

PN-ABP-650

10/23/91

WOMEN, INFANTS and STDs

Opportunities for Action
in Developing Countries

*Report of the Conference
Held in Rosslyn, Virginia
on November 7-8, 1991*

*Sponsored by the
United States Agency
for International Development
and The MotherCare Project,
John Snow, Inc.
Arlington, Virginia*

Women, Infants and STDs

Although sexually transmitted diseases (STDs) are now the most common group of notifiable diseases in the world, they have received only limited attention in developing countries. According to the World Health Organization, more than 250 million new cases of sexually transmitted infections occur each year. And though infection rates are similar in both men and women, the major burden of complications and serious sequelae fall on women and their infants. Not only do STDs cause women chronic pelvic pain and infertility but also tubal obstruction leading to ectopic pregnancies—a major cause of maternal death. Moreover, untreated maternal syphilis—especially “early syphilis”—can lead to stillbirths, neonatal death or infected infants in approximately two-thirds of pregnancies. And infants not treated for congenital gonorrhoea suffer disfigurement and blindness. These adverse outcomes of pregnancy are particularly discouraging since cost-effective interventions are available. Not preventing them tends to negate the hard-earned gains made in child survival in recent decades.

Clearly, then, in terms of lives saved and suffering alleviated, health interventions to prevent congenital syphilis and gonococcal ophthalmia neonatorum (GON) should be a national priority for mother and child health services.

The need for action is even more urgent now that researchers have confirmed that STDs also increase the risk of HIV transmission; there is increasing evidence that the genital lesions caused by syphilis increase by ten fold the risk of HIV transmission. It is vital, then, that as a first step women are reached in an efficient way through clinical services they are already using. To this end, one obvious solution would be the integration of STD screening and treatment into existing services, such as mother and child health and antenatal and family planning clinics. This approach makes sense from the perspective of the woman and the Ministry of Health since it is efficient and cost effective.

But what is most important to realize is that the loss and suffering caused by these diseases can be alleviated quickly—and now:

- └ **The technologies to prevent the diseases are available.**
- └ **The costs are acceptable.**
- └ **The programs to do so can be sustainable on a national and community level.**

And standard protocols for treatment have been developed:

└ **Preventing Congenital Syphilis and Other Adverse Outcomes from Maternal Syphilis**

- Screen pregnant women during the first trimester using the rapid plasma reagin (RPR) test and, if possible, again in the third trimester.
- Treat all seroreactive women and their sexual partners with 2.4 million units of benzathine penicillin.

Note: Using the RPR test, screening and treatment can be done within one visit.

└ **Preventing Ophthalmia Neonatorum**

- Treat newborns with one application of silver nitrate 1% eye drops or tetracycline 1% eye ointment immediately after birth to prevent gonococcal ophthalmia neonatorum.

The table below clearly shows the scope of the adverse outcomes resulting from both syphilis and gonococcal infections:

Maternal Diagnosis	Fetal Wastage Rate	Low Birth Weight or Prematurity (%)	Congenital/Perinatal Infection (%)
<i>Gonorrhoea</i>	Rate	11 to 25%	30 to 68%
<i>Early Syphilis</i>	20 to 25%	15 to 50%	40 to 70%
<i>No Infection</i>	1 to 10%	2 to 12%	NA

Source: Adapted from Wasserheit and Holmes, 1992

Syphilis

Because effective disease-control programs have not yet been launched, syphilis rates among women in developing countries are 10 to 100 times higher than those in industrialized countries. Researchers estimate that of those women who are currently pregnant, 10% to 15% have syphilis. And the effects of syphilis on pregnancy outcome are alarming: two-thirds of all these pregnancies have an adverse outcome.

The above data are borne out by recent research findings in Zambia, where 15% of all pregnant women suffer from syphilis. The result: 5% of all infants in that country suffer disfigurement, debilitation or death from congenital syphilis.

Gonorrhoea and Ophthalmia Neonatorum

Because the rate of gonococcal infection in men and women is so high in developing countries, the risk of infection to newborns is high. The problem is so serious in Africa, for example, that the risk of ophthalmia neonatorum to newborns is 50 times greater than that in many industrialized countries. And if not properly treated, the disease leads to blindness in the infant. Of course, not only infants suffer. The adverse effects of gonorrhoea on women are serious: chronic pelvic pain, pelvic inflammatory disease (PID), and tubal obstruction. Tubal obstruction can cause ectopic pregnancy, which may lead to maternal death.

What makes these two sexually transmitted diseases, gonorrhoea and syphilis, so devastating to mothers and infants is that their impact on the newborn is felt within such a limited period of time--**during pregnancy or within the first 30 days of birth.**

Congenital Syphilis

Congenital syphilis is a preventable disease. Birth outcomes in developing countries can be significantly improved through reaching pregnant women with routine serological screening and treatment with penicillin early in pregnancy. Not only is prevention feasible, it is cost effective. The possibilities for success are demonstrated by the low incidence of congenital syphilis in industrialized countries—approximately 0.05%.

Because “early” (i.e., newly infected) maternal syphilis is so damaging to the pregnancy, early diagnosis and treatment are essential. Yet, in many areas of the developing world, less than 10% of women visit a prenatal clinic, a maternal health clinic or a hospital outpatient program in the first 16 weeks of pregnancy. Despite the obstacles, researchers have shown that it is possible to significantly reduce the incidence of congenital syphilis. The intervention requires five basic steps:

Basic Steps in the Prevention of Congenital Syphilis

1. A health education campaign for early antenatal care
2. Early visits and proper screening of pregnant women
3. Treatment of infected women with penicillin
4. Counseling for follow-up visits and treatment of partners*
5. Repeat visit and screening of pregnant women in the third trimester

**The treatment of the partner is especially important if pregnant women are to avoid reinfection with syphilis in the later trimester of pregnancy.*

Treatment of Infected Women and Their Partners

Clinic staff carry out serological screening of pregnant women and their partners using the simple RPR card test. In most settings, it is important to screen with the RPR test at the prenatal clinic during the woman's first visit. Those infected are treated with a single dose of 2.4 million units of benzathine penicillin during that same visit. Since reinfection can occur, pregnant women are tested again early in the third trimester.

Treatment of Newborns

The infant should be treated at birth if (1) the seroreactive mother received no treatment—or inadequate treatment—during pregnancy, or if (2) the treatment was after 36 weeks of gestation.

A Successful Program

Despite the demands of screening, treatment and follow-up, a pilot project carried out in 1989 at the University Teaching Hospital in Lusaka, Zambia demonstrated that this intervention against congenital syphilis can succeed.

Using an innovative health education strategy, the project managed to increase the percentage of women having their first prenatal visit under 16 weeks of pregnancy from **9.4% to 42.5%** within one year. Some of the steps taken were:

1. The education campaign targeted not only sexually active men and women attending general outpatient clinics but also elderly men and women, who are influential in bringing about behavioral change in the community at large.
2. The education materials used were developed with the assistance of local leaders to ensure that they were appropriate and effective.
3. Midwives were trained in carrying out health education, learning how to present the STD prevention messages in clinics and in other community settings.
4. The education campaign used a variety of approaches to bring information to women and their partners: lectures, question and answer sessions, group discussions and audio messages.

And through improved screening, treatment and individual counseling of infected women, adverse outcomes attributable to syphilis were reduced from **72.4% to 28.3%**.

Dr. Subhash Hira, the architect of this program, concludes that syphilis is a preventable disease in terms of the mother and child. "It doesn't cost a lot, it's doable, and it's being done."

Gonorrhea and Ophthalmia Neonatorum

Under ideal circumstances, with sufficient funds, trained personnel and adequate facilities, governments would, of course, choose to diagnose and treat gonorrhea in all women. Unfortunately, researchers conclude that services to do so are not yet possible for the obstacles are significant: laboratory backup is usually required for testing, and treatment for gonorrhea is more complicated than that for syphilis.

Researchers therefore recommend for the immediate future an approach that can prevent child blindness—**ocular prophylaxis of all infants at the time of birth**. The infant should be treated immediately, no later than 4 hours after birth—after which time the risk of ophthalmia neonatorum increases 4 to 5 fold. This approach is not only operationally the best strategy, but also the most cost-effective.

Three regimens have been recommended:

- Silver nitrate 1 % eye drops
- Tetracycline 1 % eye ointment
- Erythromycin 0.5 % eye ointment

Silver nitrate is the least costly of the three and the easiest to administer at the community level.

Silver nitrate from multi-dose containers is feasible in high-volume clinical settings. Unfortunately, it is subject to evaporation when the bottle is half used, at which time it becomes overconcentrated and toxic. It is essential, therefore, that half-used bottles in low-volume clinical settings be discarded.

Silver nitrate single-dose ampules, although more expensive, are especially suitable for including in traditional birth attendants' kits. These ampules solve the two problems of proper dosage and toxicity.

Tetracycline ointment is non-toxic and may remain longer in the eye because it is an ointment. It may be more effective than silver nitrate, and multidose preparations are inexpensive and widely available in developing countries.

Erythromycin ointment is expensive and not available in many developing countries.

Of course, the choice of treatment will depend on the individual setting and the training of the health personnel.

Advantages of Ocular Prophylaxis

1. The procedure requires very little training.
2. There is a one-time application.
3. No testing is required since all newborns are treated.
4. There is a synergistic benefit: prevention of both gonococcal and chlamydial ophthalmia neonatorum.
5. The rate of success is high (approximately 90%).

When deciding whether to invest limited public health funds in any program of prevention or treatment, government officials in any developing country must ask hard questions, such as “Is it cost-effective to invest in the prevention of congenital syphilis and ophthalmia neonatorum?”

Health program designers will be pleased to discover that these STDs can be prevented at reasonable costs:

Based on his pilot project in Zambia, Dr. Hira estimates that it would cost only \$5000 to treat with silver nitrate the 1,800,000 newborns expected annually. When compared to the cost of national immunization programs, it is clear that the benefits of this intervention substantially outweigh the limited cost.

Comparison of Costs of Interventions	
Intervention	Cost per adverse outcome averted
Ophthalmia Neonatorum	\$1.40
Maternal Syphilis	\$12.00
Measles Immunization	\$40.83
Pertussis Immunization	\$99.85
Neonatal Tetanus	\$152.53

Source: Schell, et al., 1992

Socioeconomic Impact

The relatively low cost of the intervention for these STDs is especially impressive when considering recent studies using a model for estimating the socioeconomic impact of disease. The studies conclude that the economic benefit from preventing syphilis is significant, ranking just below tuberculosis and measles and above malaria. Other research shows that STDs rank second only to measles in terms of health burden to developing nations.

A nation's investment in treating these maternal and child diseases makes sense, then, not only from a humane standpoint but from an economic one as well.

Even after governments and private voluntary organizations (PVOs) set up basic facilities and programs for preventing congenital syphilis and ophthalmia neonatorum, there are likely to be problems that must be overcome if pregnancy outcomes are to be substantially improved. Some of these problems can be resolved through improved project design; others will require close attention to the social and cultural needs of those men and women who come to the clinics.

Syphilis

What complicates the treatment of syphilis in pregnant women is that the disease can be contracted both early and late in the pregnancy. The early stage of syphilis is especially damaging to pregnancies, with adverse effects for 80% of all untreated pregnant women. Yet, women in developing countries do not often visit clinics early in their pregnancy. In fact, research in a number of countries shows that no more than 10% of all pregnant women go a clinic in the first 16 weeks of pregnancy.

There are, unfortunately, numerous obstacles which either keep women from seeking treatment or cause women to receive inadequate treatment once they have decided to seek help.

<i>Lack of Symptoms</i>	Since most women and their spouses are asymptomatic, they are not aware that they are infected and need treatment.
<i>Isolation</i>	<p>Women are often secluded during pregnancy.</p> <p>Transportation to clinics is not available.</p> <p>Women lack confidence in the health care system.</p> <p>Women's health has not been a priority; the focus has been on children.</p>
<i>Exclusion of Men</i>	Men are often unaware of, and feel little responsibility for, women's reproductive health needs; they have not been a target of the educational efforts in most countries.
<i>Ignorance</i>	<p>Many men and women are ignorant of the basics of human reproduction.</p> <p>A significant percentage of all men and women are illiterate.</p> <p>There is limited access to the mass media, particularly for women.</p>
<i>Shame</i>	Social stigma is attached to STDs. In fact, in many countries, STDs are described as "women's diseases."

<i>Powerlessness</i>	Since women lack power in the family, they are fearful of discussing STD infection with their partners and asking them to seek treatment. Often, if a woman informs her partner, she is battered, abandoned, or replaced by another woman.
<i>Inefficient Treatment</i>	The diagnostic test for syphilis is often not available at the clinic, the woman has to return for test results and treatment at a later time. In most cases, few women return, for they lack the resources to do so.

Ophthalmia Neonatorum

Although treating this disease in the newborn is relatively simple and straightforward, there are, nevertheless, substantial obstacles to be addressed:

- ┌ Most babies are delivered outside of the public health system.
- ┌ Most mothers have no knowledge of treatment for the disease.
- ┌ Untrained traditional birth attendants (TBAs) are unable to identify and treat the disease.
- ┌ There is no system in place for providing TBAs with the necessary prophylactic medicines with which to treat the newborn.
- ┌ When treatment is available, it is often delayed.
- ┌ There is no established protocol for clinic staff to follow.
- ┌ In public health facilities, staff are often unable to carry out the prophylaxis on a regular, sustained basis because of lack of supplies.

Given the serious consequences of congenital syphilis and ophthalmia neonatorum in developing countries, the time for action is now—now for international donor agencies to commit funds for the prevention of these two diseases; and now for Ministries of Health to establish the policies and the programs that will reduce lost pregnancies and infant blindness. Donor agencies should be sensitive to those governments that are struggling to identify approaches that will not only show immediate results but will bring long-term, sustained improvements in maternal and child health.

Experts at the 1991 international workshop, “Women, Infants, and STDs: Opportunities for Action in Developing Countries,” strongly recommend a number of specific strategies as key elements to program success:

Step 1: *Establish a national policy integrating STD screening and treatment into other existing services, such as:*

- Antenatal Clinics
- Family Planning Clinics
- Maternal and Child Health Centers
- Outreach Programs
- General Outpatient Clinics
- Delivery Services

Discussion:

Establishing separate STD clinics which will treat pregnant women and their spouses is fraught with serious difficulties. Because there is such stigma attached to these diseases, it is often difficult, if not impossible, to bring women to STD clinics. And there are a number of advantages to integrating STD treatment into established maternal health centers and family planning clinics: women receive “one stop” care, thereby reducing the transportation problems and time constraints faced by many women; STD screening and treatment can be done in conjunction with other health services; and some of the stigma can be removed from STDs once they are seen as part of an overall maternal and child health program.

Step 2: Conduct research to determine women and men's knowledge of and attitude toward reproductive behavior and the treatment of STDs

Discussion:

There are a number of ways to conduct research on adult reproductive knowledge and behavior that have proved successful in recent years: clinic-based or community-based focus group discussions, in-depth interviews, observations of counseling sessions, and clinic exit surveys. Not only do these approaches identify adults' behaviors, they also show how and why adults make decisions about STD testing and treatment. When designing programs, this information is especially important in ensuring that the services provided men and women are those they expect and need.

Step 3: Develop clinical care protocols for government and nongovernment hospitals, health centers, clinics, and dispensaries, and train providers in these protocols.

Discussion:

The MOH, together with the Universities and field personnel, can develop screening and treatment protocols. These protocols can then form the basis for the training of local community members and health personnel.

Step 4: Establish an efficient logistics system for supplies.

Discussion:

Regular provision of reagents, supplies, and drugs are essential before embarking on a national communications strategy. Such provision will ensure that women and men who are sensitized to STD issues will be served when they seek services.

**L Step 5: Screen and treat women effectively.
Treat all newborns.**

Discussion:

For best results in diagnosing and treating syphilis, the diagnostic test used must be simple and the results quickly available. Ideally, treatment should be provided at the initial visit since there are so many obstacles preventing women from returning to the clinics. The proper equipment and supplies must be available in the clinics. And privacy and confidentiality must be clearly established; otherwise, women will not return or recommend visits to their relatives and friends. To prevent ophthalmia neonatorum, all providers of delivery services should have prophylactic ointment or eye drops available and ready to use immediately after the birth. Depending on the setting, these providers include family members, TBAs, and medically trained staff.

L Step 6: Develop a national communication strategy.

Discussion:

Presently, few women in developing countries are being tested and receiving treatment for syphilis early in pregnancy, nor are their newborns receiving prophylaxis for ophthalmia neonatorum at birth; yet early treatment is essential for both. Most women and men do not know that treatment is necessary, nor that the drugs are available. And since women are often illiterate and restricted in their movements outside of their immediate town or village, one feasible means of communicating with them is through the mass media, especially radio and television. Of course, the strategy must also include men, who need to understand their pivotal role in the spread of STDs and their responsibility in its control.

L Step 7: Train local community members and health workers.

Discussion:

Because local people are always at the heart of the success of local health programs, a serious effort must be made to train local leaders and community health workers in (1) human sexual behavior, (2) the effects of syphilis and gonococcal ophthalmia on infants and their

mothers, families and communities, (3) the necessary changes needed to bring about effective disease control, and (4) the counseling skills essential to communicating effectively with pregnant women and their partners. Once the capacity for health education, screening and treatment are established at the local level, long-term progress can be made.

Step 8: Mobilize community groups.

Discussion:

Community mobilization programs need to address two major audiences: clients in need of services and providers of these services. Both can be addressed by (1) increasing awareness and generating demand among the community for screening and treatment services, while (2) mobilizing the providers to supply quality services: counseling, timely screening, and effective treatment. Community and medical leaders should use the public forum to make the STD health problem a priority. These leaders should also ensure that programs focus not solely on women but also on partners, mothers- and fathers-in-law, community elders, and others whose influence is critical to changing community behavior.

Step 9: Establish a positive image.

Discussion:

Historically, health campaigns have focused on the threat of disease and on the need for condoms and other methods of health protection. Women and men in the developing world will respond more favorably to messages and approaches which focus on the positive outcomes brought about by maternal and child health care.

- Cates, W and Stone, KM.** "Family planning: The responsibility to prevent both women and children from the adverse consequences of reproductive tract infections." Draft copy. In Reproductive Tract Infections: Global Impact and Priorities for Women's Reproductive Health. New York: Plenum Publishing Corporation. Forthcoming, 1992.
- Dixoa-Meuller, R and Wasserheit, J.** "The culture of silence: Reproductive tract infections among women in the third world." New York: International Women's Health Coalition. 1991.
- El-Mouelhy, M.** "Addressing the barriers to integrating STD diagnosis and treatment with family planning and antenatal care services in the developing world." Paper written for the MotherCare conference, "Women, Infants, and STDs: Opportunities for Action." November, 1991, Arlington, VA.
- Germain, A.** "Reproductive tract infections in women in the third world: National and international policy implications." Report of a meeting at the Bellagio Conference Center, April 29-May 3, 1991. Co-sponsored by the International Women's Health Coalition and The Rockefeller Foundation. Draft copy. New York: International Women's Health Coalition, 1991.
- Hira, SK, Bhat, GJ, Chikamata, DM, et al.** "Syphilis intervention in pregnancy: Zambian demonstration project." *Genitourin Med* 1990; 66:159-161.
- McDermott, J, Bangser, M, Ngugi, E, et al.** "Infection: Social and medical realities." In The Health of Women: A Global Perspective, Marge Koblinsky, Judith Timyan and Jill Gay, eds. Boulder, CO: Westview Press. Forthcoming.
- Over, M and Piot, P.** "HIV infection and other sexually transmitted diseases." In Evolving Health Sector Priorities in Developing Countries. Washington, DC: The World Bank, 1991.
- "Safe Motherhood South Asia: Challenge for the Nineties."** Issued at the Safe Motherhood South Asia Conference sponsored by the International Planned Parenthood Federation, Lahore, Pakistan, March 1990.
- Schryver, D and Meheus, A.** "Epidemiology of sexually transmitted diseases: The global picture." Bulletin of the World Health Organization 1990; 66 (5):639-651.

Schulz, KF, Cates, W and O'Mara, PR. "Pregnancy loss, infant death, and suffering: legacy of syphilis and gonorrhoea in Africa." Genitourin Med 1987; 63:520-5.

Schulz, KF, Schulte, J and Berman, S. "Maternal health and child survival: Opportunities to protect both women and children from the adverse consequences of reproductive tract infections." In Reproductive Tract Infections: Global Impact and Priorities for Women's Reproductive Health. New York: Plenum Publishing Corporation. Forthcoming, 1992.

Temmerman, M, Moses, S, Kiragu, D, et al. "Impact of single session post-partum counselling of HIV infected women on their subsequent reproductive behavior." Aids Care 1991; 2:247-251.

Wasserheit, Judith and Holmes, K.K. "Reproductive tract infections: Special challenges for international health policy, programs and research." In Reproductive Tract Infections: Global Impact and Priorities for Women's Reproductive Health. New York: Plenum Publishing Corporation. Forthcoming, 1992.