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Gaps in the continuum of care among people living with HIV in Afghanistan

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Abstract

Background: Afghanistan adopted a “test and treat” strategy for all people living with HIV (PLWH) in 2016. In this study, we presented demographic and clinical characteristics of all people diagnosed between 2013–2019 and evaluated progress towards 90-90-90 UNAIDS targets and identified program gaps among PLWH in Afghanistan diagnosed in 2018.

Methods: We used clinical, behavioral, and demographic data from national HIV surveillance for 1394 patients diagnosed from 2013 through 2019. We also tracked 184 patients diagnosed with HIV in 2018 over 15 months to assess their enrollment in care, antiretroviral therapy (ART) initiation, retention on ART, and viral suppression.

Results: Of 1394 patients diagnosed from 2013 through 2019, 76.0% were male, 73.7% were older than 24 years, and 33.4% were infected with HIV through unsafe heterosexual sex. Of the 184 patients diagnosed in 2018, 94.6% were enrolled in care, 88.6% received ART, 84.2% were retained on ART for at least 12 months, and 33.7% received a viral load test. Of those with a viral load test, 74.2% were virally suppressed. Patients who were 35 to 44 years old (52.0%, p-value 0.001), infected through unsafe injection (62.5%, p-value 0.413), co-infected with hepatitis C virus (60.0%, p-value 0.449), and with CD4 >500 at diagnosis (64.7%, p-value 0.294) were less likely to be virally suppressed 12 months after diagnosis.

Conclusion: Nearly 95% of people diagnosed with HIV in Afghanistan in 2018 were linked to care and nearly 90% were on ART. Viral testing and viral suppression remain low with notable disparities for middle-aged patients, and possibly for those who injected drugs. Addressing barriers to HIV programs in Afghanistan, particularly for people who inject drugs, are urgently needed to reach the 90-90-90 global targets. Surveillance data on the number of people with undiagnosed HIV is needed to assess the first 90 target.

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Keywords

HIV Infections; Continuity of patient care; Afghanistan; Anti-retroviral agents; Viral load

Introduction

As of December 2019, Afghanistan reported 2,923 HIV-positive cases countrywide. However, UNAIDS estimates for the number of PLWH in Afghanistan is 11,000 persons, which is more than 3.5 times higher than the number of reported cases (1). HIV prevalence is much higher in subgroups with high-risk injection and sexual behaviors. These key affected populations are people who inject drugs (PWID) with 4.4% HIV prevalence, female sex workers (FSW) with 0.3% HIV prevalence, prisoners with 0.7% HIV prevalence, and men who have sex with men (MSM) with 0.4% HIV prevalence as measured in community-based surveys (2).

The first HIV case was reported in Afghanistan in 1989, and HIV treatment programs started in 2009 in Kabul and Herat cities (3). In 2014, three other treatment centers opened in Balkh, Nangrahar, and Khost provinces. Treatment at these centers is provided free of charge with support from the Global Fund to Fight AIDS, Tuberculosis and Malaria and the United Nations Development Programme (UNDP). Patients who are diagnosed for HIV in private clinics and laboratories are referred to the HIV treatment centers to receive ART (Figure 1). As of 2016, the Afghanistan national HIV program committed to a “test and treat” strategy which aims to start ART for all patients with confirmed diagnosis as soon as possible regardless of their CD4 count, disease stage, or other conditions (4). The universal test and treat strategy has proven to be effective in reducing the number of new HIV infection and AIDS related deaths. (5, 6)

Despite these policy changes in ART treatment, the continuum of engagement in HIV care has not been evaluated for Afghanistan. The continuum of engagement in HIV care was defined by UNAIDS 90-90-90 global targets to end the AIDS epidemic: by 2020, 90% of all people living with HIV will know their HIV status, 90% of all people with diagnosed HIV infection will receive sustained antiretroviral therapy, and 90% of all people receiving antiretroviral therapy will have viral suppression (7, 8). Evaluation of these targets monitors the country’s progress towards control of the HIV epidemic (7). The objectives of this current study are to present demographic and clinical characteristics of all people diagnosed between 2013 – 2019, examine these characteristics overtime, and assess the HIV continuum of care among the cohort of patients diagnosed with HIV in 2018.

Methods

Study Design

For the present study, we used data collected through the national HIV surveillance system in Afghanistan. Although HIV has been a reportable disease in the country since 2003, the case-based surveillance system became fully operational in 2013. Therefore, our cross-sectional analysis included reported HIV cases from 1 January, 2013 to 31 December, 2019.

The country has scaled up “HIV test and treat” strategy in 2017 and expanded HIV services for women at high risk for HIV including female sex workers. Therefore, we looked at HIV case data for two time periods: 1) 2013–2016 and 2) 2017–2019. For the HIV continuum of care assessment, we used a cohort analysis, in which we tracked data at diagnosis and follow-up visits for 184 patients diagnosed with HIV in 2018.

HIV cases in Afghanistan are being testing and diagnosed based on the national guideline/algorithm. Given the low prevalence of HIV in country in general population, Afghanistan uses three consecutive rapid tests (i.e., First Response, Determine and Oraquick) for HIV diagnosis. A person with positive results on all three tests is being considered as HIV positive and will be referred to an ART center for treatment. At the ART center, before initiation of ART, to re-confirm the diagnosis, another rapid test (Combo test) is being done, and only positive cases will be treated by ART.

Measures

We reported the frequency of HIV cases by demographic characteristics (e.g., gender, age), modes of transmission (e.g., unsafe injection, heterosexual sex, male-male sex, blood/blood products, mother to child, others, and missing), and co-infections (e.g., tuberculosis, hepatitis C and B, and missing). We presented data for all diagnoses registered between 2013 and 2019, for the most recent year (2019), and for two time periods (2013–2016 and 2017–2019) to assess changes over time. For those patients with available laboratory data, we presented CD4 count at diagnosis (under 250, 250–499, 500+) and viral load suppression (<1000 copies/ml) at annual testing. Based on the country ART treatment protocol, viral load is supposed to be measured at 6 and 12 months after treatment initiation for all people started ART. Our analysis included last “viral load suppression (<1000 copies/ml) at annual testing”.

Analysis

We used chi-square or Fisher’s exact tests for comparing the distribution of demographic and clinical characteristics for cases diagnosed in 2013–2016 vs. 2017–2019. For the continuum of HIV care, we used a cohort analysis, in which we examined data at diagnosis and follow-up visits for 184 patients diagnosed with HIV in 2018 through up to the first three months of 2020 to allow time for all diagnoses made in 2018 to complete annual follow-up. For each person diagnosed with HIV in 2018, we looked at care and treatment data from diagnosis to 15 months after diagnosis. We defined “enrolled in care” as data indicating the patient visited any of the treatment centers, “received ART” as data indicating that the patient was prescribed ART, and “retained on ART” as data indicating the patient visited the center for an ART prescription at 12 to 15 months after diagnosis. We requested the data from the HIV program, Ministry of Public Health of Afghanistan in May 2020. The data that we used for our analysis will be available to other researcher upon request submitted to the HIV program, Ministry of Public Health of Afghanistan (the National Program Data officer - Ajmal Alokozai: alokozai.nacp@gmail.com)

Results

A total of 1,394 people were diagnosed with HIV between 2013 and 2019 in Afghanistan, displayed in Table 1 by the time period of diagnosis. Of those patients diagnosed over the full period from 2013 to 2019, 76.0% were male, 73.7% were older than 24 years old, 33.4% infected by unsafe heterosexual sex, and 86.7% had no data on co-infections. Of 1,007 patients who had data for CD4 at diagnosis, 26.6% had CD4 count of 500+. Only 409 had at least one viral load data point in their record, of whom 69.9% were virally suppressed.

For patients diagnosed in 2019 (190 persons), 70.0% were male, 78.9% were over 24 years old, 52.6% reported unsafe heterosexual, 12.6% reported unsafe homosexual as the route of HIV transmission, 5.8% were co-infected with tuberculosis (TB), and 7.9% were co-infected with hepatitis C virus (HCV). Of those who had data for CD4 at diagnosis, 21.3% had a count of 500 or more.

In comparison to patients diagnosed between 2013 and 2016, those diagnosed in more recent years (2017 to 2019) were older (p=0.025), and more likely to be infected through unsafe heterosexual sex (24.8% vs. 43.6%, p=0.001) or unsafe homosexual sex (13.4% vs. 21.5%, p-value 0.001), co-infected with HCV (0% vs. 13.4%, p-value 0.001) or hepatitis B virus (HBV) (0% vs. 3.8%, p-value 0.001), or had CD4 data available at diagnosis (65.7% vs. 80.1%, p-value 0.001).

Of the 184 patients diagnosed with HIV in 2018 (Table 2), 94.6% were enrolled in care, 88.6% received ART, 84.2% were retained on ART for at least 12 months, and 33.7% received a viral load test. Of those with a viral load test, 74.2% were virally suppressed. Patients who were 35 to 44 years old (52.0%, p-value 0.001) were less likely to be virally suppressed at 12 months after diagnosis. Viral suppression did not significantly differ for other variables examined, but tended to be lower for patients infected through unsafe injection (62.5%, p-value 0.413), co-infected with HCV (60.0%, p-value 0.449), and with high CD4 count (500+) at diagnosis (64.7%, p-value 0.294). One person out of the three patients in the mother-to-child transmission group was virally suppressed.

Discussion

Our analysis of reported HIV cases showed that nearly 95% of people diagnosed in with HIV in Afghanistan in 2018 were linked to care and nearly 90% were on ART, of whom the majority were retained in care. If retained in care and tested, nearly three-fourths were virally suppressed. For the present, Afghanistan’s test-and-treat strategy seems to have increased the treatment rate close to the 90% target. However, our analysis identified disparities in the engagement in HIV care. People aged 35 to 44 years and possibly those who injected drugs were more likely to remain virally unsuppressed.

We were not able to directly measure the diagnosis gap in the continuum of care. Accurately measuring the first 90 target, the percentage of PLWH who are diagnosed, is challenging. The latest UNAIDS estimates using Spectrum modeling suggest that there are 11,000 PLWH in Afghanistan, and surveillance data record only 2,923 (26.5%) (1) have been diagnosed. This suggests the biggest gap in the HIV continuum of care may be HIV diagnosis. Similar

gap of diagnosis has been present in our neighbor country Iran, where only 30% of PLWH in 2014 (9) and 37% of PLWH in 2019 (10) were diagnosed which indicated a continuous gap to reach to the UNAIDS 90-90-90 goals. In Afghanistan, HIV diagnosis is mostly done in voluntary counseling and testing sites or drop-in centers that provide free rapid HIV testing services to PWID in 13 cities, MSM in four cities, and FSW in three cities (11). These services are likely under-utilized by the target populations for several reasons. First, due to stigma, most persons in key populations do not visit the drop-in centers or voluntary counseling and testing sites (12). Second, voluntary counseling and testing sites face operational challenges, including poor supervision, lack of coordination across services, poor referral mechanisms for those who test positive or are in need of special services, and limited staff and working hours. In addition to voluntary screening, there is provider-initiated HIV testing, which is being done at antenatal clinics, blood banks and prior to some surgical procedures both at public and private hospitals. However, the yield of HIV positive case finding with this strategy is very small. There is great need to reform the current testing program by providing sufficient support and supervision. The country is also struggling to implement other testing strategies, such as self-testing, that could expand the reach of testing by not requiring fixed testing sites.

Since 2016, Afghanistan has been applying a test and treat strategy that initiates ART for all persons diagnosed with HIV. Our analysis suggests that this approach may have helped achieve the second 90 target of ART coverage among those diagnosed. We found that people who diagnosed with HIV in 2018, 88.6% received ART, and 84.2% retained on ART. This achievement is happening despite continuing challenges such as unwillingness of patients to receive treatment (4, 13) or medical doctors who do not prescribe or delay initiating ART based on mental status or other medical conditions of the client (14, 15). We also found that patients who started ART had good retention in care. Retention may also have been improved by providing transportation costs, as distance can be a formidable barrier in Afghanistan. Another incentive to improve retention is the provision of food rations (specifically, 7 kg of beans, 10 kg of rice, 10 liters of cooking oil, and 7 kg of sugar) to patients.

Viral load testing in Afghanistan faces many challenges, as indicated by the low proportion of patients receiving a test. Two logistical challenges are timely supply of commodities and coordination with reference laboratories where the tests are performed. The later challenge can be addressed if all services in the HIV continuum of care can be obtained in one place, reducing patient loss and improving cost efficiency. Although not achieving 90%, viral suppression was moderately high among those who did received a viral load test. Viral suppression has implications not only for patient care, but also for onward HIV transmission, as those with undetectable viral load are unlikely to transmit HIV (16). If we consider UNAIDS updated estimates for Afghanistan in 2020 (1), with 11,000 (95% CI 4,300–38,000) PLWH, overall viral suppression would be estimated to be very low, with only 2,923 people diagnosed (26.6%), 1,679 (15.3%) enrolled in HIV care, 1,494 (13.6%) retained in HIV care, 1,044 (9.5%) receiving ART, 977 (8.9%) tested for viral load after ART initiation, and finally 706 people (6.4%) virally suppressed. However, the estimate of undiagnosed PLWH in Afghanistan is high and difficult to verify.

In addition to accurate estimates for the number of PLWH in Afghanistan, there are limitations in our study. First, we measured retention in care by a proxy variable of being linked to social support for people on ART to improve adherence, and not by drug prescriptions or medical chart data which were not complete or available to us. Second, viral suppression was only assessed among those people who had viral load measurements. If requesting a viral load test often occurred due to treatment failure, then overall viral suppression measured in our data may be under-estimated. More complete viral load testing is needed to improve accuracy of viral suppression among patients. Third, not having a direct, accurate, or precise measures of key population sizes (e.g., the number of PWID, MSM, and FSW) which in turn affects projections of the total PLWH and which groups face the greatest disparities in 90-90-90 targets. Last, tuberculosis and hepatitis co-infection data had many missing which requires careful investigation and a strategic plan for improving surveillance.

Since 2016 when the test and treat strategy and social support programs were implemented, we found that the second 90 (those who are diagnosed with HIV being on treatment) was nearly achieved. However, the biggest gap may be the first 90 of those infected with HIV being diagnosed. Afghanistan can achieve the first 90 if more efforts are made to expand testing services, raise awareness among key populations, improve logistical operations at testing sites, and address stigma. Mitigating the effects of stigma may be addressed in the future by applying self-test strategies. Lastly, the gap in the third 90 target (those on treatment achieving viral suppression) may be closed by providing more regular viral load testing of patients on ART. Future studies (i.e., cohort studies) with longer follow up periods (more than 12 months) and including patients who were diagnosed in other years (not only 2018) can provide useful information on longer term retention and treatment outcomes of patients diagnosed with HIV and started treatment in Afghanistan.

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Figure 1.
HIV treatment Services in Afghanistan

Table 1.

Demographic and clinical characteristics among 1394 people diagnosed with HIV in Afghanistan between 2013 and 2019.

Characteristics	People diagnosed with HIV in 2019 n (%)	People diagnosed with HIV in 2018 n (%)	All people diagnosed with HIV 2013–2019 n (%)	Diagnosed between 2013 – 2016 n (%)	Diagnosed between 2017 – 2019 n (%)	P- value (2013–2016 vs. 2017–2019)
Total	190	184	1394	761	633	
Gender						
Male	133 (70.0)	140 (76.1)	1059 (76.0)	592 (77.8)	467 (73.8)	0.080
Female	57 (30.0)	44 (23.9)	335 (24.0)	169 (22.2)	166 (26.2)	
Age group (years)						
<5	4 (2.1)	5 (2.7)	50 (3.6)	31 (4.1)	19 (3.0)	
5 to 24	36 (18.9)	38 (20.7)	317 (22.7)	183 (24.0)	134 (21.2)	
25 to 34	74 (38.9)	68 (37.0)	501 (35.9)	258 (33.9)	243 (38.4)	0.025
35 to 44	34 (17.8)	51 (27.7)	338 (24.2)	200 (26.3)	138 (21.8)	
45+	42 (22.1)	22 (12.0)	188 (13.5)	89 (11.7)	99 (15.6)	
Mode of transmission						
Unsafe Injection	22 (11.6)	40 (21.7)	371 (26.6)	268 (35.2)	103 (16.3)	
Unsafe Heterosexual sex	100 (52.6)	89 (48.4)	465 (33.4)	189 (24.8)	276 (43.6)	
Unsafe Homosexual sex	24 (12.6)	28 (15.2)	238 (17.1)	102 (13.4)	136 (21.5)	
Blood/blood products	10 (5.3)	8 (4.3)	75 (5.4)	34 (4.5)	41 (6.5)	0.001
Mother to Child	7 (3.7)	8 (4.3)	62 (4.4)	28 (3.7)	34 (5.4)	
Others (e.g., surgeries)	4 (2.1)	5 (2.7)	34 (2.4)	4 (0.5)	30 (4.7)	
Missing	23 (12.1)	6 (3.3)	149 (10.7)	136 (17.9)	13 (2.1)	
Co-infection						
Tuberculosis	11 (5.8)	9 (4.9)	76 (5.5)	45 (5.9)	31 (4.9)	0.405
Hepatitis C virus (HCV)	15 (7.9)	23 (12.5)	85 (6.1)	0	85 (13.4)	0.001
Hepatitis B virus	4 (2.1)	5 (2.7)	24 (1.7)	0	24 (3.8)	0.001
Missing	160 (84.2)	147 (79.9)	1209 (86.7)	716 (94.1)	493 (77.9)	0.001
CD4 available at diagnosis	122 (64.2)	136 (73.9)	1007 (72.2)	500 (65.7)	507 (80.1)	0.001
Under 250 *	55 (45.1)	56 (41.2)	380 (37.7)	185 (37.0)	195 (38.5)	0.890
250–499 *	41 (33.6)	42 (30.9)	359 (35.7)	180 (36.0)	179 (35.3)	

Characteristics	People diagnosed with HIV in 2019 n (%)	People diagnosed with HIV in 2018 n (%)	All people diagnosed with HIV 2013–2019 n (%)	Diagnosed between 2013 – 2016 n (%)	Diagnosed between 2017 – 2019 n (%)	P- value (2013–2016 vs. 2017–2019)
500+ *	26 (21.3)	38 (27.9)	268 (26.6)	135 (27.0)	133 (26.2)	
Viral load available	25 (13.2)	62 (33.7)	409 (29.3)	215 (28.3)	194 (30.6)	0.328
Viral suppression - last VL (<1000) **	16 (64.0)	46 (74.2)	286 (69.9)	152 (70.7)	134 (69.1)	0.720

*Among those who had CD4 data.

**Among those who had VL data

Table 2.

HIV continuum of care among overall and subgroups of 184 people diagnosed with HIV in Afghanistan in 2018.

Characteristics	Number (%) of People diagnosed with HIV in 2018	Number (%) Enrolled in care	Number (%) Received ART	Number (%) Retained on ART (only from those diagnosed in 2018 from Jan 2019 to March 2020)	Number (%) Retained on ART (only from those diagnosed in 2018 from Jan 2019 to March 2020) with VL	Number (%) of VL <1000 among those who had VL data
Total	184 (100.0)	174 (94.6)	163 (88.6)	155 (84.2)	62 (33.7)	46 (74.2)
Gender						
Male	140 (100.0)	133 (95.0)	122 (87.1)	117 (83.6)	46 (32.9)	34 (73.9)
Female	44 (100.0)	41 (93.2)	41 (93.2)	38 (86.4)	16 (36.4)	12 (75.0)
Age group (years)						
<5	5 (100.0)	5 (100.0)	4 (80.0)	3 (60.0)	1 (20.0)	1 (100.0)
5 to 24	38 (100.0)	35 (92.1)	35 (92.1)	34 (89.5)	9 (23.7)	9 (100.0)
25 to 34	68 (100.0)	64 (94.1)	60 (88.2)	57 (83.8)	16 (23.5)	15 (93.8)
35 to 44	51 (100.0)	48 (94.1)	44 (86.3)	40 (78.4)	25 (49.0)	13 (52.0)
45+	22 (100.0)	22 (100.0)	20 (90.9)	20 (90.9)	11 (50.0)	8 (72.7)
Mode of transmission						
Unsafe injection	40 (100.0)	36 (90.0)	33 (82.5)	29 (72.5)	8 (20.0)	5 (62.5)
Heterosexual sex	89 (100.0)	84 (94.4)	82 (92.1)	79 (88.8)	35 (39.3)	29 (82.9)
Male-male sex	28 (100.0)	28 (100.0)	27 (96.4)	27 (96.4)	8 (28.6)	6 (75.0)
Blood/blood products	8 (100.0)	8 (100.0)	8 (100.0)	7 (87.5)	4 (50.0)	3 (75.0)
Mother to child	8 (100.0)	8 (100.0)	8 (100.0)	8 (100.0)	3 (37.5)	1 (33.3)
Other	5 (100.0)	4 (80.0)	4 (80.0)	4 (80.0)	4 (80.0)	2 (50.0)
Missing	6 (100.0)	6 (100.0)	1 (16.7)	1 (16.7)	0	--
Co-infections						
TB	9 (100.0)	9 (100.0)	8 (88.9)	7 (77.8)	5 (55.6)	4 (80.0)
HCV	23 (100.0)	16 (69.6)	12 (52.2)	11 (47.8)	5 (21.7)	3 (60.0)
HBV	5 (100.0)	2 (40.0)	1 (20.0)	1 (20.0)	0	
Missing	147 (100.0)	147 (100.0)	142 (96.6)	136 (92.5)	52 (35.4)	39 (75.0)
CD4 at diagnosis						
Under 250	56 (100.0)	56 (100.0)	48 (85.7)	45 (80.4)	25 (44.6)	21 (84.0)
250–499	42 (100.0)	42 (100.0)	41 (97.6)	36 (85.7)	20 (47.6)	14 (70.0)

Characteristics	Number (%) of People diagnosed with HIV in 2018	Number (%) Enrolled in care	Number (%) Received ART	Number (%) Retained on ART (only from those diagnosed in 2018 from Jan 2019 to March 2020)	Number (%) Retained on ART (only from those diagnosed in 2018 from Jan 2019 to March 2020) with VL	Number (%) of VL <1000 among those who had VL data
500+	38 (100.0)	38 (100.0)	38 (100.0)	38 (100.0)	17 (44.7)	11 (64.7)
Missing	48 (100.0)	38 (79.2)	36 (75.0)	36 (75.0)	--	--