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"How much more on the nurse?:" a qualitative analysis of inpatient nurses' perspectives on offering HIV testing

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Abstract

Background The CDC recommends that all individuals who are hospitalized be offered HIV testing. Low HIV testing rates have been reported among hospitalized patients. We investigated expanding HIV testing among hospitalized patients at our medical center, and hospital leadership consistently recommended exploring nursing-driven, universal HIV testing. The goal of this study was to use qualitative methods to evaluate Tufts Medical Center inpatient nurses' perspectives about the barriers and facilitators of implementing an inpatient nursing-based HIV testing protocol.

Methods The study employed a qualitative research design through in-depth interviews and focus groups; these guides were developed based on Consolidated Framework for Implementation Research and the Theoretical Domains Framework. Any inpatient nurse employed at Tufts Medical Center in January 2023 was eligible to participate, including case managers and travel nurses. Nurses were recruited through in-person recruitment, email, or flyers.

Results 42 inpatient nurses participated in ten focus groups and two interviews. Eight primary themes emerged that were categorized into barriers and facilitators/strategies. The barriers were (1) concern that HIV testing would increase the nurse charting burden, (2) belief that HIV testing is not a priority for hospitalized patients, (3) concern that HIV testing consent is outside the scope of nursing practice, (4) misinformation about the required HIV testing consenting process, and (5) concern about offending patients. The facilitators/strategies were (6) belief that HIV testing is necessary for personal health, beneficial to public health and necessary for occupational safety; (7) ability to leverage existing systems of care support to HIV testing; and (8) ability to leverage current systems of education to increase HIV testing. Results showed that fostering trust within treatment teams and between patients and nurses would enable nurses to obtain patient consent for HIV testing without fear of negative consequences.

Conclusions While nurses have concerns about offering HIV testing to all hospitalized patients, there are existing systems that can be leveraged to make implementing of universal, nursing-driven HIV testing acceptable and sustainable; these include protocolization; engagement and trust; and nursing champions of expanding HIV testing.

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Introduction

Increased HIV testing is needed to end the HIV epidemic. Nearly half of the new HIV infections in the United States are transmitted by people who are unaware of their HIV positive status [1]. There are missed opportunities for HIV testing across the spectrum of healthcare, from ambulatory to inpatient settings [2–4]. Since 1993, the CDC has recommended testing all hospitalized patients for HIV, but the operationalization of these recommendations has been suboptimal [5, 6]. There have been efforts to make HIV testing more accessible, but barriers and inequity in HIV testing persist [7, 8]. Our research group found that only about 15% of people who inject drugs (PWID) receive HIV testing during hospitalization [9], and there are also racial and ethnic disparities among those who receive testing [10].

One barrier to HIV testing is the history of logistics related to the consent process [11–14]. Twenty U.S. states, including but not limited to Massachusetts, require verbal consent to be documented when ordering HIV testing [15]. Completion of the HIV antibody test, originally developed in 1985, required written consent until 2006 when the CDC amended its HIV testing guidelines and recommended against written HIV testing consent and pre-test counseling, stating that standard consent to medical treatment adequately covered the HIV testing consent requirement [15–17]. However, since the laws governing HIV testing are determined on a state-by-state basis, it took until 2018 for all states to stop legally requiring written consent for HIV testing [15, 18].

A prior study at our hospital partnered with several key stakeholders to develop interventions aimed at increase HIV testing among hospitalized PWID [19]. While developing the study, several key stakeholders suggested expanding HIV testing through increasing nurse-initiated outreach to hospitalized patients. Nurses have admission and discharge checklists that systematize the offering of several infectious disease services, including COVID-19 testing and influenza vaccination. Therefore, this study was undertaken to assess if inpatient nurses would find it acceptable to offer HIV testing to patients to improve HIV testing rates. However, we received informal feedback from nurses that obtaining verbal consent for HIV testing was outside the scope of their practice. No studies in the United States have assessed nurses' perspectives on obtaining consent for HIV testing. We subsequently used qualitative methods to understand nurses' perspectives on barriers and facilitators to expanding the role of nurses to include offering testing for HIV.

Methods

Setting

Tufts Medical Center (TuftsMC) is a 415-bed tertiary non-profit academic medical center located in Boston, Massachusetts. There are approximately 1,400 nurses employed at TuftsMC.

Current infectious diseases testing protocols

The current procedure for HIV testing is not protocolized or integrated into any electronic system. HIV testing is usually offered by a person with prescribing power (i.e., attending physician, resident physician, nurse practitioner, physician associate, etc.). The typical method for offering HIV testing is opt-in. Rapid HIV testing is not routinely available at the hospital. Rather, HIV tests are run on a blood sample from venipuncture, and the results typically return in four hours. Nurses at TuftsMC offer flu and COVID-19 vaccinations during their admission checklist. Nurses can order flu vaccines and administer them to admitted patients without an order from a provider.

Preliminary meetings with nursing leadership

Members of the research team (EDG, SDD, AGW, MM) met with the Professional Practice Council, a council of nursing leadership at TuftsMC that meets every month to review nursing practice and protocols. We reviewed our data on low HIV testing rates for hospitalized PWID. We proposed a strategy to expand HIV testing to all people who are hospitalized at TuftsMC by having nurses offer HIV testing while completing their admission checklist. We received preliminary feedback and connected with champions eager to join the study team. The consensus after the meeting was that in-depth focus groups and interviews should be conducted with inpatient nurses to gain their perspectives prior to making changes to their nursing protocols (i.e., the admission checklist).

Focus group and interview guide development

We developed de novo guides to assess barriers and facilitators based on constructs from the Consolidated Framework for Implementation Research and the Theoretical Domains Framework [20, 21]. We asked questions about flu vaccination, COVID-19 testing, COVID-19 vaccination, and sexually transmitted infections testing prior to questions about HIV testing to frame the conversation about nurses' roles in infectious diseases care and to compare beliefs between different infections. The guides were intended to facilitate 45-minute focus groups and interviews. Guides were piloted among employees of TuftsMC, including implementation researchers and

nurses, and their feedback was incorporated. The finalized versions of the guides are attached (see Supplements). We did not include demographic questions on our interview guides due to the low number of male nurses and nurses of diverse racial and ethnic backgrounds at our facility to maintain confidentiality.

Eligibility and recruitment

Any inpatient nurse employed at TuftsMC in January 2023 was eligible to participate, including case managers and travel nurses. Exclusion criteria included being a nurse practitioner or working as an outpatient nurse. Recruitment occurred through various methods. A study team member who is a well-known nursing leader in the hospital (MM) sent two emails to all inpatient nurses three weeks and one week prior to the first focus group. The email contained a link to an electronic survey sign-up sheet. Flyers were posted in break rooms and handed out to nurses on each inpatient floor of the hospital by research assistants. All team members used a snowball recruitment approach through in-person recruitment on inpatient floors. We pitched the study to the nurses and nurse managers on the floor. They shared the study information with other nurses on the floor. Since we were recruiting nurses within the hospital setting, it was convenient to use this sampling strategy. Referrals were also used to help build rapport and trust among participants. Focus groups occurred in rooms near heavily trafficked hospital locations so that real-time recruitment could also occur. If nurses signed up using the electronic survey, they were sent one confirmation message and two reminders about their focus group or interview time and location via a communication method of their choice (text message, email, or electronic message via the hospital's healthcare communication app). Nurses were given a $50 Amazon gift cards for participating in a focus group or an interview.

Table 1 Participants' employment departments by Focus Group or interview

	Labor and Delivery	Intensive Care	Medical or Surgical	Total
Focus Group 1	1	7	1	9
Focus Group 2		4		4
Focus Group 3			2	2
Focus Group 4		1	3	4
Focus Group 5		2		2
Focus Group 6		4	2	6
Focus Group 7		2		2
Focus Group 8		1	3	4
Focus Group 9	1	1	2	4
Focus Group 10	3			3
Interview 1		1		1
Interview 2		1		1
Total				42

Focus group and interview conduction and analysis

The focus groups were about 45-minutes in length and conducted at 8AM, 4PM, and 8PM on four different days (two consecutive Thursdays and Fridays in January 2023). Prior to beginning any focus group or interview, participants were read an information sheet and asked to provide verbal consent to the focus group or interview. Participants were asked for their consent to audio-record the sessions, if they declined, written notes were taken instead. All participants consented to the audio recording; therefore, no written notes were taken. The interviews and focus groups were conducted by the same research assistant (EDG). Another research assistant was present to take field notes and record the session (SDD, OA). Recordings were transcribed, and then coded using Dedoose 6.1.18, (SocioCultural Research Consultants, UCLA). Inductive Thematic Analysis (ITA) was used to capture recurrent themes expressed in the interviews and focus groups [22]. The framework method guided qualitative analysis, allowing for hybrid inductive evaluation [23]. Codes were developed iteratively among three study team members (SDD, EDG, AGW) until all recurring themes were captured. Data saturation was achieved when recurrent themes emerged. The COREQ checklist was used to ensure methodological rigor [24].

Ethics statement

The focus groups and interviews were deemed exempt from consent by the Tufts Medical Center and Tufts University Health Sciences Institutional Review Board. The study was conducted in compliance with the Helsinki Declaration. We received verbal consent for participation. We were not able to collect age, race, and gender as this could make people identifiable.

Results

The study recruited 42 participants: 40 participated in ten focus groups, and two participated in one-on-one interviews (Table 1). Twenty-three participants worked in an intensive care unit, fourteen worked on a medical or surgical floor, and five worked on the labor and delivery unit. The size of focus groups ranged from two to nine nurses. Focus group sizes varied to accommodate for the availability and schedules of the nurses. This approach allowed for in-depth discussions and efficient use of the nurse's time. Eight primary themes emerged, which are grouped into Barriers and Facilitators/Strategies (Fig. 1).

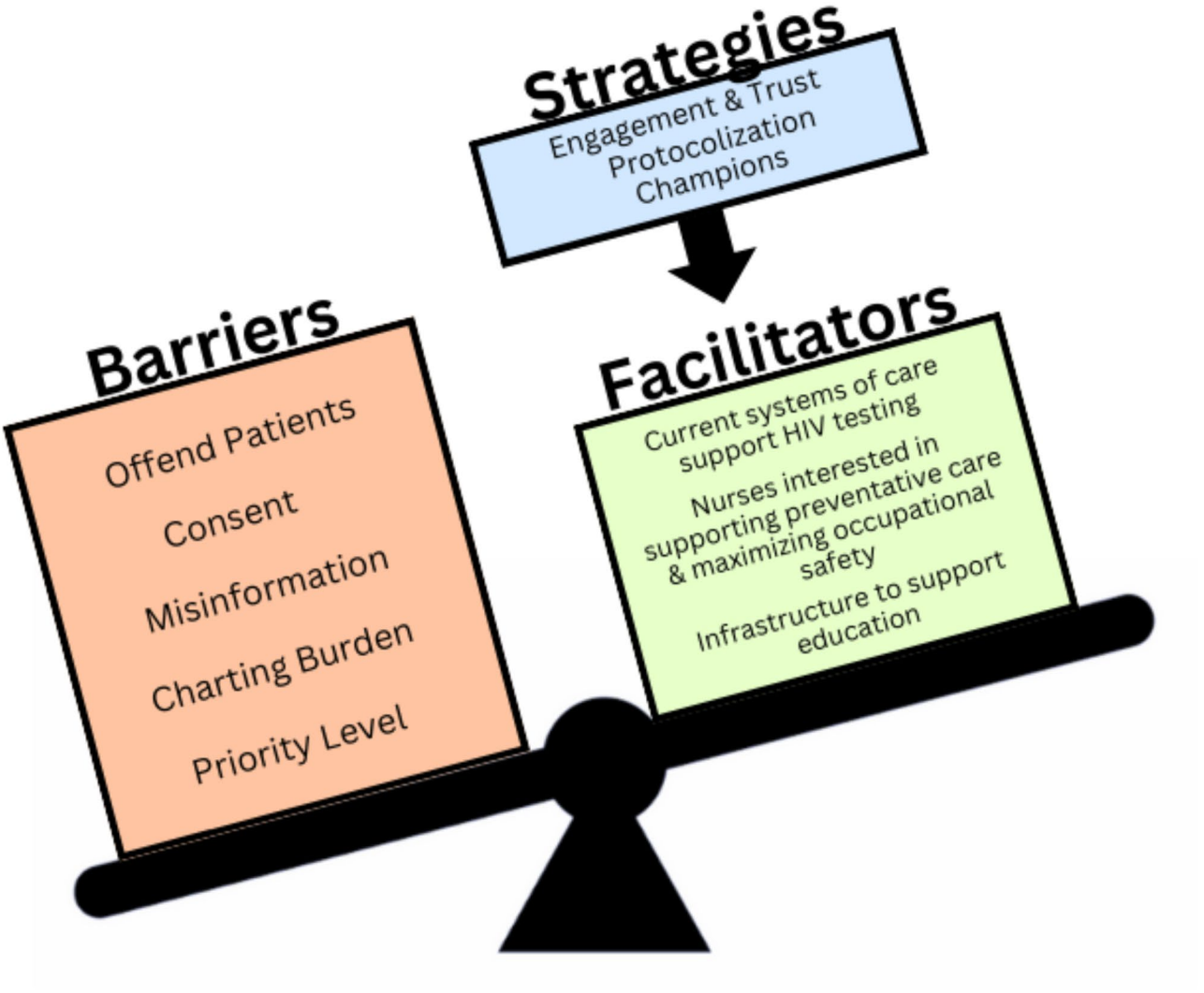

Fig. 1 Barriers, Facilitators and Strategies. The see-saw diagram illustrates how barriers exert a downward pressure on facilitators while the three strategies; protocolization, engagement and trust, and champions, act as counterweights to restore balance

Barriers

HIV testing increasing chart burden

Nurses reported being overburdened with charting responsibilities and expressed concern that adding obtaining HIV testing consent to their list of duties would worsen this issue. When a participant was asked how she would feel if asked to offer HIV testing to her patients upon admission, she said, *"How much more on the nurse?"* This nurse went on to state, *"The way we admit people now there's so much that has fallen on the nurse that never used to fall on the nurse."* Another nurse in the focus group echoed this sentiment, saying that nurses have been asked to do an increasing number of tasks, as shown by this quote: "*Epic [was introduced] and there was no conversation. It was just like, oh, don't worry. The nurses will do it because the nurses do everything else. So, let's just add this into this navigator because they'll get it done because we're goal-oriented, we want to make sure we get that green checkmark."* It was a recurring theme seen throughout the focus groups that the list of responsibilities for nurses was constantly expanding, often without their input. To facilitate information sharing between healthcare facilities, Epic is an interconnected electronic health record system that compiles electronic medical records such as patient health data, visit notes, and past medical history.

HIV testing priority

Several intensive care unit nurses felt wary of adding HIV testing to their list of tasks in cases where a sexually transmitted infection was not related to the reason a patient was admitted to the intensive care unit. Many of them viewed preventative sexual health screenings as low priority for patients who were very sick. For instance, one nurse stated that offering HIV testing to all patients would *"Open up a can of worms."* The nurse went on to

state, *"I feel like in acute care it's the here and now. Why are you here, what can I help you with now? I care about your sexual health as well, but if that's not one of your main concerns, I feel like it's just adding extra work to the nurse that's not necessary."* While nurses expressed that they care about all aspects of their patients' health, they reported feeling that there are relative priorities for healthcare services, especially in intensive care units.

HIV testing consent and scope of nursing practice

Most nurses expressed concerns about participating in the HIV testing consenting process. One nurse said, "*As a nurse, you're always worried about staying within your scope because you can get sued or in trouble."* Another nurse said, *"Nurses don't get consent for anything else, so why would it be OK for us to get consent for HIV [testing]? Because you still would need a doctor's order to order it. After all, we can't just draw labs ourselves, we still would need a doctor's order to draw one in a hospital setting. So, I wouldn't want to be asking somebody if they want – I feel like everything is so legally-driven, and we can't do anything without a consent, ya know? You can't get blood, you can't do a lot of stuff without the patient's consent, nothing. You really can't, whether it's a verbal or written. I think that should not be a nurse-driven thing. I wouldn't feel comfortable doing it."* Another nurse said, *"So I personally wouldn't want to ask them. I'm OK asking them, but just getting that signature and then putting my license then the patient coming back and saying, 'I didn't consent for this.' I can easily be thrown under the bus as a nurse, unfortunately… that's the structure that we're taught. If it's something really important, have the physician do it. Their name is golden, you don't want to get in trouble for the patient coming back and saying they weren't educated properly, or they found out something else that wasn't discussed."* In this way, many nurses indicated they were more comfortable maintaining the status quo and letting the prescriber drive HIV testing and consenting.

HIV testing consent misinformation

Several nurses did not know that consent for HIV testing was a verbal process, including one nurse who said, *"I'm almost positive it's a written-consent thing."* Another nurse said that she had accidentally consented someone for HIV testing without knowing there was a need for documenting it, *"So I just drew all the tubes. I told the patient what I was doing, and then the nurse was like, 'Oh, did you get the HIV [testing] consent?' I was like, 'I have no idea what you're talking about.'"* Participants described a large amount of confusion about both the legal and hospital protocols around HIV testing, likely attributable to the laws around HIV testing consent changing over the years with substantial variability between states. Throughout the focus groups and interviews, it was clear that even the TuftsMC HIV testing protocol was not well known among staff.

Offending patients

Several nurses were concerned that offering HIV testing to all patients would offend patients, particularly older, married patients. This is exemplified in this quotation, "*We can test all patients for STIs and HIV because we don't want you to be having these things and not knowing about them. But I just feel like they kind of aren't normalized or the patients are old-fashioned. These old people that are like: 'I don't need to be tested for that stuff. What's the point of that?' Versus no one's going to say that about the flu or COVID."* HIV is stigmatized, particularly among older, lower risk patients. Thus, many nurses were concerned that offering HIV testing to all patients would mar the nurse-patient relationship, and this loss of rapport could potentially harm other aspects of patient care. For instance, one nurse discussed how she envisioned a potential interaction with a patient after offering HIV testing: *"You think I have HIV?! Because I'm an IV-drug user you think I have HIV?! Alright. No. I'm not doing this. I'm not taking any of your meds."* Another nurse stated that in the current climate, many patient-nurse relationships were already "hanging on by a thread" and indicated that it was important to maintain as much rapport with patients as possible.

Facilitators/strategies

HIV testing is beneficial to public health and occupational safety

A prevalent theme across focus groups and interviews was that hospitalized patients are a "captive audience" who should be offered preventative care services during their admission. One nurse said, *"I like the idea of catching surgical patients and those people that* [sic] *get the total knee and the people that get total hips, those kinds of patients. Those people that* [sic] *aren't in here for an illness, that* [sic] *are in here for maybe a mechanical issue or something along those lines, those people get a head start on their immunizations and get protected for the season. We have them here; we have the opportunity. It's kind of a time saver for everybody so they don't make one last trip to their PCP (primary care provider). Kind of for the greater good."* Nurses also recognized that many patients they care for do not have a primary care physician and therefore an inpatient hospitalization is an appropriate time to offer preventative medical care, with one nurse stating, *"Especially for someone that* [sic] *doesn't have a primary-care doctor. Like, while they're here, they'd probably be happy to get worked-up for whatever they could."* This nurse indicated that inpatient hospitalizations can be used to improve public health by offering preventative

health screenings to patients who may not get them any other way.

There was also discussion of the benefits of nurses knowing the HIV status of their patients. One nurse stated, *"We just had one patient recently who came in with a lot of – he had cut himself a lot and there was blood everywhere. I know the nurses had to go in and clean him up and they weren't aware that he was HIV positive. He was tested after while he was still in the ICU and came back to the ICU as he was HIV positive. That made people a little bit nervous just because there was so much blood that they were cleaning up. We're not always that diligent if we don't know."* While nurses recognize the importance of universal precautions, many also described that knowing the HIV status of their patients is beneficial to themselves and may even influence how stringent they are with personal protective equipment and bloodborne pathogen protocols.

Existing systems of care to support HIV testing

There are several systems of care built into the hospitalization that could be leveraged to increase HIV testing. First, nurses stated they would feel more comfortable offering HIV testing if asking about testing was built into the admission checklist: *"I feel like on the inpatient side, if it was added to the admission assessment, I would feel comfortable asking. 'We ask all patients this: Do you do drugs, do you drink alcohol, would you like HIV testing while you're in the hospital?' I feel like if it was in a format like that, if someone wanted to be tested, they could opt to be tested."* Second, all hospitalized patients are also given electronic tablets, and nurses felt that educational materials on HIV testing could be added to the tablets. Third, the hospital also has "needlestick protocols" which are activated if a staff member sustains a needlestick. Several nurses agreed that needlestick injuries permit nurses to obtain consent for HIV testing. One nurse described this, *"Let's say I was stuck by a needle that I had used on my patient or whatever, then we ask them for consent for HIV [testing], and Hep B, Hep C, whatever."* Notably, every focus group and interview discussed needlestick protocols. Fourth, less formal education occurs through systems of collaborative care. For example, nurses working in the ICU felt "empowered" as part of a team: *"I think we just work so closely with attendings, and the PAs and we have just a wide-reaching order access… We're just really empowered, we're well-educated, so it just feels like we have a really collaborative team."* The nurses who described working in highly collaborative environments also tended to be the nurses who expressed more comfort with the idea of offering HIV testing to patients and who reported feeling supported by their colleagues.

Education and HIV testing

There are formal and informal systems of education built into the work environment. Formal education occurs through "in-services" with nurse educators. Several nurses felt that they were not yet adequately prepared to perform the consent process but noted opportunities to change this, as shown in this quote, *"If it was going to be a thing for nurses to do, I think it would be helpful to have more resources…. Because we don't have a whole lot of training around that."* One nurse offered suggestions for an educational session "*maybe some mock consents with some fake patients going through the whole thing and having the patient ask different questions and voice different concerns and having the nurse respond."*

Some nurses already felt comfortable with the idea of offering HIV testing, and these nurses could serve as champions holding in-service educational sessions. Two participants who had worked as nurses through the AIDS epidemic in the 1980s were much more comfortable discussing HIV testing with patients compared to many of the newer nurses, with one stating that they already *"ask a lot of pretty invasive questions,"* and the other following with, "*Yes, we also know if they're sexually active anyways, so we might as well just bolt that into it. Are you worried about having HIV?"* Another nurse said, "*I guess sometimes it's helpful to have a set – I don't want to say like a script to read off of, but something to start with where it's like this is the recommended way to introduce it. Some people are just going to say yes or no and at least you can just say, 'We offer this, do you want it?' simply, or something like that."*

Many nurses discussed in-service trainings as opportunities for additional education around offering HIV testing to patients and obtaining HIV testing consent. One nurse described how current in-service training formats could be used to provide training on HIV testing for nurses: *"Someone who knows what they're doing comes and sits down with the nurse and says, 'Hey, we're rolling out this policy or this new product. This is how you use it. This is how you troubleshoot it, and these are the common questions we see.' So it can be a role play, like a sheet, a checklist, and it just gives nurses the tools they need to be able to do their jobs safely."* Furthermore, one nurse mentioned there was blood borne pathogen training during the hospital orientation and indicated this could also be a place for more HIV-specific training to occur.

Discussion

This novel research project aimed to gather inpatient nurses' perspectives on expanding HIV consenting and testing. Findings from 48 participants expressed concerns about nurses' ability to offer HIV testing legally and ethically to hospitalized patients. There were also concerns about offending patients and that HIV testing

was not a priority for most hospitalized patients. However, participants also offered strategies for implementing nurse-driven HIV testing. These strategies included using existing systems of care and education. Although the interviews and focus groups showed some significant barriers, facilitators also emerged among the themes. We mapped these barriers and facilitators onto three main strategies: protocolization; engagement and trust; and champions.

Protocolization is a strategy that already exists to support nurses in caring for and preventing infections in hospitalization patients [25]. A systematic review that evaluated nurse-initiated HIV screening in the United States, United Kingdom, and France found successful implementation of nursing-led HIV testing and education initiatives [14]. Most of the published data show successful implementation of nursing-guided testing in urgent care clinics and outpatient settings (e.g., nurse-initiated HIV screening and educational intervention provided by an HIV-focused nurse) [26–29]. There are already protocols in place for HIV testing in the case of a needle-stick injury and there are already scripts available for nurses to use when offering medical services to patients. The standardization of teaching with in-service education sessions and continued nursing credits could also be used to support education.

Protocolization can also assist with concerns about negatively impacting the nurse-patient relationship. In 2011, a hospital in Rhode Island piloted a standing nursing order for opt-out HIV testing to increase testing [30]. Patients, nurses, and physicians were surveyed about their experiences following implementation. A notable finding was that nurses expressed concern about offering HIV testing because of the possibility of patients being upset, but none of the patients in this prior study reported feeling upset. Nurses interviewed in our study had similar concerns; however, nurses already ask patients questions about sensitive topics, such as substance use and sexual health, and spend time with patients completing personal care tasks. Specific concerns about upsetting patients with questions about HIV may be indicative of the historical context and the enduring stigma related to HIV. For one, nurses' concerns are emblematic of the downstream consequences of HIV exceptionalism [31]. The consent process for HIV testing is one piece of "HIV exceptionalism," the idea that HIV is an "exceptional" infection with associated medical, financial, and legal liabilities different from other illnesses and infectious diseases [32]. While this was justified early in the AIDS epidemic, there has been a push in recent years to move away from HIV exceptionalism, as it may act to prevent HIV diagnosis and treatment by perpetuating stigma [32].

Engagement of nurses is necessary to gain trust and to develop feasible systems that will not be too burdensome. Despite being presented with confirmation that offering and consenting for HIV testing is within the purview of nurses, several questioned if they could legally obtain consent for HIV testing. Nurses expressed concerns about losing their licenses, being sued, or being "liable." Nurses reflected on the hierarchical culture of medicine and how they were taught nurses were scapegoated for systems-based problems in the past. Nurses expressed that they trusted their state board of nursing to define and determine what was within their scope of practice. Results indicate that any changes to nursing practice should be done in conjunction with relevant licensing agencies as well as facility-specific legal teams to protect nurses and instill confidence in them that the proposed change is within their scope of practice.

In the same vein, any changes made to clinical duties must also be discussed with and deemed feasible by the nurses performing the task. A theme that came up in our study was that administrative tasks were assigned to nurses without their consultation. Administrative barriers, like increased need to "click through" EMR (electronic medical record) prompts have been cited in several studies as increasing nursing burnout [33–35]. Any changes made to nursing admission checklists or administrative duties should involve nursing input during development and implementation to ensure that the proposed changes are feasible and do not impose a prohibitive amount of clerical burden on nurses.

Leveraging existing strengths, such as champions, as the basis for novel HIV outreach pilot programs may increase HIV testing. Nurse champions are best conceived as "frontline practitioners" who engage interdisciplinary team members in efforts to exact social change, influence policy reform, and improve the safety and quality of patient care [36]. They are experienced and knowledgeable nurses who work to identify and address healthcare challenges and optimize patient outcomes. Broad goals such as these are best achieved amongst organizations that foster healthy work environments characterized by positive relations, optimal communication, and trust [36]. Many of the inpatient nurses who participated in the focus groups and interviews were vocal champions in support of improving access to preventative healthcare in the inpatient setting and increasing access to HIV testing while patients are a "captive audience." During the planning phase of this study, we also found many champions among nursing leadership who supported the addition of universal opt-in HIV testing to the admission checklist. TuftsMC's history of nurse champions is not limited to this study or its exploratory phase.

Limitations of this study include that it only occurred at a single hospital in Boston, MA. Opinions of nurses in other settings may differ, and qualitative work is not generalizable, so additional systemic evaluation may be needed to confirm consensus of the results among inpatient nurses more broadly. We did not collect demographic information due to concern for collecting potentially identifiable information. This may have limited our analysis. Our focus groups deviated from the recommended range (4–8 participants) [37] which may have affected the data richness and group dynamics. While studies have shown optimal focus group size captures nuance perspectives and achieves data saturation, it can be argued smaller groups can facilitate deeper conversation about complex topics [37–39].

Despite these limitations, we found a consensus among inpatient nurses at our medical center that expanding HIV testing would be beneficial for patients, the community, and nurses. Fostering trust within treatment teams and between patients and nurses will allow for nurses to obtain patient consent for HIV testing and feel supported by the hospital while doing so. Obtaining the support of nurse champions is crucial for ensuring that universal opt-in HIV nurse-driven testing is implemented successfully, is acceptable, and sustained beyond the initial uptake.

Conclusion

We found that nurses were concerned about offering HIV testing increasing their chart burden, that HIV testing was not a priority in hospitalized patients, that obtaining consent for HIV testing was beyond their scope of practice, and they were concerned about offending patients. There were discrepancies between the participants' beliefs of HIV testing protocol and actual hospital/state policies. Nurses believed HIV testing was important for personal and public health, that current systems of care could be used to develop an HIV testing protocol, and that there were strong educational systems in place to support implementing an inpatient HIV testing program. This study clarified that while there are significant barriers to implementing universal, nurse-driven inpatient HIV testing, there are existing strategies and strengths that could be utilized to create a sustainable program, including nursing champions, protocolization, and engagement and trust.

Supplementary Information

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Supplementary Material 1

Supplementary Material 2

Supplementary Material 3

Supplementary Material 4

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Author contributions
EDG: Investigation (equal), writing original draft (equal), formal analysis (equal), coding (equal), and conducted field interviews and focus groups (equal). SDD: Investigation (equal), writing original draft (equal), formal analysis (equal), coding (equal), and conducted field interviews and focus groups (equal). OA: Investigation (supporting), coding (equal), review and editing (supporting), and figure illustration (lead). MM: Conceptualization (supporting). PJB: Conceptualization (supporting). AWB: Supervision (supporting), review and editing (supporting). AGW: Supervision (lead), funding acquisition (lead), review and editing (lead), and conceptualization (lead). All authors have read and approved the final version of the manuscript.

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Data availability
No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate
The Tufts Health Sciences Institutional Review Board (STUDY00003176) deemed the study exempt from human subjects' research under the Health Insurance Portability and Accountability Act. This determination was made because the study does not involve the use or collection of protected health information. The study was conducted in compliance with the Helsinki Declaration. Informed consent was obtained from all nurses who participated in the study.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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