Published in final edited form as:

J Public Health Policy. 2009 December ; 30(4): 367–378. doi:10.1057/jphp.2009.35.

The right to choose parenthood among HIV-infected women and men

Joanne E. Mantell, MS, MSPH, PhD¹, Jennifer A. Smit, MS, PhD², and Zena A. Stein, MA, MB BCh^{1,3,4}

¹HIV Center for Clinical and Behavioral Studies, New York State Psychiatric Institute and Columbia University, New York, NY, USA

²Reproductive Health and HIV Research Unit, University of the Witwatersrand, Johannesburg, South Africa

³Department of Epidemiology, Mailman School of Public Health, Columbia University, New York, NY, USA

⁴G.H. Sergievsky Center, College of Physicians and Surgeons, Columbia University, New York, NY, USA

Abstract

As life expectancy for HIV-infected persons improves, studies in sub-Saharan Africa show that a considerable proportion of HIV-positive women and men desire to have children in the future. Integrating sexual and reproductive health care into HIV services has emphasized the right of women to make informed choices about their reproductive lives and the right of self-determination to reproduce, but this is often equated with avoidance of pregnancy. Here, we explore guidance and attention to safer conception for HIV-infected women and men and find this right lacking. Current sexual and reproductive health guidelines are not proactive in supporting HIV-positive people desiring children, and are particularly silent about the fertility needs of HIV-infected men and uninfected men in discordant partnerships. Public health policymakers and providers need to engage the HIV-infected and uninfected to determine both the demand and how best to address the need for safer conception services.

Keywords

HIV infection; HIV-positive women and men; fertility; parenting; reproductive policy and services; contraception

Introduction

In the era of rampant HIV infection, an obligatory public health aim is to reduce transmission and prevent the emergence of new HIV/AIDS cases. More than four-fifths of global HIV infections are due to sexual transmission (1). With the prolongation of life due to expanded access to free treatment with antiretroviral (ARV) drugs and care in the public sector – introduced within the last decade in Africa (2001 in Lesotho, 2002 in Botswana and Nigeria, 2003 in Swaziland and Uganda, 2004 in South Africa and Zambia) (2), issues of sexuality and fertility are prominently thrust into the arena of care for HIV-infected persons. Among the

many vexing and contentious policy decisions facing public health in the field of HIV/AIDS is that of reproductive choice among those infected.

The sexual and reproductive health (SRH) rights of women embodied in the Cairo Declaration (3) and the Beijing Platform of Action (4) set the stage for recognizing that sexuality and fertility, provision of information about sexuality and access to counseling services, STI treatment, the right to choose whether or not to reproduce, and involvement of partners in reproductive decision-making, are essential human rights for people living with HIV (5). Such documents as the Glion Consultation on Strengthening the Linkages between Reproductive Health and HIV/AIDS (6); Addis Ababa Global Consultation on Sexual and Reproductive Health Rights of People Living with HIV (7); Millennium Development Goals (8); Amsterdam Global Consultation on the Sexual and Reproductive Health and Rights of People Living with HIV (9), and most recently, Living 2008: The Positive Leadership Summit in Mexico City (10), have focused specifically on the SRH needs of people living with HIV/AIDS.

In this paper, we note how international documents and guidelines that address the SRH of HIV-infected persons discuss parenthood and safer conception and then we make recommendations for the need and development of relevant policies and practices. Recognizing the regional diversity in SRH issues for people living with HIV/AIDS, we focus specifically on sub-Saharan Africa where HIV prevalence is disproportionately high (1), resources and programs for ARV drugs and assisted reproductive technology are in short supply, and fertility is particularly valued (11).

Sexual and Reproductive Health for People Living with HIV/AIDS: Inclusions and Omissions

Integrating HIV and SRH via restructuring and strengthening the organization of service delivery is an important part of the popular discourse of the SRH needs of HIV-infected individuals. Although there has been a clear trend of integrating family planning with HIV/STI and maternal health services in sub-Saharan Africa (12–14), and in voluntary counseling and testing (VCT), prevention of mother-to-child transmission (PMTCT) (14), and primary care (15), integration of sexual and reproductive health into the care of HIV-infected persons has received far less attention. Programs have mainly focused on the identification of infected people through VCT; preventing transmission between sexual partners; preventing mother-to-child transmission (PMTCT) with ARV drugs and contraception; and infant breastfeeding (16–23).

Emphasis has been placed on the rights of women to make informed choices about their reproductive lives and these rights of self-determination to reproduce, but this is often equated with avoidance of pregnancy (6,18,24). Contraception, in particular, has been highlighted as a means to prevent HIV transmission from mother-to-child; and condoms are being promoted to prevent both pregnancy and HIV transmission between sexual partners (19–20).

Nevertheless, important gaps remain. The concept of SRH of HIV-infected persons goes beyond issues of prevention of pregnancy and infection with HIV and other sexually transmitted infections (STIs) and should include conception. The desire for HIV-infected individuals to have a child is often absent in policy and guideline documents, and those who want to have children typically confront biases and negative attitudes from health care providers (25–26) and are stigmatized by the communities in which HIV-infected individuals live. Health care providers often do not give their HIV-positive clients the opportunity to discuss their fertility intentions (27), while clients themselves may not raise the issue of parenting with providers.

Moreover, biases against HIV-infected women and men having children may lead them to conceal their status from family and friends as well as from health care providers (28), and in the case of some HIV-infected pregnant women, concerns about being stigmatized may make them reluctant to initiate ARV treatment. Access to complete information and counseling about reproductive options that would help HIV-positive people make fully informed decisions about whether or not to have children is often lacking (29).

Consequently, coerced abortion and sterilization and pressures to use long-acting contraceptive methods are not uncommon. The International Community of Women Living with HIV/AIDS (26) recently reported that HIV-infected women in the Democratic Republic of Congo, Namibia, South Africa, and Zambia are being sterilized without their consent or being pressured to consent (26,30). Many countries lack guidelines regarding fertility planning for those HIV-infected individuals who want to have children. While the governments in some African countries, Kenya, for example, have codified the rights of people living with HIV/AIDS, they have not always operationalized them.

Studies in sub-Saharan Africa show that a considerable proportion of HIV-positive women and men indicate that they want to have a child, or another child in the future, as life expectancy for HIV-positive persons has improved (27,31–34). This desire for children varies by individual factors, such as age (35), parity (27), fear of infecting partner and infant (31); interpersonal factors like partners' desire to have children (36), having a partner who is not a biological parent of the children (27); medical factors, for instance being asymptomatic (33) or whether on ARVs (27); structural factors, like the provision of adequate economic support of family (33); and cultural factors, such as community approval regarding reproduction of people living with HIV/AIDS (31) and cultural beliefs and practices (37). In fact, the SRH needs and desires of women and men living with HIV are not significantly different from those who are not infected (38). People living with HIV should have the same human rights as those individuals not infected with HIV. Yet, the right to parenting among HIV-positive men and women remains a neglected issue, especially with respect to safer conception, an issue seldom explicitly addressed in SRH policies. Moreover, current reproductive health guidelines are not proactive in supporting HIV-positive people desiring children (39). These policies, frameworks, and consultations are silent on the SRH needs of HIV-infected men and HIV-negative male partners of infected women (40), ignoring their rights and interests.

The pervasive pronatalist attitudes in sub-Saharan Africa place pressure on women to become pregnant, regardless of HIV status (31), and some research suggests that for men, not having children results in stigmatization and loss of social status (41–42). The few studies published to date indicate that HIV-infected men also express the desire to have a child (27,32,43–44). In the absence of appropriate counseling about how best to avoid transmission of infection when wanting to conceive, or how, in the safest way possible to prevent it, HIV-positive individuals are likely to follow their own reproductive desires without guidance (45).

Provision of Safer Conception Services in Resource-Constrained Settings: What are the Options?

Safer conception services are needed for HIV-infected women and men who desire children. Many HIV-infected women and men wanting to conceive are in serodiscordant partnerships. Assisted insemination, implemented either by a partner or by a clinic nurse is one strategy to achieve conception safely. Semen from a masturbation specimen may be inseminated from a non-infected man to an infected woman, thereby protecting him (but not the infant via vertical transmission) from the danger of infection. Or, in the case of an infected man and an uninfected woman, the sperm specimen may be “washed” in such a way as to greatly reduce its infectivity and transmission to the uninfected female partner and conceptus, and thus far has been shown

to be a relatively safe procedure (46–48). Initiation of ARV may also lessen infectiousness by reducing viral load of the infected woman or man (49).

Provision of even these relatively “medium-tech” safer conception services noted above and certainly “high-tech” safer conception services like intrauterine insemination and intracytoplasmic sperm injection are probably beyond the financial and human resources of developing country public sector services. With competing health priorities, strained infrastructures, and low per capita health expenditures, health services are challenged to provide what may be deemed luxury services. Thus, providers may not view safer reproduction counseling of HIV-infected women and men as a high priority. However, as a harm-reduction approach, timed intercourse, that is, unprotected intercourse at time of ovulation, with condom use at all other times, is one “low-tech” strategy to minimize (but not eliminate) the risk of HIV-negative women becoming infected via semen of their infected male partners, or the chances of re-infection among HIV-positive concordant couples trying to conceive (50).

But the argument addressed here is that, regardless of limited resources, public health policymakers in affected communities need to engage in active dialogue with both HIV-infected and uninfected. They need to determine both the demand and how best to address unmet sexual and reproductive health needs, and create affordable and sustainable solutions for HIV-infected women and men to have children in the safest way. Safer conception must be viewed through a gender and human rights lens, embracing the concept that this reproductive right is fundamental for both HIV-infected women and men. This view is supported by an editorial to a supplement comprising 13 studies on HIV, HAART, and fertility in sub-Saharan Africa published in *AIDS Behavior* which emphasized that “additional work is necessary to support the rights of HIV-positive individuals to be sexually active and achieve their fertility goals, while minimizing the risk of HIV transmission” (51:S3).

HIV-infected women and men who desire children will have them, even when counseled by health care providers who view the risks of timed intercourse or sperm washing as unacceptable. Engagement in fertility management involves ethical issues of both omission and commission. From this viewpoint, one can argue that failure to engage in fertility management is unethical, hence, an error of omission. However, an ethical issue of commission has been raised. This relates to the liability of the provider who counsels an HIV-discordant or concordant couple about timed intercourse (to determine the optimal window period for ovulation to reduce the risk of infection), when an HIV-infected woman gives birth to an infected child, or when a negative sexual partner seroconverts (52–53). Finally, there is the issue of the interests of the unborn child when ARV treatment is unavailable or when one or both parents may be unable to care for a child due to sickness or death (54). Thus, these ethical issues of commission are all focused on risk reduction rather than on conception.

The scaling up of ARVs in many parts of the world has improved prognosis for HIV-infected individuals and significantly reduced maternal-to-infant HIV transmission. Thus, with reduction in morbidity and mortality and the normalization that have come about as a result of treatment, the cost-benefit ratio of parenthood for HIV-infected individuals has changed, in the direction of a more supportive environment.

Clear written guidelines are needed for the fertility management of HIV-infected women and men in resource-constrained countries to minimize HIV transmission risk during conception. Safer conception counseling about reproduction and contraception should be seen as the minimum standard of care. Providers need to ensure that services are adapted so that they are friendly to HIV-positive men. With institutional commitment and adequate training, health care providers can advocate for the right of HIV-infected people to exercise the choice to have children, helping to reduce stigma associated with this choice and assisting to achieve safer

conception. Providers need to be trained in the biomedical aspects of safer reproduction technologies as well as in the provision of values-neutral balanced counseling that is not primed to ‘counsel against childbearing’. Moreover, primary and specialty clinics caring for HIV-infected women and men should create a reproductive-friendly environment that will encourage discussion of safer conception, pregnancy, contraception, and safe abortion.

Establishing centers of excellence for safer conception services would provide research and training opportunities for a range of providers with diverse skills, including OB-GYN, infectious disease specialists, nurses, HIV counselors, and behavioral scientists. They would also test and disseminate current best practice models and emerging safer conception strategies appropriate for the particular resources available. A free service-based model in a geographic area could allow for the collection of a rich database on the SRH needs of HIV-infected women and men. In this way, these centers of excellence will build sustainable institutional and community capacity in the field of safer conception.

Conclusion

Both policymakers and providers need to understand that while sterilization of HIV-infected women and men at time of diagnosis would reduce the number of infected newborns, it will not mitigate heterosexual transmission of HIV, a far greater potential burden on the community. Instead, it would deny reproductive choice to infected people who desire children. To advance fundamental sexual and reproductive health rights, recognition of safer reproduction as a goal should be explicitly incorporated into the existing Millenium Development Goals (Goal 5: improve maternal health and Goal 6: combat HIV/AIDS, malaria and other diseases) (55). But what is most needed now among public health policymakers is an appreciation of the widespread desire for parenthood among those affected, and among HIV-infected women and men, and an awareness of their human rights and of the resources that could help them.

Acknowledgments

Preparation of this paper was supported by a National Institute of Mental Health grant, “A Structural Intervention to Integrate Reproductive Health into HIV Care” (R01-MH078770; PI: Joanne E. Mantell, Ph.D.); a center grant from the National Institute of Mental Health to the HIV Center for Clinical and Behavioral Studies at the New York State Psychiatric Institute and Columbia University (P30-MH43520; Principal Investigator: Anke A. Ehrhardt, Ph.D.); and a grant from the William and Flora Hewlett Foundation (2008-1940; Co-PI: Mags Beksinska, MSc. and Jennifer Smit, Ph.D.) to the Reproductive Health and HIV Research Unit of the University of the Witwatersrand. The content is solely the responsibility of the authors and does not necessarily represent the official views of NIH, the National Institute of Mental Health, or the William and Flora Hewlett Foundation. The authors greatly appreciate the comments of the anonymous reviewers of this manuscript.

References

1. The Joint United Nations Programme on HIV/AIDS (UNAIDS). Report on the global AIDS epidemic 2008. 2008 Aug [accessed January 23, 2009]. UNAIDS/08.25E/JC1510E; <http://www.unaids.org>
2. Kanabus, A.; Fredriksson, J.; Pembrey, G. HIV and AIDS in Africa. 2009 [accessed 1 August 2009]. <http://www.avert.org/aafrica.htm>
3. Cairo Declaration on Population and Development. International Conference of Parliamentarians on Population and Development; Bangkok, Thailand. 1994. 5 p.[1]
4. Beijing Declaration and Platform for Action; Report of the Fourth World Conference on Women; 1995 [accessed 26 June 2009]. UN Doc. A/CONF. 177/20 (1995) and A/CONF. 177/20/Add. 1 <http://www.un.org/womenwatch/daw/beijing/platform/>
5. Gruskin S, Ferguson L, O'Malley J. Ensuring sexual and reproductive health for people living with HIV: An overview of key human rights, policy and health system issues. *Reproductive Health Matters* 2007;15:4–26. [PubMed: 17531746]

6. World Health Organization (WHO) and United Nations Population Fund (UNFPA). Glion consultation on strengthening the linkages between reproductive health and HIV/AIDS: Family planning and HIV/AIDS in women and children. 2006 [accessed 03 July 2009]. <http://who.int.org>
7. United Nations Population Fund (UNFPA), World Health Organization (WHO), EngenderHealth in collaboration with the Global Network of People Living with HIV (GNP+), the International Community of Women Living with HIV (ICW), the International Planned Parenthood Federation (IPPF) and Young Positives. Global Consultation on the Rights of People Living with HIV to Sexual and Reproductive Health, Addis Ababa, Ethiopia. 2006 [accessed 03 July 2009]. http://www.who.int.org/reproductive-health/hiv/final_global_consultation.pdf
8. World Health Organization (WHO). Achieving millenium development goal 5: Target 5A and 5B on reducing maternal mortality and achieving universal access to reproductive health. Briefing note on achieving Millennium Development Goal (MDG) 5. WHO Department of Reproductive Health and Research. 2009 [accessed 15 July 2009]. <http://who.int.org>
9. Global Network of People Living with HIV/AIDS, International Community of Women Living with HIV/AIDS, Young Positives. Global Consultation on the Sexual and Reproductive Health and Rights (SRHR) of People Living with HIV. Consultation Report Amsterdam, the Netherlands (5–7 December 2007). [accessed 05 July 2009]. <http://www.gnpplus.net>
10. LIVING 2008 Partnership: GNP+, IAS, ICASO, ICW, IFRC, International HIV/AIDS Alliance, IPPF, Mexican Network of People Living with HIV, Sidaction, UNAIDS, WHO. LIVING 2008: The positive leadership summit, summit report. Amsterdam, the Netherlands, 5–7 December. 2009 [accessed 31 July 2009]. http://www.gnpplus.net/images/stories/living2008_summit_report_en_high.pdf
11. van der Spuy, Z. HIV and reproductive health: A South African experience; Reproductive BioMedicine Online. 2009. p. 3-10. <http://www.rbmonline.com/Article/3880> on web 22 January 2009
12. Mayhew S. Integration of STI services into FP/MCH services: Health service and social contexts in rural Ghana. Reproductive Health Matters 2000;8:112–124. [PubMed: 11424239]
13. Askew I, Maggwa R. Integration of STI prevention and management with family planning and antenatal care in sub-Saharan Africa - what more do we need to know? International Family Planning Perspectives 2002;28:77–86.
14. Stover, J.; Fuchs, N.; Halpern, D.; Gibbons, A.; Gillespie, D. USAID Issues Brief. Washington, DC: Population and Reproductive Health, US Agency for International Development; 2003 Oct [accessed 20 February 2009]. Adding family planning to PMTCT sites increases the benefits of PMTCT. http://www.info.usaid.gov/our_work/global_health/pop/publications/docs/familypmtct.html
15. Haslegrave M. Implementing the ICPD programme of action: What difference a decade makes. Reproductive Health Matters 2004;12:12–18. [PubMed: 15242206]
16. United Nations. Declaration of Commitment on HIV/AIDS. United Nations General Assembly Special Session on HIV/AIDS; 25–27 June; New York. 2001 [accessed 26 July 2009]. <http://www.unaids.org>
17. Cleland J, Bernstein S, Ezeh A, Faundes A, Glasier A, Innis J. Family planning: The unfinished agenda. Lancet 2006;368:1810–1827. [PubMed: 17113431]
18. Duerr A, Hurst S, Kourtiz A, Rutenberg N, Jamieson D. Integrating family planning and prevention of mother-to-child transmission in resource-limited settings. Lancet 2005;366:261–263. [PubMed: 16023518]
19. Reynolds H, Janowitz B, Wilcher R, Cates W. Contraception to prevent HIV-positive births: Current contributions and potential cost savings in PEPFAR countries. Sexually Transmitted Infections 2008;84:ii49–ii53. [PubMed: 18799493]
20. Wilcher R, Petruney T, Reynolds H, Cates W. From effectiveness to impact: Contraception as an HIV prevention intervention. Sexually Transmitted Infections 2008;84:ii54–ii60. [PubMed: 18799494]
21. Coovadia H. Current issues in prevention of mother-to-child transmission of HIV-1. Current Opinion in HIV and AIDS 2009;4:319–324. [PubMed: 19532071]
22. Cremin I, Nyamukapa C, Sherr L, Hallett T, Chawira G, Cauchemez S, et al. Patterns of self-reported behaviour change associated with receiving voluntary counselling and testing in a longitudinal study from Manicaland, Zimbabwe. AIDS and Behavior. 2009 Epub ahead of print.

23. Stein Z, Kuhn L. (forthcoming) The evidence basis for new policies on breastfeeding and HIV. *Journal of Public Health Policy*. in press.
24. Shelton J, Peterson E. The imperative for family planning in ART in Africa. *Lancet* 2004;364:1916–1918. [PubMed: 15566991]
25. Center for Reproductive Rights and Federation of Women Lawyers-Kenya. At risk: Rights violations of HIV-positive women in Kenyan health facilities. 2008 [accessed 23 July 2009]. http://reproductiverights.org/sites/default/files/documents/At_Risk.pdf
26. International Community of Women Living with HIV/AIDS. The forced and coerced sterilization of HIV-positive women in Namibia. International Community of Women Living with HIV/AIDS. 2009 Mar [accessed 23 July 2009]. <http://www.icw.org/node/421>
27. Cooper D, Moodley J, Zweigenthal V, Bekker LG, Shah I, Myer L. Fertility intentions and reproductive health care needs of people living with HIV in Cape Town, South Africa: Implications for integrating reproductive health and HIV care services. *AIDS and Behavior* 2009;13:38–46. [PubMed: 19343492]
28. Feldman R, Maposhere C. Safer sex and reproductive choice: Findings from "positive women: Voices and choices" in Zimbabwe. *Reproductive Health Matters* 2003;11:162–173. [PubMed: 14708407]
29. Lusti-Narashim M, Cottingham J, Berer M. Ensuring the sexual and reproductive health of people living with HIV: Policies, programmes and health services. *Reproductive Health Matters* 2007;15:1–3.
30. Smith, D. African women with HIV 'coerced into sterilisation'. *The Guardian*. 2009 Jun 22 [accessed 23 July 2009]. <http://www.guardian.co.uk/world/2009/jun/22/africa-hiv-positive-women-sterilisation>
31. Cooper D, Harries J, Myer L, Orner P, Bracken H. "Life is still going on": Reproductive intentions among HIV-positive women and men in South Africa. *Social Science and Medicine* 2007;65:274–283. [PubMed: 17451852]
32. Myer L, Morroni C, Rebe K. Prevalence and determinants of fertility intentions of HIV-infected women and men receiving antiretroviral therapy in South Africa. *AIDS Patient Care and STDs* 2007;21:278–285. [PubMed: 17461723]
33. Rutenberg N, Biddlecom A, Kaona A. Reproductive decision-making in the context of HIV and AIDS: A qualitative study in Ndola, Zambia. *International Family Planning Perspectives* 2000;26(3):124–130.
34. Stevens M. From HIV prevention to reproductive health choices: HIV/AIDS treatment guidelines for women of reproductive age. *African Journal of AIDS Research* 2008;7(3):353–359.
35. Stanwood N, Cohn S, Heiser J, Pugliese M. Contraception and fertility plans in a cohort of HIV-positive women in care. *Contraception* 2007;75:294–298. [PubMed: 17362709]
36. da-Silveira-Rossi A, Fonsechi-Carvasan G, Makuch M, Amaral E, Bahamondes L. Factors associated with reproductive options in HIV-infected women. *Contraception* 2005;71:45–50. [PubMed: 15639072]
37. Nattabi B, Li J, Thompson S, Orach C, Earnest J. A systematic review of factors influencing fertility desires and intentions among people living with HIV/AIDS: Implications for policy and service delivery. *AIDS and Behavior* 2009;13(5):949–968. [PubMed: 19330443]
38. Coll O, Lopez M, Hernandez S. Fertility choices and management for HIV-positive women. *Current Opinion in HIV and AIDS* 2008;3:186–192. [PubMed: 19372964]
39. London L, Orner P, Myer L. "Even if you're positive, you still have rights because you are a person": Human rights and the reproductive choice of HIV-positive persons. *Developing World Bioethics* 2007;8:11–22. [PubMed: 18302539]
40. De Bruyn, M. Reproductive rights for women affected by HIV/ AIDS? A project to monitor Millennium Development Goals 5 and 6. 2005 [accessed December 19, 2006]. http://www.ipas.org/Publications/Reproductive_rights_for_women_affected_by_HIV-AIDS_A_project_to_monitor_Millennium_Development_Goals_5_6.aspx
41. Dyer S, Abrahams N, Mokoena N, van-der-Spuy Z. "You are a man because you have children": Experiences, reproductive health knowledge and treatment seeking behaviours among men suffering from couple infertility in South Africa. *Human Reproduction* 2004;19:960. [PubMed: 15016772]

42. Mantell, J.; Cooper, D.; Taylor, TN.; Exner, TM.; Myer, L.; Moodley, J., et al. "He lacks his fatherhood": The biological imperative of paternity with HIV/AIDS in South Africa. International Association for the Study of Sexuality. Culture and Society Conference; 15–18 April; Hanoi, Viet Nam. 2009.
43. Paiva V, Ventura F, Santos N, Novaes L, Segurado A. The right to love: The desire for parenthood among men living with HIV. *Reproductive Health Matters* 2003;11:91–100. [PubMed: 14708400]
44. Sherr L, Barry N. Fatherhood and HIV-positive heterosexual men. *HIV Medicine* 2004;5:258–263. [PubMed: 15236614]
45. Bekker, L.; Black, V. Guidelines for the management of the non-infertile couple in the HIV clinic. Paper presented at the South African AIDS Conference; 03 April; Durban, South Africa. 2009.
46. Marina S, Marina F, Alcolea R, Exposito R, Huguet J, Nadal J, Vergés A. Human immunodeficiency virus type I serodiscordant couples can bear healthy children after undergoing intrauterine insemination. *Fertility and Sterility* 1998;70:35–39. [PubMed: 9660417]
47. Gilling-Smith C. HIV prevention. Assisted reproduction in HIV-discordant couples. *AIDS Reader* 2000;10:581–587. [PubMed: 11068804]
48. Semprini A, Levi-Setti P, Bozzo M, Ravizza M, Taglioretti A, Sulpizio P, et al. Insemination of HIV-negative women with processed semen of HIV-positive partners. *Lancet* 1992;340:1317–1319. [PubMed: 1360037]
49. Baker H, Mijch A, Garland S, Crowe S, Dunne M, Edgar D, et al. Use of assisted reproductive technology to reduce the risk of transmission of HIV in discordant couples wishing to have their own children where the male partner is seropositive with an undetectable viral load. *Journal of Medical Ethics* 2003;29:315–320. [PubMed: 14662808]
50. Mandelbrot L, Heard I, Henrion-Géant E, Henrion R. Natural conception in HIV-negative women with HIV-infected partners. *Lancet* 1997;349:850–851. [PubMed: 9121267]
51. Kaida A, Bangsberg D, Gray G, Hogg R, King R, Miller C. Editorial: Introduction to the supplement on HIV, HAART and fertility in sub-Saharan Africa. *AIDS and Behavior* 2009;13:1–4. [PubMed: 19434488]
52. Pennings G. The physician as an accessory in the parental project of HIV positive people. *Journal of Medical Ethics* 2003;9:321–324. [PubMed: 14662809]
53. Shenfield F, Pennings G, Cohen J, Devroey P, Tarlatzis B, Sureau C. Taskforce 8: Ethics of medically assisted fertility treatment for HIV positive men and women. *Human Reproduction* 2004;19:2454–2456. [PubMed: 15459168]
54. Nosarka S, Hoogendijk C, Siebert T, Kruger T. Assisted reproduction in the HIV-discordant couple. *South African Medical Journal* 2007;97:24–26. [PubMed: 17378275]
55. United Nations. Tracking the Millenium Development Goals. Millenium Development Goal Monitor. 2007 [Accessed 05 May 2008]. <http://www.mdgmonitor.org>