Report

Four main indicators at the ART Clinics through BLITZ

November 2019

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Acknowledgements

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Without the extensive support from these partners, the review of ART services at these ART clinics would not have been possible.

I. Introduction

Some newly identified people living with HIV (PLHIV) failed to link to or enroll in care and initiate treatment, and those on antiretroviral treatment (ART) often missed clinical appointments and failed to reengage in care and treatment. Addressing poor linkages and retention in care is critical for achieving HIV/AIDS epidemic control. Identifying those who missed their clinical appointments (lost to follow-up) will allow targeted interventions to help reengage those patients back to treatment and help the national program reach the third 90 target of the global HIV indicator.

Loss to follow-up remains a major problem in Cambodia. Although most LTF among PLHIV on ART can be explained by undocumented deaths and transfers out, most of them may have stopped treatment or are taking ART irregularly. A common reason for loss to follow-up in Cambodia is migration to Thailand. For example, in Sampov Loun 12 out of 13 patients who were lost to follow-up in 2017 reported moving to Thailand, while the reason for LTF for most of the other patients was unknown in Battambang and Banteay Meachey provinces.

About 79% of PLHIV on ART received viral load testing, and 75% of them were found to have viral load suppression. There are some concerns regarding why patients have not been viral load tested. Did they miss their appointment, or they are lost to follow-up?

Tuberculosis is the most common cause of morbidity and mortality among HIV infected persons globally. In 2008 WHO issued its guidance recommending IPT as a public health priority for people living with HIV, especially in high-burden settings. Despite huge evidence for the efficacy of IPT/TPT[(1)], global recommendations for its routine use[(2)], and the recommendations of national programs, the uptake of IPT/TPT has been low and increasing only slowly.

II. Rationale

While searching for HIV positive cases is more and more difficult, maintaining ART for existing cases to support suppression of viral loads will help prevent new infections. Lost to follow-up patients can increase risk of HIV drug resistance since they do not take drugs rightly and regularly. They affect the whole cascade of the 90:90:90 and consume national resources needed to fight against HIV.

Successful tracking and tracing of PLHIV who have failed to return to care/treatment will allow for targeted interventions in order to help return those patients back to appropriate care and treatment and achieve viral load suppression. Identifying exact persons by line listing will help the national program and involved stakeholders to trace them.

Identifying the line listing of patients who did not receive viral load tests as national algorithm will help ART clinics to take appropriate interventions to resolve problems. The national program and all partners can make it clear whether the proportion of viral load testing that is missing is among those who were lost to follow-up or else.

III. Goal and Objectives of BLITZ

3.1 Goal:

- To trace the patients who were lost to follow-up and re-engage them into care, and
- To reach the third 90 goal of the national HIV program.

3.2 Objectives:

- Identify and determine patients who did not return for visit after missing their appointment or patients who were lost to follow-up,
- Identify and determine patients who are eligible for viral load testing based on the viral load algorithm but have not had a viral load test performed,
- Identify and determine patients who are eligible for TPT but do not receive TPT, and
- Identify and determine patients who have died.

IV. Methodology

4.1 Number of ART clinics:

12 ART clinics in Phnom Penh

4.2 Patient charts review:

All patient charts from the last visit date of January 1, 2018 until the date that BLITZ was conducted at the ART clinics were reviewed.

4.3 Data collection:

- Pre-populated the number of patients in the clinic and all variables of interest into the assigned Tablets supported by web-based application.
- 4 groups of 3 or 4 teams. Each team was composed of 1 reviewer and 1 person to enter data. Each group had 2 coordinators who could alternate work.

4.4 Data quality control:

- Clear written data collection instructions.
- Restriction keys for data entry (including required fill-in so that cells could not be kept blank).
- Training for all data collection teams/members.
- Core group met every week to monitor progresses, resolve problems, and disseminate corrective actions.
- Group coordinators reviewed and checked the collected data each day.
- Assured confidentiality.

4.5 Duration:

From June to September 2019.

V. Findings:

5.1 Overall

At the 12 ART clinics, 20,882 patient charts were reviewed. The specific number of charts at each ART clinic is shown in Table 2 below. 4 ART clinics have a larger number of patients in care: Center of Hope (18.4%), Preah Kosomak Hospital (15.2%), Khmer Soviet Friendship Hospital (13.6), and Social Health Clinic (12.3%).

Table 1: Number of records reviewed and percent of error

Number of Charts Reviewed	Completed (%)	% Errors and Corrected
20,882	100%	< 2%

Table 2: Number of patient charts reviewed at each ART clinic

Site ID	Number	Percent	Cumulative percent
1201	2,853	13.66	13.66
1202	1,551	7.43	21.09
1203	3,171	15.19	36.28
1204	1,040	4.98	41.26
1205	3,852	18.45	59.7
1207	1,134	5.43	65.13
1208	2,566	12.29	77.42
1209	1,383	6.62	84.04
1211	989	4.74	88.78
1212	699	3.35	92.13
1213	637	3.05	95.18
1214	1,007	4.82	100
Total	20,882	100	

On average, patients were about 49% female and 51% male. The distribution by sex at each clinic is varied between female and male.

Table 3: Distribution of patients by sex by ART clinic

Site ID		Female	Male	Total
1201	n	1,424	1,429	2,853
	%	49.9	50.1	100
1202	n	790	761	1,551
	%	50.9	49.1	100
1203	n	1,573	1,598	3,171
	%	49.6	50.4	100
1204	n	477	563	1,040
	%	45.9	54.1	100
1205	n	2,096	1,756	3,852
	%	54.4	45.6	100
1207	n	551	583	1,134
	%	48.6	51.4	100
1208	n	1,296	1,270	2,566
	%	50.5	49.5	100
1209	n	580	803	1,383
	%	41.9	58.1	100
1211	n	508	481	989
	%	51.4	48.6	100
1212	n	356	343	699
	%	50.9	49.1	100
1213	n	289	348	637
	%	45.4	54.6	100
1214	n	514	493	1,007
	%	51.0	49.0	100
Total	n	10,454	10,428	20,882
	%	50.1	49.9	100

The proportions of patients were starting up from age 25 years old. Almost all sites covered more than 90% of patients aged 25 years or older, except site 1208. Site 1204 is the National Pediatric Hospital where almost all patients were aged 0-14 years old.

Table 4: Distribution of patients by Age group by ART clinic

		Age								
Site ID		0-14	15-19	20-24	25-29	30-34	35-39	40-44	45+	Total
1201	n	4	44	228	546	782	620	365	264	2,853
	%	0.14	1.54	7.99	19.14	27.41	21.73	12.79	9.25	100
1202	n	0	30	92	239	382	327	215	266	1,551
	%	0	1.93	5.93	15.41	24.63	21.08	13.86	17.15	100
1203	n	6	120	142	283	572	590	659	799	3,171

	%	0.19	3.78	4.48	8.92	18.04	18.61	20.78	25.2	100
1204	n	1,010	30	0	0	0	0	0	0	1,040
	%	97.12	2.88	0	0	0	0	0	0	100
1205	n	1	69	243	703	883	813	509	631	3,852
	%	0.03	1.79	6.31	18.25	22.92	21.11	13.21	16.38	100
1207	n	1	57	40	124	219	225	186	282	1,134
	%	0.09	5.03	3.53	10.93	19.31	19.84	16.4	24.87	100
1208	n	74	226	207	411	505	495	301	347	2,566
	%	2.88	8.81	8.07	16.02	19.68	19.29	11.73	13.52	100
1209	n	14	42	245	433	296	193	93	67	1,383
	%	1.01	3.04	17.72	31.31	21.4	13.96	6.72	4.84	100
1211	n	1	37	97	109	202	213	136	194	989
	%	0.1	3.74	9.81	11.02	20.42	21.54	13.75	19.62	100
1212	n	0	6	46	95	136	135	108	173	699
	%	0	0.86	6.58	13.59	19.46	19.31	15.45	24.75	100
1213	n	3	23	39	77	135	145	107	108	637
	%	0.47	3.61	6.12	12.09	21.19	22.76	16.8	16.95	100
1214	n	0	60	87	146	187	224	123	180	1,007
	%	0	5.96	8.64	14.5	18.57	22.24	12.21	17.87	100
Total	n	1,114	744	1,466	3,166	4,299	3,980	2,802	3,311	20,882
	%	5.33	3.56	7.02	15.16	20.59	19.06	13.42	15.86	100

5.2 Findings related to the specific objectives of BLITZ

5.2.1 Patents who missed their appointment or were lost to follow-up

Of the 20,882 charts reviewed, 480 (2.3%) patients did not return for their visit within 1-30 days after the appointment date. 235 (1.1%) did not return for visit within 31-90 days after the appointment date. 1,290 (6.2%) were lost to follow-up greater than 90 days (Table 5). The number of patients who missed their appointment or were lost to follow-up by ART clinic is shown in Table 6.

Table 5: Number (%) of patients by duration after missed appointment/LTF

Duration of missed appointment/LTF from the next appointment date until the date BLITZ conducted	Number	%
Regular	18,877	90.4
Missing 1-30 days	480	2.3
Missing 31-90 days	235	1.1
LTF > 90 days	1,290	6.2
Total	20,882	100

At four ART clinics the percentages of missed appointments or loss to follow-up were greater than 10%. Those clinics were National Pediatric Hospital (NPH), Chamkar Daung (CKD) referral hospital, Chhouksa Clinic, and Pochentong referral hospital where the percentages of lost to follow-up greater than 90 days were 17%, 14%, 10%, and 10% respectively.

The lowest percentage of active patients was observed at site 1204 (NPH) where around 77% of patients were active, and at 1213 (CKD) where 80% of patients were active.

Table 6: Number (%) of patients by duration after missed appointment/LTF

Site ID		Duration after missed appointment/LTF				Total
		Regular	1-30 days	31-90 days	> 90 days	
1201	n	2,722	36	9	86	2,853
	%	95.41	1.26	0.32	3.01	100
1202	n	1,454	39	12	46	1,551
	%	93.75	2.51	0.77	2.97	100
1203	n	3,014	29	38	90	3,171
	%	95.05	0.91	1.2	2.84	100
1204	n	808	34	21	177	1,040
	%	77.69	3.27	2.02	17.02	100
1205	n	3,536	73	20	223	3,852
	%	91.8	1.9	0.52	5.79	100
1207	n	966	102	27	39	1,134
	%	85.19	8.99	2.38	3.44	100
1208	n	2,369	44	17	136	2,566
	%	92.32	1.71	0.66	5.3	100
1209	n	1,170	39	32	142	1,383
	%	84.6	2.82	2.31	10.27	100
1211	n	851	37	17	84	989
	%	86.05	3.74	1.72	8.49	100
1212	n	622	4	9	64	699
	%	88.98	0.57	1.29	9.16	100
1213	n	515	12	16	94	637
	%	80.85	1.88	2.51	14.76	100
1214	n	850	31	17	109	1,007
	%	84.41	3.08	1.69	10.82	100
Total	n	18,877	480	235	1,290	20,882
	%	90.4	2.3	1.13	6.18	100

Of the 480 patients who missed the appointment for 1-30 days, 18%, 16%, and 17% were seen in the age-groups of 30-34, 35-39, and 45+ respectively. Overall, these three age groups had percentages of missed appointments or loss to follow-up greater than other age groups.

Table 7: Number (%) of patients missing appointment/LTF by Age Group

Age group		Duration after missed appointment/LTF				
		Regular	1-30 days	31-90 days	> 90 days	Total
0-14	n	864	36	23	191	1,114
	%	4.58	7.5	9.79	14.81	5.33
15-19	n	643	26	8	67	744
	%	3.41	5.42	3.4	5.19	3.56
20-24	n	1,293	38	21	114	1,466
	%	6.85	7.92	8.94	8.84	7.02
25-29	n	2,893	72	32	169	3,166
	%	15.33	15.00	13.62	13.1	15.16
30-34	n	3,942	89	42	226	4,299
	%	20.88	18.54	17.87	17.52	20.59
35-39	n	3,672	79	47	182	3,980
	%	19.45	16.46	20.00	14.11	19.06
40-44	n	2,578	57	30	137	2,802
	%	13.66	11.88	12.77	10.62	13.42
45+	n	2,992	83	32	204	3,311
	%	15.85	17.29	13.62	15.81	15.86
Total	n	18,877	480	235	1,290	20,882
	%	100	100	100	100	100

The percentages of missed appointments/LTF for all categories for women patients were lower than for men.

Table 8: Number (%) of patients missing appointment/LTF by Sex

Sex		Duration after missed appointment/LTF				Total
		Regular	1-30 days	31-90 days	> 90 days	
Female	n	9,528	231	110	585	10,454
	%	50.47	48.13	46.81	45.35	50.06
Male	n	9,349	249	125	705	10,428
	%	49.53	51.88	53.19	54.65	49.94
Total	n	18,877	480	235	1,290	20,882
	%	100	100	100	100	100

When comparing patient status recorded in the database at ART clinics and patient status defined by BLITZ, the reliability of the data was high because 99.8% of both data matched on patient status classified as “Active”.

Table 9: Comparing patient status defined by BLITZ and patient status in the clinic database

Patient status defined by BLITZ		Patient status in clinic database				Total
		Active	Dead	LTF	Transferred out	
Active	n	18,840	5	10	22	18,877
	%	99.8	0.03	0.05	0.12	100
1-30 days	n	452	9	5	14	480
	%	94.17	1.88	1.04	2.92	100
31-90 days	n	175	24	12	24	235
	%	74.47	10.21	5.11	10.21	100
> 90 days	n	122	169	659	340	1,290
	%	9.46	13.1	51.09	26.36	100
Total	n	19,589	207	686	400	20,882
	%	93.81	0.99	3.29	1.92	100

5.2.2 The performance of viral load tests

The performance of viral load tests at each ART clinic was reviewed against the criteria stated in the national viral load algorithm (see Appendix 1). More than 87% of patients had a viral load test according to the national algorithm. About 12% of patients who were eligible for a viral load test did not receive the test. 0.5% of patients did not have viral load information.

Table 10: The performance of viral load tests

Viral load testing	Number	Percent
No information	122	0.58
Not tested	2,530	12.12
Tested	18,230	87.3
Total	20,882	100

Reviewing the performance of viral load tests by ART clinic, table 6 shows that the performance of viral load testing varied from site to site with a mean of 78.7% and standard deviation of ± 9.9%. The maximum percentage of viral load test performance was 91% at Khmer Soviet Friendship Hospital. The minimum was 59% at Chamkar Dong referral hospital.

Table 11: The performance of viral load tests by ART clinic

Site ID		No info	Tested	Eligible but not tested	Pending results	Total
1201	n	5	2,607	101	140	2,853
	%	0.18	91.38	3.54	4.91	100
1202	n	3	1,384	133	31	1,551
	%	0.19	89.23	8.58	2	100
1203	n	8	2,778	317	68	3,171
	%	0.25	87.61	10	2.14	100
1204	n	10	792	228	10	1,040
	%	0.96	76.15	21.92	0.96	100
1205	n	9	2,974	253	616	3,852
	%	0.23	77.21	6.57	15.99	100
1207	n	0	761	364	9	1,134
	%	0	67.11	32.1	0.79	100
1208	n	5	1,942	347	272	2,566
	%	0.19	75.68	13.52	10.6	100
1209	n	50	1,207	107	19	1,383
	%	3.62	87.27	7.74	1.37	100
1211	n	5	773	125	86	989
	%	0.51	78.16	12.64	8.7	100
1212	n	12	603	69	15	699
	%	1.72	86.27	9.87	2.15	100
1213	n	7	376	235	19	637
	%	1.1	59.03	36.89	2.98	100
1214	n	8	706	251	42	1,007
	%	0.79	70.11	24.93	4.17	100
Total	n	122	16,903	2,530	1,327	20,882
	%	0.58	80.95	12.12	6.35	100

Viral load test performance by patient status was analyzed. Of the 2,530 patients who were eligible for viral load test but did not have the test performed, almost 68% of them were active, meaning the patients regularly visited the clinic.

Table 12: Viral load performance by patient status

Patient status		Tested	Eligible but not tested	Pending results	Total
Regular	n	15,904	1,714	1,240	18,858
	%	94.09	67.75	93.44	90.84
1-30days	n	356	93	27	476
	%	2.11	3.68	2.03	2.29
31-90days	n	125	80	16	221
	%	0.74	3.16	1.21	1.06
>90days	n	518	643	44	1,205
	%	3.06	25.42	3.32	5.8
Total	n	16,903	2,530	1,327	20,760
	%	100	100	100	100

5.2.3 The performance of TPT

TB prevention therapy is one of the activities that ART clinics focus on for quality of care. Cambodia has implemented the 3 Is strategy for many years. TPT (IPT) is a joint effort between the two national programs – NCHADS and CENAT. Around 28% of patients in the 12 ART clinics were given TPT. 5% of patients had no information on TPT eligibility. The latter may be due to clinicians not screening for signs and symptom of TB or clinicians not recording the information during clinical examinations.

Table 13: The performance of TPT

Performance of TPT	Number	Percent
TPT not given	13,378	64.1
No information	1,053	5.0
Not eligible	564	2.7
TPT given	5,886	28.2
Total	20,881	100

Disaggregating by sex showed no difference for the percentages of TPT given or not between male and female patients

Table 14: The performance of TPT by sex

TPT performance		Sex		
		Female	Male	Total
TPT not given	n	6,783	6,595	13,378
	%	50.7	49.3	100
No info	n	476	577	1,053
	%	45.2	54.8	100
Not eligible	n	276	288	564
	%	48.94	51.06	100
TPT given	n	2,918	2,968	5,886
	%	49.58	50.42	100
Total	n	10,453	10,428	20,881
	%	50.06	49.94	100

When looking at the percentage of TPT given by ART clinic, more than 95% of patients were not given TPT at three ART clinics: 1202 (95%), 1205 (99%), and 1207 (97%). Two ART clinics had only around 10% of patients who were not given TPT – 1204 (11%) and 1209 (10%).

Table 15: The performance of TPT by site

Site ID		TPT not given	No information	Not eligible	TPT given	Total
1201	n	2,429	6	281	137	2,853
	%	85.14	0.21	9.85	4.8	100
1202	n	1,483	4	63	1	1,551
	%	95.62	0.26	4.06	0.06	100
1203	n	1,199	12	38	1,922	3,171
	%	37.81	0.38	1.2	60.61	100
1204	n	121	832	37	50	1,040
	%	11.63	80	3.56	4.81	100
1205	n	3,838	11	3	0	3,852
	%	99.64	0.29	0.08	0	100
1207	n	1,110	2	22	0	1,134
	%	97.88	0.18	1.94	0	100
1208	n	1,824	64	21	657	2,566

	%	71.08	2.49	0.82	25.6	100
1209	n	148	3	32	1,199	1,382
	%	10.71	0.22	2.32	86.76	100
1211	n	278	2	19	690	989
	%	28.11	0.2	1.92	69.77	100
1212	n	209	7	31	452	699
	%	29.9	1	4.43	64.66	100
1213	n	246	101	9	281	637
	%	38.62	15.86	1.41	44.11	100
1214	n	493	9	8	497	1,007
	%	48.96	0.89	0.79	49.35	100
Total	n	13,378	1,053	564	5,886	20,881
	%	64.07	5.04	2.7	28.19	100

5.2.4 Number of ART patients who died

For about one year and a half, there were 207 patients reported dead. However, the cause of death was not reviewed during BLITZ. The percent of death among male patients was 55.6% while the percent of death among female patients was 44.4%.

Table 16: Number (%) dead by sex

		Female	Male	Total
Dead	n	92	115	207
	%	44.4	55.6	100

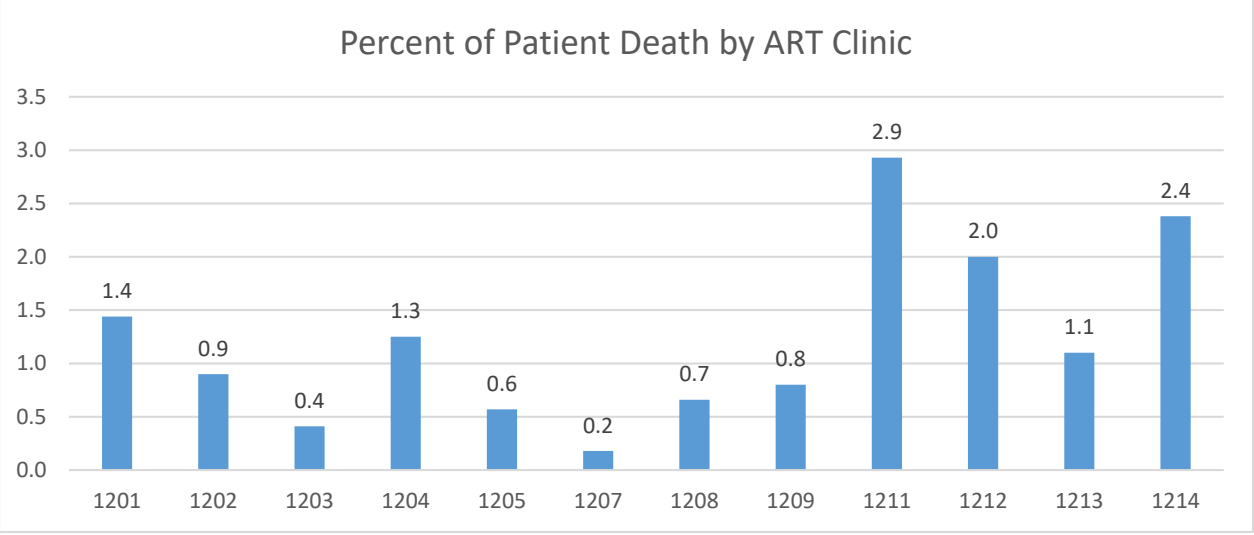
Table 17: Number (%) of patients who died by ART clinic for one year and a half

Site ID		Reported patient status				Total
		Active	Dead	LTF	Transferred out	
1201	n	2,769	41	21	22	2,853
	%	97.1	1.4	0.7	0.8	100
1202	n	1,502	14	33	2	1,551
	%	96.8	0.9	2.1	0.1	100
1203	n	3,067	13	90	1	3,171
	%	96.7	0.4	2.8	0.0	100
1204	n	835	13	39	153	1,040
	%	80.3	1.3	3.8	14.7	100

1205	n	3,633	22	116	81	3,852
	%	94.3	0.6	3.0	2.1	100
1207	n	1,101	2	30	1	1,134
	%	97.1	0.2	2.7	0.1	100
1208	n	2,438	17	67	44	2,566
	%	95.0	0.7	2.6	1.7	100
1209	n	1,255	11	102	15	1,383
	%	90.7	0.8	7.4	1.1	100
1211	n	894	29	41	25	989
	%	90.4	2.9	4.2	2.5	100
1212	n	635	14	43	7	699
	%	90.8	2.0	6.2	1.0	100
1213	n	551	7	54	25	637
	%	86.5	1.1	8.5	3.9	100
1214	n	909	24	50	24	1,007
	%	90.3	2.4	5.0	2.4	100
Total	n	19,589	207	686	400	20,882
	%	93.8	1.0	3.3	1.9	100

In general, the percentage of patients who died at each ART clinic was low. The average percent was 1.2% with a standard deviation of 0.8%. Site 1211, 1214, and 1212 had high rates of death: 2.9%, 2.4%, and 2.0% respectively.

Figure 1: Percent of patient death by ART clinic



VI. Discussion

A discussion among healthcare providers at the 12 ART clinics was conducted. They acknowledged that the findings from BLITZ reflected the real situations at the ART clinics. They also discussed reasons or factors associated with loss to follow-up and the reasons that viral load tests and TPT were not performed and not given.

Regarding the loss to follow-up rates, all sites revealed many challenges that they have been facing for the missing clinical appointments or loss to follow-up. Those challenges included:

- Patients traveled abroad, especially to Thailand;
- Patients moved and registered at another site;
- Patients perceived they are well now and in a good health;
- Patients who were lost to follow-up for more than 90 days most likely died;
- Family issues;
- No companion who can help patients come to the clinics, especially for elderly patients or those in bad condition;
- The residence is far away from the clinic;
- No money for transportation;
- Patients are actually working far from the clinic; and
- Side-effects.

When discussing the reasons why eligible patients were not viral load tested, all sites listed 11 main reasons:

- Clinicians did not request the viral load test for the patients;
- Patients did not come to their appointment;
- Clinicians forgot or confused the date for viral load testing;
- The viral load test was already performed but the result was not recorded or entered in the patient's chart;
- Patients were detained in the rehabilitation center;
- Patients traveled abroad (for whatever reason);
- Sometime clinicians requested viral load tests, but the laboratory performed CD4 instead;
- Human errors: Sometimes staff mistakenly thought patients already had their blood drawn for viral load testing;

- Patients rushed to go back without telling staff;
- Family or caregivers picked up the drugs on behalf of the patients.

Loss to follow-up and viral load performance issues were attributed more to challenges with patients than with health providers. The main reasons for not receiving TPT were mainly due to systemic issues such as lack of drugs, drugs out of stock, or drug shortages at all clinics. However, a few challenges were due to clinicians hesitating to prescribe TPT because of drug toxicity and quantity of pills for patients. Additionally, some patients refused to receive TPT.

The BLITZ methodology used a web-based application. The patients' data from the ART clinic database was pre-populated onto the assigned tablets, and the reviewers reviewed and entered the patients' data on the charts into the assigned tablets. Minimal discrepancies (<2%) were found between information on patients' charts and the database.

VII. Conclusion

The performance of viral load testing was quite good overall. ART clinics where viral load testing was lower than 80% need more attention. ART clinics have to review and analyze the root causes of the problem (low VL performance) and develop a specific and practical improvement plan. Those ART clinics are 1204, 1205, 1208, and especially sites 1213 and 1214 where the viral load performance was the lowest at 59% and 70% respectively.

Almost 68% of viral load tests that were not performed were among patients who are active. If all sites have all active patients tested, the performance of tests would have reached to 96%. The improvement plan for viral load test performance among active patients should be focused especially at ART clinics where performance was lower than 80%.

The performance of TPT was low. Around 28% of patients have received TPT.

The number of patients who died during the year and half was low at all 12 ART clinics. The percentage of death among males was 11% higher than among female patients.

On the other hand, recommendations from BLITZ included:

- Help ART clinics to review their services and performances and develop improvement plan if needed;
- Help national program and stakeholders to clarify some hypotheses such as VL tests not performed among LTF;
- Help the two national programs (CENAT and NCHADS), relevant partners, and clinics to develop strategic plans to improve the quality of care at ART clinics, particularly on TPT;
- Help national programs (NCHADS), relevant partners, and clinics to develop strategic plans to trace patients who missed appointment/lost to follow-up and re-engage them into care in order to reach the 3rd 90 goal.

- BLITZ is a part of the quality improvement process. ART clinics should consider doing this on a routine basis (e.g., Center of Hope).

VIII. Recommendations

The improvement plan shall be developed and implemented to improve the quality of care. Actions should be taken at each level:

8.1 At ART Clinics

- Review specific findings related to the clinic, particularly on viral load coverage, TPT coverage, and loss to follow-up;
- Prioritize the problems (findings) based on three minimum criteria that have been used in prioritizing a problem: **important, urgent and feasible**;
- Do the root cause analysis and develop specific solutions according to the causes;
- Implement the improvement plan;
- Monitor the progresses of the implementation of the improvement plan;
- Document the best practices and outcomes of the improvement plan

8.2 At National Level

- Develop a tool that is able to capture patients who did return for the visit within 30 days. The tool will help ART teams in identifying patients who miss the appointment and intervene on time.
- Develop a tool that is able to remind ART team patients who need to be viral load tested.
- Coordinate with all relevant partners to assure the availability and distributions of TPT drugs to all ART clinics.
- Coordinate with all relevant partners to develop a standard operational procedure to trace and re-engage patients who missed their appointment within a traceable period.
- Coordinate with all relevant partners to conduct further study to better understand the reasons for missing appointments/lost to follow-up.
- Coordinate with all relevant partners to conduct further study to better understand the barriers to providing TPT.

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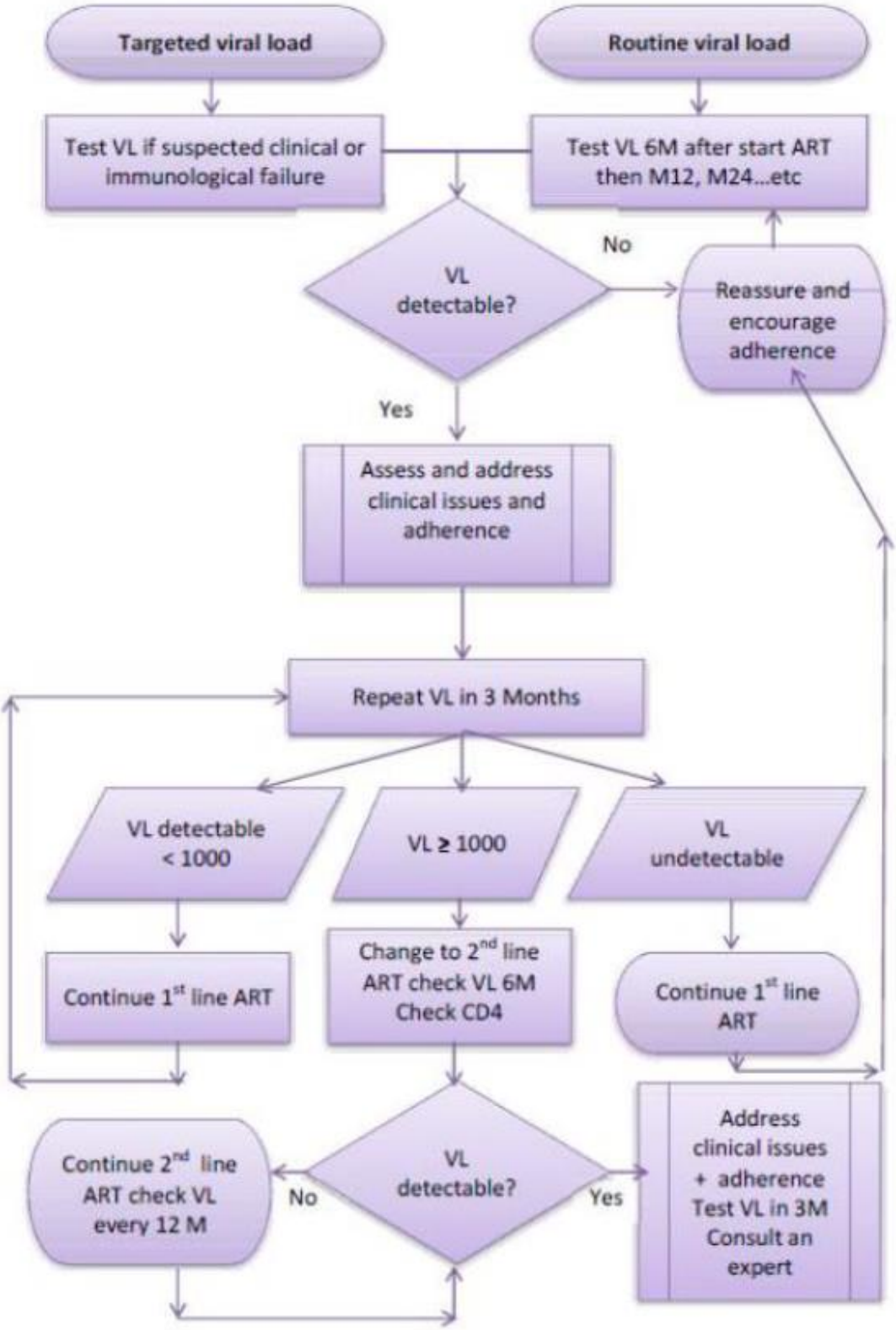
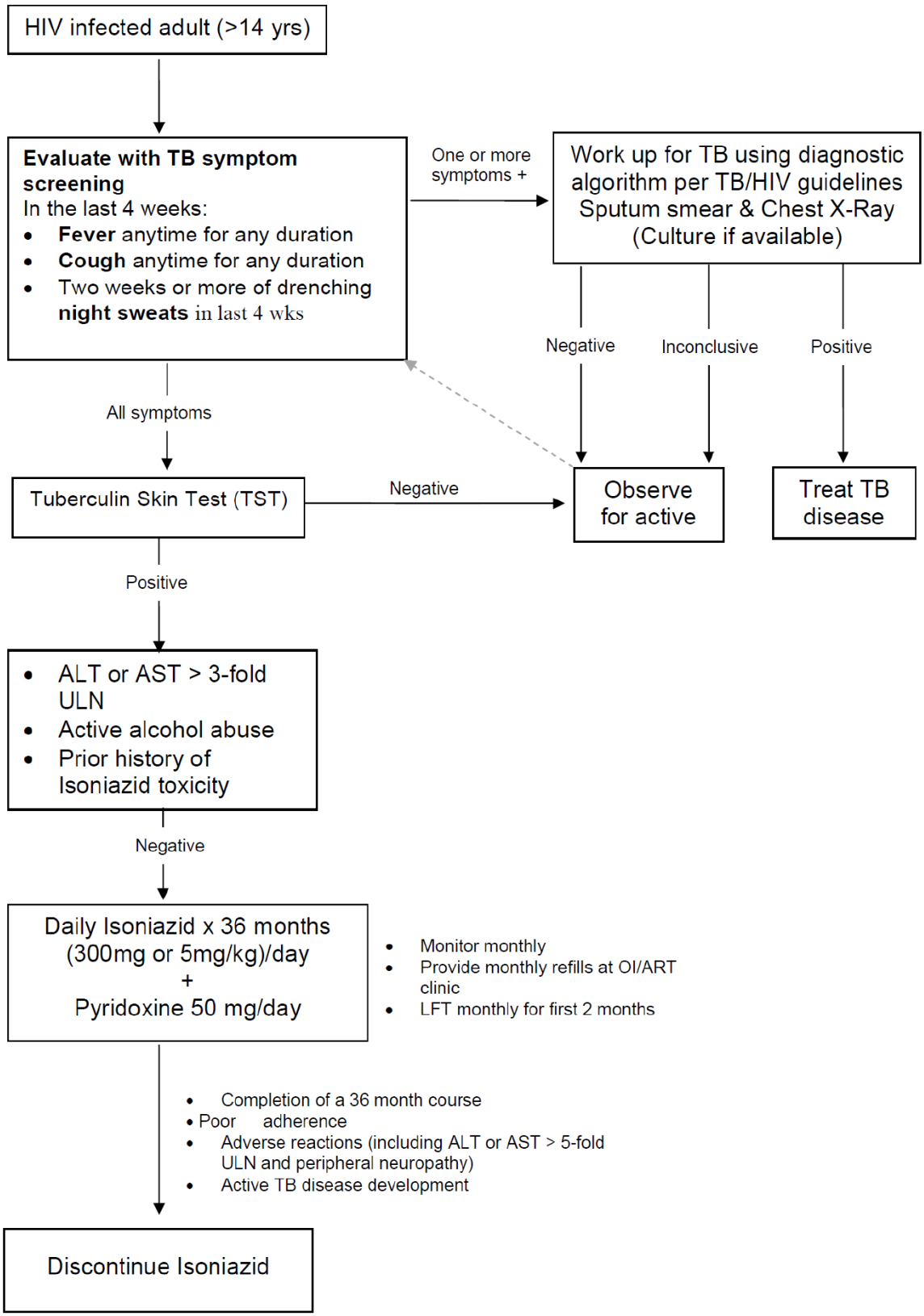
X. Appendixes

Appendix 1: National Viral Load Algorithm



Appendix 2: IPT Algorithm for Adults and Adolescents (note: this is old algorithm since 2010)



Appendix 3: Tracing sheet of missed appointment/LTF Patients

no.	clinicid	artnumber	sex	age	province	district	commune	dateoflastvisit	datenextappointment	Date blitz completed	cat_ltf	patientstatus	Contactable Yes No Not	Date contacted	Re-start on Treatment : Yes	Date re-start on treatment	Reasons for missed appoitment/LTF
1																	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	

Appendix 4: Follow-up of improvement plan for viral load test

no.	clinicid	artnumber	age	sex	datestartart	dateofviralloadtest	valueoflastviralload	dateoflastvisit	datenextappointment	Date blitz completed	patientstatus	Reason viral load not performed	Now tested Yes No
1													
2													
3													
4													
5													
6													
7													
8													
9													

Appendix 5: Notification letter to ART clinics

ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

ក្រសួងសុខាភិបាល
មជ្ឈមណ្ឌលជាតិប្រយុទ្ធនឹងជំងឺអេដស៍ សើស្បែក និងកាមរោគ
លេខ: [illegible]

ភ្នំពេញ ថ្ងៃទី [illegible] ឆ្នាំ ២០១៩

ប្រធានមជ្ឈមណ្ឌលជាតិប្រយុទ្ធនឹងជំងឺអេដស៍ សើស្បែក និង កាមរោគ
ជំរាបជូន
លោកប្រធានមន្ទីរពេទ្យមិត្តភាព ខ្មែរ-សូវៀត

កម្មវត្ថុ: សំណើសុំការអនុញ្ញាតិពីក្រុមការងារ របស់មជ្ឈមណ្ឌលជាតិប្រយុទ្ធនឹងជំងឺអេដស៍ សើស្បែក និងកាមរោគ ចុះពិនិត្យព័ត៌មានអ្នកទទួលសេវាព្យាបាលជំងឺអេដស៍ នៅសេវានៃមន្ទីរពេទ្យមិត្តភាព ខ្មែរ-សូវៀត ដែលមានរយៈពេល **១៦ ថ្ងៃ** គឺ ចាប់ពី**ថ្ងៃទី ០៨ ដល់ថ្ងៃទី ២៣ ខែសីហា ឆ្នាំ ២០១៩** និងអ្នកសម្របសម្រួល ចំនួន **២នាក់**ចូលរួមក្នុងការពិនិត្យព័ត៌មាននេះ។

ដូចបានចែងក្នុងកម្មវត្ថុខាងលើនេះ មជ្ឈមណ្ឌលជាតិប្រយុទ្ធនឹងជំងឺអេដស៍ សើស្បែក និងកាមរោគ សូមជម្រាបជូនលោកប្រធានថា គោលបំណងនៃការពិនិត្យព័ត៌មាននេះ រួមមាន កំណត់រកអ្នកជំងឺដែលបោះបង់សេវា អ្នកជំងឺដែលសមស្របធ្វើតេស្តរកបន្ទុកមេរោគអេដស៍ក្នុងឈាម អ្នកជំងឺស្លាប់ និងអ្នកជំងឺដែលសមស្របទទួលថ្នាំបង្ការជំងឺរបេង។ ក្រុមការងារសង្ឃឹមថា នឹងអាចស្វែងរកអ្នកជំងឺបោះបង់សេវា ហើយនាំពួកគាត់មកទទួលសេវាវិញបាន ដើម្បីសំរេចគោលដៅ "៩០ ទី ៣" របស់កម្មវិធីជាតិប្រយុទ្ធនឹងជំងឺអេដស៍។ ក្រុមការងារនឹងពិនិត្យមើលឯកសារទាំងអស់របស់អ្នកជំងឺមកទទួលសេវា ក្នុងកំឡុងពី ថ្ងៃទី០១ ខែមករា ឆ្នាំ២០១៨ រហូតដល់ ថ្ងៃទី ៣១ ខែធ្នូ ឆ្នាំ២០១៨។ ការពិនិត្យព័ត៌មាននេះ នឹងប្រព្រឹត្តទៅចំនួន ១៦ ថ្ងៃ គឺចាប់ពីថ្ងៃទី ០៨ ដល់ថ្ងៃទី ២៣ ខែសីហា ឆ្នាំ ២០១៩។ នៅក្នុងរយៈពេលពិនិត្យព័ត៌មាននេះ ក្រុមការងារស្នើសុំអ្នកសម្របសម្រួលចំនួន ២នាក់ ដើម្បីចូលរួមក្នុងការងារនេះ។

អាស្រ័យហេតុនេះ សូមលោកប្រធានមេត្តាអនុញ្ញាតិតាមការគួរ ។

សូមលោកប្រធានមេត្តា ទទួលនូវការគោរពរាប់អានដ៏ស្មោះស្ម័គ្រពីខ្ញុំ ។

ឡី_ពេញ ស៊ុន

Appendix 6: CamBLITZ procedures

Cambodia BLITZ Procedures

Before BLITZ at least one week:

1. NCHADS will coordinate with Referral Hospital's director or representative to assure the BLITZ for HIV program will be conducted properly.
2. NCHADS will send Referral Hospital's director or representative the objectives of BLITZ, visit notification letter, and BLITZ agenda.
3. NCHADS will develop the agenda for the BLITZ visit.
4. NCHADS will coordinate BLITZ teams meetings to assign clear roles and responsibilities to each member of the teams.
5. The operational plan includes hospital name, total number of patients on ART in 2018, date to conduct the BLITZ, number of teams to conduct at a specific hospital, and estimated duration is developed.

During the BLITZ:

1. NCHADS will coordinate all activities at site including but not limited to:
    a. In-briefing,
    b. Reviewing the agenda,
    c. Conducting BLITZ.
2. Each member of the teams conducts the BLITZ in accordance with the roles and responsibilities assigned to him/her. Clear hand writing is required.
3. At the end of each day, all teams submit their completed BLITZ to the Group Coordinators who will summarize the activities and results of the day, and plan for the following day.
4. At the end of each day, Group coordinators (1 NCHADS, 1 CDC/Partners) will:
    a. Collect all data from each team, and submit to core-group
    b. Assure the data quality (completeness, accuracy, consistency),
        ➔ Group Coordinator will daily do 10% randomly check among the completed patients' records:
            1. If the Group Coordinator found <10% errors, then the Group Coordinator will edit/correct, add remark and submit to Core-group
            2. If the Group Coordinator found >10% errors, then the team(the same team or change team member need to REDO)
    c. Assure the teams do not interrupt the daily activities of the site.
5. At the end of BLITZ, the Group Coordinators lead and facilitate the debriefing, during which the team and ART clinic review the findings and discuss the improvement plan if needed.

After the BLITZ:

1. Group Coordinators assures that all data from the BLITZ stored properly.
2. NCHADS will share to ART clinics the findings within 14 working days after BLITZ:
    a. Line listing of lost to follow-up,
    b. Line listing of patients eligible for viral load but not viral load performed,
    c. Line listing of patients eligible for TPT but not TPT given,
    d. Line listing of dead patients.