Kingdom of Cambodia

Nation Religion King

Ministry of Health

Document Knowledge of People Living with HIV On Viral Load and Undetectable=Untransmittable

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National Center for HIV/AIDS, Dermatology and STD

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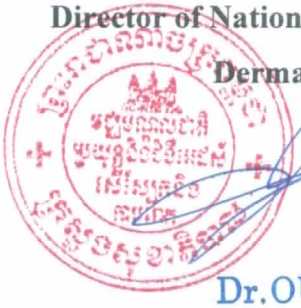
On behalf of the National center for HIV/AIDS and dermatology and STD (NCHADS), I would like to express my sincere to all contributers throught out the process of the development this important document, including health care workers from Battambang Provincial Hospital, Preah Norodom Sihanouk Tbuong Khmum Referral Hospital, Neak Loeung Referral Hospital, Sihanoukville Provincial Hospital, Kompong chnang Provoncial Hospital, Chey Chumneas Referral Hospital, Preahseihanouk Hospital Center of hope , National Clinic for AIDS, Dermatology and STD (former: Khmer-Soviet Friendship Hospital and Social Health Clinic) NCHADS' colleagues from Technical Bureau, Research Unit, and AIDS Care Unit.

It is the first documentation of the Knowledge of People Living with HIV (PLHIV) on Viral Load (VL) and Undetectable=Untransmittable in Cambodia. The main purposes are to estimate the knowing level of the VL literacy and concept of undetectable VL is equal to untransmittable of HIV infection among PLHIV. Good understanding the knowing level of VL literacy and concept of undetectable VL will help program managers, decision makers, and cliniciens to understand the effectiveness of the training activity, and counseling services at ART clinics and to identify specific areas associated with the VL literacy for improvement.

Finally, I would also like to express my sincere thanks to US-CDC for providing technical and financial supports of this important documentation. I hope that this document is useful for heath care workers, ART counselors, and PLHIV to understand of the important of monotoring the VL, good treatment adherence, and long-life retention in care to achieve the level of VL test's results at Undetectable=Untransmittable in Cambodia.

Phnom Penh, 16th January 2023

Director of National Center for HIV/AIDS, Dermatology and STD



Dr. OUK VICHEA

List of Abbreviations and Acronyms

ARV	Antiretroviral drug
ART	Antiretroviral Therapy/Treatment
CD4	T-CD4+ Lymphocyte
HAART	Highly Active Antiretroviral Therapy
SOP	Standard Operational Procedures
MOH	Ministry of Health
NCHADS	National Center for HIV/AIDS Dermatology and STD
OI	Opportunistic Infection
VL	Viral Load
U=U	Undetectable viral load is equal to Untransmittable
PLHIV	People Living with HIV
PH	Provincial Hospital
RH	Referral Hospital

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Executive Summary

Introduction

Level of VL in blood of HIV-infected patients on ART indicates the effectiveness of the treatment. The uptake of routine VL test among ART patients is partly associated by the knowledge of healthcare providers and patients themselves on VL literacy and the concepts of undetectable=untransmissible (U=U).

Knowing level of VL literacy and level of understanding of concept of U=U among people living with HIV would have help national HIV program to understand the effectiveness of its program, and will guide the national HIV program to take more actions to improve the viral load literacy and knowledge of U=U among PLHIV

Methods

Cross-sectional design was conducted in this study. Nine ART clinics were selected with inclusion criteriea to paticipate is PLHIV and who retain in ART services. To obtain information of VL literacy and U=U from the patients, data collection from 9 ART sites were conducted by NCHADS team, by asking 19 pre-designed questionnaires by face-to-face interviews.

Results

Majority, 58% were in the age group over 45 years, 28.5% are between 35-44 years, 8.5% are range from 25-34 years, and only 4.8% in the age group of 15-24 years. Meanwhile, 44% of the participants had finished the primary school, 40% went to high school, 14% had no school, and very small proportion (2%) reported graduating from university. Largely, 68% were living with others versus 32% were living alone. Most of them (31%) started ART during the period from 2005 to 2009, followed by 28.5% would be between 2015 to 2019. Almost 21% of the participants, started ART in the period from 2010 up to 2014, and only 2% were between 1995 to 1999.

Among all the participants: 30% have been on ART from 15 to 19 years, 25% of them from 10 to 14 years, and 20% from 5 to 9 years, with only 19.6% are on ART less than 5 years, and 4% of them from 20 to 24 years.

Most of the participants 83% reported to have regularly visits to ART sites, 16% of them have visited not so regularly, and only 1.5% of them did not visit regularly.

Over 70% of participants have heard about VL and 48% of them knew about their VL status. Around 70% were aware of the level of VL in the blood that indicated the success of treatment. Above 90% of participants knew what they have to do to find out the level of VL in their body. 97% of them knew that they have to do VL test in the 6^{th} and 12^{th} month and then every 12 months. Almost 90% of them were aware that they have to do VL testing, if they are suspicious of treatment failure.

Only 9% of them knew about U=U and less than 50% of them were aware of the meaning of U=U. Nearly 40% of PLHIV were aware that they have a high chance of transmitting the disease to their sexual partner if they have many sexual partners without using condom. 96% of them knew that they have to do VL testing and 97% knew that they need to do the CD4 cells count test to check if the treatment is effective. 98% of them are aware that they need to start ART as soon as possible, 99% of them knew that they need to seek additional counselling and all of them are aware that they need to have good adherence on ART.

Extensive knowledge of PLHIV had appropriate knowledge of VL literacy, which is very important because the VL is a hallmark of the effectiveness of ARV treatment. More than 50% of PLHIV had appropriate knowledge on VL literacy.

Nevertheless, there were one questions (Q.9) that less than 50% of PLHIV knew about their VL status.

The knowledge of PLHIV who have appropriate level of knowledge of undetectable of VL is equal to untransmittable the particular subject was more than 50%.

Nevertheless, there were three questions that under 50%, especially only 9% of the Q.15 “on ever heard of "U = U?”, 39% of the Q.17, and 48% of the Q.16

The national program should strengthen the training and retraining of healthcare workers on HIV/AIDS counselling methods to improve the appropriately knowledge of PLHIV on VL literacy and knowledge of undetectable of VL is equal to untransmittable.

In addition, the National HIV program has developed, printed, and disseminated various IEC materials including video clips, leaflets, posters, and especially flipcharts for counselors for accessibility counseling for PLHIV.

I. Introduction

Level of VL in blood of HIV-infected patients on ART indicates the efficacy of the treatment. The uptake of routine VL test among ART patients is partly associated with the knowledge of healthcare providers and patients themselves on VL literacy and the concepts of undetectable=untransmissible (U=U).

The training and health educations on VL literacy and U=U to healthcare providers and patients would improve their knowledge on the importance of having VL suppressed.

II. Rationale

Knowing level of VL literacy and concept of undetectable VL is equal to untransmittable of HIV infection among healthcare providers and patients would have helped national HIV program to understand the effectiveness of the training activity, and counselling services at ART clinics, and to identify specific areas associated with the VL literacy that need improving among healthcare workers and PLHIV in Cambodia.

III. Objective

1. To estimate percentage of PLHIV who have appropriate level of knowledge on the benefits of having VL level monitored;
2. To estimate percentage of PLHIV who have appropriate level of knowledge of undetectable of VL is equal to untransmittable of HIV.

IV. Methods

4.1 Study design and setting

Cross-sectional design was conducted in this study. Selected nine ART clinics are Battambang Provincial Hospital, Preahnorodom Sihanouk Tbuong Khmum Referral Hospital, Neak Loeung Referral Hospital, Sihanouk Provincial Hospital, Kompong chnang Provoncial Hospital, Chey Chumneas Referral Hospital, Center Of Hope, and National ART clinic (ex: Khmer-Soviet Friendship Hospital and ex: Social Health Clinic).

4.2 Taget population and study population

PLHIV on ART and who retain in ART services.

4.3 Sample size

If 20% of PLHIV have appropriate level of knowledge of VL literacy with 5% absolute precision and 95% confidence, this documentation process would require a sample size of 245 by using formula below.

The number of sample size is round up to 270 to have 30 sample per province sampled and samples are equally distributed by male and female: 135 males and 135 females.

n = Z2P (1-P)/d2 where:

n= sample size

Z= Z statistic for a level of confidence set at 95%, Z=1.96

P= expected proportion of PLHIV have appropriate knowledge of viral load literacy or U=U, assuming 20%

d= precision, set at 5%

4.4 Sampling

We use probability proportional to size sampling technique to sample provinces and 09 ART sites. (describe how do you select PLHIV at selected ART site by equal allocation between male and female).

Table 1: Sampled province using PPS

No	Province	# of PLHIV	Cumulative total	Range (for sampling)	Province sampled	Serial number	Selected Site in the Sampled province	Sample size	
								Male	Female
1	BMC	3868	3868	00001-03868					
2	BTB	5422	9290	03869-09290	5844	1	BTB RH	15	15
3	KCM	3060	12350	09291-12350					
4	KCG	833	13183	12351-13183	12578	2	KCGPRH	15	15
5	KPS	1511	14694	13184-14694					
6	KTM	1043	15737	14695-15737					
7	KPT	2188	17925	15738-17925					
8	KDL	2604	20529	17926-20529	19312	3	Chey Chumneas RH	15	15
9	KEP	89	20618	20530-20618					
10	KHK	976	21594	20619-21594					
11	KTI	577	22171	21595-22171					
12	MDK	51	22222	22172-22222					
13	OMC	517	22739	22223-22739					
14	PLN	392	23131	22740-23131					

15	PNH	2078 9	43920	23132-43920	26046, 32780, 39514	4 5 6	ex KSF ex SHC COH	15 15 15	15 15 15
16	PVH	317	44237	43921-44237					
17	PVG	2598	46835	44237-46835	46248	7	Neak Loeung	15	15
18	PST	1360	48195	46836-48195					
19	RKR	200	48395	48196-48395					
20	SRP	4559	52954	48396-52954					
21	SHV	1866	54820	52955-54820	52982	8	SHV RH	15	15
22	STG	383	55203	54821-55203					
23	SVG	1354	56557	55204-56557					
24	TKO	2574	59131	56558-59131					
25	TKM	1477	60608	59131-60608	59716	9	TKM RH	15	15

4.5 Data collection and Data analysis

To obtain information of VL literacy and U=U from the patients, 19 predesigned questionnaires were used to interview the study participants. The data collection at all sampled ART sites/provinces were conducted by NCHADS team.

Objective	Method of data collection	Tool
1. To estimate percentage of patients who have appropriate level of knowledge of VL literacy. 2. To estimate percentage of patients who have appropriate level of knowledge of undetectable of VL is equal to untransmittable of HIV.	Face-to-face interview	A predesigned questionnaire with 19 questions.

4.6 Data analysis

All general information on antiretroviral therapy, Socio-demographic characteristics viral knowledge of VL literacy, knowledge about U=U were included for descriptive analysis using frequency and proportion.

Term of definition of Undetectable is **“Undetectable” describes when the copies of HIV in a person's blood is so low that it does not show up on a lab test**. The test measures a person's “viral load.” “Untransmittable” means that a person living with HIV has virtually no chance of transmitting the HIV virus to someone else through sexual contact.

V. Results

5.1 Socio-demographic characteristics:

Of the 270 participants, half of the samples are male. Majority, more than half (58%) were in the age group over 45 years, followed by 28.5% were in the age group of 35-44 years, 8.5% were in the range of 25-34 years, and only 4.8% were in the age group of 15-24 years. Meanwhile, almost half of the participants (44%) had finished only primary school, while the other 40% went to high school, 14% had no schooling, and only 2% of them reported graduating from university. Mainly, 68% of them were living with others, versus 32% were living alone. (Table 2).

Table 2: Demographic characteristic of study population

Characteristics	Number = 270	Percentage (%)
Sex		
Male	135	50%
Female	135	50%
Age		
15-24	13	4.81%
25-34	23	8.52%
35-44	77	28.52%
45+	157	58.15%
Mean (±SD)	46.37 (±11.3)	
Educational level		
None	39	14.44%
Primary	118	43.7%
High school	107	39.63%
University	6	2.22%
Living status		
Alone	86	31.85%
With others	184	68.15%

5.2 General information on antiretroviral therapy

As shown in table 3, among 270 participants, 31% of them started ART during 2005 to 2009. The second leading period with 28.5% would be between 2015 to 2019. Almost 21% of the participants, started ART in the period range from 2010 to 2014. Only 11.5% of them started ART in the years 2000-2004. From 2020 onward, only 6.3% of the participants started ART which is the second to the least to the period ranging from 1995 to 1999 with about 2%.

Among all the participants, over 30% of them have been on ART for 15 to 19 years. 25% of them have been on ART for 10 to 14 years. Then, the people who have been on ART for 5 to 9 years with over 20%. 19.6% of them have been on ART for less than 5 years and the least percentage (4%) of the participants have been on ART for 20 to 24 years.

Most of the participants (83%) reported visited ART clinic regularly and 16% of them has visited not so regularly and only 1.5% of them did not visit regularly.

Table 3: Duration of using ART

Information	**Number**	**Percentage (%)**
Year to start ART		
1995-1999	5	1.85%
2000-2004	31	11.48%
2005-2009	84	**31.11%**
2010-2014	56	**20.74%**
2015-2019	77	**28.52%**
2020+	17	6.3%
Number of years on ART		
<5 years	53	19.63%
5-9 years	55	**20.37%**
10-14 years	68	**25.2%**
15-19 years	83	**30.74%**

20-24 years	11	4.07%
Mean (±SD)	10.94(±5.7)	
Visit status (self-reported)		
Regular	223	**82.6%**
Not so regular	43	**15.93%**
Not regular	4	1.48%

5.3 Knowledge on VL (VL literacy)

To measure the level of knowledge of PLHIV about VL, seven questions were asked. Each question was scored "1" for correct answer and scored "0" for wrong answer, with 7 maximum scores in total for all corrected answered.

Over 70% of participants have heard about VL (1) and 48% of them knew about their VL status. Around 70% were aware of the amount of VL that show the success of treatment (2). Above 90% of participants knew what to do to find out the amount of VL in their body. 97% of them knew that they have to do VL test in the 6^{th} and 12^{th} month and every 12^{th} month. Almost 90% of them were aware that they have to do VL testing if they are suspicious of treatment failure. Almost all of them knew what they should do to minimize their VL or make them undetectable (Table 4).

Table 4: Number and percentage of PLHIV having appropriate knowledge of VL literacy

No.	Number of Question	Question	Number/Percentage of Known/right N=270	
			N	**%**
1	Q8	Have you ever heard of viral load in your blood or not?	200	74
2	Q9	Do you know about your VL measurement status?	129	48

3	Q11	At VL level can we consider the treatment a success?	192	71
4	Q12	How do you know about your VL?	255	94
5	Q13a	Do you know that you need to do VL test on the sixth, twelfth, or every twelve months?	261	97
6	Q13b	Do you need to do a VL test when you suspect that the treatment is failure?	237	88
7	Q14	What should you do to make the VL level low or undetectable?	266	98

The mean score of total 7 score was 5.7 with standard deviation of ± 1.3. The range was 5 with minimum score was 2 and maximum score was 7. Around 38% answered all seven questions correctly, 22% answered six questions correctly, and 20% responded 5 questions correctly. Only 1% and 5% of PLHIV interviewed got 2 and 3 of total score respectively.

Table 5: Knowledge of VL literacy

Total score	**Number**	**Percentage (%)**
2	4	1%
3	14	5%
4	36	13%
5	53	20%
6	60	22%
7	103	38%
Total	270	100

5.4 Knowledge on undetectable of VL is equal to untransmittable (U=U):

Only 9% of them knew U=U and under 50% (3) of them were aware of the meaning of U=U which means when the amount of VL is undetectable and uncountable, then the person will not be able to transmit the disease to sexual partner. Nearly 40% of PLHIV were aware that

they have a high chance of transmitting the disease to their sexual partner if they have many sexual partners without using condom even though their VL is undetectable and they take medicine regularly. 96% of them knew that they have to do VL testing and 97% knew that they need to do CD4 cell count test to check if the treatment is effective. 98% of them are aware that they need to start ART as soon as possible, 99% of them knew that they need to seek additional counselling and all of them are aware that they need to have good adherence on ART so that they can have minimum amount of VL until they are undetectable or <40 copies/ml or <1000 copies/ml.

Table 6: Number and percentage of PLHIV having appropriate knowledge about U=U

No.	Number of Question	Question	Number/Percentage of Known/right N=270	
			N	%
1	Q15	Have you ever heard of U=U?	26	9
2	Q16	Is it true that when the VL undetectable, it means that the patient will not be able to infect their sexual partner(U=U)?	130	48
3	Q17	Is there a high percentage for a PLHIV who take medicine regularly and have undectable VL transmit the virus to their sexual partner, if the patient have many sexual partner without using condom	106	39
4	Q18	What should we do to track the progression of the treatment?	VL (263) CD4(260)	97 96

5	Q19a	What should you do to have VL undetectable, < 40 copies/ml or <1000 copies/ml? a- Early treatment?	266	98
6	Q19b	b- Take medicine regularly?	270	100
7	Q19c	c- Consult with health care provider if you need to?	267	99

The mean score of the total 7 possible score was 4.6 with standard deviation of ± 0.69. The range was 3 with minimum score was 4 and maximum was 7. 0.74% answered all seven questions correctly, 10% responded six questions correctly, and 40.74% answered 5 questions correctly and 48.52% of PLHIV interviewed received 4 scores correctly.

Table 7: Knowledge on Undetectable = Untransmittable

Total score	**Number**	**Percent**
4	131	48.52
5	110	40.74
6	27	10.00
7	2	0.74
Total	270	100

VI. Discussion

Extensive knowledge of PLHIV had appropriate knowledge of VL literacy, that is very important because the VL is a hallmark of the effectiveness of ARV treatment.

More than 50% of PLHIV had appropriate knowledge on VL literacy and answered correctly more than 70% (2) to the questions.

Nevertheless, there were one questions that less than 50% of PLHIV answered correctly, specically the question: Q.9: 48% of them knew about their VL status. In general, the respondents had limited understanding of VL literacy (4).

The knowledge of PLHIV who have appropriate level of knowledge of undetectable of VL is equal to untransmittable the particular subject was more than 50% and answered correctly to more than 90% of questions.(3, 5)

Nevertheless, there were three questions, especially PLHIV answered correcty were lower than 50% (6) :

. Only 9% of the Q.15 “on ever heard of "U = U?”.

. 39% of the Q.17, and 48% of the Q.16

VII. Limitation

There were several limitations for our study. First, the inclusion of newly diagnosed PLHIV and currently receiving treatment. And second, nearly two years during the period of Covid-19 pandemic, this led to health care providers were spent less time for ART counselling to PLHIV.

VIII. Conclusions and Recommendations

The national program should strengthen the training and retraining of healthcare workers on HIV/AIDS counselling methods to improve knowledge of PLHIV appropriate of VL literacy and knowledge of undetectable of VL is equal to untransmittable and strengthen adherence counselling.

In addition, the National HIV program has developed, printed, and disseminated various IEC materials including video clips, leaflets, posters, and especially flipcharts for counselors for accessibility counseling to PLHIV.

Conduct a further study to assess the VL literacy and knowledge on U=U by the end of 2022.

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