

Missed opportunities for earlier HIV-testing in patients with HIV infection referred to a tertiary hospital, a cross-sectional study

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SUMMARY

Introduction: In Malaysia, the prevalence of missed opportunities for HIV-testing is unknown. Missed opportunities have been linked to late diagnosis of HIV and poorer outcome for patients. We describe missed opportunities for earlier HIV-testing in newly-HIV-diagnosed patients.

Methods: Cross sectional study. Adult patients diagnosed with HIV infection and had at least one medical encounter in a primary healthcare setting during three years prior to diagnosis were included. We collected data on socio-demographic characteristics, patient characteristics at diagnosis, HIV-related conditions and whether they were subjected to risk assessment and offered HIV testing during the three years prior to HIV diagnosis.

Results: 65 newly HIV-diagnosed patients (male: 92.3%; Malays: 52.4%; single: 66.7%; heterosexual: 41%; homosexual 24.6%; CD4 <350 at diagnosis: 63%). 93.8% were unaware of their HIV status at diagnosis. Up to 56.9% had presented with HIV-related conditions at a primary healthcare facility during the three years prior to diagnosis. Slightly more than half were had risk assessment done and only 33.8% were offered HIV-testing.

Conclusions: Missed opportunities for HIV-testing was unacceptably high with insufficient risk assessment and offering of HIV-testing. Risk assessment must be promoted and primary care physicians must be trained to recognize HIV-related conditions that will prompt them to offer HIV-testing.

KEY WORDS:

Missed opportunities, HIV testing, risk assessment, primary care

INTRODUCTION

Missed opportunities for HIV diagnosis is the failure to detect HIV infection earlier before the onset of symptoms of advanced disease. Early treatment of HIV is associated with lower morbidity and mortality, and a life-expectancy approaching that of the general population.^{1,2} However, many with missed opportunities fail to benefit from this early treatment where HIV is diagnosed after the optimal moment

of treatment initiation.³ An estimated 1.9 million people living with HIV (PLWH) in the Asia Pacific region are unaware of their status in 2015.⁴ Late diagnosis continues to be a serious barrier to tackling HIV in this region resulting in PLWH eventually starting antiretroviral therapy (ART) with very low CD4 counts. Early testing is a key component of HIV prevention strategies. Nonetheless, achieving this is difficult as HIV infection is often asymptomatic until the onset of opportunistic infections. Without early testing, the median time between diagnosis and the development of clinical AIDS is estimated to be 9 to 11 years.⁵

To tackle the problem of late testing and diagnosis of HIV, the US and UK have published guidelines recommending HIV screening in general practice and for all general admissions while the French guidelines recommended a one-time routine voluntary HIV screening for the whole of France.⁶⁻⁸ One of the key strategies in expanding early testing for HIV infection is routine testing. A study by Lyons et al reported that many patients with undiagnosed HIV infection who presented at the emergency departments of three hospitals had potential indications for testing documented even in the absence of a dedicated risk assessment.⁹ The authors concluded that routine screening is likely necessary to detect all cases of undiagnosed HIV and if routine screening is not feasible, targeting populations by venue, with attention to readily apparent testing indications, could detect many persons with undiagnosed HIV.⁹ Meanwhile, in the setting of primary care, the lack of HIV prevention counselling has been identified as factors contributing to missed opportunities for earlier HIV diagnosis.¹⁰

In Malaysia, the lack of risk assessment screening for HIV in most private and public health institutions may contribute to missed opportunities for earlier HIV-testing and diagnosis. We describe missed opportunities for earlier HIV-testing in newly-HIV-diagnosed patients referred to an infectious diseases clinic of a tertiary hospital.

MATERIALS AND METHODS

Study design, setting and sample size.

A cross-sectional survey was done between July 2015 and October 2015 at the Infectious Diseases Clinic (IDC) of the Hospital Tuanku Ja'afar Seremban (HTJS), Negeri Sembilan,

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Malaysia. HTJS is a 1070-bedded tertiary referral hospital in the state of Negeri Sembilan in Malaysia. The IDC is a unit of the department of medicine in HTJS and has roughly 400 PLWH on regular follow-up at the clinic. The eligibility criteria for this study were patients at or above the age of 18-years, diagnosed with HIV-infection within the last three years, referred to the IDC for follow-up, had at least one medical encounter at a public or private primary healthcare facility in the last three years, mentally competent, and fluent in spoken English or Malay language.

Survey Tool.

Face-to-face interviews were conducted using a questionnaire consisting of four sections. The interviews were conducted in a safe environment with no time limitation. The first section of the questionnaire contained questions designed to capture demographic data such as age, gender, ethnicity, marital status, education level and monthly income. The second section contained questions designed to gather information regarding patient characteristics at diagnosis such as date of diagnosis, awareness of serostatus prior to diagnosis, where and how was the diagnosis arrived at, the presence of risk behaviours and CD4 cell count at the time of diagnosis.

The third section was subdivided into two parts. The first part was a survey of symptoms possibly related to HIV-related conditions (Table I) that was adapted from the study by Champenois et al.⁸ Dengue was included in our version because it is endemic in Malaysia and its clinical presentations are similar to HIV seroconversion illness in many aspects. The patients were asked if they had any of the symptoms listed in Table I when they presented to any healthcare facility during the three years before HIV diagnosis. In the second part we enquired if the patients had been assessed by their primary healthcare providers during the three year period prior to HIV diagnosis about the presence of risk behaviours associated with HIV such as intravenous drug use, blood transfusion, unprotected sexual intercourse with at risk groups such as men-who-have-sex-with-men (MSM), sex workers (SW) and/or transgender people. Medical encounters that did not lead to a test proposal were considered as missed opportunities for HIV-testing.

The fourth and final section was a brief survey to assess the opinion of the PLWH on two issues: 'Do they believe that their current state of health would have been better had they been tested for HIV diagnosed earlier?' and, 'Would they favour the practice of routine HIV-testing to be implemented in the Malaysian healthcare system?'

Eligible patients were briefed about the objectives of the survey. Participation was voluntary. Informed consent was obtained from the respondents before they were interviewed. The study received approval from the International Medical University Joint Research and Ethics Committee (Project ID No. CSc/Sem6(22)2015) and registered with the National Medical Registry of Malaysia (NMRR-15-1886-26587)

Statistical analysis.

Descriptive statistical methods were used to describe the study population and opportunities for HIV testing. All statistical analyses were performed using the IBM SPSS Statistics for

Windows, Version 20.0. Armonk, NY: IBM Corp. Released 2010.

RESULTS

Socio-demographic characteristics

Sixty-five of 110 eligible patients participated in the study. Their socio-demographic characteristics are summarized in Table II. The majority of them were males (92.3%). The age group of 31 – 40 years was the largest group. Most of the respondents were Malays (52.4%) followed by Chinese (27.7%) and Indians (13.8%). About two-third of them were single (66.7%). Most of them had received either secondary (50%) or tertiary education (43.5%). The majority of them (83%) were earning a monthly income of less than MYR 3000.

Patient characteristics at diagnosis

Information regarding the patient characteristics at diagnosis is shown in Table III. Nearly all of the patients (93.8%) were not aware of their HIV status prior to diagnosis. Most of them were diagnosed at either a government hospital (41.5%) or private hospital (24.6%). Heterosexual (41.0%) and homosexual (24.6%) intercourse were the major risk behaviours and likely mode of disease transmission although a sizable number of patients claimed they had no known risk behaviour (24.6%). Forty-one (63%) patients had CD4 cell count of < 350 cells/mm³ at the time of diagnosis, from which 27 (41.5%) had CD4 cell count of < 200 cells/mm³.

Symptomology survey of patients

During the three years prior to their HIV diagnosis, between one-quarter to one-half of the patients had presented at a primary healthcare facility at least once with general symptoms that are associated with HIV infection (Table III). Fever was the most common complaint (60%) followed by weight loss (38.5%) and diarrhoea (27.7%). In addition, between 10 – 15% of them had presented with mucocutaneous symptoms such as seborrheic dermatitis, oral herpes, oral thrush, and lymph node swelling; bacterial and viral infections such as pneumonia and dengue; and sexually transmitted infection such as syphilis and gonorrhoea. Four of them (6.2%) had presented with pulmonary tuberculosis (Table IV).

Risk behaviour survey and offer of HIV-testing by healthcare providers

Slightly more than half of the patients reported being asked about intravenous drug use and history of blood transfusion by their healthcare providers during the three years prior to their HIV diagnosis (Table V). However, fewer numbers were asked about sexual risks – history of unprotected sex (41.5%), MSM activities (38.5%) and contact with sex workers and/or sex work as an occupation (38.5%). Of those who were asked, more than 90% readily disclosed their risk behaviours. Only twenty-two out of sixty-five patients (33.8%) were offered HIV-testing out of which twenty accepted the offer for HIV-testing (Table V).

Earlier HIV-testing, health status, and routine HIV testing

Forty-seven (72.3%) of the patients felt that their current health status could have been better had they been tested and diagnosed with HIV earlier. Fifty-one (78.5%) patients

Table I: Symptomology survey of possible HIV-related conditions

General symptoms: fever unexplained and/or lasting > 1 month; diarrhoea recurrent and/or lasting > 1 month; unexplained weight loss > 10%

Mucocutaneous symptoms: seborrheic dermatitis; oral herpes; oral hairy leukoplakia; oral candidiasis; varicella zoster; onychomycosis; unexplained prurigo, lymphadenopathy

Bacterial & viral infections: community-acquired pneumonia, pulmonary tuberculosis, recurrent bacterial infections, dengue*

Diseases associated with HIV infection: viral hepatitis B and C; sexually transmitted infections (STIs) such as syphilis, gonorrhoea, chlamydia, genital herpes, trichomoniasis and genital condyloma or human papilloma virus

*Dengue was included in the survey because it is endemic in Malaysia and its clinical presentations are similar to HIV seroconversion illness in many aspects

Table II: Socio-demographic characteristics of study population

Socio-demographic characteristic	Frequency (%)
Age group in years (n = 65)	
<20	4 (6.1)
21 – 30	17 (26.1)
31 – 40	20 (30.8)
41 – 50	12 (18.5)
> 50	12 (18.5)
Gender (n = 65)	
Male	60 (92.3)
Female	5 (7.7)
Ethnicity (n = 65)	
Malay	34 (52.3)
Chinese	18 (27.7)
Indian	9 (13.8)
Others	4 (6.2)
Marital status (n = 60)	
Single	40 (66.7)
Married	18 (30.0)
Widowed	2 (3.3)
Education level (n = 62)	
Primary	4 (6.5)
Secondary	31 (50.0)
Tertiary	27 (43.5)
Monthly income in MYR (n = 53)	
< 1000	11 (20.8)
1001 – 2000	22 (41.5)
2001 – 3000	11 (20.8)
> 3000	9 (16.9)

Table III: Patient characteristics at diagnosis of HIV

Patient characteristic	Frequency (%)
Awareness of HIV status prior to diagnosis (n = 65)	
Aware	4 (6.2)
Unaware	61 (93.8)
Place of HIV diagnosis (n = 65)	
General practitioner	9 (13.8)
Government health clinic	8 (12.4)
Private hospital	16 (24.6)
Government hospital	27 (41.5)
Private laboratory	3 (4.6)
Others	2 (3.1)
Risk behaviour (n = 61)	
Heterosexual	25 (41.0)
Homosexual	15 (24.6)
Bisexual	3 (4.9)
Intravenous drug use	3 (4.9)
Undisclosed	15 (24.6)
CD4 cell count at diagnosis (n = 65)	
< 50	18 (27.7)
50 – 100	5 (7.7)
101 – 200	4 (6.2)
201 – 350	14 (21.5)
351 – 500	5 (7.7)
> 500	12 (18.5)
Unavailable	7 (10.7)

Table IV: Symptomology survey of patients (N = 65)

Symptoms	Frequency (%)
General symptoms:	
Fever unexplained and/or lasting > 1 month	37 (56.9)
Diarrhoea recurrent and/or lasting > 1 month	18 (27.7)
Unexplained weight loss > 10%	25 (38.5)
Mucocutaneous symptoms:	
Seborrheic dermatitis	10 (15.4)
Oral herpes	10 (15.4)
Oral hairy leukoplakia	0
Oral candidiasis	11 (16.9)
Varicella zoster	0
Onychomycosis	0
Unexplained prurigo	0
Lymphadenopathy	7 (10.8)
Bacterial & viral infections:	
Community-acquired pneumonia (including <i>Pneumocystis jirovecii</i>)	8 (12.3)
Pulmonary tuberculosis	4 (6.2)
Recurrent bacterial infections	0
Dengue	8 (12.3)
Diseases associated with HIV infection:	
Viral hepatitis B and C	0
Syphilis	9 (13.8)
Gonorrhoea	0
Chlamydia	0
Genital herpes	10 (15.3)
Trichomoniasis	0
Genital condyloma	0

Table V: Risk behaviour survey and offer for HIV-testing

Risk behaviour survey	Yes (%)
Were you asked about the presence of these risk behaviours by your healthcare provider? (n = 65)	
Intravenous drug use	37 (56.9)
Blood transfusion	36 (55.3)
Unprotected sex	27 (41.5)
MSM sex	25 (38.5)
Sexual intercourse with sex worker/ is a sex worker	25 (38.5)
When you were asked about risk behaviour by your healthcare provider, did you disclose your risk behaviour? (n = 41)	
	37 (90.2)
Were you offered HIV-testing by your healthcare provider? (n = 65)	
	22 (33.8)
When HIV-testing was offered, did you consent to be tested? (n = 22)	
	20 (90.9)

favoured the adoption of routine testing for HIV in all public and private healthcare facilities in Malaysia.

DISCUSSION

A whopping 93.8% of the patients were unaware of their HIV status prior to their final diagnosis. This study revealed the failure to identify persons at high risk of being HIV-infected and the failure to offer HIV-testing. All of the patients had at least one medical encounter during the three-year period preceding HIV diagnosis and although many had reported symptoms associated with HIV-infection (Table I), only approximately half of them were asked about their risk behaviours by healthcare providers and approximately one-third of them were offered HIV-testing. Healthcare providers have been reported to be ill at ease when tasked with sexuality and risk behaviour assessment because they are considered delicate in nature.^{11,12} The failure to offer HIV-testing may arise from lack of training in HIV counselling and testing; and the lack of self-confidence on the part of the healthcare providers.¹³ Some general practitioners considered

the whole process of pre-HIV-test counselling burdensome.¹⁴

Although there have been reports of patients being unwilling to disclose their risk behaviour and consenting to HIV-testing out of fear of moral judgement by healthcare providers,¹⁵ this appeared to be unfounded in this study as most of the patients (90.2%) were quite willing to disclose their risk behaviour when asked and readily consented to be tested for HIV if offered (90.9%) (Table V).

About two-thirds (63.0%) of the patients in this study were late presenters, defined as "persons presenting for care with a CD4 count < 350 cells/mm³."¹⁶ Approximately 40% of these late presenters had clinical AIDS (CD4 count < 200 cells/mm³). In comparison, a study among 221 newly diagnosed HIV-positive patients in Thailand found that 40% were unaware of their HIV serostatus while 50% of them presented with clinical AIDS.¹⁷ The problem of late presenters is closely linked to unawareness of HIV infection and late diagnosis. Late presenters are associated with higher morbidity and mortality, delayed linkage to care, missed

opportunities for biomedical and behavioural prevention, and represent potential undetected spread of the disease in the community.^{18,19} Inversely, early testing and diagnosis of HIV is associated with better short and long term outcomes, better linkage to care, early initiation of ARV and limitation of spread of HIV in the community.^{20,21} Routine HIV testing or the opt-out option is an attractive strategy to tackle the problem of late diagnosis and late presenters. More than two-third of the patients (78.5%) in this study favoured this approach. However, even in the US and France where this practice is recommended, its implementation has been difficult, chiefly due to the high cost involved and other factors.^{22,23} Hence, the more practical and economical risk-based approach has been recommended by some experts where HIV testing is offered to those who are considered to be at risk after risk assessment.²⁴

Our study had several limitations. The study population was relatively small, comprising mainly referred patients with HIV infection to one tertiary hospital. The findings may not represent the experience of other hospitals. Larger studies can be conducted to include patients and healthcare providers in all public and private primary care facilities in the country to obtain a more accurate picture. Our study did not take into account the status of the sexual or injecting partners of the HIV-infected patients. Future studies should include surveying about screening or disclosure of diagnosis of HIV to their partners for early detection of HIV in them. The findings were subject to bias and limitations inherent to any study dependent on recall. For example, we could not be ascertained how many medical encounters the patients had in the three-years leading to their HIV diagnosis although all of them were certain that they had at least one encounter. Eight patients in our study reported they were diagnosed with dengue (Table IV). However, we could not ascertain if the diagnoses were confirmed by laboratory results. As dengue and acute HIV seroconversion illness share similar clinical presentations, the acute febrile episodes may very well be the latter although a study reported no increase in HIV seroconversion illness in a dengue endemic population. Nevertheless retesting for HIV a month after a febrile episode was recommended for individuals with established risk behaviour.²⁵

CONCLUSIONS & RECOMMENDATIONS

The study findings suggest an unacceptable rate of missed opportunities for HIV-testing and highlights deficiencies in risk factor and symptomology assessments among patients who had medical encounters in primary care setting before referral to a tertiary centre. Missed opportunities result in a late diagnosis of HIV, delayed linkage to care and therapy, and eventual poorer health status of the patients. Risk assessment must be promoted and clinicians, particularly in the primary care setting must be trained to recognize HIV-related conditions that will prompt them to offer HIV-testing. We recommend the boosting of training for primary care doctors and nurses on risk assessment to recognize HIV-related conditions. Perhaps an assessment algorithm for HIV risk can be developed to create awareness about the possibility of HIV infection when patients present to the primary care facilities with non-specific general symptoms that could be related to HIV infection. Training can be offered

to help overcome any awkwardness experienced by primary care health personnel to that may hinder thorough risk assessment for HIV infection.

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