



available at www.sciencedirect.com

SCIENCE @ DIRECT®

journal homepage: www.elsevier.com/locate/siny

Seminars in
FETAL & NEONATAL MEDICINE

Elimination of HIV infection in infants in Europe—Challenges and demand for response

Mikael Ostergren*, Ruslan Malyuta

Child and Adolescent Health and Development, World Health Organization Regional Office for Europe, CHD 8, Scherfigsvej, Copenhagen 2100, Denmark

KEYWORDS

HIV infections, prevention and control, transmission, in infancy;
Disease transmission;
Vertical, prevention and control;
Postnatal care;
Infant care;
Maternal health services;
Europe

Summary Effective interventions for the prevention of mother-to-child transmission (MTCT) of human immunodeficiency virus (HIV) infection now exist and where these are fully implemented, MTCT rates of 1–2% are achievable. Virtual elimination of HIV in infants by 2010 has therefore been set as a goal for European region. There are, however, many challenges. The eastern European and central Asian countries are facing the fastest growing HIV epidemic in the world with a dramatic increase in numbers of HIV-positive pregnancies and new HIV infected infants. Nevertheless, the prevalence of HIV among pregnant women is still relatively low and the high coverage with antenatal care provide an opportunity to decrease the number of new HIV cases among infants to minimal level. The challenge is to move national strategies for prevention of HIV infection among infants from a disease-focused vertical approach towards effective preventive interventions integrated into mother-child health (MCH) and reproductive health services. The scaling up of prevention interventions among those most at risk and hard-to-reach women are key priority actions. This goes beyond clinical care and needs to include a range of care and protection issues, both in health institutions and in the community. The WHO Regional Office for Europe, together with other UNAIDS co-sponsors, has developed a regional strategic framework for prevention of HIV infection in infants. The strategic framework promotes a comprehensive approach comprising the four interrelated elements: (1) primary prevention of HIV infection; (2) prevention of unintended pregnancies among HIV-infected women; (3) prevention of HIV transmission from HIV-infected women to their children; (4) provision of care and support to HIV-infected women, their infants and families. Implementation of all four pillars of the strategic framework would help European countries to achieve the goal of virtual elimination of HIV infection in infants.

© 2005 Elsevier Ltd. All rights reserved.

* Corresponding author.

E-mail address: mmo@euro.who.int (M. Ostergren).

Introduction

Vertical transmission of the human immunodeficiency virus (HIV) is the main source of HIV infection of children in the world, with an estimated 2000 vertically-acquired HIV infections occurring daily worldwide, mostly in sub-Saharan Africa. Over the past 5 years, eastern Europe and central Asian (EECA) countries have been faced with a dramatic increase in numbers of HIV-positive pregnancies and new HIV infected infants (Fig. 1).

Effective interventions for prevention of mother-to-child transmission (MTCT) of HIV infection now exist and where these are freely available and used, MTCT rates of 1–2% are achievable.^{1–3} The challenge is to make this happen throughout the World Health Organization (WHO) European region and particularly in the eastern part, where the HIV epidemic is fuelled by injecting drug use and health systems are affected by economies in transition. The high level of coverage with antenatal care, the availability of an extensive healthcare infrastructure, high literacy levels, the relatively low number of infections, and effective interventions to reduce MTCT offer an opportunity to eliminate virtually HIV infection in infants from the European region, and thus provide a model for the rest of the world. This would require the preparation of the health systems affected by economies in transition, and particularly, maternal and child health services, to deal with transmission of HIV infection to infants in an integrated manner. The interventions need to go beyond clinical care and need to include a range of care and protection issues, both in health institutions and in the community.

In response to this challenge, the WHO Regional Office for Europe, together with other UNAIDS co-sponsors, has developed the Regional Strategic Framework for the Prevention of HIV Infection in Infants.⁴ The goal set for the European region is the virtual elimination of new HIV paediatric cases by 2010^a — a goal that was included in the Dublin Declaration adopted at the Conference on ‘‘Breaking the Barriers — Partnership to Fight HIV/AIDS in Europe and Central Asia’’, organized under the Irish Presidency of the European Union in Dublin on 23 and 24 February 2004.

The Strategic Framework promotes a comprehensive approach comprising four interrelated elements:

- primary prevention of HIV infection
- prevention of unintended pregnancies among HIV-infected women
- prevention of HIV transmission from HIV-infected women to their children
- provision of care and support to HIV-infected women, their infants and families

Discussion

Integration of HIV prevention interventions into maternal and child health (MCH) care services in western Europe has

^a Less than one HIV-infected infant per 100,000 live births, and less than 2% of infants born to HIV-infected women acquiring HIV infection.

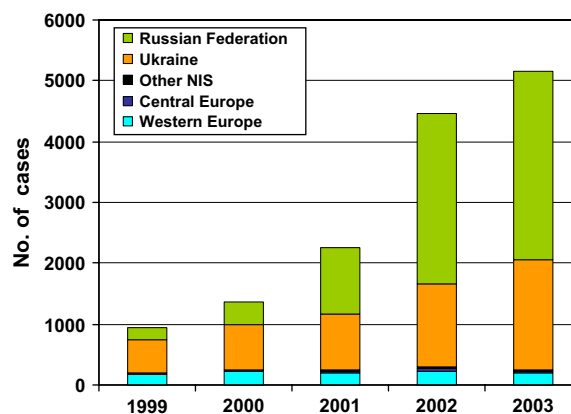


Figure 1 Newly reported HIV infections through mother-to-child transmission in western, central and eastern Europe 1997–2003. *Source: EuroHIV (2004).*

helped to prevent large numbers of new HIV cases among children. Linkages to civil society organizations with effective community outreach programmes have helped to reach those populations that are underserved and most at risk, to provide them with primary prevention, family planning and prevention of MTCT (PMTCT) interventions. The question is whether MCH services in EECA can absorb and successfully implement similar activities. Although MCH services in EECA are characterized by an extensive infrastructure and a high level of coverage with antenatal and perinatal care, several shortcomings include over-medicalization of care, focus on inpatient care, outdated treatment guidelines, lack of an evidence-based approach to care, shortages of basic supplies and drugs to provide appropriate care, lack of standardization of M&E (monitoring and evaluation) indicators, a poor legal system and inequalities in access to quality care.

Compared with other regions, such as Sub-Saharan Africa and southeast Asia, the prevalence of HIV among pregnant women is relatively low. Even in the most affected countries such as Ukraine and the Russian Federation the prevalence does not exceed 1% (Fig. 2).

The epidemiology and mode of transmission of HIV also differs across the European region. In western Europe, at

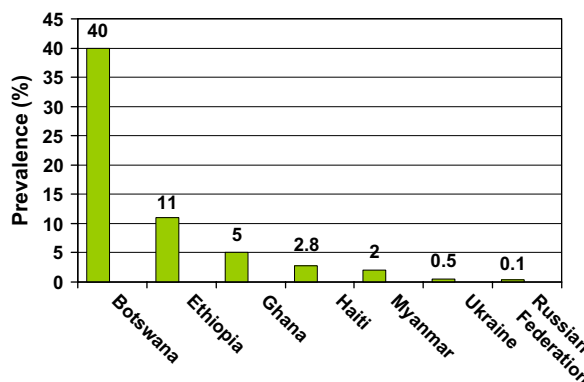


Figure 2 Prevalence of HIV infections among pregnant women in selected countries from Asia, Africa, the Caribbean and eastern Europe. *Source: AIDS Epidemic Update, December 2004. Geneva, UNAIDS/World Health Organization, 2004.*

the end of 2003, the annual reported number of newly diagnosed HIV infections among women was mainly associated with the heterosexual transmission, and 48% of new HIV cases were imported from countries with high HIV prevalence outside the European region (*EuroHIV*, 2004). In central Europe, the main route of transmission is heterosexual and affects mainly commercial sex workers and ethnic minorities. A different epidemiological pattern is seen in eastern Europe where rapid socio-economic changes and high levels of poverty have become associated with higher numbers of women practising commercial sex and injecting drug use. In addition, a growing rate of sexually transmitted infections increases the women's risk of being infected and/or of transmitting HIV. The prevalence of HIV among street commercial sex workers in St Petersburg, Russian Federation was 48.1% in 2003.⁵ In EECA, 33% of new HIV cases in 2003 were due to contact with a high-risk partner (*EuroHIV*, 2004) and data from the Russian Federation show that the proportion of women in reported HIV cases increased from 24% in 2001 to 43% in 2004.

The challenges of the heterogeneity of the epidemiological situation in the European region, both between and within countries, have an impact on the design of interventions and priorities and ways of implementing interventions to prevent HIV infection in infants. Thus, one of the priority actions is the need to set up linkages with other primary HIV prevention services, and intensify efforts to reach the most vulnerable women and those who "missed" antenatal care services. Although the western European preventive services may target immigrants from countries with a generalized HIV epidemic, the main concerns in eastern Europe are reaching injecting drug users, female sex workers and trafficked women. As these groups often experience difficulties in accessing health services, their specific needs should be taken into consideration. Strengthening the role of civil society and non-governmental organizations to cover these populations with prevention and care interventions is vitally important.

Given the strong and direct relationship between primary prevention activities (or the lack of them) and the number of infections in infants, the rapid scaling-up of primary prevention within the MCH services is essential. Voluntary HIV testing and counselling in general, and particularly during pregnancy, provide an excellent opportunity to address HIV prevention among women and infants. The rapid scaling-up of VCT (voluntary counselling and testing) services is feasible if they are integrated into the primary healthcare levels of the countrywide MCH network. The use of optional HIV testing in Ukraine implemented at all levels of antenatal care resulted in a 60% increase in the uptake of HIV tests from 30% in 2000 to 92% in 2003. Lessons learned in Ukraine, however, show that testing is much easier to implement than quality counselling, which still remains a concern.⁶

In the eastern European context, reproductive health services for drug-using women are of particular importance. Female injecting drug users are difficult to reach through the usual reproductive health services and may mistakenly perceive themselves as infertile because of drug-related amenorrhoea. Reproductive health services, therefore, need to be more client-focused, especially toward marginalized and young women. Linkages should be created between HIV/acquired immunodeficiency syndrome (AIDS)

services, reproductive health services and harm-reduction programmes, including the use of peer counsellors and conversely, all harm-reduction projects should establish linkages with reproductive health services. The appropriateness of different family planning models will depend on the medical needs of individual women and the social and cultural situations in which women find themselves.

The package of specific interventions to prevent HIV transmission from an infected mother to her child includes antiretroviral drug use, safer delivery practices, and infant feeding counselling and support. Over the last decade the vertical transmission rate in western Europe decreased from around 20% in the pre-076 era, to 10% in the monotherapy era, to less than 2% currently with the wide implementation of highly active antiretroviral therapy (HAART) as prophylaxis or treatment complemented by elective Caesarean section and replacement feeding.

In Ukraine and the Russian Federation, substantial progress in the provision of antiretroviral drugs (ARV) to prevent vertical transmission has been made during 2003–2004. The coverage of women with ARV prophylaxis against vertical transmission was about 90% in Ukraine in 2003.

The choice of ARV regimens in the eastern European context is determined by its feasibility, efficacy, acceptability and cost. Currently, up to one third of HIV-positive women in eastern European countries do not benefit from the advantages of long-term potent ARV prophylaxis during pregnancy because of late presentation to healthcare services. Often their HIV status is not identified until labour or soon after delivery, which substantially reduces the opportunity of preventing HIV transmission to their infants. In St Petersburg (Russian Federation) the rate of transmission for women with late presentation to antenatal services was 26% compared with 4% of those followed during pregnancy.⁷ Most of these women are from populations with risk behaviours, including injecting drug users. Strengthened services for injecting drug users, such as drug dependence treatment and harm reduction, and the creation of strong linkages between these services and existing services such as reproductive healthcare for women, will help the early engagement of female injecting drug users in antenatal care services and prevention of HIV transmission to their infants.

An elective Caesarean section delivery substantially reduces the risk of mother-to-child transmission of HIV, even in women with low viral load or those receiving combination antiretroviral therapy. Caesarean section, therefore, remains the main method of delivery for HIV-positive women in western European countries. In the eastern European countries, however, delivery practices are different and the majority of HIV-infected women deliver vaginally. With the well-developed infrastructure of MCH services in eastern European countries, elective Caesarean section should be considered as an affordable and potential tool to reduce the rate of HIV transmission.

The protection of child rights should be central to programmes for the prevention of HIV in infants. Recent reviews of PMTCT programmes in Ukraine and the Russian Federation found that about 10% of children born to HIV-infected mothers are abandoned and almost all of them are institutionalized. There are only anecdotal cases reported of the adoption of HIV infected children in eastern Europe.

Services need to be developed to prevent the abandonment and institutionalization of infants.

Lack of sufficient resources (healthcare infrastructure, human resources and drug availability) prevents many eastern European countries from the broad introduction of HAART for prevention of vertical transmission. More resources are needed to procure combination anti-retroviral therapy, and to make supportive care services available.

Conclusions

The goal of the virtual elimination of HIV in infants in the European region by 2010 will only become realistic if all four prongs of the Strategic Framework for the Prevention of HIV Infection in Infants in Europe are addressed in a comprehensive manner. United Nations agencies and other international organizations and donors should continue providing support to countries in implementing and scaling up comprehensive programmes for the prevention of HIV infection in infants.

The WHO is committed to providing such support. The WHO's role focuses on primary prevention (especially among vulnerable groups), the integration of key interventions into MCH services for the PMTCT of HIV, and the provision of care, treatment and support to HIV-infected mothers, their children and their families. The WHO has a particular role to play in:

- setting norms and standards for implementing programmes to prevent HIV infection in infants;

- providing technical support to countries in specific areas, such as surveillance, strategic planning, programme implementation, and monitoring and evaluation; and
- institutional and human capacity-building, including training of MCH staff.

References

1. Dorenbaum A, Cunningham CK, Gelber RD, Culnane M, Mofenson L, Britto P, et al. International PACTG 316 Team. Two-dose intrapartum/newborn nevirapine and standard antiretroviral therapy to reduce perinatal HIV transmission: a randomized trial. *JAMA* 2002;**288**(2):189–98.
2. Ioannidis JP, Abrams EJ, Ammann A, et al. Perinatal transmission of human immunodeficiency virus type 1 by pregnant women with RNA virus load <1000 copies/ml. *J Infect Dis* 2001;**183**:539–45.
3. Mandelbrot L, Landreu-Mascaro A, Rekacewicz C, et al. Lamivudine-zidovudine combination for prevention of maternal-infant transmission of HIV-1. *JAMA* 2001;**285**:2083–93.
4. *Strategic Framework for the Prevention of HIV Infection in Infants in Europe*. Copenhagen: WHO Regional Office for Europe; 2004.
5. Smolskaya T, Yakovleva A, Kasumov V, Gheorgitsa S. HIV sentinel surveillance in high-risk groups in Azerbaijan, the Republic of Moldova and the Russian Federation. *Report on a WHO project* April 2003–March 2004.
6. Malyuta R, Ostergren M, Newell ML, et al. Prevention of mother-to-child transmission of HIV infection: Ukraine experience to date. *European Journal of Public Health*, in press.
7. Khaldeeva N, Hillis SD, Voronin E, et al. HIV-1 seroprevalence rates in women and relinquishment of infants to the state in St Petersburg, Russia 2002. *Lancet* 2003;**362**(9400):1981–2.