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НАН України



**INSTITUTIONAL RESEARCH**

**SOCIODEMOGRAPHIC AND MEDICAL DETERMINANTS  
OF THE RISK OF MOTHER-TO-CHILD TRANSMISSION  
OF HIV IN UKRAINE**

**Annotated Report**

Kyiv – 2014

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This publication presents the results of research of social and demographic determinants of the risk of mother-to-child transmission of HIV. In the process of development of the national strategy Getting to Zero, the study and analysis of a still high HIV-infection rate among newborns, are the preconditions for understanding the epidemiological and social factors contributing to the success of the program for prevention of mother-to-child transmission of HIV (PMTCT) and, correspondingly, for the development of a strategy and interventions to eliminate cases of HIV-infection among children in Ukraine. The research results will be of interest to decision makers in the area of HIV/AIDS response, to the organizers of health care and social sphere, to the heads of AIDS Centres and to all people involved in HIV/AIDS response activities.

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**ABSTRACT**  
**Institutional Research «Sociodemographic  
and Medical Determinants of the Risk of Mother-to-Child  
Transmission of HIV in Ukraine».**  
**Annotated Report**

**Research Goal:** to learn medical and non-medical factors that influence mother-to-child transmission of HIV; to develop recommendations for elimination of HIV-infection cases among children born to HIV-infected mothers in Ukraine.

**Materials and Methods.** A retrospective analysis of 200 HIV-infection cases among children born to HIV-infected mothers in 2008 – 2012 was conducted in 5 regions of Ukraine. The analysis was conducted on the basis of medical documents and sociological survey to identify key determinants of mother-to-child transmission of HIV.

**Results.** An average age of mothers of HIV-infected children was 26 years; and by the time of delivery – 29 years. Despite the heterosexual transmission was key HIV transmission mode for these women (78.0%), every one woman in five (21.5%) was infected due to injecting drug use. The proportion of women, who were current IDUs in pregnancy, was 14.5%. In spite of injecting drug use, 90.0% of mothers of HIV-infected children had sexual relations during pregnancy and 61.0% of them had never used condoms. 28.5% of women, whose HIV positive status was identified antenatally and postpartum, did not receive the required set of medical and non-medical PMTCT services. Some women (5.0%) became HIV-infected during pregnancy and were identified at the second medical examination. In other cases 11.1% of HIV-infected women had negative HIV testing results antenatally and postpartum, and this means that they were in a 'seroconversion window' period at the second HIV testing, or were HIV-infected after delivery. ARV prevention of perinatal transmission of HIV was offered to 72.0% of pregnant women, of whom 22% of women were provided with ARV prevention only during labour. Coverage of pregnant IDUs with ARV prevention was 49.0%. Over the half of women (56.0%) had low adherence to ARV treatment. Social support during ARV prevention was provided to only one in four women (25.0%). Caesarean section was offered to only 15.0% of HIV-infected parturient women, 17.5% of HIV-infected women presented themselves to the maternity hospital already in labour, 27.5% of women had preterm delivery, 22.0% of women had latency period that lasted over 4 hours and 11.5% were offered invasive manipulations during labour. ARV prevention coverage of HIV-infected children in the researched regions was 84.0% and was lower than an average in Ukraine. According to the survey results, 16.0% of patients had experienced stigma and discrimination due to their personal (or their child's) HIV positive status; 10.0% of children were refused from the provision of health services due to their HIV positive status. There are still cases of disclosure of HIV positive status of a mother or a child (14.6%), first of all, by health care workers. The value of social material assistance after the birth of HIV-infected child and its contribution to the family budget has significantly increased –

from 5.0% to 65.0%. At the time of research, the social services were received by only 50.5% of HIV-infected children.

**Conclusions.** The research results demonstrate that the problem with infection of children with HIV-infected mothers is still relevant at the current stage of epidemic development in Ukraine. Social component of the PMTCT programme is implemented at an appropriate level only in some regions of the country and does not have a significant impact on the achievement of the expected PMTCT results on the national level. Integration of activities to prevent perinatal transmission of HIV in the addictions, TB, STI and other health and social services will contribute to a better coverage of HIV-infected pregnant women with PMTCT services and to the achievement of strategic goals for the elimination of mother-to-child transmission of HIV in Ukraine.

## LIST OF ABBREVIATIONS

ARV	Antiretroviral
ARVP	Antiretroviral prevention
ART	Antiretroviral therapy
HAART	Highly active antiretroviral therapy
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HIV	Human immune deficiency virus
WHO	World Health Organization
HCF	Health care facility
NAP	National Programme on Prevention of HIV-infection, Treatment, Care and Support to HIV-infected and AIDS Patients for 2009–2013
OST	Opioid Substitution therapy
IB	Immune blot
STI	Sexually transmitted infections
ELISA	Enzyme-linked immunosorbent assay
HCT	HIV counselling and testing
PLH	People, living with HIV
NGO	Non-governmental organizations
MTCT	Mother-to-child transmission of HIV
PMTCT	Prevention of mother-to-child transmission
PCR	Polymerase chain reaction
IDU	Injecting drug users
AIDS	Acquired immune deficiency syndrome
TB	Tuberculosis
CSSFCY	Centre of Social Services for Families, Children and Youth
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNICEF	The United Nations Children’s Fund

## RELEVANCE OF THE RESEARCH

Mother-to-child transmission of HIV (MTCT) is one of the routes for the spread of HIV-infection, which prevails among other causes of HIV-infections among infants. A timely, comprehensive and consistent prevention of MTCT can make a significant impact on this infection transmission mode and limit it as much as possible in the future.

Since 2001 Ukraine has achieved a significant progress in prevention of mother-to-child transmission of HIV (PMTCT). Implementation of the national strategy of PMTCT programme is the only prevention intervention in Ukraine that covered the major proportion of its target group with high quality interventions and led to the reduction of mother-to-child transmission of HIV (MTCT) rate.

Since 2001, during the period of PMTCT programme implementation in Ukraine, the frequency of mother-to-child transmission of HIV has been reduced almost 6-fold, from 27.8% in 2001 to 4.9% in 2010. Of 3,881 children born to HIV-infected mothers in 2010, HIV diagnosis was confirmed for 177 children; 3,408 children were removed from medical check-up lists due to the absence of HIV-infection; 296 children remained with HIV diagnosis to be confirmed because their parents refused from examination, or because the place of residence of children was unknown and there was a need to perform a further follow up for the child to confirm his or her HIV status.

In spite of a certain progress of the PMTCT programme, Ukraine still has serious challenges that need to be addressed. In 2001 more than 5,000 pregnancies among HIV positive women were registered in Ukraine, while HIV prevalence among pregnant women was 0.47%, which is the highest in Europe. The largest number of HIV-infected children live in the regions with high HIV prevalence where epidemic process is fuelled by the transmission of the virus in most-at-risk populations, first of all, among injecting drug users (IDUs).

Current trends of HIV epidemic development suggest that on the background of 'feminization' of the epidemic one can expect a further growth of the numbers of children born to HIV-infected women, and it requires to ensure a permanent monitoring and to timely implement PMTCT interventions.

Within the global strategy of the Joint United Nations Programme on HIV/AIDS (UNAIDS) and the World Health Organization (WHO) on elimination of mother-to-child transmission of HIV, Ukraine as other UN member states committed to strengthen and scale up the PMTCT programmes by 2015.

In 2012 the Government of Ukraine conducted an evaluation of the National Programme on Prevention of HIV-infection, Treatment, Care and Support to HIV-infected and AIDS Patients for 2009–2013, approved by the Law of Ukraine #1026-VI as of 19.02.2009 (NAP), which should help to identify obstacles to key intervention of epidemic response, including the sphere of prevention of mother-to-child transmission of HIV in Ukraine.



In spite of implementation of various studies of the situation with PMTCT programme in Ukraine, the need to study the links between the cases of HIV transmission from mother to child and socio-demographic factors that contribute to the transmission of virus to the newborns, as well as medical aspects of vertical transmission of HIV that are not analyzed in the official statistics data still remains relevant.

The importance of studying such factors as the key causes of HIV transmission to the infants on the current stage of epidemic process determined the need to conduct a special research. The results of this research will contribute to the development of future interventions in medical and non-medical spheres to achieve the global and national targets on the elimination of mother-to-child transmission of HIV in Ukraine.

## RESEARCH METHODOLOGY

**Research Goal** – to study medical and non-medical factors that influence mother-to-child transmission of HIV; to develop recommendations for elimination of HIV-infection cases among children born to HIV-infected mothers in Ukraine.

### **Research Objectives:**

- to identify socio-demographic characteristics of HIV-infected children and their parents;
- to assess the maternal factors of impact on MTCT, including behavioural and social ones;
- to analyze timeliness of laboratory and clinical confirmation of HIV diagnosis in children;
- to conduct a comprehensive analysis of the implementation of key PMTCT interventions aimed at HIV-infected infants and their mothers, including health interventions and social support;
- to evaluate Ukrainian legislation on the provision of services for the prevention of mother-to-child transmission of HIV and for social support to HIV positive mothers and their children;
- to develop recommendations on the elimination of mother-to-child transmission of HIV in Ukraine, taking into account the reduction of impact of social determinants that contribute to the mother-to-child transmission of HIV.

**Research Method** – retrospective epidemiological analysis and sociological survey.

### **Subject of Research:**

1) pairs «HIV-infected mother – HIV-infected infant born to HIV-infected mother»; HIV-infected infant is a liveborn baby born to HIV-infected woman in 2008–2012 with the confirmed HIV-infection. Subjects of research also include babies born to HIV-infected mothers, who died after birth and in whom HIV-infection was confirmed before or after their death.

2) Experts – health and social service providers, specialists of the Regional AIDS Centres.

**Research Tools:** specially designed questionnaires that include data from primary medical documentation, epidemiological history (Section 1) and interview results (Section 2) aimed to identify key problems in the area of organization of interventions for the prevention of mother-to-child transmission of HIV (Section 3).

**Sampling Size** – 200 pairs «HIV-infected mother – HIV-infected infant».

Five Regional AIDS Centres were involved in the research: Crimean Republican, Dnipropetrovsk, Donetsk, Zaporizhja and Odessa Oblast AIDS Centres. Questionnaires were distributed by the regions of Ukraine proportionally to the number of vertical transmission cases registered in 2008–2009 in these regions:

### Distribution of Questionnaires by the Regions of Ukraine

Regions	Numbers of HIV-infected children born in 2008–2009	Number of questionnaires
AR Crimea	12	10
Dnipropetrovsk oblast	79	70
Donetsk oblast	80	65
Zaporizhja oblast	13	10
Odessa oblast	47	45
<b>Total:</b>	<b>231</b>	<b>200</b>

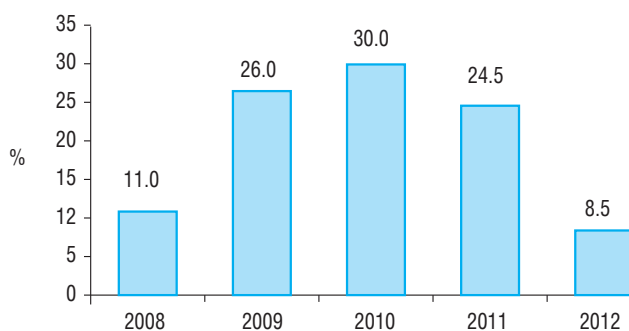
## Section 1.

# RESULTS OF DESK STUDY TO IDENTIFY THE FACTORS OF MOTHER-TO-CHILD TRANSMISSION OF HIV BY THE PRIMARY MEDICAL DOCUMENTATION DATA AND EPIDEMIOLOGICAL HISTORY

## 1.1. Socio-demographic and Epidemiological Data

### 1.1.1. HIV-infected Children

All children from the researched cohort were born in 2008–2012 (*Diagram 1*) and had the following distribution by sex: 49.5% boys and 50.5% girls.



**Diagram 1. Distribution of HIV-infected children by the year of birth**

The majority of children (95.5%) became infected with HIV during pregnancy or in labour. HIV-infection during breastfeeding was officially confirmed in 9 (4.5%) of children. However, according to the questionnaires, breastfeeding was identified as an additional mother-to-child transmission risk factor in another 14 (7.0%) children.

After their birth, 6.5% of HIV-infected children were abandoned by their mothers at maternity hospitals and in 4.0% of cases their parents were deprived of parental rights. The majority of infants grew in the families, i. e., with mother and/or father (80.0%), under the guardianship of relatives (7.0%) or were adopted (9.0%). 7 children (3.5%) lived in the state institutions and one child (0.5%) – in a health care facility.

Before the start of this research 7 HIV-infected children (3.5%) had died; of them 6 children died during the first year of life. All children died at health care facilities (HCF). The underlying disease caused the death is HIV-infection, IV clinical stage. One child died of acute enteric infection. Data about postmortem examination and establishment of postmortem diagnosis of HIV-infection were specified only in one file of a deceased child.

### 1.1.2. Information about Mothers of HIV-infected Children

According to the research, 99.5% of mothers of HIV-infected children were citizens of Ukraine; 70.0% of them were urban and 30.0% – rural residents.

By the moment of HIV-infection diagnosis the age distribution of these women was following: 15–19 years – 11.2%, 20–24 years – 35.5%, 25–29 years – 27.9%, 30–34 years – 17.8%, 35 years and older – 7.6%.

An average age of a mother of HIV-infected infant by the moment of HIV diagnosis was 26 years.

The majority of mothers of HIV-infected children (74.5%) were practicing risky behaviours, which could contributed to HIV-infection. Almost 40.0% of women had multiple unprotected sexual contacts, 21.5% were injecting drug users and 16.0% abused alcohol (*Table 1.1*).

*Table 1.1*

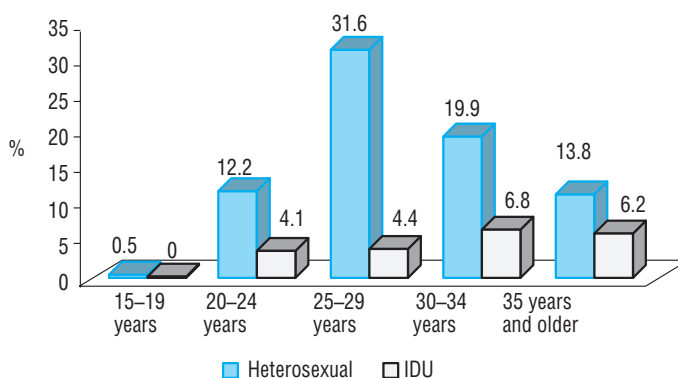
#### **Distribution of mothers of HIV-infected children (N=200) by risk behaviour factors**

<b>Risk behaviour factors</b>	<b>Abs. #</b>	<b>%</b>
Multiple unprotected sexual contacts	77	38.5
Tobacco smoking during pregnancy	76	38.0
Injecting drug use	43	21.5
Alcohol abuse	32	16.0
Provision of transactional sex services	4	2.0
Imprisonment	3	1.5
Use of non-narcotic psychoactive substances	2	1.0
<b>No risk behaviour factors</b>	<b>50</b>	<b>25.5</b>

The results of many scientific studies and research show that tobacco smoking during pregnancy contributes to the development of placental insufficiency, foetus growth delay and increased perinatal transmission of HIV due to placenta lesions. According to this research it was found out that 38.0% of women were smoking during pregnancy.

Analysis of HIV transmission modes demonstrated that 78.0% of women were infected through unprotected sexual contacts, and the majority of them were under 30 years of age. HIV-infection related to injecting drug use was confirmed in 21.5% of mothers of HIV-infected children, and most of these women were in the age groups of 30–34 years and 35 years and older (*Diagram 2*).

In 0.5% of women HIV-infection route was either unknown, or was being identified.



**Diagram 2. Distribution of HIV-infected women by age groups and key HIV transmission modes**

By the moment of filling the questionnaires out, 22 (11.0%) deaths of mothers of HIV-infected children were registered. The main reason of death of 16 women was directly related to HIV-infection, and 3 women died of HIV associated tuberculosis.

### 1.1.3. Information about the fathers of HIV-infected children

Some information about the fathers of HIV-infected children (in responses to different questions of the questionnaire) remained unclear. According to the known data, 98.5% of these men were citizens of Ukraine; HIV status was identified in 119 (59.5%) of fathers, 89 of whom (44.5%) had HIV-infection diagnosis and 30 (15.0%) were HIV negative.

The ratio between the number of HIV positive and HIV negative fathers was 3 : 1.

HIV-infected fathers had the following age distribution: 20–24 years – 2.8%, 25–29 years – 19.7%, 30–34 years – 28.2%, 35 years and older – 49.3%.

An average age of a father of HIV-infected child at the time of HIV-infection diagnosis was 34 years.

The largest portion of fathers were tested for HIV under the code 102, i.e., injecting drug use – (41.0%); the code 101, i.e., sexual contacts with HIV-infected people – (32.0%); and code 114, i.e., anonymous testing – (12.0%).

Analysis of risk behaviours of HIV-infected fathers showed that 74.1% of fathers were injecting drug users, 28.4% were imprisoned, 23.5% were practicing multiple unprotected sexual contacts and 21.0% abused alcohol (*Table 1.2*).

*Table 1.2*

**Distribution of HIV-infected fathers (N=89) by risk behaviour factors**

Risk behaviour factors	Abs. #	%
Injecting drug use	60	74.1
Imprisonment	23	28.4
Multiple unprotected sexual contacts	19	23.5
Alcohol abuse	17	21.0
Use of non-narcotic psychoactive substances	8	9.8
<b>No risk behaviour factors</b>	<b>14</b>	<b>17.3</b>

According to epidemiological history, 76.2% of husbands were HIV-infected through the injecting drug use, 19.7% – through unprotected sexual contacts and in 4.1% cases the HIV-infection route was either unknown, or was being clarified.

**Summary:**

1. In 95.5% cases, children were HIV-infected during their mothers' pregnancy or labour. HIV transmission through breastfeeding was officially registered in 4.5% of children, though the proportion of such cases is 2.5 times higher and amounts to 11.5%.
2. The overwhelming majority of HIV-infected children – 96.0% – are living in families with mother and/or father, under the guardianship of their relatives, or are adopted.

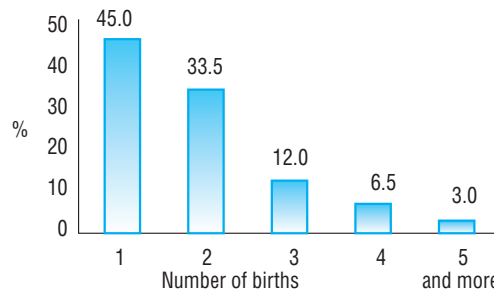
3. Only one in seven deceased children had postmortem HIV diagnosis on the basis of postmortem examination in accordance with the Ukrainian legislation.
4. An average age of a mother of a HIV-infected infant by the time of HIV diagnosis was 26 years. Most HIV-infected women have been registered in the age group of 15–24 years (37.0%).
5. The most common HIV transmission mode for 78.0% of mothers of HIV-infected children was heterosexual one. Additional risk behaviour factors that could contribute to HIV-infection of women included injecting drug use (21.5%) and alcohol abuse (16.0%).
6. HIV status of only 60.0% of the fathers of HIV-infected children was known. The ratio of HIV positive and HIV negative fathers was 3 : 1.
7. An average age of a father of HIV-infected child at the moment of HIV-infection diagnosis was 34 years. Most HIV-infected men have been registered in the age group of 35 years and older (49.0%).
8. A third of HIV-infected fathers (32.0%) were identified as sexual partners of HIV-infected women, that is, after the confirmation of HIV positive status of the mothers of HIV-infected children.
9. The main HIV-infection route of 76.0% fathers of HIV-infected children was parenteral (injecting drug use).
10. Additional risk behaviour factors that could contribute to HIV-infection among men included imprisonment (28.0%); multiple unprotected sexual contacts with different partners (23.5%) and alcohol abuse (21.0%).



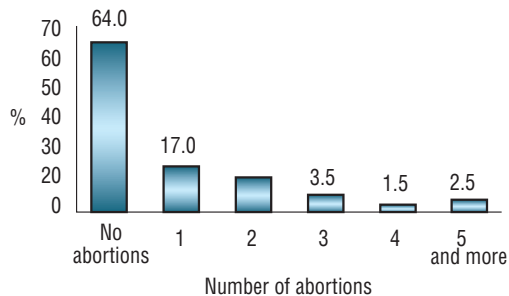
## 1.2. Maternal Factors of Impact on Mother-to-child Transmission of HIV

According to the research, 33.0% of mothers of HIV-infected children were not registered in the antenatal clinics for pregnancy; in 48.0% of cases the pregnancy was unplanned.

The distribution of HIV-infected women by the number of births and abortions during the questioning by the data of their obstetric history is presented on *Diagrams 3–4*.



**Diagram 3. Distribution of HIV-infected women by the number of births**



**Diagram 4. Distribution of HIV-infected women by the number of abortions**

At the time of delivery the age distribution of HIV-infected mothers was the following: 15–19 years – 0.5%, 20–24 years – 16.8%, 25–29 years – 36.2%, 30–34 years – 26.5%, 35 years and older – 19.9%.

An average age of HIV-infected women at the moment of delivery was 29 years.

More than half of women (55.0%), who gave birth to HIV-infected children, had more than one child in the family some of whom were also HIV-infected (*Table 1.3*).

It is well known that the frequency of mother-to-child transmission of HIV is influenced by a range of co-infections that increase the risk of transmission of virus

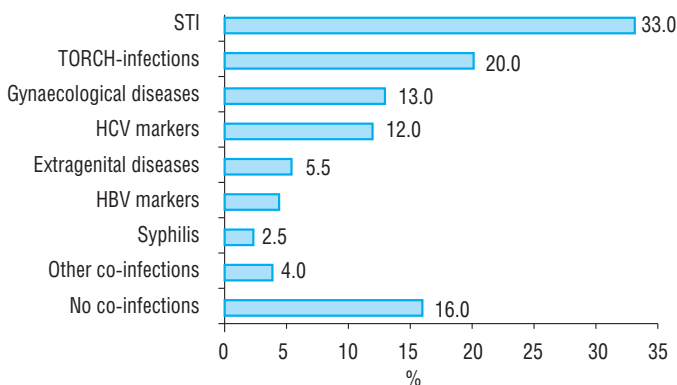
Table 1.3

**Number of children per one HIV-infected mother**

Number of HIV-infected mothers, who have families:		Including HIV-infected mothers, who have HIV-infected children			
		1 child	2 children	3 children	4 children
One child	90	90	X	X	X
Two children	69	X	8	X	X
Three children	24	X	1	3	x
Four children	11	X	0	0	0
Five children	5	X	1	0	0
Six children	1	X	0	0	1
<b>Total</b>	<b>200</b>	<b>90</b>	<b>10</b>	<b>3</b>	<b>1</b>

from mother to foetus, especially with progressing HIV-infection and growing viral load in the blood of pregnant woman. Presence of sexually transmitted infections (STI), pathologies of genital tract microbiocenosis, gynaecological diseases and TORCH-infections contribute to the complications of pregnancy, inflammatory diseases of pelvic organs and other health problems.

During pregnancy, various co-infections were identified in 168 HIV-infected mothers (84.0%) and the most common of them were STI (33.0%), TORCH-infections (20.0%) and other gynaecological diseases (13.0%). Serological markers of hepatitis C virus (HCV) were found in 12.0% of women, and of syphilis – in 2.5% of women (*Diagram 5*).



**Diagram 5. Distribution of HIV-infected women  
by the presence of co-infections**

One of the important components of PMTCT programmes is serological testing of pregnant women for antibodies to HIV. Testing of pregnant women is conducted to identify the HIV status of a woman and, in case of positive result, to provide

counselling, health care and prevention antiretroviral treatment to prevent transmission of HIV to her future newborn.

According to Ukrainian legislation, HIV testing of pregnant women is conducted with their informed consent and is recommended to be performed twice: at the moment of booking to the antenatal clinic and before the delivery.

The research results show that 89.0% of women, when their HIV status was being confirmed, received HIV counselling and testing services (HCT) to full extent. However, 10.0% of women had only pre-testing or post-testing counselling, and 1.0% did not have any HIV counselling at all. When women refused from HCT, social support was provided only to 30.0% of women, who needed it.

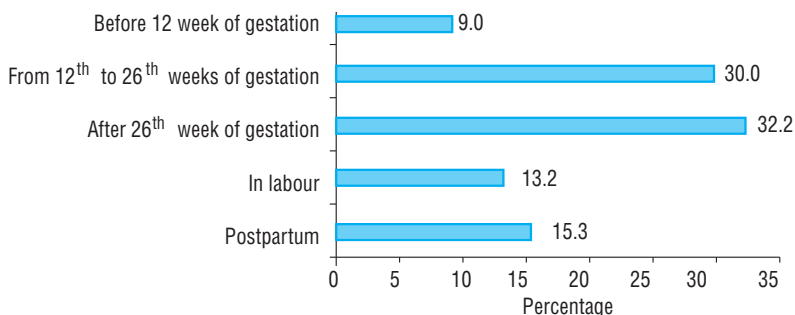
164 women (82.0%) were tested for antibodies to HIV due to their pregnancy by code 109. In 10 (5.0%) of them HIV positive status was identified at the second testing by code 109.2, i.e., HIV serological markers were not found at the first testing by code 109.1.

The rest of women (18.0%) were tested for HIV due to the following reasons: 3.0% – to receive a certificate of their HIV status (code 107); 3.0% were tested for prevention purposes (code 116); 2.5% were tested by code 102 as injecting drug users; 2.5% were tested by code 101 as individuals who have sexual contacts with HIV-infected people; 1.5% had sexually transmitted infections (code 104); 1.5% were blood donors (code 108); 1.5% had symptoms or conditions associated with HIV-infection or AIDS (code 113) and 2.5% were tested for other reasons.

In recent years in Ukraine the number of women with newly diagnosed HIV positive status in pregnancy among general population of HIV-infected pregnant women has been gradually declining and it has been a general trend.

According to the research, the proportion of women who already knew about their HIV positive status before pregnancy was 28.0% (56 women).

Among women, who learnt about their HIV positive status in pregnancy (103 women) and in labour (19 women), HIV-infection diagnosis was confirmed in the following terms (*Diagram 6*):



**Diagram 6. Timing of confirmation of HIV-positive status in pregnant women (new HIV-infections)**

So, 41 (28.5%) of 114 pregnant women with the newly confirmed HIV diagnosis did not know about their HIV positive status during pregnancy and did not receive the needed range of medical and non-medical services for the prevention of vertical transmission of HIV.

It should be noted that among 22 women, who learnt about their HIV positive status postpartum, 16 women (11.1% of 144 new HIV-infections) had two HIV negative results of testing for HIV by codes 109.1 and 109.2, or HIV negative results of rapid test in labour, which means that they were in seroconversion window period at the second testing for HIV, or were infected after delivery and birth. In such cases HIV-infection of their newborns occurred through the breastfeeding. It should be underscored, that unidentified cases of HIV-infection in pregnant women on the background of a high viral load in women's blood, as a rule, lead to 100% transmission of HIV from mother to child. Such situation with the late diagnosis of HIV-infection in pregnant women according to the research results requires improvement of approached to testing of pregnant women and optimization of the number of such tests.

Selection of a clinical scenario of PMTCT, delivery mode and evaluation of efficiency of antiretroviral treatment is based on the results of immunological testing and HIV viral load in the blood of pregnant women.

Testing to identify CD4 count during pregnancy was conducted for only 49.0% of HIV-infected women, and viral load testing before delivery was performed only for 24.5% of pregnant women (*Table 1.4*).

*Table 1.4*

### Immune suppression degree and the level of HIV viral load in the blood of mothers of HIV-infected children during pregnancy

Immune suppression degree at first testing				HIV viral load in the blood before delivery			
CD4 count cell/mm <sup>3</sup>	Number of pregnant	%	%	Copies/mm <sup>3</sup>	Number of pregnant	%	%
Testing was conducted at:	98	49.0	100.0	Testing was conducted at:	49	24.5	100.0
> 1000 cell/mm <sup>3</sup>	8	4.0	8.2	< 50	2	1.0	4.1
700–999 cell/mm <sup>3</sup>	10	5.0	10.2	51–500	17	8.5	34.8
500–699 cell/mm <sup>3</sup>	17	8.5	17.4	501–10 000	11	5.5	22.4
350–499 cell/mm <sup>3</sup>	34	17.0	34.7	10 001–30 000	7	3.5	14.3
200–349 cell/mm <sup>3</sup>	16	8.0	16.3	30 001–100 000	6	3.0	12.2
200 cell/mm <sup>3</sup>	13	6.5	13.2	> 100 000	6	3.0	12.2
Testing was not conducted:	102	51.0		Testing was not conducted:	151	75.5	
Total	200	100.0		Total	200	100.0	

Key reasons (83.0%), due to which testing was not conducted during pregnancy, included refusal of HIV-infected pregnant women to register at antenatal clinic, confirmation of HIV-positive status during delivery or postpartum, and refusal from tests, primarily by women with asocial behaviours. In other cases (17.0%) the testing was not conducted due to frequent change of the place of residence, incarceration in the remand prison, residence in a distant rural area and disfunctioning laboratory equipment.

When HIV-infected pregnant women refused from testing for CD4 count and viral load, the social support was provided to only 4.5% of women, primarily due to refusals to obtain social services by women themselves, or due to impossibility to establish their permanent place of residence. Such social services were provided exclusively by the representatives of non-governmental organizations (NGO).

At the moment of first testing at AIDS Centres, more than half of HIV-infected women (53.0%) had I clinical stage of HIV-infection, 28.0% – II clinical stage, 9.5% – III clinical stage. AIDS (IV clinical stage) was found in 9.5% women, 6.5% of whom were IDUs.

One of the most common AIDS indicator diseases is tuberculosis (TB). Active form of TB has a negative impact on the foetal-placental blood circulation, leads to the threat of preterm delivery and increases the risk of obstetric complications 2–9-fold.

According to the research, tuberculosis in pregnancy was diagnosed in 10 women (53% of pregnant women with diagnosed AIDS), including 8 women with newly diagnosed TB, 8 women with pulmonary TB, 5 women with bacterial shedding by the results of bacterioscopy (MBT+).

An important component of PMTCT is a medicinal prevention with ARV drugs for pregnant women. ARV prevention (ARVP) was offered to 144 (72.0%) of HIV-infected women, including 32 (22.2%) pregnant women, who received ARV treatment only in labour. 56 (28.0%) HIV-infected pregnant women did not receive any ARVP (*Table 1.5*).

Highly active antiretroviral therapy (HAART) was provided to 65 (45.0%) pregnant women, of whom only 10 (7.0%) women continued ART postpartum.

Among mothers of HIV-infected children, who were infected due to injecting drug use, ARVP was provided only to 48.8% of women including 23.3% of cases when ARV prevention was prescribed and provided only in labour. The proportion of female IDUs of the total number of pregnant women, who received ARVP, was 31.3%, and of the total number of pregnant women, who did not receive ARVP – 40.0%.

Key reasons of non-receipt of ARVP included the lack of registration of a HIV-infected pregnant woman at an antenatal clinic, late presentation to the maternity hospital already in labour, refusal of a woman from ARV drugs, avoidance of

Table 1.5

**ARV treatment regimens for HIV-infected women  
to prevent mother-to-child transmission of HIV**

	Description	Abs. #	%	Incl. IDU	%
1	Number of mothers of HIV-infected children	200	100.0	43	100.0
2	Number of HIV-infected pregnant women, who received ARV prevention/ART	144	72.0	21	48.8
2.1	Including: ART for their own health before pregnancy and during pregnancy	7	3.5	0	0
2.2	ARV prevention during pregnancy	105	52.5	11	25.6
	Prescribed at: before 12 <sup>th</sup> week of gestation	0	0.0	0	0
	from 12 <sup>th</sup> to 26 <sup>th</sup> weeks of gestation	42	21.0	4	9.3
	after 26 <sup>th</sup> week of gestation	63	31.5	7	16.3
2.3	ARV prevention in labour	32	22.2	10	23.3
3	Number of HIV-infected pregnant women, who did not receive any ARV prevention	56	28.0	22	51.2

follow-up at an AIDS Prevention Centre and HIV diagnosis after delivery. Most often such situations were observed among women with asocial behaviours.

It is common knowledge that it is impossible to achieve a desired treatment effect without a strict adherence to drug regimen. Among women, who were receiving ARV drugs during pregnancy and in labour, 44 (30.6%) had high adherence to ARVP, 80 (55.6%) – low adherence and there was no data about the adherence level of 20 (13.8%) women.

Most frequent reasons for low adherence to ARVP among HIV-infected pregnant women included active injecting drug use, alcohol abuse and inadequate behaviour. Other reasons included side effects of drugs in some women; false perceptions of pregnant women about harmful effects of ARV drugs for their future child; fear of disclosure of their HIV status to the husband if the drugs are kept at home; psychological problems related to unwanted pregnancy and the lack of support from relatives; limited access to services due to the residence in rural areas.

Social support during the distribution of ARV drugs for PMTCT was provided by the representatives of NGO and specialists of AIDS Centres to only one in four women (24.6%), who needed it.

It is common knowledge that HIV-infected pregnant women, who actively use drugs during pregnancy, have a higher risk of complications, which leads to an increased level of mother-to-child transmission of HIV by more than 2 times. The research identified that at the moment of establishment the pregnancy and during

its all term 27 pregnant women had the status of active injecting drug users. It is 13.5% of the entire cohort of mothers of HIV-infected children. At the same time, it is 63.0% of the number of women, who were infected parenterally through the injecting drug use. At the same time, only 2 HIV-infected pregnant women participated in the Substitution therapy (OST) programme.

Only 17 women, who were active IDUs, were counselled on the impact of drug use on their pregnancy and the observation plan for the pregnancy development was designed by an obstetrician-gynaecologist together with an addictions doctor for only 4 women. Only 2 drug addicted women participated in the rehabilitation programmes during pregnancy.

**Summary:**

1. One third (33.0%) of mothers of HIV-infected children were not registered at antenatal clinics for pregnancy; 48.0% had an unplanned pregnancy.

2. More than one third (36.0%) of HIV-infected women had terminated pregnancy once or several times; for 55.0% of women pregnancy and birth of HIV-infected baby were not the first ones in their life time;

3. An average age of a HIV-infected women at the time of delivery was 29 years.

4. More than half of women (55.0%), who gave birth to HIV-infected children, had more than one child in the family, including 13.0% women, who had 2 to 4 HIV-infected children in addition to the children of the researched cohort.

5. 84.0% of HIV-infected women had co-infections during pregnancy; the most common of them were STI (33.0%) and TORCH-infections (20.0%). Serological markers of hepatitis C virus were identified in 12.0% of pregnant women; of syphilis – in 2.5% of women.

6. When tested for HIV, 89.0% of women received HIV counselling and testing services (HCT) to full extent. When women refused from testing for antibodies to HIV the social support was provided only to 30.0% of women, who needed it.

7. The overwhelming majority of women (82.0%) were identified at testing for HIV due to their pregnancy (code 109), including 5.0% of pregnant women who were detected at the second testing (code 109.2). However, 11.1% of HIV-infected women had HIV negative results of testing during pregnancy and delivery.

8. The proportion of women diagnosed with HIV before pregnancy with the baby of the researched cohort was 28.0%.

9. Of 144 women, who did not know about their HIV positive status before their pregnancy, only 39.0% had timely registered at an antenatal clinic in the I and II trimesters of pregnancy.

10. The needed range of medical and non-medical services related to PMTCT was not received by 28.5% of women, whose HIV positive status was confirmed in labour and postpartum.

11. Tests to identify an absolute number of CD4 lymphocytes during pregnancy were conducted to only 49.0% of HIV-infected women; tests for HIV viral load in blood serum before delivery were made to only 24.5% of pregnant women. In case of refusal from such tests the social support was provided to only 4.5% of women.

12. At the time of booking for medical follow up at the AIDS Centres, 81.0% of mothers of HIV-infected children had I-II clinical stages of HIV-infection and 19.0% – III-IV clinical stages of HIV-infection. 24.4% of pregnant women had high HIV viral load before delivery which is characteristic for the advanced stages of HIV-infection and AIDS stage.

13. Proportion of HIV-infected pregnant women, who received ARV drugs to reduce MTCT, was 72.0% including 22.0%, who received ARV treatment only in labour.

14. ARVP coverage of pregnant women, who were infected through injecting drug use, was only 49.0%.

15. 13.5% of women (or 63.0% of the number of the researched cohort of women with parenteral route of infection through injecting drug use) were active IDUs during pregnancy. OST programme services were received by only 2 HIV-infected pregnant women. Collaboration between obstetricians-gynaecologists and addictions doctors in the area of joint medical follow-up for HIV-infected pregnant women with drug addiction was inadequate.

16. More than half (56.0%) of women had poor adherence to ARV treatment, while social support was provided to only one in four women.

17. Coverage of HIV-infected pregnant women, who do not adhere to treatment regimen and refuse from laboratory testing, with the social follow-up programmes remains limited. Such services are provided primarily by NGO that cooperate with the AIDS Centres.



### 1.3. Obstetric Factors of Impact on Mother-to-child Transmission of HIV

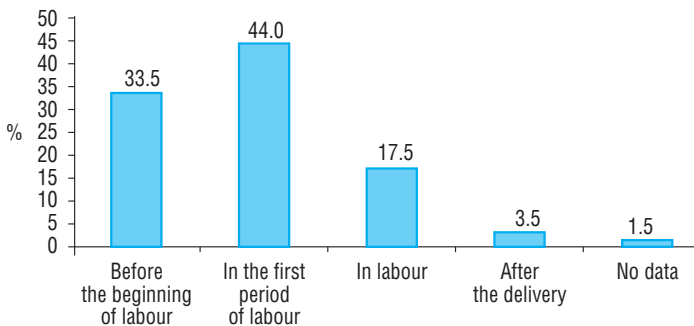
A significant number of cases of mother-to-child transmission of HIV occur during delivery, which required a better follow-up of HIV-infected pregnant women at the later terms of pregnancy and the selection of a rational approach to delivery mode.

According to Ukrainian legislation, the inpatient health care to HIV-infected pregnant women, parturient women and women, who gave birth, shall be provided by the territorial principle. Delivery at a maternity hospital (ward) at the place of residence of HIV-infected pregnant women took place for 181 (90.5%) women, at a specialized HCF – for 8 (4.0%), at home – for 7 (3.5%) women; and data about HCF where a HIV-infected infant was born were absent for 6 (2.0%) women.

One of the risk factors that increase the frequency of mother-to-child transmission of HIV is preterm delivery. The Order of the MOH of Ukraine #179 as of 29.03.2006 specifies that preterm delivery include the ones that occurred in the period from the 22<sup>nd</sup> full week of gestation till the end of the 37<sup>th</sup> week of gestation.

In the researched cohort of HIV-infected pregnant women, the frequency of preterm delivery was 27.5% (55 women). The remaining 72.5% (145 women) delivered in time – in the period from the 38<sup>th</sup> week to the end of the 42<sup>nd</sup> week of gestation. 17.5% of parturient women (34 women) presented themselves to the maternity hospitals in labour.

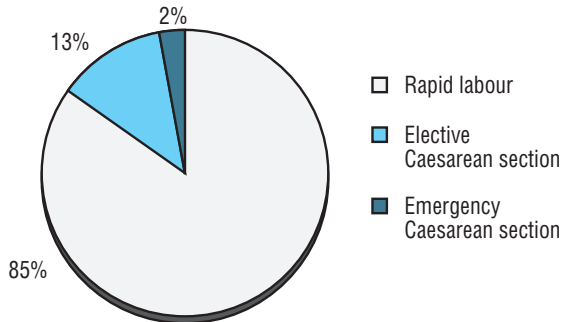
The periods in which HIV-infected pregnant women were hospitalized to the maternity hospitals are presented in *Diagram 7*.



**Diagram 7. Labour periods in which HIV-infected parturient women were hospitalized in the maternity hospital**

The most recent studies demonstrate that an elective or emergency Caesarean section reduces the MTCT by 55–80%, while a long-term rupture of membranes for over 4 hours is, to the contrary, increasing the frequency of perinatal transmission of HIV, while every hour of the period without amniotic fluid increases the risk of mother-to-child transmission by 2%.

According to the research, 26 (13.0%) of HIV-infected women delivered with the help of routine (elective) Caesarean section and 4 (2.0%) – with emergency Caesarean section. Vaginal delivery occurred in 170 (85.0%) of HIV-infected pregnant women (*Diagram 8*).



**Diagram 8. Modes of delivery among HIV-infected pregnant women**

The period without amniotic fluid lasted for more than 4 hours in 44 (22.0%) of women. Invasive interventions, such as amniotomy, episiotomy and perineotomy, were performed for 23 (11.5%) of parturient women.

Among HIV-infected pregnant women with the second childbirth the delivery and labour over 12 hours lasted in 38 (19%) women, and among women who were giving birth for the first time the duration of delivery over 16 hours was observed in 12 (6%) of women.

Complications during pregnancy and delivery were observed in 84 (42.0%) HIV-infected women: insignificant weight growth (17.0%), threat of pregnancy termination and history of pregnancy termination (16.5%), gestosis (16.0%), hypannion (8.0%), foetal growth restriction (6.0%), abnormal delivery and labour (5.5%), haemorrhage during pregnancy and/or in labour (4.0%), premature placental abruption (0.5%).

#### Summary:

1. Inpatient obstetric care was provided to 94.5% of HIV-infected parturient women at the place of residence or at specialized HCF. 3.5% of HIV-infected women did not receive medical care during labour; data about 2.0% of women were absent.

2. Frequency of preterm delivery among HIV-infected pregnant women was 27.5%.

3. 17.5% of HIV-infected women presented themselves to the maternity hospitals in labour; 3.5% of women got there after delivery.

3. Key mode of delivery among HIV-infected pregnant women was vaginal (85.0%). Caesarean section (elective and emergency ones) was performed for 15.0% of HIV-infected parturient women.
4. Latency period over 4 hours lasted in 22.0% of HIV-infected parturient women.
5. Invasive interventions during delivery and labour were performed for 11.5% of HIV-infected women.
6. Delivery that lasted over 12 hours was observed in 19.0% of HIV-infected women with repeated delivery; over 16 hours – in 6.0% who were giving birth for the first time.
7. Complications during pregnancy and labour, or combination of several complications were observed in 42.0% HIV-infected pregnant women.

#### 1.4. Infant Factors of Impact on Mother-to-child Transmission of HIV

According to the Order #179 of the MOH of Ukraine as of 29.03.2006, a premature newborn is the one whose birth length is less than 47 cm and/or weight is less than 2,500 grams.

Every one in four of 200 HIV-infected infants were born prematurely: 49 (24.5%) children weighed less than 2,500 grams at birth and 29 (14.5%) children had birth length less than 47 cm.

Proportion of children who received antiretroviral prevention to reduce the risk of mother-to-child transmission of HIV was 84% (*Table 1.6*).

*Table 1.6*

#### Antiretroviral treatment regimens for newborns to prevent mother-to-child transmission of HIV

<b>N<sub>e</sub></b>	<b>Description</b>	<b>Abs. #</b>	<b>%</b>
1	Number of children born to HIV-infected mothers	200	100.0
2	Number of children born to HIV-infected mothers, who received ARV prevention	168	84.0
	of them: with one ARV drug, 7 days/28 days	110	55.0
	with three ARV drugs 7 days/28 days	58	29.0
3	Number of children born to HIV-infected mothers, who did NOT receive ARV prevention	32	16.0

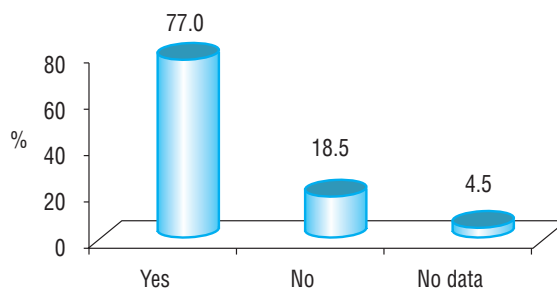
Key reasons due to which 12 HIV-infected children did not received ARVP included refusal of their mothers or low adherence of mothers to prevention treatment of a child, a negative result of HIV testing during pregnancy, falsification of data in the medical card of a pregnant woman and concealment of her HIV positive status, or home birth.

Exclusion of breastfeeding of children born to HIV-infected women reduces the risk of transmission of HIV and other infectious diseases by 12–20%. In the cohort of HIV-infected children, 177 (88.5%) were formula fed. However, 20 children (10.5%) were exclusively breastfed by HIV-infected mothers, three more children (1.5%) received mixed feeding, which means that 11.5% of infants were at risk of being infected with HIV through the breast milk.

Duration of breastfeeding by HIV-infected mothers is another factor that can influence the risk of infant's HIV-infection. Meta-analysis of some studies shows that concentration of HIV-infected cells is much higher in the mature milk. The risk of HIV-infection with breastfeeding that lasts up to 6 months is 12% and can increase to 24% with breastfeeding that lasts more than 6 months.

According to the research, among 20 HIV-infected children, who were breastfed for some time, 6 children were breastfed for 3–7 days, 7 children – 11–16 days, 4 children – 3–4 months, and 3 children – 6 months. Three children, who were on mixed feeding, were breastfed for 1 to 2 years.

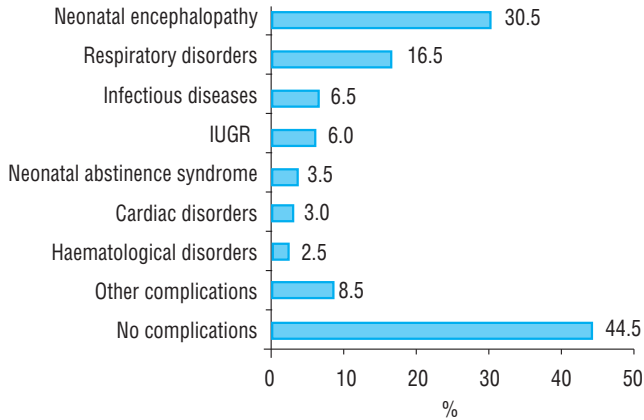
With an informed consent of a HIV-infected new mother a medicinal termination of lactation is performed immediately after delivery. It was found that lactation was terminated for 154 (77.0%) of HIV-infected mothers at maternity hospitals (*Diagram 9*).



**Diagram 9. Medicinal termination of lactation for HIV-infected new mothers at maternity hospital**

The reasons due to which lactation was not terminated for 37 HIV-infected new mothers at maternity hospitals include the lack of medicines at the time of their stay at maternity hospital (5.5%), HIV negative result of the serological tests (ELISA, rapid tests) in one third of women. In other cases women themselves did not want to terminate lactation, left the maternity hospitals and abandoned their children immediately after delivery.

Various neonatal complications were identified in 55.0% of HIV-infected children and 3.5% of children had neonatal abstinence syndrome (*Diagram 10*).



**Diagram 10. Neonatal complications in HIV-infected children**

**Summary:**

1. Coverage of HIV-infected children of the researched cohort with antiretroviral prevention was 84.0%.
2. The overwhelming majority of HIV-infected children (88.5%) were formula fed immediately after birth. 11.5% of children faced the risk of mother-to-child transmission of HIV through breast milk. The longest duration (1 to 2 years) of breastfeeding was observed for children, who were on mixed feeding.
3. Medicinal termination of lactation was performed at maternity hospitals to 77.0% of HIV-infected new mothers. The key reasons due to which lactation was not terminated at maternity hospitals included the lack of medicines at the time women's stay at maternity hospital and HIV negative results of the serological tests during pregnancy and delivery.
4. According to anthropometric data, 24.5% of children had birth weight less than 2.5 kg, and 14.5% of children had birth length less than 47 cm, which are considered the signs of premature newborns.
5. More than 50.0% of HIV-infected children had various neonatal complications; 3.5% of newborns had neonatal abstinence syndrome.

## 1.5. Laboratory and Clinical Confirmation of HIV-infection Diagnosis in Children

Final diagnosis of HIV-infection in a child aged under 18 months is based on two positive results of tests of HIV genetic material with PCR DNA, or on viral load in blood measured with PCR RNA.

If two negative results of PCR DNA tests of HIV genetic material are received, the child is considered HIV negative, but its HIV status is finally confirmed on the basis of results of the tests for the identification of serological markers of HIV in the age of 18 months and older.

The study subjects also included the methods and results of HIV diagnostic in children and timeliness of its performance. HIV-infection diagnosis for 172 (86.0%) children was confirmed on the basis of two positive PCR DNA results; for 25 (12.5%) children – on the basis of early and serological diagnostics; for 3 (1.5%) children – only on the basis of serological diagnostics and for 1 deceased child – on the basis of one positive PCR DNA result and confirmed clinical HIV-infection diagnosis, IV stage.

According to the WHO guidelines, in order to make a timely clinical decision at the earliest possible HIV-infection stage in a child, early tests for HIV with the use of virology method should be performed as soon as possible. According to the Ukrainian legislation, the first PCR DNA test to a child born to HIV-infected mother should be performed in the age of 1–2 months, and the second test – in the age of 3–5 months after birth.

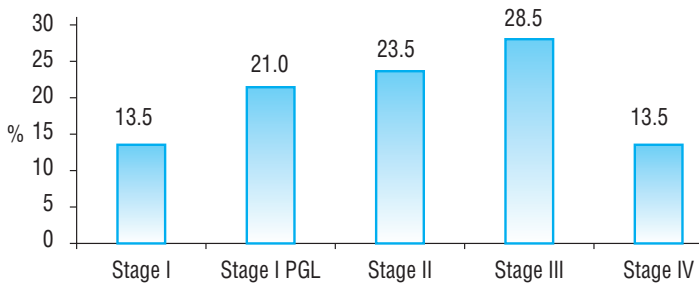
The proportion of children of the researched cohort covered with PCR DNA test only once was 90.0%, twice – 81.5%. Proportion of HIV-infected children who had virology tests for HIV during the first 2 months after birth was 42.0%.

Clinical manifestations of HIV-infection in children require on-going monitoring and analysis of the child's condition. The immune status of a child should be urgently identified at the stages of evaluation of disease progression, of prescribing ART and making decision on prevention of opportunistic infections. There is a need to identify viral load on the stage of monitoring of antiretroviral treatment of a child.

Coverage of HIV-infected children with the tests to identify the absolute or relative CD4 count was 95.0%; with the tests to identify viral load – 82.5%.

According to medical documentation it has been found that 42.0% of children had III-IV stages of HIV-infection by the moment of confirmation of their HIV-positive status (*Diagram 11*).

Antiretroviral therapy is a component of a comprehensive health care to HIV-infected children and has the key objective to ensure the conditions to prevent the deteriorative effect of HIV on the child's body.



**Diagram 11. Clinical stages of HIV-infection in children of the researched cohort**

By the moment of implementation of this research it was found out that 125 HIV-infected children (62.5%) were receiving ART; 22 (11.0%) children were in need of ART but did not receive it; 38 (19.0%) children did not need ART; data about treatment of 15 (7.5%) children were absent.

Key reasons of failure to receive ART by children, who needed it, included preparation of a child to ART at the moment of research, refusal of parents to treat their child and low adherence of parents to ARV treatment of their child.

Development of adherence to ART among child family members and provision of social support to children, who are receiving ART, are prerequisites of efficiency of treatment and full development of a child. When mothers refused from laboratory tests and ARV treatment of their children, the social support was provided to only 30.0% of children, mostly by the involved representatives of NGO.

Primary prevention of pneumocystis pneumonia is initiated to children born to HIV-infected mothers in the age of 1.5–2 months and to older HIV-infected children older than one year of age with a relative CD4 count less than 15%.

Proportion of children of the researched cohort, who received prevention of pneumocystis pneumonia, was 82.4%, including 34.0%, who initiated it in the age of 1.5–2 months, 37.0% – during the third month of life and all the rest – in the age of 3–12 months. One child started receiving prevention of pneumocystis pneumonia in the age of 1 year and 8 months.

**Summary:**

1. The majority of HIV-infected children (86.0%) received the final diagnosis of HIV-infection on the basis of two positive PCR DNA results.
2. The proportion of children of the researched cohort covered with PCR DNA test only once was 90.0%, twice – 81.5%.

3. Only 42.0% of HIV-infected children had the first PCR DNA test during the first 2 months of life, and it does not meet the international recommendations on the terms of early diagnostic of HIV in infants.
4. Coverage of HIV-infected children with the tests to identify the absolute or relative CD4 count was 95.0%; with the tests to identify viral load – 82.5%.
5. By the moment of implementation of this research 62.5% of HIV-infected children were receiving ART; 11.0% children were in need of ART but did not receive it; 19.0% children did not need ART; data about treatment of 7.5% children were absent.
6. When mothers refused from laboratory tests and ARV treatment of their children, the social support was provided to only 30.0% of children, mostly by the involved representatives of NGO.
7. 82.4% of HIV-infected children received timely prevention of pneumocystis pneumonia during the first year of life.

## 1.6. Medical Follow-up and Social Support of HIV Positive Children

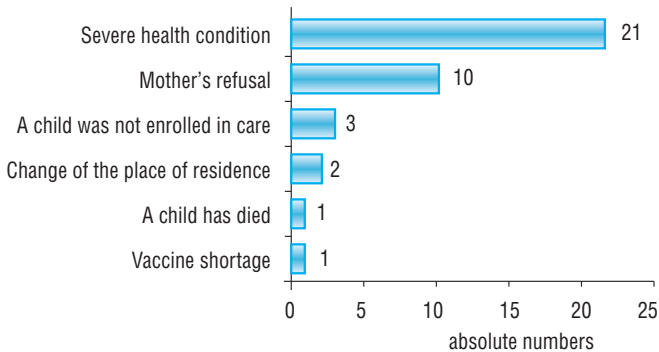
Medical supervision of children living with HIV envisages dynamic surveillance over progression of HIV-infection, provision of comprehensive prevention and treatment, prevention of opportunistic infections, provision of psychological support and assistance with social adaptation. In outpatient settings polyclinic and inpatient care is provided to HIV positive children on the usual terms.

According to the survey results, medical supervision at the place of residence covered 84.5% of children. Neonatal home nursing was provided regularly to 164 (82.0%) children in the cohort: every two weeks during the first month of life, then monthly – during the first year of life, and subsequently until verification of HIV status – once in 2–3 months. Irregular nursing was reported in 22 (11.0%) cases, while 10 children (5.0%) did not receive such care at all. Data on the remaining 4 (2.0%) children are missing.

The main reasons for irregular or absent medical supervision of a HIV positive child include: mother's refusal from medical follow-up; child's stay in the maternity with subsequent transfer to the children's home; frequent changes of places of residence.

Vaccination of children with HIV at asymptomatic carrier stage is carried out according to immunization schedule (in the absence of other counter-indications).





**Diagram 12. Reasons why HIV positive children did not receive preventive vaccination**

No vaccines are administered to children who developed AIDS. BCG vaccination is excluded from the immunization schedule.

162 children (81.0%) in the cohort under study received preventive vaccination according to immunization schedule for HIV positive children. The reasons why 38 positive children did not receive vaccinations are presented in *Diagram 12*.

Pursuant to current legislation all children born to HIV positive mothers receive free adapted milk formulas during the first year of life at the place of residence. According to the study results, 177 (88.5%) of children received formulas primarily at the expense of the local budgets, while one mother purchased adapted milk formulas at her own cost.

In line with legal regulations, all children under 16 years living with human immunodeficiency virus are eligible to receive monthly allowance upon request of their legal representatives. The right to receive such assistance is granted to all children under 18 months born to HIV positive mothers. Children with confirmed HIV positive status are also entitled to social assistance up to the age of 18 years as individuals disabled since childhood. According to the study, monthly benefits were provided to 178 (89.0%) of children in the cohort under study.

The main reasons for children not receiving adapted milk formulas and state benefits include: child's mother or guardian are yet to finalize relevant documents; a mother has abandoned her child; unwillingness of parents; frequent changes of places of residence, and child's death.

As of the date of the survey, 110 (50.5%) of HIV positive children were receiving social services, and only 5 of them (2.5%) received services from the centres of social services for family, children and youth (CSSFCY). The remaining children benefited from services offered by NGOs and AIDS centres.

Social services most commonly provided to HIV positive children include: delivery of food products; counselling on the development of adherence to ART; legal consultations; child's follow-up during referral to health facilities.

The list of social services for HIV positive children as of the date of the survey is presented in *Table 1.7*.

*Table 1.7*

**The list of social services provided to HIV positive children  
as of the date of the survey (N=110)**

#	Service	Absolute number	%
1	Provision of food products and food packages; delivery of adapted milk formulas	38	14.1
2	Preparation to HAART; formation and monitoring of adherence to ART; social support of ART patients	36	13.4
3	Legal consultations; monitoring of law observance; assistance in formalizing social benefit documents	32	11.9
4	Referral to specialists in health facilities; assistance with child's medical examination; transportation to children's hospital	28	10.4
5	Provision and delivery of medicines and vitamins	27	10.0
6	Psychological support	26	9.7
7	Counselling on prevention of mother-to-child transmission of HIV	17	6.3
8	Social and household services; provision of personal hygiene products and detergents	15	5.6
9	Early childhood development classes	12	4.5
10	Counselling on the prevention of opportunistic infections	11	4.1
11	Humanitarian aid	10	3.7
12	Counselling on care and support of children; peer counselling; home nursing	10	3.7
13	Other (services of day care centres; child's participation in holidays; maternal counselling in case of infant abandonment; family planning and healthy lifestyles consultations, etc.)	7	2.6

**Summary:**

1. Medical supervision at the place of residence covered 84.5% of HIV positive children; it was provided on regular basis to 82.0% of such children.
2. Preventive vaccination was given to 81% of HIV positive children according to immunization schedule. The most common reasons for not receiving vaccination were difficult health condition of children and mother's refusal.
3. 88.5% of children received adapted milk formulas, provided primarily at the expense of local budgets. Monthly allowances were provided to 89.0% of children. The main reasons for children not receiving adapted milk formulas and state benefits include: failure to prepare relevant documents; unwillingness of parents; frequent changes of residence, and child's death.
4. As of the date of the survey, 50.5% of HIV positive children were receiving social services. Involvement of CSSFCYs in the social support of HIV positive children is extremely low (2.5%).

## Section 2.

### SOCIOLOGICAL SURVEY RESULTS REGARDING FACTORS THAT CONTRIBUTE TO VERTICAL TRANSMISSION OF HIV

#### 2.1. Social and Demographic Information

Mothers of HIV positive children constituted the majority (79.5%) of respondents of this sociological survey. Relatives or guardians of HIV positive child (a father, a grandmother, and an aunt) answered the survey questions in 10.5% of cases. In case of mother's death or her inability to participate in the study, the researchers questioned health workers, who made up 10% of the total number of respondents.

In 97.5% of cases interviews were conducted in the premises of health facilities – oblast AIDS centre, infectious diseases room, or in the doctor's office in the infectious diseases hospital. Interviews in the regional office of the Network of PLWH were carried out in 1.5% of cases, and only 0.5% of interviews were conducted in the city hospital or via the telephone survey.

As of the date of the interview, the age distribution of respondents was as follows: 15–19 years – 1.5%; 20–24 years – 16.0%; 25–29 years – 30.5%; 30–34 years – 25.0%; 35–39 years – 17.0%; 40–49 years – 6.0%, and 50 years and older – 4.0%.

Findings of multiple studies confirm that low educational level is one of key social factors of risky behaviour. According to the survey, conducted by Kyiv International Institute of Sociology in 2011, in Ukraine 25.1% of women (and 22.6% of men) have complete higher education; 27.8% of women (and 26.9% of men) studied in technical schools; 24.0% of women (and 15.6% of men) have secondary school education, while 3.6% of women (and 1.1% of men) have primary education only.

By educational level, 44.8% of respondents had complete general secondary education; 20.4% graduated from vocational and technical schools. Only 13.8% of respondents received higher education (*Table 2.1*).

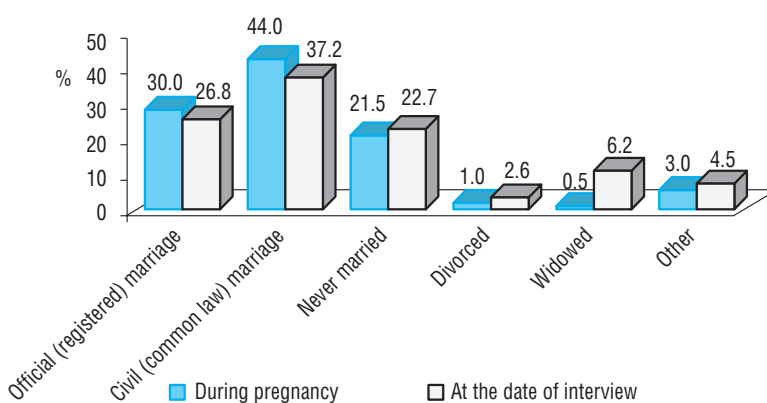
During pregnancy the majority of mothers of HIV positive children lived either in official (30.0%) or unofficial (civil) marriage (44.0%), that is, they had permanent sexual partner. Only 1.0% of women were officially divorced, and 0.5% of respondents were widowed. 21.5% of pregnant women have never been married.

Somewhat different situation with marital status was observed at the date of interview: the proportion of women in union reduced from 74% to 64%, while the percentage of divorced respondents increased from 1.0% to 2.6%. It should be noted that the number of widows has also increased, which is explained by the death of fathers of HIV positive children who also had positive status and were active injecting drug users (*Diagram 13*).

Table 2.1

**Distribution of respondents by education**

Level of education	Percentage
Higher	13.8
Incomplete higher	2.6
Vocational and technical after 10/11 grade	13.3
Vocational and technical after 8/9 grade	7.1
General secondary	44.8
Incomplete secondary	18.4



**Diagram 13. Marital status of mothers of HIV positive children during pregnancy and at the date of interview**

Respondents' living conditions during pregnancy and at the date of interview did not differ significantly. During pregnancy 26.9% of respondents lived in their own apartment or house (32.9% – at the date of interview). 39.4% of pregnant women lived in relatives' apartment or house (38.0% – at the date of interview); 16.1% of them lived in husband or partner's apartment or house (13.0% – at the date of interview). 12.4% of pregnant women rented an apartment, a house or a separate room (10.4% – at the date of interview). 2.1% of respondents lived in dormitories both during pregnancy and at the date of interview.

During pregnancy 81.5% of respondents regarded their living conditions as «satisfactory», whereas 14.8% lived in «unsatisfactory» conditions; 3.7% had no permanent place of residence. The situation at the date of interview virtually did not change: 80.7% of women lived in «satisfactory», and 14.2% – in «unsatisfactory» conditions. Similarly, 3.6% of respondents had no permanent residence.

While answering the question «Whom are you living with now?» 5.3% of respondents reported living alone. In other cases 56.9% of surveyed women lived with a husband or partner; 79.3% lived with children under 18 years; 3.2% – with children

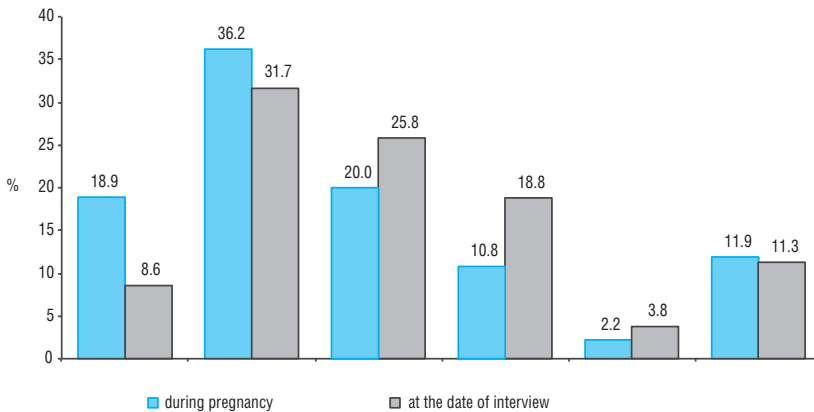
over 18 years. 29.8% of respondents lived with parents; 6.9% – with siblings or other family members. 1.0% of women shared living quarters with one or more roommates.

54.1% of respondents lived with one child under 18 years of age; 27.0% lived with two children; 11.5% – with three children, and 4.7% – with four children. 2.7% of surveyed women had five children.

Speaking about respondents who lived with parents, 47.3% shared living quarters with both parents. Three or more persons (respondent's and her husband/partner's parents) lived with a woman in 18.2% of cases.

Among those who lived with other relatives, 76.9% lived together with one, and 23.1% – with two siblings. 69.2% of respondents lived with another family member; 23.1% shared housing with two family members, and 7.7% lived with more than two other relatives.

Average monthly budget of families with a HIV positive child ranged from UAH 1,000 to UAH 2,000 both during pregnancy and at the date of interview. It should be noted that significant proportion of respondents reported certain increase of their monthly budgets at the date of interview (see *Diagram 14*). It can be partially explained by general growth of salaries in the country, associated with the increase of minimum wages, and by reception of certain social benefits, e.g. child-birth grants and allowances following confirmation of the child's positive status.

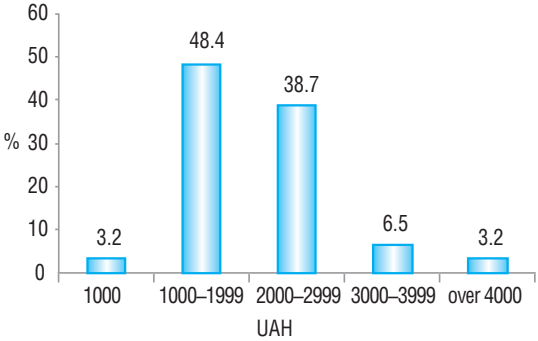


**Diagram 14. Monthly family incomes during pregnancy and at the date of interview**

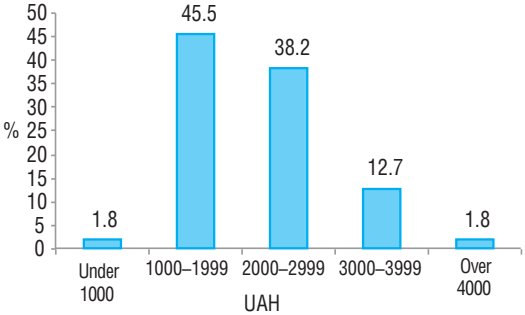
During pregnancy the main sources of income for mothers of HIV positive children were salaries of their husbands or partners (42.4%), their own salaries (38.4%), and paid maternity leave (35.7%).

For 45.4% of families with HIV positive children the main source of income at the date of interview was paid maternity leave; for 40.0% of families – salary of a husband/partner, and for 14.2% – salary of a mother of HIV positive child.

Average monthly income of a husband/partner of a mother of HIV positive child remained virtually the same both during the mother’s pregnancy and at the date of interview unchanged. At the same time, one could observe almost two-fold increase of the share of men (from 6.5% to 12.7%) with average monthly income ranging from UAH 3,000 to 4,000 (Diagrams 15–16).



**Diagram 15. Monthly income of a husband/partner during mother’s pregnancy (UAH)**



**Diagram 16. Monthly income of a husband/partner at the date of interview (UAH)**

Only 4.9% of surveyed women received material assistance (benefits) during pregnancy, which included government support to mothers with many children and to single mothers, allowances in connection with a husband/partner’s disability, and allowances due to HIV in older child. Other types of incomes mentioned by respondents were: support from parents and friends (12.5%), commercial sex services (2.2%), casual jobs and stealing (2.0%), and informal jobs (0.5%).

At the date of interview 65.0% of surveyed women regarded social benefits and allowances (child’s disability, single parent status, loss of a breadwinner, HIV in older child) as the main source of income. The main family earning for 3.0% of women was their involvement in commercial sex. 25.0% of respondents reported about other additional sources of income.

**Summary:**

1. The level of education of mothers of HIV positive children is generally lower than the average education of Ukraine's female population. Only 14.0% of such women have higher education. Almost half of respondents (45.0%) received only general secondary education.
2. Each fifth (21.5%) HIV positive woman has never been married, which coincides with country average – out-of-wedlock birth rates per 100 births reached 21.9 in 2011.
3. After the birth of a HIV positive child the proportion of married mothers tends to decrease – from 74% to 64% with simultaneous growth of the share of divorced HIV positive women – from 1.0% to 2.6%.
4. 81.0% of respondents regarded their living conditions as «satisfactory», while 3.6% did not have permanent residence. 57% of surveyed women lived with a husband or partner; 82.5% lived with children. About 30.0% of respondents lived with parents; 7.0% – with siblings or other family members; 1.0% of women shared living quarters with roommates, and 5.3% lived alone.
5. The level of monthly incomes of families with HIV positive children is significantly lower than country average<sup>7</sup>. The majority of respondents reported that both during pregnancy and at the date of interview their monthly family budgets did not alter, ranging from UAH 1,000 to 2,000 per month.
6. During pregnancy the main sources of income for mothers of HIV positive children were salaries of their husbands or partners (42.4%), their own salaries (38.4%), and paid maternity leave (35.7%), and after the birth – paid maternity leave (45.4%) and salaries of a husband/partner (40.0%).
7. Significance of social benefits and their contribution in the budget of families with HIV positive children increases considerably after the birth of a child and confirmation of his/her HIV positive status – from 5.0% to 65.0%.
8. The main family income for 3.0% of mothers of HIV positive children women was their participation in commercial sex.

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<sup>7</sup> According to the State Statistics Service of Ukraine's «Household Expenditures and Resources» for 2011, average monthly total resources per one household were UAH 3,841.70.



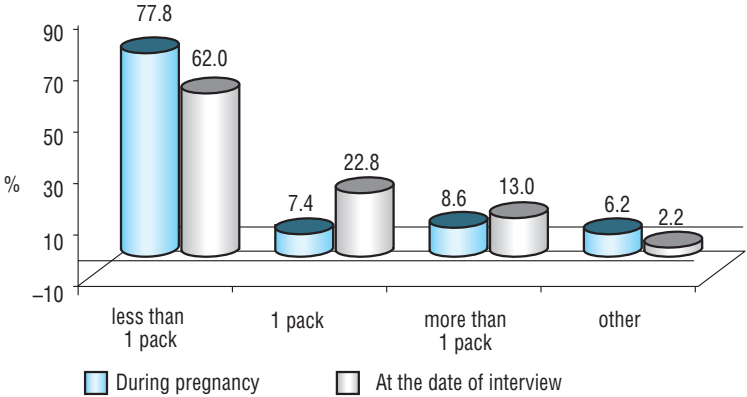
## 2.2. Behavioural Risk Factors

### 2.2.1. Alcohol Consumption and Smoking

According to survey results, 27.5% of HIV positive women confirmed the fact of alcohol consumption during pregnancy. 45.1% of pregnant women preferred low alcohol beverages, 25.5% consumed alcohol drinks of medium strength, while 29.4% preferred hard liquors.

During the past month, 5.6% of respondents consumed alcohol every day, and 21.1% – at least once a week. 40.0% had alcohol less frequently than once a week, and 15.6% never consumed alcohol. 17.8% of respondents did not answer this question. Among those who consumed alcohol during the last month, 47.7% preferred low alcohol drinks; 33.0% consumed medium strength alcoholic beverages, while 19.3% drank hard liquors.

During their pregnancy 43.1% of HIV positive women continued smoking, while at the date of interview the number of smokers among respondents reached 53.5%. Absolute majority of surveyed women smoked less than one pack of cigarettes a day both during pregnancy (77.8%), and at the date of interview (62.0%). However, one can observe the increasing proportion of respondents who smoke one and more packs of cigarettes a day. Distribution of respondents by daily frequency of smoking is presented in the *Diagram 17*.



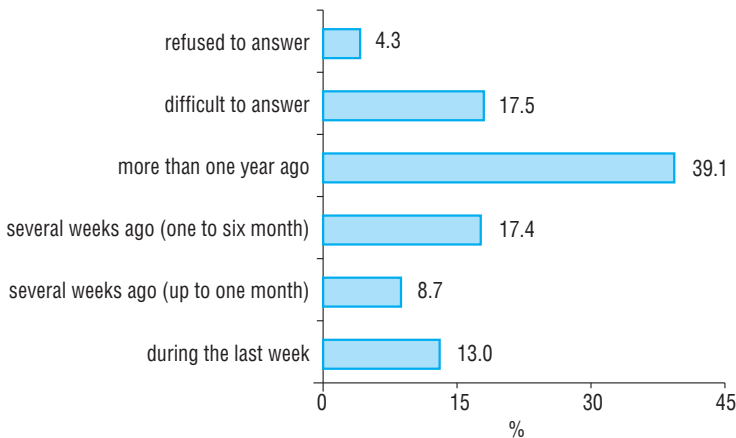
**Diagram 17. Distribution of respondents by daily frequency of smoking during pregnancy and at the date of interview**

It should be noted that no women participating in the survey have ever sought assistance for treating their alcohol and/or nicotine dependence.

### 2.2.2. Injecting Drug Use

14.3% of mothers of HIV positive children have injected narcotic substances during pregnancy. While answering the question «When was the last time you injected drugs?» 21.7% of those who contracted HIV as a result of injecting drug use confirmed their status of active IDUs – that is, they injected regularly or during the last month (*Diagram 18*).

During the most recent injecting episode 13.6% of respondents cooked the drug solution themselves; 9.1% prepared drugs with an injecting or sexual partner; 14.3% bought the solution from permanent supplier (dealer); 28.6% bought drugs from different dealers, and 23.8% – from different people. 23.8% of respondents refused to answer this question.



**Diagram 18. Percentage of respondents who reported recent use of injecting drugs**

70.6% of respondents confirmed the use of non-sterile needles or syringes. While using non-sterile injecting equipment, 26.7% of surveyed women have never applied disinfectants to clean them; 26.7% used disinfectants from time to time; 13.3% have always cleaned injecting equipment with disinfectants, while 33.3% did not remember or did not know about such cleaning.

70.6% of surveyed women have never used services of syringe/needle exchange sites (programmes) during pregnancy; 5.9% sought these services less than once a month, and 23.5% of respondents found it difficult to answer this question.

### 2.2.3. Other Dependencies as Risk Factors

The fact of use of non-injecting psychoactive substances during pregnancy was confirmed by two (0.5%) mothers of HIV positive children.

While answering the question «When was the last time you used non-injecting psychoactive substances?» one HIV positive woman reported having used them more than one year ago, and the other one – several months ago (from one to six months).

One HIV positive respondent sought medical assistance to treat her dependence from non-injecting psychoactive substances. She received necessary treatment in the addiction treatment clinic (dispensary) and provided with social support by NGO specialists.

### 2.2.4. Sexual Behaviour

While speaking about sexual behaviour, only 6.8% of mothers of HIV positive children reported having no sexual contacts while being pregnant with this child; 4.2% of women refused to answer this question.

Among HIV positive women who had sexual contacts during pregnancy, 91.8% had one sexual partner, 6.5% – two partners, and 1.7% – three partners.

The majority (70.0%) of known sexual partners of surveyed women had one or several factors of risky behaviour (Table 2.2).

2.7% of mothers of children under study provided sex services for reward (money, drugs, goods and products) during pregnancy.

Table 2.2

**Factors of risky behaviour of sexual partners  
(while pregnant with a child in the cohort under study) (N=138)**

Factors of risky behaviour	Percentage
Alcohol abuse	28.6
Injecting drug use	28.0
Imprisonment	15.4
Multiple unprotected sexual contacts with different partners	5.5
Presence of sexually transmitted infections	2.8
Sexual contacts with HIV positive person	1.1
Provision of commercial sex services	0.6
Nothing of the above	30.4

During pregnancy 6.7% of women have always used condoms during sex; 5.0% of women used condoms in more than half of all contacts; 4.5% used condoms in half of all cases, and 11.8% of women used condoms in less than half of all sexual contacts. It is interesting to note that 61.0% of HIV positive women have never used condoms while having sex during pregnancy. The remaining respondents either refused to answer or had no sexual contacts during pregnancy (11.0%).

Answers of mothers of HIV positive children to the question «Have you ever had sex in condition of alcohol or drug intoxication while being pregnant with this child?» are presented in the *Table 2.3*.

*Table 2.3*

**Answers of mothers of HIV positive children to the question «Have you ever had sex in condition of alcohol or drug intoxication while being pregnant with this child?» (N=159)**

Psychoactive substances	Always	> 50%	= 50%	< 50%	Never	Don't remember	Do not use
Alcohol	0.0	6.1	2.2	1.7	18.8	10.4	60.8
Injecting drugs	0.5	1.1	1.1	0.5	3.8	5.5	87.5
Other psychoactive substances	0.0	0.0	0.0	0.0	1.1	4.9	94.0

Therefore, the highest risk of sexual contacts during pregnancy was observed among women under the influence of alcohol – 10.0% of cases, while 6.1% of such women practiced such behaviour in more than 50 per cent of cases. 3.2% of women had sex during pregnancy after injection of drugs. Influence of other psychoactive substances on the sexual behaviour of mothers of HIV positive children was not identified during the study.

### *2.2.5. Violence as Risk Factor*

Violence means any intentional actions of physical, sexual, psychological, or economic nature of one person against another person, which violate constitutional rights and freedoms of the latter and result or may result in moral injury and harm his/her physical and mental health.

The survey findings demonstrate that 22.5% of respondents suffered from domestic violence at the hands of partners; 22.1% encountered violence on the part of parents, and 4.7% – of other persons (step father, superiors at the workplace). The respondents also encountered violence in educational establishments (1.0%), in public transportation (5.2%), on the streets (10.5%) and in other public places (57.0%).

79.6% of victims of violence were verbally abused; 64.0% suffered beating; 16.7% became victims of sexual abuse and harassment; 4.8% were ill-treated and

3.6% – exploited. 1.2% of those reporting violence were forced into commercial sex. Other manifestations of violence mentioned by respondents were: prohibition to seek medical care (0.5%), and to express own thoughts and views (0.5%). Respondents did not report any cases of forced involvement in pornography, alcohol and drug use, as well as violence on the part of colleagues.

The majority of respondents (67.8%) encountered violence in adulthood and/or marriage; 24.4% faced violence in adolescence, and 7.8% – in childhood.

### **Summary:**

1. 27.5% of HIV positive women confirmed the fact of alcohol consumption during pregnancy, whereas 10.0% of pregnant women had sexual contacts in a drunken state. The proportion of HIV positive women who consumed hard liquors has reduced from 29.4% (during pregnancy) to 19.3% (during the last month).

2. 43.1% of HIV positive pregnant women continued smoking, while at the date of interview the number of smokers among respondents reached 53.5% (of them 80.0% were mothers of HIV positive children).

3. 14.3% of HIV positive women have injected narcotic substances during pregnancy. However, at the date of interview 21.7% of mothers of HIV positive children were active IDUs – that is, they injected regularly or during the last month.

4. High risk injecting practices were found among many mothers of HIV positive children at the date of interview, which include: the use of non-sterile needles or syringes (70.6%), the absence or irregular processing (cleaning) of non-sterile injecting equipment with disinfectants (53.4%), purchasing of drug solutions for injections from different dealers and from other people (52.4%).

5. The majority of mothers of HIV positive children (70.6%) have never sought services of syringe/needle exchange programmes.

6. 89.0% of HIV positive women had sexual contacts during pregnancy, including 6.5% who had two sexual partners, and 1.7% – three sexual partners.

7. 61.0% of HIV positive women had sexual contacts of high risk during pregnancy as they did not use condoms during sex.

8. 2.7% of HIV positive women provided commercial sex services (min exchange for money, drugs, goods and products) during pregnancy.

9. During pregnancy with a child in the cohort under study, 70.0% of male partners of HIV positive pregnant women practiced one or several risky behaviours, predominantly alcohol abuse (28.6%) and injecting drug use (28.0%).

10. According to survey findings, 22.5% of respondents suffered from domestic violence at the hands of partners; 22.1% encountered violence on the part of parents, and 4.7% – of other persons. The majority of respondents (67.8%) encountered violence in adulthood and/or marriage; 24.4% faced violence in adolescence, and 7.8% – in childhood.

11. Manifestations of violence included: in 79.6% of cases – verbal abuse; 64.0% – beating; 16.7% – sexual abuse and harassment; 4.8% – ill-treatment, and 3.6% – labour exploitation. 1.2% of respondents were forced in commercial sex.

### 2.3. Health Services

The first and foremost step in preventing HIV among women is devotion to healthy lifestyle that needs to be developed and strengthened in family and public settings, as well as by educators and health workers from the very first day of child's life.

Prior to conformation of HIV positive status only 34.8% of respondents reported receiving information about HIV prevention among women. The main sources of such information included AIDS centres and antenatal clinics (*Table 2.4*).

*Table 2.4*

#### Sources of information about HIV prevention in women

Source of information	Percentage
AIDS centres	41.6
Antenatal clinics	12.0
Health centres	2.6
Family planning and reproductive health centres	2.6
CSSFCYs	2.6
Centres for social and psychological rehabilitation	0.0
Youth Friendly Clinics	0.0
Non-governmental organizations	0.0
Other sources	5.0

Other sources of relevant information included: schools (2.0%), universities and colleges (1.5%), maternities (0.5%), television (0.5%), and friends (0.5%).

Following confirmation of pregnancy with a child under study, information on the need to use condoms for preventing HIV and other STI during pregnancy was communicated to 80.9% of women; on the risks of HIV transmission to foetus/infant – to 82.2% of women; on advantages and risks of ART – to 79.6% of women; on the risks of transmission of HBV and HCV and ways to reduce such risks – to 71.3% of respondents; on the impact of drugs on foetal development, including abstinence syndrome – to 45.2% of women; on the availability of harm reduction programmes and addiction treatment (including OST) – to 35.7% of women; on the impact of delivery mode on the risk of HIV transmission, including risks and advantages of C-section – to 70.1% of women; and on the expediency to exclude breastfeeding and recommendations on artificial feeding – to 80.3% of surveyed women.

According to current Ukrainian legislation, the plan of labour management should be developed with participation of HIV positive pregnant woman and in line with clinical protocol. According to survey results, 61.8% of respondents were informed about the delivery mode in advance.

Counselling on procedures of childcare and medical follow-up immediately after birth was provided to 88.6% of respondents. The main sources of such information were: AIDS centres (61.0%), maternities (29.0%), and NGOs (14.8%). Children's polyclinics and hospitals, antenatal clinics, drop-in centres «Dovira» and centres for social and psychological rehabilitation provided childcare services in 13.6% of cases. The representatives of family planning and reproductive health centres, CSSFCYs and Child Friendly Clinics did not provide counselling on services.

Clinical and laboratory evaluation of the state of HIV positive children takes into account their age, individual developmental characteristics and health condition. For example, control over physical development parameters of positive children from 6 months to 5 years of age should be carried out at least once in three months. In addition, all HIV positive children regardless of age undergo clinical biochemistry blood tests every 6 months or more frequently depending on medical indications.

According to the survey data, following confirmation of HIV positive status children underwent medical examinations in AIDS centres on quarterly (43.8%), monthly (25.3%) and weekly basis (2.2%). In all other cases medical assistance was sought once (4.5%) or twice a year (10.1%). 9.0% of children did not seek such services at all. At the date of interview 1.0% of children were in hospitals, 1.5% stayed in children's homes, and 3.5% died.

68.0% of respondents confirmed that they never had to pay for health services for HIV positive children. 23.5% of respondents paid for such services «sometimes»,

1.1% – «in half of cases», and 6.3% paid «in most cases». 1.1% of respondents had to pay for health services every time.

While seeking medical assistance, 9.8% of children in the cohort under study were denied such services. According to respondents, in 7.3% of cases the reason for this was the presence of HIV-infection in a child.

According to current legislation, all HIV positive women are provided with free contraceptives following consultations on recommended methods or means of contraception. At the date of interview 43.9% of respondents were fully provided with contraceptives (condoms).

### Summary:

1. The majority of surveyed mothers of HIV positive children (65.2%) did not receive any prevention-related information until HIV positive status was confirmed.
2. AIDS centres remain the main source of information about HIV prevention among women (41.6%), PMTCT measures (54.0%), counselling on childcare and procedures of medical follow-up of a child immediately after birth (61.0%).
3. Provision of information to HIV positive women during pregnancy is still limited. This primarily concerns information on the impact of drugs on foetal development, including abstinence syndrome (45.2%) and on the availability of harm reduction programmes and addiction treatment (35.7%). Information on all other issues related to PMTCT was provided to almost all respondents (80.0% and more).
4. Only 61.8% of HIV positive pregnant women were informed about the delivery mode in advance; the remaining 38.2% of women did not participate in the development of their labour management plans.
5. Medical observation and clinical/laboratory evaluation of a child's condition is routinely performed according to norms among 72.0% of children; the remaining children either receive medical assistance once or twice a year or do not seek such services at all.
6. One-third (32.0%) of surveyed women reported about the need to pay for health services provided to their positive children, while 9.8% of children under study were denied such services in connection with their HIV positive status.
7. At the date of interview only 44.0% of respondents were fully provided with contraceptives (condoms).
8. 41.0% of surveyed HIV positive women were NGO clients.



During the interview 40.7% of surveyed mothers of HIV positive children were clients of NGO services and were receiving a package of social services.

## 2.4. Social Services

Absolute majority of respondents (91.8%) were aware of opportunities to receive social services for a HIV positive child, while 66.7% of respondents noted that their children needed such services.

The respondents initially learned about opportunities to receive social services for their children in AIDS centres (38.5%), in children's polyclinics, hospitals and infectious diseases hospitals (27.0%), in NGO (12.5%), in drip-in centres (2.5%), from friends and acquaintances and in the Internet (2.0%), and in maternities (1.5%), as well as from other sources (16.0%).

Social services to children with HIV were typically provided in AIDS centres (77.3%) and NGOs (20.3%), whereas the role of CSSFCYs in the provision of such services is extremely low (2.4%).

At the date of interview 119 (or 59.5%) of HIV positive children were receiving the following social services:

- Counselling on the development of adherence to treatment and on peculiarities of care and support of children living with HIV – 79.8%.
- Training on prevention of HIV and opportunistic infections, development of skills of healthy lifestyles – 55.5%.
- Referral of a child to narrow specialists according to needs and medical indications – 60.5%.
- Monitoring of observance of legal norms regarding mandatory social payments and mobilization of resources of charitable foundations for treatment, health improvement, feeding and transportation of a child – 18.5%.
- Psychological assistance – 66.4%.
- Representation of child's interests in various institutions and organizations – 12.6%.
- Social and domestic services (provision of food products, toys, transportation, social and household support (patronage), calling a doctor, delivery of medications, etc.) – 49.6%.
- Other: humanitarian aid (0.5%); infant food (2.5%); assistance with medical examinations (0.5%); classes for children, including participation in holidays and early childhood development lessons (2.0%); day care services (0.5%).

**Summary:**

1. Absolute majority (91.8%) of surveyed women were aware of opportunities to receive social services for a HIV positive child, while 66.7% of respondents noted that their children needed such services. 60.0% of HIV positive children currently receive social services.
2. Institutions/organizations that typically provide social services to children with HIV are AIDS centres (77.3%) and NGOs (20.3%).
3. Reported cases of disclosure of mother's and/or her child's HIV positive status (14.6%), as well as non-fulfilment of the government's commitment to reimburse expenses of HIV positive people who travel to health facilities (98.4%) violate norms of current Ukrainian legislation.

It should be emphasized that 14.6% of respondents were aware of cases when their own HIV positive status or that of their children was disclosed during provision of health and social services, while 85.4% of respondents denied such facts.

The cost of round-trip travel to the treatment facility was reimbursed to only 1.6% of respondents.

## 2.5. Stigma and Discrimination Associated with HIV Positive Status

It is well known that people living with HIV routinely encounter discrimination and violence, which prevents them from receiving necessary information and services. Stigma limits access of HIV positive individuals to prevention and treatment programmes, as well as to care and support for PLWH in need of such services.

According to the research data, 15.9% of respondents personally experienced stigma and discrimination in connection with HIV positive status (one's own or that of a child). The majority of such situations are linked with moral and ethical humiliation (75.0%), verbal abuse (32.1%), ignoring of interests (25.0%) and intimidation (3.6%).

**Summary:**

1. Stigma and discrimination in connection with HIV positive status (one's own and that of a child) were common for 16.0% of respondents who typically experience moral and ethical humiliation and verbal abuse in this regard.
2. Health workers (76.0%), relatives (52.0%) and friends (28.0%) are persons who typically reveal stigmatizing and discriminating attitudes towards HIV positive individuals.

In most cases stigma and discriminatory attitudes are demonstrated by health workers (76.0%), family members (52.0%), friends (28.0%), police (12.0%), and partner/husband (8.0%).

76.0% of respondents have never encountered discrimination in public places (stores, resort and recreation areas, etc.); while 20.0% felt it sometimes. 4.0% of respondents were often discriminated in public places. Municipal institutions, banks and the like were free from discrimination for 68.0% of those surveyed; 16.0% experienced it sometimes, while another 16.0% faced it very often.

## Section 3.

### **RESULTS OF SITUATION ANALYSIS «MEDICAL AND PSYCHOSOCIAL SERVICES PROVIDED BY GOVERNMENTAL AND NON-GOVERNMENTAL ORGANIZATIONS IN THE SPHERE OF PMTCT»**

Situation analysis «Medical and psychosocial services provided by governmental and non-governmental organizations in the sphere of PMTCT» was aimed at bringing to light the main issues in the area of prevention of mother-to-child transmission of HIV in the regions of Ukraine during 2009 – 2012. Thanks to information, collected among providers of health and psychosocial services by means of questionnaire, the researchers identified key issues in the area of organization of PMTCT measures. Collected data can also inform the development of Strategic plan of actions to eliminate vertical transmission of HIV in Ukraine.

The existing system of prevention of mother-to-child transmission of HIV in the country can be viewed as an excellent model of decentralization of HIV/AIDS response – all antenatal clinics and maternity / obstetric services provide HIV counselling and testing services, are adequately equipped and staffed with specialists trained in VCT service provision.

It should be noted that clear distribution of duties and responsibilities for PMTCT programme implementation is essential for organizing relevant measures. As for the availability of specialists responsible for PMTCT programme implementation at the regional level, it should be stressed that not every region has formally approved such persons by issuing order or instruction. At the same time, person or persons responsible for monitoring and evaluation of PMTCT measures at institutional level have been approved by relevant orders, instructions and job descriptions.

One of essential components of PMTCT programme implementation is proper organization of multidisciplinary team (hereinafter – MDT) activities aimed at provision of health and social support to HIV positive pregnant women and to children born to positive mothers. In all regions of Ukraine involved in the study relevant MDTs were set up in respective regional AIDS centres. In 16.0% of cases MDT activities were not formalized by specific order or resolution. Key documents regulating the procedure of MDT functioning included agreements on cooperation with NGOs and on letting premises to NGOs (50%), or relevant internal orders of health facilities (50%). In half of all cases the MDTs included specialists of AIDS centres and NGO representatives; 34.0% of MDTs were staffed with NGO specialists only, and 16.0% of multidisciplinary teams consisted of experts of AIDS centres.

Ongoing and uninterrupted provision of health products and medicines for PMTCT measures is one of key objectives of the National Programme to Ensure

Prevention of HIV-infection, Treatment, Care and Support to HIV Positive People and Patients with AIDS for 2009–2013, approved by the Law of Ukraine No. 1026-VI as of February 19, 2009. It preconditions the effectiveness of measures in this activity area.

47.6% of experts mentioned delays in the supply of health products and medications during 2009–2012, while 52.4% of experts denied these statements. Health products and medications that were commonly mentioned as undersupplied include: test kits for routine examination of pregnant women (83.3%); rapid tests for HIV during delivery for women who were not tested in the antenatal period (66.4%); PCR test kits and consumables for early diagnosis of HIV (66.4%); test kits for CD4 cell count and viral load testing of HIV positive pregnant women (50.0%), and adapted milk formulas (66.4%). It should be noted that almost all experts (95.0%) reported that delays did not occur every year, while 5.0% of surveyed specialists pointed at annual delays with the provision of adapted milk formulas.

Similarly, 31.0% of experts pointed at delays in the supply of health products and medications during 2011. Products and medications that were commonly mentioned as undersupplied include: test kits for routine examination of pregnant women (66.4%); test kits for CD4 cell count and viral load testing of HIV positive pregnant women (50.0%); consumables for PCR tests for early diagnosis of HIV (50.0%); rapid tests for HIV during delivery for women who were not tested in the antenatal period (33.3%), and adapted milk formulas (16.7%). It should be noted that all experts reported that delays did not occur more than once a year.

During 2009–2012 there were no reported delays in the supply of antiretroviral drugs for ARV-based prevention and ART for HIV positive pregnant women in obstetric health facilities at all levels of health care system.

Evaluation of services provided by governmental and non-governmental organizations in the area of PMTCT is the following:

### *Evaluation of AIDS centres' services*

Each and all experts evaluated psychological services as «quality services, but sometimes results are not achieved».

While speaking about health and social services, 16.7% of experts regarded them as «not always quality services, and sometimes results are not achieved»; for 50.0% of experts these were «quality services, but sometimes results are not achieved», and 33.3% of experts highly appreciated these services («quality services and consistently achieved results»).

Only one-third of experts were able to assess social and pedagogical services, while others did not have sufficient information about such services in general and about their quality in particular. 50% of those who answered the question viewed these services as «quality services, but sometimes results are not achieved» and «not always quality services, and sometimes results are not achieved».

The majority of experts (66.7%) regarded provision of information services as «quality services and consistently achieved results», while the remaining specialists (33.3%) were less positive: «quality services, but sometimes results are not achieved» and «not always quality services, and sometimes results are not achieved».

Legal services offered by AIDS centres received the lowest score: 66.7% regarded them as «not always quality services, and sometimes results are not achieved», and 33.3% – as «quality services, but sometimes results are not achieved».

66.7% of experts regard socio-economic service provision as «quality services and consistently achieved results», while for 33.3% of experts these are «quality services, but sometimes results are not achieved».

### *Evaluation of CSSFCY services*

While speaking about social services provided by CSSFCYs in the area of PMTCT, the majority of experts admitted having insufficient knowledge about provision of such services in general, and about the quality of such services in particular.

Half of surveyed experts evaluated psychological and socio-medical services as «quality services, but sometimes results are not achieved», while the other half of experts described such services as «services of low quality, and results are never achieved».

Provision of information services by these institutions was assessed by 75% of experts as «not always quality services, and sometimes results are not achieved», while the remaining 25% of respondents believe that these are «quality services and consistently achieved results».

50% of experts evaluated legal services as «quality services, but sometimes results are not achieved», while in other 50% of cases they were qualified as «not always quality services, and sometimes results are not achieved».

Very limited information was provided regarding the capacity of CSSFCYs to provide socio-economic services – only one expert described them as «not always quality services, and sometimes results are not achieved».

### *Evaluation of NGO services*

Average score of services provided by NGOs working in the area of PMTCT is 4 – «quality services, but sometimes results are not achieved». We should note the uniformity of expert evaluations regardless of the region. Average scores for the provision of socio-economic, socio-medical and psychological services ranged from 3.6 to 3.8 – «not always quality services, and sometimes results are not achieved». At the same time legal (4 points), socio-pedagogical (4.25 points) and information (4.4 points) services were identified as «quality services, but sometimes results are not achieved».

### *Evaluation of services provided by other organizations*

The majority of experts admitted having insufficient knowledge about services provided by centres for rehabilitation and other institutions and organizations that are not directly involved in PMTCT activities, and about the quality of such services.

Evaluations of services provided in 2011 do not differ substantially from average estimates for 2009–2012.

Sustainability of social services, outsourcing of services provided and financing of services by the government are key priorities of the Concept of the National Targeted Social Programme for HIV/AIDS Response for 2014–2018. In order to ensure adequate governmental support to service provision, it is essential to strengthen the role and to build capacity of social service providers in terms of provision of competent assistance and support in the area of PMTCT to all those in need.

Key factors, which according to experts can contribute to effective work of social service providers include:

- Increased financing of social support projects for HIV positive women both during pregnancy and postpartum;
- Capacity building of staff and improved qualification of social workers, including in the area of prevention of HIV/AIDS and PMTCT;
- Delegation of functions on the provision of counselling services for socially disadvantaged women (including female representatives of most-at-risk populations) regarding PMTCT, family planning and provision of barrier contraceptives to social service providers;
- Involvement of staff of social service providers in social support and VCT service provision for HIV positive women who were not under medical observation and did not receive ARV-based prevention during pregnancy;
- Introduction of motivational targeted financial assistance for HIV positive women both during pregnancy and after delivery (including socially disadvantaged women and female representatives of most-at-risk populations);
- Introduction of standards of social service provision and ensuring control over realization of these standards in the course of service provision;
- Centralization and integration of social assistance with well-confirmed mechanism of referrals between various facilities;
- Establishment of close cooperation between health facilities, social service providers and NGOs that support PMTCT programmes;
- Provision of health facilities, social service providers and NGOs that support PMTCT programmes with printed materials on the issues of mother-to-child transmission of HIV.

Equally important is strengthening of regulatory and legal base, including clinical protocols and orders of the Ministry of Health of Ukraine in the area of PMTCT. According to experts, the following legislative acts require review, clarification or further development:

- Order of MoH Ukraine No. 619 as of December 29, 2003 «On Introduction of Monitoring of Vertical Transmission of HIV from Mother to a Child»<sup>2</sup>;
- Order of MoH Ukraine No. 716 as of November 14, 2007 «On Approval of Clinical Protocol for Obstetric Care ‘Prevention of Mother-to-Child Transmission of HIV’» (concerning earlier initiation of PMTCT – from the 16<sup>th</sup> week of pregnancy; state support for elective C-section; introduction of DBS methodology for early diagnostics of HIV among newborn children in maternities; expanding the list of obstetric and clinical situations);
- Order of MoH Ukraine No. 580 as of December 12, 2003 «On Improving Treatment of Patients with HIV-infection and AIDS» (concerning provision of post-exposure prophylaxis);
- Order of MoH Ukraine No. 977 as of December 27, 2011 «On Introduction of Changes to the Order of the Ministry of Health of Ukraine No. 582 as of December 15, 2003 ‘On Approval of Clinical Protocols for Obstetric and Gynaecological Care’» (concerning introduction of Clinical protocol «Caesarean Section for HIV Positive Pregnant Women»)<sup>3</sup>;
- Joint Order No. 740/1030/4154/321/614a as of November 23, 2007 «On Measures for Organization of Prevention of Mother-to-Child Transmission of HIV, Health Care and Social Follow-up of HIV Positive Children and their Families».

In addition the experts emphasized the need of introducing computerized monitoring system for programmes aimed at prevention of mother-to-child transmission of HIV.

The most debatable was the issue of introducing changes to the Law of Ukraine «On Prevention of Diseases Caused by Human Immunodeficiency Virus (HIV) and Legal and Social Security of People Living with HIV» (No. 1972-XII as of December 12, 1991) to strengthen personal liability of mothers for avoiding medical observation and for intentional non-fulfilment of doctor’s orders, which has led to a child’s exposure to HIV.

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<sup>2</sup> Currently this legal document is null and void pursuant to Paragraph 4 of the Order of MoH Ukraine No. 612 as of August 3, 2012 «On Approval of Forms of Primary Registration and Reporting Documentation on Monitoring of Measures to Prevent Mother-to-Child Transmission of HIV, and Instructions for Completing Them».

<sup>3</sup> The Order currently reviewed pursuant to the Order of MoH Ukraine No. 977 as of December 27, 2011 «Clinical Protocol on Obstetric Care ‘Caesarean Section’».



## CONCLUSIONS

Medical and social measures on PMTCT form an integral part of the WHO's basic comprehensive strategy aimed at preventing mother-to-child transmission of HIV, which includes four main areas: primary prevention among women; prevention of unwanted pregnancies among HIV positive women; prevention of transmission of infectious matter from HIV positive mother to her child; and treatment and support of HIV positive women and their families.

Implementation of measures against four core components of PMTCT in Ukraine currently aims at achievement of the global strategic goal – to ensure sustainable success of PMTCT programme thus enabling reduction of rates of vertical transmission of HIV to 0%.

Within the framework of this study the researchers identified the impact of various medical and non-medical factors that contributed to mother-to-child transmission of HIV among children born in 2008 – 2012, and determined the main gaps in the implementation of measures against four core components of PMTCT during the same period.

In order to eliminate possibilities of mother-to-child transmission of HIV, it is necessary not only to reduce risks of vertical transmission, but also to prevent new infections among all women of reproductive age, and this significantly depends on the progress of primary prevention measures, based on the principles of healthy lifestyle and family values. According to findings of this study, only 35.0% of mothers of HIV positive children received useful information on HIV prevention before their positive status was confirmed. It is interesting to note that schools and other educational establishments were identified as primary sources of such information by only 3.5% of respondents.

Therefore, current measures of primary prevention, integrated in educational processes, fail to achieve adequate level of public awareness regarding HIV/AIDS issues. In recent years funding of prevention programmes within the overall structure of expenditures on HIV/AIDS response in Ukraine was the lowest (about 30%) as compared to other expenditures (treatment, care and support, organizational measures). It is widely believed that services supported from budgets are the most financially secure. At the same time, the National AIDS Programme does not envisage funding of primary prevention from the State Budget. Measures of focused prevention for most-at-risk populations are carried out exclusively at the expense of the Global Fund to Fight AIDS, Tuberculosis and Malaria.

Family planning is one of universally recognized components of prevention of mother-to-child transmission, as women with unwanted pregnancies are less likely to accept medical supervision and medicinal prevention of vertical transmission. About half of women in the sample (48.0%) reported that their pregnancy with HIV positive child was unplanned. 55.0% of women who gave birth to positive children, had more than one child in their families: in addition to a child in the cohort under

study, 13.0% of women had 2 to 4 children who were also infected with HIV. At the date of interview only 44.0% of HIV positive women had contraceptives (condoms) at their disposal. Despite the fact that prevention of unwanted pregnancies is a widespread issue for Ukraine, the situation can aggravate even further in case of HIV-infection, especially for women belonging to most-at-risk populations. Therefore one can assert that currently there exists a countrywide deficit of accessible information for HIV positive women on the use of contraceptives and on family planning after childbirth.

According to socio-demographic and epidemiological data, 99.5% of mothers of HIV positive children were citizens of Ukraine, and 70.0% of them lived in big cities. The mean age of women at diagnosis of HIV is 26 years, and at delivery – 29 years (*according to 2004 study – 25 years*).

Educational level of mothers of HIV positive children is generally lower than the average education of Ukraine's female population: 14.0% of such women have higher education (*country average in 2011 – 25.0% of women*), and 45.0% received only general secondary education (*country average in 2011 – 24.0% of women*).

During the period from pregnancy to the date of interview one could observe the reduction of the percentage of HIV positive mothers in union (official or civil marriage) – from 74% to 64%, with simultaneous increase of the proportion of divorced women living with HIV – from 1.0% to 2.6%. Each fifth (21.5%) HIV positive woman has never been married, which coincides with the country average.

The growth of epidemiological significance of sexual transmission of HIV in Ukraine leads to annual increase of the number of women of reproductive age among newly diagnosed cases of HIV. According to official statistics for 2011, the proportion of pregnant women who became infected through sexual contacts reached 92.1%, and of those infected as a result of injecting drug use – only 7.0%. Nevertheless, analysis of the study results shows that despite the fact that the most common way of HIV transmission to mothers of positive children was sexual (78.0%), each fifth woman (21.5%) contracted HIV through injecting drug use.

It is recognized that the risk of HIV transmission from mother to a child increases significantly if a mother injects drugs during pregnancy. According to the desk review findings, the proportion of such women was 13.5%, and according to the survey – 14.5% (*country average in 2011 – 3.5%*). However, after the childbirth and regardless of being aware of own positive status, the proportion of women – active IDUs among all mothers under study has increased significantly – at the date of interview 21.7% of respondents practiced high risk behaviours associated with injecting drug use. At the same time, coverage of female IDUs by syringe/needle exchange programmes was only 29.4%.

Scaling up access of IDUs to prevention programmes makes it possible to more actively address the intensity of HIV epidemic. The growing number of HIV positive active IDUs among women following the childbirth demonstrates that the coverage

of female representatives of this most-at-risk population with harm reduction programmes remains low. One can also assume that the real number of female IDUs with positive status in the regions with high HIV prevalence can be significantly bigger – at least by 1.5–2 times as compared to the number of HIV positive women who inject drugs during pregnancy.

It should be added that current efforts aimed at re-socialization of HIV positive pregnant women with drug dependence are inadequate at all levels of follow-up (during pregnancy, in labour and after delivery). The study shows that only 2 positive pregnant women participated in OST programme; 2 more women were involved in the rehabilitation programme for drug addicts; only 4 women received prenatal care plan for drug addicts developed by the addictions specialist. In other words, cooperation between obstetricians-gynaecologists and addictions specialists remains weak.

It is well-known that women are more vulnerable to HIV-infection than men, both biologically and socially. Irrespective of the fact of drug use, women are more likely to have unsafe sexual contacts due to much more limited knowledge, skills and understanding of risks associated with HIV. Analysis of the survey data revealed that during pregnancy about 90.0% of mothers of HIV positive children had sexual contacts, with 61.0% of them not using condoms. Moreover, 40% of women had multiple unprotected contacts, while 3.0% were engaged in commercial sex. 33.0% of respondents were found to have STI, including 2.5% of women who had serological markers for syphilis. Women in a drunken state had the highest risk of having unprotected sexual contacts.

These data predict more intensive prevalence of sexual transmission of HIV, which points at the need to scale up and to improve the quality of measures aimed at STI prevention (including HIV) among women and their sexual partners, especially in most-at-risk populations, as the latter play a decisive role in determining further development of epidemiological processes of HIV and its possible generalization in Ukraine.

Serological screening of pregnant women for antibodies to HIV is one of more important components of PMTCT programme. Recent tendency observed in Ukraine is gradual reduction of the number of women with HIV positive status newly identified during pregnancy, delivery and postpartum among all HIV positive pregnant women. According to the study, the proportion of such women was 72.0% (*country average in 2011 – 55.0%*). Among women who were not aware of their positive status before pregnancy, only 39.0% were enrolled in care in antenatal clinics during the first and second trimesters of pregnancy (*country average in 2011 – 75.3%*), that is, at a proper time to initiate full-scale ARV-based prevention. 28.5% of women whose positive status was identified during delivery and postpartum did not receive necessary package of medical and non-medical PMTCT services (*country average in 2011 – 6.3%*).

It is interesting to note that some women (5.0%) became infected during pregnancy, and their infection was diagnosed during the repeat screening by the Code

109.2 (*country average in 2011 – 0.02%*). In other cases, 11.1% of positive women received HIV negative results both during pregnancy and at labour, which means that they were either in the «window period» during the repeat screening, or became infected only after the childbirth. In these cases infants were infected through the breast milk. It should be emphasized that unidentified infections in pregnant women in conditions of high levels of viral load usually lead to 100% of mother-to-child transmission of HIV. The situations with late identification of HIV-infection in pregnant women call for more effective approaches to screening and for optimization of the number of such tests.

It should be noted that prenatal screening for HIV is not only aimed at identifying HIV positive women to ensure timely and comprehensive provision of PMTCT services, but also at preventing HIV transmission to sexual partners of positive women. According to survey results, the correlation between the number of HIV positive and HIV negative fathers was 3:1. About one-third of all positive fathers (32.0%) were found to be sexual partners of HIV positive women, that is, after confirmation of positive status of mothers of children with HIV. 98.5% of HIV positive fathers were citizens of Ukraine, while 34 years was their average age at the date of HIV diagnosis. 76.2% of men were infected as a result of parenteral transmission, while in 19.7% of cases fathers were exposed to HIV as a result of unprotected sex.

Many women become infected by having sex with partners who practice risky behaviours, e.g. inject drugs. However, 25.0% of positive pregnant women had HIV negative partners, which puts the latter at risk for HIV-infection as a result of sexual contacts with these women. It is extremely important to routinely implement various prevention measures for such discordant couples in order to protect HIV negative partners from infection. If we analyse high-risk behaviours of all sexual partners of mothers of HIV positive children regardless of their status, we can see that 70.0% of men had one or several risk factors, such as alcohol abuse, injecting drug use, imprisonment and multiple unprotected sexual contacts.

Therefore, large-scale implementation of routine testing for HIV among male partners of HIV positive pregnant women, and among sexual partners of pregnant women who practice high-risk behaviours in order to identify discordant couples, as well as introduction of necessary prevention measures and prescription of ART can reduce HIV-associated morbidity and mortality among the country's population of reproductive age.

According to different epidemiological indicators, the number of cases of late identification of persons with clinical signs of HIV tends to increase in almost all regions of Ukraine. During 2008–2011 the proportion of patients enrolled in care at the clinical stages III and IV in the total number of persons with newly diagnosed HIV-infections has been growing steadily from 30.6% to 32.5% to 37.3% and to 40.0% correspondingly. As for HIV positive pregnant women, the situation is somewhat more optimistic. According to this survey, only 19.0% of mothers of HIV positive children developed clinical stages III and IV of HIV-infection at the date of enrolment in care in AIDS centres (*country average in 2011 – 12.8%*). However, immediately before

labour 24.4% of pregnant women had very high levels of viral load, which correspond to symptomatic stage of HIV and the AIDS stage. Therefore, the disease continued to progress during pregnancy in some of HIV positive women, which may be explained the lack ARV-based prevention or its ineffectiveness, or by low adherence of these women to ART.

Analysis of the research data shows that 33.0% of mothers of HIV positive children were not registered with antenatal clinics; as a rule they arrived to maternities only immediately before delivery or after the childbirth. ARV-based prevention of perinatal transmission of HIV was provided to 72.0% of pregnant women (*country average in 2011 – 94.5%*); 22.0% of them received antiretroviral prophylaxis only during labour (*country average in 2011 – 4.3%*). Coverage of pregnant women-IDUs with ARV-based prevention reached 49.0% (*country average in 2011 – 65.3%*). HAART was provided to 45.0% of pregnant women (*country average in 2011 – 61.6%*), and only 7.0% of these women remained on ART after delivery. More than half of women (56.0%) demonstrated low adherence to ART. Social support during the course of ARV-based prevention was provided to each fourth woman in need of such services. In most cases social services to these women were offered by NGOs that work in partnership with AIDS centres.

The data show that one of key factors that «boost» mother-to-child transmission of HIV in Ukraine is inadequate coverage of pregnant women – primarily female representatives of most-at-risk populations – with ARV-based prevention. The main non-medical reasons for not receiving ART for the purposes of PMTCT include: woman's refusal to receive treatment, non-registration of HIV positive woman with antenatal services, avoidance of follow-up by the AIDS centre specialists, and woman's asocial behaviour. All these are the evidence of poor cooperation between health workers and other specialists in the area of formation of adherence to ART among HIV positive pregnant women.

Other factors that could contribute to HIV-infection of children in the cohort under study also include some negative obstetric factors. For example, the main mode of delivery among HIV positive pregnant women under study was vaginal birth (85.0%). However, 17.5% of HIV positive women were delivered to maternity obstetric service in the period of expulsive pains, and 3.5% – after the birth. 27.5% of women had preterm delivery; 22.0% had their rupture to delivery interval over 4 hours; 11.5% had invasive interventions during labour. Caesarean section was performed in 15.0% of cases only (*country average in 2011 – 22.1%*). The mode of delivery was routinely discussed only with 62.0% of HIV positive pregnant women. Therefore, currently there exist a number of issues related to obstetric management of HIV positive pregnant women, which can be addressed by improving the national clinical protocol for HIV positive women in terms of obstetric observation and selection of delivery mode for positive pregnant women on the basis of modern approaches and evidence-based medicine.

Equally important area of PMTCT programme implementation is HIV prevention among newborn babies. According to current clinical protocol, all children born to

HIV positive mothers must receive ARV-based prevention and be on artificial feeding. According to survey findings, coverage of HIV positive children in the cohort with ARV-based prevention was 84.0%, which was notably lower than country average (*in 2011 – 99.1%*). Particularly alarming is the fact that despite the majority of HIV positive infants received artificial feeding immediately after birth, and only 4.5% of children were found to be infected through breastfeeding, in reality the risk of infection through breastfeeding for the children in the cohort under study was by 2.5 times higher, reaching 11.5%. Medicated weaning (cessation of lactation) in maternities was provided to 77.0% of HIV positive birthing mothers. Therefore, likelihood of infection through the breast milk of a HIV positive mother remains considerable, thus requiring urgent measures to eliminate such possibilities.

Currently one can observe ongoing changes in the approaches to diagnosis of HIV-infection in children born to positive mothers in Ukraine. Their overall goal is to establish the child's HIV status as soon as possible. Early diagnosis (by using PCR DNA test) contributes to better planning of health and social services for a child, reduces parental stress of waiting for the news about the child's status, and is cost-effective. Within the framework of this study the researchers analysed methods and results of HIV diagnostics in children and timeliness of these procedures. For example, HIV positive status of 86.0% of children was confirmed on the basis of two positive results of PRC DNA test. Only 42.0% of HIV positive children were initially tested for HIV with PCR DNA tests during the first two weeks after birth, which does not comply with international recommendations on the terms of early diagnosis of HIV in infants (*country average in 2011 – 55.3%*). Low value of this indicator, both within this study and throughout Ukraine in general, points at systemic gaps in the supply of kits for PCR DNA testing to virology laboratories.

Provision of antiretroviral therapy to HIV positive children in Ukraine is defined as a priority and integral component of a programme of comprehensive medical care. ART coverage has crucial impact on the levels of AIDS-associated morbidity and mortality. The target of ART coverage of children is 100%. According to relevant medical documentation, 42.0% of children at the date of final confirmation of their positive status have already developed clinical stages III or IV of HIV-infection; 62.5% of HIV positive children received ART. The main reasons for children not receiving ART among those in need of such treatment at the date of the survey included: child's preparation to ART, parents' refusal to treat their child, and low adherence of parents to child's treatment. Development of proper adherence to ART among family members and social support of children on ART shall guarantee effectiveness of treatment and adequate development of a child. In cases of mother's refusal from laboratory examination and antiretroviral therapy, social support is provided to only 30.0% of children, usually by NGO specialists.

Further spread of HIV epidemic, coupled with low birth rates and deterioration of demographic situation in the country, contributes to negative trends in the dynamics of morbidity and mortality rates among infants during the first year of life. More than half of HIV positive children in the cohort under study have developed various



neonatal complications, while 3.5% had abstinence syndrome. The frequency of mortalities among HIV positive children born to positive mothers reaches 3.5%. All children with confirmed AIDS have died during the first year of life. In case of child's death post-mortem examinations are very rare (one examination per seven deaths), which violates current legislation of Ukraine.

Medical supervision of children living with HIV envisages dynamic surveillance over progression of HIV-infection, provision of comprehensive prevention and treatment, prevention of opportunistic infections, provision of psychological support and assistance with social adaptation. According to survey results, medical supervision at the place of residence covered 84.5% of HIV positive children; it was provided on regular basis to 82.0% of such children.

Many HIV positive women encounter stigma and hostile treatment in health facilities, which prevents them from receiving necessary prevention and treatment services, or forces them to delay the use of such services. According to the survey findings, 16.0% of respondents have personally felt stigma and discrimination in connection with HIV positive status (either their own or that of their children). The majority of such situations were linked with moral and ethical humiliation (75.0%), verbal abuse (32.1%), and ignoring of interests (25.0%). 32.0% of surveyed women reported about the need to pay for health services provided to their positive children, while 10% of children under study were denied such services in connection with their HIV positive status. Respondents also report about cases of disclosure of positive status – either mother's or that of her child (14.6%) – primarily by health workers. Therefore, better access of HIV positive mothers and their children to health services requires consistent measures aimed at de-stigmatization of PLWH among the public in general and among health workers in particular.

Medical factors that contribute to further spread of the epidemic are closely linked to social factors, as the majority of HIV positive individuals contracted infection against the backdrop of own low and unstable social status. Most of HIV positive children lived in families: with a mother and/or father, with relatives or with adoptive parents (96.0%). Despite the fact that 81.0% of respondents of this survey regarded their living conditions as «satisfactory», monthly incomes of families with positive children were significantly lower than country average, ranging from 1,000 to 2,000 hryvna per month (*country average in 2011 – UAH 3,841.70*). In addition, 88.5% of children received adapted milk formulas at the expense of local budgets. Material assistance was provided on monthly basis to 89.0% of children. Non-fulfilment of the government's commitment to reimburse expenses of HIV positive people who travel to health facilities (98.4%) violates norms of current Ukrainian legislation.

These data confirm extremely limited social wellbeing of families affected by HIV/AIDS. Current stage of Ukraine's development is characterized by many grave social problems that contribute to deterioration of the quality of people's lives. Social benefits, namely childbirth grants, become an incentive for «earning» and form the backbone of family budgets, especially in low-income families. For example, significance of social benefits and their contribution in the budget of families

increases considerably after the birth of a child with HIV positive status – from 5.0% to 65.0%.

At the date of the survey only 50.5% of HIV positive children were receiving social services. As a rule, these included delivery of food products, development of adherence to ART, legal consultations and accompanying of children during their referral to health facilities. Therefore, current scope of social support meets the needs of only half of all HIV positive children. Strong NGO networks supplements the state healthcare system in some important areas, but NGO activities significantly depend on external funding. According to study, only 41.0% of mothers of HIV positive children reported being clients of non-governmental organizations that offer social support to positive pregnant women, mothers and their children.

To ensure sustainable medical and social support for children affected by HIV epidemic and to provide such services to all HIV positive children, it is necessary to involve and strengthen governmental social sector. However, current involvement of CSSFCY representatives in the provision of social support to positive children is extremely low (2.5%). At the same time, AIDS centres continue to play the central role in providing information about HIV in women (41.6%), implementing PMTCT measures (54.0%), and providing counselling on procedures of childcare and medical follow-up immediately after birth (61.0%).

Based on the data, collected from experts – providers of health and psychosocial services, the researchers identified the main issues in the area of organization of PMTCT measures. Uninterrupted supply of necessary health products and medications for PMTCT activities is one of key objectives of the National AIDS Programme, which preconditions the effectiveness of work in this area. 47.6% of experts mentioned delays in the supply of health products and medications for PMTCT programme during 2009–2012. Commodities and medications that were commonly mentioned as undersupplied included: test kits for routine examination of pregnant women (83.3%); rapid tests for HIV during delivery (66.4%); PCR test kits and consumables for early diagnosis of HIV (66.4%); test kits for CD4 cell count and viral load testing of HIV positive pregnant women (50.0%), and adapted milk formulas (66.4%). Therefore, underdeveloped procedures of the state procurement of health products and medications, coupled with the deficit of budget funding lead to untimely implementation of PMTCT measures, which often entails emergency procedures to obtain these supplies at the expense of the local budgets.

Management and implementation of PMTCT programme in Ukraine is regulated by current normative and legal base, which requires renovation as well as development of new documents in line with international standards and recommendations in the area of PMTCT. Above all, it is necessary to review clinical protocol on HIV positive pregnant women, including those with drug dependence. Another imminent issue is strengthening personal liability of mothers for avoiding medical observation and for intentional non-fulfilment of doctor's orders, which has led to a child's exposure to HIV.



One of major Ukraine's achievements is the improvement of PMTCT monitoring and evaluation system, which enables the development of strategic actions aimed at elimination of mother-to-child transmission of HIV in the country. This system, based on fundamental principles of epidemiological surveillance for HIV-infection and AIDS, tracks the progress against core indicators of PMTCT programme regarding diagnostics, prevention, treatment and support of HIV positive pregnant women, including representatives of most-at-risk populations, and children born to these women. According to experts, for system to be used more effectively it is necessary to introduce special software to monitor programmes aimed at prevention of mother-to-child transmission of HIV.

Therefore, findings of this research demonstrate that the problem of HIV transmission from positive mothers to their children remains relevant in the current state of epidemic development in Ukraine. The situation is further aggravated by the fact that HIV epidemic continues to develop amid the spread of other socially dangerous diseases, such as drug addiction, tuberculosis, STI, hepatitis B and C. Social component of PMTCT programme is being implemented adequately only in selected areas and fails to make the difference in attaining expected results in the area of PMTCT at the national level. Mainstreaming measures to prevent perinatal transmission of HIV in addiction treatment, TB management, dermatovenerology and in other health and social services will contribute to better coverage of HIV positive pregnant women with PMTCTC services, and to attainment of strategic goals of eliminating mother-to-child transmission of HIV in Ukraine.

### Key factors that contributed to mother-to-child transmission of HIV, based on the survey results (N=200)

Indicator	Indicator value
Percentage of pregnant women with high viral load in plasma before delivery:	
10,001–30,000 copies/ml,	14.3%
30,001–100,000 copies/ml	12.2%
> 100,000 copies/ml	12.2%
Coverage of HIV positive pregnant women with ARV-based prevention,	72.0%
including: Percentage of women receiving ARV-based prevention only during delivery	22.0%
Percentage of HIV positive pregnant women who did not receive ARV-based prevention	28.0%
Coverage of pregnant women with HIV resulting from injecting drug use with ARV-based prevention	49.0%
Percentage of HIV positive pregnant women with low adherence to ART	56.0%
Frequency of preterm deliveries among HIV positive pregnant women	27.0%
Percentage of HIV positive pregnant women delivered to maternity obstetric service in the period of expulsive pains	17.5%
Percentage of HIV positive pregnant women who gave birth at home	3.5%
Percentage of HIV positive pregnant women with rupture to delivery interval lasting over 4 hours	22.0%
Percentage of HIV positive birthing mothers who experienced invasive interventions during labour	11.5%
Percentage of HIV positive birthing mothers with the duration of labour:	
over 12 hours, repeated labour	19.0%
over 16 hours, first labour	6.0%
Percentage of HIV positive birthing mothers who gave birth by caesarean section (elective, emergency)	15.0%
Coverage of HIV positive children in the cohort under study with ARV-based prevention	84.0%
Percentage of breastfed children	11.5%
Percentage of women with concomitant diseases identified during pregnancy	84.0%
Percentage of women with unplanned pregnancy	48.0%
Percentage of women who were active IDUs during pregnancy	14.3%

## KEY RECOMMENDATIONS

- To develop effective strategy of public information and education programmes for the general public and for most-at-risk populations on HIV prevention and promotion of healthy lifestyles.
- To scale up counselling and family planning services for women of reproductive age with the goal of preventing HIV and unwanted pregnancies; to integrate these services in prevention programmes for young people.
- To ensure free access to contraceptives (condoms) for HIV positive women, including during pregnancy.
- To expand the scope and to improve quality of measures aimed at prevention of STI, including HIV-infection, among women and their sexual partners, particularly among most-at-risk populations.
- To strengthen approaches to testing of pregnant women for HIV in order to establish their exact numbers and to reach unified HIV testing methods and practices in all regions of Ukraine.
- To ensure timeliness of results of verification screening of pregnant women for HIV-infection.
- To perform routine HIV testing of male partners of HIV positive pregnant women in order to identify discordant couples and to ensure immediate initiation of ART for all positive members of such couples identified during pregnancy.
- To set up cooperation of obstetric and paediatric services with HIV service NGOs; to develop a procedure and to ensure efficacy of the system of referrals of HIV positive women from most-at-risk populations to AIDS centres for medical follow-up, timely introduction of ARV-based prevention and development of adherence to antiretroviral treatment.
- To strengthen the role of addictions service in granting priority access to HIV positive pregnant women and mothers who inject drugs to Substitution therapy, harm reduction initiatives and rehabilitation programmes for women with drug dependence.
- To establish cooperation between obstetricians/gynaecologists and addictions specialists for the purposes of joint follow-up of HIV positive pregnant women who inject drugs.
- To ensure uninterrupted supply of test kits for maternities to perform rapid tests for HIV-infection among women with unidentified HIV status.
- To introduce elective C-sections for HIV positive pregnant women in order to reduce mother-to-child transmission of HIV in line with international standards and recommendations.
- To introduce medicated weaning (cessation of lactation) in maternities immediately after the childbirth, and to provide all infants born to HIV positive mothers with adapted milk formulas.

- To improve infrastructure of laboratory services in order to scale up access of HIV positive pregnant women and children born to these women to timely testing for HIV.
- To strengthen approaches to HIV diagnostics in children with unidentified HIV status; to consider possibility of introducing Dry Blood Spot (DBS) testing methodology; and to analyse potential resources for decentralization of HIV diagnostics in children.
- To improve the procedure of procurement with the goal of eliminating any shortages of medicines, test kits and other health products and commodities. Any interruptions in supplies create gaps in service provision, which, in turn, leads to new HIV-infections both among the general public and in most-at-risk populations.
- To set up efficient partnerships: intersectoral – between individual health services (obstetrics, paediatrics, addictions and the like), and interdepartmental – between health and social services to ensure effective medical and social follow-up of HIV positive women during pregnancy, labour and postpartum.
- To improve obstetric practices based on the principles of friendly and positive treatment of mothers and children, including provision of assistance at labour and after the childbirth to HIV positive women to eliminate stigma and discrimination.
- To improve cooperation with social service providers to work with HIV positive pregnant women from socially disadvantaged families during antenatal care and immediately after childbirth.
- To ensure cooperation between the Social Service and HIV service organizations for adequate protection of the rights of children in addressing the issues of social orphanage and deprivation of maternal rights.
- To increase and improve health workers' knowledge in the area of prevention of vertical transmission. To develop the national strategy for improving professional competence in HIV/AIDS and PMTCT issues of the following specialists: health workers (perinatal, paediatric and addictions services, psychologists); lecturers of faculties and departments of medical universities and colleges; pedagogues of other educational establishments; social workers; psychologists of social service providers; staff members of laboratories of different levels.
- To improve regulatory and legal base on PMTCT, primarily by adapting the national clinical protocol for HIV positive pregnant women to WHO recommendations; to develop and introduce protocols for effective case management of mother-to-child transmission of HIV, which should include interdisciplinary health and social monitoring of implemented prevention measures in the area of PMTCT.
- To strengthen PMTCT monitoring and evaluation system in Ukraine by improving HIV epidemiological surveillance among women and children and by setting up computerized monitoring system for programmes aimed at prevention of mother-to-child transmission of HIV. To carry out systematic analysis of monitoring data, to assess PMTCT measures, and to track progress against key PMTCT programme indicators with the goal of developing strategic action plan to eliminate vertical transmission of HIV in Ukraine.

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