

Parkhurst Exchange (<http://www.parkpub.com>); July 2003 issue; Pages 16-17

Department: Head to Head (Experts Take a Stand)

**Debate Title: Mandatory HIV testing: Should screening in pregnancy be compulsory?**

**PRO: More lives can be saved**

AUTHOR: Elyske Levinsky, MD, MHSc Bioethics; St. Michael's Hospital, Toronto

Highly effective antiretroviral drugs, elective cesarean section and formula feeding have been shown to reduce the mother-to-child spread of HIV from approximately 25% to less than 2%. Despite these advances, perinatal transmission continues to occur in women who are unaware of their HIV status. According to the Centres for Disease Control (CDC), 93% of HIV-infected mothers in 25 states knew their viral status before delivery. This means that 7% did not, and unknowingly exposed their babies to the real risk of contracting HIV during pregnancy, labour, delivery and postpartum care. The primary prevention strategy is to maximize prenatal HIV testing of pregnant women. Ideally, this would involve sensitive and careful patient education and counseling to encourage all these women to undergo voluntary prenatal HIV screening. Even with such measures in place, some refuse to be tested during pregnancy, endangering themselves and their unborn children.

Mandatory prenatal testing may help solve this problem. This approach would require all pregnant women to undergo HIV testing so that measures could be initiated to prevent transmission of infection to their fetuses. Clearly, the ideal situation is compliance with voluntary testing. Unfortunately, this isn't always feasible.

**For a greater good**

In the recent severe acute respiratory syndrome [SARS] outbreak in Toronto, there's been a tremendous amount of alarm over people who aren't complying with their quarantines. Although mandating quarantine does breach the extremely important principle of autonomy, the public health benefits may outweigh the associated loss of individual autonomy. As a healthcare professional and citizen living in Toronto with my loved ones, I've been concerned to learn about individuals who break the quarantine rules. Respecting the civil liberties and rights of the individual is of utmost importance but, in such cases, perhaps this measure should be mandated.

Mandating immunization to prevent infectious diseases in children is another example of loss of individual autonomy for the greater health benefit to the public. While there's some debate on this issue, it's widely favoured and practiced, positioned as a greater good for both the child and society by preventing transmission of disease.

Are these situations comparable to mandatory HIV testing in pregnancy? Clearly, distinct similarities and differences exist. Still, this action fulfills the beneficence principle for the mother by enabling her to get help and initiate antiretroviral therapy, and for the fetus by decreasing the risk of transmission. Testing would prevent further spread of infection to other individuals in society. Compulsory screening may also reduce the negative economic impact that infections such as HIV and AIDS have on society. A utilitarian perspective may support this approach.

As mentioned, the ideal is a team approach that involves both patients and healthcare professionals functioning on an allied front, making informed decisions together and respecting patient autonomy. In the case of prenatal HIV testing, however, mandatory screening may be a more realistic option and should be considered.

## **CON: False positives can have disastrous effects**

AUTHOR: David Crowe; Alberta Reappraising AIDS Society (<http://www.aras.ab.ca>)

[This version is prior to editing by Parkhurst, and includes references which were all deleted by the magazine]

Mandatory prenatal HIV testing requires certainty. Certainty that the tests are accurate and that subsequent interventions will benefit both mother and child.

Canadian women are still at low risk for AIDS – only 44 new cases were reported in 2001<sup>1</sup>. Testing a low risk group, such as healthy pregnant women, is mathematically certain to produce false positives. If a test sequence is 99.9% accurate, and 1 out of 1,000 people being tested are infected, there will be as many false positive results as true positives. If tests are 99% accurate and only 1 out of 10,000 people tested are infected, false positives would outnumber true by 100 to 1!

HIV testing in most wealthy countries starts with an ELISA (antibody) test. If positive, it is repeated and, if still positive, a Western Blot (WB) is performed. This antibody test uses ten HIV proteins (antigens) separately impregnated in a paper strip instead of mixed together as in ELISA. Wherever an antigen reacts with an antibody a coloured ‘band’ forms. The problem is that there are at least 11 different interpretations of the number and identity of bands required for a positive WB in various laboratories, institutions and countries<sup>2</sup>.

The biggest problem with all HIV tests is that “there is no independent, unequivocal way of identifying a group of individuals who are all assuredly infected or uninfected”<sup>3</sup> [Cleary, JAMA. 1987; 258:1757]. Such a ‘gold standard’ is essential to determine which combinations of bands distinguish those ‘truly infected’ from those ‘truly not infected’. However, no such independent verification has been performed for either ELISA or WB, a fact admitted in many HIV test packet inserts<sup>4</sup>. HIV antibody tests are, instead, accepted as valid because there is a high (but not perfect) correlation between a positive test sequence and AIDS-defining illnesses, and between a negative test and their absence.

It is not necessary for AIDS to be present before a positive HIV test is acted upon. Antivirals are often immediately prescribed, even though it will be an average of 10 years before any signs of AIDS develop<sup>5</sup>.

A pregnant HIV-positive woman may be pressured to have a caesarean section and told that she must not breastfeed, even though there is no proof that breastfeeding (especially if exclusive) results in worse health outcomes than formula feeding<sup>6,7</sup>.

Mothers may be pressured to take antivirals during pregnancy and birth, even though AZT, the drug usually prescribed, is designed to interfere with DNA synthesis (it is a defective Thymidine analog), crosses the placenta<sup>8</sup> and may be carcinogenic and genotoxic<sup>9</sup>. They will also be urged to mix it with their baby’s formula. This, despite several studies showing that children exposed to antiviral medications as a fetus or infant are more likely to get sick and die<sup>10, 11, 12, 13</sup>.

Mandatory HIV testing, despite the possibility of errors and debilitating or fatal consequences, will result in the coercion of mothers by health care workers who believe, erroneously, that they know with certainty what is best for her baby<sup>14</sup>. HIV testing should be voluntary, and only performed after women are honestly informed of the likely consequences of a positive test.

## References

---

- <sup>1</sup> HIV and AIDS in Canada; Surveillance Report to June 30, 2002. Health Canada. 2002 Nov.
- <sup>2</sup> Papadopoulos-Eleopoulos E et al. High rates of HIV seropositivity in Africa - alternative explanation. *Int J STD AIDS*. 2003; 14: 426.
- <sup>3</sup> Cleary PD et al. Compulsory premarital screening for the human immunodeficiency virus: Technical and public health considerations. *JAMA*. 1987; 258: 1757-62.
- <sup>4</sup> Human Immunodeficiency Virus Type 1 HIVAB HIV-1 EIA. Abbott Laboratories. 1997 Jan.
- <sup>5</sup> Muñoz A et al. The incubation period of AIDS. *AIDS*. 1997; Vol 11 (suppl A): S69-76.
- <sup>6</sup> Coutoudis A et al. Influence of infant feeding patterns on early mother-to-child transmission of HIV-1 in Durban, South Africa: a prospective cohort study. *Lancet*. 1999 Aug 7; 354: 442-3,471-6.
- <sup>7</sup> Nduati R et al. Effect of breastfeeding and formula feeding on transmission of HIV-1; a randomized clinical trial. *JAMA*. 2000 Mar 1; 283(9): 1167-74.
- <sup>8</sup> Olivero OA et al. 3'-azido-3'-deoxythymidine (AZT) transplacental perfusion kinetics and DNA incorporation in normal human placentas perfused with AZT. Third Conference on Environmental Mutagens in Human Populations. 1999 Feb 18.
- <sup>9</sup> Olivero OA et al. Transplacental effects of 3'-azido-2',3'-dideoxythymidine (AZT): tumorigenicity in mice and genotoxicity in mice and monkeys. *JNCI*. 1997 Nov 5; 89(21): 1602-8.
- <sup>10</sup> The Italian Register for HIV Infection in Children. Rapid disease progression in HIV-1 perinatally infected children born to mothers receiving zidovudine monotherapy during pregnancy. *AIDS*. 1999 May 28; 13: 927-33.
- <sup>11</sup> Kuhn L et al. Disease Progression and Early Viral Dynamics in Human Immunodeficiency Virus Infected Children Exposed to Zidovudine during Prenatal and Perinatal Periods. *J Infect Dis*. 2000 Jul; 182: 104-11.
- <sup>12</sup> de Souza RS et al. Effect of prenatal zidovudine on disease progression in perinatally HIV-1-infected infants. *J Acquir Immune Defic Syndr*. 2000 Jun 1; 24(2): 154-161.
- <sup>13</sup> Miller TL et al. Maternal and infant factors associated with failure to thrive in children with vertically transmitted Human Immunodeficiency Virus-1 infection: the prospective, P2C2 Human Immunodeficiency Virus Multicenter study. *Pediatrics*. 2001 Dec; 108(6): 1287-96.
- <sup>14</sup> Wolf LE et al. When Parents Reject Interventions to Reduce Postnatal Human Immunodeficiency Virus Transmission. *Arch Pediatr Adolesc Med*. 2001; 155: 927-33.