

Microbicides: Prevention of HIV/AIDS, STIs, and Unintended Pregnancy



Microbicides are gels, creams, films, suppositories, and other products that reduce the risk of transmission of HIV/AIDS and/or sexually transmitted infections (STIs); some will also help prevent unintended pregnancy. More than two dozen products are in various stages of development. They have the potential to allow millions of women around the world to protect themselves from infection and pregnancy more easily and less expensively.

Patients seeking reproductive health services are often in need of dual protection from both STIs and unintended pregnancy. Although women are able to control their fertility through a variety of contraceptive methods, the condom is currently the only option available to women to protect themselves against infections. Microbicides could be applied in advance of sexual activity, and without the active involvement or even knowledge of the male partner.¹ When microbicides become available in the United States, providers will play a key role in counseling patients on this new technology and its potential to allow women to protect themselves against infection.

Overview of Microbicides

A microbicide is a substance that can significantly reduce transmission of HIV and/or viral, bacterial, fungal, or protozoan sexually transmitted pathogens when applied topically to genital mucosal surfaces. A microbicide could be produced in many forms, including gels, creams, suppositories, films, lubricants, or a sponge or vaginal ring that slowly releases the active ingredient. Microbicides can be contraceptive or non-contraceptive.

Mechanisms of Action

Most microbicides under development act through one or more of five mechanisms:

1. Killing or inactivating pathogens by breaking down the surface or envelope of the pathogen
2. Inhibiting adsorption of pathogens by creating a physical barrier
3. Inhibiting entry and fusion of pathogens
4. Boosting the vagina's natural defenses
5. Inhibiting viral replication

Microbicides and HIV-Positive Patients

- By neutralizing pathogens in both semen and vaginal secretions, some microbicides may offer bi-directional protection for both partners.
- Some products will also be able to reduce a woman's risk of getting other STDs, bladder infection or yeast infections.
- Non-contraceptive microbicides could one day allow a sero-discordant couple to have children with less risk of sexual transmission.

Current Status of Development

As of June 2005, 15 candidate microbicides were in clinical trials, five of which were in Phase II/IIB or III trials, with 46 additional products in preclinical testing.² First-generation products could be available by 2010, with more effective second- and third-generation products following soon after.³ Research on rectal microbicides is not as far along as research for vaginal microbicides due to both political and scientific challenges, but preclinical testing is under way.

Preparing for Microbicide Access and Use

The face of AIDS is increasingly female, and the pandemic is having a disproportionate impact on communities of color. AIDS is the leading cause of death among young African-American women aged 25–34.⁴

The effects of microbicides on HIV infection rates will depend largely on the extent of their use. If it is used by 20 percent of women in 73 developing countries, even a microbicide that is only 60 percent effective against HIV could avert up to 2.5 million HIV infections over three years.⁵ Health care providers will play an important role in determining the number of women who have information about and access to microbicides once they become available.

Health care providers need to be involved now in planning for how microbicides, and eventually an AIDS vaccine, will be presented to the public in a way that doesn't discourage people from using condoms.

Acceptability of Microbicides

A nationally representative survey of 1,000 sexually active US women aged 18–44 found that an estimated 21.3 million US women have some potential current interest in using microbicides. These women are likely to be unmarried and of low income and less education, and are also more likely to have visited a doctor for infection symptoms.⁶ Growing evidence shows that:

- Individual women within and across cultures express different preferences for product formulation and other characteristics.
- Safety and effectiveness are regarded as most important.
- Primary concerns among women and men are about long-term side effects.
- Excessive “messiness” is a deterrent to use.
- Effect on sexual pleasure is an important consideration, with significant implications for product positioning, promotion, and marketing.

Use of Condoms

The first generation of microbicides, potentially available to the public as early as 2010, is likely to be 50 to 60 percent effective against HIV infection.⁷ Although condoms provide the best form of protection for people who are sexually active, using a microbicide will be much safer than nothing for women for whom condom use is unlikely or impossible. For some women and men, the contraceptive effect of condoms is a major deterrent to use; developing both contraceptive and non-contraceptive microbicides is important. Providers can counsel patients on the use of microbicides in conjunction with condoms for added protection, and as a “backup” method when condom use cannot or does not occur.

Cervical Barriers and Microbicides

Once a microbicide is proven safe and effective, it is likely that it will be best used in combination with a diaphragm or cervical cap, thus requiring an increased need for provider training on sizing and fitting of these barrier methods.

What You Can Do?

As a health care provider, you can help ensure that microbicides will be an option in the future.

1. Learn more

- Read ARHP’s magazine, *Health & Sexuality*, *Microbicides: What They Are—Why We Need Them* at <http://www.arhp.org/publications>.
- Check out the latest news and advocacy updates from the Global Campaign for Microbicides and sign up for a free electronic newsletter at <http://www.global-campaign.org>.
- Find out about specific studies and sign up for a free electronic newsletter at the Alliance for Microbicide Development’s Web site at <http://www.microbicide.org>.

2. Advocate for microbicide research and development funding

- Write to your senators and representative by visiting <http://www.global-campaign.org/legislativeadvocacy.htm>.

3. Spread the word

- Host a talk about microbicides; presentations are available at the Global Campaign Web site.
- Send this educational tool to everyone you know.

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1. Stein Z, Myer L, Susser M. The design of prophylactic trials for HIV: the case of microbicides. *Epidemiology* 2003;14(1):80-83.
2. Alliance for Microbicide Development Weekly News Digest. http://www.microbicide.org/publications/digest/news.digest_vol6no20.pdf, June 3, 2005.
3. Shattock R, Solomon S. Microbicides – aids to safer sex. *Lancet* 2004;363:1002-1003.
4. Minority Health Disparities at a Glance. US Department of Health and Human Services Fact Sheet. July 12, 2004. <http://raceandhealth.hhs.gov/glance.htm>.
5. Watts C, Vickerman P. The impact of microbicides on HIV and STD transmission: model projections. *AIDS* 2001; 5(suppl 1):543-544.
6. Darroch J, Frost J. Women’s interest in vaginal microbicides. *Family Planning Perspectives* 1999;31(1):16-23. Available at <http://www.guttmacher.org/pubs/journals/3101699.html>. Accessed October 2, 2004.
7. *The Economics of Microbicides Development: A Case for Investment*. A Report by the Pharmaco-Economics Working Group of the Microbicide Initiative funded by the Rockefeller Foundation. 2001.

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The Association of Reproductive Health Professionals (ARHP) is a multidisciplinary association composed of professionals who provide reproductive health services or education, conduct reproductive health research, or influence reproductive health policy. Founded in 1963, ARHP’s mission is to educate health care professionals, public policy makers, and the public. The organization fosters research and advocacy to promote reproductive health. <http://www.arhp.org>

The Global Campaign for Microbicides is a unifying umbrella for activism to build support among policymakers, opinion leaders, and the general public for increased investment in microbicides and other user-controlled HIV and STD prevention options. Through the shared commitment and collective agenda of its 55 partner organizations and 200 endorsing groups worldwide, the GCM amplifies the voices of advocates by equipping them with a growing body of free resources and materials, supporting their efforts through sub-grants and offering guidance for effective awareness-raising, media cultivation and lobbying strategies. <http://www.global-campaign.org>