Northern Alberta—preventing HIV transmission to babies

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Since 1996 the widespread availability of combination therapy for HIV—highly active antiretroviral therapy (HAART) —has had a dramatic impact on the health of people with HIV. In high-income countries, deaths due to AIDS-related complications have greatly decreased, at least among people who are engaged in their care and treatment. The benefit of HAART is so profound that several research teams have estimated that young HIV positive adults who begin therapy today should be able to live near-normal life spans. Faced with this good news, surveys in Canada and France have found that HIV positive women are increasingly considering the possibility of raising a family.

The following steps greatly reduce the chance of transmitting HIV from mother to child:

- getting prenatal care
- taking HAART to help reduce viral load during pregnancy and delivery
- receiving intravenous AZT (zidovudine, Retrovir) during delivery
- delivering the baby via C-section if necessary
- giving the baby AZT after birth for six consecutive weeks
- avoiding breastfeeding and using baby formula instead

In high-income countries, employing these steps can reduce the risk of transmission to less than 2%.

However, according to researchers in Northern Alberta, in some parts of the Canada and the United States certain factors can contribute to higher rates of HIV transmission from mother to child, including the following:

- not getting prenatal care
- lack of routine HIV testing for pregnant women
- addiction
- homelessness

In Alberta

From 1999 to 2006, between 800 and 1,100 HIV positive people had their health monitored by the Northern Alberta HIV Program. Common HIV transmission risk factors for this population included the following:

- sharing equipment for drug use – 35%
- unprotected sex between men and women – 32%
- unprotected sex between men – 28%

Focus on prevention

To help reduce the risk of HIV transmission between mother and child, the HIV Program in Northern Alberta has a sophisticated approach, marshalling a healthcare team for the mother that includes the following:

- infectious disease specialists
- virologists
- pharmacists
- obstetricians
The team meets regularly and provides close monitoring and support that is individualized to meet the needs of HIV positive women who may have a chaotic lifestyle. Also, for the first year of the baby’s life, free baby formula is provided.

**Testing**

A key element of any HIV prevention program is testing. In Alberta, HIV testing as part of routine blood tests is available for pregnant women. Since 1998, pregnant women in Alberta may choose to not have an HIV test performed on their blood samples. However, records show that more than 95% of women in this province do get an HIV test.

Researchers recently evaluated the effectiveness of the Northern Alberta HIV Program in preventing mother-to-child transmission. Their findings suggest that the program is very effective. However, additional opportunities for retesting pregnant women for HIV are needed, such as during the later stages of pregnancy or even during delivery. Moreover, the impact of such testing on protecting the infant from infection should also be evaluated.

**Study details**

The research team reviewed health information collected from HIV positive women and their babies between January 1999 and March 2006. The team focused on results from 98 women who had 111 babies (some of the women delivered twins or were pregnant more than once).

The average profile of the women in this study was as follows:

- age at first delivery – 26 years
- 38% of the women were co-infected with hepatitis C virus
- CD4+ count at the time of delivery – 400 cells

The main ethno-racial groups were as follows:

- Aboriginal – 62%
- Black – 17%
- White – 15%

Main HIV infection risk factors were as follows:

- unprotected sex with a man – 55%
- sharing equipment for drug use – 38%

Women disclosed the following substance-using behaviours during their pregnancy:

- 66% smoked tobacco
- 45% used alcohol
- 41% used illicit drugs

**Results**

About 53% of the women knew that they were HIV positive before they became pregnant. But a large proportion of women did not know about their infection until HIV testing was done at one of the following points:

- prenatal screening
- at delivery of the baby
Anti-HIV therapy

In the years 1999 to 2006, anti-HIV drugs were increasingly prescribed during pregnancy. However, in 16% of pregnancies during this period, these medicines were not prescribed. Here are some reasons for this:

- the mother’s viral load was less than 400 copies without therapy – 4 women
- HIV was diagnosed immediately after the baby was born – 4 women
- no documented reason – 10 women

Keeping viral load down

At the time data collection began in 1999, the lower limit that the viral load assays could accurately count was 400 copies. Even though viral load tests were later improved so that they could detect a viral load as low as 50 copies, the researchers retained the original lower limit of 400 copies to achieve consistency in their results.

At the time the women gave birth, 72% had a viral load below the 400-copy mark. Among the women whose viral load was not suppressed, here are some of the reasons:

- They began anti-HIV therapy less than two months before they gave birth. In people with high viral loads, two months of therapy may be insufficient to suppress viral levels in the blood.
- They did not receive anti-HIV drugs.
- They had HIV that was resistant to available therapy.
- No reason was listed.

Events at birth

A critical part of reducing HIV transmission is to provide intravenous AZT to the mother during delivery of the baby. In 78% of births, AZT was given in this way; 5% of births received the anti-HIV drug nevirapine (Viramune). For the remaining women, medical records are not clear as to whether or not they received AZT. In some cases where intravenous AZT was not given, the following circumstances may have been a factor:

- premature delivery of the baby in prison
- women not knowing their HIV status at the time of delivery
- women not disclosing their HIV status at the time of delivery

HIV testing in babies

In Northern Alberta, infants are considered to be infected with HIV when two PCR tests performed on two separate blood samples at least four weeks apart have a positive result.

Infants are considered HIV negative when two PCR tests performed on two separate blood samples—done at least after the first month of birth and the second at least at the fourth month of age—have a negative result.

Babies that do not have both consecutive PCR test results are considered to have an “indeterminate” HIV infection status.

The babies

Most (74%) of the babies in this study were born after nine months of pregnancy and 75% of all the babies weighed less than normal. The HIV status of the babies was as follows:

- HIV positive – one baby
- HIV negative – 101 babies
- indeterminate – nine babies

Slipping through the cracks
The mother of the one baby who tested HIV positive was HIV negative during her previous pregnancy a year earlier. She lived in a remote community and did not seek prenatal care for her second pregnancy. Moreover, the healthcare team did not consider her to be at high risk for HIV, so during labour they did not offer her rapid HIV testing. Although nurses did draw her blood for HIV testing after she gave birth, this testing was not done until several days later.

**Some good news**

Bear in mind that while pregnant women in Alberta can refuse to have their blood tested for HIV, fewer than 5% did so.

There was only one confirmed case of mother-to-child transmission out of 111 babies; this is less than 1%. This is much lower than the results from a previous study done in Alberta in the late 1990s when 40% of infants were infected with HIV.

**Refusing HIV testing**

A previous study in Alberta using anonymous blood samples from pregnant women found that a small number were HIV positive. Because this testing was done anonymously—that is, no one knew the names of the women who were tested or the results of their pregnancies—the HIV status of the infants is also unknown.

Clearly, if HIV transmission rates in babies born to HIV positive women in Alberta are going to be reduced, research on why some women refuse HIV testing and ways of educating them about the benefits of testing (and the resulting care and treatment) for their health and the health of their babies needs to be done.

—Sean R. Hosein

**REFERENCES:**

Disclaimer

Decisions about particular medical treatments should always be made in consultation with a qualified medical practitioner knowledgeable about HIV- and hepatitis C-related illness and the treatments in question.

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