Circumstantiating circumcision as an HIV prevention tool: A brief review of principal issues and concerns

1. Current key recommendations

WHO and UNAIDS organized an international technical consultation in March 2007 on male circumcision for prevention of HIV transmission. A set of recommendations emerged from this meeting. They are based on the results of studies according to which male circumcision is efficacious for reducing female to male transmission of HIV.

Part of comprehensive prevention program

The recommendations state that male circumcision is an additional, important strategy for preventing heterosexual transmission of HIV to men. Circumcision does not provide complete protection, as circumcised men can still become infected and can infect their partners. Thus, "male circumcision should never replace other known methods of HIV prevention and should always be considered as part of a comprehensive HIV prevention package,…" (WHO and UNAIDS, "New Data on Male Circumcision and HIV Prevention Policy and Programme Implications, Conclusions and Recommendations", 2007.).

Calculation of needs

The recommendations emphasize that, as an HIV prevention method, wide roll out of male circumcision should be prioritized in areas with extremely high HIV prevalence (over 15%), where transmission occurs mainly through heterosexual sex, and where most men are not circumcised. A population level impact of male circumcision would otherwise not be achievable. The recommendations clarify that countries that seek to roll out male circumcision for the purpose of HIV prevention must calculate the various needs related to human resources, infrastructure, delivery logistics, costs, and so on (WHO and UNAIDS, 2007).

2. State of the evidence

The WHO and UNAIDS technical consultation was a response to the outcomes of three studies, the South Africa Orange Farm Intervention Trial in 2005, and two U.S. National Institutes of Health trials in Kisumu, Kenya, Rakai District and Uganda, respectively. Put together these three studies showed that circumcised men had between 50-60% lower levels of HIV infection than uncircumcised men (WHO and UNAIDS, 2007).

Critics

Some argue the evidence from the trials is controvertible. Much of the criticism revolves around the fact that trials show the efficacy rather than the effectiveness of male circumcision. In other words, they show the impact of male circumcision on HIV infection risk in the context of clinical trials rather than a real world settings. The concern is not just academic (Dowsett G. W. and Couch M., "Male Circumcision and HIV Prevention: Is there really enough of the right kind of evidence? ", *Reproductive Health Matters*, 2007; 15 (29):33-44).

Influences on results

The trials provided monitoring and counseling that could have influenced trial participants and artificially enhanced safer sexual behavior. For instance, trial participants had access to condoms and treatment for sexually transmitted infections. Trial participants would not necessarily be exposed to such intensive prevention in their normal lives. Access to condoms in high prevalence areas remains extremely low, with some past calculations showing average figures as low as 4.5 condoms per (15-59 year) old man per year in sub-Saharan Africa (J. D. Shelton J.D. and Johnston B., "Condom gap in Africa: Evidence from donor agencies and key informants", *British Medical Journal*, 2001; 323: 129 (21 July)). Sexually transmitted infections also create a favorable terrain for HIV transmission, and while levels of diseases, such as syphilis are rising access to treatment is still woefully inadequate in developing countries (WHO/TDR, "Disease Watch Focus: Syphilis", *Nature Reviews, Microbiology*, volume 2, June 2004). Trial participants would not be readily able to obtain HIV treatment and counseling in their real life settings.

3. Men's behavior and use of circumcision as a prevention tool

The WHO/UNAIDS recommendations make clear male circumcision does not provide complete protection against HIV infection. Indeed despite the prevention gains shown in the trials—presumably obtained through circumcision and perhaps also through the intensive additional prevention services provided—incidence of HIV persisted (WHO/UNAIDS, 2007). This fact indicates the extent of the uphill struggle that is HIV prevention, and for several calls for reflection and doubt on how to promote successfully voluntary uptake of circumcision among men.

Circumcision versus condom use

Some ask how is it that men unwilling to practice safer sex will be willing to be circumcised? The difficulties of influencing men to use condoms with every sexual act are well established, both from the perspective of public health promotion and from the context of intimate sexual life. A key barrier to reducing the increased vulnerability of women and girls to HIV/AIDS is the inability of women to negotiate condom use with their partners. Men who do not care to protect themselves or their wives from HIV infection may not wish to undergo surgery to do so (even though male circumcision is not known to prevent male to female transmission, if men do not contract HIV from other women they would protect their steady female partners) (Berer M., ""Male circumcision for HIV prevention: Perspectives on gender and sexuality", *Reproductive Health Matters*, 2007; 15 (29):45-48 and Gruskin S., "Male circumcision, in so many words…", *Reproductive Health Matters*, 2007; 15 (29): 49-52"). It depends in part on whether male circumcision can be more attractive to men than consistent condom use (which in itself would not be a desirable outcome in light of the only partial protection of circumcision and the need to include its provision as part of a comprehensive HIV prevention package). The answer to this question is not clear.

Accepting circumcision

Analysis of acceptability studies around circumcision uptake reflects ambiguous conclusions. On the one hand, it would appear circumcision in sub-Saharan countries (ideal for roll out as per WHO and UNAIDS recommendations) would be accepted to high levels by both men and women. On the other hand, initial acceptance could be quickly followed by refusal. After one of the studies conducted in Western Kenya, among the men of the Luo tribe, showed acceptability levels of 70%, the Luo Council of Elders declared they would not allow their culture to be eroded, although Luo men were free to be circumcised if they wished (Buvé A. *et al.*, "Delivery of male circumcision services: "*Festina lente*", *Reproductive Health Matters*, 2007; 15 (29): 57-61).

Meaning and understanding of circumcision

Thus social and cultural control issues could join personal desires and circumstances in influencing whether men would be willing to take up circumcision as a means of prevention of HIV. This point is further problematized and strengthened when one takes into account the broad variation in the meaning of circumcision throughout the world. Circumcision can mean partial or complete removal of the prepuce as well as a simple small cut to induce bleeding. What it means depends on religion and/or culture. Important variations also occur in relation to the socially preferred time of doing the circumcision, at birth, adolescence or midlife, which itself is in part determined by the socially prescribed for reasons for circumcision, be these based on hygiene, initiation into manhood, or purification, etc. (Aggleton P, "'Just a snip'?: A social history of male circumcision", *Reproductive Health Matters*, 2007; 15 (29): 15-21 and Niang C. I. and Boiro H., "You can also cut my finger!: Social construction of male circumcision in West Africa, a case study of Senegal and Guinea-Bissau", *Reproductive Health Matters*, 2007; 15 (29): 22-32). Roll out of circumcision would thus need to confront not only men's willingness to be circumcised but also the willingness of the communities in question to have their men be circumcised, and the differences in understanding of what it means to circumcise and when one should best do it.

Accepting that its only partial protective

Other concerns raised related to the behavior of men include whether men will appreciate that circumcision only provides partial protection from HIV. Also, will they be willing to delay sex during wound healing? If they do not they will be even more vulnerable to HIV infection. Evidence from the aforementioned three clinical trials shows that 11-14% of men had sex before their wounds had totally healed, despite intensive counseling during this period (Grusking, S., 2007). Another key question is whether after initial acceptability in a community, men will continue to want to be circumcised if they learn from men who have gone through the intervention that it is traumatizing and produces loss of

sexual pleasure. There is no guarantee of such an outcome, but claims about these negative side effects of circumcision arise continually and must be taken seriously (Berer, 2007).

4. Could/will public health measures to roll out male circumcision for HIV prevention assume voluntary uptake?

It is odd to ask men to volunteer to be circumcised in order for them to protect themselves from HIV infection and at the same time instruct them to use condoms with every risky sex act once circumcised. The reasoning of the men would have to be such that they would both wish to be circumcised in case they were ever to act imprudently and at the same time firmly commit to using condoms consistently. Yet, based on the WHO and UNAIDS recommendations, this is the type of awkward reasoning public health experts must be supposing men will need to have.

Mandatory circumcision?

The awkwardness of the reasoning described above suggests perhaps that the best way male circumcision would make sense as an HIV prevention tool would be if it were rolled out as a mandatory intervention. It is worth asking if public health experts are harboring the hope that male circumcision would one day become a mandatory intervention. While mandatory public health approaches to HIV have been widely condemned and also eliminated, due to concerns about violations of individual rights (to freedom of movement, informed consent, non-discrimination, etc.), they have not disappeared from public discourse or from the discourses of relevant institutions. Indeed, one might argue they are resurging.

Mandatory HIV testing!

In New York (and also Connecticut), every newborn baby has a mandatory HIV test if the mother has not had a test during her pregnancy. In 2004 the Massachusetts General Assembly Joint Committee on Health Care held a hearing on a bill (SB 647) that would allow public health or safety officials exposed to a person's bodily fluids while working to learn whether the person is HIV-positive. State law at the time required hospitals and clinics to keep a patient's HIV status confidential. Recently, Bill Clinton endorsed mandatory HIV testing and even compulsory disclosure in high prevalence countries where diagnosis, treatment and anti-discrimination measures are in place. And Singapore is currently actively seeking to make HIV testing for pregnant women mandatory (The Body, "Mandatory HIV testing should be instituted for public health, safety officials exposed to bodily fluids, commentary says", June 8, 2004 and Nandini Oomman "Mandatory HIV testing - Who is being coerced?", Global Health Policy, April 26, 2006.)

5. Does a cost and benefit analysis come out in favor of rapid rolling male circumcision for prevention of HIV?

According to a mathematical model presented at the Sydney International AIDS Society Conference on July 25th, rapid roll out of male circumcision in 14 countries in sub-Saharan Africa would cost between $397 and $922 million for the first five years. The number of required circumcisers would 1,912 or 0.23 per 10,000 adults. Costs and personnel needs would go down considerably for the 6-10 years following. The number of required circumcisers would fall to 504 and the cost to between $208 and $84 (Note: the aforementioned figures are themselves averages, and are meant to be relevant for either the public or the private sectors.) (Auvert B, *et al.*, "Cost of the roll-out of male circumcision in sub-Saharan Africa", *Fourth International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention*, abstract WEAC105, Sydney, 2007.).

Up scaling circumcision

Rapid roll out of male circumcision would therefore be expensive. But it might be worth it on balance with the HIV infections prevented or with other prevention interventions. Although circumcision programmes will involve significant initial costs, experts claim they will save billions of dollars in the long-term. According to the authors of the mathematical model mentioned above, in over 20 years between $3 and $4 billion would be saved in HIV treatment and care costs. So, even though rapid roll out of circumcision as an HIV prevention measure would require high uptake and substantial funding in the first few years it would eventually be cost-effective. Critics warn, however, that this cost-effectiveness relies on strong uptake of male circumcision among the targeted group, rolling out in high prevalence areas, and on circumcised men not become more sexually active because they believe they benefit from extra protection from HIV infection (Alcorn K. and Carter M. IAS: Models predict costs and benefits of circumcision programmes, aidsmap News July 25, 2007).

Up scaling condom promotion
But is rapid roll out of male circumcision desirable as opposed to upscaling access to male and female condoms, contraception and/or anti-retrovirals? As mentioned above, there is a large condom gap where condoms are most needed, and female condoms are rarely available (and when they are they are too expensive). Yet condom use remain the surest way to prevent HIV infection. If condom promotion has not succeeded it may be worth studying why that has been the case, and to develop practical approaches that address the causes. It may turn out that doing so would be even more cost effective than rapid roll out of male circumcision.

Up scaling access to contraception
Similar reflections are in order in relation to access to contraception and anti-retroviral drugs (ARVs). According to some analysts 80% of HIV positive women claim their pregnancies were unwanted, and this because they could not access contraception, and indeed, programs to prevent perinatal transmission of HIV only reach 10% of women (van Bergen J., "Impressies van het internationaal soa congres seattle 2007: op schaal brengen van interventies en een geintegreerde aanpak nodig").

Up scaling access to treatment
The price of antiretroviral medication in resource-poor countries has dropped heavily in recent years. A course of drugs for first-line treatment for one year in some places costs as little as $148 due to the advent of generic drugs (Avert.org, "Providing drug treatment for millions"). It is known HIV positive persons on ARV treatment present a lower of risk of transmitting the virus. It might then be possible to do rapid roll out of ARVs for a lower price than rapid roll out of male circumcision, prevent as many if not more infections, and at the same time save lives.

Conclusion
Our conclusion is that mathematical models need to be developed and analyzed for scenarios to make economically and ethically sound public health decisions.