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1. INTRODUCTION

About 14 million women were living with HIV/AIDS in the world at the end of 1998. Of these, over 2 million were infected during 1998. Perinatal transmission of HIV can occur from the infected mother to her baby during pregnancy, during labour and delivery or after delivery through breastfeeding. Nearly 600 000 children were born with HIV infection in the world in 1998—more than one child per minute. Most of these children were born in sub-Saharan Africa. Perinatal transmission occurs in the Eastern Mediterranean Region (EMR) of the World Health Organization (WHO) but on a small scale. Perinatal transmission can be prevented by zidovudine therapy and other interventions.

In the above context, the Eastern Mediterranean Regional Office (EMRO) of WHO organized an intercountry meeting on perinatal transmission of HIV in Cairo, Egypt, from 25 to 27 January 1999 with the following objectives:

- to review the situation of perinatal transmission of HIV in the Eastern Mediterranean Region;
- to discuss possible interventions for prevention of perinatal transmission; and
- to formulate regional strategies for prevention of perinatal transmission.

The agenda and the programme of the meeting are given in Annexes 1 and 2 respectively. The meeting was attended by participants from Djibouti, Egypt, Islamic Republic of Iran, Iraq, Jordan, Lebanon, Libyan Arab Jamahiriya, Morocco, Pakistan, Sudan, Syrian Arab Republic and Republic of Yemen as well as by staff, consultants and temporary advisers from WHO, United Nations Population Fund (UNFPA) and World Bank (Annex 3). Dr Nahed Azzazy of Egypt was elected as chairperson of the meeting and Dr Mustafa El Nakib of Lebanon as rapporteur.

A message from Dr Hussein A. Gezairy, WHO Regional Director for the Eastern Mediterranean was delivered by Dr Zuhair Hallaj, Acting WHO Representative, Egypt. Dr Gezairy referred to the present situation of HIV/AIDS in general and perinatal transmission in particular. He informed the participants of the low prevalence of HIV in the Eastern Mediterranean Region owing to religious and moral values. He highlighted various interventions for prevention of perinatal transmission and stressed that prevention of sexual transmission should be the primary aim. He referred to the efficacy of zidovudine treatment in combination with avoidance of breastfeeding in preventing perinatal transmission.

Dr Gezairy drew the attention of the participants to various implications of the strategies for prevention of perinatal transmission, including the high cost of zidovudine, ethical issues and other resources implications. He emphasized that interventions for prevention of perinatal transmission should be integrated into

national maternal and child health services. He called upon the participants to discuss and identify appropriate regional strategies to be subsequently adapted in the individual countries.

2. SITUATION OF PERINATAL TRANSMISSION

2.1 Global situation

Ms Elizabeth Hoff, WHO headquarters

By the end of 1998, 33.4 million people were living with HIV and 5.8 million became infected during 1998. Over one million children have been infected with HIV, largely through mother-to-child transmission (MTCT). If current trends continue, HIV will increase infant mortality by 25% and under-5 mortality by over 100% in regions most affected by HIV.

Challenges in HIV prevention and care vary considerably between countries depending on seroprevalence and the maturity of the epidemic. Antenatal screening at sentinel sites has shown levels of seroprevalence of up to 40% in some urban areas in sub-Saharan Africa whereas countries in the Eastern Mediterranean Region are in general less severely affected; but HIV is becoming an increasing problem in some in some of them.

Prevention of MTCT comprises a three-pronged strategy:

- primary prevention of HIV in women
- prevention of unwanted pregnancies in HIV-positive women
- prevention of MTCT.

Primary prevention should include:

- strengthening of STD screening and treatment
- strengthening of family planning services, especially promotion of the use of the male and female condom in a consistent and correct manner.

The main interventions for prevention of MTCT are:

- identification of seropositive women
- provision of antiretroviral (ARV) drugs
- provision of replacement feeding.

Short-course zidovudine therapy (Thailand regime) has made this intervention feasible in some developing countries.

An interagency steering committee has been set up to take full advantage of MTCT interventions, voluntary counselling and testing, antiretroviral drug treatment

and replacement feeding and to facilitate their appropriate use. UNICEF, WHO, UNAIDS and UNFPA aim to act together to ensure that pilot MTCT interventions are implemented safely and effectively.

Criteria for selection of countries for pilot interventions are:

- high HIV infection rates among women of child bearing age
- health system strong enough to deliver their intervention
- political commitment.

Although the list of pilot countries has not been finalized, substantial planning and some trials have begun in several of the most heavily affected countries in sub-Saharan Africa.

2.2 Regional situation

Dr Purushottam Shrestha

The number of new cases of AIDS reported from the Eastern Mediterranean Region countries is increasing every year, and the cumulative total has reached nearly 7000. The largest number has been reported from Sudan, followed by Djibouti, Morocco, Tunisia, Saudi Arabia, Oman and other countries. About 5% of the reported cases were among children under 15 years. About one-quarter of the reported cases were among females but the female-to-male sex ratio has been increasing steadily over recent years. About three-quarters of cases were due to heterosexual transmission but the proportion of cases due to heterosexual transmission has been increasing during recent years. About 3% of the reported cases were due to perinatal transmission. The largest number of cases due to perinatal transmission was reported from Sudan, followed by Tunisia, Oman, Djibouti and Morocco. Other countries have reported fewer than 10 cases each. The number of cases due to perinatal transmission reported every year is small, reflecting the low magnitude of the epidemic in the Region as a whole.

HIV surveillance is being carried among pregnant women attending antenatal clinic in a few countries of the Region. Bahrain reported a prevalence of 0.2% in 1996 and 1997 but nil in 1998. In Djibouti, the prevalence reached 9.3% in 1996 but very limited information was available for 1997 and none for 1998. Pakistan reported a prevalence of 0.2% in 1995 and 1997 but nil in other years. In Sudan, the prevalence was 0%, 0.6%, 1.7% and 2.9% in 1994, 1995, 1996 and 1997 respectively but no information was available for 1998. In other countries, surveillance was either not carried out or very little information was available.

The number of HIV infections due to perinatal transmission in the Region is too small to get an indication of transmission rate. No study has been carried out on the risk of perinatal transmission, nor have any preventive interventions been implemented.

2.3 Country situation

The country situation in Djibouti, Libyan Arab Jamahiriya, Morocco and Sudan was presented and discussed.

2.3.1 Djibouti

Dr Abdourahmane Sow, Mr Djama Guirreh and Dr Ahmed Assakaf

Among the overall population of 649 769 (1997), women represent 50.6% (303 600). Women of childbearing age (15–49 years) number 162 000 (27%). In 1997 the number of expected births was 22 000.

Health infrastructures are as follows: two referral hospitals including maternity services in the capital city; one national tuberculosis referral centre in the capital city; two mother and child hospitals in Djibouti district; four medical centres, one in each district (district hospitals); 34 health centres and dispensaries; three private medical clinics; five private medical clinics; four private dental clinics; one private dental health centre; and four private pharmacies.

Djibouti has 1 physician for 6849 persons, 1 pharmacist for 47 928, 1 dentist for 61 000, 1 midwife for 15 976, 1 nurse for 1579 and 1 laboratory technician for 17 658.

Some health indicators are: life expectancy at birth is estimated at 48 years (42 for men and 54 for women); crude death rate is 17.7 per 1000; infant mortality is 114 per 1000 live births; and maternal mortality is 740 per 100 000 live births.

Mother and child health services exist from the peripheral level up to central level in the capital city. Although infrastructures exist, the services are poorly staffed and are inadequately equipped, and drugs are not available on a regular basis. A programme for safe reproductive health has been set up including standardized antenatal visits, referral network for at-risk pregnancies, tetanus immunization of pregnant women and procedures for good quality intrapartum and postpartum care. In addition, there is a joint baby-friendly hospital initiative set up by UNICEF, WHO and the government of Djibouti. More than one-third of women attend antenatal clinics, over half of women deliver in hospital or a health centre, nearly two-thirds of babies are delivered by trained staff and practically all young infants are breastfed.

An estimated 15 000 persons are living with HIV, of whom 615 are children. HIV prevalence among pregnant women is 2.8% (1996). The cumulative number of reported AIDS cases is 1730 as at second quarter, 1998. By age group, 0–4 years represent 1.2% of the total cumulative cases, and age group 20–49 (childbearing age) represents 81.5%. By sex, 59% are male and 41% female. By route of transmission the large majority is heterosexual (98.4%) while transmission from mother to child accounts for 1.2%. Other routes are negligible.

There is no site for voluntary counselling and testing, nor is any population subgroup known to seek voluntary testing. Currently, there isn't any activity being implemented to prevent perinatal transmission. In future, plans will be developed based on the outcome of this meeting.

2.3.2 Libyan Arab Jamahiriya

Dr Mohamed Al Arbi Bushaala

Antenatal care in Libyan Arab Jamahiriya is usually provided to pregnant women through maternity and child care centres integrated into the primary health care system in designated polyclinics, which are distributed in the cities and villages according to population. Some pregnant women receive antenatal care through the private sector. Overall most women receive an appropriate standard of antenatal care. All deliveries occur in maternity hospitals. Perinatal transmission of HIV in the Libyan Arab Jamahiriya is not problem at this time but this does not mean that it does not exist at all. However, if it is present it is of minimal occurrence, mainly among women of foreign national origin. This has been confirmed by the recent widespread testing of several thousand of pregnant women all over the country, which showed the absence of HIV infection among Libyan women.

2.3.3 Morocco

Dr Kamal Alami and Dr Mimoun Aouraghe

Maternal and child health services are organized at three levels. The first level is composed of dispensaries and health centres, the second level is composed of provincial maternity hospital and the third level of university maternity hospital. The exclusive breastfeeding practice is 36% in urban and 70% in rural areas. The estimated number of persons living with HIV is 6000, and the prevalence of HIV among pregnant women is 0.014%. The number of reported AIDS cases is 557 (as of 31 December 1998), of whom 70% are male and 30% are female. 19 cases of AIDS due to transmission from mother to infant have been reported, representing 3.4% of all cases. There are 10 sites for voluntary counselling and testing, and it is planned to extend this number in 1999. The activities to prevent perinatal transmission are included in the new strategy of screening and management of AIDS and HIV infection which is in the implementation process.

Infected pregnant women are treated with antiretroviral drugs before and at the time of delivery. Newborn babies are also treated with antiretroviral drugs. Breastfeeding is contraindicated if women have HIV infection.

2.3.4 Sudan

Dr Isam El Khidir and Dr Amal El Dardiry Nugud

Reproductive health/family planning has been a priority component of primary health care since 1975. Services offered are antenatal care, delivery, and postnatal care

including immunization and STD services. In Sudan antenatal care coverage is 70%. Trained staff deliver 77% of pregnant women. Breastfeeding is widely practised. Mean duration of breastfeeding is 19–20 months and complementary feeding rate at 6–9 months is 75%.

By the end of 1998, 2343 AIDS cases had been reported. Heterosexual transmission is the predominant mode, and 66 cases were due to perinatal transmission. The estimated number of HIV-positives at the end of 1998 was 186 000. The estimated number of children living with HIV by end-1998 was 13 500. HIV prevalence among pregnant women varies from 0.5% in Khartoum to 3.5% in Juba (south) and 4.5% in Elgedarif (east).

Voluntary counselling and testing is offered in many sites. Activities offered to prevent perinatal HIV infection are: education of general public and vulnerable groups, integration of HIV/AIDS/STD into reproductive health/family planning services, safe blood supply, and infection control measures. Planned activities include strengthening of counselling and formulation of national strategy for prevention of perinatal transmission.

3. MATERNAL AND CHILD HEALTH SERVICES AND INFRASTRUCTURE IN THE EASTERN MEDITERRANEAN REGION

Dr Kunal Bagchi, WHO/EMRO

WHO has worked with countries of the Region to support national efforts to reduce mortality and morbidity among women and children, often with considerable success. It became clear that reductions in levels of maternal and neonatal mortality lagged behind those in infant and child mortality. The Safe Motherhood Conference held in Nairobi in 1987 was a historic milestone that generated global hope for ameliorating the continuing tragedy of maternal mortality. Closely following the Nairobi Conference, the WHO Regional Committee for the Eastern Mediterranean in its Thirty-fifth Session in 1988 noted with concern the high levels of maternal mortality in some countries of the Region, and passed a resolution calling to reduce maternal mortality of each Member State by 50% by the year 2000 and to adopt all possible measures to achieve this goal.

During subsequent years, the concept and programmatic framework of reproductive health care has revised WHO's approach towards safe motherhood as horizontal rather than vertical.

To enhance the implementation of the Safe Motherhood Initiative, the major outcome of the Nairobi conference, through the programmatic framework of reproductive health at country level, WHO, in collaboration with UNDP, UNICEF, UNFPA and World Bank, has developed the Mother–Baby Package, which describes the minimum interventions needed for safe motherhood. These are antenatal care to prevent and treat complications of pregnancy; clean and safe delivery using trained

birth attendants; essential obstetric care for all women who need it for high-risk pregnancies and complications; and family planning for health to ensure that individuals and couples have the information and services to plan the timing, number and spacing of pregnancies. The Mother–Baby Package was introduced by the Regional Office at an intercountry workshop held in Lahore, Pakistan, in 1995 and since then it has been adopted by countries of the Region as an operational tool to convert the concept of safe motherhood into a reality.

It is now being increasingly recognized that in the long term safe motherhood can only be achieved through an intersectoral and holistic approach. Nevertheless, it should be reminded that this approach will take a long time, will need large financial and human resources, and above all, will require political commitment of a high order. Fortunately, health-related measures like the Mother–Baby Package will have a quick impact in cutting down maternal and neonatal mortality and morbidity.

There are great variations and disparities in maternal and neonatal mortality levels between countries and between different geographical areas in the Eastern Mediterranean Region. The countries can be classified into three groups: countries which have achieved significant impact on maternal mortality but still have to strengthen neonatal health care—the average maternal mortality in these countries is 33 per 100 000 live births; countries which have achieved some improvement, but still need to bring about further reduction in maternal mortality—the average maternal mortality in these countries is 144 per 100 000 live births; and countries which have achieved little or no improvement in maternal mortality and still need extensive support to implement effective safe motherhood measures—the average maternal mortality in these countries is 505 per 100 000 live births.

It is difficult to demonstrate the impact of safe motherhood initiative for two main reasons: determination of accurate maternal mortality rates and difficulty in establishing baseline data on maternal morbidity and mortality due to poor information systems, which exist in some countries. Data on maternal and neonatal mortality rates in most countries are based on hospital statistics.

Countries have raised several questions. Should the Safe Motherhood Initiative focus on maternal *and* neonatal health or should it be a holistic women's health approach? What strategies are appropriate?

Urgent efforts are necessary to improve the Safe Motherhood Initiative in some countries considering the poor quality of care in peripheral and rural areas, inadequate logistical support systems, lack of community awareness and participation, and insufficient financial commitment at national level.

Thus, despite many lessons learnt, much remains to be done to make motherhood safer in the Eastern Mediterranean Region.

4. OVERVIEW OF PERINATAL TRANSMISSION AND STRATEGIES FOR PREVENTION

Dr Rachel Clare Baggaley and Ms Elizabeth Hoff, WHO headquarters

Mother to child transmission (MTCT) can take place prenatally through intrauterine infection (5%–7%), during labour and delivery (10%–15%), or postnatally through breastfeeding (7%–22%).

A wide range of factors increases the risk of HIV transmission from mother to child. Maternal factors include advanced immunosuppression, advanced clinical disease, high viral load, recently acquired HIV infection and placental barrier disruption (through chorioamnionitis, placental malaria, smoking). Delivery factors include mode of delivery (vaginal delivery or caesarean section), invasive procedures and prolonged rupture of membranes. Postnatal factors include breastfeeding, cracked nipple and oral lesion in the infant. Reduction of MTCT can be achieved by intervening at any of these stages.

Antenatal care services are necessary for the success of MTCT prevention programmes. The first priority of addressing the problem of MTCT should be to provide all women with an essential package of antenatal care. Women should be encouraged to begin antenatal care early to prevent and treat anaemia, to screen for syphilis and other STDs and to decide on HIV testing.

During labour and delivery a skilled attendant should be present who:

- is trained to avoid unnecessary invasive obstetric procedures that may increase the risk of MTCT of HIV;
- is trained to use universal precautions; and
- will refer the mother and child promptly and safely to expert care when necessary.

In the light of the risk of MTCT the following procedures should be avoided unless absolutely necessary: routine episiotomy, artificial rupture of membranes, use of scalp electrodes and fetal blood sampling.

Vaginal cleansing using a 0.25% solution of chlorhexidine has been shown to reduce transmission in women with membranes ruptured for more than four hours and to reduce neonatal and puerperal sepsis.

Postpartum care should include further counselling on risk of transmission, infant feeding, family planning, signs of postpartum infection and follow-up care for mother and child.

5. HIV COUNSELLING AND TESTING

a) Dr Minoos Mohraz, Temporary Adviser, WHO/EMRO

Voluntary counselling and testing is the cornerstone of HIV care service for pregnant women, and should be established if antiretroviral intervention to reduce MTCT is available. Voluntary counselling and testing of pregnant women must be confidential and available in hospital settings, antenatal clinics and family planning clinics and has to be integrated into maternal and child health services. Partners should be counselled whenever possible. Testing should be free and results should be available quickly. Counselling of pregnant women, helping them seek treatment, should be ongoing and confidential.

b) Dr Rachel Baggaley

There are many advantages of offering voluntary counselling and testing in the antenatal setting. One of them is “normalization”. Major barriers to HIV prevention are stigma and denial. If HIV testing is made more available and acceptable this may be important in changing these barriers.

The majority of women will test negative even in high prevalence areas. For women who test negative this knowledge may help them to stay negative.

For women who test seropositive, there are many advantages to knowing their status:

- option to terminate their pregnancy if legally and safely available
- special health care during antenatal period and delivery
- antiretroviral interventions to reduce MTCT if available
- partner counselling
- family planning counselling
- early access to health care and social support (including prevention of opportunistic infections)
- mutual support from groups of people living with HIV/AIDS.

However, women must be protected, if they test seropositive, from possible negative consequences, such as abuse and abandonment by husbands, stigmatization by peers, friends or neighbours, stigmatization by health workers, and poor psychological coping following a positive test result if adequate support and ongoing counselling is not available.

Women in low prevalence areas may feel more marginalized and subject to greater stigmatization than women from areas where HIV is a well established and acknowledged problem.

6. ANTIRETROVIRAL THERAPY

Dr Rachel Baggaley

Short-course zidovudine is a feasible intervention for some developing country settings. The regime is zidovudine 300 mg twice a day from 36 weeks until onset of labour and then 300 mg every three hours during labour. This regimen has been shown to be effective only among women who do not breastfeed. When this regimen was used in Thailand a 50% reduction in MTCT was achieved. However these results must be interpreted with some caution as adherence to therapy was optimal, attendants at antenatal clinic were extremely good and all women delivered in the hospital. Furthermore, all women receiving the intervention were in good health, and mean CD4 count was 424 cells/ μ l. No women breastfed, and it is likely that the reduction in MTCT would be less if they did. Results from trials of antiretroviral therapy among women who breastfeed will be available over the next few months. In industrialized countries combination antiretroviral therapy is now used to prevent MTCT and has shown even greater efficacy.

When considering introduction of antiretroviral drugs to prevent MTCT a set of minimum requirements should be in place:

- access to and use of appropriate antenatal, intrapartum and postpartum care with adequately trained health workers
- adequate voluntary pre- and post-test counselling services
- affordable and reliable HIV testing
- acceptance and uptake of voluntary counselling and testing by HIV-infected women
- an enabling environment; preventing discrimination and abuse of women who test positive
- continuing medical and social support for HIV-infected women
- laboratory services to monitor blood parameters
- delivery units with access to safe standard precautions: disinfectants, gloves and needles
- affordable antiretroviral drugs
- a sustainable pharmaceutical distribution and storage system for antiretroviral drugs, to include quality control
- availability of an adequate supply of affordable breast-milk substitutes.

7. HIV AND INFANT FEEDING

Dr Anna Verster, WHO/EMRO

7.1 Benefits of breastfeeding

Nutritional benefits

- Breastmilk provides an infant's complete nutritional needs up to the age of 6 months, up to one-half from 6 to 12 months and one-third from 12 to 24 months.
- Colostrum normally has a high concentration of vitamin A.
- Breastmilk contains enough water even in very dry and hot areas.
- Breastmilk is easily digested and its composition changes to meet the development needs of the growing infant.

Protection against infections and other illnesses

- Breastfed infants have fewer illnesses.
- Breastmilk helps to protect against diarrhoea, acute respiratory tract infection and otitis media, and reduces the risk of infant death.

Contribution to maternal health

- Exclusive breastfeeding on demand delays the return of fertility.
- Breastfeeding reduces the risk of ovarian, breast and other reproductive cancers later in life.

Social and economic benefits

- Breastfeeding is the most economical method of infant feeding, and reduces the cost of health care for sick infants.
- Breastfeeding provides human interaction and stimulation to ensure healthy development.

7.2 Risks of avoiding breastfeeding

- If prevalence of artificial feeding were to reach 10 or 100% in a country where postnatal mortality was 90 there could be a 13 or 59% increase in infant mortality rate respectively.

- In one study the relative risk of mortality of non-breastfed infants (8 days–12 months) from diarrhoea was 14 times that of breastfed infants.
- HIV can be transmitted through breastfeeding. An estimate of the additional risk of MTCT attributable to breastfeeding of 7%–22% was given at the Consultation.

7.3 Alternatives to breastfeeding

Breastfeeding is the ideal way to feed the majority of infants. Efforts to protect promote and support breastfeeding by women who are HIV-negative or of unknown HIV status need to be strengthened.

HIV-positive mothers should be enabled to make fully informed decisions about the best way to feed their infants and receive support to carry out their decision as safely as possible.

To make fully informed decisions about infant feeding, women need to know and accept their HIV-status. This implies increased access to voluntary and confidential counselling and testing.

Infant feeding options that may be considered by HIV-positive women are replacement feeding, modified breastfeeding and use of breastmilk from other sources.

Replacement feeding means providing a child who receives no breastmilk with a diet that contains all the nutrients that the child needs throughout the period for which breastmilk is recommended, that is for at least the first two years of life. *Modified breastfeeding* is early cessation of breastfeeding or feeding with expressed and heat-treated breastmilk. *Use of breastmilk from other sources* may be made from a breastmilk bank or from a wet-nurse within the family who is HIV-negative. It is important to note that the risk of illness and death from replacement feeding must be less than the risk of transmission of HIV through breastfeeding; otherwise there will be no advantage in choosing this alternative.

Feeding implications

From birth to 6 months of age: milk is essential and can be given in the form of commercially produced infant formula or as home-prepared formula made by modifying fresh or processed animal milk together with micronutrient supplements.

From 6 months to 2 years: replacement feeds should consist of appropriately prepared nutrient enriched family foods, given three times a day if commercial or home-prepared formula continues to be available or given five times a day if neither formula is available

Appropriate foods for 6 months till 2 years: some form of milk product should be included for protein and calcium. Meat or fish should be added as a source of iron and zinc. Vegetables should be added for vitamins A and C, folate and other vitamins.

Appropriate mixing of formula and safe handling is a skill. It also requires resources, such as safe water, fuel, soap, feeding utensils, preferably cups and spoons, time, and sufficient formula.

Cost of replacement feeding: to feed infants from 0–6 months, 92 litres of fresh milk or 20 kilograms of powdered commercial formula are needed. Between 6–24 months, 255 litres of milk or 43 kilos of milk powder will be needed. The cost of 20 kilograms of formula varies—e.g. US\$ 380 in USA, US\$ 150 in Pakistan and US\$ 200 in Kenya. The total cost of breastmilk substitutes for 1 year as a percentage of per capita GNP is about 3% in USA, 53% in Pakistan and 139% in Kenya.

To provide support for adequate replacement feeding and to prevent unnecessary use of artificial feeding and spill-over, Governments need to take action to implement and enforce the International Code of Marketing of Breastmilk Substitutes and subsequent World Health Assembly resolutions.

Support for alternatives to breastfeeding should be considered as part of a package of care to reduce MTCT, which should include improved maternal nutrition, safe delivery practices and voluntary counselling and testing.

Communities have a special role to play in providing a supportive and enabling environment for HIV-positive women and their families by raising the awareness of the whole community about HIV and AIDS, addressing denial and promoting acceptance of voluntary counselling and testing.

Only through strong and supportive community action can the stigmatization and victimization of those infected with HIV/AIDS be reduced. Politicians, influential local leaders and support groups should all be involved, and men and other decision-makers in the family should be targeted.

8. OTHER METHODS OF PREVENTING PERINATAL TRANSMISSION

Dr Minoo Mohraz

Based on the current understanding of HIV transmission, approaches other than antiretroviral drugs are under evaluation, and some of them can reduce MTCT of HIV. These approaches include:

- *Micronutrient supplements* such as vitamin A and multivitamins. Vitamin A is essential for growth, immunity and mucosal integrity. The effect of vitamin A in reducing MTCT is under study.

- *Caesarean section.* Studies on the role of caesarean section in reducing MTCT of HIV have shown variable results. But if this procedure can be applied, it is recommended.
- *Vaginal cleansing* with a topical microbicide, such as chlorhexidine, has shown to be effective in situations where membranes were ruptured for more than four hours.
- *Breastfeeding or bottle-feeding?* The risk of transmission of HIV to infants by breastfeeding is 7%–22%. If there is a safe alternate to breastfeeding it should be advocated.
- *Passive immunization* with HIV-specific monoclonal or polyclonal antibodies and active immunization of neonates with HIV vaccines.

Until there is an effective vaccine for MTCT prevention, the most effective method of MTCT prevention is antiretroviral therapy.

9. ETHICAL ISSUES

Dr Purushottam Shrestha

There has been a widespread abuse of human rights in the wake of HIV/AIDS epidemic. Denial of the existence of AIDS is one of the main causes of such action. But protection of human rights is an essential component in preventing HIV transmission and reducing HIV infection. Every individual has a right to life and to the highest attainable standard of physical and mental health as well as the right to privacy, informed consent and confidentiality of information.

Two basic ethical questions can be asked about perinatal transmission. Is inaction justifiable or ethical knowing that certain interventions are known to prevent or reduce significantly perinatal transmission? On the other hand, what are the ethical implications if interventions are implemented to prevent perinatal transmission? Answers must be sought within the context of women's and children's perspectives. Women have a lower status than men in the Region, are economically dependent on their husbands, have limited autonomy and are vulnerable to abuse and discrimination. Their views on HIV/AIDS are often not sought. Children have the right to life, to health and to fulfil their potential but they are unable to give consent. There are areas of conflict between parents' and children's interests.

Prevention of perinatal transmission involves identification of infected women through voluntary counselling and testing. Voluntary counselling and testing requires informed consent, testing and giving test results. However, giving information about risk behaviour is highly sensitive in many cultures. Furthermore, many women in developing countries have a limited capability to understand the information and to give consent. In case of minor girls, parental consent becomes necessary,

complicating the matter further. Issues related to HIV testing in many situations include inadequate counselling, lack of confidentiality of test results, possibility of stigmatization and discrimination, non-availability of interventions to choose from, and negative attitude of care providers.

Antiretroviral treatment is an important intervention for prevention of perinatal transmission but it is not without implications. This intervention is aimed at preventing transmission to children without regard to women's own infection. This could have adverse effect on the medical condition of infected women. Other issues to be considered include the capability of women to understand the purpose and nature of treatment and to adhere to the regimen, choice of treatment regimen and children's follow-up.

Avoiding breastfeeding is another important intervention but in countries where breastfeeding is the norm, avoiding it may be tantamount to being labelled as HIV-infected. Avoidance of breastfeeding should also be considered in the light of women's capability to understand the whole issue, their willingness to accept it, their capability to prepare proper formula feeding, risk of childhood diseases, cost of breastmilk substitute, loss of contraceptive effect of breastfeeding and international code for marketing of breastmilk substitutes.

10. CARE OF INFECTED MOTHERS AND INFANTS AND INTEGRATION INTO MATERNAL AND CHILD HEALTH SERVICES

Dr Kunal Bagchi

Organized HIV/AIDS prevention and control activities are not integrated with routine maternal and child health services in the countries of the Region. HIV/AIDS control and prevention programmes, as they exist, are either independent in nature or are special programmes or are part of general communicable diseases control. As such, it is not simple to describe in exact terms how an infected mother and her new born baby will be taken care within the standard maternal and child health service context. Some broader issues that will require strengthening within the routine maternal and child health service are discussed below.

- The HIV/AIDS situation will affect the maternal and child health/family planning service providers in two different ways-personally, and professionally. At the personal level, the principle concern will be to prevent HIV infection in themselves and in members of their families. The main professional tasks of maternal and child health/family planning service providers will be to keep abreast of new information and practice about HIV/AIDS and then convey this knowledge and practice to others for prevention purposes.
- Preventing HIV infection in women of reproductive age and making voluntary contraception available to HIV-infected women are the two elements of

preventing mother-to-child transmission, in addition to the use of selective antiretrovirals.

- HIV counselling should be an integral part of HIV prevention and control programme. Antenatal care provides an opportunity to offer HIV counselling for women of reproductive age. HIV counselling has two objectives: to prevent HIV infection and transmission and to provide support for these already infected.
- HIV testing should be available in antenatal clinics in areas where HIV seroprevalence among pregnant women is high. Knowledge of HIV infection may influence a woman's decision to practise family planning.
- Preventing HIV transmission in labour, delivery and care of neonates can be achieved by the adoption of universal precautions; use of protective barriers like gloves and eyewear; washing hands and other skin surfaces if contamination occurs. Universal precautions should be taken when caring for the newborn and all members should be regarded as potentially infectious.
- Preventing HIV transmission through blood transfusion at the time of delivery can be achieved by discouraging those who have engaged in high-risk behaviour from donating blood; by testing each unit of blood before it is transfused; by increasing the iron stores of pregnant women in treatment of anaemia and contributing causes; by avoiding episiotomy, active management of the third stage of labour and prompt repair of lacerations; by use of normal saline and plasma expanders instead of packed blood cells or whole blood; only women who have very low haemoglobin levels and symptoms of acute blood loss or severe anaemia should receive blood.
- Care of HIV-positive newborn infants is undertaken through the maintenance of good nutrition. Mothers should also be taught about appropriate complementary feeding practices and introduction of solid foods.
- HIV-positive infants should be vigorously treated for common paediatric infections. Immunization according to standard schedules should be maintained. Protective vaccination is particularly desirable as vaccine preventable illness can often be much more severe in children with HIV infection. Lastly, as many of the infected children will have months or years of asymptotic life. every effort should be made by family members and health care professionals to help the children lead as normal a life as possible.
- Proper use of contraception will prevent pregnancy in an HIV-infected woman and will, as a result, also prevent HIV transmission to a fetus/infant. If used properly, condoms can prevent HIV transmission to an uninfected person.

11. FINANCIAL IMPLICATIONS

Dr Rachel Baggaley

Various models have been developed to determine the cost effectiveness of short-course zidovudine for the prevention of mother-to-child transmission. These models have been prepared using estimates from a high-prevalence low-income setting in sub-Saharan Africa and from a middle-income moderate-prevalence setting (Thailand). These models indicate that for high-prevalence settings, the cost of short-course zidovudine for MTCT may be in the order of US\$ 44 per disability-adjusted life year (DALY) or US\$ 832 per case of HIV averted. This makes the intervention comparable with other routine health interventions such as DPT/poliomyelitis immunization and prevention of childhood malnutrition by school feeding programmes. Models for low-prevalence/middle-low-income settings have not been developed.

However, for low prevalence countries (such as those in the Region) the intervention is likely to be much more costly per case of HIV averted because of the large number of women who will have to be screened to detect a seropositive case. For the intervention to be cost-effective in these settings HIV screening could be targeted at women of “higher risk” or antiretroviral drugs could be offered to women who are already aware of their seropositive status.

12. WORKING GROUPS

The participants were divided into three working groups to discuss a) planning and advocacy; b) technical and operational issues; and c) ethical, social, cultural and legal issues. Each working group reviewed the current situation, discussed the main issues that need to be considered and identified the strategies and interventions. The findings and recommendations of the groups were presented and discussed at the plenary session.

12.1 Advocacy and planning

The current situation is as follows:

- There is a lack of strong political commitment.
- A lot of stigma is attached to HIV infection.
- There is no specific plan for prevention of perinatal transmission of HIV.
- There is a lack of coordination among related programmes: reproductive health/family planning, nutrition, national AIDS programmes and nongovernmental organizations.

- A number of health workers have a negative judgmental attitude.

Advocacy for prevention of MTCT should aim at sensitization of decision-makers, getting cooperation and support from community leaders, raising awareness of people at community level and changing the attitude of health workers.

The framework of any programme to prevent perinatal transmission of HIV should include:

- a) Prevention of new infections among women of childbearing age

Among general public by promotion of safer sex, supply of safe blood and adoption of universal infection control measures.

For vulnerable groups through specific projects targeting vulnerable groups.

- b) Avoidance of pregnancy by infected women

- c) Prevention of MTCT of HIV by:

- provision of voluntary counselling and testing
- therapeutic intervention using antiretroviral drugs
- provision of breast milk substitute to infants born to HIV-positive mothers who are on antiretroviral drug treatment
- improving quality of care to mother and infants through strengthening the reproductive health/family planning services through capacity-building, provision of supplies and development of health information system.

Breastfeeding should be promoted, protected and supported in all countries. All women who are HIV-negative or whose HIV status is not known should be encouraged to breastfeed. HIV-positive women who know and accept their status should be counselled on infant feeding options.

12.2 Technical and operational issues

The objectives of the MTCT prevention programme are:

- prevention of HIV infection in women of childbearing age, and
- prevention of perinatal HIV transmission in countries of the Region.

Strategies for prevention of MTCT should include:

- expansion and strengthening of family planning and STD/HIV information and services, especially dual protection approaches
- education of women about STD/HIV/AIDS and about how to protect themselves from acquiring infection

- strengthening primary health care programmes to optimize the implementation of strategies to reduce MTCT of HIV infection
- provision of quality voluntary counselling and testing services in particular link with maternal and child health/sexually transmitted diseases services by trained staff
- strengthening referral services to meet the requirements of treatment and care of women and their children with HIV
- training of health personnel in the field of counselling, care and treatment of infected persons with emphasis on pre-service training
- encouragement of the role of nongovernmental organizations in counselling and provision of care for infected mothers and their children
- encouragement of research in the field of STD/HIV/AIDS
- monitoring and evaluation of MTCT prevention programme.

Strengthening of primary health care should pay attention to the following:

- provision of delivery units with all means of universal precautions
- provision of appropriate laboratory facilities
- Providing pregnant women with vitamin A, multivitamins and other necessary micronutrients in addition to treatment for sexually transmitted diseases
- ensuring availability of trained attendants at birth
- availability of antiretroviral drugs to be given to HIV-positive pregnant women according to recommendations of expert committees in this regard
- provision of breastmilk substitutes for at least six months for children born to HIV-positive mothers.

12.3 Ethical, social, cultural and legal issues

As MTCT of HIV infection is essentially an extension of HIV infection in women who themselves are infected sexually or parentally, interventions may be targeted at prevention of infection among women and at prevention of transmission of infection from infected women to their children.

Prevention of infection among women

- The classical field of intervention of AIDS programmes is essentially to increase the awareness of the population about the problem, mainly through information and promotion of health practices in life using many media to diffuse the message (nongovernmental organizations, mosques, mass media, etc.).
- Using condoms cannot be recommended due to the cultural and religious context of the Region.
- Using the syndromic approach to treat sexually transmitted diseases.

- Education should be targeted at both men and women
- AIDS education in schools is important.
- Behavioural research is important, and advocacy among religious leaders is essential.

Prevention of transmission to children

- Voluntary counselling and testing still does not exist in many countries.
- If the woman is tested for HIV, the result of the test must be communicated to her. But how to justify the test, especially to an apparently healthy women, is a difficult issue.
- Confidentiality is an important ethical issue in this situation, and most important is the follow-up of HIV-positive persons.
- Anti-retroviral therapy: if the woman is already on antiretroviral drug treatment, the treatment should not be stopped for the sake of the child. If the woman is not under treatment the question arises regarding who has the priority—mother or baby.
- Breastfeeding: it is practically impossible to recommend stopping breastfeeding, especially if the conditions required for replacement feeding are not favourable. Stopping breastfeeding cannot be recommended to women whose HIV status is not known.

13. RECOMMENDATIONS

13.1 To countries

1. High-level commitment including provision of adequate financial and human resources should be made for prevention of MTCT.
2. As effective interventions are becoming available for prevention of MTCT, countries should consider implementing interventions for preventing MTCT. In some cases such programme may consider initiating pilot projects focusing on safety and feasibility, particularly in areas where HIV prevalence is relatively higher.
3. MTCT pilot prevention programmes should consist of voluntary counselling and testing, antiretroviral drug treatment and advice on replacement feeding. Other interventions may be added after they prove to be effective by well conducted studies.

4. As the cost of voluntary counselling and testing is very high in low-prevalence countries, voluntary counselling and testing should be focused on women who are at increased risk of HIV infection, and informed consent should be obtained.
5. Short-course zidovudine treatment is recommended in resources-constrained countries because of lower cost, easier administration and better likelihood of completion of treatment. Zidovudine should be available, accessible and affordable. Infected pregnant women as well as their husbands and families should be educated and counselled about the treatment.
6. As replacement feeding by HIV-positive women may increase the risk of childhood illnesses in resource-constrained countries, care should be given to appropriate alternatives which may include proper preparation of formula feeding and training of women. Promotion of breastfeeding for HIV-negative women and for women of unknown HIV status should be continued and further strengthened.
7. Continued efforts including education, advocacy and other appropriate measures should be made to deal with ethical, social, cultural and legal issues in order to avoid stigmatization and discrimination against infected women or their children.
8. MTCT prevention programmes should be integrated into reproductive health/family planning services and should be developed in a phased manner, in collaboration with national AIDS programmes and nutrition departments, with involvement of medical and nursing schools, professional associations, nongovernmental organizations and other advocacy groups.
9. Efforts for prevention of sexual transmission of HIV should be continued and strengthened targeting at both women and men.
10. Primary health care/reproductive health programmes should be strengthened to accommodate MTCT interventions which include: prevention of HIV infection through the expansion and strengthening of family planning and STD/HIV information and services, especially dual protection approaches; an essential package of antiretroviral drug treatment including nutritional support; safe labour and delivery care, including skilled attendants and minimizing invasive obstetric practices; and integrating prevention and treatment of sexually transmitted diseases into antenatal services.

13.2 To WHO and other UN organizations

11. Technical and financial support should be provided to countries in order to facilitate the implementation of MTCT prevention programme.

12. Negotiations should be continued with manufacturers to reduce the prices of antiretroviral drugs and breast milk substitutes and this benefit should be made available to countries of the Region.

Annex 1

AGENDA

1. Opening session
2. Situation of mother to child transmission (MTCT) of HIV
3. Overview of MTCT and strategies for prevention
4. HIV counselling and testing
5. Antiretroviral therapy
6. Breastfeeding
7. Other methods of preventing MTCT
8. Care of mothers and infants and integration into maternal and child health services
9. Ethical issues
10. Financial implications
11. Operational plan
12. Group work on regional strategies
13. Closing session

Annex 2**PROGRAMME****Monday, 25 January 1999**

- 08.00 Registration
- 08.30 Opening session
Message from Regional Director
Introduction of participants
Nomination of officers
Objectives of meeting
Dr Shrestha
- 09.00 Situation of mother to child transmission (MTCT) of HIV
Global
Ms Hoff
Regional
Dr Shrestha
Country: Djibouti, Libya, Morocco and Sudan
- 10.45 MCH services and infrastructure in the Region
Dr Bagchi
- 11.30 Overview of Transmission of HIV from mother to child
Dr Baggaley and Ms Hoff
Strategies for prevention of MTCT
- 12.45 HIV counselling and testing
Drs Mohraz and Baggaley
- 13.45 Ethical issues
Dr Shrestha

Tuesday, 26 January 1999

- 08.00 Antiretroviral therapy
Dr Baggaley
- 09.15 HIV and infant feeding
Dr Verster
- 10.45 Other methods of preventing MTCT
Dr Mohraz
- 11.30 Care of infected mothers and infants and integration into MCH services
Dr Bagchi

- 12.15 Financial implications
Dr Baggaley
- 13.15 Operational plan
Dr Shrestha
Introduction to group work on regional strategies
Group work on regional strategies

Wednesday, 27 January 1999

- 08.00 Group work on regional strategies
- 10.45 Report from groups and discussion
- 13.00 Recommendations
Draft report
Closing

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