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Health professional perspectives on integrating substance use services into pediatric hospitals for adolescents with chronic medical conditions

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Abstract

Adolescents with chronic medical conditions (A-CMCs) are at elevated risk for alcohol and substance use (SU) and its adverse health consequences, yet screening and intervention remain limited in pediatric hospitals. This study identified barriers and facilitators to SBIRT implementation within an urban pediatric hospital, using the Learning Health System (LHS) framework and the Consolidated Framework for Implementation Research (CFIR) to embed SU prevention into routine clinical care. Guided by CFIR, we conducted semi-structured interviews with 26 multidisciplinary hospital staff. Interviews were analyzed deductively using CFIR domains to elucidate determinants influencing SBIRT implementation, with attention to LHS principles of continuous learning and data-driven improvement. Facilitators included provider perception of SBIRT effectiveness, alignment with existing hospital workflows, electronic health record integration with decision support tools, and engagement of behavioral health staff, which are all consistent with LHS mechanisms of routine data use and continuous learning. Barriers included high patient acuity in the pediatric emergency department and inpatient settings, insufficient SU screening protocols, competing workload priorities, unclear role responsibilities, billing challenges, and concerns regarding SU stigma among patients and families. Participants emphasized that implementing SBIRT in pediatric inpatient settings requires multi-level strategies that leverage LHS strengths such as embedded data capture, real-time decision support, and continuous quality improvement cycles to overcome barriers. Addressing identified barriers via workflow piloting, standardized screening tools, leadership alignment, and training may enhance system capacity. Future research should evaluate LHS-enabled implementation models for SBIRT to scale equitable SU interventions within pediatric hospital settings.

Keywords Implementation science, SBIRT, Adolescent substance use, Chronic medical conditions, Learning Health System, Pediatric hospital

1 Introduction

In recent years, drug overdose mortality has risen faster among adolescents than the general population, largely due to opioids [1, 2]. This is an especially important risk factor for adolescents with chronic medical conditions (A-CMCs) as they are more likely to misuse and initiate substance use (SU) at younger ages compared to adolescents without CMCs [3, 4]. SU in A-CMCs poses additional risks including adverse medication interactions, increased treatment non-adherence, poor disease control, and higher likelihood of prescription medication misuse and accidental death [5]. A-CMCs account for the majority of pediatric emergency department (ED) visits and inpatient hospitalizations following an ED visit for an exacerbation of their disease [6–11]. However, A-CMCs are not routinely screened for SU in pediatric inpatient settings even though they are often discharged on opioid medication to manage the pain that accompanies their medical conditions [12–14]. Thus, the pediatric ED and inpatient settings offer clinicians a critical, but missed, opportunity to universally screen for SU among A-CMCs once medical concerns are stabilized.

Screening, Brief Intervention, and Referral to Treatment (SBIRT) is an evidence-based approach to detect and provide early intervention for adolescent SU that is widely endorsed across pediatric settings [15, 16]. The goal of the SBIRT model is to employ universal screening (S) to identify adolescents at risk of SU disorders, administer appropriate brief intervention (BI), and initiate referral to treatment (RT) when indicated [15, 16]. The National Institute on Drug Abuse, National Institute on Alcohol Abuse and Alcoholism, the American Academy of Pediatrics, and the scientific community have widely endorsed the SBIRT model as an intervention that should be implemented across pediatric ambulatory and ED settings to prevent and reduce SU among adolescents [17–21]. Use of SBIRT is included in the guidelines for SU disorder treatment by the American Academy of Pediatrics, with recently published guidelines recommending that SBIRT be routinely used with A-CMCs [18]. Despite this strong endorsement, the uptake and sustainability of SBIRT in pediatric ED and inpatient settings remain limited [22]. Commonly cited barriers to the utilization of SBIRT span multiple levels including barriers at the patient-level (e.g., ethical challenges related to adolescent SU disclosure); provider-level (e.g., limited knowledge of BI, time management constraints) and hospital-level (e.g., financial costs related to providing SBIRT; integrating screening tools into existing electronic health record systems). Even when implementers of SBIRT have been able to overcome these barriers and integrate SBIRT into treatment settings, sustainability has been challenging [22, 23]. In a study conducted to examine the sustainability of 103 SAMHSA-funded SBIRT outpatient programs after funding was completed, of the original sites in the six SBIRT grantee programs, 69 sites continued providing services in some reduced or modified capacity [24]. In another SAMHSA study across eleven multi-site programs in two cohorts, 67% of the original performance sites adapted and redesigned SBIRT services after initial grant funding had ceased [25]. These findings highlight the persistent challenges in sustaining SBIRT delivery, underscoring the need for multi-level implementation strategies to ensure long-term viability in pediatric healthcare settings.

Addressing these challenges requires not only evidence-based implementation strategies but also the infrastructure to support continuous learning and adaptation—central tenets of a Learning Health System (LHS). LHSs ideally address persistent challenges by

continuously aggregating and analyzing data from ongoing healthcare interactions to define best practices and embed these insights into the delivery process for improved care [26]. While LHS strengths include the continuous analysis of real-world clinical data, these analyses do not always clarify "why" a practice remains inconsistently adopted. LHS models are aspirational as they aim to increase ongoing dialogue among researchers, policymakers, practitioners, and patients and families to understand current practice and the opportunities for continuous healthcare improvement and innovation. By creating networks that link a broad range of health system partners, LHSs enable the development and implementation of evidence-based solutions to a community's health problems. SBIRT's implementation relies heavily on this LHS model, by urging collaboration among providers, researchers, and policymakers to identify barriers and facilitate solutions. This collaboration among all partners in the healthcare system ensures that current screening, intervention, and referral strategies are done with an understanding of systemic inequalities that may impede the facilitation of SBIRT.

Beyond the LHS framework, implementation science (IS) offers complementary methods and strategies to elucidate barriers and facilitators of best practices to promote the uptake of evidence-based interventions into routine clinical practice. The Consolidated Framework for Implementation Research (CFIR) is one of the most widely used determinant frameworks in IS, encompassing five domains and 39 constructs to guide the systematic assessment of intervention, inner setting, outer setting, individuals involved, and implementation process [27]. When applied within a LHS model, CFIR helps to structure learning cycles in which partner input can be gathered and used to continuously tailor and improve interventions like SBIRT. For example, CFIR domains may help illuminate whether a hospital's leadership engagement, staff readiness, or existing health record infrastructure supports or hinders the feasibility of SBIRT integration.

Given the persistent barriers and underuse of SBIRT among clinicians treating A-CMCs, we propose to apply a LHS framework and systematic IS methods to understand persistent barriers to SBIRT adoption. The overarching objective of the current study was to gather feedback from hospital staff (e.g., nurses, trainees, physicians, psychologists, social workers, and administrators from information systems) at an urban Midwestern pediatric hospital about their ideal SBIRT design features, given their hospital's typical workflow and system constraints. Specific aims of the study were to elicit barriers and facilitators of SBIRT implementation among A-CMCs, based on the CFIR domains. The long-term goal of the current study is to inform the adaptation of SBIRT for the pediatric hospital setting and for population of A-CMCs in a single-arm hybrid type 3 effectiveness-implementation trial in a pediatric hospital.

2 Methods

2.1 Design

Semi-structured individual interviews with pediatric hospital staff (i.e., nurses, trainees, physicians, psychologists, social workers, and administrators from information systems) were conducted to identify determinants, both barriers and facilitators, of SBIRT implementation among pediatric A-CMCs. Individual interviews focused on the five CFIR domains (1) intervention characteristics, (2) inner setting (e.g., clinical), (3) outer setting (e.g., policy and reimbursement), (4) characteristics of individuals involved in the implementation process, and (5) implementation process (Appendix 1).

2.2 Setting

The pediatric hospital was located in an urban area in the Midwest, serving youth and families at their main campus and satellite offices and clinics across the state [28]. The pediatric hospital had a longstanding history of serving A-CMCs, with expert care delivered by a multidisciplinary team tailored to children's and adolescents' unique needs. In fiscal year 2022, the hospital reported over 928,000 total patient visits, encompassing more than approximately 808,000 outpatient visits, 79,500 emergency department visits, and 30,000 inpatient admissions. These services were provided to more than 239,000 pediatric patients presenting with a range of chronic medical conditions, ranging from pulmonary conditions to cancers and other blood-related disorders [29]. Although the hospital did not conduct universal screening of A-CMCs for SU, there was an existing infrastructure for providing SU services for adolescents identified as high risk in the course of usual care; specifically, there was a social work consultation service and a SU outpatient treatment program that served as a referral source for adolescents identified as needing specialty care. The hospital has infrastructure consistent with LHS-aligned practices, including enterprise EHR capabilities, existing clinical decision support tools, and mechanisms for quality improvement and performance monitoring. At the time of data collection, SBIRT had not yet been implemented or embedded as a formal LHS initiative. This qualitative study was conducted to inform subsequent workflow design, measurement planning, and iterative refinement needed to integrate SBIRT into routine inpatient care.

2.3 Procedures

All procedures were approved by the Institutional Review Board at Ann & Robert H. Lurie Children's Hospital of Chicago, which is affiliated with Northwestern University Feinberg School of Medicine, prior to participant enrollment. Due to the minimal risk associated with participation, the study was granted waiver of documentation of consent (IRB: 2022–5048).

2.3.1 Recruitment

We employed purposive and snowball sampling to recruit a mix of hospital staff from 5 divisions serving A-CMCs: (1) Hematology, Oncology, Neuro-Oncology, & Stem Cell Transplantation; (2) Pulmonary and Sleep Medicine; (3) Transplantation; (4) Emergency Medicine; and (5) General Medicine. To qualify, hospital staff had to meet the following inclusion criteria: aged 18 years or older; employee or faculty at the urban Midwestern pediatric hospital; position in the patient workflow; and oversight of workflow or technical implementation of workflow in which SBIRT is likely to be imbedded. We intentionally recruited at least 2 individuals from different disciplines, namely nurses, physicians, psychologists, social workers, and administrators from hospital information systems. The sample size was determined based on qualitative implementation research conventions and to capture diverse perspectives across key divisions and disciplines. We targeted approximately 20–25 interviews to support coverage of CFIR domains and to assess saturation. Recruitment concluded at 26 participants when thematic saturation was reached and perspectives across planned stakeholder groups were adequately represented.

Eligible hospital staff were identified by reviewing the organizational chart in each department at the pediatric hospital. The principal investigator (PI)contacted eligible staff via email using an introductory script. Interested staff were scheduled to participate and consented immediately prior to the interview.

2.3.2 Qualitative interviews

Individual interviews were led by the PI, a pediatric clinical psychologist, over Zoom, and lasted approximately 45 min. Audio recordings from the interviews were collected and transcribed verbatim. All staff who took part in the interviews were given $25 gift cards. Hospital staff were first provided introductory information on SBIRT and asked questions regarding their knowledge of SU among A-CMCs. They were then asked questions regarding SBIRT implementation determinants based on the five CFIR domains. Hospital staff were asked what would be needed to implement SBIRT in their setting and how SBIRT might fit in with their current practices, which led to a broader discussion on desired behavioral health screening initiatives in the hospital, features of the initiatives, and integration considerations.

2.3.3 Data analysis

The transcribed and de-identified interviews were uploaded to Dedoose (9.2.22) and analyzed for summary and thematic content. The analysis used a deductive approach to identify which CFIR determinants influence the implementation of SBIRT [30]. Our codebook consisted of four codes within the Characteristics of Individuals domain (Knowledge & beliefs about SU, Knowledge & beliefs about SBIRT, Access to knowledge and Information, and Self-efficacy); three codes within the Implementation Process domain (Opinion Leaders & Key Stakeholders, Engaging, and Patients & Families who will participate in the SBIRT intervention); seven codes within the Intervention Characteristics domain (Evidence Strength & Quality, Relative Advantage, Adaptability, Trialability, Complexity, Design Quality & Packaging, and Cost); four codes within the Outer Setting domain (Patient Needs & Resources, Peer Pressure, External Policy & Incentives, and Cosmopolitanism); nine codes within the Inner Setting domain (Structural Characteristics, Networks & Communications, Culture, Compatibility, Relative Priority, Organizational Incentives & Rewards, Learning Climate, Available Resources, and Tension for change), and three codes not included in CFIR (Past success, Ideas for success, and SBIRT data use). To create our codebook the lead qualitative analyst tailored the CFIR codebook by including SBIRT specific wording in the existing code definitions and example excerpts after review of the first three transcripts. In addition to this tailoring of existing codes, the study team added an additional three codes that were important for the pediatric hospital setting but not reflected in the existing codebook: past success, ideas for success, and SBIRT data use (Appendix 2).

The coding team consisted of the PI, a lead qualitative analyst, and five trained research staff who served as qualitative coders. The lead analyst provided initial training and ongoing technical assistance to the coding team throughout the project. Each interview transcript was blind double-coded by a team of two using a consensus approach. Any code or placement discrepancies were discussed within the coding team and, if consensus could not be reached, the discussion was brought to the PI for final adjudication. After coding was complete, excerpts were independently reviewed and summarized by

teams of two to identify themes. These initial themes were then presented to the full project team for discussion, interpretation, connection and sense-making. This process resulted in the final themes identified in this effort. Formal interrater reliability statistics were not calculated given the use of consensus coding.

3 Results

3.1 Participants

In total, 26 pediatric hospital staff (100% of the target) were recruited. Table 1 describes the demographic information for the participating staff. Nearly half (46%) of the staff identified as front-line clinicians, 19% in middle management, 12% in executive positions, and 23% identifying as "Other roles" (e.g., information technology, quality improvement, or a combination of roles (e.g., front-line and middle management). The majority of staff (85%) identified as non-Hispanic White and predominantly female (85%). A large portion of participants identified as 50 + years (38%) of age. There was variability in years of employment at the hospital, with 27% having less than 5 years, 31% employed 5–15 years, 19% employed 16–25 years, and 23% employed more than 25 years at the hospital.

3.2 CFIR themes

Table 2 provides an overview of the reported facilitators and barriers for each theme (CFIR domain) and sub-themes.

Table 1 Demographics of pediatric hospital professionals

	N **= 26**	**%**
Job rank		
Front line	12	46
Middle management	5	19
Executive	3	12
Other	6	23
Race & ethnicity		
Non-Hispanic black	1	4
Non-Hispanic Asian	1	4
Non-Hispanic White	22	85
Hispanic	2	7
Age		
18–29	1	4
30–39	8	31
40–49	7	27
50+	10	38
Gender		
Female	22	85
Male	4	15
Years of employment		
< 5 years	7	27
5–15 years	8	31
16–25 years	5	19
> 25 years	6	23

Table 2 Summary of CFIR domains and implementation determinants

Domains & sub-domains	Facilitator	Barrier
Characteristics of individuals		
Knowledge and beliefs of SU	SU is prevalent among adolescents and has short- and long-term health consequences. SU assessments are often overlooked for children with chronic medical conditions (CMCs)	Lack of standardized SU screening in the setting Many teens are not honest about their SU. Providers may have difficulty differentiating SU and prescription medication adherence
Knowledge and beliefs about SBIRT	SBIRT seems beneficial and manageable in the setting. SBIRT appears to be an effective tool for identifying young people who use substances	Lack of familiarity of SBIRT
Access to knowledge and information	Clear communication and provided trainings will boost staff confidence for a successful implementation	No barriers
Self-efficacy	SBIRT can be integrated into the clinical workflow and administered by staff with proper training (i.e. social workers or nurses)	Lack of training in SBIRT and SU screening. Staff are overworked and may not have the bandwidth to administer SBIRT
Implementation process		
Opinions leaders and key stakeholder	A multidisciplinary team that undergoes training to administer SBIRT. Nursing leadership and social workers are crucial to screening the patient. Clinical practice directors, digital health personnel, and medical and department heads are important for approving the intervention Demonstrating the success rates of SBIRT and highlighting the importance of the intervention will persuade clinicians to start implementation	New interventions may face resistance without strong executive-level support
Engaging	Institution encourages cross-division collaboration for intervention implementation	No barriers
Patients & Families who will participate in the SBIRT intervention	SBIRT would be an overall benefit to patients as long as it is administered in a discreet, sensitive, and standardized manner	Lurie's communication style with patients of different origins may not be favorable for the implementation Anticipate pushback due to stigma still surrounding SU
Intervention characteristics		
Evidence strength & quality	SBIRT's effectiveness data in reducing SU would increase receptibility	Lack of referral sources
Relative advantage	SBIRT is currently the only known standardized screening tool for SU SBIRT seems generalizable to fit in different unit workflows and EHRs	No current universal SU screening integrated in the inpatient workflow
Adaptability	SBIRT can easily fit into the workflow. Ancillary staff, nurses, clinicians, social workers, and attending physicians can administer SBIRT in the first 24–48 h of admission	The logistics (who, what, where, when and how) for how the three SBIRT components will be implemented is unclear and may be different across the units within the hospital
Trialability	SBIRT pilot in two units before full-scale implementation is encouraged	No barriers

Table 2 (continued)

Domains & sub-domains	Facilitator	Barrier
Complexity	SBIRT's three components are straightforward and do not seem complicated to integrate at the surface level	Concerns with confidentiality when screening adolescents with chronic illness There are challenges of implementing SBIRT into current workflow, specifically the uncertainty over who (e.g. nurses, social workers, residents) will be responsible for implementation and follow-up. Clinical staff are already overwhelmed by current responsibilities
Design quality & packaging	Access to educational materials such as trainings or online modules	Allotting time to train staff to administer SBIRT
Cost	SBIRT may reduce the number of readmissions if co-morbid SU in this population is addressed	Implementing SBIRT will have multiple costs (i.e. hiring and training staff like, consultants, data analysts, nurses to administer SBIRT)
Outer setting		
Patient needs & resources	SBIRT would be beneficial for identifying SU early in treatment for this vulnerable population (i.e. adolescents with chronic medical conditions)	SBIRT can be difficult to administer because of the stigma associated with SU. Also, some providers are concerned about patient honesty due to the intervention's subjective nature
Peer pressure	Past success with implementation in pediatric emergency departments Innovation to be a pioneer of SBIRT implementation in the pediatric inpatient setting	Not enough familiarly about SBIRT among providers No other pediatric hospitals have implemented this in the inpatient setting
External Policies & Incentives	American Academy of Pediatrics Recommendation of SBIRT	Not Joint Commission mandated
Cosmopolitanism	Institution has collaborative relationships with local pediatric hospitals and community-clinics	No barriers
Inner setting		
Structural characteristics	Effective integration of SBIRT necessitates collaboration across departments	Existing staffing shortages
Network & communications	Communicate with multidisciplinary departments (i.e. meetings, global emails, and newsletters) that would be involved in the screening process	No barriers
Culture	Lurie's improvement-focused and collaborative culture Clear communication through daily organization-wide emails, monthly town halls meetings and division-level meetings. Mandatory staff trainings related to patient behavioral health	Behavior change is hard when staff is overburdened by shortages Staff pushback related to discussing SU in this population
Compatibility	SBIRT is related to other hospital-wide initiatives (e.g., universal suicide screening and health equity) and is compatible to integrate into EHR	Adopting and implementing SBIRT effectively across different units with different workflows may be challenging
Relative priority	Universal SU screening of adolescent patients with CMCs is important	SBIRT efficient EHR workflow integration may be time consuming
Organizational incentives and rewards	Have clear and efficient communication and logistics. Determine varying incentives for different groups	Lack of resources to incentive the implementation

Table 2 (continued)

Domains & sub-domains	Facilitator	Barrier
Learning climate	Access to the necessary tools and information is essential for effective implementation (i.e. steering committee that created initiatives and provides trainings for staff)	No barriers
Available resources	Information and data management teams are trained to assist with SBIRT EHR integration	Widespread staffing shortages across the institution (i.e. Support for behavioral health services are limited) EHR platform (e.g., Epic) barriers may complicate integration of SBIRT that protects patients' privacy
Tension for change	Interventions that address public health are crucial	Interventions that address public health (e.g., SU) are slow to scale
Additional codes		
Past success	Buy-in from executive sponsors and directors is important in successful implementation of universal SU screening implementation in the ED	Finding resources to hire additional staff and to make workflow adjustments were challenging
Ideas for success	Framing SBIRT as a public health equity-justice issue will increase buy-in EHR integration is crucial	Nurses are overworked to take on the implementation of SBIRT
SBIRT data use	SBIRT should align with CURES Act guidelines Adding screener results on patient's MyChart or Epic Data is standardized across community-based organizations and healthcare	Auto-triggering in a non-ambulatory setting without requiring staff to manually send out the screener. Uncertainty of how the data will be tracked, extracted, and reported Concern for the capture, documentation, and release of sensitive information

3.2.1 Characteristics of individuals

Hospital staff discussed barriers and facilitators related to (1) their perceptions of SU risk among A-CMCs, (2) their perspectives on patient and clinical receptivity to SBIRT, and (3) their prior familiarity with SBIRT.

Recognition of the need to address SU among A-CMCs commonly emerged as a facilitator. The majority of participants recognized that SU among A-CMCs was a significant concern, with potential to worsen disease outcomes and compromise treatment adherence. Some emphasized how psychological distress and chronic pain management contributed to misuse. As one clinician noted, "*I feel like it comes up regularly that some of our teen patients sort of seek substances to offset pain or discomfort related to their condition*" (P21). Another participant highlighted the intersection with mental health: "*We know that there's a lot of co-occurrence in mental health and substance abuse issues. So, yes, I think it's very important*" (P10). Others elaborated on how SU could directly undermine physical health outcomes. "*I think a lot of the adolescents are likely vaping. Although I would like to think that they have pulmonary disease, so they wouldn't vape… but I've been surprised… Any inhalation of substances impacts the airways… and I'm sure has a detrimental effect on their lung function*" (P15). Despite widespread concern about SU, several participants noted the absence of consistent or standardized screening in the hospital. One provider reflected, "*I don't think there is a lot of consistency around asking these questions… I think there's a need to be more thoughtful about that*" (P3). Another

stated more directly, "*SU is increasing in the teenage population, and we don't do a good job of screening and treating generically*" (P22).

Participant impressions of SBIRT were another common facilitator. Most participants believed that SBIRT would be well-received by both patients and clinical teams. One provider reflected, "*I think it will be well-received. I think patients will… appreciate it, and, you know, kind of use it, respond to it*" (P20). Another provider noted that clinical teams would likely be interested in SBIRT if there were sufficient guidance on how to deliver it: "*I think they will be receptive, but we have a lot of researchers on our teams, so I think they will have a lot of questions about the details—how to implement it in a way that's going to be standard and have the highest efficacy*" (P5)." In contrast, participants' familiarity with SBIRT was consistently cited as a barrier. Familiarity was limited with most participants, having not encountered it before the study. "*I never heard of it*" (P9), said one participant, while another added, "*I was not familiar. I had no idea what that is, to be honest*" (P17). One participant who had some prior awareness viewed SBIRT positively: "*I think it has tons of potential… the universal screening as being something that's adapted more easily once people get familiar with the screening tool*" (P19).

While there was consensus on the importance of addressing SU, some participants differed in their readiness and in how they envisioned SBIRT fitting within their clinical scope. The need for clarity around role responsibilities and training emerged as a recurrent concern, suggesting both enthusiasm and uncertainty about practical implementation.

3.2.2 Process

Participants described several factors shaping the feasibility and acceptability of SBIRT implementation, emphasizing (1) the importance of multidisciplinary collaboration, (2) the need for training and integration of SBIRT into the workflow, and (3) concerns about competing priorities.

Most participants emphasized the value of involving multidisciplinary teams as a factor supporting the planning and executing of SBIRT. They believed that diverse perspectives could help identify practical implementation strategies and build buy-in. As one participant explained, "*I think having a multidisciplinary group think through how to do this would be really pivotal… best practices that have been used in the past – maybe not for this specific tool but any other tool – that could lend itself as we navigate that framework*" (P3). Most participants also identified training as an essential facilitator for successful implementation. "*People need a little bit of training on the intervention… once they get comfortable, I think it could be part of the routine*" (P19). When asked about how SBIRT might be operationalized, many believed that social work would be the most logical team to lead screening efforts, particularly given their experience with psychosocial assessments. "*It's gonna need to be social work because… if you're gonna screen, you got to do something. You have an ethical responsibility*" (P7). A participant working with chronic care teams explained: "*We have a social worker that works specifically with our cystic fibrosis population… having our social workers be able to guide what we're doing, I think is helpful*" (P15). Logistical facilitators included existing infrastructure for other screenings and confidence in the hospital's EHR capabilities. "*I see a place because we have the best practice alerts… it can definitely fit in with existing workflows*" (P11). Others were optimistic about the technical feasibility due to other ongoing, compatible

processes: "*We're screening for social determinants of health, so no problem here*" (P7), and "*I feel confident we can build anything in the electronic health record*" (P1).

At the same time, several participants flagged challenges related to screening fatigue and competing demands within hospital workflows. *"There's a lot of competing screening processes that are in place,"* one staff member noted. "*It would be important to embed* [31] *within the work, and then… give those that are doing the screening the connection to those resources in a clear and easy way*" (P25). Other participants reflected on the need to proactively attend to the cumulative burden of multiple screenings already in place: "*We're doing all the social determinants of health screening… then everyone's getting a suicide screen and a PHQ-9… it just does become a lot in the clinic space*" (P8); and "*I think when specifically, an inpatient, but even broader, maybe someone who's coming into the ED, or Ambulatory Services, or screened for a host of other things. Suicide, for example, elopement risk, any family issues that they may have are just a few that come to the top of my mind. So, I think there are a lot of things to screen for, and sometimes with the volumes of patients that we have now, and the challenges with staffing, it can be difficult to complete all of the screenings"* (P25). These concerns were often tied to broader reflections on organizational readiness and the need for executive-level support to ensure that SBIRT would not be deprioritized or implemented inconsistently.

Finally, although the majority of participants largely agreed that SBIRT aligned with the hospital's mission and EHR infrastructure, they emphasized that implementation would require effortful integration into clinical workflows. Most participants expressed particular concern about how SBIRT would be operationalized across different departments, roles, and touchpoints. "*The tool probably is okay. It's the who does it, when they do it, and who's gonna follow up? Those are the million-dollar questions*" (P7). Despite these concerns, some participants felt the additional steps required to integrate SBIRT could be manageable with thoughtful planning. "*I don't think it would be overly burdensome to ask of the patient… from a provider standpoint there would be additional steps… but I don't think those would be extraordinarily complex or time-consuming*" (P2). Others highlighted the need for clear planning before implementation: "*You'd wanna work out all those processes… like handoffs from one team member to another, and how your Epic build is setup based on what you're gonna try to measure*" (P13). The majority of participants widely endorsed the idea of piloting SBIRT before full-scale implementation to refine workflows, clarify responsibilities, and build staff buy-in. As one participant concluded, "*You wanna get your documentation right… before you start collecting a ton of data and then realize you're not getting what you need*" (P13).

3.2.3 Intervention characteristics

Participants reflected on several features of SBIRT that shaped their perceptions of its utility and feasibility. They emphasized (1) the evidence and flexibility of the intervention, and (2) the importance of confidentiality and privacy protections and (3) the need to pair screening with meaningful follow-up.

Characteristics of SBIRT were viewed positively and frequently emerged as facilitators. Across roles, the majority of participants appreciated that SBIRT is one of the few available standardized, evidence-based approaches for addressing adolescent SU. "*From what I know, we don't have anything better*," one participant noted, "*And so, I think it's worth a try*" (P10). Others were drawn to its simplicity. "*It seems pretty straightforward*,"

remarked one provider (P3), while another added, "*The brief part of it is good… if they're short and very regimented and can be easily incorporated into workflow, those are the types of things that are going to be more successful*" (P11). Several participants noted that SBIRT's adaptable design would support implementation across both inpatient and outpatient settings. "*As an outpatient provider, I'd definitely like to see it as part of our routine paperwork*," said one clinician, "*and I'd say, on an inpatient unit, it would be very easy to incorporate that into the intake process… I think it would be really great to incorporate that…*" (P14). This perceived adaptability—across departments, roles, and points of care—was viewed as a key strength of the intervention.

At the same time, almost all of the participants consistently emphasized that privacy and confidentiality would be critical to successful implementation—particularly given the sensitivity of SU-related disclosures in pediatric populations. One provider described this potential barrier this way: "*You're dealing with sensitive information, which always adds a level of complexities… when you think about release of information, MyChart, proxy access, disclosure, disclosure, disclosure… how is this information being shared?*" (P1). Others reflected on the tension between adolescent privacy and parental expectations: "*I find that families oftentimes are very confused. 'I'm the parent… I should know the answers.' That doesn't encourage the adolescents to be honest… they might want to share but are very worried about what's going to happen to them when they go home*" (P4). Most participants underscored that without clear privacy protocols, adolescents may withhold information or disengage.

Some participants emphasized that screening must be paired with meaningful follow-up in order to be ethically and clinically sound. "*We're not gonna want to screen and not do anything about it*," one provider said, "*people get upset about that… you have an ethical responsibility. If you're gonna screen, you got to do something*" (P7). However, some raised concerns about the continuity of care once a youth discloses SU in the hospital. "*You identify a youth who's at risk or has acknowledged they are using… the family doesn't know… you're certainly going to refer that patient and family to services*," said one clinician, "*but they're gonna get discharged and go home and kind of be sitting with all of this*" (P4).

3.2.4 Inner setting

Participants discussed a range of contextual factors within the hospital that shaped their views on SBIRT implementation. Key subthemes included (1) a culture of innovation and prior success with behavioral health initiatives, (2) concerns about competing priorities and resource limitations, (3) concerns about institutional commitment to fund the initiative, (4) recognition of the need to obtain high-level leadership support and alignment with organizational priorities, and (5) the role of networks and communication disseminating information about SBIRT.

The hospital's culture of innovation was cited as both a barrier and facilitator. Many participants described the hospital as a place that values continuous improvement and has successfully rolled out related initiatives in the past. Several pointed to prior hospital-wide implementations such as universal suicide screening as evidence that SBIRT could be feasible. However, enthusiasm was tempered by concerns about capacity. One staff member noted, "*There are a lot of projects going on, and sometimes I think that interferes with how we're able to focus and move things forward… there's multiple competing*

priorities" (P6). Another added, "*If it starts to impose on staff who are already so strapped that they're having a hard time functioning, it will take a backseat*" (P16).

Many participants also described significant operational barriers related to competing priorities and resource limitations in the ED due to the ongoing behavioral health crisis. Many agreed that the high patient volume and acuity in the ED would make SBIRT difficult to conduct effectively with current resources. As one provider explained, "*There are tremendous barriers. I think it's a worthwhile project. I don't think you're going to get it off the ground until we fill in some of these huge holes in our provisions. I mean, to have kids sitting in the ER for 65 hours, because they can't get into a bed after they've been admitted is – you know, in my experience, unheard of, and if that's the kind of deficit we're operating on, this is not an ideal time to introduce something*" (P22). Another explained, *"So, if an adolescent is admitted [to the ED] on Friday… it's highly doubtful that that team of two people is gonna have the time to do this with that patient because they are also taking care of 31 other patients… So, I'm just trying to be realist and think who sort of is kind of doing this job anyway?"* (P16). As a result, many suggested shifting implementation to the inpatient setting, where workflows are perceived as more feasible: *"I think the in-patient side is less time-compressed. There's downtime and not downtime everywhere. Everyone feels like what they're doing is important"* (P10).

Privacy and documentation standards within the hospital were discussed as potential implementation barriers. A few participants flagged the sensitivity of SU-related disclosures in pediatrics, especially in light of federal regulations. One provider noted, "*This could be considered sensitive information, so how that gets released and what gets released… what's part of the legal medical record and what isn't?*" (P18). Another emphasized the complexity of ensuring confidentiality in such a fast-paced care setting: "*It's challenging in the pediatric ED… to get really accurate information without doing it confidentially. And I think the whole process of getting confidential information is one extra step that takes time and is unfunded*" (P10).

Some participants also raised practical concerns about the financial and operational implications of SBIRT implementation and the need for the institution to commit to funding implementation. These included costs related to EHR integration, training, staffing, and data monitoring. One participant explained, "*I think given our current fiscal climate, if it required any additional dollar investment it would take a backseat unless you have dollars.*" (P16). "*Depends on who's gonna do your Epic build… there might be cost associated because they might hire consultants to do the build,*" one staff member noted (P13). Others added, "*The cost of the time for the person to build these things, the cost of the training, the cost of the person pulling the data and developing reports*" (P11), and *"I think really talking about first the cost is really around the FTEs [full time equivelents] to support this"* (P1). Some participants anticipated that implementation might face resistance if costs were not clearly justified and if there were not a strong institutional commitment to provide sustainable funding. However, one provider pointed to a potential strategy: "*I think if you can speak to the fact that it will reduce admissions… improve adherence… then it would go a long way to making sure that the teams would be on board*" (P21); and *"The hospital gets no revenue for doing this and so I think it becomes more challenging from an operations, administrative perspective to figure out whose task it is"* (P10).

One of the most consistent facilitators that emerged across interviews was the importance of high-level leadership support and alignment with existing institutional goals, such as safety, high reliability, and health equity, would strengthen buy-in and facilitate adoption. "*From an organizational standpoint, I think being able to connect SBIRT with maybe some existing priorities. So, if we think about safety like I just said. We're certainly talking about safety being a highly reliable organization, and we talk about outcomes. Really ensuring equitable outcomes*" (P4). Several participants reflected on prior hospital-wide initiatives, such as suicide screening and social determinants of health assessments, that gained traction only after becoming formal institutional priorities. "*Make it an organizational strategy. I think those are usually when it's the best,*" one participant explained, "*if it's maybe not a top runner… we can align with health equity or quality… really trying to make it a goal for the organization, because when you make things a goal, then everyone has the support it needs*" (P1); *"It fits. Yeah, that's not an issue. We're screening for social determinants of health, so no problem here"* (P7); and *"I think it fits in. It aligns with vision and mission"* (P11). Others echoed this view, emphasizing the role of executive sponsorship in mobilizing resources and sustaining momentum: "*What I would say just in general—obviously huge buy-in from your executive sponsors and your frontline team from the beginning. Because if they're not making you their priority, then it's going to be harder*" (P18), and *"I think that if you can actually think about framing your intervention as being delivered with equity, I think that might be a nice, initial process outcome… that this was done equitably, and how this allows you to deliver a targeted intervention to an at-risk population"* (P10).

Many participants emphasized the importance of clear communication channels and existing networks for disseminating information about SBIRT. They described multiple avenues for staff to receive updates, including leadership councils, town halls, regular staff meetings, supervisor emails, and global communications. As one participant explained, "*I would say for the biggest bang to try to reach the most people, things like a town hall, things like a leadership council where we as leaders should go and be getting our information so we can pass that on to our teams*" (P4). "*We do have global [emails]. It's a global communication that goes out to the entire organization. It's moderately effective in my opinion…*" (P9). Another described benefitting from direct access to enterprise management meetings where new initiatives are discussed: "*I'm lucky enough to attend the EPMO meetings, so I hear a lot in the enterprise management office as requests coming through for new initiatives and projects*" (P13).

3.2.5 Outer setting

Some participants identified several external factors that shaped their perceptions of SBIRT's feasibility and importance. These included (1) the role of accreditation and policy mandates, (2) stigma and normalization of adolescent SU, and (3) challenges related to limited community awareness of SBIRT and lack of pediatric inpatient models.

Strong external guidance through the Joint Commission mandate [7] was viewed as a strong potential facilitator for implementation. As one provider put it plainly, "*I think that there's a Joint Commission mandate, then people would do it*" (P10). These participants noted that externally mandated policies often receive institutional priority and may help prompt resource allocation that internal initiatives struggle to secure.

In addition to structural motivators, a few participants discussed cultural norms surrounding adolescent SU. Some felt that societal stigma around SU was beginning to decrease, though it remained a potential barrier to open communication and engagement. "*I do think that we are getting more used to those types of questions being asked*," said one staff member, "*because of that, we're getting there in terms of the stigma—becoming more comfortable with it… but I do think it will still take some people aback*" (P12). Others believed that embedding screening into routine hospital processes could help normalize SU and reduce stigma. "*Just as part of the intake into the hospital admission process would also do well to destigmatize it*," suggested a participant, "*because if we're just asking the people we're consulting on, it… carries weight*" (P14).

While many participants recognized the promise of SBIRT, especially in pediatric ED, a few participants expressed concerns about the limited community awareness of SBIRT and lack of established models in inpatient pediatric settings. They noted that unfamiliarity with the intervention, financial constraints, and the absence of clear referral networks could pose potential barriers to uptake and sustainability.

3.2.6 Additional codes

Some participants highlighted several additional themes related to implementation success, including the importance of framing SBIRT as a public health and health equity initiative. "*There's an overall institutional effort from an administrative leadership side that public health is important*," one participant observed, "*if you could frame it in the public health equity lens, I think that is both a way to get some additional line-item resource as well as get buy-in from some constituencies*" (P10). They further noted that staff might be particularly responsive to an equity-centered message: "*I think the other way to frame it is as a health equity issue and as a health justice issue, and I think nurses respond to that framing as well*" (P10).

At the same time, most participants emphasized that implementation strategies should be mindful of staff capacity, especially for nurses. Some expressed concern about adding responsibilities to already overburdened teams. "*Nursing…they're short and they feel stressed… you put one more thing in their to-do list and they are not happy*," one provider reflected, "*even if you tell them it's important to public health, if it wasn't their idea, they have a really hard time operationalizing it*" (P10).

4 Discussion

This qualitative study provides valuable insights into healthcare providers' perspectives of barriers and facilitators to implementing SBIRT in a pediatric hospital setting for A-CMCs. The study was conducted within a pediatric hospital that has LHS-aligned infrastructure and established mechanisms for data use and quality improvement, yet SBIRT had not been fully operationalized within those learning cycles at the time of data collection. Guided by CFIR, we conducted interviews with multidisciplinary hospital partners to identify context-specific determinants likely to influence SBIRT integration into routine care. The themes that emerged map closely onto LHS principles – iterative learning, stakeholder co-design, and embedding evidence-based practices into clinical workflows – and together they underscore key considerations for planning, piloting, and refining SBIRT implementation prior to broader scale-up.

4.1 SBIRT implementation facilitators

Several factors emerged as facilitators for SBIRT implementation. First, healthcare professionals recognized the importance of addressing adolescent SU early, acknowledging both short- and long-term health consequences. The perceived effectiveness of SBIRT and its potential for integration into clinical workflows were viewed as strong motivators for adoption [32, 33]. Multidisciplinary teams engaging in training were seen as a mechanism to promote organizational buy-in and potentially support conditions associated with SBIRT's sustainability [31, 34]. Furthermore, training embedded behavioral health staff ensures a specialized workforce capable of delivering SBIRT efficiently while minimizing additional burdens on other clinical staff [31, 34]. Aligning SBIRT efforts with existing workflows—such as routine patient assessments and behavioral health screenings—may reduce resistance and has the potential to enhance feasibility [33]. Moreover, integrating SBIRT screening into the EHR system allows for streamlined documentation, automated prompts for providers, and improved data tracking [35]. This integration exemplify key LHS features such as routine data capture, real-time decision support for providers, and systematic tracking to inform practice change and long-term sustainability [36–38].

At the institutional level, a culture of collaboration and improvement-oriented initiatives facilitated receptivity to SBIRT. The presence of clear communication channels, such as organization-wide emails and town hall meetings, contributed to information sharing and engagement. Additionally, alignment with existing hospital-wide initiatives, such as universal suicide screening, social determinants of health, and health equity programs, underscored SBIRT's compatibility within the current pediatric hospital.

4.2 SBIRT implementation barriers

Despite these facilitators, several barriers posed challenges to implementation. Healthcare professionals emphasized that SBIRT implementation in the hospital's ED would not be feasible due to the ongoing behavioral health crisis that has significantly impacted ED operations. The high patient volume and acuity levels in the ED will make it difficult to conduct SBIRT effectively in this setting with existing resources. Instead, healthcare professionals suggested implementing SBIRT in the pediatric inpatient setting, as many A-CMCs are hospitalized following an ED admission. The average length of hospital stay for A-CMCs varies depending on the specific condition and severity. A study analyzing hospitalizations of A-CMCs reported a mean length of stay of 7.8 days, with a standard deviation of 17.7 days [39]. This suggests that hospitalizations may provide a feasible window of opportunity for SBIRT implementation during pediatric inpatient care. Thus, adolescent's medical concerns are stabilized before engaging in SBIRT, ensuring that they are in a better position to participate in SU screening and intervention efforts.

Another major obstacle was the lack of standardized SU screening protocols within the pediatric hospital setting, contributing to low familiarity with SBIRT among healthcare staff. This is similar to other studies that have shown that providers often report unfamiliarity with available screening tools and a lack of standardized protocols as barriers to SBIRT implementation in pediatric settings [40, 41]. Training gaps and uncertainties regarding staff responsibilities for SBIRT delivery were identified as additional barriers to SBIRT implementation efforts which reflects research that consistently finds insufficient training, lack of clarity on who should deliver brief interventions, and low

confidence in addressing positive screens as key challenges to SBIRT implementation [40–42]. Furthermore, provider time constraints for both training and implementation of SBIRT were frequently cited as challenges, as already overburdened staff found it difficult to allocate time for additional responsibilities. These reflections support prior research highlighting insufficient time, competing clinical priorities, and difficulty integrating SBIRT into existing workflows as among the most commonly reported barriers to both training and implementation in pediatric and primary care environments [41, 43, 44] Overcoming these barriers is critical to developing a robust LHS in which SBIRT implementation becomes self-sustaining through team learning, continuous feedback, and embedded quality improvement cycles [42, 45].

Workflow-related barriers included logistical uncertainties about when, where, and how the three SBIRT components should be administered across different hospital units. Integrating SBIRT into the existing EHR system presented additional challenges, as modifications were required to ensure smooth documentation and workflow compatibility. Billing challenges associated with the three SBIRT components—screening, brief intervention, and referral to treatment—also emerged as a significant barrier, as unclear reimbursement structures and lack of designated funding streams made sustainability uncertain.

Patient and family reticence to addressing SU during hospitalization for CMCs could further complicate implementation efforts. The healthcare professionals noted that some patients and families may express concerns about the appropriateness of discussing SU in an acute medical setting, while others worried about potential stigma and confidentiality related to SU. These findings are similar to research highlighting that stigma and fear of punitive response around SU are significant barriers to SBIRT implementation for adolescents and their families, and often leads to hesitation in discussing SU in healthcare settings [33, 46] These barriers underscore the need for careful framing of SBIRT as a routine component of adolescent health care rather than as punitive [47].

Consistent with CFIR guidance emphasizing the importance of pre-implementation inquiry, this study represents an initial phase of a larger implementation effort. Specifically, the interviews correspond to early CFIR-informed steps focused on identifying context-specific barriers and facilitators prior to intervention adaptation and rollout. Subsequent phases will include co-design of SBIRT workflows with hospital partners, pilot testing within selected inpatient units, and iterative refinement using LHS learning cycles.

4.3 Translating implementation determinants into actionable strategies

Beyond identifying barriers and facilitators, the findings from this study suggest several actionable strategies for advancing SBIRT implementation within this pediatric hospital system. First, strong alignment between SBIRT and existing institutional priorities such as patient safety, health equity, and behavioral health integration may provide an opportunity to leverage leadership support to address resource constraints and competing clinical demands. Participants consistently noted that initiatives framed as organizational priorities were more likely to receive staffing, training, and EHR development support. Second, staff's existing confidence in the hospital's EHR capabilities may offer a mechanism to address workflow ambiguity and screening burden. Many participants described prior success with embedding standardized assessments and clinical decision

support tools, suggesting that similar strategies could be applied to SBIRT to clarify roles, automate prompts, and support appropriate follow-up. In an LHS context, these tools could also facilitate real-time monitoring of screening completion and referral patterns to inform iterative improvement. Third, the presence of embedded behavioral health professionals and multidisciplinary teams was identified as a key facilitator that could mitigate concerns related to training, role clarity, and ethical responsibility following positive screens. Leveraging these teams to lead SBIRT delivery or consultation may reduce burden on frontline medical staff while enhancing fidelity and acceptability. Lastly, some participants' emphasis on piloting SBIRT prior to hospital-wide rollout aligns with both CFIR and LHS principles. Pilot implementation within select inpatient units would allow the hospital to test workflows, address confidentiality concerns, and refine processes using feedback from clinicians, patients, and families before broader dissemination.

4.4 Implications for practice and policy

Our findings suggest several actionable implementation strategies to enhance SBIRT implementation in inpatient settings within a pediatric LHS. First, structured training programs tailored for different clinician roles may improve knowledge, self-efficacy, and overall engagement. Framing SBIRT as a public health issue may further strengthen institutional commitment. Additionally, leveraging executive leadership support and identifying internal champions will be crucial to driving adoption. To address workflow concerns, piloting SBIRT in select units before hospital-wide implementation may help refine logistics and potentially enhance feasibility. Furthermore, advocating for policy changes, such as external accreditation incentives or regulatory requirements, may facilitate broader adoption. Financial investment in behavioral health services, including hiring dedicated staff for SBIRT delivery, is necessary to mitigate resource constraints. Lastly, ensuring that EHR integration aligns with privacy regulations and streamlines documentation has the potential to be viewed as supporting sustainability.

4.5 Limitations

Several limitations should be considered when interpreting the findings of this study. First, this was a single-site qualitative study conducted at a large urban pediatric hospital in the Midwest. As such, the findings may not be generalizable to other hospital settings, including rural hospitals, community-based pediatric practices, or institutions with fewer behavioral health resources or different organizational cultures. Second, although the sample included a multidisciplinary group of hospital staff, including nurses, physicians, social workers, psychologists, trainees, and administrators, some departments may have been underrepresented, and participants were self-selected. Individuals who opted to participate may have held stronger opinions or more favorable views toward behavioral health innovation than those who declined, introducing the potential for selection bias. Additionally, the sample was predominantly non-Hispanic White and female, which may shape perspectives on SU, stigma, and implementation priorities. As such, findings may not fully capture perspectives from more racially, ethnically, or gender-diverse staff, potentially limiting transferability. Third, while the use of a well-established implementation science framework (i.e., CFIR) structured the data collection and analysis, some themes that emerged, such as perceptions of health equity

and public health framing, extended beyond the original framework. Although these additional codes enriched the findings, the integration of inductive and deductive coding could have led to uneven emphasis across CFIR domains. Finally, the study focused on anticipated barriers and facilitators of SBIRT implementation rather than real-time implementation or post-implementation outcomes. As a result, participants' perceptions may differ from their actual behaviors or experiences during SBIRT rollout. These findings should be interpreted as formative insights to guide subsequent phases of design and implementation.

Future research will focus on exploring patient and caregiver perspectives regarding the acceptability of SBIRT in the pediatric inpatient setting. Separate interviews or focus groups with adolescent patients and their caregivers will provide insights into their experiences, perceptions, and potential concerns related to SBIRT implementation. These discussions will help identify additional barriers and facilitators that may not have been captured through healthcare professionals' perspectives alone. Understanding the perspectives of patients and families will be critical in refining SBIRT strategies to ensure that the intervention is both effective and patient-centered. In response to CFIR's limited emphasis on structural inequities, power dynamics, and lived experiences of historically marginalized populations, future work will incorporate the Health Equity Implementation Framework (HEIF) to guide data collection and analysis. HEIF offers a more explicit focus on how social determinants, cultural factors, and systemic inequities shape implementation processes and outcomes. By applying HEIF, we aim to better understand how adolescent patients and their families experience SBIRT through the lens of equity, and to ensure that implementation strategies are aligned with both clinical needs and social justice priorities.

5 Conclusion

The implementation of SBIRT in a pediatric hospital setting presents both opportunities and challenges. While providers acknowledge its importance in addressing SU among A-CMCs, practical barriers related to training, EHR workflow integration, and resource allocation must be addressed. Applying a LHS framework offers a path forward: embedding SBIRT into routine care processes, leveraging EHR data for continuous monitoring and improvement, and fostering a culture of shared learning among multidisciplinary teams may potentially support sustainability and responsiveness to emerging needs. This hypothesis warrants evaluation in future implementation and effectiveness studies. Thus, future research should evaluate how leveraging identified facilitators and mitigating barriers through targeted implementation strategies, may position pediatric hospitals to institutionalize SBIRT as a core component of adolescent care. Future research should also evaluate how integrating SBIRT within an LHS model may support iterative learning, equitable care delivery, and the scale-up of best practices across diverse pediatric inpatient settings.

Supplementary Information

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Supplementary Material 1.

Supplementary Material 2.

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Author contributions
FS: Conceptualization, Funding acquisition, Investigation, Methodology, Project administration, Resources, Supervision, Writing – original draft, Writing – review & editing. SW: Data organization, coding, analyses, writing - original draft, writing - review & editing. NG: Writing – original draft, writing - review & editing. IZ: Writing – original draft, writing - review & editing. KC: Writing – original draft, writing - review & editing. PF: Writing – review & editing, Conceptualization, Funding acquisition, Methodology. SB: Writing – review & editing, Methodology.

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Data availability
De-identified data is provided upon request.

Declarations

Ethics approval
This study involving human participants was reviewed and approved by the Institutional Review Board (IRB) at Ann & Robert H. Lurie Children's Hospital of Chicago (IRB #2022–5048). The study was determined to be minimal risk, and the IRB granted a waiver of documentation of consent. All participants provided verbal informed consent prior to taking part in interviews. All procedures were conducted in accordance with the ethical standards of the institutional research committee.

Consent to participate
All participants provided verbal informed consent prior to participation in the study, in accordance with the approved procedures outlined by the Ann & Robert H. Lurie Children's Hospital of Chicago Institutional Review Board (IRB 2022–5048).

Consent for publication
Not applicable. No participant data are included in this manuscript in an identifiable form. Participant quotations are presented without identifiers and do not include information that would enable identification of individuals.

Competing interests
The authors declare no competing interests.

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