had a discussion regarding appropriate HIV treatment regimens prior to conception.<sup>23</sup> Of the total women surveyed, 59% believed that society urged them not to have children.<sup>23</sup>

Data reported in our study also supports previous research described from a Houston prenatal care clinic in which 34% of HIV-infected pregnant women did not know the HIV



status of their partner and 40% reported that their partner was HIV-uninfected.<sup>26</sup> In our study, 46% of the participants did not know the HIV-status of their male partner and 28% presumed their partners were HIV-uninfected. Most women reported disclosure of HIV status to their partners, but 26% of participants reported that some or none other their partners knew their HIV status. Although we do not know whether women in this cohort employed safer sex practices to conceive, it appears that a significant proportion of women were in serodifferent relationships with potential for sexual HIV transmission. Screening and prevention education for uninfected male partners is also integral to preconception counseling of HIV-infected women.

Our findings suggest that family planning - including discussions of effective contraception, pregnancy intentions and safer conception methods – alongside with HIV prevention education - is needed in this population both postpartum and in the primary HIV care setting. Enhanced screening for HIV to diagnose individuals with unknown serostatus and then maintaining all HIV-infected individuals on ARVs, if clinically indicated, are also key prevention measures.<sup>9</sup> This type of comprehensive care can be achieved through a multidisciplinary (infectious disease, obstetrics and gynecology, primary care, social work, nursing) awareness of the unique health needs of women with HIV. In our study, respondents were commonly seen by multiple types of providers (e.g. primary care, HIV specialist, obstetrics/gynecology) in the year prior to pregnancy, limiting our ability to determine which provider types were most likely to deliver family planning and prevention messages. Future studies further elucidating patient-provider communication of family planning and prevention messages could help inform this multidisciplinary delivery of care.

Based on data from this U.S. cohort, discussion of pregnancy intentions with a health care provider was associated with a decreased risk of unplanned or ambivalent pregnancy. Given HIV is a chronic medical illness requiring preconception management and there are risks of sexual and perinatal HIV transmission during conception and pregnancy, our goal should be to maximize the number of planned pregnancies. Our data also suggest that a significant number of women in serodifferent relationships are conceiving without knowledge of their partner's HIV serostatus and may need additional advice to promote safer conception. Outcomes related to unintended pregnancy are similar to HIV transmission: increased risk of morbidity and mortality, adverse health outcomes for children, and poor family health.<sup>27,28</sup> Organizations such as the Centers for Disease Control and Prevention (CDC) and Infectious Diseases Society of America (IDSA) already endorse discussion of pregnancy intentions and contraception as part of primary medical care of HIV-infected women.<sup>29</sup> Interventions that increase the provision of preconception counseling and ART use may increase the likelihood of planned pregnancy among HIV-infected women in the US and promote options to decrease risk of HIV transmission among serodifferent couples.

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## References

1. Lampe MA, Smith DK, Anderson GJE, Edwards AE, Nesheim SR. Achieving safe conception in HIV-serodiscordant couples: the potential role of oral preexposure prophylaxis (PrEP) in the United States. *AJOG*. 2011; 204:e1–8.

2. HIV Surveillance Supplemental Report 2012. 2012; 17, No.2(Part A)
3. Centers for Disease Control and Prevention. [Accessed May 21, 2013] CDC Fact Sheet - HIV Among Pregnant Women, Infants and Children. 2013. <http://www.cdc.gov/hiv/risk/gender/pregnantwomen/facts/>
4. Finocchiaro-Kessler S, Dariotis JK, Sweat MD, et al. Do HIV-infected women want to discuss reproductive plans with providers, and are those conversations occurring? *AIDS Patient Care and STDs*. 2010; 24(5):317–323. [PubMed: 20482467]
5. Finocchiaro-Kessler S, Sweat MD, Dariotis JK, et al. Understanding high fertility desires and intentions among a sample of urban women living with HIV in the United States. *AIDS Behav*. 2010; 14:1106–1114. [PubMed: 19908135]
6. Finocchiaro-Kessler S, Mabachi N, Dariotis JK, Anderson J, Goggin K, Sweat M. “We weren't using condoms because we were trying to conceive”: The need for reproductive counseling for HIV-positive women in clinical care. *AIDS Patient Care and STDs*. 2012; 26:700–707. [PubMed: 23025705]
7. Adimora AA, Auerbach JD. Structural Interventions for HIV Prevention in the United States. *J Acquir Immune Defic Syndr*. 2010; 55:S132–135.
8. Speizer IS, White JS. The unintended consequences of intended pregnancies: youth, condom use, and HIV transmission in Mozambique. *AIDS Educ Prev*. 2008; 20:531–546. [PubMed: 19072528]
9. Cohen MS, Chen YQ, McCauley M, et al. Prevention of HIV-1 infection with early antiretroviral therapy. *N Engl J Med*. 2011; 365:493–505. [PubMed: 21767103]
10. Thigpen MC, Kebaabetswe PM, Paxton LA, et al. Antiretroviral preexposure prophylaxis for heterosexual HIV transmission in Botswana. *N Engl J Med*. 2012; 367:423–434. [PubMed: 22784038]
11. Baeten JM, Donnell D, Ndase P, et al. Antiretroviral prophylaxis for HIV-1 prevention among heterosexual men and women. *N Engl J Med*. 2012; 367:399–410. [PubMed: 22784037]
12. Centers for Disease Control and Prevention. Interim guidance for clinicians considering the use of preexposure prophylaxis for the prevention of HIV infection in heterosexually active adults. *MMWR*. 2012; 61:586–589. [PubMed: 22874836]
13. Townsend CL, Cortina-Borja M, Peckam CS, de Ruiter A, Lyall H, Tookey PA. Low rates of mother-to-child transmission of HIV following effective pregnancy interventions in the United Kingdom and Ireland, 2000–2006. *AIDS*. 2008; 22:973–981. [PubMed: 18453857]
14. Barrett, G. [Accessed May 23 2013] The London Measure of Unplanned Pregnancy. 2013. <http://measure.ascody.co.uk/index.htm>
15. Barrett G, Smith SC, Wellings K. Conceptualisation, development and evaluation of a measure of unplanned pregnancy. *J Epidemiol Community Health*. 2004; 58:426–433. [PubMed: 15082745]
16. Fang J. Procedure FREQ, GENMOD, LOGISTIC, and PHREG to estimate adjusted relative risks - a case study. *SAS Global Forum*. 2011; 345:1–11.
17. Centers for Disease Control and Prevention. [Accessed July 17, 2011] HIV Surveillance in Women. 2011. <http://www.cdc.gov/hiv/topics/surveillance/resources/slides/women/index.htm>
18. Finer LB, Henshaw SK. Disparities in rates of unintended pregnancy in the United States, 1994 and 2001. *Perspect Sex Reprod Health*. 2006; 38:90–96.
19. Dehlendorf C, Rodriguez MI, Steinauer J. Disparities in Family Planning. *Am J Obstet Gynecol*. 2010; 202:214–220. [PubMed: 20207237]
20. Valverde, E.; Short, W.; Brady, K.; Frazier, E.; Beer, L.; Mattson, C. Paper presented at: 6th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention. Rome: 2011. HIV medical provider's assessment of the reproductive plans of women receiving HIV care.
21. Finocchiaro-Kessler S, Bastos FI, Malta M, et al. Discussion childbearing with HIV-infected women of reproductive age in clinical care: a comparison of Brazil and U.S. *AIDS Behav*. 2012; 16:99–107. [PubMed: 21359541]
22. Steiner RJ, Finocchiaro-Kessler S, Dariotis J. Engaging HIV care providers in conversations with their reproductive-age patients about fertility desires and intentions: A historical review the HIV epidemic in the United States. *Am J Public Health*. 2013; 10:e1–e10.

23. Squires KE, Hodder SL, Feinberg J, et al. Health needs of HIV-infected women in the United States: Insights from the women living positive survey. *AIDS Patient Care STDs*. 2011; 25:279–285. [PubMed: 21446785]
24. Hader SL, Smith DK, Moore JS, Holmberg SD. HIV infection in women in the United States: Status at the millenium. *JAMA*. 2001; 285:1186–1192. [PubMed: 11231749]
25. Marlink R, Kao H, Hsieh E. Clinical care issues for women living with HIV and AIDS in the United States. *AIDS Res Hum Retroviruses*. 2001; 17:1–33. [PubMed: 11177380]
26. Nacius LA, Levison J, Minard C, Fasser C, Davila JA. Serodiscordance and disclosure among HIV-positive women in the Southwestern United States. *AIDS Patient Care and STDs*. 2013:242–247. [PubMed: 23565927]
27. Kaiser Family Foundation. [Accessed July 15, 2011] Women and HIV/AIDS in the United States. 2011. <http://www.kff.org/hivaids/upload/6092-09.pdf>
28. Speidel JJ, G R. Addressing global health, economic, and environmental problems through family planning. *Obstet Gynecol*. 2011; 117:1394–1398. [PubMed: 21606751]
29. Centers for Disease Control and Prevention. Incorporating HIV prevention into the medical care of persons living with HIV: recommendations of the CDC, the Health Resources and Services Administration, the National Institutes of Health, and the HIV Medicine Association of the Infectious Diseases Society of America. *MMWR*. 2003; 52(No. RR-12):4. [PubMed: 12549899]



**Table 1**  
**Characteristics of HIV-infected pregnant women (N=172)\***

<b>BACKGROUND</b>	<b>N (%)</b>
Median age (range) in years	28 (18-42)
Median age at HIV diagnosis (range) in years	22 (0-34)
Setting of HIV diagnosis, N=170	
Past pregnancy	63 (37)
Outside of pregnancy	109 (63)
Race/ethnicity	
Non Hispanic Black	135 (78)
Non Hispanic White	15 (9)
Other	22 (13)
Education – highest level completed, N=170	
Less than high school	11 (6)
High School	72 (42)
Some college or technical school	59 (35)
College or more	28 (17)
One or more prior births, N=171	131 (77)
One or more births since HIV diagnosis	104 (60)
<b>PARTNER ISSUES</b>	
Sexual partners in last year, N=171	
Median	1 (1-6)
1	132 (77)
2 or more	39 (23)
Known biological father	156 (92)
Reported HIV serostatus of biological father, N=143	
HIV-infected	45 (31)
HIV-negative	79 (55)
Unknown	19 (13)
Disclosure of HIV infection to sexual partner(s) in last year, N=167	
Disclosure to all partner(s)	124 (74)
Disclosure to some partner(s)	27 (16)
Disclosure to no partner(s)	16 (10)
<b>HEALTH CARE</b>	
Health care in year prior to pregnancy, N=172, **	149 (87)

<b>BACKGROUND</b>	<b>N (%)</b>
HIV-specialist	132 (77)
Obstetrician/Gynecologist	49 (29)
Primary Care	59 (34)
Antiretroviral medication in year prior to pregnancy, N=156	127 (81)
Discussion of fertility intentions with health provider, N=154**	
Patient-initiated	70 (45)
Provider-initiated	93 (60)
Provider-initiated discussion regarding condom use, N=157	152 (97)
Provider-initiated discussion regarding contraception, N=156	127 (81)

\* Denominators may vary based on response completion; results represent N (%) unless otherwise specified

\*\* More than one response possible; 70 women saw multiple providers

**Table 2**  
**London Measure of Unplanned Pregnancy (LMUP)\* among HIV-infected, Pregnant Women in the United States. (N=172)\*\***

	%
<b>In the month that I became pregnant... (N=170)</b>	
I/we were not using contraception at all	88 (52)
I/we were using contraception, but not every time we had sex	27 (16)
I/we always used contraception, but knew that the method had failed at least once	38 (22)
I/we always used contraception (birth control)	17 (10)
<b>In terms of becoming a mother, I feel that my current pregnancy happened at the...</b>	
right time	66 (38)
ok, but not quite right time	83 (48)
wrong time	23 (13)
<b>Just before I became pregnant this time...</b>	
I intended to get pregnant	41 (24)
my intentions kept changing	42 (24)
I did not intend to get pregnant	89 (52)
<b>Just before I became pregnant this time... (N=171)</b>	
I wanted to have a baby	64 (37)
I had mixed feelings about having a baby	66 (39)
I did not want to have a baby	41 (24)
<b>Before I became pregnant.... (N=169)</b>	
My partner and I had agreed that we would like me to be pregnant	61 (36)
My partner and I had discussed having children together, but had not agreed for me to get pregnant	66 (39)
We never discussed having children together	42 (25)
<b>Before you became pregnant, did you do anything in preparation for pregnancy?***</b>	
took folic acid or prenatal vitamins	22 (13)
stopped or cut down smoking	14 (8)
stopped or cut down drinking alcohol or using drugs	14 (8)
ate more healthily	21 (12)
got medical/health advice	30 (17)
did something else to prepare	2 (<1)
-or---	
I did not do any of the above before my pregnancy	110 (64)

\* Questions listed in table are abbreviated from full LMUP survey administered.

\*\* Denominators may vary based on response completion.

\*\*\* More than one response possible

**Table 3**  
**Predictors of Unplanned/Ambivalent Pregnancy among HIV+ Pregnant Women in the U.S. (Bivariate and Multivariable Analysis, n=172) \***

	RR (95% CI)	p-value	adjusted RR (95% CI) *	p-value
<b>One or more birth since HIV diagnosis</b>	0.81 (0.75 – 0.87)	<0.01	0.67 (0.47 – 0.94)	0.02
<b>Provider-initiated discussion</b>	0.85 (0.73 - 1.00)	0.05	1.01 (0.84-1.22)	0.91
<b>Patient-initiated discussion</b>	0.70 (0.59 – 0.83)	<0.01	0.63 (0.46 – 0.77)	<0.01
<b>Saw medical provider in year prior to pregnancy</b>	0.81 (0.72 - 0.92)	<0.01	0.60 (0.46 - 0.77)	<0.01
<b>Known biological father</b>	0.79 (0.73 – 0.86)	<0.01	0.93 (0.78-1.11)	0.42
<b>Mother's HIV status known to biological father</b>	0.78 (0.71 – 0.86)	<0.01	0.87 (0.73-1.03)	0.11

\* Reference groups not presented. The referent for Age was <29 years; for all other variables, the referent was “No” or “None”

\*\* Adjusted for age, race, and variables with a statistically significant (p<0.05) bivariate association (all listed in this table)