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FEATURE

MATERNAL AND CHILD HEALTH

# How Cuba eliminated mother-to-child transmission of HIV and syphilis

As relations between Cuba and the West have thawed and Barack Obama makes the first visit by a sitting US president to Cuba in 88 years, **Jeanne Lenzer** explores some lessons the world could learn from the country's health service

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On 30 June 2015, the World Health Organization and the Pan American Health Organization announced that Cuba had become the first nation to virtually eliminate mother-to-child transmission of HIV and syphilis.[1] The announcement came after a five day, on-site audit conducted by experts from 10 nations, including the United States, Brazil, and Japan.

WHO defines "effective elimination" of mother-to-child transmission as reduction to such a low level "that it no longer constitutes a public health problem." Validation was based on transmission rates less than 50 cases per 100 000 live births, and included validation that the services provided were "free of coercion and in accordance with human rights principles." In 2013, only two babies were born with HIV and three with syphilis in Cuba.

I visited Matanzas Province in northern Cuba to learn how the country had accomplished this goal—something not apparent from the WHO news reports. Margaret Chan, WHO's director-general, praised Cuba saying, "Eliminating transmission of a virus is one of the greatest public health achievements possible. This is a major victory in our long fight against HIV and sexually transmitted infections, and an important step towards having an AIDS-free generation." However, there was no mention of the public health measures that led to its success. Instead, WHO cited a statistic about interruption of vertical transmission with antiretroviral drugs. But according to the doctors I spoke to, drugs had only a minor role in the elimination of maternal transmission.

## Public health measures first

Armando Arechavaleta, chief of the maternal-child program at Provincial Maternal Health Hospital in Matanzas, explained that Cuba has a strong public health initiative encouraging all couples to use barrier contraception until they desire pregnancy and confirm that both partners are HIV negative. If women who are HIV positive want to conceive, doctors work with them to determine when their viral load is low and it is safest to become pregnant.

Testing is mandatory, and pregnant women rarely if ever refuse testing. The doctors I spoke to attributed this to free testing and care, and to strong public health efforts to educate parents. If a woman refuses testing, the doctor is expected to talk to the baby's father about potential health consequences to the baby, and to ask his support to convince the mother to be tested. If this fails, both parents are expected to sign a document in which they accept responsibility for health consequences if the baby becomes infected. Knowingly transmitting a disease to another person is against the law in Cuba and subject to punishment.

All pregnant women in Cuba receive free care throughout pregnancy, including monthly visits with their doctor and a multidisciplinary team that includes a family doctor, obstetrician-gynaecologist, psychologist, and nutritionist. If the woman is HIV positive, the team also includes an epidemiologist or infectious disease specialist. All pregnant women have comprehensive testing for general health issues, genetic conditions, and sexually transmitted diseases, including HIV, syphilis, and hepatitis.

As a result, prevalence of HIV among pregnant women is extremely low. In Matanzas, one of 15 provinces in Cuba, with about 600 000 inhabitants, there are roughly 6000 to 7000 pregnancies a year, yet only seven pregnant women in the past five years have been HIV positive, making intervention to interrupt transmission rarely necessary.

According to UNAIDS, prevalence of HIV in Cuba has historically been among the lowest in the world, and in 2014, was 0.2% to 0.3% among adults ages 25 to 49. However, "perceived confidence" of pregnant women in successful preventive measures may have paradoxically led to an increase in the proportion of HIV positive women who choose to become pregnant, rising from 3.8% in 2010 to more than 5% in subsequent years.[2]

Teresita Crespo, obstetrician-gynaecologist and consultant professor at Matanzas Medical School, said: "It is the comprehensive nature of the Cuban healthcare system and our

public health approach that has allowed us to accomplish this. When you have a diagnosis [of HIV], you use all measures available to treat pregnant women, but success is based on what you do before they are pregnant."

## Interrupting infection

Globally, although vertical transmission of HIV is declining, the number of babies born with HIV remains a serious threat, especially in resource poor communities. In 2013, according to UNAIDS, about 199 000 infected babies were born to the 1.3 million women with HIV.

For the few pregnant women with HIV, Cuba uses several methods to reduce transmission, including caesarean sections, avoidance of episiotomies and amniocentesis, no breastfeeding, use of antiretroviral drugs, and (rarely) abortion. Francisca Matos, director of Matanzas Provincial Maternal Care Home, emphasised that Cuban doctors do not encourage abortion, and the choice to terminate a pregnancy is a personal one made by the parents alone.

Certain measures, such as no breastfeeding, are controversial. However, maintaining breastfeeding despite HIV infection is more important in countries where babies die of diarrhoeal and respiratory diseases and where formula is not readily available, factors which do not apply in Cuba.[3]

Prophylaxis using highly active antiretroviral therapy (HAART) is used for all pregnant women regardless of viral load.[4] Neonates are given their first dose of azidothymidine in the first four hours of life and the drug is continued for six weeks. If viral load is undetectable at six weeks, medicine is stopped and the baby is followed up with monthly visits to the paediatrician or family doctor for the first year of life and then with decreasing frequency according to their age and health. All visits are free, as are any medicines. Viral load testing is repeated at 1, 2, 4, 9, 12, and 18 months by ELISA, with Western blot added at 9, 12, and 18 months.

## Reducing mortality through primary prevention

Neonates with HIV are likely to fare better than newborns in many countries, partly because maternal and infant care is free throughout Cuba. The country's infant mortality rate is lower than that in the United States (4.76 deaths per 1000 live births in 2013 compared with 5.96 in the US).[5]

The provincial maternal homes, located close to hospitals in all 15 provinces of Cuba, offer "lying-in care" to women at risk of complications as well as to healthy pregnant women who live in remote areas and may not have easy access to a hospital. Healthy pregnant women are referred for free care at the homes for three weeks, beginning at the 38th week of pregnancy. If the woman hasn't delivered by 41 weeks, she is transferred to the local hospital. Women with complications may be offered longer term care depending on their condition.

Most women take advantage of the care available at provincial maternal homes, where they have classes on general health, nutrition, and the care of infants. The pregnant women who were in the home when I visited were enthusiastic about the services, saying they chosen to be there because they felt more secure with immediate access to a hospital.

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1 WHO. WHO validates elimination of mother-to-child transmission of HIV and syphilis in Cuba. Press release, 30 June 2015. http://www.who.int/mediacentre/news/releases/2015/mtct-hiv-cuba/en/
2 OMS. Prevención de la transmisión maternoinfantil de la sífilis y el VIH Informe de resultados, Cuba 2014. OMS, 2014.
3 Encylopedia of Death and Dying. Infant mortality. http://www.deathreference.com/Me-Nu/Mortality-Infant.html
4 Roig Álvarez T, González Núñez I, Verdasquera Corcho D. Use of highly active antiretroviral therapy (HAART) and HIV vertical transmission, Cuba 1989-2008. *Rev Bras Saúde Matern Infant* 2013;13:111-7.
5 Mathews TJ, MacDorman MF, Thorma ME. Infant mortality statistics from the 2013 period linked birth/infant death data. *National Vital Statistics Reports* 2015;64(9). thttp://www.cdc.gov/nchs/data/nvsr/nvsr64/nvsr64_09.pdf.