**Antiretroviral therapy. THE REPUBLIC OF UZBEKISTAN**

**EPIDEMIOLOGICAL CONTEXT**

**HIV/AIDS Incidence and Prevalence and AIDS Mortality.**

The estimated number of PWLH in the Republic of Uzbekistan constituted 36692 in 2013. There was a growth in the number of newly registered cases of HIV infection: in 2011 there were 3584 newly registered cases of HIV infection, while in 2013 4247 new cases were registered. The prevalence among such key vulnerable groups as PWID and CSW imply stabilization of the epidemiological process in these populations in the Republic of Uzbekistan. Meanwhile the HIV prevalence among MSM has increasedб and these data indicate unstable epidemiological situation in this particular group (Table 1).

TABLE 1. MAIN EPIDEMIOLOGICAL INDICATORS

|  |  |  |
| --- | --- | --- |
|  | 2011 | 2013 |
| The estimated number of PWLH | 39 041 | 36 692 |
| HIV prevalence among adults (at the age of 15–49 years old), %  | 0.21 | 0.18 |
| HIV spread among PWID according to sentinal surveillance data | 8,4 | 7,1 |
| HIV prevalence among MSM according to sentinal surveillance data | 0.7 | 3.3 |
| HIV prevalence among CSW according to sentinal surveillance data | 2.2 | 2.1 |
| The number of newly registered cases of HIV infection | 3584 | 4247 |
| HIV incidence *per 100 000 people* | 12.2 | 14.1 |
| Percentage of officially registered PWLH from the estimated number | 41 | 59 |
| AIDS case rate per *100 000 people* | 5.3 | 7.0 |
| AIDS related death, *per 100 000 people* | 5.9 | 5.1 |

Against the background of increased access to ART, the indicators of annually registered cases of AIDS related deaths have the tendency to stabilization - though late diagnosing of HIV infection reflects upon the increase of AIDS cases.

**HIV TESTING ACCESSIBILITY**

The access to HIV testing has been improving in the recent years. In 2013 the overall number of HIV tests was 2 816 424, which meant 9 319 tests per 100 000 people (Table 2). Routine surveillance data on testing reflect the intensity of testing as well as expenditures on them though they don’t reflect the structure of tests (by gender and age).

TABLE 2. HIV TESTING INDICATORS

|  |  |  |
| --- | --- | --- |
|  | 2011 | 2013 |
| The overall number of HIV tests per 100 000 people | 7 013 | 9319 |
| The number of HIV tests among key vulnerable groups  |
| *PWID* | 7222 | 6460 |
| *CSW* | 3379 | 3230 |
| *MSМ* | 150 | 150 |
| *migrants* | 161003 | 361993 |
| % of pregnant women tested for HIV over the last 12 months and aware of their results | 87,1% | 91,4% |
| % of patients with TB aware of their HIV positive status, %  | 100% (2012) |

Tests coverage among risk groups hasn’t considerably changed. Meanwhile it should be mentioned that in 2013 HIV the testing coverage among migrants increased more than twice if compared to 2011. Notwithstanding the above mentioned fact, the percentage of risk groups in the overall testing structure remains low.

The indicator of HIV testing among pregnant women improved and in 2013 it reached 91.4%. In 2012 HIV testing among patients with TB aware of their results reached 100%.

**ACCESS TO ART**

In the Republic of Uzbekistan there are 18 health care institutions providing ART. All the 18 health care institutions providing treatment to PWLH provide TB diagnostics tuberculosis. There are no data available on key vulnerable groups who received access to ARV therapy. Substitution therapy is not provided in the Republic of Uzbekistan.

Increase of access to ART (from 2 038 to 5 146) among adult PWLH was registered in 2011-2013. But it should be mentioned that in 2013 the total ART coverage constituted 14 % from the estimated number of PWLH in the country and has shown the tendency to increase (in comparison to 5,2% in 2011). In 2013 5146 PWLH out of 20 358 adult patients of the dispensary group (25 %) received ARV therapy. The following number is attributed to PWLH who visited health care institutions at least once in the following year (Table 3).

TABLE 3. ACCESS TO ARV THERAPY AND MEDICAL FOLLOW UP

|  |  |  |  |
| --- | --- | --- | --- |
|  | 2011 | 2012 | 2013 |
| The number of adults (at the age of 15+) receiving ARV therapy at the end of the year | 2 038 | 3 491 | 5 146 |
| Percentage of adults (at the age of 15+) receiving ARV therapy from the estimated number of PWLH, % | 5.2 | 9.3% | 14 |
| Adults’ percentage (at the age of 15+) receiving ARV therapy from the number of the dispensary group, % | 12.9 | 19.1 | 25.3 |
| The number of PWID receiving ART | No data available |
| The number of representatives from other key vulnerable groups receiving ART  | No data available |
| Percentage of PWID among adults (at the age of 15+) receiving ARV therapy  | No data available |
| Percentage of representatives from other key vulnerable groups receiving ART  | No data available |
| The number of HIV infected PWID receiving ARV and substitution therapy | 0 | 0 | 0 |
| Percentage of PWLH tested for CD4 level at the moment of diagnosing the case (in the course of 2 months after diagnosing the case), % | 55.7 | 75.2 | 77.1 |
| Percentage of PWLH with the clinical symptoms and CD4 < 350 at the moment of diagnosing the case, % | 42 | 37.6 | 36 |
| The average level of CD4 among patients at the moment of starting ARV therapy | 278 | 310 | 330 |

The current National Clinical Protocols approved by the Ministry of Health prescribe systematic monitoring of the level of CD4 for all HIV patients, which helps to solve the issues related to the start of ARV therapy as well as opportunistic infections prevention.

In 2013 in compliance with the National Protocol the immunological threshold for starting ARV therapy was the level of CD4 < 350 cells/mcl.

The percentage of PWLH with the clinical symptoms or the number of CD4 <350 cells/mcl at the moment of diagnosing HIV infection constituted 36% in 2013, which indicates late diagnosing of the infection and consequently leads to late ART start. Simplified technologies of identifying the level of CD4 are unavailable at the level of diagnosing HIV infection as well as at the level of PWLH population, PWLH from separate key vulnerable groups at the local, regional and national levels. Some health care institutions providing services to PWLH have an option of CD4 analysis before ART start, which performs the function of the routine survey. However it should be noted that the indicator of CD 4 at the moment of diagnosing HIV infection, in the process of medical check-up, at the moment of ART start at the level of PWLH as well as at the level of health care institutions (locally, regionally and nationally) wasn’t included into the system of monitoring and evaluation.

Therefore the current system of biofeedback at the level of health care institutions providing services to PWLH at the local, regional and national levels doesn’t provide the opportunity for getting timely data on patients’ distribution on the number of their CD4 at the moment of ARV therapy start, for identifying the median/midpoint of the number of CD4 at the moment of ART start at the local, regional, national levels and at the level of particular health care institutions.

**ART AND PROCUREMENT SERVICES**

ARV therapy is provided to “naive” as well as to experienced patients in compliance with the current National Clinical Protocol approved by the Ministry of Health.

In compliance with the National Clinical Protocol the first line ART regimens include ART regimens prescribed to “naïve” patients for the very first time in their lives as well as “substitution” regimens when separate components of initially prescribed regimen are substituted as the result of toxicity/intolerance to some ARV drugs. All patients on the first line ART regimens receive standard three component regimens.

The second line ART regimens are those prescribed in case of failure in use of the first line SRVT regimens when the first line ARV regimen is substituted by the second line ART regimen. “Failure in ART” means existence of some virological, immunological and clinical symptoms of treatment failure. The described approach complies with the recommendations of WHO.

Percentage of adult patients receiving the first line ART regimens constituted 90% from all adult patients among PWLH receiving ARV therapy in 2012 and 87% in 2013.

|  |  |
| --- | --- |
|  |  |
| **Diagram 1. Patients’ distribution depending on the first and second line ART regimens** | **Diagram 2. Patients’ distribution depending on ART regimens, 2013** *(adults, who continue receiving ARV therapy, absolute values and %)* |

Adult patients’ distribution depending on ART regimens in 2013 is presented in Diagram 2.

The standard first line ART regimen consists of 2 NRTI and the third component which is 1 NNRTI or enhanced HIV protease inhibitor.

Percentage of different NRTI (AZT-, TDF, d4T- or ABC-containing regimens in combination with 3ТС or FTC) in standard first line regimens depending on the number of adult patients receiving the following regimens at the end of 2013 is presented in Diagram 3. AZT-containing regimens constitute more than 57,9%, TDF-containing regimens constitute 21,5%, d4T- containing regimens constitute 11,8% and ABC- containing regimens constitute 8,7%.

The regimen of 3 NRTI (presented in Diagram 3 as AZT+ABC when the third component is 3TC) was prescribed to 5 adult patients only out of 4 748 patients receiving the first line ART regimen in 2013.

|  |  |
| --- | --- |
| 3 | 4 |
| **Diagram 3. Nucleoside and HIV protease inhibitor****in the first line ART regimens, 2013** *(adults, continue receiving ART)* | **Diagram 4. . Non-nucleoside and HIV protease inhibitor in the first line ART regimens, 2013** *(adults, continue receiving ART)* |

In 2013 percentage of NNRTI in the first line regimens was 93.6%. In 2013 the prevailing NNRTI in the first line ART regimens prescribed to adult patients was EFV (65.4% of all the first line ART regimens). ART regimens on the basis of enhanced HIV protease inhibitor (LPV/rtv) were prescribed to 6.3% of patients among those receiving the first line ART regimens in 2013. Percentage of NNRTI and HIV protease inhibitor in the first line ART regimens depending on the number of adult patients receiving the following regimens at the end of 2013 is presented in Diagram 4.

Preference is given to fixed dose combinations: TDF/FTC / EFV, AZT/3TC, TDF/FTC, LPV/rtv. The above mentioned antiretroviral drugs are used in fixed dose combinations which in compliance with the existing international evidential basis increase patients’ adherence to treatment, complies with all the international recommendations including WHO approaches.

In 2012–2013 the average cost of the first as well as of the second line ART regimens is presented in Diagram 5 and in 2013 it constituted 140 USD per the first line ART regimen per one patient per year and 493 USD per the second line ART regimen per one patient per year.



**Diagram 5. The average cost of the first and second line ART regimens**

 **per patient per year,** *USD*

**ACCESS TO REGULAR AND QUALITATIVE SERVICES**

The number of officially registered PWLH in 2013 constituted 57.8% from the estimated number of PWLH in the country.

The percentage of PWLH with the clinical symptoms or the number of CD4 < 350 cells/mcl at the moment of diagnosing HIV infection constituted 36% in 2013. This indicator is the evidence of late diagnosing HIV infection and consequently causes untimely late ARV therapy start as well as expenditures on seriously ill patients.

Simplified technologies of identifying the number of CD4 are unavailable in the process of identifying HIV infection at the level of PWLH in general as well as at the level of PWLH from separate key vulnerable groups at the local, regional and national levels.

Early and systematic access to diagnosing and identifying the number of CD4 for all PWLH is not only one of essential conditions of ART start on the basis of immunological criterion but also a factor which influences further indicators of treatment efficiency. As mentioned before, the number and percentage of PWLH who received early access to CD4 diagnosing at the moment of ART start as well as the average number of CD4 haven’t been included into the system of monitoring and evaluation.

The indicators of patients’ retention on ART remain stable: 91.7% after 12 months of therapy. The indicator of retention on therapy after 60 months improved and constituted 60.3% in 2013.

Detailed analysis of number of patients on different regimens noticed some discrepancy between reported data on number of patients receiving ART at the end of the year and data calculated based on the number of patients at each regimen. According to the report of the Republican Center to fight AIDS the number of adults (at the age of 15+) receiving ART at the end of the reporting period is 5 146 people, the number of adults (at the age of 15+) receiving ART regimens at the end of the reporting period on regimens is 5 093 people (-53).

In 2013 four health care institutions reported cases of stock-outs of at least one ART component over the last 12 months (in 2012 – five) on the reason of frequent ART regimens change and breaks in ART procurement which shows insufficient level of monitoring of antiretroviral drugs in compliance with ART regimens, number of patients receiving separate ART regimens, effective work of procurement and supply chain, its connection to the system of biofeedback. In its turn all the above mentioned factors provide regular ARV therapy for those patients who received access to treatment.

TABLE 4. INDICATORS OF ART CONTINUITY AND EFFECTIVENESS

|  |  |  |  |
| --- | --- | --- | --- |
|  | 2011 | 2012 | 2013 |
| Percentage of PWLH continuing receiving ART after 12 months, %  | 87.2 | 82 | 91.7 |
| Percentage of PWLH continuing receiving ART after 60 months, % | 49.7 | 61.3 | 60.3 |
| The number of stock-out which would happen to at least 1 patient and last more than a week in the course of a year\*  | n/d | n/d | n/d |
| The number of patients on ART checking their viral load at least once a year  | 803 | 1182 | 2238 |
| The number of patients with the unidentified viral load among those continuing ART  | n/d | 1948 | 4181 |

*The number of stock-out episodes was not provided, although the number of health care facilities reported stock-out episodes is available.*

The current National Clinical Protocols approved by the Ministry of Health prescribe systematic monitoring of the viral load (VL) for all HIV infected patients on ART at intervals of once per 6 months to prove virological efficacy of therapy and patients’ adherence to treatment.

The indicator of VL which is equal to 25 copies RNA HIV/ml of plasma serves the threshold of sensitivity to the used test systems in the country. In case when VL is < 25 copies RNA HIV/ml of plasma it’s “unidentified”.

Viral load testing is available only at one health care institution providing ARV therapy and is tested not less than once a year for patients receiving ART. The number of patients with the unidentified viral load demonstrates high level of patients’ adherence

The percentage of patients with unidentified viral load among those on treatment is 81% (4181 out of 5146)**.**



**Diagram 6. PWLH access to regular effective health care services (2013)**

**FUNDING OF HIV/AIDS PROGRAMS**

An increase (in absolute values) in funding programs to fight HIV can be observed in the Republic of Uzbekistan in last two years comparing to 2011. Percentage of international donors funding constitutes the bigger part of the annual budget allocated to fight the epidemic, however, the share of international funding has been decrease comparing to 2011.



**Diagram 7. The overall annual expenditures to fight**

**HIV epidemic,** *USD and %*

19% of the overall budget allocated to fight HIV epidemic was used to fund programs of PWLH treatment and support in 2013. Before 2013 ART was procured on the funds of international donors only.



**Diagram 8. Funding of treatment and support programs, %**

**CONCLUSIONS**

The indicators of HIV prevalence and spread imply stabilization of the epidemic process among general population as well as among the risk groups in the Republic of Uzbekistan. The number of officially registered PWLH is 59% from the estimated number of PWLH in the country. Therefore, about 40% of all the cases of HIV infection remain unidentified.

According to sentinel surveillance data the active epidemic process takes place among men who have sex with men. The system of HIV infection routine monitoring doesn’t allow thorough monitoring and analysis of all the indicators among the above mentioned risk groups.

ART coverage has been constantly growing which resulted in decrease of mortality rate via AIDS. Though taking a high number of unidentified PWLH and late cases of HIV infection diagnosing into consideration, indicators of the universal access to treatment are insufficient for treatment to perform prevention function.

In 2013 ART procurement was realized due to the funds of the Global Fund to fight AIDS, tuberculosis and malaria. The country would have to increase its expenditures on the further programs from the overall and local budgets to fight HIV epidemic in order to be able to introduce government funding in the nearest future.

Percentage of adult patients receiving the first line ART regimens constituted 94% from all adult PWLH receiving ARV therapy in 2011 and 88% in 2013.

All patients receive standard ART regimens. In 2013 percentage of the first line ART regimens based on NNRTI was 91,1%. In 2013 the prevailing NNRTI in the first line ART regimen prescribed to adult patients was EFV (65%) while more than 25% of patients on the first line ART regimens received ART regimens based on NNRTI-NVP. ARV therapy is prescribed in the form of fixed dose combinations including three component regimens of the first line based on NNRTI, which in its turn is in compliance with the existing international evidential database, increases patients’ adherence to treatment and complies with all the international recommendations including WHO approaches.

The number of reported patients continuing receiving AVT doesn’t coincide with the number of ARV drugs and ARV components in ART regimens.

Quantitative data analysis of annually registered cases of HIV, AIDS and mortality rate via AIDS is essential in the process of general assessment of the epidemic situation with HIV infection. While collecting and analyzing data provided by the surveillance, it’s important to implement some tool which will allow their disaggregation for identifying their structure and data analysis of newly registered cases of HIV infection, disease incidents, deaths, via their clinical epidemiological indicators including key epidemiological indicators, such as belonging to particular vulnerable groups and clinical epidemiological indicators (stage of HIV infection and level of CD4 at the moment of diagnosing the case), data on the structure of AIDS defining illnesses, causes of death of PWLH (related to HIV, not related to HIV, because of AIDS defining illnesses or some other diseases/conditions which served the cause for death and when cause of death remains undetermined).

Available clinical epidemiological characteristics of key epidemiological data on disease prevalence and death cases among PWLH are important for development and assessment of effective measures to respond to the epidemic.

**RECOMMENDATIONS**

**HIV Testing Accessibility**

1. The system of HIV testing monitoring should include not only tests volume but also the structure of these tests (by gender and age).
2. It’s necessary to increase percentage of HIV tests carried out among risk groups and their intercourse partners, improve access to tests among key vulnerable groups, identify effective “entry points” of access to counseling and testing which gives the opportunity to shorten the difference between estimated and registered number of PWLH.
3. It’s important to introduce/implement data collection and analysis reflecting connection of the number of HIV tests in separate groups with the number of newly registered PWLH from these groups and with those who received access to CD4 analysis and other services of treatment, care and support including ART for the reporting period. The following approach gives the opportunity to receive and evaluate information about HIV testing efficacy.

**Epidemiological monitoring and biofeedback.**

1. It’s highly recommended to collect data on HIV tests, the number of newly registered cases of HIV infection, AIDS, mortality of PWLH and mortality rate via AIDS applying methods and tools allowing to identify the structure of the following data as well as to conduct analysis on the basis of clinical epidemiological characteristics including key epidemiological indicators (belonging to particular vulnerable to HIV infection groups among them) as well as clinical epidemiological indicators such as HIV infection stage and the number of CD4 at the moment of diagnosing HIV infection, HIV infection stage and the number of CD4 at the moment of ART start, access to ARV therapy (if there has been a new case of AIDS defining disease or death in the course of receiving ART or while being out of this access), ART duration.
2. To introduce data collection and coverage evaluation of CD4 among general population of PWLH and PWLH who are representatives of key vulnerable groups while diagnosing HIV infection and in the course of follow-up.
3. To introduce data monitoring and analysis on the structure of AIDs defining diseases.
4. To conduct data collection which allows their disaggregation and analysis on the reasons of PWLH deaths: cases related to HIV infection, those which are not related to HIV, because of AIDS defining diseases or some other diseases/conditions which served the cause of death, as well as deaths of PWLH when the cause has been unidentified.
5. It’s necessary to implement methodology of triangulation data analysis (recommended by UNAIDS/WHO, 2013) in order to prove the main tendencies of the epidemic process of HIV infection. The above mentioned methodology implies collection and analysis of quantitative and qualitative data received from several sources using different methods of information collection which gives the opportunity to receive more reliable data of evaluation of the epidemic situation with HIV infection among general population as well as among different social and vulnerable to HIV infection groups.

**ART Accessibility**

1. It’s necessary to improve access to treatment programs for PWLH supported by both the government funds and the funds of international donors.
2. It’s necessary to provide early access of newly registered PWLH to diagnosing the number of CD4 cells - possibly with the use of simplified technologies of rapid identification of CD4 number.
3. To consider possibility of opening sites of integrated services for PWLH/PWID at health care institutions providing treatment to PWLH.
4. To provide access to systematic routine survey of CD4 number and viral load for all PWLH from the dispensary group at intervals approved by the National Clinical Protocol.
5. To introduce monitoring and analysis of CD4 midlevel at the moment of ART start at health care institutions providing services to PWLH at the local, regional and national levels which would allow precise evaluation of timely access to ART.
6. To improve the systems of clinical monitoring of all patients receiving ART and, specifically, of timely record of patients dropped out of the treatment program with the analysis of the dropout’s reasons/causes (patient’s death, ART interruption for some other reasons, causes identification and analysis). It will allow a more precise identification of the number of patients receiving ART in the course of some separate period (e.g. 12 months, 24 months, 60 months), based on the cohorts’ analysis.
7. To improve relation of the system of biofeedback to procurement and supply chain based on the importance of providing regular ART for those patients who have already received access to treatment within the regimens they receive and there are no signs of inefficiency or intolerance.
8. To improve planning systems of access to ART scale up and relation of planning to procurement and supply chain based on the importance of access to ART for those patients who need it in compliance with the current National Clinical Protocol.
9. To introduce monitoring of indicators of early prevention of antiretroviral resistance in compliance with WHO recommendations at health care institutions at the local, regional and national levels:
	1. ART prescription
	2. Patients lost/dropped out of the follow up during the first 12 months (absolute number and %);
	3. Patients continuing receiving the first line ART regimen after 12 months of treatment;
	4. Following schedule of attending health care institutions to receive ART;
	5. Timely receipt of ART;
	6. Regular procurement of ARV drugs.

**ABBREVIATIONS**

**ARV – antiretroviral, ART – antiretroviral therapy, CSW** – commercial sex workers, **MSM – men who have sex with men, GF –** **Global Fund, n/d – n**o data available, **PWID** – people who inject drugs, **PWLH** – people living with HIV, **TB – tuberculosis, VL – viral load.**

**ACKNOWLEDGMENTS**

Research team is grateful to Lev Zohrabyan and Dildora Mustafaeva, the representatives of country offices in the Republic of Uzbekistan for their assistance in data collection and participation in the review of this document.