



CENTRUL PENTRU POLITICI ȘI ANALIZE ÎN SĂNĂTATE  
CENTER FOR HEALTH POLICIES AND STUDIES

## HIV Prevalence among New TB registered Cases in the Republic of Moldova

Operational study  
Final report

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## ACRONYMS

AIDS	Acute Immune Defficiency Syndrome
DOTS	Directly Observed Treatment Strategy
EUR	WHO Regional Committee for Europe
HIV	Human Immunodefficiency Virus
NBM	National Bank of Moldova
NCHM	National Center for Health Management
PLWH	People Living with HIV
TB	Tuberculosis
VCT	Voluntary Counseling and Testing
WHO	World Health Organization

## INTRODUCTION

### Tuberculosis epidemic

Worldwide TB is the second most common cause of death in adults attributable to a single infectious agent. WHO estimated that in 2004 worldwide were around 9 million new TB cases and approximately 2 million TB deaths<sup>1</sup>. Tuberculosis (TB) remains an important public health problem in Eastern European Region as well. Factors such as the high incidence of TB in many countries in the region, the high level of multidrug-resistant TB, the appearance of extensive drug-resistant TB, the TB outbreaks in the growing pool of people living with HIV and the large population in prisons, and the increasing mobility of people, make TB a regional emergency and one of the most serious problems in the region.<sup>2</sup>

The spread of tuberculosis in the Republic of Moldova became epidemical during the 1990s, being caused by the socio-economical crisis, insufficient financing of the health system, lack of anti-TB drugs during the period of 1997 – 2000 years, as well as unfavorable situation regarding tuberculosis in prisons. In 2006 in the Republic of Moldova there were registered 5,457 TB cases (134 per 100,000), in 2007 - 5,305 of cases (131 per 100,000 of population)<sup>3</sup>.

### HIV epidemic

By the end of 2007, an estimated number of 33.2 million of people were living around the world. Every day, over 6,800 persons become infected, with HIV and over 5,700 persons die from AIDS, mostly because of inadequate access to HIV prevention and treatment services<sup>4</sup>.

An estimated 150,000 people were newly infected with HIV in 2007, bringing the number of people living with HIV (PLWH) in Eastern Europe and Central Asia to 1.6 million. Nearly 90 percent of newly reported HIV diagnoses in this region in 2006 were from two countries: the Russian Federation (66%) and Ukraine (21%). Elsewhere, the annual numbers of newly reported HIV diagnoses are also rising in Caucasus, Central Asia and the Republic of Moldova.<sup>5</sup>

The first case of HIV infection was registered in Moldova in 1987. Newly reported HIV cases in the Republic of Moldova have more than doubled since 2003, to 621 reported new cases in 2006. More than half (59%) of HIV infections reported in 2006 were attributed to unprotected sexual transmission<sup>6</sup>. From 1987 to 2007, the National AIDS Center has registered 4,131 cumulative new cases, 2,939 of them on the right bank of the right bank of the Nistru river and 1,192 on the left bank of Nistru river. In 2007 the overall prevalence reached 98.73 per 100,000 (right bank 81.97 per 100,000, left bank 194.43 per 100,000).<sup>7</sup> Moldova is in the concentrated epidemic stage, with the highest HIV prevalence in risk groups: injecting drug users, commercial sex workers and men who have sex with men. At the same time, the mode of transmission continues to be predominantly heterosexual: in 2006, heterosexual mode accounted for 67 percent of new cases.

### Tuberculosis and HIV co-infection

TB and HIV are major public health problems in the world<sup>8</sup>. Challenges increase in case of interaction of both infections HIV and TB. HIV can fuel the TB epidemic in several ways:

- HIV is the most potent known risk factor for progression to active TB both in people with recently acquired and latent Mycobacterium tuberculosis infection
- HIV also increases the rate of recurrent TB, either due to endogenous reactivation (true relapse) or exogenous re-infection. This results in increased risk of TB transmission to the general community, whether or not HIV-infected
- TB is a leading killer of people living with HIV/AIDS (PLWHA)
- The level of immunodeficiency at which PLWHA usually develop TB is associated with higher case fatality rates<sup>9</sup>

The Eastern European Region is considered a region with high TB prevalence and low HIV prevalence. Compared to other regions in the world, there are differences in HIV attributed cases in TB. For example, in Zambia 70% of TB cases are attributed to HIV<sup>10</sup>, whereas a recent analysis shows that only 2.6% of all new TB cases that occurred in Europe in 2000 were attributable to HIV co-infection. An estimated 1% of all new TB cases were estimated HIV-positive and 35% adult AIDS have died from TB in 2000 in the Russian Federation<sup>11</sup>. In this context, the WHO Regional Committee for Europe (EUR) identified the Republic of Moldova (along with Belarus, Estonia, Latvia, Lithuania, Russian Federation and Ukraine), as a high priority country for HIV and TB interventions<sup>12,13</sup>.

In many countries, HIV prevalence in TB patients is a sensitive indicator of the spread of HIV into the general population.<sup>14</sup> According to guidelines for surveillance of HIV among TB patients, in low-level and concentrated epidemic, routine HIV testing data should be used for surveillance purposes. If this system is not in place yet, periodic surveys or sentinel surveys are suitable alternative.<sup>15</sup>

Unfortunately, there is no accurate data available on HIV prevalence among patients with TB, or about coverage with HIV voluntary counseling and testing (VCT) of the TB patients. According the national standards, every newly detected TB case should be counseled and tested for HIV<sup>16</sup>. According to the data reported by the AIDS Center in 2006<sup>17</sup>, it was mentioned that only 2,906 of new and retreated TB cases were tested for HIV out of a total number of 4,652 TB cases registered that year (without left bank of the Nister river)<sup>18, 19</sup>. This represents only 62.4 percent of all registered TB cases in 2006. Out of those tested, 19 persons, or 0.7 percent were detected as new HIV cases in 2006. It is not clear if there were significant differences between those not tested and those tested for HIV, as no other information on the socio-demographics is available for comparison. Therefore, those that have not been tested for HIV might have a different HIV incidence and prevalence.

Therefore, it was necessary to determine if the accuracy of the estimated HIV prevalence in TB patients. Another focus was to observe the rate of accepting the HIV testing if the testing was preceded by pre-test counseling and followed by post-test counseling. In addition, it evaluated the standard HIV knowledge, acceptance and VCT behavior among TB patients.

The survey results will allow extending research findings about HIV prevalence and HIV testing to the whole TB community in Moldova. Moreover, it can serve as a basis for planning comprehensive strategies and interventions to address HIV/TB challenges.

## **GOAL AND OBJECTIVES OF THE STUDY**

### ***Study goal***

The research had the goal to estimate HIV prevalence among newly registered TB cases in 2007 in the Republic of Moldova. Besides, it evaluated knowledge and attitudes towards HIV/AIDS and HIV VCT of TB patients.

### ***Study objectives:***

- To estimate HIV prevalence among TB new detected cases in Moldova
- To estimate HIV knowledge among TB patients in Moldova
- To reveal TB patients attitudes towards HIV/AIDS
- To measure HIV VCT coverage of TB patients.

## **STUDY METHODS**

In order to reach the goal and objectives, a prospective cohort study was conducted. The study had two components: serological and quantitative components. The serological component allowed estimating HIV prevalence among new TB cases, the knowledge and behavioral component one allowed assessing key knowledge on HIV/AIDS and reveal attitudes towards HIV/AIDS of the target group.

### ***Definition of study participants***

Patients with new TB case registered in the Republic of Moldova, the right bank of the Dniester River, with age more than 18 years at the time of recruitment were included in the study. The eligibility criteria were the following:

#### **Inclusion criteria:**

- New TB cases registered and hospitalized in any of the four institutions during the data collection period
- More than 18 years old
- Mental and physical ability to answer questions
- Willingness to participate in the study

#### **Exclusion criteria**

- New TB cases on the right bank of the Dniester River
- New TB cases registered in the penitentiary system
- Less than 18 years old
- Unwillingness to participate in the study

The National Scientific and Practical Centre for AIDS Prevention and Control (7/1, Studentilor str., Chisinau, Moldova) carried out the ELISA testing for the blood samples sent from Chisinau and Vorniceni institutions, and the Balti Diagnostic Reference Laboratory for HIV, Hepatitis and Other Viral Infections processed and tested blood samples from Balti hospital. The testing algorithm of HIV case was done in accordance with the national protocols.

### ***Ethical considerations***

According to the international standards<sup>20</sup> and national protocols<sup>21</sup>, a person subject for HIV testing should be counseled before testing (pre-test counseling) and information about the test result should be accompanied by post test counseling. The study met these requirements, by providing pre and post-test HIV counseling to each study participant. The questionnaire was administrated before counseling in compliance with written concern of the survey responder. The National Ethical Committee for Researches and Studies approved study methods on November, 10 2007.

### ***Sampling***

Recruitment of the respondents was done in all medical institutions where patients with newly registered TB cases initiated treatment according to Directly Observed Treatment Strategy (DOTS), implemented in Moldova since 2001. All new TB cases were contacted and invited to participate in the survey in the data collection period.

The list of medical institutions is presented below:



**Table 1. List of medical institutions providing TB treatment in the Republic of Moldova**

	Name of the medical institution	Address
1	Institute of Phthisiopneumology "Ch.Draganiuc"	13, Constantin Virnav Str., Chisinau Republic of Moldova MD 2025
2	Clinical Municipal Hospital of Phthisiopneumology Chisinau	147, Grenoble Str., Chişinău Republic of Moldova MD 2019
3	Clinical Municipal Hospital of Phthisiopneumology Balti	101 Decebal Str., Bălţi Republic of Moldova MD 3101
4	Hospital of Tuberculosis Disease from Vorniceni	Village Vorniceni, Străşeni Raion Republic of Moldova MD 3736

The table below presents the results of the sampling process.

**Table 2. Sampling results**

No	Indicator	National TB Institute	Chisinau TB Hospital	Balti TB Hospital	Vorniceni TB Hopital	TOTAL
1	Total number of new and re-treatment cases who initiated TB treatment in the sampling period	286	145	134	112	<b>677</b>
2	Number of new TB cases initiated in treatment	163	122	82	84	<b>451</b>
3	Number of persons contacted for recruitment	163	122	82	84	<b>451</b>
4	Number of persons who refused to participate	0	0	0	0	<b>0</b>
5	Number of persons lost to follow up	3	5	7	0	<b>15</b>
6	Number of persons interviewed	160	117	75	84	<b>436</b>
7	Number of persons counseled for HIV testing	160	117	75	84	<b>436</b>
8	Number of blood sample collected	160	113	74	84	<b>431</b>
9	Number of persons refused to be tested for HIV	0	4	1	0	<b>5</b>
10	Number of blood sample tested for HIV	160	113	74	84	<b>431</b>
11	Number of persons counseled after HIV testing	157	110	72	84	<b>423</b>
12	Number of persons lost to follow up for counseling after HIV testing	3	3	1	0	<b>7</b>

### **Data collection**

Data collection was carried out in the period November, 1 2007 through January, 31 2008. The data collection steps are presented below:

- Identification of the study participant
- Informing of goal and objectives of the study
- Obtaining of the written concern
- Administration of questionnaire
- Pre-test counseling
- Blood collection and transporting of the samples to the laboratories
- Testing or blood processing, informing the medical institutions about results
- Post-test counseling of the survey participants and results announcement

Four certified counselors in voluntary counseling and testing were trained in interview skills and specifics of the questionnaire. After administering the questionnaire, they provided pre-test counseling according to the national standards. Blood was collected by certified nurses, in accordance with the national standards. Blood samples were transported to the two labs within the same day. The counselors provide the test result within one week after drawing blood, immediately followed by post-test counseling.

### **Questionnaire**

The questionnaire was developed based on the standardized questionnaire to evaluate HIV knowledge and attitudes towards HIV/AIDS<sup>22</sup>. It was approved by the National Ethical Committee for Researches and Studies along with other relevant survey documents. It was pre-tested on 10 TB patients. The final version was translated into Russian. Data collection took place in both languages (Romanian and Russian).

### **Data entry**

Double entry of data was used, to minimize errors. Two independent operators entered the data and verified for overlapping and data entry errors. SPSS was used for analysis.

**Table 3. Time frame of the survey**

	<b>Activity Month</b>	<b>Oct 07</b>	<b>Nov 07</b>	<b>Dec 07</b>	<b>Jan 08</b>	<b>Feb 08</b>	<b>Mar 08</b>
1	Development of the advanced survey methodology						
2	Questionnaire development, submission survey documents to the NEC						
3	Data collection						
4	Data entry						
5	Data analysis and drafting the final survey report						
6	Finalization of the final report, presentation of the survey results						

## STUDY RESULTS

### **Socio – demographic characteristics of the sample**

The final sample size of the study was 436 respondents.

#### **Sex and civil status**

Most of the sample respondents were males – 76.8%, and 23.2% females, thus the proportion of males among new TB case is about three times higher than females. More than half of respondents (53.9%) were married or lived in domestic partnership, 24.0% were single, and 22.1% declared to be divorced or widowed.

#### **Age and residency**

The age distribution was the following:

**Table 4. Age distribution of study participants**

18- 24 years	18.8%
25 - 49 years	55.0%
50 and more years	26.1%

More that half (54.6%) of the respondents lived in villages, 16.5% lived in towns and rayon centers and 28.9% of them were from the cities of Chisinau or Balti. In terms of geographic distribution, 39.0% of respondents were from Central part of Moldova, 29.1% were from city of Chisinau, 22.0% from Northern part of Moldova, 6.0% from South, and 3.9% represented UTA Gagauzia.

**Table 5. Geographic distribution of study participants**

Chisinau city	29.1%
North	22.0%
South	6.0%
Center	39.0%
UTA Gagauzia	3.9%

#### **Education**

More than half (53.6%) of respondents had secondary or professional education, while 11.5% have not completed secondary education. A quarter of respondent (24.6%) have finished general school or less. High education was reported by only 3.9% of survey participants, and about same number of participants had incomplete high education (4.4).

**Table 6. Education of study participants**

Primary school is not completed	2.1%
Nine grades or less	24.6%
Incomplete secondary education	11.5%
Secondary/professional education	53.6%
Incomplete high education	4.4%
High education	3.9%

#### **Ethnicity**

Most (76.8%) of the respondents reported themselves as Moldovans/Romanians, followed by Russians (8.0%) and Ukrainians (7.8%), 2.8% of respondents were Gagauz, 1.4% - Bulgarians. About 3% of respondents were representatives of other ethnicities (Gypsies, Jewish and others).

#### **Socio-economic status and employment**

About a quarter (23.9%) of respondents reported as not having income, 12.2% reported their monthly income as 300 MDL or less. According to medium exchange rate of National Bank of Moldova for the data collection period<sup>23</sup>, 300 MDL are roughly the equivalent to USD 30, meaning that 36.1% of the survey participants live on less than USD 1 per day. 28.9% of respondents reported to have MDL 301 – 1,000, equivalent of USD 1 - 3 per day, 22.9% percent stated to have monthly MDL 1,001 – 3,000, equivalent of USD 3 – 9 per day, followed by 6.4% of participants with a monthly income of MDL 3,001 – 6,000 equivalent of USD 9 – 18 per day. Only 2.5% of respondents reported to have monthly income more than MDL 6,001, more than USD 18 per day. Around 3% of

survey participants did not answer this question. Other studies have shown that the monthly income is underreported in Moldova, due to sensitivity of respondents to declare their incomes and the difficulty to report incomes outside their official salary.

A half (51.8%) of survey respondents were officially employed, 8.3% were agricultural workers cultivating their own lands, 3.9% were self employed, 21.4% of responders reported to be jobless, 9.2% are retired and disabled people, 4.4% are students.

### **HIV Prevalence among newly detected TB cases**

As presented in methods, all 436 or 100 percent of respondents selected for study have been counseled before taking the HIV test. Of them 431, or 98.8% have accepted HIV testing. Seven respondents or 1.6% did not receive their test results and post-test counseling, due to their absence in the institution at the time of result availability. All of those who did not receive their result were HIV-negative. It is necessary to mention that the turnaround time for an HIV-negative result was on average one week, while for an HIV-positive result or re-testing an uncertain result it took on average two to three weeks.

According to the data obtained from ELISA testing of the blood samples, the total number of HIV reported cases was 15 out of 431 respondents who accepted HIV testing. This translates into an HIV prevalence of 3.48% or 3,480 of HIV positive case per 100,000 of TB new cases, being 42 times higher than in general population in Moldova in 2007 (left bank of Nister River), which is 81.97 per 100,000 population<sup>24</sup>. An alarming 12.2% (9 out of 72 TB patients) HIV prevalence was reported in Balti city.

The geographic distribution shows that the majority of HIV positive cases (60%) were registered among TB patients from Balti city and only one case per each site were detected in Chisinau city, Straseni, Anenii Noi and Orhei (three districts in the Central Zone) and Drochia and Falesti (two districts in the Northern Zone).

**Table 7. Geographic distribution of HIV-positive cases among new TB cases, registered in survey**

Site	No	Percent
Balti city	9	60.0%
Chisinau city	1	6.7%
Drochia	1	6.7%
Falesti	1	6.7%
Anenii Noi	1	6.7%
Orhei	1	6.7%
Straseni	1	6.7%
Total	15	100%

Nine persons out of 15 HIV positive were males (60%) and 6 (40%) females. The mean age of HIV positive persons was 35.5 years old (SD±10.2 years). The youngest person was 20 years old, the oldest person was 54 years old.

### **Knowledge about transmission and effective HIV prevention**

The knowledge about HIV/AIDS transmission and effective prevention methods was relatively high, from 66.7% to 90.6% for different prevention methods.

**Table 8. Knowledge about transmission and effective HIV prevention**

Variable	n	yes	no	do not know
<b>HIV transmission</b>				
HIV transmission through syringe sharing	395/432	90.6%	0.9%	6.7%
<b>Effective prevention</b>				
Consistent condom use	291/435	66.7%	5.7%	24.1%
Faithful uninfected sexual partner	329/433	7.5%	5.3%	15.6%

### **Rejecting myths about HIV**

At the same time, the level of misconceptions about HIV transmission was high. Only 37.8 percent of respondents rejected transmission through toilet seat and the same level (38.7%) through sharing food with an

HIV positive person. There was noted a high percentage of respondents who did not know for sure: 34.8% and 26.4% correspondingly. Only 60.3 percent of study participants correctly determined that a healthy looking person could be HIV-infected, about third part did know about this (28.7%).

**Table 9. Rejecting myths about HIV**

Variable	n	yes	no	do not know
Transmission thru toilet seat after HIV+	165/436	25.9%	<b>37.8%</b>	34.8%
Transmission thru sharing food with an HIV+ person	169/436	34.4%	<b>38.7%</b>	26.4%
A healthy looking person can be infected with HIV	263/434	<b>60.3%</b>	8.7%	28.7%

The correlation analysis has shown that HIV-positive persons rejected most of the myths, compared to HIV-negative patients in a statistically significant proportion and that the younger respondents had better knowledge about misconceptions than older TB patients.

**Table 10. Correlation of rejecting myths with age, sex, sites and HIV status**

	Rejecting transmission thru toilet seat after HIV+	p-value	Rejecting transmission thru sharing food with an HIV+ person	p-value	Confirming that a healthy looking person can be infected with HIV	p-value
<b>Age</b>						
18-24	48.8%	0.001	51.2%	<0.0001	70.7%	0.014
25-49	38.8%		41.7%		63.8%	
50 or more	30.4%		23.7%		46.4%	
<b>Sex</b>						
male	35.5%	0.478	37.3%	0.587	59.8%	0.712
female	31.7%		43.6%		63.4%	
<b>Sites</b>						
Chisinau city	40.9%	0.104	46.5%	0.002	62.2%	0.012
North	43.8%		46.9%		62.1%	
Center	34.1%		30.6%		61.8%	
South	32.0%		36.0%		45.8%	
UTA Gagauzia	23.5%		17.6%		52.9%	
<b>HIV-status</b>						
HIV+	80.0%	0.009	86.7%	0.001	93.3%	0.068
HIV-	36.7%		36.9%		59.2%	

### **Integrated HIV Knowledge indicator**

The integrated knowledge indicator was determined based on UNGASS definition<sup>25</sup>. The indicator includes answering correctly to five questions: (1) can the risk be reduced by having sex with one faithful uninfected partner; (2) can the risk be reduced by using consistently condoms; (3) can a healthy-looking person have HIV; (3) can a person get HIV from toilet seat; (5) can a person get HIV by sharing a meal with someone infected. Only **18.5%** of respondents answered correctly to all five questions.

There were significant differences in integrated knowledge based on age and HIV status. There were no significant differences between sexes and geographic sites.

**Table 11. Correlation of HIV knowledge indicator with age and HIV-status**

Age	Correct knowledge	p-value
18-24	28.0%	<0.0001
25-49	20.8%	
50 or more	7.0%	
HIV-status		0.004
HIV+	47%	
HIV-	18%	

### Accepting attitudes to PLWH

The high level of misconceptions about HIV transmission has translated accordingly in a high level of stigma towards PLWH among TB patients. Only 11.9% of respondents would share food with an HIV-infected person and the majority (79.1%) said they were not ready to do this. About half of respondents (47.0%) would not keep it a secret if a family member got HIV, a sign of societal discrimination against HIV-infected people.

**Table 12. Accepting attitudes to PLWH**

Variable	n	yes	no	do not know
Are you ready to share food with HIV+ person?	52/435	11.9%	79.1%	6.0%
Would you keep secret about an HIV+ family member?	182/434	41.7%	47.0%	7.6%

The high level of misconceptions correlated with age, sex and geographic sites. Significantly more respondents who were younger and living in cities (Chisinau and Balti) rejected myths about HIV, in comparison with older and rural population. The most significant difference was noted between HIV-positive respondents and HIV-negative respondents in accepting attitudes.

**Table 13. Correlation of accepting attitudes to PLWH with age, sex, sites and HIV-status**

	Do you a PLWH?	p-value	Would you share food with PLWH?	p-value	Would you keep it a secret if your close would be HIV+?	p-value
<b>Age</b>						
18-24	8.5%	0.032	22.3%	0.001	59.3%	0.003
25-49	10.9%		11.3%		39.7%	
50 or more	7.9%		6.1%		34.2%	
<b>Sex</b>						
male	7.5%	0.038	10.2%	0.126	41.0%	0.851
female	16.8%		17.8%		45.0%	
<b>Sites</b>						
Chisinau city	8.7%	0.033	15.0%	0.009	43.2%	0.004
North	19.8%		17.7%		42.7%	
Center	4.7%		5.9%		39.4%	
South	4.0%		12.0%		40.0%	
UTA Gagauzia	17.6%		11.8%		41.2%	
<b>HIV-status</b>						
HIV+	60.0%	<0.0001	60.0%	<0.0001	66.7%	0.238
HIV-	8%		9.4%		40.8%	

### HIV testing awareness and experience

Only 25.5% of all respondents knew where they could take an HIV test in their city or district. As to the confidentiality of HIV testing, only half (48.6%) of those who knew where HIV test was available thought that it was possible to get confidential HIV test in their locality.

**Table 14. Awareness about HIV testing**

Variable	n	yes	no	do not know
Do you know where one can get a test for HIV?	114/435	<b>26.1%</b>	34.9%	38.3%
Is it possible for someone to get a test for HIV in you city/district?	111/435	<b>25.5%</b>	15.8%	57.8%
Is it possible for someone to get a confidential test for HIV in you city/district?	53/109	<b>48.6%</b>	11.0%	35.8%

As to the testing experience of the study participants, only 26.1% had an HIV test before the study and 75.7% of those tested learned the test results. Out of those tested, 53.6% respondents stated they got a voluntary HIV test, 45.5% said it was a required test. Only 43.8% of those tested were counseled before testing, they were explained for what purpose the blood was collected and what HIV was. Only 23.9% of those tested got post-test counseling.

**Table 15. Prior HIV testing experience**

Variable	n	yes	no	do not know
Had an HIV test	114/436	<b>26.1%</b>	67.2%	6.7%
It was voluntary HIV test	60/112	<b>53.6%</b>	45.5%	0.9%
Received pre-test counseling	49/112	<b>43.8%</b>	49.1%	7.1%
Received post-test counseling	26/109	<b>23.9%</b>	48.6%	22.9%
Learned the result	84/111	<b>75.7%</b>	24.3%	

More than a half of the respondents had HIV test within the past year (56.4%), followed by those who got the HIV test between 1-2 years ago (26.4%), 16.4% of respondents got HIV test more than 4 years ago.

**Table 16. The time of the most recent HIV test**

The most recent HIV test	n	%
Within the past year	<b>62/110</b>	<b>56.4</b>
Between 1-2 years	<b>29/110</b>	<b>26.4</b>
More than 4 years ago	<b>18/110</b>	<b>16.4</b>
DK	<b>1/110</b>	<b>0.9</b>

### ***HIV testing integrated indicator***

The HIV testing integrated indicator was determined based on UNGASS definition<sup>26</sup>. The definition includes in the nominator all respondents who answer positively the following two questions: (1) have you been tested in the past 12 months and (2) do you know the result. Based on this definition, only 10.8 percent of the respondents have had a prior HIV test in the past year and got their results.

There were significant differences in integrated testing indicator based on age and HIV status. There were no significant differences between sexes and geographic sites.

**Table 17. Correlation of HIV testing indicator with age and HIV-status**

Age	HIV testing	p-value
18-24	20.7%	<0.0001
25-49	11.3%	
50 or more	2.6%	
HIV-status		<0.0001
HIV+	46.7%	
HIV-	9.9%	

### ***Willingness to take a test in the future***

Of the total number of respondents, regardless if they have previously taken an HIV test, 57.3% would be willing to take a test in the future. The majority (78.1%) of those who have not taken a test were willing to take an HIV test in the future.

## **CONCLUSIONS AND IMPLICATIONS FOR INTERVENTIONS**

If routine testing is offered to all TB patients, the HIV prevalence in TB patients is much higher than previously reported. The HIV prevalence in new TB patients exceeds the national HIV prevalence in Moldova (except Transnistria) by 42 times. An alarming 12.2% HIV prevalence was reported in Balti city, which should be a sign of high concern and immediate action with TB/HIV integrated interventions.

The integrated knowledge indicator showed a lower level of knowledge in TB patients (18.5%) compared to 28.3% in the general population<sup>27</sup>. There was noted a high level of misconceptions about HIV transmission and high level of stigma towards PLWH among TB patients, linked to the lack of knowledge about how HIV is not transmitted. A good pre-test and post-test counseling service as well as providing informational materials about basic HIV facts would be an excellent solution to this problem.

Compared to the general population, the integrated HIV prior testing indicator in TB patients has shown a similar testing trend. A total of 10.8% of respondents took a test in the past 12 months and knew their result, compared to 8.5% in the general population aged 15-49 years<sup>28</sup>. At the same time, 53% of all respondents have expressed their willingness to take an HIV test in the future, regardless if they have taken previously HIV tests. A higher proportion, 78% of those who never took an HIV test were willing to take one. In conditions when HIV testing is accompanied by qualified pre-test counseling, the testing accepting rates are very high. After pre-test counseling the number of study participants accepting HIV testing has gone up to 99%. Therefore having an HIV opt-out qualified full-time VCT service in the TB system would be a very good opportunity and an entry point to test a sub-population found to be at a higher risk for HIV than the general population.



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