vaginal transmission of FIV, the feline version of the AIDS virus.

Epidemiologist Joan Kreiss of the University of Washington, who led the Kenyan study, is more circumspect. "The importance of [the Kenyan] study is that it made us all aware that N9 has potential adverse effects on women, and it emphasized the importance of doing randomized clinical trials before setting public health policy," she says.

Cone acknowledges that N9 has drawbacks, including destroying normal vaginal flora and leading to irritation. "You can look at N9 and see all of its difficulties—and we do," says Cone, who like a dozen other researchers is now working on developing new microbicides. "But in terms of women and the next decade, what should we be telling them? N9." NIAID's Hitchcock disagrees. "The data aren't there," she says. To obtain more data, an efficacy trial of condoms with and without N9 delivered to the vagina on a piece of film is being conducted in Cameroon by Ron Roddy and his colleagues at Family Health International; Kreiss is about to launch another efficacy study in Kenyan prostitutes using N9 in a gel.

One frustration for many researchers interested in developing microbicides is the paucity of available funding. This spring, NIAID awarded $1.5 million to HIV microbicide research; NICHD funds some of this research as well. But industry (apart from a few small biotechnology companies) has shown little interest in developing microbicides, because they would likely be sold cheaply; in addition, their makers might be vulnerable to lawsuits from women who become infected.

Some researchers are so concerned about the lack of corporate interest that they've started companies to remedy it. David Malamud, a biochemist at the University of Pennsylvania who has formed a company to make an anti-HIV microbicide, says it's a "serious problem" that big pharmaceuticals aren't involved. "I do believe the only way this will happen is for nonprofits to make fairly substantial investments," says Malamud. "There's an awful lot of lip service pertaining to women's health in general and to microbicides in specific."

While there clearly is much more that can be done to prevent HIV infection in women and to help those women who do become infected, it is equally clear that the scientific community is focusing on questions about women and HIV with an intensity that was woefully short just a couple of years ago. That, of course, is no guarantee that answers are right around the corner, but the stepped-up pace certainly increases the chances of understanding just how HIV specifically infects—and affects—women.

–Jon Cohen

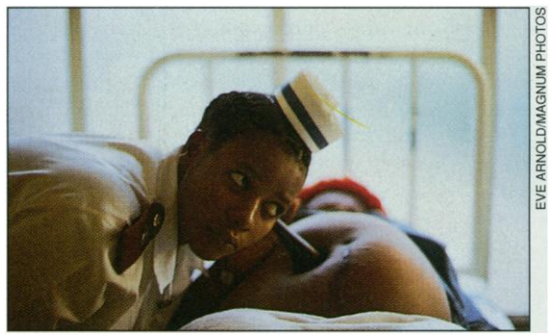
OBSTETRIC CARE

New Push to Reduce Maternal Mortality in Poor Countries

One of the bonuses of living in a wealthy country is relatively safe childbirth. For most women living in poor countries, however, being pregnant is all too often a life-threatening condition. More than half a million women in those countries die each year from disorders associated with pregnancy and childbirth.

"We have a health crisis, a real gap in health care," says public health physician Beverly Winikoff, program director of reproductive health at the Population Council in New York City. "In developing countries, women are still dying of things they were dying of 50 years ago here." A tragic aspect of this situation is that the majority of loss of life is avoidable. But although the international community made maternal health a top priority in the 1980s, it has failed to staunch the tide of death and disease. Some experts think, however, that this picture of failure might change dramatically if a campaign to promote a controversial form of maternal care in developing countries continues gathering momentum.

The key to resolving this crisis for women in developing countries, say Winikoff and some other experts, is not preventive, primary health care, which for decades has been the focus of much of the help provided to developing countries by external agencies. Instead, they argue, the only way to stem the carnage caused by childbirth is to supplement primary care with emergency curative services that are unavailable to many women in developing countries. "You can't prevent [most] obstetric complications. They happen, they happen quickly, and they happen without warning—but you can treat them by providing emergency medical care," says epidemiologist Deborah Maine, director of the Prevention of Maternal Mortality Program at Columbia University School of Public Health's Center for Population and Family Health.



EVE ARNOLD/MAGNUM PHOTOS

Ear to the future. Most funding for maternal and child health has gone to preventative care; here, a nurse in South Africa checks a pregnancy.

At first blush, the type of care Maine is talking about seems out of the reach of poor countries. In those countries, health services are often minimal, and the emergency care facilities needed to deal with an obstructed birth or hemorrhage exist only in a few cities, far from the rural majority. But although money—or rather the lack of it—is the root of some of this evil, it's not the whole story. Indeed, according to two recent World Bank analyses, not only is emergency obstetric care affordable by all but the poorest countries, it's also one of the few truly cost-effective medical interventions. It's not money that's been the barrier to preventing deaths due to childbirth, say the experts, but the twin demons of political apathy and strategic misjudgment.

"There's been an acceptance that women [in developing countries] die in childbirth. In some ways, it's been considered quaint and traditional," contends Anne Tinker, senior health specialist at the World Bank. That attitude meant that women's health—except as a route to improving infant health—was for decades low on the list of health priorities for both governments and international health agencies.

In light of the statistics, that lack of concern seems surprising. Throughout the world about 15% of pregnant women suffer life-threatening complications. A woman's chances of dying from those problems, however, vary tremendously depending on which continent she calls home. An African woman has a one in 21 lifetime risk of dying from birth complications, a woman in Asia has a one in 54 lifetime risk, and a woman in Northern Europe has an almost negligible one in 10,000 lifetime risk.

Indeed, although infant mortality in developing countries is a subject of great concern among health professionals, the discrepancy between the rich and poor countries is up to 10 times higher for maternal mortality than it is for infant mortality. And the real killer is complications of pregnancy. Diseases exacerbated by pregnancy, such as malaria, account for some maternal deaths. But the biggest hazards—accounting for up to 75% of all deaths are obstetric emergencies, predominantly hemorrhage; septic abortion; eclampsia (convulsions and coma trig-

gered by high blood pressure); infection; and obstructed labor.

Those fearsome statistics remained unchanged throughout the 1960s, '70s, and '80s—precisely the decades during which campaigns to improve child health reached their zenith, slashing the death rate of children under age five by half. The realization that, with sufficient political commitment, death and disease in the poor countries of the world could be curtailed helped fuel a groundswell of discontent over maternal deaths, culminating in the first international conference on the topic in Nairobi, Kenya, in 1987. There, the World Health Organization (WHO), the World Bank, and the United Nations Population Fund (UNFPA) spearheaded the launch of the Safe Motherhood Initiative (SMI). The program's goal: to halve maternal mortality rates by 2000.

Eight years later, however, progress has been negligible. "People are disappointed by the lack of improvement, the lack of action, the lack of obvious evidence of change," says epidemiologist Wendy Graham of the Aberdeen Maternity Hospital in Scotland. And even where there has been action, say the critics, the strategies chosen to combat the problem haven't been maximally effective—especially those selected initially by key organizations such as WHO, UNFPA, and UNICEF.

Part of the reason policy choices made by UNICEF, UNFPA, and WHO are crucial, say the critics, is that many other organizations look to these leading groups to provide programmatic guidance and support. Thus, following those agencies' leads, many aid organizations and governments attempted to meet the SMI goal by bolstering prenatal care programs already in existence. Health organizations in some countries employed more nurses to make rounds of the villages, offering iron to anemic women, treating syphilis, monitoring blood pressure, and checking for other signs that a woman might be heading for a difficult delivery. In other countries, these organizations trained thousands of "traditional birth attendants" (TBAs)—usually uneducated older women—in basic hygiene such as handwashing and in recognizing danger signs during delivery such as excessive bleeding, convulsions, fevers, or a prolonged labor.

In some ways, stepping up prenatal care made good sense. After all, it was primary health care—for example, vaccinations, monitoring growth, and advice on hygiene and breast feeding—that had provided such remarkable success in reducing child mortality. But the critics say that primary health care has not been useful in relation to maternal health.

Maine, for example, is blunt: "The international health community has not been helpful. It's been telling people for a long time to do clean deliveries and provide prenatal care and maternal mortality will come down, but that's wrong," she says. To illustrate her point, Maine refers to turn-of-the-century England. Between 1840 (when mortality figures first became available) and 1933, infant mortality in England dropped by half, but maternal mortality remained unchanged—despite the introduction of widespread prenatal care. "The medical community was very upset. It was supposed to reduce maternal mortality and it hadn't," says Maine.

TOP FIVE CAUSES FOR DALYS* LOST
(Developing Countries, Ages 15–44)

Rank	Females (millions of DALYs lost)		Males (millions of DALYs lost)	
1	Maternal	27.9	HIV	14.7
2	STDs	13.8	TB	13.3
3	TB	10.9	Motor vehicle injuries	13.0
4	HIV	10.2	Homicide and violence	9.6
5	Depressive disorders	9.0	War	6.6

*Disability-Adjusted Life Year
SOURCE: WORLD DEVELOPMENT REPORT 1993

Maine points out that, in fact, the reduction in maternal deaths in the United Kingdom didn't begin until the mid-1930s, when emergency medicine in the form of blood transfusions, low-segment caesarean sections (a safe surgical technique for delivering an infant), and, eventually, antibiotics became widely available. That pattern, which has been repeated in countries throughout the world, persuaded Maine and obstetrician Allan Rosenfield, also of Columbia, to undertake a campaign to make emergency obstetric care widely available in developing countries.

The campaign, begun in the mid-'80's, has started to gather support—particularly in some of the countries that were disappointed by the progress of the SMI. Ghana, with funding from UNICEF, the U.S. Agency for International Development, and UNFPA, was one of the first of the developing countries to respond to the SMI by bolstering prenatal care. By 1994, Ghana's Ministry of Health had trained more than 6000 TBAs. "The analysis up until now has found that, yes, TBA knowledge, and to a certain extent, skills have improved," says public health specialist Charlotte Gardiner, who formerly headed maternal and child health in Ghana's Ministry of Health and now works at UNFPA. But "as far as reducing mortality," she says, "we've been very disappointed."

The reason for the failure, says Gardiner, is that "the quality of care available at the health facilities was overestimated." More often than not, TBAs referred women with obstetric complications to rural health centers lacking beds, surgical equipment, or even medical professionals. But saving the life of a woman in a difficult labor requires anesthesia, surgical equipment, oxygen and blood supplies, and vacuum extraction equipment (for pulling the infant through the birth canal). There's also a need for medical personnel trained in doing caesarean sections and other surgery. Finally, efficient transportation is vital because, although a woman may take several days to die from childbirth complications, it's far easier to save her life if she gets emergency care within the first 12 hours.

The standard of emergency obstetric care practiced in Ghana is similar to that of countries throughout the developing world, including much of Africa, Asia, and Latin America. And the consequences of those inadequacies, along with the efforts of Maine, Rosenfield, and others, and the disappointments of being so far from meeting the SMI goal of halving deaths due to childbirth by the year 2000, is triggering sweeping changes.

One organization that has been shaken by the disillusionment of the last 8 years is WHO. It's now made emergency obstetric care (a component of "essential obstetric care") a high priority, including it among its recommended minimum requirements for healthy infants and mothers in the Mother-Baby Package that was unveiled at the 1 to 12 May World Health Assembly in Geneva.

"What we hadn't understood," says Carla Abouzahr, associate chief of WHO's maternal health and safe motherhood program, "is that both essential obstetric care and prenatal care are necessary, and that neither alone is sufficient." Although WHO now embraces emergency obstetric care, Abouzahr cautions against allowing the pendulum to swing too far the other way. "It would be unethical to say I won't treat anemic women and syphilitic women because I'm going to concentrate on the 15%" who are going to have life-threatening complications, she says.

WHO is not alone in changing its strategies for making childbirth safer in developing countries. "Our support is only going to continue to expand in the area" of emergency obstetric care, says Nicholas Dodd, UNFPA's chief of reproductive health. Meanwhile, UNICEF plans to discuss new directions for its maternal health program at an October meeting of representatives from UNICEF regional offices.

"There will be some major changes," pre-

Rockefeller's Big Prize for STD Test

Sexually transmitted diseases (STDs) are a serious threat to the health of women in developing countries—not least because left untreated they help spread the most lethal sexually transmitted infection of all: HIV. And although STDs are easy to treat, in developing countries diagnosing the infection in the first place can be exceedingly difficult. Indeed, the need for accurate diagnosis is so acute that last year the Rockefeller Foundation put up $1 million as a prize for a simple rapid test for two of the most common asymptomatic STDs—a prize that is as yet unclaimed.

To get a sense of the dimensions of the problem, consider that in a farming and fishing area of Nigeria, 11% of teenage girls are infected with gonorrhea, syphilis, chlamydia, or other STDs. "One of the most disturbing factors is that these would be considered low-risk girls—not prostitutes, but rural girls," says women's health specialist Loretta Brabin of the Liverpool School of Tropical Medicine in the United Kingdom, a principal investigator on the team that conducted the 1995 study.

The Nigerian study is just one of a recent spate that suggests the problem is far more severe than previously supposed, says Brabin. That revelation is spurring the international health community to boost its efforts to reduce the level of STDs among women in poor countries.

But unlike men, women infected with STDs frequently either have no external symptoms of the disease, or they have confusing symptoms. In the wealthy West, that's not such a serious problem, because STDs are diagnosed using sophisticated laboratory blood tests. In the poorer reaches of the world, however, blood tests are rarely an option, and STDs are usually diagnosed by symptoms alone. That "works OK for men because they are likely to have specific signs—for example, they get a urethral discharge only with STDs," says Gina Dallabetta, who heads an STD unit at Family Health International, a nongovernmental health organization in Arlington, Virginia.

Women, on the other hand, present a confusing picture. Their vaginal discharge may be due to less serious yeast infections; physicians may also fail to distinguish an abnormal discharge from normal secretions. Perhaps worst of all for the purposes of treatment, 50% of STD-infected women have no external symptoms whatsoever.

To help surmount those problems, in 1994 the Rockefeller Foundation put up a $1 million purse for the first research team that develops a quick, cheap, and accurate test for asymptomatic chlamydia and gonorrhea. To win the prize, the test must be so simple it can be conducted by a person with a primary school education after 2 hours of training. The test should not require blood to be drawn, but instead assay urine, vaginal secretions, or some other bodily fluid that can be collected noninvasively.

Rockefeller has received more than 200 inquiries from researchers interested in developing the test, but hasn't yet received "the definitive entrant," says Rockefeller's associate director of health sciences Seth Berkley. If it doesn't come soon, he says, "we may even enhance the incentive" by increasing the purse. And that could only help bring good news for many of the world's women.

–R.N.

dicts France Donnay, a public health specialist, obstetrician, and gynecologist, and UNICEF's new senior adviser on women's health. Those changes include beefing up emergency services by upgrading hospitals and health centers, and training midwives. Indeed, two of UNICEF's largest regional offices, in India and Bangladesh, have already started making those changes on the ground. UNICEF also plans to organize local communities to provide transportation to the hospitals and to promote National Commissions on Safe Delivery in developing countries, says Donnay.

The outspoken critics of previous tactics say that these changes are overdue—but welcome. "It's taken us 8 years to get to this point," said Maine, after a June meeting in New York on prenatal and emergency obstetric care attended by representatives from all the relevant UN agencies, as well as the World Bank, the Population Council, the International Planned Parenthood Federation, and others. "But the good news is that we've gotten there. There's more consensus than ever before. I'm feeling optimistic."

A commitment to introducing emergency medicine to poor areas of the world is one thing, however, but getting services off the ground is quite another. According to the World Bank's Tinker, it's still difficult to convince many cash-strapped Third World governments that it's worth investing in emergency obstetric care—with some notable exceptions such as India, Morocco, the Philippines, Chad, and Ghana. "Women's status is so low that their health is just not a priority," says Tinker.

Those attitudes may change, however, as governments in the developing world start assimilating recent data on the impact of death and disease due to pregnancy and childbirth on a country's productivity. According to a 1993 World Bank report, pregnancy-related complications account for 18% of healthy years of life lost in women aged 15 to 44—more than any other single cause. And those losses are particularly important in the developing world, where women provide one third of the wage labor and most of the unpaid labor.

Another incentive to change is that emergency obstetric care is a relatively cheap way of saving lives, according to a World Bank report due out this summer. For low-income countries like India and parts of sub-Saharan Africa, the bank's analysis offers a ballpark figure of $1 to $2.50 per capita to provide emergency obstetric care for the 15% of women who will need it, along with basic prenatal care for all women.

Admittedly, in many developing countries, that's a sizable chunk of the health budget (for example, countries in sub-Saharan Africa spend $8 per capita on average). Nonetheless, says Tinker, almost all countries could afford it if they reallocated resources from less cost-effective therapies—for instance, the kidney dialysis and cancer therapy that some countries provide for wealthier citizens—and encouraged the private sector and nongovernmental organizations to pick up more of the tab. The World Bank analysis also shows that in terms of economically productive lives saved, the prenatal and emergency obstetric care package is among the handful of cost-effective interventions. (Among the others are childhood immunizations, the treatment of malaria, and the provision of family planning services.)

Despite the changes now gathering momentum, few in the field expect that the SMI goal of halving maternal mortality in poor countries will be accomplished by the year 2000. But with many UN and nongovernmental health organizations united in their commitment to helping developing countries upgrade emergency obstetric care facilities, some experts are guardedly optimistic. "We are going to start to see [emergency obstetric care] programs being implemented in some countries," says Rosenfield. "We are not going to meet the [SMI] goal, but I'm optimistic that over the next 10 years we will start to see an impact" on death due to childbirth. And that would be a good start on bridging the gap between women who live in rich countries and their sisters in poor ones.

–Rachel Nowak