


Assessing Barriers and Facilitators to Participation in a Nurse-Driven, Opt-Out HIV Screening Program in the Emergency Department

Global Qualitative Nursing Research
Volume 11: 1–10
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DOI: 10.1177/23333936241292735
journals.sagepub.com/home/gqn


Jackson M. C. Montgomery¹ , Alida Bouris¹,
and Kimberly A. Stanford¹ 

Abstract

Emergency department (ED) HIV screening is a key component of the strategy to end the HIV epidemic, reaching populations with limited access to care for screening and early diagnosis. Many screening programs rely primarily on participation from ED nurses; however, little is known about the factors affecting nurse participation in screening. Guided by the Consolidated Framework for Implementation Research, 20 semi-structured interviews were conducted with ED nurses to explore perceptions of HIV screening, barriers and facilitators to participation, and implementation insights. Nurses were categorized as either high adopters or low adopters based on the number of HIV tests ordered 3 months prior to interviews. The Stanford Lightning Report Method, a rapid qualitative analysis approach, was used to analyze field notes. All participants generally agreed that the ED was an appropriate location for screening and that frequent, multimodal education about screening was needed. Integration of screening into standard workflows, education about the public health impact of screening, and the use of peer champions and mentors were identified as important strategies to increase participation. By incorporating these findings into implementation strategies, EDs may be able to increase nurse participation in screening, addressing important health equity issues in HIV diagnosis.

Keywords

HIV/AIDS, emergency care, health care screening, access to health care, nursing, Midwestern United States

Received May 16, 2024; revised September 22, 2024; accepted October 3, 2024

Although reducing the percentage of people living with HIV (PLWH) who are unaware of their status to 5% is one of the goals of the Ending the HIV Epidemic (EHE) in the United States (U.S.) initiative (Centers for Disease Control & Prevention, n.d.a), it is estimated that 13% of the 1.2 million PLWH in the U.S. continue to be undiagnosed (Centers for Disease Control and Prevention, n.d.b). Minoritized populations experiencing health disparities continue to be disproportionately represented among individuals newly diagnosed with HIV (Centers for Disease Control and Prevention, n.d.b). Opt-out, routine screening for HIV in the emergency department (ED) has been recommended by the Centers for Disease Control and Prevention (CDC) since 2006 as a highly effective means of addressing this issue (Centers for Disease Control and Prevention (CDC) et al., 2006). The ED visit represents an ideal opportunity for HIV screening, as many people with limited access to outpatient care and screening may preferentially utilize the ED for their health-care needs (Rust et al., 2008). There is a considerable body

of evidence supporting the cost-effectiveness (Mwachofi et al., 2021) and public health impact of universal HIV screening (Lyons et al., 2013; Mohareb et al., 2021). Despite this, uptake of this important public health intervention in EDs across the country has been highly variable (Henriquez-Camacho et al., 2017).

Existing literature has explored barriers to screening among EDs that have HIV screening programs in place. These have primarily focused on physicians and non-physician providers (NPPs), that is, advanced practice nurses and physician assistants. These studies have identified discomfort about disclosing results (Christopoulos et al., 2011),

¹University of Chicago, Chicago, IL, USA

Corresponding Author:

Jackson M. C. Montgomery, Chicago Center for HIV Elimination, Biological Sciences Division, University of Chicago, 5837 S. Maryland Ave., Chicago, IL 60637, USA.
Email: jmcmont@bsd.uchicago.edu



concerns about time constraints (Arbelaez et al., 2012; Zucker et al., 2021), resources, or result follow-up (Arbelaez et al., 2012), and a desire to focus on the primary complaint (De Rossi et al., 2017) as major barriers. However, nurse-driven screening initiatives are integral to HIV screening efforts in EDs, and existing literature surrounding nurse participation in ED HIV screening is limited. Nurse-led screening systematizes the testing and may be more effective than traditional physician-led models (Whalen et al., 2018). The limited literature on nurse attitudes toward HIV screening suggests they share physician concerns about time constraints and follow-up (Hill et al., 2020; Leblanc et al., 2021), but also may consider screening to be low priority (Leblanc et al., 2021), and have more concerns about patient privacy and autonomy (White et al., 2016). Increasing nurse buy-in and participation in HIV screening programs is essential to scaling up these programs to maximize their reach. This study aims to explore ED staff nurse attitudes around nurse-driven HIV screening and gain insights important to the implementation of a screening program, with a particular focus on the perceived barriers and facilitators to nurse participation in ED screening for HIV.

Methods

Study Setting

This study took place in the ED of a large, urban, tertiary care hospital with a Level 1 trauma center surrounded by communities experiencing high socioeconomic hardship. The ED patient population consists of a primarily non-Hispanic Black population, with most patients utilizing public insurance (i.e., Medicaid/Medicare). In this ED, 0.2% of patients screened receive a new diagnosis of HIV (Stanford, Mason et al., 2024). This ED has had a nurse-driven, opt-out HIV screening program in place since 2011. The program was significantly expanded with the introduction of an automated alert in the electronic medical record (EMR) in 2019 (Stanford, Mason et al., 2024), which prompted nurses, physicians, and NPPs to order screening tests. For patients eligible for HIV screening, the alert would trigger for nurses when triage was completed or any time they opened the patient chart, until the test was ordered, or screening was declined by anyone on the clinical team. The implementation of the alert was accompanied by several implementation strategies, including an extensive education campaign (Stanford et al., 2023), frequent in-person and email reminders about the program, one-to-one feedback, engagement with leadership, and occasional incentives to participate in screening (Powell et al., 2015). The screening program was designed to be nurse-driven, with reminders for physicians and NPPs only if the alert was not addressed in triage or by the patient's assigned nurse. After implementation of the alert, an average of almost 1,400 HIV tests were sent in the ED each month, representing a

242% increase in screening (Stanford, Mason et al., 2024), and an internal evaluation immediately after implementation found that nurses ordered the majority of HIV screening tests. However, within 2 years of implementation, only a quarter of patients were being screened (Stanford, Mason et al., 2024) with most tests ordered by physicians and NPPs, indicating a decline in nurse adoption and patient reach (Glasgow et al., 1999).

Recruitment

Recruitment occurred between February 22nd and June 24th, 2022. All nurses working in the ED for at least 1 month who had ordered at least one HIV screening test were eligible to participate in an interview. A 1-month threshold was chosen to exclude nurses who were too new to their roles to have sufficient knowledge or opinions about the screening program. A total of 100 eligible ED nurses were invited to participate via email; of these, 11 responded and four completed an interview. Given the low response rate to the initial recruitment strategy, a trained research assistant (RA) was embedded in the ED to conduct in-person recruitment over a 3-month period. During this time, the RA recruited and consented an additional 16 participants. Recruitment continued until the sample size was deemed to capture a reasonable range of experiences to address the research question. Thematic saturation was approached but not used to guide sample size given its uncertain utility in this context (Braun & Clarke, 2021; Thorne, 2020) and the practical constraints of recruiting additional participants. Participants were offered a \$5 incentive gift card after completion of the interview. This study was approved by the University of Chicago Institutional Review Board [IRB21-2007], as well as the Nursing Research and Evidence-Based Practice Council.

Interview Guide

A semi-structured interview guide was created that included a set of discrete demographic questions (e.g., length of time working in the ED) and open-ended questions exploring constructs from the Consolidated Framework for Implementation Research (CFIR), a meta-theoretical determinants framework that can be used to help understand the contextual facilitators and barriers to implementing a new program, practice or policy (Damschroder et al., 2009), including the implementation of ED programs by nurses (Allison et al., 2023; Aronson et al., 2017), and the tailoring of implementation strategies and adaptations. Open-ended questions were derived from all five CFIR domains drawing on published literature (Safaeinili et al., 2020) and author experience implementing an opt-out HIV screening program in the ED (Stanford et al., 2020): (1) the innovation, for example, the actual characteristics of the screening program, (2) inner setting, that is, factors endogenous to

Table 1. Sample Interview Questions by CFIR Domain.

CFIR domain	Sample question
Innovation	Innovation complexity <ul style="list-style-type: none"> Do you feel that informing patients about the program is time consuming?
Individual characteristics	Implementation facilitators and deliverers <ul style="list-style-type: none"> Do you think more education about the program would increase staff participation? Motivation <ul style="list-style-type: none"> Why do you think HIV screening should or should not be offered as part of the ED visit?
Inner setting	Communications <ul style="list-style-type: none"> What would be the best way to deliver education about the screening program? Physical infrastructure <ul style="list-style-type: none"> When you are prompted to order HIV screening through an alert/pop-up what do you typically do?
Outer setting	Policies and laws <ul style="list-style-type: none"> Do you feel that the requirement to inform patients about the screening program is a barrier to offering screening?
Implementation process	Engaging <ul style="list-style-type: none"> How did you find out about the HIV screening program?

where the innovation is being implemented, in this case the ED and larger hospital system; (3) outer setting, that is, factors exogenous to the implementation setting, including patient needs and characteristics, as well as policy, (4) individuals, for example, the beliefs, attitudes, motivations and other characteristics of the individuals tasked with implementing the new innovation; and (5) the actual implementation process of the screening program. Table 1 presents a sample of the interview questions, which were designed to elicit nurse's perceptions of HIV screening, barriers and facilitators to participation in screening, and suggestions for improvements to the program that would facilitate participation among their peers.

Data Collection

A trained RA conducted semi-structured qualitative interviews with N=20 nurses in the ED. To maximize nurse participation, the interviews were conducted with nurses during their ED shift, with the RA asking verbatim questions from the semi-structured guide and using probes and follow-up questions that emerged during the conversation. Because interviews sometimes occurred near patient-care areas, the RA collected detailed interview and field notes, including verbatim quotes from participants, in lieu of audio recordings. Each interview lasted between 15 and 30 minutes. Members of the research team collected and discussed notes on their impressions after each interview.

Data Analysis

Rapid qualitative analysis is a pragmatic approach to data analysis that enables researchers to obtain timely and actionable insights on implementation data (Brown-Johnson et al., 2019; Taylor et al., 2018; Watkins, 2017). In contrast to traditional methods of qualitative analysis, which seek to generate thick descriptions of the lived experiences of study participants or new theoretical perspectives, rapid methods are well-suited for identifying and responding to contextual barriers and facilitators to implementation (Hamilton & Finley, 2019). This study used the Stanford Lightning Report Method (SLRM) (Brown-Johnson et al., 2019), a rapid qualitative approach that synthesizes implementation data into three categories: (1) what is working well (the "plus"), (2) what needs to change (the "delta"), and (3) any implementation insights, recommendations or ideas based on the qualitative data, field notes, or observations obtained during data collection. These findings are designed to be shared with key stakeholders, who can provide additional feedback on the results of the synthesis (Brown-Johnson et al., 2019).

Four independent coders analyzed the 20 field notes using the SLRM. Each respondent was retrospectively categorized as a high-adopter (HA) or low-adopter (LA) of the screening program based on the number of HIV tests they had ordered in the prior 3-month period. Participants who had ordered 20 or more HIV tests were considered HAs, and those ordering fewer than 20 tests were categorized as LAs. Field notes from HAs were divided into two groups of four, and those from LAs were divided into two groups of six. Each coder was assigned one group of HAs and one group of LAs. Each coder then read the field notes from each interview and created a synthesis document following the SLRM framework for each assigned subset of participants, with themes further organized by CFIR constructs (Damschroder et al., 2009). The coders then met in pairs to compare notes and create a consensus document for each subset of participants. As part of this process, coders identified negative cases in the data, that is, examples when participant responses diverged from the overall pattern in the data (Strauss & Corbin, 1990). A total of four consensus documents were created. All four coders then met as a group to discuss their findings, which resulted in a final consensus document summarizing the three categories in the SLRM. Consistent with SLRM recommendations and to establish credibility of the findings (Guba & Lincoln, 1994), the results of the synthesis were subsequently presented to a group of nurses at a grand rounds lecture and at multiple nurse huddles in the ED. At each presentation, feedback was solicited to further validate the results. There was no disagreement by ED nurses with the study findings as they were reported.

Results

This study included 8 high adopters and 12 low adopters of HIV screening. Length of employment in the study ED ranged from 1 month to 7 years, with a mean of 1.9 years ($M=2.2$ years HA, $M=1.7$ years LA). Ten participants (50%) had worked in other EDs prior to the current ED. Mean length of employment in any ED setting was 4.3 years ($M=5.3$ years HA, $M=3.4$ years LA). Illustrative quotes from all participating nurses for what is working well, what needs to change, and implementation insights are provided.

What is Working Well: Contextual Facilitators That Support Nurse Adoption of an Opt-Out HIV Screening Program in the ED

Certain facilitators that largely fell within the inner setting were identified from both high and low adopters in terms of what is working well, including awareness of the existence of the program and its operating parameters, and multimodal forms of nurse education. Access to knowledge and information was a strong facilitator, with both groups expressing high universal awareness of the existence of the program. HA 133, who had worked in an ED setting for 4 years, summarized the program as: *"It is something we do for all patients and there's no charge. . . , we do it unless you don't want to."* Another high adopter, HA 125 (5 years of ED experience), described their approach: *" . . . I tell patients everyone gets tested; it makes it less negative. . . instead of saying we choose people to get tested."*

Within the innovation domain, low perceived complexity of the innovation was noted as an important factor that facilitated screening. HAs generally reported a belief that screening was not time consuming and did not affect available resources or distract from their regular workflow. HA 130, with over 6 years of ED experience, described the ease of implementing screening by stating: *"If we draw the labs, you just mention it to them, so it's super easy."* Culture and mission alignment also appeared to play a larger role for HAs, who reported high awareness of the importance of screening in the ED. HA 115, a nurse with 12 years of ED experience, described the importance of the ED for addressing gaps in primary care:

Absolutely, because. . . people come to the ED more frequently versus [primary care], so they may not have the proper education and may not have knowledge on risk associated with certain behaviors around sex, so the ED provides a solution to the gap in care.

HA 120, who had 4 years of ED experience, also believed that the ED was an appropriate screening location: *"I think [the ED] is where unidentified positives will come. . . the ED might be the only part of the hospital where they might be identified."* Many LAs also endorsed that the ED was an

appropriate place for screening, but support for the important role of screening in the ED was more tempered among LAs: *"Everyone should get tested yearly with their doctor, so why not [here]?"* (LA 122, 8 months of ED experience).

In addition, both groups identified communication and educational resources as important inner setting factors that facilitated screening. Many cited multimodal education about the program, including nursing huddle presentations, staff lectures, handouts, and emails, accompanied by frequent reinforcement of education using these modalities, as key implementation facilitators. Both groups identified huddles, in particular, as an ideal place to learn about the screening program. For example, HA 120 stated:

I remember they talked about it when we first started. The [automated alert] helped me address it with patients. They do huddles in the morning, so they told us we would start doing screening. I think I received enough education on it.

LA 121, who had worked in an ED setting for 10 months, recounted how they came to learn about the program: *"When I started working here, it was a poster on the wall. When I met with my preceptor, they told me it was something we offered."*

Education was especially effective when supported by leadership engagement, a component of the Individuals domain, suggesting that nurse managers and educators have an important effect on engaging innovation deliverers in the program. HA 120 summarized: *"For staff, for me, what is most effective is to have management and/or the charge nurse mention it during huddles."* LAs also described the importance of the huddle, highlighting the benefit of being able to ask questions in real-time: *"I think the huddles were good, it was in-person, and you could ask questions versus emails, which get lost"* (LA 122, 8 months of ED experience). HA 116, who had worked as an ED nurse for over 2.5 years, also described why huddles were preferential to email: *"The nurse huddles, something within 5 minutes. A lot of people don't check their emails, so the huddles are the best method to deliver information."* Nevertheless, more LAs than HAs described email as an important source of learning about the program: *"I think email is the best way to get it to everybody, maybe mention in the huddles in the morning"* (LA 129, 7 years of ED experience).

What Needs to Change: Contextual Barriers to Implementing the ED Screening Program

Within the inner setting, access to knowledge and information and communication were identified as important barriers for *what needs to change*. In general, LAs tended to report that the education they received was insufficient, indicating low knowledge about the details of the program and the reasons for its existence. For instance, LA 128 (4 years ED experience) stated: *" . . . it was just 'We have a screening*

program and screen everybody,' and that was all the explanation I got." Although LA 118 (1 month of ED experience) had learned about the program via multiple pathways, for example, flyers, preceptor, and the automated alert, they also described not understanding the overall purpose of the program: "I couldn't tell you what the goal is or the bigger picture. I am still learning." LA 117, who had worked in an ED for 5 months, also was surprised to learn that nurses could order HIV tests for ED patients, telling the interviewer: "I wasn't aware. Is that something we as nurses can order?"

Whereas HAs tended to report that they understood the importance of universal screening, many LAs expressed a lack of understanding about the public health impact of universal screening, which seemed to result in reduced motivation and tension for change. LA 128, who had worked as a nurse in an ED setting for 4 years, expressed indifference to screening: "Yeah, I don't see why not [offer screening], I don't think it makes a big difference if it was or wasn't [offered]." Another LA with 7 years ED experience (LA 129) described the screening program as "a waste of time" if the patient was in the ED for minor complaints not requiring a blood draw.

In addition, many LAs expressed individual biases or preferences that affected their own screening practices, in particular reporting sentiments that HIV screening should be performed elsewhere or should be targeted to patients with identified risk factors, which is counter to the existing evidence (Lyons et al., 2013) and CDC guidelines (Branson et al., 2006). For example, LA 131 (7 years of ED experience) suggested that "primary care visits" were more appropriate for HIV screening than the ED. LA 134 also suggested that HIV screening should be focused on patients with symptoms of a sexually transmitted infection: "The [areas of the ED designated for lower acuity patients] would make more sense. It makes more sense to screen people for STD checks. . . If there are more urgent care type visits, it makes sense versus someone in critical care." LA 131 communicated a similar preference: ". . . if they are here for a hand injury and don't need blood draws it would be nice to have someone [else] draw it."

The screening program is designed as opt-out, meaning that nurses were instructed to tell patients that everyone gets screened unless they decline, and then offer them an opportunity to decline, as compared to opt-in screening, in which patients are asked if they would like to be screened. Opt-out strategies may be more effective at increasing participation in screening, in part due to reduction in stigma around testing (Montoy et al., 2016). Although the program is designed as opt-out, LAs had more variability in what they understood this to mean, and as a result, how they reported presenting screening to patients, more often inadvertently using opt-in language. For example, LA 126, a nurse with 1 year ED experience, described how they offer screening to patients: "I just ask them if they want to be screened for HIV or syphilis today, and I tell them since we are drawing blood anyway

it will be a part of their labs." Similarly, LA 127, a nurse who had worked in an ED setting for 11 months, stated: "I ask the patient if they would like to be tested. If they say yes, I will accept it." Many LAs perceived the screening program as optional, often endorsing a lower relative advantage of the screening program, indicating a perception that alternative solutions (i.e., not screening) were more advantageous, given the need to serve a large volume of patients needing emergency care: "It is such a busy ER, it's sometimes hard to think about the optional stuff. This is something they can get done somewhere else. We don't have time to keep doing screenings when we have so many arrivals" (LA 121). Yet another LA with 1 year of ED experience, stated: "I thought we have to ask everybody if they want to be screened, because it is optional, right? I think we just order the tests and that is about it" (LA 126).

While HAs perceived physicians more as support when additional patient education was needed, LAs reported a perception that discussing screening with patients to provide an opportunity to opt out was too time consuming (Inner setting: available resources; Innovation: high complexity and low relative advantage) or that this responsibility was more appropriate for physicians, a misconception related to opportunity (Individuals domain). LA 126, who noted that while having nurses offer screening was effective, "The biggest thing is that it's adding another aspect to the nurse's work. It would be nice to have the doctors explain to the patients. It would be better coming from the doctor's mouth." Additionally, LA 134, who had worked in an ED setting for 3 years, described how they deferred to doctors for screening: "I typically ask the doctor if the patient is eligible for screening. I assume if the labs aren't ordered, they aren't eligible. I just try to find the doctor."

Implementation Insights

Key implementation insights reported from the interviews focused on education (access to knowledge and information, communication), innovation design, and engagement of staff (motivation of innovation deliverers), with important differences existing between the two groups. Central to the insights for improving implementation was the need to revise the education and training strategies to emphasize the impact and value-added of the screening program. For example, HA 115 described how multiple education and training modalities could increase nurse knowledge and buy-in: "Many ways—in my opinion—huddle talks night and day and reiterate importance and why we conduct this program—talk in front before they go to work, and handouts, as well as email for all different types of learning." LA 126 also emphasized the importance of stressing the reasons for the program via written materials: "Maybe if we got a sheet about it more in-depth during our orientation on why we do it would be cool." Likewise, LA 119 described how program impact could be emphasized via e-mail: "I think adding value instead of 'Hey,

do this’—add context to the email.” HA 115 also stressed how continued education would increase motivation and buy-in among a large and diverse team of nurses working in the ED:

Yes, education is primary goal to make a project work. They need to learn why they are doing what they do. [It’s] important to tell people why patients need this. Some nurses are goal oriented versus rule based. [With] So many different nurse practices, it’s hard to get everyone on the same page.

In addition to changing the emphasis of the education, nurses also suggested that education and training should be ongoing, beginning during orientation and continuing through email, regular huddle presentations, and during one-on-one on-shift training with preceptors. HA 120 described the value of ongoing education given ED staffing turnover: “I think it can never hurt. We get a lot of new nurses and staff. We have a lot of new people that have started. I think re-education wouldn’t be a bad idea.” Additionally, LAs more often reported misconceptions and knowledge gaps about the program despite these points being addressed in educational presentations and materials. LAs also demonstrated a tendency to apply individual bias in who should be screened and the belief that someone else was better suited to perform screening than they were. However, one negative case was exemplified, with LA 127 reporting that additional education was not necessary, and that other strategies (implementation process domain) were necessary to promote wide-scale nurse adoption: “No, I don’t think it is the education. Basically, making it a part of the daily routine.”

Across the interviews, it became clear that HAs felt more empowered to take ownership of their role in the screening program and expressed a better understanding of both the significance of the program and the actual logistics. LAs, on the other hand, had lower self-efficacy and less understanding of the reason for performing screening or the public health impacts. HAs tended to describe their role in the screening program more actively, encouraging active modes of education for both staff (e.g., huddles) and patients, with most believing that educating patients about screening is not time-consuming and does not represent a barrier to screening. In contrast, LAs suggested more passive modes of education for staff (e.g., handouts, e-mails, posters), and many expressed that the responsibility for patient education should not fall on them, instead suggesting materials that relied on patient engagement, such as handouts, or transferring the task to physicians. For example, LA 126 recommended using pamphlets to inform patients about the screening program: “I don’t know if there are pamphlets when they check-in saying this is something we do, something they can hand to patients that tell them this is something we do routinely.” This sentiment was echoed by LA 132, a nurse with 18 years of ED experience: “There should be a better way, there’s a tv in the waiting room that they could see and know about the screening before they come

back.” LA 117 also agreed that patients should be informed via other avenues of engagement:

I think it can be. Not because of the program, but because of the process how the ED works. I think the posters are quite helpful. That is one of the things that stuck out to me. What I notice it’s all around, so the importance is; it is in their head. I think it is most important in the waiting room. If there are pamphlets in the waiting room. Maybe it could be on the TVs in the waiting room.

When subsequently asked for recommendations to improve education about the program, LA 117 stated, “I don’t know. All I know is I draw the blood, and there’s nothing wrong with asking if they want it.”

While all agreed that a comprehensive approach to education delivery should include several key points, such as why screening is taking place, how screening should be presented to patients, what happens after screening, and how to address technical issues, the differences in perspective between the two groups suggested that education should most strongly focus on the importance of universal screening, the pivotal role nurses have in the screening program, motivating the innovation deliverers, and empowering them to take an active role in screening. HA 116 highlighted the important role of the preceptors: “I think it’s important, especially if we have new nurses. The preceptor sets the tone.” Identification of a nurse champion to help motivate peers and active education and individual mentoring from other nurses that encourages nurses new to the program to participate in the screening program also could help to dispel myths about time constraints and address concerns and misconceptions they may have about the program. For instance, HA 115 noted: “We need champions being part of a team, have nurse volunteers that reiterate these things at huddles.”

Another major implementation insight centered around workflow optimization, with both HAs and LAs agreeing that the innovation design should consider how screening can fit seamlessly within existing workflows and information technology infrastructure, key constructs in the inner setting. There was consensus that screening would optimally happen early in the ED visit to avoid repeat lab draws. Both HAs and LAs suggested triage, the first point of contact with the patient in the ED, as the ideal setting for ordering screening tests. HA 120 stated: “[Triage] is the best time to ask and check the box so it doesn’t create unnecessary lab orders in the chart,” and LA 127 suggested, “Maybe I guess when they are in triage we can ask them then.” Decreasing complexity of ordering the tests was also noted by one LA, who stated: “Oftentimes, I and the other nurses don’t order it because there are quite a few steps into ordering the labs that it deters the nurses from ordering it.”

Discussion

This study identified several key barriers and facilitators to implementation of ED HIV screening among nurses. Central

facilitators included information, communication, motivation, and workflow optimization. Both HA and LA identified a need to improve engagement through an understanding of the public health significance of the screening program, with frequent reinforcement of education through multiple channels, including the use of peer champions. Incorporating these strategies may improve participation in ED screening programs, resulting in a greater reach, and faster progress toward Ending the HIV Epidemic initiative goals.

The themes that were extracted from these interviews highlighted the roles of culture, mission alignment, and engagement of the innovation deliverers with HIV screening. HAs demonstrated a clear understanding of the public health impact of HIV screening and were motivated to take ownership of their role in the program. In contrast, LAs viewed screening more as a task they were being asked to perform, and while they generally agreed that the ED was an appropriate setting for routine HIV screening, they were more likely to be concerned about logistical barriers or to think of screening as unnecessary or extraneous to their primary job. One study of ED nurses found that they may consider HIV screening to be low priority (Leblanc et al., 2021), which may reflect similar sentiments and lack of “big picture” understanding to the LAs in this study. Draper et al identified the need for continuous education and training to sustain nurse engagement in quality improvement initiatives (Draper et al., 2008), and education was noted to be a key facilitator and barrier to engagement in a review of nine articles on nurse engagement (Alexander et al., 2022). However, simply knowing how the program works may not be sufficient. One study of nurse engagement with an infection prevention initiative found that educating nurses about the importance of the issue and empowering them to address it helped facilitate participation (Carter et al., 2016), a theme that highlighted from the present study.

This education must be presented in multiple ways, both written and verbal, and repeated frequently over time. Participants suggested a combination of group talks, one-to-one mentorship, handouts, emails, and posters. This highlights the need to support a variety of learning styles and to compete with the many demands of working in the ED environment. Education is also most effective when presented by a peer, nurse champion, or leadership, whose support and promotion of the intervention can be fundamental to its success (Alexander et al., 2022). Both high and low adopters expressed that nurse preceptors played a critical role in conveying the importance of screening and providing regular updates, reinforcing the importance of leadership buy-in in driving successful program implementation.

Previous studies among ED nurses have also identified specific concerns such as time constraints in an ED and responsibility for result notification (Alexander et al., 2022; Hill et al., 2020; Leblanc et al., 2021), both of which can be

mitigated to some extent by workflow optimization. Similar concerns about time and resource utilization were noted in the present study, particularly among LAs. While further study would be helpful to evaluate any actual effect of screening programs on workflow and efficiency, this was notably not a concern reported by the HAs, who have considerably more experience ordering screening tests than LAs. Much of the concern about the effort involved in test ordering can be mitigated by workflow optimization through leveraging of the electronic medical record, which can be used to streamline selection of patients for screening and the ordering process (Lin et al., 2017). A partnership outside the ED to coordinate result notification and linkage to care can also offload work from ED staff and ensure minimal utilization of extra ED resources (Hazra et al., 2023). Nurse practitioners embedded in the ED or in an affiliated clinic, who can assist with patient education, linkage to care, and treatment, would be another potential option to improve workflow and decrease the burden on ED staff. While many of these operational barriers were effectively addressed in the study ED through EMR alerts and a partnership with a clinic that took responsibility for all result notification, LAs in particular reported a lack of awareness of these resources, and many did not know who was responsible for linkage to care, which again emphasizes the need for thorough and continuous education about the aspects of the program that impact engagement.

The present study is not without limitations. First, due to the necessity of conducting interviews during breaks in clinical shifts to maximize participation, interviews were relatively brief and unable to be audio recorded, thus the analysis relied on field notes alone. Although field notes are frequently utilized in qualitative research, it is possible that nurses would have provided additional details had they been able to participate in a longer interview in a quieter environment. This limitation is offset, however, by the validity checks conducted by presenting findings to nurses at grand rounds and in huddles and eliciting feedback. The data also come from a cross-sectional, convenience sample of nurses; as such, the findings may not generalize to other ED settings and cannot be used to evaluate the causal mechanisms influencing the implementation of the ED screening program. Although the data provide some insights on nurse perspectives on HIV screening in this specific context, additional research is needed to better understand how the implementation strategies used to support the screening program shape actual implementation beyond this single site. Despite these limitations, the present study provides important qualitative insights on the perspectives of both high and low adopter nurses.

In conclusion, this qualitative analysis of ED nurse interviews including high and low adopters of HIV screening provides valuable insights into the implementation of a

nurse-driven, opt-out HIV screening program in a large, urban ED. The findings emphasize the significance of workflow optimization, ongoing, multimodal education, not only about the program logistics but, importantly, about the public health impact of the work, and engagement by nurse leadership and peer champions. To improve the uptake of HIV screening in the ED, interventions should target the promotion of public health values, dispelling misconceptions, and optimizing workflow through technological enhancements in the EMR tools, especially during the triage process. By understanding the factors influencing nurse engagement, healthcare institutions can develop more effective implementation strategies to enhance the impact and reach of HIV screening, which will be needed to reach the goals of the Ending the HIV Epidemic initiative and address the ongoing racial and socioeconomic disparities in HIV diagnosis and care.

Declaration of Conflicting Interests

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

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

ORCID iDs

Jackson M.C. Montgomery  <https://orcid.org/0009-0003-7021-4792>

Kimberly A. Stanford  <https://orcid.org/0000-0002-7374-1323>

Supplemental Material

Supplemental material for this article is available online.

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Author Biographies

Jackson M. C. Montgomery, BS, is a Research Coordinator at the Chicago Center for HIV Elimination at the University of Chicago, Chicago, IL, USA.

Alida Bouris, PhD, MSW, is an Associate Professor in the Crown Family School of Social Work, Policy, and Practice, and the Co-Director of the Chicago Center for HIV Elimination at the University of Chicago, Chicago, IL, USA.

Kimberly A. Stanford, MD, MPH, is an Associate Professor of Medicine in the Section of Emergency Medicine and Director of Emergency Department HIV/STI Testing for the Chicago Center for HIV Elimination at the University of Chicago, Chicago, IL, USA.