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*In Kenya, the Population Council is working with Muslim scholars to develop consensus that FGM/C is not supported by Islam. Inset: A traditional cutter explains her methods. See story, page 2.*

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## Reducing FGM/C Among Somali Girls in Kenya

Nearly all Somali girls, sometimes when they are as young as four years, undergo female genital mutilation/cutting (FGM/C). This ancient practice involves the removal of all or part of the female external genitalia for cultural, not medical, reasons. Among Somalis in Kenya, the most severe form of FGM/C—called type III—is the most common.\* Focus groups and in-depth interviews with the Somali community and their religious leaders have revealed that the best way to reduce this practice is to demonstrate a lack of religious support for FGM/C. Thus, Population Council staff members are working with Muslim scholars in Kenya to develop consensus that the practice is not supported by Islam so that this message can be conveyed by the scholars to their communities.

### Rationale for FGM/C

When asked about the rationale for FGM/C, members of the Somali community in Kenya cited several reasons, chiefly that FGM/C is a Somali tradition as well as an Islamic requirement (even though the majority of Muslims globally do not practice FGM/C). Community members indicated that they were ready to listen to religious scholars and would be prepared to stop any practices that are not in line with Islamic teachings.

On the basis of these findings, in 2005 the Population Council's USAID-funded Frontiers in Reproductive Health program, in collaboration with UNICEF and the Kenya Ministry of Health, instituted a religious-oriented program to address the practice of FGM/C. It focuses on the Somali community living in Kenya's North Eastern Province.

### Facilitating dialogue

To support discussions on FGM/C and Islam, Frontiers arranged four symposia in Wajir, involving 44 degree-holding, Arabic-speaking Somali Muslim scholars. Medical experts,

traditional circumcisers, and women who had undergone FGM/C testified to the scholars, many of whom had little understanding of the practice.

With UNICEF, the Council then organized a regional symposium, attended by 25 Kenyan scholars and one Saudi Arabian scholar. The Council, together with UNICEF, the United Nations Population Fund (UNFPA), and GTZ (German Technical Cooperation), followed this with a national seminar attended by 55 Somali and non-Somali scholars and a visiting scholar from Sudan. Facilitators led discussions on the status of FGM/C in Sharia (Islamic law) and discussed next steps for engaging communities in talking about the practice.

### Teachings of Islam on FGM/C

The scholars participating in these symposia agreed that neither the Quran nor the deeds, authentic sayings, and approvals of the Prophet support FGM/C, and that there is no consensus among Muslim jurists on the practice. They also agreed that Islam provides many relevant reasons for discontinuing FGM/C. The scholars recommended that a gradual process be adopted to encourage abandonment of FGM/C, starting with moving from type III FGM/C, the most extreme form, to a milder version, and then eventually to no FGM/C.

These scholars were personally convinced that FGM/C is not supported by Islam, but most were still reluctant to publicly declare their opposition to the practice. However, "the fact that the scholars discussed the eventual abandonment of the practice indicates their acceptance that FGM/C has no religious basis—because under Islamic law a religious act cannot be abandoned," said Council program officer and project leader Maryam Sheikh Abdi.

Several discussion sessions were held with different community groups—women, men, youth, teachers, chiefs, health providers, police officers, and cutters. In each session the non-Islamic nature of FGM/C was highlighted, together with the medical, human rights, and legal perspectives. The Council also produced

resource materials (in Arabic and English) containing relevant Islamic texts that can be used during discussions with scholars and community members to illustrate the lack of religious support for the practice. Maryam has presented the Council's findings to policymakers and advocates at international conferences in Washington, DC, Ethiopia, Japan, and Turkey.

Since January 2008, additional support from the Wallace Global Fund has enabled the Council to sustain this work at both the community and national levels. Maryam met with parliamentarians to review the National Plan of Action for the Elimination of FGM/C. Council staff members are part of the National Committee for the Abandonment of FGM/C. And the Council was part of the team that reviewed national educational curricula, with funding from UNICEF/Kenya. The team's findings will be used to advocate for discussion of FGM/C in all curricula. The Council is continuing to work with Muslim scholars and imams and the community in general to help them become advocates for change and to hasten eradication of FGM/C.

"Change is likely to be slow, requiring a long commitment," says Ian Askew, the Council's Kenya-based director of reproductive health services and research. "We would like to persuade a few leaders and work with them to convince the majority." ■

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United States Agency for International Development and the Wallace Global Fund

\*See *The Cut*, a poem by Maryam Sheikh Abdi, <http://www.popcouncil.org/rh/thecut.html>

## Computerized Interviewing Validated in Brazil

Population Council researchers have used biological tests for sexually transmitted infections to confirm that people responding to questions about sexual behaviors asked by a computer gave more accurate answers than people responding to such questions asked by a person. The assessment of interviewing methods was part of a larger Council study in Brazil on alternative ways of diagnosing and treating sexually transmitted infections (STIs). This study is one of a limited number that use biological specimens to validate the reporting of behavior. The Population Council is at the forefront of designing, testing, and using computerized interviewing technology for research in the developing world.

### Accurate data

In order to develop the most effective programs and policies, it is essential that policymakers and program managers have accurate data. Face-to-face interviews are a common means of gathering information from people. But, in many cases, the information needed is on sensitive topics, including sexual behavior, domestic violence, and drug use. Studies comparing interviewing methods in the developed world have consistently shown that the greater privacy and confidentiality afforded by computerized interviews lead to higher reporting of risky behaviors. The assumption has been that the higher reporting of risky behaviors is more accurate.

“Our study is one of only a few that have attempted to validate the reporting of risky sexual behaviors with laboratory tests for STIs,” says Council demographer Barbara S. Mensch, a lead researcher on the study.

The study on interviewing methods was part of a project assessing the feasibility of self-sampling for diagnosing STIs in São Paulo, Brazil. In this case, 818 women were randomly assigned to use a self-administered vaginal swab—either in a clinic or at home—to obtain samples for biological testing for chlamydia, gonorrhea, and trichomoniasis. [Results of this research were described in *Population Briefs* Vol. 14, No. 1 and Vol. 12, No. 3.] The women

were also randomly assigned to be interviewed about their sexual behavior via a face-to-face interview or with audio computer-assisted self-interviewing (ACASI). The ACASI software can be tailored to the local language and customized for people who cannot read or write.

“We expected that the women using the ACASI system would be more likely than women being interviewed in person to report stigmatized behaviors, such as vaginal, oral, or anal sex without a condom, that could raise

*“ACASI results in more valid estimates of the prevalence of sensitive sexual behaviors.”*

their risk of STIs,” says Council social scientist Paul C. Hewett, another lead researcher on the study. “We also expected that if ACASI elicits more accurate responses, the data would show a stronger association between the STI test results and the ACASI answers than between STI test results and answers provided during the face-to-face interviews.”

Indeed, significantly more women using ACASI reported having anal or oral sex. Women using ACASI were also less likely than women being interviewed face-to-face to report condom use during vaginal, oral, or anal sex; the difference was statistically significant for oral sex. Crucially, the researchers found stronger associations between risky behaviors and STIs among women using ACASI than among women interviewed face-to-face.

“These results suggest that when responding to questions posed by research staff or health care providers, women over-report protective behaviors and under-report risky behaviors,” says Hewett. “Further, women who actually had STIs were more likely than women who did not

to misreport their behavior during face-to-face interviews.” For example, among STI-positive women, those using ACASI reported an additional three unprotected sex acts on average compared with women interviewed face-to-face, whereas STI-negative women using ACASI reported only one additional sex act compared with STI-negative women interviewed face-to-face.

“These results strongly suggest that computer administration of interview questions results in more valid estimates of the prevalence of sensitive sexual and risk behaviors,” says Mensch.

### Information technology

The Population Council is in the vanguard of using computer-based interviewing technologies and disseminating them to researchers at other institutions. “What started as something very small—providing software to our own researchers—has turned into a larger enterprise,” says Stan Mierzwa, director of information technology at the Population Council. “We now have organizations outside the Council requesting our software and expertise. One example is the NIH-supported Microbicide Trials Network, which is using the Population Council’s ACASI software in a large-scale clinical trial. We are thrilled to be able to provide this technology and assist them in reaching their research goals.” ■

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## *Addressing the HIV Prevention Needs of Men Who Have Sex with Men in Africa*

Groundbreaking research by the Population Council is beginning to shed light on the full range of risks for HIV infection faced by men who have sex with men (MSM) in Africa, and on the best ways to reduce these risks. The Council's research has found low consistent condom use, high levels of violence, and widespread resistance to seeking health care among such men, even when they experience symptoms of sexually transmitted infections (STIs). Our findings have greatly benefited ministries of health, which have used this evidence to shape HIV policies and improve services for this vulnerable population.

### *Men who have sex with men*

According to the U.S. State Department's Office of the Global AIDS Coordinator, MSM are "among those who are most marginalized in society and have the least access to basic health care." This is evident in much of the developing world—and in Africa in particular—where the stigmatization, discrimination, and criminalization associated with male same-sex behavior persists. Officially, many African leaders deny the existence of same-sex activity, resulting in HIV prevention policies that ignore the needs of MSM. Nearly all materials in Africa aimed at educating people about HIV risks are targeted to heterosexual couples, and many MSM hold misconceptions about which sexual practices increase HIV risk. Often HIV service providers are not trained, equipped, or willing to meet the specific prevention and treatment needs of MSM; and less than 5 percent of such men have access to HIV prevention and care globally. As a result, even where MSM are aware of general prevention interventions, they may not access them out of fear of mistreatment or even arrest.

The Population Council's work on MSM has helped to dispel the belief that male same-sex behavior in sub-Saharan Africa occurs only among foreigners. A study by Scott Geibel of the Population Council and Eduard Sanders of the

Kenya Medical Research Institute estimated that 739 MSM sex workers are active in Mombasa, Kenya. The method Geibel and his team used is an adaptation of a technique used in wildlife biology to estimate the size of hidden populations. On two separate occasions, one week apart, "peer leader enumerators" distributed leaflets to

*MSM in Africa represent an epidemiologically important population who urgently need to be targeted by HIV prevention strategies.*

MSM sex workers at 77 locations in Mombasa. A record was kept of when, where, and by whom the leaflets were given, received, or refused. Using this data, the researchers estimated the size of the MSM sex worker population in that area.

The Population Council and the International Centre for Reproductive Health later conducted a behavioral survey of MSM sex workers in Mombasa. The researchers found that 80 percent of male clients of these sex workers were Kenyan citizens and as a group were extremely likely to engage in behaviors that put them at high risk of HIV infection. "MSM in Africa represent an epidemiologically important population who urgently need to be targeted by HIV prevention strategies," said Geibel.

Council research has identified a high prevalence among MSM of behaviors, experiences, and beliefs that put them at high risk of HIV transmission. Reported condom use was low in most studies: only 14 percent of MSM reported

condom use at last receptive sex in Dakar, Senegal. Only 36 percent of MSM sex workers surveyed in Mombasa used condoms consistently with male clients, and 35 percent did not know that HIV could be transmitted during anal intercourse. Further, in a Nairobi, Kenya study, use of oil-based lubricants, which can make condoms vulnerable to breakage, was common: 84 percent of respondents used petroleum jelly. Among those MSM who knew about lubrication, only 26 percent knew that only a water-based lubricant should be used with latex condoms.

Non-consensual sex is also common among MSM and may place them at increased HIV risk. The Council's Dakar study found that 43 percent of respondents had been raped at least once, and 13 percent had been raped by a policeman.

Unprotected anal intercourse among MSM not only increases their risk of HIV transmission, but ultimately the risk of their female partners and children (through mother-to-child transmission). In the Council's Dakar study, 88 percent of MSM reported having had vaginal sex, and nearly one-fifth had had anal sex with a woman. In the Council's Nairobi study, 22 percent of MSM reported having at least one child.

However, not all MSM engage in high-risk behaviors. The Nairobi study found that reported condom use was as high as 75 percent during the last anal sex act, and 21 percent of respondents reported having only one male sexual partner over the past year. In addition, 57 percent reported having ever taken an HIV test—98 percent of whom had received their test results—more than double the rate of the general population as reported by Demographic and Health Surveys in 2003. This suggests some diversity between MSM in different settings.

### *Innovative programs can work*

The Council evaluated a program in Dakar that trained 40 MSM peer educators on ways to

communicate about and promote risk-reducing behaviors, as well as on ways to support their peers in starting and continuing these behaviors. These educators were equipped with water-based lubricants, condoms, and educational materials. Twelve health care providers were also trained to deliver “MSM-friendly” services and to raise awareness among media, police, and community-based organizations about the health needs of MSM. The Council assessed the feasibility and acceptability of the intervention, and its outcomes on MSM. We documented that the intervention resulted in 1,200 clinical consultations, with 263 MSM referred for HIV counseling and testing. The Council is now assessing a similar service-delivery project for MSM in Mali.

The Council also evaluated a program launched by the International Centre for Reproductive Health to reduce HIV transmission among MSM sex workers in Mombasa. The program includes a drop-in center, training of peer educators in prevention and basic counseling, distribution of condoms and water-based lubricants, and sensitization and training of providers. The Council’s assessment showed significant improvements in HIV-related knowledge and behaviors among MSM sex workers, including correct knowledge of anal HIV transmission and water-based lubrication, and increased condom use.

### Going forward

Building on Geibel’s estimates of the number of MSM sex workers in Mombasa, the Council, led by epidemiologist Scott Kellerman, will seek to determine the number of MSM sex workers in three cities in Nigeria and three cities in South Africa. “You can’t design good HIV prevention strategies without getting a handle on the size of this important but hidden population,” says Kellerman.

Also in Nigeria, the Council—led by behavioral scientist Andrew Karlyn—is establishing the Men’s Health Network, an association of healthcare providers, community-based organizations, and opinion leaders. The program will use a “social franchise” model through which all men can access comprehensive medical care and HIV prevention services in a hassle-free manner. It will harness both the private and public sectors and use new

technologies, such as smart cards and point-of-service machines.

Some people hold the misguided belief that HIV and AIDS were created as a means of genocide. Studies in the United States, for example, have found that up to 50 percent of African Americans believe HIV was created by the government. In Pretoria, South Africa Council researchers Waimar Tun and Kellerman will explore the impact of mistrust and conspiracy beliefs on HIV-preventive behaviors, use of HIV-related services, and willingness among MSM to participate in clinical trials for HIV treatments or vaccines.

Informed discussion among key HIV policymakers in African governments is critical

*In Africa, Population Council data are facilitating a change in government policies toward men who have sex with men.*

to legitimize the need for MSM-specific HIV prevention and treatment programs, and to develop guidelines for implementing them. To address this need, the Population Council and the National AIDS Control Council of Kenya convened an international meeting in May 2008 to highlight research conducted by the Population Council and other organizations. The meeting, titled *The Overlooked Epidemic: Addressing HIV Prevention and Treatment among Men Who Have Sex with Men in Sub-Saharan Africa*, brought together more than 60 representatives from national HIV programs, research organizations, donor agencies, and advocacy groups from 16 African countries. “Given common attitudes in Africa about men who have sex with men, the fact that the meeting happened at all is remarkable,” commented Geibel. “This was one of the first meetings in Africa to focus on MSM and to

present a strong evidence base about this population.” The Population Council will present and discuss the meeting’s findings at national, regional, and international venues in an effort to garner additional support for policies and programs to improve access to services.

“In Africa, attitudes about and government policies toward men who have sex with men are beginning to change,” says Kellerman, “and this is in part due to the Population Council data.” ■

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## *Illuminating the Mechanisms of Sperm Maturation*

When sperm leave the testis, they cannot swim or fertilize an egg. Not until they pass through the tube-like epididymis do sperm acquire both of these functions. No one is certain what happens in the epididymis to activate sperm. Population Council cell and molecular biologist Gary Hunnicutt, his technicians Susanna Kwitny and Louis Vargas, and other collaborators are investigating the mechanisms by which sperm become activated in the epididymis. Gaining an understanding of how this activation occurs may aid in the development of a reversible, nonhormonal male contraceptive. It may also give clues to the origins of, and potential treatments for, some forms of male infertility.

### *Functioning in different environments*

Sperm have to travel and operate in remarkably different environments. Although they start in the male testis, they also need to function effectively in the female reproductive tract. Cells have different strategies for performing well under different conditions. A primary approach is creating new proteins adapted to the new environment. However, sperm cannot do this. By necessity, they are streamlined and lack the cellular machinery to make new proteins once they leave the testis. Instead, one of the primary ways that sperm deal with a changing environment is by reorganizing their existing proteins on the surface of their cell membranes. This allows them to interact with different proteins, found in different environments, at different times.

“Reorganizing the sperm proteins produces new interactions that result in new functions. ADAM1/ADAM2 is an important protein complex in fertilization and is one of the protein complexes that get rearranged on the surface of sperm,” explains Hunnicutt.

When sperm leave the testis, ADAM1/ADAM2 and other proteins are distributed over the whole head of the sperm. But as sperm mature in the epididymis, ADAM1/ADAM2 moves and becomes segregated in the bottom

half of the sperm head, called the posterior head domain. This relocation is important because just before a sperm fertilizes an egg, it sheds the membrane at the top half of the sperm head. If ADAM1/ADAM2 and other proteins did not move and become sequestered within the posterior head domain, they would be lost from the sperm when this top membrane (known as

*“We would like to find that ‘fertility switch’ and take control of it.”*

the anterior head domain) was shed. The loss would be catastrophic for the sperm and would most likely result in infertility.

### *Rooted or fenced in?*

Hunnicutt and his colleagues wondered what keeps ADAM1/ADAM2 and other proteins sequestered within the posterior head domain. Were the proteins like trees, rooted within the membrane? Or were they more like cattle, roaming within the posterior head domain and kept in that area by a “fence”? They found that the answer is different at different times. They discovered that ADAM1/ADAM2 is mostly rooted in place until just before the anterior head domain is shed. After this shedding, ADAM1/ADAM2 stays in this area, but moves freely, like cattle in a corral. This finding led the team to realize that cell function might be influenced by a protein’s freedom of mobility within specific areas. ADAM1/ADAM2, for example, may not be functional when it is rooted, but may become functional once it becomes mobile.

Hunnicutt and his team investigated what signal triggers ADAM1/ADAM2 to become mobile. They honed in on a molecule, called cyclic AMP or cAMP, that triggers many events around

the same time that ADAM1/ADAM2 becomes mobile. They first treated sperm with cAMP at a point when ADAM1/ADAM2 was immobilized in the posterior head domain. They found that cAMP mobilized ADAM1/ADAM2.

They next treated younger sperm, in which ADAM1/ADAM2 is still found over the whole sperm head. This time, cAMP had virtually no effect and ADAM1/ADAM2 remained immobilized. These results suggest that the ability of ADAM1/ADAM2 to respond to cAMP develops as sperm move through the epididymis.

“Something happens when sperm pass through the epididymis that makes them sensitive to cAMP and, therefore, capable of fertilizing an egg. We would like to find that ‘fertility switch’ and take control of it. If we can turn it off, we have a contraceptive. If we can turn it on, we could treat some forms of infertility,” says Hunnicutt. A contraceptive that targets processes in the epididymis would have advantages over hormonal contraceptives. The method would not alter the endocrine system and would have potentially fewer side effects. Additionally, because such a method would not influence sperm production, it would take effect more quickly than methods that depended on halting sperm production. Men would also return to normal fertility more quickly when they stopped using this method. ■

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## Has the HIV Epidemic Peaked?

The HIV epidemic appears to have stabilized around the world, according to a Population Council Distinguished Scholar and his colleagues. Although the rate of new infections has probably peaked in all world regions, the absolute number of HIV-positive individuals is expected to remain near current levels worldwide, with slower growth in sub-Saharan Africa and declines elsewhere. The epidemic still poses a daunting challenge to public health programs. As a result of continued high rates of population growth and only moderate success of HIV prevention programs, large numbers of adolescents and adults are still likely to become infected.

These findings were published in the Population Council's peer-reviewed journal *Population and Development Review*. The authors are Population Council Vice President John Bongaarts, a demographer, and three colleagues affiliated with the United Nations Population Division.

### The state of the epidemic

Most of the world's 33.2 million HIV-positive individuals are likely to die of AIDS-related illnesses eventually. Further, with 2.5 million people being newly infected every year, the death toll from AIDS will remain high in the coming years. However, the findings of Bongaarts and his colleagues also indicate that the percent of the population infected with HIV has stabilized in all world regions over the past decade except in Eastern Europe—where prevalence rates are expected to have reached their highest point in 2008.

Worldwide approximately 0.8 percent of adults—persons aged 15–49—are infected with HIV. Prevalence of HIV is 1 percent or lower in all major world regions except sub-Saharan Africa, where it is 5 percent. In this region, prevalence levels range from a fraction of 1 percent in several West African countries to more than 15 percent in some Eastern and Southern African nations. HIV has spread more widely among populations in these regions because

*“These findings indicate a continuing need for prevention and treatment programs.”*

multiple and concurrent sexual partnerships are relatively common, male circumcision and condom use are relatively rare, and other sexually transmitted infections—which raise the risk of HIV transmission—are more prevalent.

Although trends vary, Bongaarts and his colleagues have identified a general pattern in the past growth of the epidemic: a slow spread of HIV in the early 1980s or 1990s, followed by a period of rapid expansion, before reaching a relatively stable level. The appearance of plateaus implies that HIV is present in a small proportion of the population but that it does not generally spread beyond currently infected subgroups.

### Why has the epidemic reached a plateau?

The main explanation for this finding is that population subgroups have widely varying risks for infection. Sex workers and their clients, needle-sharing intravenous drug users, and men who have sex with men are the most vulnerable. Men and women living in monogamous unions or without sexual partners are at the opposite end of the spectrum. At first, the virus spreads quickly among the groups at highest risk, but then transmission slows when the individuals in those groups become infected or die, and the lower-risk groups remain uninfected. An epidemic reaches a plateau when the virus has achieved maximum penetration of the vulnerable groups. This point was reached in most countries by the early 2000s.

Declining prevalence rates in several countries are consistent with the view that risky behavior has declined in part because of current prevention efforts. Despite these encouraging trends, high-risk behavior remains pervasive, and HIV continues to spread in much of the world.

“These findings indicate a continuing need to develop new prevention technologies and for prevention and treatment programs especially in the countries with substantial epidemics,” concludes Bongaarts. ■

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