What will it take? Using an Implementation Research Framework to Identify Facilitators and Barriers in Implementing a School-Based Referral System for Sexual Health Services

Emily Leung（ ✉ ELeung@caiglobal.org ）

   CAI   https://orcid.org/0000-0003-1742-0303

Kathryn J. Wanner

   CAI

Lindsay Senter

   CAI

Amanda Brown

   CAI

Dawn Middleton

   CAI

Research article

Abstract

Background:Across the United States (U.S.), sexually-transmitted infections and unintended pregnancy rates are alarmingly high among youth. Schools play a critical role in improving access to sexual health services (SHS) due to their proximity and access to youth. Schools can increase student access to services by creating referral systems (RS) to link students to school- and community-based SHS. From 2013-2018, the Centers for Disease Control and Prevention's Division of Adolescent and School Health funded 17 Local Education Agencies (LEA) to partner with priority schools, and other stakeholders, to develop and implement RS to increase student access to SHS. CAI served as the Technical Assistance Center, providing capacity building to the LEA. CAI conducted a case study at two large urban LEA to elucidate factors that influence RS implementation in 2016-2017. Methods:This mixed-methods case study included interviewing and surveying 19 LEA and community-based healthcare (CBH) staff in the Southeastern (n=9) and Western U.S. (n=10). Key constructs from the Consolidated Framework for Implementation Research (CFIR) framework guided the methodology and analysis. Consensus qualitative research coding methods were applied to the interviews. We also distributed a quantitative survey to collect participants' perceived difficulty in implementing and sustaining RS; data was analyzed using descriptive statistics. Results:Interviewees reported strong beliefs that school-based RS can help students achieve better academic outcomes. We identified several contextual key factors across the five CFIR domains that influenced successful implementation and integration of an RS including: enforcing state and district policies, strong LEA and CBH collaboration, positive school culture towards adolescent health, knowledgeable and supportive staff, leveraging of existing resources and staffing structures, and influential district and school building-level leadership and champions. Notably, this case study challenged our initial assumptions that RS are easily implemented in states with comprehensive SHS policies. Rather, our conversations revealed how districts and local-level policies have significant influence to either impede or promote those policies. Conclusions:Using an implementation science lens, this study describes key contextual factors and lessons learned to implementing an RS. Other schools may wish to consider these influencing factors to optimize integration of RS-related evidence-based practices, systems, and policies in their districts.

Contribution To Literature

• Research shows that school-based referral systems link students to needed health services and can therefore play an important role in decreasing the high rates of STIs and unintended pregnancy among adolescents. • Using implementation science to assess outer context factors, such as culture and policy, as well inner context factors related to the district and school building, allows us to assess key factors that are essential to implementation. • Findings contribute to gaps in literature in elucidating key factors, both inside and outside the school system, that influence implementation of a referral system.

Background

Across the United States (U.S.), rates of STIs and unintended pregnancy are alarmingly high for our nation's youth; young people aged 15-24 acquire half of all new STIs. Rates of STIs are also on the rise; between 2013 and 2017, syphilis cases have nearly doubled, gonorrhea cases have increased by 67%, and chlamydia remains the most common STI, with 45% diagnosed cases occurring among 15-24 year old females. Untreated, the sequalae of STIs include pelvic inflammatory disease, infertility, and cervical cancer. , Further, almost 40% of high school students reported having engaged in sexual activity, adding to the need for consistent and comprehensive STI and unintended pregnancy prevention services. Schools play a critical role in improving access to sexual health services (SHS) due to their proximity and access to youth. In the U.S., schools have direct contact with more than 15 million students attending grades 9-12 for at least six hours a day during the key years of their social, physical, and intellectual development. As identified by the U.S. Department of Health, improving access to SHS within school settings is "crucial" to eliminating disparities in reproductive health outcomes. In recent years, school-based SHS services, such as STI screenings, and the implementation of School Based Health Centers (SBHC) that offer sexual and reproductive health services, have shown promise in increasing positive adolescent sexual health outcomes. However, there are myriad barriers and challenges to comprehensive access. While the number of SBHC is increasing, many schools, especially in rural areas, do not have SBHC, and many SBHC have limited or no provision of SHS. Only 37% of SBHC are capable of distributing contraceptives onsite; almost 50% are prohibited from doing so by state or local policy, and even among schools that provide SHS services, utilization of the services may be low. One way for schools to overcome such barriers and to increase student access is by creating comprehensive referral systems (RS) to link students to a wide array of SHS—both school- and community-based. Recent research has shown promising findings for improving school-based RS; in one study, high school females who received referrals to SHS from school staff were more likely to receive birth control, get tested and/or treatment for STIs, and receive an HIV test. Rasberry et al. also found that students who received a referral from school staff were three times more likely to get tested for HIV and STIs, after controlling for factors such as sex, age, race/ethnicity, sexual minority status, and having had sex. In a direct response to these trends, from 2013 to 2018, the Centers for Disease Control and Prevention's Division of Adolescent and School Health funded the Promoting Adolescent Health through School-Based HIV/STI Prevention and School-Based Surveillance project. Funding was for 17 Local Education Agencies (LEA) to partner with priority schools and other stakeholders to develop and implement an RS and associated protocols, resources, and tools to increase student access to SHS. CAI, funded as the Technical Assistance Center to provide tools and capacity building to the LEAs, developed the Core Components of a Referral System (CCRS) framework that outlines and describes the seven core components necessary for successful RS implementation (Fig. 1).11 This framework is intended to provide LEA with a standardized approach for implementing an RS, with the overall goals of increasing student awareness of school- and community-based SHS providers, increasing student referrals to school and community-based SHS providers, and increasing the number of sexually active adolescents receiving key SHS services. In the final year of implementation (2017), CAI conducted a case study to investigate best practices and to elucidate the key ingredients needed to successfully implement a system that connects

students to SHS in two select LEA. This manuscript presents the results from this study, which consisted of a mixed-methods evaluation design and drew from implementation science (IS) frameworks.

Methods

Design Data was collected from January to April 2017 using a mixed-methods multiple case study design in two large urban school districts via in-depth qualitative interviews and quantitative surveys. The authors selected a case study approach, as it allowed for an "in-depth, multi-faceted understanding of a complex issue in its real-life context". We also employed an IS framework for the case study, as it is essential to consider contextual factors at multiple levels in order for successful integration of evidence-based practice and policies in real-world settings. The Consolidated Framework for Implementation Research (CFIR), a well-renowned framework consisting of 39 constructs organized into five domains, was used to structure, identify, and evaluate key facilitators and barriers to implementation of the RS (see Table 1). , , , Interviews The CFIR informed the development of interview and field guides, other data collection tools, and the coding and analysis of data. Twenty CFIR constructs were selected for the interview guide. The interview data was coded based on all CFIR constructs and domains (see Appendix A). The study was reviewed by Western Institutional Review Board and was determined to be exempt. Table 1. Application of CFIR Domains CAI developed semi-structured interview guides with approximately 25 open-ended questions guided and organized by the five CFIR domains and the 20 relevant constructs. The CCRS framework was used in the interview guides to ensure standardized definitions and terms describing an RS. Two CAI research staff conducted the interviews, each spanning 45-60 minutes. One interview was conducted via phone while the rest were conducted onsite. Surveys To generate further insight into LEA's implementation, CAI also developed two short surveys which were completed immediately before and after the interview. Surveys were administered via paper for the onsite interviews and online via SurveyGizmo for the phone interview. The surveys, using a 10-point Likert scale, with 1 = least difficult and 10 = most difficult, assessed the CFIR construct, complexity, in two areas: perceived overall difficulty in implementing an RS and perceived difficulty in implementing each of the eight CCRS. Since there are no specific CFIR constructs measuring sustainability included in the qualitative interviews, the post-survey specifically assessed the "perceived difficulty of implementation in the absence of funding" as an approach to gain insight into the future sustainability of the RS. Nineteen interviewees completed the quantitative pre-interview survey and 18 interviewees completed the post-interview survey (100% and 95% response rates respectively). Sample Site Selection CAI selected two large urban school districts located in the Southeastern and Western United States for participation. These sites were selected based on their promising practices in RS implementation. Not only have these districts shown consistent numbers of referrals from the initiation of their RS to present, but both districts have also shown varied approaches to implementation that can inform other LEA throughout the country. Recruitment of Participants CAI first contacted each of the LEA's program coordinators in November 2016 to request their participation in the study. After they agreed to participate, CAI used a snowball sampling technique to select interviewees by asking the program coordinator to identify key staff and stakeholders involved with planning, implementing, and evaluating their RS, making referrals at their priority schools, or

providing referred students with SHS. Participants A total of 19 staff members from both districts were interviewed from January to April 2017: 9 staff from the Southeast Site and 10 staff from the Western Site. Interviewees were classified as school district-level staff (individuals who worked in the district offices, such as program directors and managers), school-building staff (individuals who worked directly in schools, such as teachers and school nurses), and community-based healthcare providers (CBHP) (individuals who worked at community-based organizations as health educators or as testing coordinators, for example). See Table 2 for types of interviewees interviewed at each site. Table 2. Interviewees by role and site Analysis Interviews CAI digitally recorded and transcribed all interviews and kept files and data in a secure and confidential server during the study period. Consensus qualitative research methods guided the qualitative data coding and analysis. CFIR constructs were used as codes to sort and organize qualitative data. Two independent coders coded the data using ATLAS.ti and met to compare and reconcile coding. After coding, common themes by construct and domain were put into a matrix and salient themes were identified for each site as well as across both sites. Survey For the surveys, CAI used Excel to perform descriptive analysis of the data, including frequencies, proportions, and means.

Results

The following findings from the interviews and surveys at the two school districts are organized by the CFIR domains and summarized across the two sites and the various staff interviewed. CAI included specific quotes that demonstrate salient findings, labeled by the interviewees and their role; interviewees are also labeled by a randomly-generated identification number. Table 3 provides an overall summary of themes and quotes organized by CFIR domains and constructs. Tables 4 and 5 present key findings from the pre- and post-surveys and are embedded within the specific CFIR domains (Domains 1 & 5) that they sought to measure. Table 3. Summary of emergent themes from qualitative interviews that influence RS implementation CFIR Domain 1: Intervention Characteristics The CFIR domain, intervention characteristics, contains constructs that influence the implementation of the RS (intervention), including evidence strength and quality, and complexity. Evidence Strength and Quality Overall, interviewees felt that schools are an ideal location to address the epidemic of STIs, HIV, and unintended pregnancy because students may not be able to access SHS resources at home or in their greater community. As one clinical services staff at a CBHP mentioned, "some young people don't have supportive parents, they live in a strict environment…for them it provides an opportunity to be able to get access to sexual health which is so important." (Participant 02-CBHP) Most interviewees also felt that having a strong RS can ease students' stress and anxiety in determining who and where to ask for help, thereby improving students' ability to focus at school, school attendance, and educational outcomes. Complexity The surveys sought to measure the construct of complexity overall, and interviewees reported a moderate level of difficulty implementing an RS (average score (AS)=5.50) (Table 2). Some components of the CCRS were rated as more difficult to implement than others, such as ensuring broad knowledge of the RS among staff and students (AS=5.79); developing district policy about making SHS referrals (AS=5.63); and developing district-specific referral procedures (AS=5.57). During the interviews, participants

overwhelmingly reported that the many layers of bureaucracy and the "chaotic" nature of the school system make implementation difficult. As one district staff mentioned, "the challenge we face is our bureaucracy...there's so many people that have to be involved that sometimes it hinders the process." (Interviewee 04-District Staff) Table 4. Results from pre-survey assessing perceived difficulty in implementation, and measuring the complexity construct CFIR Domain 2: Outer Setting The second domain, Outer Setting, explores external factors that may influence the RS, such as student needs, state and district policies, and partnerships. Needs and Resources Most of the interviewees believed that connecting students to SHS is a high need. As one interviewee states, "On a scale of one to ten based on how much students need [SHS], I'd probably give it an 11". (Interviewee 02 -CBHP) One reason is the high rates of STIs among the adolescents, specifically where the school districts are located: "We have a hot spot for chlamydia that we've seen, more outbreaks of syphilis than we have seen in the past." (Interviewee 02-CBHP). Interviewees also expressed that many students are sexually-active but are misinformed about the risk, as they often share incorrect information with one another. Many interviewees expressed specific concerns for disproportionately affected populations, such as students of color and those identifying as LGBTQ. Cosmopolitanism In this context, cosmopolitanism can be defined as the degree to which each site is networked with other external organizations.17 While each site has myriad local and state partnerships, two main types of organizations emerged as crucial partners: local health departments (LHD) and CBHP. Interviewees noted that through the planning and implementation of the RS, partnerships among these organizations were strengthened. "It was a tenuous relationship in the past but...this grant has really increased our ability to access the school board and have a seat at the table" (Interviewee 03-CBHP) Specifically for LHD, the interviewees expressed that they played a prominent role in supporting professional development (PD) sessions for teachers and staff, offering SHS to students through SBHC and assisting LEAs with monitoring and evaluation activities. CBHP, described as "youth-friendly, LGBT-inclusive, more up-to-date than typical clinicians on the latest birth control methods and STI testing, HIV testing" (Interviewee 11-District Staff), also play active and crucial roles in the implementation of the RS. Interviewees reported their involvement in writing project proposals and work plans, providing SHS to students, delivering training and technical assistance to other CBHP, and in creating resources for LEAs (e.g., referral guides, policies, and staff PD curricula). Interviewees also felt that these partnerships increased CBHP's awareness of state and local policies regarding minors' access to health services. Additionally, interviewees from the Southeastern site mentioned that the relationship between the organization and the school district has strengthened significantly in the last several years. In the past, the CBHP was not allowed on school campuses due to the larger political climate and a restrictive district policy. Several interviewees mentioned that through collaborating to create an RS, the partnership has been further solidified. One interviewee summarized this evolving relationship by saying, "people in the school system are much more open now and understand that having a relationship with a youth advocacy organization is a strengthening component". (Interviewee 03-CBHP) State and District Policies While interviewees identified how some state laws facilitate RS—the Western site's state law allows students to access STI services (including HIV testing and treatment) without parental consent, other policies serve as barriers—the Southeastern state's guidance for abstinence-only education is an obstacle for schools to deliver comprehensive sexual health education.

The Southeastern site's state policy prohibiting school district staff from providing contraceptives, contraceptive counseling, and referrals for contraceptive services without parental consent, was also discussed as a barrier to student access to SHS: "not being able to talk about condoms or any contraceptives in the school is a humongous barrier" (Interviewee 12-CBHP). CFIR Domain 3: Inner Setting The third domain, Inner Setting, refers to the location where the intervention takes place. Constructs that were explored included networks and communications, culture and climate, leadership, and available resources. Networks and Communications RS in both sites had distinct networks and communication systems, drawing from pre-existing staffing structures and innovative marketing and communication approaches. In the Western site, the RS was supported by the existing network of the referral staff, who were nurses across different schools organized into teams called "clusters." Clusters met monthly and often discussed issues related to referring students to SHS. In the Southeastern site, one primary communication tool used to refer students to services is a palm-sized 'chat card'. Staff who were knowledgeable about the RS refer students to the counselor or provide students via 'chat cards.' These include information about locations of teen health centers, types of services offered, and contact information. However, many interviewees from this site noted that the 'chat cards' might not be directive enough to link students to SHS. Organizational Culture and Access to Knowledge and Information In the Western site, most staff mentioned that the organizational culture is supportive of sexual health prevention services. However, they also mentioned that the county they work in is more conservative, relative to the rest of the state, and that negative attitudes and stigma towards sexual health education and services exist. Interviewees felt that other school staff did not feel capable of promoting the RS (e.g., linking students to designated referral staff or giving referral guides to students) due to fears related to parents, legal issues, and general lack of knowledge about the RS. One interviewee expressed that, "there is this nervousness that principals and other people have when kids go to confidential appointments when they're entrusted by their parents to be at school". (Interviewee 16-District-Level Staff) Similarly, many staff in the Southeastern site highlighted the culturally conservative climate as negatively impacting the RS. Leadership Engagement Since school principals have a lot of authority on the day-to-day operation of schools, they can influence the degree of RS implementation. Most interviewees at both sites reported that principals' acceptance and commitment to implementing a sexual health RS varies. A few of the interviewees stated that school-building level champions were at times hard to identify due to lack of buy-in from principals. However, district-level leadership (e.g., superintendents) and CBHP were described overall as supportive, involved, and motivated. As one interviewee stated, "the leaders here are on board with it, and they really encourage us to get the program out there for the students". (Interviewee 07-CBHP) Available Resources Many interviewees discussed the importance of having a full-time referral staff as crucial in the success of the RS. The Southeastern site mentioned that the district is spread out geographically and that public transportation is limited; therefore, their five SBHC are critical resources for students. As one interviewee stated, "it's hard for a lot of the students to get to health clinics unfortunately, which is why it's important that we are in the schools." (Interviewee 05-District Level Staff). Challenges were also mentioned around SBHC, which included space, staffing, inadequate hours, and difficulty for students who attend other schools to access. CFIR Domain 4: Characteristics of Individuals The fourth domain describes the individuals involved with the RS, such as district staff, school staff,

CBHP and leadership. Specifically, these individuals involved with the RS' knowledge and beliefs regarding the importance of SHS emerged as a salient construct. Knowledge and Belief Across the two sites, interviewees reported that staff who were the most actively involved in RS (e.g., referral staff, program coordinator, champions) were also the most knowledgeable, especially regarding the logistics of making a referral, policies, and promoting student access to local health service providers. Interviewees stated that knowledge about the RS is generally higher among all staff and students if the school has a SBHC onsite or if the RS is heavily marketed through posters, flyers, and/or announcements. However, interviewees reported that beliefs and attitudes towards the RS among school-building staff were mixed. Particularly in the Southeastern site, interviewees reported that their colleagues are hesitant to make referrals as they do not want to appear that they are endorsing adolescents having sex. One school district staff said "…We're in the Bible Belt and I think some of the mindsets…about the way that children should be behaving…hinder the referral process." (Interviewee 04—District Staff) Additionally, many interviewees stated that despite having supporting policies in place at the state- or district-level, lack of knowledge or misunderstanding of the policies are barriers to SHS service provision. As one interviewee explained, laws surrounding consent are often difficult for school staff to comprehend because it is outside of typical practice for schools to allow students to do anything without parental consent. "The school system does not do anything with young people without parental consent and engagement, except for in rare situations" (Interviewee 03—CBHP). Furthermore, many interviewees mentioned that sometimes, local- and state-policies conflict, which is confusing for school and district staff. CFIR Domain 5: Process The last domain looks at the entire process of the RS through different stages of implementation. Salient constructs in this domain include engaging staff and students in the referral process and reflecting and evaluating. Engaging Many interviewees spoke of the necessity of the Program Coordinator position to employ different strategies to engage the appropriate individuals to ensure successful implementation and use of the RS. As one CBHP manager stated, "I've been really impressed with her ability to sort of navigate all of this…a lot of it just falls on her. She's really coordinating with everyone and working with the schools and coordinating with the partner agencies." Also, PD proved to be important to engage designated referral staff (e.g., counselors, school nurses), to ensure that they know about CCRS and the health resources available for students, and to increase their knowledge in local STI, HIV, and pregnancy statistics. Engagement of students mostly occurred through posters, flyers, palm cards, school announcements, banners, and calendars. Social media approaches (e.g., Instagram, Snapchat) are currently being developed as well in these sites. Health educators interviewed also identified incentives to help students fill out paperwork to take home to their parents to get permission for SHS, such as providing lunch during outreach and education encounters. Reflecting and Evaluating Methods to conduct ongoing tracking and evaluating of the RS varied depending on the school district. In the Southeastern site, the LHD develops tracking tools, collates data, and ensures data quality. In the Western site, the program coordinator developed a paper log for nurses to track data and distribute a monthly survey to collect data. Across the two sites, tracking referrals was identified as very difficult as the current data collection systems does not capture passive referrals (e.g., self-referral when student seeks out SHS on his/her own after seeing a poster) or efforts that do not result in a referral. Further, only the staff who were most involved in RS implementation regularly receive data reports and

take the time to use data to evaluate their work. Sustainability The sustainability construct was assessed through post-interview surveys to measure perceived difficulty implementing an RS in the future absence of funding. Interviewees reported a high level of overall difficulty (average score=7.96) (Table 5). In particular, continuing to provide management and oversight regarding RS implementation (average score=8.54) was rated as the most difficult component. Table 5: Results from post-survey assessing complexity and perceived difficulty in sustaining implementation

Discussion

This study describes important drivers and facilitators that influence the successful implementation and integration of an RS linking students to SHS in two school districts, which has not been reported in the literature up until now. Despite variation in local contexts, there were consistent themes and experiences across the two sites that can inform school districts as they work to increase students' access to SHS. Our study also highlights the different ways RS function across school districts, and the need for each school to strategically identify and leverage available resources and drivers at their districts in order to optimize successful implementation. Overall, results from the case studies indicated a strong belief that schools are an ideal location to address the epidemic of STIs, HIV, and unintended pregnancy among adolescents, and that having an RS implemented within the school system can help students achieve better academic outcomes. We specifically used an IS approach to frame the case studies to explore how specific contextual drivers and barriers affect implementation of an intervention. Regarding RS implementation, we found that outer context factors, including policy and culture, were shown to impact the implementation in both settings. Not only did prohibitive policies emerge as a significant barrier throughout our interviewees, but we also found that while having supportive statewide policies is an important facilitator, it is not always sufficient. When implementers are unsure or unknowledgeable of policies, they may avoid implementing aspects of the RS for fear of being noncompliant, which has been shown in a previous study on the effects of teachers' knowledge of food and nutrition-related policy on policy implementation within schools. , Therefore, increasing guidance and education surrounding state and local policies can help mitigate policy-related barriers. Another salient outer context facilitator is the collaboration between schools and external partners, such as community-based organizations and/or healthcare providers. Collaboration, which is the highest level of partnership, consists of multiple factors: a shared vision/outcome, shared ownership of the system by health and education partners, and formalized agreements. The partnership mitigated some barriers of implementation, such as taking the burden off the school staff to refer students to SHS, when they might not always feel confident or capable of doing so, and enabling provision of culturally-competent services. This shows that collaborations between schools and other organizations are important to strengthening school-based RS not only by creating linkages between students and service providers but also by aiding in the integration of care into schools in prohibitive environments. Therefore, inviting community agencies and organizations who have similar visions of improving student health and academic outcomes to partner with local school districts is another promising approach for strengthening school-based RS. Inner context factors shown to affect implementation include the implementation climate(e.g., the knowledge

and beliefs of the implementation staff). For example, many interviewees mentioned how the knowledge and beliefs of implementers can influence whether SHS referrals are made. Many interviewees highlighted the stigma of talking about sexual health in schools, which previous studies also corroborate.xxxii As we saw in the Western site, even in a supportive environment, school staff who serve as gatekeepers (i.e., principals, office staff, hall monitors) were unaware of the policies and/or not supportive of student access to services. Unsupportive attitudes regarding the RS may exist because of a societal stigma related to teens accessing sexuality education and health services, and this stigma may affect implementation readiness. The level of stigma around accessing SHS was distinct in each site, showing that when implementing interventions related to sexual health, stigma may create an additional barrier, especially in intervention climates that hold conservative views around sexual health. In order to reduce barriers that affect RS, implementers must be aware of the impact of stigma around SHS at the outer context and inner context levels, in order to understand ways to mitigate this barrier. Other inner context barriers include the bureaucracy of the school district. Previous studies have also identified bureaucratic factors, which can range from availability of staff time to support from the school administration and perceived priority of the initiative at the school, as barriers to implementing new school-based policies and health promotion programs. , Additionally, interviewees reported that in the absence of funding, sustainability of the RS will be difficult, especially in the area of management and oversight. As demonstrated in the results, the program coordinator provided crucial oversight and structure for the program. Without funding, this full-time dedicated program coordinator could not exist. In light of barriers to funding, taking advantage of already formalized organizational structure and workflows is essential for sustainability. However, funding remains a crucial component to implementation success. Our findings show that schools should identify and leverage existing and efficient resources and workflows to ensure effective sustainability. In addition, successful collaboration between schools can take the burden off of schools and provide additional support, from staffing to resources, that promote the sustainability of the intervention. Understanding different workflows and where there is a potential for integration involves assessment of school district's existing workflow, systems, and partnerships to the wider community, which could then promote implementation success. Research surrounding how to reduce structural barriers that affect implementation of a school system is necessary to better understand how to best implement an RS for sexual health services. IS frameworks highlight the importance of using a multi-level approach to understanding barriers and facilitators to implementation.25 Our investigation showed that while similar barriers and facilitators emerged, each site exists in a unique environment with distinct challenges and strengths. It is crucial to understand these factors to mitigate barriers and utilize strengths in each distinct environment to improve RS success.

Conclusions

This case study describes the effective application of CFIR's five domains to identify key factors influencing the successful implementation of an RS. The lessons learned can help other school districts leverage existing resources and identify potential barriers during the implementation stage of designing

RS. Additionally, this study also highlights areas to focus on and strengthen when designing implementation guides to improve systems to connect students to health services.

Abbreviations

AS: Average score CBHP: Community-based healthcare provider CCRS: Core components of a referral system CFIR: Consolidated Framework for Implementation Science HIV: Human immunodeficiency virus IS: Implementation science LEA: Local education agency LHD: Local health department PD: Professional development RS: Referral system SBHC: School-based health center SHS: Sexual health services STI: Sexually transmitted infections

Declarations

Ethics approval and consent to participate

The study protocol was reviewed by Western Institutional Review Board and was determined to be exempt from review on January 11, 2017 (WIRB Work Order # 1-988019-1). Prior to data collection, verbal consent was provided by all participants to participate in the study, be audio-recorded, and have their quotes published on the basis of anonymity. Participants were provided with a document with information about the study.

Consent for publication

Not applicable.

Availability of data and materials

The qualitative data used and analyzed for the current study are not publicly available as individual privacy may be compromised. Requests from data may be available upon reasonable request from the corresponding author.

Competing interests

The authors declare that they have no competing interests.

Funding

Authors contributions

EL and KW took the lead in conceptualizing and writing the manuscript, collecting data, and analyzing the data. EL and AB designed the surveys and interview guides, with input provided by LS and DM. AB, LS, and DM provided ongoing feedback and critique of the findings and conceptualizing of the manuscript. All authors read and approved the final manuscript.

Acknowledgements

Reference

Shelton RC, Lee M. Sustaining Evidence-Based Interventions and Policies: Recent Innovations and Future Directions in Implementation Science. Am J of Public Health 2019; 109(Suppl 2): S132-S134. doi: 10.2105/AJPH.2018.304913. Assessed 30 April 2019.
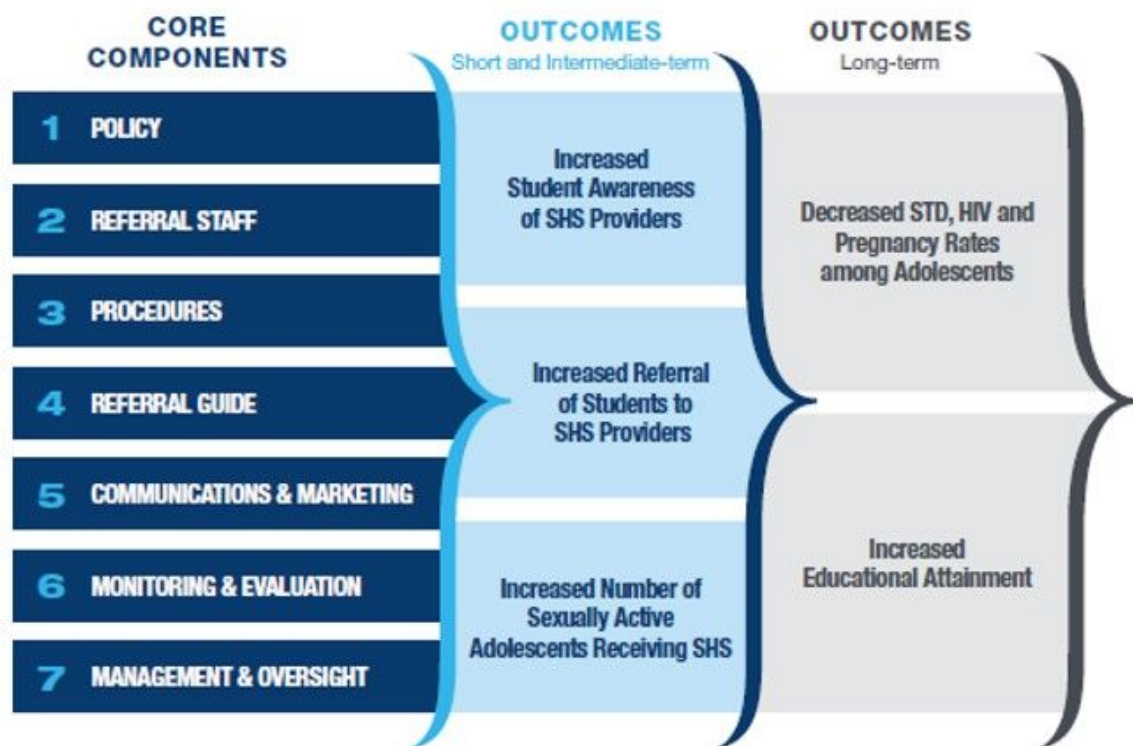
Figures

Figure 1

Core Components of a Referral System

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- supplement1.docx
- supplement2.docx
- supplement3.docx
- supplement4.docx
- supplement5.docx
- supplement6.docx
- supplement7.docx