

Developing an Accident and Emergency HIV Testing Program in Belize City: Recommendations from Key Stakeholders

Journal of the International
Association of Providers of AIDS Care
Volume 18: 1-10
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DOI: 10.1177/2325958219856328
journals.sagepub.com/home/jia



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Abstract

With the ultimate goal of developing an accident and emergency (A&E) department HIV testing program in Belize City, Belize, we sought input from key stakeholders on program components and potential facilitators and barriers to HIV testing in emergency care. We conducted semistructured interviews among 4 key stakeholder groups at Karl Heusner Memorial Hospital Authority (KHMHA) in Belize City: (1) 20 A&E patients, (2) 5 A&E physicians, (3) 5 A&E nurses, and (4) 5 KHMHA administrators. We performed a qualitative content analysis of the interview transcripts and isolated important themes. Major themes included: (1) Patient selection: patients preferred to test all A&E patients. All other stakeholder groups preferred testing specific patient groups. (2) Training: Specific training should be completed for staff. (3) Confidentiality: integral for testing. (4) Facilitators and barriers: facilitators included respectful relationships, privacy, resources, coordination, and education. Barriers included stigmatization, patient willingness, inadequate resources, privacy, and testing biases.

Keywords

HIV testing, emergency medicine, qualitative research, key stakeholders

Date received: 30 November 2018; revised: 17 May 2019; accepted: 20 May 2019.

Introduction

Belize has the highest prevalence of HIV in Central America and the third highest in the Caribbean.¹ The adult HIV prevalence in the general population is approximately 1.8% and approaches 13% in high-risk populations, despite increasing public health efforts and national programs for prevention.² HIV is the third leading cause of death in Belize, second only to cancer and ischemic heart disease, and accounts for 11% of all deaths in Belize.³ Moreover, nearly two-thirds (61%) of persons newly diagnosed with HIV are at advanced stages of the disease at the time of diagnosis (CD4 count <350 cells/mm³), indicating a need for earlier diagnosis.⁴

In 2016, over 30 000 HIV tests were performed nationwide in Belize with 225 positive cases (0.75% positivity rate).⁴ However, only a little over a quarter of the general population reported having had an HIV test and knowing the result.⁵ The majority of newly diagnosed HIV cases were in Belize District,⁴ an urban area centered around Belize City and served by Karl Heusner Memorial Hospital Authority (KHMHA). The district

reflects the country's ethnic diversity and Caribbean and Central American cultures, comprised of mestizo (52.9%), Creole (25.9%), and Maya (11.3%), among other populations.⁶

Karl Heusner Memorial Hospital Authority is the largest public hospital in Belize and national referral center and leads health-care capacity development in the country through continued medical education and patient care initiatives.

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What Do We Already Know About This Topic?

Emergency care settings in low- and middle-income countries (LMICs) provide a vital access point for care for underserved populations and HIV testing done in these settings results in high rates of HIV diagnosis and linkage to care.

How Does Your Research Contribute to the Field?

Limited information is available on screening and protocol development for HIV testing in LMICs, particularly in novel settings such as emergency care, and this research provides key stakeholder input from diverse viewpoints on the development of an HIV testing program and its key components.

What Are Your Research's Implications Toward Theory, Practice, or Policy?

The qualitative key stakeholder input and HIV screening program development and implementation from this research provide valuable information for developing similar testing programs in other emergency medicine settings, particularly those in LMICs and resource-limited settings.

Emergency care is provided via the accident and emergency (A&E) department. The population served by KHMHA A&E comprises a high-risk population for HIV, including all trauma patients in Belize City, sex workers, and indigent populations, as well as patients transferred to the hospital for higher levels of care nationwide from other facilities.⁷ A 2015 medical record review over a 6-month period of current KHMHA A&E HIV testing practices revealed of approximately 12 400 adult visits, 1.2% of visits had an HIV test sent, of which 8.4% were positive.⁸ Half of these positive HIV tests were new diagnoses, all diagnosed at a late stage of the disease process (CD4 count <200). Karl Heusner Memorial Hospital Authority A&E currently has no systematic HIV testing programs in place, with testing performed based solely on provider discretion; however, given the high-risk population served, it has the potential to increase HIV diagnostic testing.

The Belize Ministry of Health provides guidelines for the treatment of HIV and there is universal publically funded treatment for HIV; however, no specific guidelines exist on HIV testing.⁹ The Belize National AIDS Commission dictates the need for pre- and posttest counseling and written informed consent for voluntary testing; however, there are no specific guidelines on content of counseling, consent, or populations to be tested.¹⁰ The World Health Organization recommends routine universal screening for all health facilities with a generalized

HIV epidemic (defined as prevalence of HIV in pregnant women of persistently >1% as a proxy of HIV prevalence in the general population), which would include Belize.^{11,12} However, these recommendations acknowledge resource and capacity limitations, advocating for a phased implementation of general voluntary population screening, as well as the need to have access to prevention, treatment, and follow-up care.¹²

Given the high burden of HIV in Belize and universal government-funded treatment,^{1,4} increasing HIV testing in the emergency care setting has the potential to increase early HIV diagnosis, linkage to care, and treatment. On a global level, emergency departments (EDs) often serve as the only access to care for urban populations without regular health care and these populations constitute an important target population for HIV screening. Research from the United States has demonstrated HIV screening in EDs to be a successful approach to increase HIV diagnosis.¹³⁻¹⁵ HIV testing conducted in emergency settings in low- and middle-income countries (LMICs) has revealed high rates of HIV diagnosis and provision of linkage to care, illustrating the feasibility and value of HIV testing in these settings.^{16,17} However, there are limited data on HIV screening practices and protocol development in LMICs such as Belize, especially in nontraditional settings such as EDs. The majority of prior studies on HIV testing in similar settings focused on provider attitudes toward HIV care and evaluation of current care rather than development of new testing protocols.¹⁸⁻²⁴

To develop an A&E HIV testing program, we sought input from key stakeholders (patients, physicians, nurses, and administrators) on the recommended program components and potential facilitators and barriers to HIV testing in emergency care. This investigation ultimately aims to provide a guide to HIV testing and linkage to care in this resource-limited, emergency care setting. Assessing barriers and facilitators with key stakeholders should better inform HIV testing not only in the A&E setting in Belize but in similar resource-limited, high-prevalence settings.

Methods

Study Site and Patients

This study was conducted at the KHMHA A&E in Belize City, which is an urban national referral and tertiary care facility with an annual patient volume of approximately 24 800 adult and 7310 pediatric visits. Karl Heusner Memorial Hospital Authority is the largest public hospital in Belize, with the largest annual patient volume and policies developed there have the potential for nationwide impact.

Ethical Approval and Informed Consent

Lifespan Healthcare System (registration 00000396) and Baylor College of Medicine's (registration 00000286) institutional review boards (IRBs) approved this study (references 947934 and H-38158) under expedited review, and given that the host

Table 1. Selection of A&E Patients for HIV Testing.

Key Stakeholder Group	A&E Patient Selection	Reasons/Explanations Cited
Patients	All patients: especially young and middle-aged adults with high-risk behaviors, lower socioeconomic status, symptomatic, and critically ill patients	Asymptomatic, HIV cannot be diagnosed based on appearance or risk factors; fairness and equity to patients
Physicians	Select groups: symptomatic patients, pregnant women, occupational HIV exposures and sources, ill young patients, 50- to 60-year-old sexually active patients	Clinically indicated reasons; specific groups at risk; testing important due to risks to health-care workers
Nurses	All patients and select groups: pregnant women, sexual assault survivors, patients with new infections, signs or symptoms of immunosuppression, and those undergoing procedures	Overcome stigma; avoid missed diagnoses; alert health-care workers for prevention of infection to themselves; concern over backlash for testing all patients and resources
Administrators	All patients, no patients, or select groups: high-risk, symptomatic, when test results impact clinical care	Concern for resource availability

Abbreviation: A&E, accident and emergency.

institution, KHMHA, does not have an IRB, the research protocol was submitted and approved by the board of directors of KHMHA. Additionally, the Institute for Social and Cultural Research of the National Institute of Culture and History of Belize approved the research protocol. Written consent was waived and consent was given verbally through an approved verbal consent script to minimize collection of personal identifying data.

Interviews

Semistructured qualitative interviews were conducted among 4 key stakeholder groups from November 2016 to February 2017 at KHMHA: (1) 20 A&E patients, (2) 5 A&E physicians, (3) 5 A&E nurses, and (4) 5 KHMHA administrators. Patients were identified in the A&E during their receipt of care. Eligible patients were 18 to 65 years old, able to provide informed consent, and were not critically ill or injured. Administrators were recruited who represented relevant areas of the hospital: A&E physicians, A&E nursing, KHMHA infection control, KHMHA laboratory services, and KHMHA administration.

All interviewees provided informed verbal consent for interviews and voice recording based on a script approved by the IRB. All data were recorded without identifiers. A small voucher for phone or grocery credit was offered as an incentive for participating in the interviews.

Interview Questions

The interviews focused on barriers and facilitators to HIV testing in the KHMHA A&E. The interview questions (see Supplemental Material) were developed in consultation with content area experts from KHMHA, based on research by the study authors,^{8,25-27} and informed by the necessary components of testing per Belizean national guidelines to include all phases of HIV testing: selection of patient population, counseling, consenting, results delivery, follow-up care, and other facilitators and barriers to HIV testing.⁹ The questions were reviewed with local experts for cultural acceptability and ease of comprehension.

Data Collection

Interviews were conducted by the lead study author. Interviews were audio-recorded and stored in a secure electronic database. The interview recordings were transcribed by a medical transcription service. The interview transcripts were collated for review by stakeholder group and study question.

Data Analysis

Three investigators independently reviewed the transcripts and conducted a content analysis. No qualitative software was used for analysis. The analysis focused on descriptive thematic coding by stakeholder group: (1) A&E patients, (2) A&E physicians, (3) A&E nurses, and (4) KHMHA administrators. The investigators afterward met to cross review and isolate important themes and representative quotations. Themes and sub-themes were summarized and compared by stakeholder group and study question along with representative quotations. Quotations are demarcated by stakeholder (P: patient, D: doctor, N: nurse, and A: administrator) and interview number.

Results

Study Population

The 20 A&E patients included 9 women and 11 men, with a median age of 41 years (range of 19-65 years) and were English speaking primarily. The additional stakeholders interviewed were 5 A&E physicians (4 women, 1 man; 31-47 years), 5 A&E nurses (3 women, 2 men; 24-33 years) of varying years of nursing practice, and 5 administrators (4 women, 1 man; 35-50 years) from different departments of KHMHA.

Selection of A&E Patients for HIV Testing

The vast majority of patients (17/20) believed that all A&E patients should be tested for HIV, although they also emphasized testing certain key groups who might be at higher risk

(Table 1). Patients highlighted testing all patients based on safety, fairness, and limiting bias, stating “You don’t know who would have it. Because it’s a silent thing” (P19), and “If you just randomly select the patient, to me that would be like somewhat biased” (P13), and “HIV is not limited to some ethnic group. It could happen to any group at all” (P1).

In contrast to patients, all physicians (5/5) believed only certain groups of A&E patients should be tested, in particular those with signs and symptoms of infection and members of high-risk groups, including “patients who come with this strange story of sickness” (D2) and “anybody who is sexually active, especially taking the groups with high-risk factors” (D5). Nurses varied in their opinions, with some supporting testing for all A&E patients (2/5) and others supporting testing only select patient populations with symptoms or risk factors (3/5). Some cited concerns about patient backlash against testing of all A&E patients as well as resource limitations.

Administrators were not congruent in their beliefs, each holding a different perspective on groups to be tested, with one stating all A&E patients should be tested, another that no patients should be tested as it is not appropriate in A&E, with some (3/5) advocating against testing except in certain situations, stating “considering the service that we provide here, we don’t do that” (A3) and “if the patient could be able to be referred to the voluntary counsel and testing because they have more time and more chance look up pre-counsel and post-counsel, probably I refer the patient there” (A5).

Selection of Personnel for HIV Testing in the A&E

Patients overall emphasized trained personnel to offer HIV testing (Table 2), stating “it has to be somebody that has knowledge in that field” (P24). Patients varied on who should perform testing, with some preferring physicians (6/20), some nurses (2/20), some counselors (3/20), and others not having a specific preference (9/20), stating “I’d say it doesn’t make a difference, a doctor or a nurse, if they’re trained for it” (P25).

Physicians varied in both wanting physicians alone (3/5) or physicians as well as counselors (2/5) to provide testing, but overall were more supportive of physicians providing testing. They emphasized testing should be performed by anyone with time and specific counseling ability, indicating that counselors “have more experience in meeting with those kind of patients” (D1).

Nurses had a range of opinions with no clear majority on who should perform testing, ranging from anyone trained, to physicians and counselors, as well as against having counselors performing testing. Reasoning against using counselors was confidentiality; “we don’t want that private information to leak. That’s why I say the doctors and the nurses because we are bound to have confidential and private information about patients” (N7).

Administrators all agreed that physicians should be initiating HIV testing for a variety of reasons, including physician knowledge on the topic, respect for their role by patients, and potential for limiting stigmatization.

Table 2. Selection of Personnel for HIV Testing, Counseling, and Results.

Key Stakeholder Group	Personnel for HIV Testing	Reasons/Explanations Cited
Patients	Anyone trained	Need specific training
	Physicians	In charge of patient medical care; knowledge
	Nurses	Work directly with patients; more time
Physicians	Counselors	Training; address psychosocial aspects of care
	Physicians	Identify patients in need; physician role as decision-maker; decision-making for testing
Nurses	Physicians and counselors	More time, more thorough
	Anyone trained	Need training
	Counselors	Specifically trained for this role
Administrators	Physicians	Traditional role; have training; patient trust
	Not counselors	Protect hospital reputation and confidentiality
	Anyone trained	Need for training
	Physicians	Knowledge; respect; training; medical relationship with patients; less stigmatization

Table 3. Timing of A&E HIV Testing.

Key Stakeholder Group	Timing of HIV Testing	Reasons/Explanations Cited
Patients	Beginning	Increase health and safety; early knowledge
Physicians	Anytime	Timing doesn’t matter
	Beginning	Need at start
Nurses	Any convenient time	With phlebotomy; whenever time permits
	Test at triage	Normalization; reduction of surprise of HIV testing
	Beginning	At start
Administrators	Middle of assessment	If diagnosis is unclear
	Beginning	At start
	After patient evaluation	Facilitate testing
	No good time	A&E not a place for HIV testing

Abbreviation: A&E, accident and emergency.

Timing of HIV Testing During A&E Visit

Patient preference for timing of the HIV test during the A&E visit ranged from beginning of the visit to anytime (Table 3). Physicians emphasized convenient timing based on their workflow;

Table 4. Space for A&E HIV Testing.

Key Stakeholder Group	Space for HIV Testing	Reasons/Explanations Cited
Patients	Private	Confidentiality
	Open area	Learn from mistakes and risk-taking behavior of others
Physicians	Private	Particularly results and counseling for confidentiality
	Anywhere if needed	Limitations of space
Nurses	Private	Confidentiality; stigma; rumor concerns; specifically concerned about results provision and counseling
	Anywhere	Privacy can increase stigmatization; phlebotomy can be done anywhere
Administrators	Private	Confidentiality for consenting and results
	Patient bedside	Limitations of space
	Anywhere	Prevent stigmatization

Abbreviation: A&E, accident and emergency.

however, some (2/5) preferred testing at the beginning of the patient evaluation. Nurses believed in all different times, from introducing testing at triage or at the beginning or middle of patient assessment. All administrators had different preferences, from introducing testing at the beginning of the visit, the middle, or to no good time for testing in A&E, stating “if the patient could be able to be referred to the voluntary counsel and testing because they have more time and more chance look up pre-counsel and post-counsel, probably I refer the patient there” (A5).

Confidential Space for HIV Testing

Most patients preferred testing to occur privately to preserve patient confidentiality (Table 4); however, a few (4/20) advocated for testing to be conducted in open spaces of the A&E so that fellow patients could learn from the actions and behaviors of others (eg, getting tested because of risk). Patients emphasized confidentiality; “what would make it hard is confidentiality. If it’s not there, if it’s not present, you will have where people are very reluctant to do an HIV test” (P8).

All physicians also advocated for privacy; however, they also had awareness of limitations of the A&E space, emphasizing private space for specific confidential parts of the testing process, such as results and counseling. Privacy was emphasized for confidentiality, referring to HIV testing as “somewhat taboo, so privacy is important” (D5).

All the nurses believed results and counseling should currently be done in a private space, although some (2/5) favored using any space to reduce stigmatization. They supported normalization of the testing process; “if you want an HIV test, it should be just like if you want a hemoglobin test or you want a malaria test, it should be the same” (N7).

All administrators believed that obtaining consent for testing and delivering test results should occur privately and that other aspects of testing could be performed at the bedside or anywhere in the A&E. Using any space would minimize stigmatization and prevent others from knowing what test was being done, stating “I don’t think there should be a specific site, because from me, I would feel a little uncomfortable if I would say, ‘You need to go to that area because you are consenting to the HIV.’ We are small” (A2).

Counseling for HIV Testing

All stakeholder groups offered varying suggestions for a variety of information to be included with counseling (Table 5), ranging from basic medical information and risks for HIV to coping with the psychosocial aspects of testing. One physician discussing counseling stated that patients need to “. . . know that they’re not alone and have [. . .] support from their families. The importance of sharing” (D2).

There was no consensus among patients, nurses, or administrators on when counseling was needed in relation to the testing process, whereas in contrast most physicians wanted counseling prior to testing.

Consenting for HIV Testing

Patients did not give specifics about steps of the consenting process, but most wanted the procedure to be explained (Table 5). Physicians, nurses, and administrators more specifically called for patient identifiers and permissions as well as patient acknowledgment and description of testing (specific responses in Table 5).

Delivering HIV Results

All stakeholders emphasized a need for providing reassurance and coping skills to patients with positive HIV test results, with one patient stating “after the individual already accepts the fact that they have been infected with HIV virus, the next step is for them to learn how to cope with society” (P14; Table 6). Patients suggested a variety of information to be provided with positive and negative test results, including logistical next steps and psychosocial aspects of care. Physicians emphasized privacy for results delivery, as well as additional information including follow-up and support. Nurses emphasized the need for time to grieve with test results as well as self-care and follow-up, stating “I think they really need to encourage those people to live a normal life, and teach them how to be happy” (N4). Administrators supported similar information, including logistical next steps, monitoring, and limits of testing accuracy.

Following Up After a New HIV Diagnosis

All stakeholders emphasized the barrier of stigmatization when following up after an HIV diagnosis (Table 7). One nurse commented on a barrier to follow-up is “they actually see themselves wasting away. The patients are just simply ashamed to

Table 5. Information to Be Provided with Counseling and Consenting.

Key Stakeholder Group	Counseling Information	Consent Information
Patients	Preparation for test results; basic information about HIV/AIDS; safety practices for self and others; treatment for HIV; support and resources; reassurance about diagnosis and the future; maintenance of good health; follow-up; how to inform others of your diagnosis; and how to cope with others after revealing your diagnosis	“everything”; rules and regulations; explanations of the procedure; the limits and accuracy of testing
Physicians	Privacy limitations; preparation for receiving results; next steps after receiving results; reasons for testing and the value of early diagnosis; impact of the diagnosis on the patient’s life; sharing the diagnosis; support and treatment resources; and importance of achieving “peace of mind”	Patient identifiers; acknowledgment of receiving counseling; permission to provide test results to family; purpose of testing; acknowledgment that testing will occur; right to refuse testing; witness of consent; importance and limitations of testing; and the effect of test results on others
Nurses	Risk factors for HIV; behavior change to reduce risks; provision of consolation/hope and positive outlook; preparation for test results; need for confirmation of test results; and the importance of follow-up	Test to be performed; patient and contact information; witness of consent; signatures of those involved in obtaining consent; and verification and acknowledgment of consent
Administrators	Risk factors for HIV; preparing for test results; transmission routes; HIV prevention; the nature of HIV/AIDS infection; patient actions and expectations after testing; importance of follow-up care; need for contact information; coping with the diagnosis; and importance of antiretroviral medications	Descriptions of the testing procedures; access to test and results (ie, limits of confidentiality and hospital and government personnel who have access); rationale for testing; patient acknowledgment that testing occurred; patient identifiers; and administration of questions on the patient’s risk factors for HIV

Table 6. Information to Be Provided with Positive and Negative Results.

Key Stakeholder Group	Positive Result Information	Negative Result Information
Patients	Next steps after test results; medications and treatment options; status and prognosis; support groups and counseling resources; coping mechanisms; and how one’s life will be changed	“Nothing”; prevention strategies
Physicians	Patient’s CD4 count; severity of illness and prognosis; treatment options; hope/reassurance; diet suggestions; hygiene importance; referral procedures; reduction of transmission; and duty to inform family	Transmission modes; behavioral risks to contract HIV; prevention and counseling options
Nurses	Test results; coping strategies; importance of continuing to live despite a positive test result; behavior modification and safer behaviors; referrals for counseling; self-care suggestions; follow-up; and medications needed	Test results; safe behavior
Administrators	Coping with the diagnosis; basic information about HIV/AIDS; follow-up care; addressing risk factors; treatment options; monitoring of the disease/condition; reassurance on health outcomes and need for support	Retesting (if needed in the future); potential for infection later; limits of accuracy of the test; and prevention/behavioral counseling

leave their houses” (N1). Providers, nurses, and administrators were worried about the stigma of patients having follow-up with an HIV specialist, as opposed to another type of clinician.

Patients suggested a number of ways to ensure follow-up, including ease of scheduling appointments and appointment reminders. Most patients (13/20) wanted the follow-up appointment as soon as possible after A&E testing. Physicians emphasized the stigma of following up with HIV specialists and suggested providing alternative doctors for follow-up. All physicians varied on timing needed for follow-up, from as soon as possible to dependent upon the queue for appointments. Nurses believed that the best ways to ensure follow-up included patient initiative and access, with timing as soon as possible, with one nurse stating after talking with a support person.

Administrators supported reminders and designated appointment times. The majority (4/5) believed that the best timing for follow-up was as soon as possible after confirmatory testing for HIV was performed.

Facilitators and Barriers to HIV Testing in the A&E

The overwhelming responses from patients on how to facilitate HIV testing were to ensure trusting, respectful, and confidential relationships between patients and A&E staff (Table 8). Barriers to testing that were identified included lack of confidentiality and stigmatization with potential for gossip and discrimination. A patient emphasized “what would make it hard is

Table 7. Facilitators and Barriers to Follow-Up After a Positive HIV Test.

Key Stakeholder Group	Facilitators to Follow-Up	Barriers to Follow-Up
Patients	Convenient time; accessibility of location; reminder calls; home visits; assistance with making appointments; information cards; and offering patients motivation and rationale for the appointment	Fear and shame of the diagnosis; reactions of others because of the diagnosis; and stigmatization
Physicians	Appointment with internists and not HIV-specific doctors; home visits; telephone reminders; provision of the rationale for follow-up; and explanations for medication plans	Stigmatization and costs
Nurses	Patients themselves making an appointment; encouragement; specific appointment dates; appointments by phone request; increasing choices of providers and times; patient trust in the provider and access to providers	Timing of appointments and long lines at clinics; stigma from being seen in public with wasting or skin conditions
Administrators	Designation of a specific staff person to ensure follow-up; assignment of appointment dates in advance; telephone reminders; providers to respect patient's time and schedules; use of social workers in the community	Security of patient information; stigma and bias of appointment location and provider type (HIV specialist); loss to follow-up waiting for confirmatory testing; and the comfort and education level of providers

Table 8. Facilitators and Barriers to HIV Testing.

Key Stakeholder Group	Facilitators	Barriers
Patients	Trusting, respectful, and confidential relationships	Lack of confidentiality; the potential for gossip about those tested; stigmatization and discrimination against those found to be HIV infected
Physicians	Increasing privacy; restricting access to health records	Patient lack of willingness to be tested; lack of privacy; need for additional blood sample to verify positive test results; and lack of supplies
Nurses	Consistent staff member to conduct testing; resources; overcoming negative patient reactions; and informing the general public about hospital policies for testing	Lack of time due to busy work shifts; high patient flow; lack of private rooms and staffing
Administrators	Coordinate staff to use limited resources; counselors to remain with patients during the testing experience; availability of reagents and technicians to run tests; education of physicians and staff; contact tracing; and improved communication with and education of patients	Hospital areas with inherent stigmatization; lack of consent forms; insecurity of patient information; stigma and bias for follow-up appointment location and provider; loss to follow-up; long waits for confirmatory testing; lack of personnel; time, resource, and reagent shortages and reduced privacy

confidentiality. If it's not there, if it's not present, you will have where people are very reluctant to do an HIV test" (P8).

All physicians also stressed the need for privacy, including restricting access to health records, stating testing is "somewhat taboo, so privacy is important" (D5). Some physicians were concerned about available resources, in particular supplies, as well as patient willingness to be tested, stating "if we have the reagent, we have the people, and we have the forms, we have everything that is needed in place. The next part would be how easy is the patient allowing us to do the test" (D5).

Nurses advocated for educating the public about HIV testing and procedures to overcome negative reactions. In addition, they found resources to be a facilitator when present, including specific personnel to conduct testing, and a barrier when absent, specifically lack of time, personnel, and privacy. They supported testing with the caveat of having adequate resources: "but again, it goes in your resources, how much resources you

have as well. Everyone, just to have a baseline to work with, that would be perfect" (N7).

Administrators supported education of staff and patients, coordination between departments, and resources to facilitate testing. Barriers to testing included privacy and stigmatization of HIV testing and follow-up associated with specific care areas and specialist providers. Administrators, similar to nurses, identified inadequate resources (lack of personnel, reagents, space, and time) as barriers. However, one administrator remarked "... if we wait for additional resources, it would take us years. I think proper coordination and the will of the staff can make it happen at this point, since we are limited with resources" (A2).

Discussion

This study identified many varying perspectives on HIV testing from key stakeholders; however, several overarching themes to

HIV testing and protocol development emerged. These included: (1) Patient selection: the vast majority of patients (17/20) preferred that all A&E patients should be tested for HIV, in contrast all other stakeholder groups preferred testing specific patient groups. (2) Training: most stakeholders asserted that specific training should be completed by staff who conduct HIV testing. (3) Confidentiality: all stakeholders agree confidentiality is essential to HIV testing in A&E, specifically counseling, and results should be delivered privately. (4) Key facilitators and barriers to care: facilitators include having respectful, confidential relationships between staff and patients (patients); maintaining privacy (providers); ensuring adequate resources and education (nursing); and providing education, coordination, and resources (administrators). Barriers include HIV-related stigmatization and lack of confidentiality (patients), lack of patient willingness and resources (providers), lack of time and space (nurses) and inadequate resources, and privacy concerns and biases against testing (administrators).

These results highlight the difference in patient perspective relative to other key stakeholder groups, particularly physicians and administrators, in that patients were far more supportive of providing HIV testing for all patients with less concern about resources, whereas practically all physicians and administrators opposed testing all patients. This finding is echoed in a similar study in South Africa, where patients reacted more favorably to ED HIV testing than providers.²⁴ A study completed in the United States also demonstrated more ethically conservative attitudes of providers relative to patients regarding ED HIV testing.²⁸ We did not specifically ask about opt-out testing as current Belize practices require written informed consent and counseling. All stakeholders agreed consent was an essential part of the testing process; however, further research is needed to determine key stakeholder preferences for opt-out or opt-in testing.

In regard to barriers to HIV testing, all groups in our study overwhelmingly spoke of need for confidentiality, similar to the South African study.²⁴ This emphasis might be related to stigmatization of high-risk groups, such as men who have sex with men and sex workers, as well as those living with HIV/AIDS,^{5,23,29} supporting a need for outreach and education. This concern may impact implementation of ED HIV testing programs in other LMICs; confidentiality should be a critical component of such program development. In creating an ED HIV testing program, we realize all key stakeholders have varying viewpoints; however, important overarching themes emerged: addressing confidentiality in testing, a need for training and counseling, and although there are differing perspectives among stakeholders (eg, more perceived barriers to testing by physicians and administrators and less support for testing all), the realization of common ground supports improving the testing process. Knowledge of different viewpoints allows for education and consideration of various key groups during program development.

This study addresses the deficits in knowledge on HIV testing program development and key stakeholder input for an A&E department at the largest public hospital and tertiary care

referral center in Belize. Given that no formal testing policy existed in the KHMHA A&E with HIV testing performed based on individual provider discretion, these results were used to create a uniform HIV screening program. The diverse viewpoints from 4 stakeholder groups informed stepwise protocol development through shared decision-making of stakeholders. Modified HIV screening criteria were created along with trainings for staff (given our finding of need for education) and were implemented in the KHMHA A&E following interviews. Our future work aims to evaluate this screening program and its impact on HIV testing rates and stage of diagnosis. The qualitative key stakeholder input, in particular varying viewpoints, and HIV screening program development and implementation can provide valuable information for developing similar testing programs in other emergency medicine settings, particularly those in LMICs and resource-limited settings.

Limitations

Given the scope and qualitative nature of this study, opinions on this topic by other potential stakeholders might not be reflected in the results. However, a strength of the study was the purposive sampling of stakeholders from within and beyond the A&E, reflecting gender representation and a diversity of years of work experience at the hospital. One limitation of this investigation was that all interviews were conducted in English. Although English is the primary language spoken in Belize, Belize is a culturally diverse nation with patients speaking multiple languages, with large communities speaking Creole and Spanish as well as other indigenous languages, thus limiting the generalizability of results to patient populations not speaking English. This may specifically limit generalizability to potentially marginalized groups who do not speak English and may also be high risk for HIV. However, all KHMHA staff speak English and only 1 patient was excluded during recruitment for being primarily non-English speaking. Additionally, information was not collected from patients regarding their risk factors for HIV to preserve confidentiality. This additionally limits the generalizability of the results to populations who may be most at risk for HIV, and further research is planned that includes more patient demographic and characterization of HIV risk factors with their perspectives.

As with all qualitative content analyses, there is potential for misinterpretation of interviews and themes. This limitation was mitigated by involving investigators with experience working in this setting and review of the study methods and interview questions with local stakeholders prior to study onset. Moreover, qualitative research is limited in the size of study, as rather than increasing number of participants more in depth answers are sought. This limits the overall number of study participants and has the potential to miss additional perspectives. This was limited by accumulating interviews until thematic saturation was reached. Additionally, the responses to these interviews serve as a guide for further quantitative research obtaining a broader sample of responses, which is currently under process.

Conclusion

Key stakeholders had many diverse viewpoints on the HIV testing process; however, the majority supported key aspects of an A&E HIV testing program for KHMHA in Belize City, including defining the patient selection process, recommending training of testing staff, maintaining confidentiality, emphasizing respectful relationships, increasing resources, and decreasing stigmatization. By addressing these aspects of HIV testing, an HIV testing program was created in this high HIV prevalence setting and could be informative for similar program development in EDs in LMICs and resource-limited settings.

Acknowledgments

Karl Heusner Memorial Hospital Authority board of directors, staff, and patients, in particular Dr Adrian Coye, Dr Lisa Johnson, Dr Pedro Arriaga, and Nurse Casilda Bowman and Institute of Social and Cultural Research, National Institute of Culture and History, Belize.


Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This project was supported by a Resident Research Grant from the University Emergency Medicine Foundation of Brown University.

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