



## *My Africa*

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### Will Vaginal Microbicides Solve the HIV Problem in Africa?

It is now well recognized that HIV infection has reached the proportions of a pandemic, having spread on every continent only a few years after its outbreak. Unfortunately, some continents have a disproportionate share of the HIV and AIDS burden, such as Africa south of the Sahara with at least 60% of the infected population. The reasons for such a situation in Africa are poverty, the status of women, less than optimal public health response, civil destabilization, migration, and unfair global trade regimes and viral factors such as different subtypes of the virus (1).

In order to tackle the HIV on the African continent, several prevention and control interventions are being implemented. Of late, a growing interest has been shown in microbicides as an upcoming tool capable of reducing the incidence and, eventually, prevalence of HIV. Under the term "microbicide," we refer to an active agent that can be applied topically, usually inside the vagina (but could

also be applied rectally/anally or on to the penis), in order to prevent the transmission or acquisition of HIV and/or other sexually transmitted infections (STI) (2). Microbicides could be formulated as films, suppositories, gels, or creams, as well as be released from sponges and rings inserted into the vagina.

#### **The research pipeline**

No microbicide has yet been approved for general use. However, at least 60 products are at various stages of the research pipeline, from phase I to phase III trials. At least eleven of them have already been found to be safe and efficacious in animal studies, and have recently been started to be tested on humans. However, it is generally understood that microbicides that are found to be effective and safe may not be available for general use for the next 2 to 5 years.

The history of microbicide research is closely associated with nonoxynol-9 (N-9), a detergent

that was found to be ineffective against preventing HIV transmission. This was thought to be largely due to toxic effects that facilitated the entry or acquisition of the virus. It has been demonstrated in a mouse model, that nonoxynol-9 causes genital epithelial ulceration (3). Loss of epithelial integrity will most likely facilitate the acquisition of HIV.

#### **The rationale for microbicides**

Any agent or social intervention that has potential to stem HIV spread is worth pursuing. The most important rationale for the development of microbicides is the assertion that the available means of HIV prevention, ie, monogamy and fidelity, (male) condom use, and sexual abstinence are not always practical for women in resource-limited settings such as Africa. Women may be monogamous themselves but their sexual partners may not be. There is also a particularly vulner-

able group of female sex workers, who usually do not have sustainable alternative means of earning for life. The primary argument for the use of microbicides is that women may use them without knowledge of their male sexual partners, ie, use them covertly.

Orner et al (4) reported that vaginal microbicides would be an important tool against HIV infection among women in South Africa if applied at the beginning of the day. This was perceived to be very important because of the high incidence of rape in South Africa. South Africa probably has the highest number of reported rape cases per population. Tolerant attitudes that prevent reporting of rape are partly to blame for the high incidence of rape in general (5). But even in non-rape situations, it is believed that a female-controlled method would contribute significantly more than other methods to the fight against HIV.

#### **Characteristics of an ideal microbicide**

Several "acceptability studies" assessing a hypothetical microbicide have been carried out to find the identifying attributes of an "ideal" microbicide. Holt et al (6) reported that young women and men in California indicated that a preferred microbicide should have the following attributes; a) be able to prevent pregnancy, b)

prevent other sexually transmitted infections, c) should be as effective as the (male) condom, d) be available over the counter, ie, without prescription, e) not result in excessive "wetness" of the vagina, f) be suitable for application several hours before sexual intercourse, and g) be suitable for application with an applicator. An ideal microbicide should also not interfere with sexual pleasure, should allow for discrete use, and not attract stigma.

#### **What happened to the female condom?**

The female condom, although originally thought to be an innovation enabling female empowerment, is yet to make its mark as a significant tool in the prevention of HIV in Africa. The problems with the female condom have been described elsewhere (7,8) and include noise during sexual intercourse, perception of over-lubrication, and increased cost.

Coffey et al (9) reported on the short term acceptability of the PATH female condom in Mexico, South Africa, and Thailand among 20 couples in each of the countries. The users found the PATH condom easy to use, stable, and comfortable. The study was not meant to produce generalizable results and therefore it is not possible to estimate the general acceptability of the condom outside of the

specially selected group of research participants.

It is important to consider some of the lessons learned from the experience we have with the female condom. When the female condom was introduced, tens of acceptability studies were conducted in several regions of the world. It was generally perceived that it would solve some of the problems emanating from lack of female-controlled condom device.

In Zimbabwe, Buck et al (10) conducted an acceptability study of the male condom, female condom, and the diaphragm and reported that the female condom was the least preferred because of "obviousness" and interference with sexual pleasure.

#### **Should we be concerned about "condom migration"?**

One of the expected consequences of microbicide use is the so called, condom migration (11). Condom migration occurs when people stop using condoms in favor of another mode of STI and HIV prevention.

A study by Sangi-Haghpeykar et al (12) in Houston, Texas, USA, showed that 54% of women reported discontinuation of condom use since the introduction of hormonal contraceptives. In a community with high partner exchange and high

HIV prevalence, this can facilitate HIV spread.

### **Preference for “dry sex”**

Intravaginal practices, such as douching and dry sex, are important in understanding the epidemiology of HIV and other STIs. It has been suggested in some studies that they could be associated with increased incidence of HIV (13), although there are studies that did not confirm this association (14). Dry sex occurs after ensuring that the vagina is dry. Women use cotton wands, pieces of cloth, leaves, or even earth to dry up the vagina before penile-vaginal sex. In a representative study of young adults in South Africa by Beksinska et al (15), 46% women reported ever having dry sex.

Dry sex could facilitate HIV transmission, as the risk for vagina tears is increased when the vagina is less lubricated. Myer et al (16), however, failed to demonstrate that intravaginal practices were associated with incident HIV infection (hazard ratio = 1.04; 95% confidence interval: 0.65-1.68). Prevalent HIV at enrollment was, however, associated with intravaginal practices (adjusted odds ratio = 1.50, 95% confidence interval: 1.22-1.85), perhaps suggesting that women with HIV and or STI infection were likely to practice douching in response to vaginal symptoms.

In many communities in southern Africa, women may be despised by their male sexual partners if the vaginal is not perceived to be dry during sex. Smit et al (17) conducted a study of 848 hormonal injectable contraceptive users in KwaZulu Natal, South Africa in which 18.4% of women reported vaginal wetness as a side effect of the contraceptive. Women also reported that men considered women who were wet during sex as “cold” and “tasteless.”

### **Condoms, microbicides, and religion**

The response of religious organizations will play an important role in accepting the microbicides. Therefore, it is useful to consider the attitudes of religious organizations about the use of condoms in the prevention of HIV transmission and as a family planning method (18-20).

### **Ethical considerations: covert vs overt use**

Among the most important advantages of microbicides is the possibility of their use without knowledge of the male partner. Covert use is especially important in the situations when a woman would suffer abuse or loss of business, in case of commercial sex work, if the male partner knew about the use of the agent. The covert use of mi-

crobicides in marriage has serious ethical implications, since if there is a need for such measures, we cannot talk about a quality and healthy relationship.

### **Microbicides use among unmarried persons**

In most African countries where HIV is a major public health problem, young people are at particular risk. Although there is paucity of data on the marital status of many of these young people, it is plausible to suggest that a significant proportion of them are unmarried. Condom campaigns have been targeted at unmarried youth. The use of microbicides among young unmarried people brings along the stigma baggage from the condom debate.

### **Marketing for microbicides**

Will microbicides really be a discrete product for females? How can they be marketed in order to reach the largest number of susceptible individuals? Will the use of microbicides be possible without the knowledge of male partners? Moreover, is it desirable or necessary that men are excluded from the use of microbicides or is there a need for male participation? All these questions merit honest answers. If microbicides will replace (male) condoms, it is important to seri-

ously consider whether HIV incidence may increase (21).

### Conclusion

Vaginal microbicides have the potential to stem the tide of HIV spread in Africa and beyond. But it still remains a question whether effective agents will be found and whether they will contribute to the fight against HIV. That is why clinical trials are under way to inform us whether these agents can join the ranks of sexual abstinence, sexual fidelity, condoms, and anti-retroviral drugs.

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