



A Technical Assistance Curriculum for Expanding Sustainable School-Based Oral Health Programs in the Carolinas' Dental Safety Net

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Abstract

Purpose School-based oral health programs (SBOHPs) provide opportunities to address oral health inequities by providing convenient access points for care. No published guidelines on SBOHP implementation existed. Our work describes how philanthropic, public, and academic organizations partnered to support dental safety net providers with designing comprehensive SBOHPs in North and South Carolina.

Description A multi-sector leadership team was established to manage a new SBOHP philanthropic-funded grant program organized into two phases, Readiness and Implementation, with the former a 6-month planning period in preparation of the latter. Readiness included technical assistance (TA) delivered through coaching and 15 online learning modules organized in four domains: operations, finance, enabling services, and impact. Organizations could apply for implementation grants after successful TA completion. Process evaluation was used including a Readiness Stoplight Report for tracking progression.

Assessment Ten Readiness grantees completed the TA. A variety of models resulted, including mobile, portable and fixed clinics. Descriptive analysis was conducted on the readiness stoplight reports. Components of the operation and finance domains required were the most time-intensive, specifically the development of policy manuals, production goals, and financial performance tracking.

Conclusion The program's structure resulted in (a) a two-state learning community, (b) SBOHP practice and policy alignment, and (c) coordinated program distribution. TA improvements are planned to account for COVID-19 threats, including school closures, space limitations, and transmission fears. Telehealth, non-aerosolizing procedures, and improved scheduling and communication can address concerns. Organizations considering SBOHPs should explore similar recommendations to navigate adverse circumstances.

Keywords School health services · Oral health · Safety-net providers · Dental care for children · Preventive dentistry

Significance

What is already known on this subject? School-based oral health programs (SBOHPs) are essential components of the dental safety net. They serve children who otherwise would be unable to access care. SBOHPs have a range of scopes of

service through a variety of modalities. Success is accentuated when public policy aligns with their mission.

What does this study add? A technical assistance curriculum is presented that reflects the evidence-based clinical practice and the business tools essential for program sustainability. The value of SBOHPs is evident when implemented in the context of guidelines and policies that support sustainability, supported by a multi-sector leadership team.

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Introduction, Objectives, Purpose

While the United States has seen improvements in children's oral health in the last 20 years, almost half (45.8%) of children aged 2 to 19 years continue to experience dental caries. Inequities with caries experience, treated and untreated,

persist among school-aged, Hispanic, and African American children (Fleming & Afful, 2018). Factors that contribute to poor oral health have been explained with the Fisher-Owens Socio-Ecological Model (Fisher-Owens et al., 2007). The conceptual model identifies a cadre of factors along child, family, and community-level influences, in the context of time and environment.

School-based oral health programs (SBOHPs) provide opportunities to address many socio-economic influences on oral health by providing alternative, convenient access points for care (Gargano et al., 2019). A synthesis of comprehensive care models demonstrated oral health improvements as barriers such as transportation, broken appointments, and parent disengagement were ameliorated. Not all obstacles were addressed. Some SBOHPs reported low rates of treatment consent, and low participation rates in high schools and schools with large enrollment numbers. One SBOHP discovered that children living in households with low incomes needed more health education than families with greater affluence. Favorable school nutrition policies contributed to oral health status improvements (Gargano et al., 2019). In order for SBOHP effectiveness to be optimized, national thought leaders recommended accompanying public policies that support (a) universal school-based caries prevention programs (Niederman et al., 2017), (b) expansion of Federally Qualified Health Center (FQHC)-based oral health operations (Mason et al., 2019), and (c) use of dental hygienists or alternative providers at the top of their licenses (Simmer-Beck et al., 2017). SBOHPs should place priority on the delivery of dental sealants. The clinical and cost-effectiveness of school-based dental sealants are well documented (Griffin et al., 2016), however, sealant rates continue to fall short of Healthy People 2020 goals (United States Department of Health and Human Services, 2020). The Association of State and Territorial Health Officials identified SBOHPs that offer sealants as an evidence-based approach to oral health promotion (Association of State and Territorial Health Officials, 2011), based on recommendations from the United States Community Preventive Services Task Force (Centers for Disease Control and Prevention, 2013).

In 2018, The Duke Endowment and the Blue Cross and Blue Shield of North Carolina Foundation, and later the Blue Cross Blue Shield of South Carolina Foundation, partnered on a new grant initiative to support the expansion of comprehensive SBOHPs in rural, underserved communities. Potential grantees were expected to offer comprehensive dental care, similar to FQHCs, which include diagnostic, prevention, and basic restorative services (National Network for Oral Health Access [NNOHA], 2009, p. 21). Grantees were expected to deliver and prioritize evidence-based services, such as dental sealants as a part of their comprehensive care models. Given the opportunities SBOHPs

potentially contribute to the reduction of oral health inequities, understanding the attributes of effective, sustainable models is essential. Unfortunately, no published guidelines were available on how to develop, implement, and evaluate evidence-based models. As such, this report is a description of how philanthropic, public, and academic organizations partnerships supported safety net providers with the design and implementation of comprehensive SBOHPs in rural, underserved schools in North and South Carolina. This report describes the process for developing and implementing a technical assistance (TA) curriculum during the Readiness Phase, including (a) partnerships, (b) curriculum components, (c) community-based environmental scans, (d) grantees, and (e) evaluation. The scope of work was reviewed and approved by the Institutional Review Board at the Medical University of South Carolina as non-human subjects research. Approval was given on February 27, 2019.

Description

Partnerships

A multi-sector leadership team was established to ensure the Carolinas School-Based Oral Health Expansion Initiative (C-SBOHEI) was implemented with fidelity to the evidence used to frame it. The philanthropic organizations identified academic partners at the Colleges of Dental Medicine at the Medical University of South Carolina (MUSC) and East Carolina University (ECU) in Greenville, NC to serve as the architects of the C-SBOHEI. The academic partners also provided TA coaching to organizations on program design and evaluation, both of which are subsequently described. Additional partners were leveraged to assist with policy issues necessary to codify successful implementation, based on the needs of the state. Both states' Medicaid programs and the North Carolina Oral Health Collaborative were engaged as policy and practice advisors. The C-SBOHEI was organized into two phases, Readiness and Implementation, with the former a 6-month planning phase and the latter, deployment of clinical care and business plans. The TA curriculum and Readiness Phase processes are subsequently described.

Based on previously described recommendations (Gargano et al., 2019) and lessons learned, (Trudnak Fowler et al., 2018) the leadership team recognized the importance of including policymakers as partners. This inclusion was essential for identifying policy issues that could potentially impact the future success of C-SBOHEI. The North Carolina Oral Health Collaborative was engaged to align its advocacy efforts with hygiene supervision and C-SBOHEI sustainability (Eyes & Warren, 2020). Changes to the North Carolina practice act allowed for more cost-efficient models operated

by safety net organizations using public health hygienists (21 N.C. Admin. Code 16W.0104, 2020). South Carolina Medicaid was engaged as the state's policy partner. In that role, one of the agency's priorities was to operationalize the value of school-based oral health programs on improved pediatric oral health indicators. A variety of indicators were identified. Increased sealant rates were a priority for South Carolina Medicaid due to the clinical and cost-effectiveness of sealants as previously described (Martin et al., 2020). In both states, the contributions of extended policy-related partners were intentional for strengthening TA curriculum fidelity.

Development of a Technical Assistance Curriculum

Development of the C-SBOHEI was informed by a similar grant program funded by the Maternal and Child Health Bureau (MCHB), Health Resources and Services Administration (HRSA) (Trudnak Fowler et al., 2018). Though the scope of work and grantees differed, the MCHB-HRSA program informed expectations for C-SBOHEI, specifically with program participation, student oral health needs, and sustainability considerations. Lessons learned from the MCHB-HRSA grantees included the expectations of (a) approximately half (45%) of children at enrollment will have existing dental caries; (b) enrollment will increase over time as relationships are built with schools and families; and (c) sustainability can be actualized through deliberate attention to operational efficiencies (Trudnak Fowler et al., 2018).

While the MCHB-HRSA grant program provided essential insights to the C-SBOHEI design, a description of the attributes a program should possess for success was not described. As such, feedback was solicited from state and national thought leaders and experts in SBOHPs. Nominal group technique (Centers for Disease Control and Prevention, 2018) was used to capture and organize their contributions. A Recommendations Document was developed, consisting of clinical care and business plan domains used to frame a TA curriculum and competency map. The resulting TA curriculum included 15 learning modules that aligned with the Recommendations Document (Table 1). Pre-recorded video-based modules were produced, averaging 15 min in length and organized into four domains: operations, financial, enabling services, and impact. The modules were sequenced in order of critical path decision-making. Table 2 describes each module and corresponding learning objectives and required grantee deliverables. The curriculum was planned such that after viewing each module, grantees would meet with their designated TA Coaches to develop components of their clinical care or business plans resulting in specific deliverables to show progress.

Implementation of the New Technical Assistance Curriculum

Over the course of 6 months, TA coaches delivered the new curriculum. After grantees viewed each of the pre-recorded learning modules, TA coaches facilitated

Table 1 Summary of recommendations for successful school-based oral health program

Recommendations
<i>A successful school-based oral program can do the following with great clarity:</i>
Clinical care plans
1. Define the oral health services to be provided. (Grantees were expected to ensure provision of services that meet the definition of phase 1 treatment completion (cite))
2. Describe the care delivery site, including people served and anticipated needs
3. Describe how the community will be engaged, including but not limited to schools, local dentists, and families
4. Describe partnerships essential for program success
5. Describe modality for how care will be provided (i.e. portable equipment, fixed operatories) and the infrastructure requirements for operation (i.e. electricity)
6. Describe how case management services will be used for referral management
7. Provide oral health education to patients, teachers, and families to ensure knowledge, attitudes, and behavior change is prioritized
8. Describe the process for obtaining and managing consent to treat
Business plan
9. Demonstrate the use of optimal, cost-efficient staffing models
10. Describe staff training and development plans to reduce the risk of burn-out and to calibrate the staff to the clinical care plans
11. Describe the decision-making framework for selecting portable equipment and electronic health record or practice management software
12. Describe billing strategy to ensure policies are in alignment with the practice act, Medicaid, and other regulatory or governance rules
13. Communicate financial productivity goals that lead to sustainability
14. Demonstrate the ability to collect and report clinical and financial performance data
15. Describe how qualitative or storytelling will be used to promote the program

Table 2 Technical assistance curriculum map and learning objectives

Module	Learning objectives	Grantee deliverables
<i>Operations</i>		
1	<p>Describe steps necessary for school site selection and commitment from the school district</p> <p>Describe important components to be included in a Memorandum of Agreement between the SBOHP and the School District in order to facilitate the effective and efficient delivery of dental services in the schools</p> <p>Identify oral health services to be provided</p> <p>Identify effective strategies for increasing sealant delivery & retention rates</p> <p>Describe the advantages and disadvantages of dental delivery modalities typically used in SBOHPs</p> <p>Understand the operationalization of the different dental delivery modalities (portable, mobile, & fixed)</p> <p>Identify ways to integrate use of portable equipment that improves access to and efficiencies of care delivery</p> <p>Identify ways to optimize functionality of Electronic Health Records (EHRs) or practice management software when providing care in remote locations</p> <p>Identify ways to determine staffing needs based on school size, treatment needs, and proximity to care completion site</p> <p>Identify opportunities for continuity of care and revenue generation by staff during ‘down times’ in the school year & summer</p> <p>Identify ways to assess staff learning needs around evidence-based care and program operations</p> <p>Identify opportunities for staff to connect or receive continuing education</p> <p>Describe keys for successful partnerships</p> <p>Describe methods for partnership planning and development</p> <p>Identify strategies for consistent communication among current and prospective partners for your program</p>	<p>List of target school sites</p> <p>Contact made with relevant school site officials</p> <p>Memorandum of Agreement (MOA) obtained with school sites or district</p> <p>Confirmed scope of oral health services to be provided in school sites</p> <p>Referral agreements for restorative or specialty care outside of program defined scope of services</p> <p>Modality chosen that is informed by sustainability plan and in agreement with school partners</p> <p>Verification of remote access capability of EHR</p> <p>Feasibility assessment for the degree to which portable equipment can be used</p> <p>Staffing model plan developed</p> <p>Plans for how staff will be used when school is not in session</p> <p>Evidence of a continuing education policy published in the Policy and Procedure Manual</p> <p>Evidence of partnerships developed within community such as MOAs or Letters of Support</p>
2	<p>Identify oral health services to be provided</p> <p>Identify effective strategies for increasing sealant delivery & retention rates</p>	<p>Confirmed scope of oral health services to be provided in school sites</p> <p>Referral agreements for restorative or specialty care outside of program defined scope of services</p>
3	<p>Describe the advantages and disadvantages of dental delivery modalities typically used in SBOHPs</p> <p>Understand the operationalization of the different dental delivery modalities (portable, mobile, & fixed)</p>	<p>Modality chosen that is informed by sustainability plan and in agreement with school partners</p>
4	<p>Identify ways to integrate use of portable equipment that improves access to and efficiencies of care delivery</p> <p>Identify ways to optimize functionality of Electronic Health Records (EHRs) or practice management software when providing care in remote locations</p>	<p>Verification of remote access capability of EHR</p> <p>Feasibility assessment for the degree to which portable equipment can be used</p>
5	<p>Identify ways to determine staffing needs based on school size, treatment needs, and proximity to care completion site</p> <p>Identify opportunities for continuity of care and revenue generation by staff during ‘down times’ in the school year & summer</p>	<p>Staffing model plan developed</p> <p>Plans for how staff will be used when school is not in session</p>
6	<p>Identify ways to assess staff learning needs around evidence-based care and program operations</p> <p>Identify opportunities for staff to connect or receive continuing education</p>	<p>Evidence of a continuing education policy published in the Policy and Procedure Manual</p>
7	<p>Describe keys for successful partnerships</p> <p>Describe methods for partnership planning and development</p> <p>Identify strategies for consistent communication among current and prospective partners for your program</p>	<p>Evidence of partnerships developed within community such as MOAs or Letters of Support</p>
<i>Financial</i>		
8	<p>Identify daily, weekly, monthly, and annual financial & production goals by utilizing the productivity & financial goal tools provided</p>	<p>Productivity goals as published in the program’s business plan</p>
9	<p>Identify how to collect and track clinical data including: # of patient visits & procedures, patient-level oral health status improvements, referral completion rates, completed treatment plan rates, satisfaction rates for parents, teachers & school administrators, sealant delivery & retention rates</p> <p>Identify metrics to collect and monitor case management services</p> <p>Identify how to use clinical and related data for program improvement</p>	<p>Completion of performance data collection calibration training</p> <p>Development of local data-driven quality improvement strategy</p>

Table 2 (continued)

Module	Learning objectives	Grantee deliverables
10	Describe how to develop a fee schedule that is both sustainable and affordable to target populations, including use of sliding & nominal fee scales Describe how to track production & collections at the site-level using the program tools provided	Enrolled as participating providers with Medicaid and private insurance groups Fee schedule developed Development of site-level financial data reports
<i>Enabling services</i>		
11	Identify essential components of the consent form Identify effective strategies for the distribution and collection processes that optimizes consent return rates	Parental consent form developed Agreement with schools on consent distribution and collection process
12	Describe the elements of a successful case management plan Describe staffing needs to carry out a successful case management plan	Case management plan developed that includes both internal and external providers Deployment of care completion tracking tools
13	Describe evidence-based approaches for delivering oral health education in school-based settings and communities	Oral health education curriculum and tools identified
14	Describe the levels of the community engagement continuum necessary for support and success of your program Describe strategies for promotion and advocacy for your school oral health program Describe effective ways to cultivate support among local resources (e.g., local dental professionals, school officials, etc.)	Identification of communications and outreach strategy
<i>Impact</i>		
15	Identify effective strategies of storytelling for promoting your school-based oral health program	Established goals for capturing human-interest and case studies for sharing program success

individual grantee coaching sessions to ensure module-specific content was translated into clinical and business plans as seen as expected deliverables. TA coaching sessions were conducted remotely by telephone or a virtual platform. Coaching sessions for each module required a minimum of 2 h. However, some grantees with unique module-specific needs required weekly sessions for up to 3 months. Often, grantees with unique expertise were used as peer coaches and paired with other grantees that would benefit from their consultations on a case-by-case basis. For example, one grantee had an extraordinarily high return rate for consent forms. That grantee shared its forms and protocols with other grantees, a process that resulted in module-specific learning collaboratives.

Implementation of the TA curriculum was supplemented with community context data so that grantees would be informed about the oral health needs of the counties they intended to serve. The environmental scan informed priorities, such as schools to target, sustainable workforce models, and modalities of care. TA coaches conducted the environmental scans using a variety of public-use data. Examples of data obtained included:

- Public school enrollment characteristics, absenteeism rates; and school poverty rates;
- County-level population demographics, poverty rates, unemployment rates, and oral health status;
- Public and private insurance participation rates;
- Dental Health Professional Shortage Area designations;
- Medicaid participation rates by dentists and enrollee utilization rates; and
- Community water fluoridation levels.

A process evaluation was used for assessing grantee performance in the Readiness Phase. TA Coaches debriefed monthly, using a Readiness Stoplight Report for tracking grantee progress on the 15 learning modules. Progress was flagged as either ‘completed (green),’ ‘in progress (yellow),’ or ‘not started/challenges (red).’ TA Coaches made notes that qualified the progress of each grantee. The Readiness Stoplight Report was updated monthly and a time-to-completion rate was calculated for each domain to identify which was the most challenging for grantees. The Stoplight Report was also useful in predicting if a grantee was at risk for not successfully completing the Readiness Phase. The Recommendations Document, TA curriculum, links to the learning modules, templates, and tools were housed on a private server at The Duke Endowment. Our use of online tools enabled grantees and the leadership team to access all materials and resources in an organized and coordinated way.

Assessment

A cohort of 10 organizations was awarded Readiness grants beginning September 1, 2019. Four grantees were Federally Qualified Health Centers (FQHCs), four were county health departments, one was a university, and one was a non-profit organization that was neither an FQHC nor governmental entity. Three to five participants from each organization, including dental team members and executive leaders, completed the TA curriculum. Three grantee organizations were based in South Carolina. All ten successfully completed the 6-month TA curriculum.

Ultimately, the evidence of successful Readiness Phase completion was the submission of competitive Implementation Phase grant applications. In total, the cohort of 10 proposed in their Implementation grant applications to expand school-based oral health services into 148 public schools serving an estimated 35,993 children. Figure 1 identifies the counties targeted by the C-SBOHEI. Each grantee was awarded \$65,000 for planning in the Readiness Phase. They collectively received \$4,038,838 (\$367,167 average award) for the Implementation Phase indicating their success in the Readiness Phase. Four delivery approaches were approved for funding by the grant-makers: (a) fixed clinic co-located on school campus (n = 1 program), (b) mobile clinics (n = 2 programs), (c) portable equipment (n = 5 programs), and (d) hybrid models (n = 2 programs). Using definitions provided by the Association of State and Territorial Dental Directors (Association of State & Territorial Dental Directors, 2011), mobile clinics were recreational vehicles (RVs) that were equipped with the capacity for full dental treatment, or at least full hygiene services. Portable equipment included self-contained units that could be transported inside a vehicle or trailer and set up inside public schools that had appropriate space, infection control, power, and water access. Hybrid models adopted a combination of portable or mobile elements, and leveraged assets of fixed clinic sites.

A descriptive analysis was conducted on the Readiness Stoplight Report. Table 3 delineates the percent of grantees that had completed each TA learning module by each month of the Readiness Phase. Plans for staffing, site selection, and program partners proved to take the most time (Fig. 2). Based on the TA Coaches’ notes, however, the business plan modules were the most challenging for grantees. The descriptive analysis does not quantify grantee difficulties because the business plan modules are not introduced until the last 2 months of the Readiness Phase.

Fig. 1 Counties where school-based oral health expansions were planned for academic year 2019

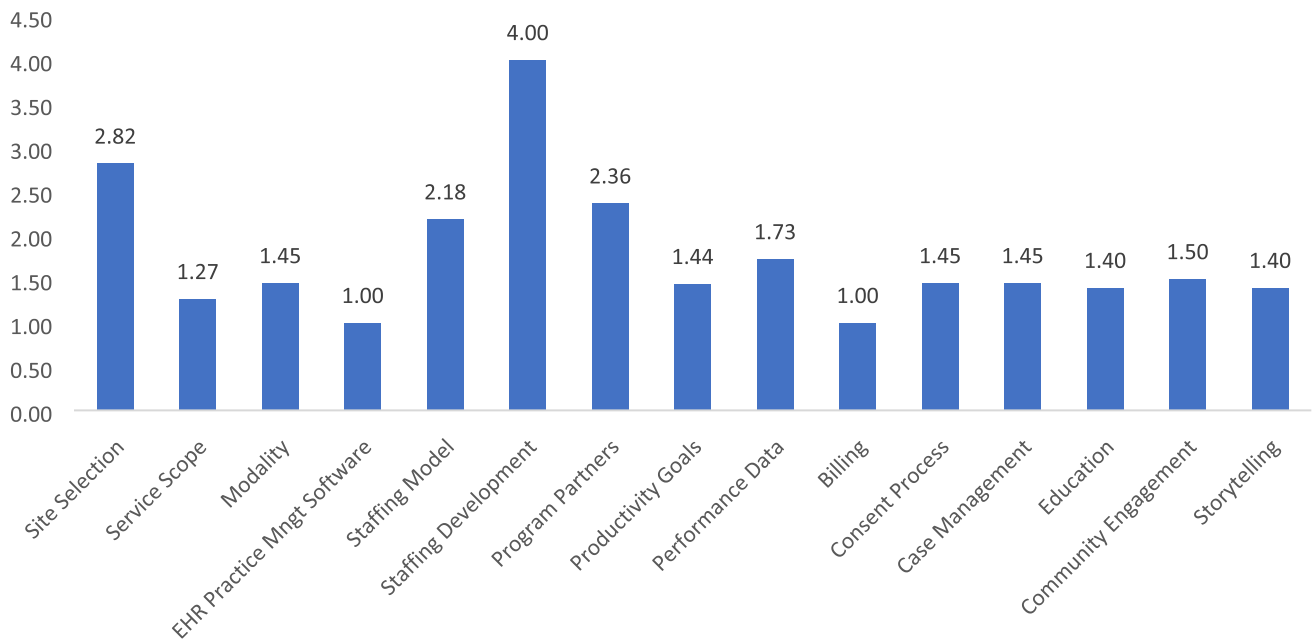
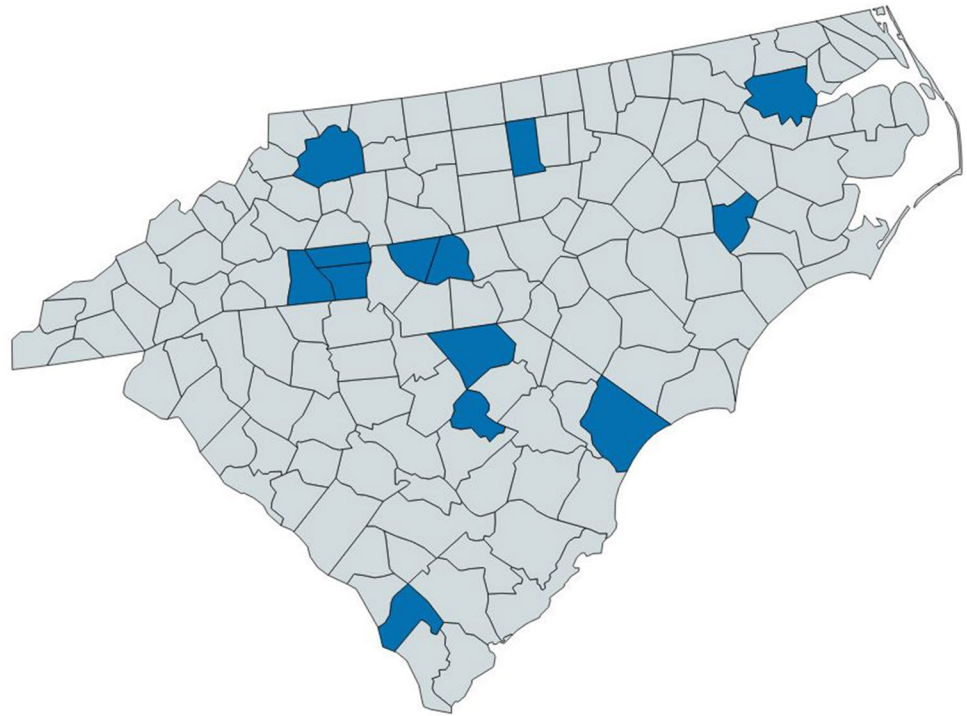


Fig. 2 Average number of months to complete each technical assistance learning module

Conclusions for Practice

The C-SBOHEI builds on similar programs implemented across the United States. Through a TA curriculum for evidence-based SBOHPs, grantees developed clinical care and business plans to optimize access to care for

vulnerable children enrolled in public schools in North and South Carolina. At the completion of the Readiness Phase, all grantees successfully achieved the goals of the grant and advanced for implementation.

As a result of monthly TA Team debriefings, lessons learned were documented for C-SBOHEI grantees and

Table 3 Percent of C-SBOHEI grantees that completed each technical assistance learning module by each month of the readiness phase

Learning module	October (%)	November (%)	December (%)	January (%)	February (%)	March (%)	April (%)
Operations							
Site selection	45.5	63.6	72.7	72.7	72.7	90.9	100
Service scope	72.7	100	100	100	100	100	100
Modality	54.5	100	100	100	100	100	100
EHR software		100	100	100	100	100	100
Staffing model		36.4	63.6	72.7	90.9	90.9	100
Staffing development			9.1	18.2	27.3	36.4	45.5
Program partners			72.7	100	100	100	100
Financial performance							
Productivity goals				45.5	81.8	81.8	81.8
Performance data				27.3	100	100	100
Billing				100	100	100	100
Enabling services							
Consent process					63.6	90.9	100
Case management					63.6	90.9	100
Education						45.5	90.9
Community engagement						36.4	90.9
Impact							
Storytelling						45.5	90.9

Blank cells indicate the module had not yet been introduced to the grantees

others desiring to deliver school-based oral health services. By structuring the C-SBOHEI as a grant program, there was a different level of accountability among grantees than if each organization had solicited the funders independently. Three byproducts emerged as a result of this configuration. The first was the facilitation of a learning community culture, a concept that emerged from the Institute for Healthcare Improvement (Institute for Healthcare Improvement, 2014). Secondly, state-specific grantee networks emerged, leading to synergy for practice and policy improvements. Practice and policy alignment would not have occurred without the deliberate philanthropic-academic-public-grantee partnerships. The third byproduct was the ability to coordinate the distribution of program expansions at intra- and inter-state levels.

The Readiness Phase of the C-SBOHEI resulted in facilitated improvements in intra-organization communications among large organizations, such as FQHCs and health departments. Specifically, the process required vertical and horizontal organizational representation to develop and support the clinical care and business plans for their school programs. In addition to ensuring quality plans, the process unexpectedly elevated the importance of oral health in organizations that previously might not have prioritized it.

The lesson of time management is critical. As previously stated, the sequencing of TA learning modules was based on critical path decision-making. The sequencing process demonstrated that although some modules took longer than

others, certain modules could not be addressed until antecedent decisions were made. Specifically, the development of clinic policy manuals, clinical production goals, and measuring financial performance were identified as the most challenging and time-intensive for grantees, yet they were scheduled later in the curriculum with less calendar time to strategize. Regrettably, these components of the curriculum could not be addressed until decisions such as workforce models, care delivery modality, and site selections were made.

The final lesson learned stems from the use of the Readiness Stoplight Report, our primary instrument in our process evaluation. The Readiness Stoplight Report was useful in coordinating the TA Team and tracking grantee progress. A weakness of the tool is that it did not account for decision changes made by grantees without qualitative notes by TA coaches. For many grantees, the development of clinical care and business plans was not as linear a process as the Readiness Stoplight Report portrayed.

The C-SBOHEI will continue to be refined, particularly in the age of COVID-19. Dr. Lisa Simon (2020) recently published anticipated professional changes resulting from the pandemic, and her prognostication is likely exacerbated for school-based programs. Dr. Simon encouraged the incorporation of telehealth technologies, interoperable electronic health records, and delivery of vaccinations into dental practices. These suggestions resonate with school-based programs especially during times of school closures,

space limitations for portable equipment due to social distancing, and enhanced fear of COVID-19 exposures during care delivery.

The C-SBOHEI continues to work with grantees to improve its TA curriculum. While the scopes of service and delivery of SBOHPs may change, the use of QI and effective TA will continue to be used. The result should be SBOHPs prepared to navigate adverse circumstances.

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