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HIV prevalence among medical inward patients in the National Hospital of Sri Lanka (NHSL) with the assessment of patient acceptance, the feasibility and challenges of the hospital based Rapid HIV Diagnostic Test.

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Abstract

Introduction: Hospital based HIV Rapid Diagnostic Testing (RDT) was introduced in 2018, following programmatic decision. However, being the province with the highest HIV prevalence in the country, the number of hospital based rapid testing carried out in Western province was not impressive, leading to missed opportunities and late diagnosis. Therefore, RDT was re-implemented in selected medical wards of NHSL.

Objective: To assess the case detection rate, the feasibility and challenges of the rapid HIV testing services among inpatients of medical wards of NHSL.

Method: A descriptive demonstration study, carried out among consecutive 3,395 new admissions to selected medical wards of the NHSL within three months period. HIV status was tested on finger prick blood, using FDA and WHO approved 4th generation HIV RDT (with 100% sensitivity,99.7% specificity) following informed consent. Patient information were extracted from bed head tickets. Focus Group Discussions (FGD) were carried out with the relevant hospital staff to assess the challenges. Confidentiality of patients ensured by training all the health care workers involved in RDT and followed up of the positive test results, according to the national guidelines

Results: Among the 3395 participants, eight (8) were found to be positive, with the HIV prevalence of 0.23 %. The patient acceptance rate was 96%. Out of the positives, majority were males (n=6) and married (n=5) and half of them were from the Colombo district. Only two (25 %) had AIDS defining symptoms while the majority (n=5) had baseline CD4 count less than 200 cells/µl . Work overload, consent taking, lack of confidence in post-test HIV counselling were identified as major areas of concern.

Conclusions: Hospital-based HIV rapid testing is one of the high yielding programmatic strategies implemented in the country so far. The positivity rate of the study sample was 0.23% which is higher than the HIV positivity rate reported through different testing strategies including the general public (0.03%), and STD samples (0.1%). Further, beating up the challenge of missed opportunities and late diagnosis was highlighted. Therefore, addressing the identified barriers through policy and administrative support and further scaling up of hospital-based HIV testing is highly recommended.

Key words: HIV rapid testing, HIV prevalence, Challenges, Hospital based HIV testing, RDT

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Full article

Introduction

HIV infection has a prolonged clinically asymptomatic period which makes it difficult to detect infected people. HIV is well controllable, if identified early and start anti-retroviral treatment. Once viral suppression is achieved, people living with HIV can lead a near normal life. According to UNAIDS, 21.7 million [19.1 million–22.6 million] people were accessing antiretroviral therapy in 2017 world-wide(1). However late diagnosis is a problem around the world and 25% of HIV diagnosis in 2017 were considered as late diagnosis (1).

Reported cumulative number of HIV diagnoses by end 2018 was 3200 and among them , 992 were from Colombo district(2). New HIV cases reported in the country are rising with 350 new HIV cases detected in 2018 and majority (23.4%) were from Colombo district (2).

Sri Lanka has taken a proactive stance to end the AIDS epidemic in 2025, five years ahead of global target(2).In line with the UNAIDS concept 90.90.90 by 2020, ninety percent of people living with HIV should know their sero status by end 2020 (2). Currently, in SL only 68% of PLHIV know their status resulting in a gap of 22%(2). To reduce this gap and to achieve the target, scaling up of HIV testing is very important.

HIV testing among symptomatic patients who come in contact with health sector was not upto the expected level. This was evident by having large number of late diagnosis and AIDS deaths, despite having free HIV testing and effective treatment through government sector.

Until end 2017, all inward and clinic samples need to be sent to nearest STD clinic for HIV testing. Lack of transport facilities, long turn over time, difficulties in collecting reports were common reasons given by hospital staff for inadequate HIV testing. To overcome above barriers NSACP has introduced rapid HIV testing facilities to base hospitals and above levels in 2018 March. This was a major step to scale up HIV testing in the hospital setting.

Since then a total of 5169 rapid HIV tests were carried out in hospital labs all over the country and 10 HIV cases were detected through rapid testing alone(2). However, being the district with largest number of reported HIV cases so far, the number of rapid testing carried out in Western province including National Hospital of Sri Lanka was not impressive and none of the new HIV diagnoses in Colombo district was made through hospital-based HIV rapid testing.

Even though significant number of new HIV cases are being diagnosed through blood samples send from NHSL to NSACP, it was evident that late HIV diagnosis and AIDS deaths indicate missed opportunities. Therefore, there is an unmet need of HIV testing among inpatients in National Hospital of Sri Lanka.

Therefore, this demonstration study was carried out to exemplify the health care workers involve in HIV rapid testing regarding the effectiveness and feasibility of hospital based HIV rapid testing while assessing the challenges following reimplementation.

Objectives

General objective

To assess the case detection rate, the feasibility and challenges of the rapid HIV testing services among inpatients of medical wards of NHSL.

Specific objectives

1. To assess patient acceptance of HIV rapid testing among inpatients of selected medical wards of National Hospital of Sri Lanka.
2. To assess the HIV prevalence among inpatients of medical wards in National Hospital of Sri Lanka
3. To assess the feasibility and challenges of carrying out HIV rapid testing among inpatients of medical wards.

Methods

This descriptive demonstration study was carried out in selected medical wards of the NHSL, which is the largest teaching hospital in Sri Lanka. NHSL serves about 5000 to 6000

medical inward patients with average 200- 300 admissions per each ward per month.

Even though initially decided to carry out the study among all medical inward patients ,due to limited support from certain ward staff, the study was limited to selected medical wards of NHSL for 3 months period, from August to October 2019. Therefore, all patients more than 18 years who admitted to selected medical wards and given consent to participate was included. Unconscious patients and patients who do not have mental capacity to give consent was excluded.

Three advocacy meetings were conducted for administrative and clinical staff of selected medical wards of NHSL, to explain the proposed demonstration study and to plan the study and to demonstrate the process of testing. Two research assistants and health care staff were trained on basic information about HIV, consent taking, how to fill the questionnaire and to maintain the confidentiality while maintaining a non-judgmental attitude

HIV testing was carried out using 4th generation rapid HIV test (Alere HIV combo) which detect HIV 1 and 2 antibodies and P24 antigen with a relatively short window period of 2-3 weeks. It is a FDA and WHO approved rapid test with a sensitivity of 100% and specificity of 99 %. Results were interpreted in 20 minutes. Basic information about the participants were extracted from bed head ticket(BHT) using a data extraction form.

The feasibility and challenges of performing the rapid tests for all medical inpatients was assessed by small group discussions with the nursing staff and doctors of the relevant medical wards. Discussions were carried out at the end of the three months so that they could share their own experiences during the study period.

HIV rapid test positive patients were offered further investigations according to the national HIV testing algorithm after detailed counselling. HIV diagnosis was based on nationally accepted HIV testing algorithm.

The quantitative data were analysed in terms of measures of central tendency and dispersion. Nominal data with regard to proportions and associations was studied where appropriate. Qualitative data was analyzed with the use of thematic analysis.

The ethical approval was obtained from Ethics Review Committee of NHSL to conduct the study while administrative clearance was obtained from the Deputy Director General, NHSL and written consent was obtained from all Consultants in-charge of relevant wards before commencement of the study. Participants were given clear information about HIV, the purpose and the method of the study by written and verbal information and the participation was voluntary and confidentiality and anonymity was maintained.

Results

Socio demographic characteristics of the study sample

Table 1. socio demographic characteristics of the study sample

Variables and levels		Counts	Percent
Gender	Male	1,723	50.8
	Female	1,672	49.2
	Total	3,395	100
Age	18-25	391	11.5
	25-34	369	10.9
	35-44	394	11.6
	45-54	604	17.8
	55-64	812	23.9
	>65	825	24.3
	Total	3,395	100
marital status	Married	2,257	66.5
	Separated	29	0.9
	Divorced	29	0.9
	Widow	471	13.9
	Total	3395	100
Province	Western	3,073	90.5
	Central	65	1.9
	Southern	48	1.4
	North Western	22	0.6
	North Central	28	0.8
	Sabaragamuwa	39	1.1
	Uva	36	1.1
	Nothern	10	0.3
	Eastern	27	0.8
	Foreign	2	0.1
	Not known	45	1.4
	Total	3,395	100

The study sample included almost equal proportion of male (50.2%) and female (49.2%) while 24% were above 65 years. The mean age of the participants was 50.9 years (SD-17.27) with an age range of 18-94 years. However, from each age category there were more than 10 % of participation. Among them majority were married (66.5%) while 13.9 % were widows. Ninety percent of the study sample has claimed Western province as their area of residence, while there was a minimal representation from other provinces.

Case detection rate

Table 2. Case detection rate

	Hospital HIV RDT
Total tests Offered	3520
Uptake of Screening test	3395
Screening positive	12
Confirmed positive	8
Positivity rate	0.23%

Of 3520 patients approached, 3395 has given consent to carry out the test with 96% acceptance rate. Altogether, there were 3395 rapid HIV tests were carried out during study period. Among them 12 were become rapid diagnostic test positive. Then those 12 were further investigated for confirmation test and 8 were found to confirmed as having HIV infection giving rise to 0.23% of HIV prevalence among study sample.

Socio Demographic characteristics of the positive patients

Table 3. Socio demographic characteristics of the positive patients

Variables and levels		Count	%
Gender	Male	5	62.5
	Female	3	37.5
	Total	8	100
Age	<25	1	12.5
	25-34	1	12.5
	35-44	1	12.5
	45-54	3	37.5
	55-64	2	25
	>65	0	0
	Total	8	100
marital status	Married	3	37.5
	Unmarried	2	25
	Separated	1	12.5
	Divorced	0	0
	Widow	2	25
	Total	8	100
Area of residence	Western	5	62.5
	Central	0	0
	Southern	0	0
	North Western	1	12.5
	North Central	1	12.5
	Sabaragamuwa	1	12.5
	Uva	0	0
	Nothern	0	0
	Eastern	0	0
	Foreign	0	0
	Total	8	100

The majority of confirmed positive patients were from Western province(n=5) and were male (n=5). Mean age of the Rapid test positive cases was 46.5 years with the age range of 24 to 60 years. Of them 6 patients were above 35 years and only one was below 25 years while 3 were married.

Table 4. Symptom analysis of positive patients

Age	Gender	Symptoms
54	Female	CKD
24	male	Alcohol withdrawal fits
34	male	Fever
57	male	Cough, Dyspnoea
60	male	Chest pain
47	Female	Left lower limb swelling
57	Male	Abdominal pain, LOA, PUO
39	Male	Fever, Body rash

Table 5. Disease specific characteristics of the positive patients

Characteristics		No	Percent
Symptoms	AIDS def. con	2	25
	Non AIDS def	6	75
	Total	8	100
Base Line CD4	<200	5	62.5
	>200	3	37.5
	Total	8	100
WHO stage	Stage I	2	25
	Stage II	1	12.5
	Stage III	2	22
	Stage IV	3	37.5
	Total	8	100

Table 4 describes the presenting complains/symptoms of the diagnosed HIV patients. It is evident that majority (n=6) were admitted due to non-AIDS defining conditions where HIV testing is not routinely offered. Even though, majority(n=6) were not presented with AIDS defining /HIV indicator condition, 5 of them had their CD 4 cell counts below 200 cells/µl. Therefore, the risk of ending up as missed opportunity of HIV diagnosis is higher. Further, majority (n=5) were in WHO stage 3 and 4 at the time of diagnosis and one patient died just after the confirmation.

An average number of tests carried out was 12.5 tests per hour by each research assistant. However, the total number of admissions for each medical ward of NHSL was varied between 25 – 35 per day with the mean of 24.6.

Following areas were identified during thematic analysis of FGD done with medical officers, Nursing Officers and Nursing sisters

Extra work load

Rapid test takes 20 minutes to give the results. Therefore, it was expressed that they need a dedicated person to carry out HIV rapid testing amidst all the admissions in the ward. Further, maintenance of the register/s of receiving and utilizing of test kits, and maintaining of rapid test return of patients, were highlighted as an additional burden during heavy work seasons.

Inadequate requests coming from medical officers

Nursing officers highlighted that, consent taking was not consistently carried out by first contact medical officers and therefore, the test was not carried out among certain admissions.

Feeling uncomfortable to request HIV test

Some doctors were reluctant to request HIV testing from a patient even though they have come across patients with certain indicator illnesses. This is because the feeling that it is highly stigmatized disease that would concentrated among high risk population. They were thinking that it is out of their scope. Further they were in an idea that this was not a suitable place to request HIV testing with the limited availability of time and heavy work load.

Lack of updated knowledge regarding the HIV and HIV testing

Majority of the participating staff thought that they haven't received adequate knowledge regarding the HIV and HIV testing prior to start this demonstration study, even though some have participated for advocacy programmes and training programmes. They were interested if there are ongoing training since this is new area.

Lack of confidence to disclose positive result to patient

Majority of medical officers were reluctant to disclose the positive results to the patient even though this is a screening test. They believed that breaking bad news for life-time serious illness may make uncomfortable situation.

Discussion

The study participants represented male and female patients almost equally and the age distribution was satisfactory throughout all age categories, even though majority of the participants were above 45 year of age. Further, this study was included the expected target population, as majority (90.6%) of participants were from the western province which carries the highest reported HIV cases so far in the country(2).Therefore, hospital setting was an ideal setting to track more Patients in need who may not be otherwise approached through traditional health care settings such as STD clinic settings.

This study was carried out in the largest teaching hospital, in Sri Lanka and it is the largest tertiary care center with high patient turnover. The patient acceptance of 96% was highly satisfactory in this set up when compared to other hospital based HIV testing surveys carried out in other low prevalence countries(3). A recent study carried out in an emergency medicine department UK, which was a high prevalence setting (>1%), the patient acceptance was 48%(4). National STD/AIDS Control programme has introduced multiple strategies targeting to reduce the remaining gap of HIV case detection in the

country(5). However, the positivity rate of 0.23% of this study is higher than the current testing strategies use for general public such as STD clinic samples (0.1%),TB Screening(0.13%), Prison screening(0.06),Blood donor samples(0.1%)(6). In contrast, this strategy is second only to case finding hybrid model which has been introduced to detect Key Populations with HIV(6). Therefore, this is one of the highest yielding programmatic strategy implemented in the country so far. A study done in USA revealed that the positivity rate of 0.53% in non-traditional clinic setting attendees(7),while another study revealed 9.2% positivity rate among Emergency department attendees in UK(4).Moreover ,only two out of eight patients were having HIV indicator condition to offer HIV testing. However, the baseline CD4 cell count was less than 200 cells/µl in five patients (62.5%) and included into WHO stage III and IV at the time of diagnosis. Therefore, the early testing irrespective of having indicator condition could lead to early disease identification, early treatment, reduced disease related morbidity/mortality, thereby preventing missed opportunities. Following the positive screening with HIV rapid test, the pathway to confirmation and follow up was streamlined according to the national HIV testing guidelines in order to prevent unnecessary worries of false positive patients and to avoid delay in management of confirmed cases and loss to follow up.

The average number of tests carried out by an allocated person was 12.5 per hour. When compared to mean admission per a ward (24.6), this test can be easily performed at bed side or on admission by a trained health care worker. Moreover, despite the challenges, researchers were able to continue the study for three months period by demonstrating the feasibility and effectiveness to the health care staff responsible for carrying out the test.

Thematic analysis revealed that the most health care workers were reluctant to engage in extra work considering it as an over burden due to heavy work load. Further, the lesser number of HIV test requests were coming from first contact doctors, and feeling uncomfortable to offer HIV test to the patients as well as difficulties in post-test counselling were identified as barriers/Challenges. Requirement of continuous update or advocacy programmes to health care staff was highlighted as areas to improve in order to ensure the sustainability of the programme

Conclusions

Hospital-based HIV RDT is one of the high yielding programmatic strategies implemented in the country so far. The positivity rate of the study sample is higher than the HIV positivity rate reported through different testing strategies while beating up the challenge of missed opportunities and late diagnosis. Patient acceptance was highly satisfactory while the feasibility of the strategy was demonstrated throughout the study. Therefore, addressing the identified barriers through policy and administrative support and further scaling up of hospital-based HIV testing while ensuring the sustainability, is highly recommended.

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