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Process of Identifying Measures and Data Elements for the HRSA School-Based Telehealth Network Grant Program

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Introduction and Background

Despite the proliferation of school-based health centers (SBHCs) in both urban and rural areas over the last two decades, evaluations have found that many schools still face barriers in getting needed services or follow-up referrals for children and adolescents. Limited capacity to provide necessary specialty services (e.g., mental health, oral health), challenges with reimbursement, difficulties engaging parents in on-site preventive health education, and lack of funding are some of the multiple barriers.[1] These problems are magnified in rural, underserved areas, where parents may have to drive long distances and take time off work to bring children to follow-up services. School-based telehealth offers a potential opportunity to expand and enhance access to services,[2,3] but its use has been relatively limited (in 12% of SBHCs in 2016-17).[4] As a result, evidence regarding the effectiveness of rural telehealth in school-based settings is scant, and additional research is needed.[4-7]

Key Findings

- Candidate School-Based Telehealth Network Grant Program (SB TNGP) measures were identified through an extensive published and grey literature review and search of key organizations' existing measures.
- The resulting inventory of 1,220 measures was subjected to 3 rounds of scoring by the research team, external experts, and the SB TNGP grantees.
- The final set of 27 measures included 17 clinical measures and 10 nonclinical measures.
- For evaluation purposes, these 27 measures were operationalized into 40 data elements needed for systematic data collection and statistical analysis.

In September 2016, the Health Resources and Services Administration (HRSA) Federal Office of Rural Health Policy (FORHP) Office for the Advancement of Telehealth (OAT) awarded grants to 21 organizations across the country for the School-Based Telehealth Network Grant Program (SB TNGP)[a]. This program is designed to demonstrate how telehealth can expand access to, and coordinate and improve the quality of, health care services offered in schools. As specified in the Funding Opportunity Announcement (FOA HRSA-16-102), grants were targeted to rural, frontier, and underserved communities providing telehealth services for school children, with a particular focus on five clinical areas: asthma, behavioral health, diabetes, healthy weight, and oral health.

As part of this initiative, FORHP funded the Rural Telehealth Research Center (RTRC)[b] to identify a set of measures for the SB TNGP. The principal activities for this project included developing an inventory of potential SB TNGP measures, defining a methodology for evaluating this inventory of measures to determine which were most relevant and

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applicable for evaluating the SB TNGP initiative, applying the methodology to identify a final list of measures, translating the measures into data elements, and creating a dictionary and tool that could be used to systematically collect and report data by SB TNGP grantees. The goal of the project was to identify a common set of measures that could be collected from each of the grantees on all of their grant-funded telehealth encounters for a cross-grantee assessment of school-based telehealth services, utilization, process, and outcomes.

Methods for Identifying and Categorizing Measures

Literature review – Following clarification of the process and goals with FORHP and OAT staff and developing familiarity with the grantee initiatives, potential measures were gathered. A review of the evidence-based literature related to school-based or pediatric health care was conducted to identify potential measures. The search strategy encompassed the published peer-reviewed literature available through existing article databases, including PubMed, CINAHL, Cochrane Database, and ERIC. The Telebehavioral Health Institute's bibliography was also a source reference. Lists from relevant articles and systematic reviews were hand-searched for additional articles to inform measure selection. Additionally, Google Scholar and the grey literature were searched for studies, reports, and presentations to help inform the selection of school-focused measures. In total, the research team reviewed 250 titles, abstracts, reports, websites, presentations, and full-text articles. From these, the team identified 63 unique articles for further review, which yielded 556 measures.

Environmental scan of existing stakeholder measures – An environmental scan was conducted to identify additional relevant measures from stakeholder agencies and organizations (e.g., state-level agencies, the National Association of School Nurses, the School-Based Health Alliance). This environmental scan was also used to assess the degree to which measures aligned across key stakeholders to minimize reporting burden for grantees. This effort identified 427 measures required or recommended from 24 stakeholder groups. A search for measures that grantees may be required to report as SBHCs within their states yielded 88 relevant potential measures. The 21 SB TNGP grant applications were reviewed for measures that grantees indicated they were currently tracking or planned to track under the SB TNGP grant. This review of grant applications yielded 315 potential measures.

Categorization by domain and subdomain – Measures identified in the literature review and environmental scan were collected in a measures inventory. Prior to scoring, measures were categorized into 23 domains, based in part on categorization schemes used by the National Quality Measures Clearinghouse and the School-Based Health Alliance. The 23 domains encompassed the 5 clinical focus areas of the SB TNGP grants (i.e., asthma, behavioral health, diabetes, healthy weight, and oral health), other clinical areas (e.g., acute care, substance use), and relevant nonclinical topics (e.g., satisfaction, school performance). Each domain was made up of subdomains, or categories of closely related measures. Measures were sorted into domains, and then subdomains, through an iterative review process.

Methods for Scoring Measures

Scoring criteria and review process for clinical and nonclinical measures – The methodology for evaluating the inventory of measures was built on selection criteria guidelines used by the National Quality Forum (NQF) with some modifications tailored to address SB TNGP goals and to recognize the limitations of evidence-based research in this area. In total, 10 specific selection criteria for assessing the benefit of potential measures for SB TNGP assessment were identified in 4 broad categories: (1) importance to measure and report for school-based telehealth practice; (2) sensitivity to school-based health or telehealth services; (3) feasibility of collecting; and (4) usability for quality improvement and FORHP evaluative needs. Measures were scored on these criteria using a three-round scoring process separately for clinical and nonclinical measures. Figure 1 shows a flowchart of the measures scoring process described below.

During the first round of scoring, 4 members of the research team scored 1,220 measures—533 clinical measures in 11 domains and 687 nonclinical measures in 12 domains. For Round 1, reviewers scored measures on 3 criteria: measure specification, alignment, and utility for study/grant objectives. As a result of this scoring, 455 measures met the Round 1 minimum threshold criteria and were moved to Round 2.

The second round of scoring was conducted by 7 research team members and external reviewers who scored the clinical measures on 6 criteria, including the degree to which the measure was related to an intervention (1) commonly provided in school-based settings (high volume), (2) where the child is at high risk if not treated (high patient risk), (3) for which the use of telehealth technology has been or could be applied in a school setting (amenable to telehealth), and (4) for which access to, cost, or quality of care can be improved (opportunity for improvement). The reviewers also considered whether a measure (5) can accurately capture what it is intended to measure (rigor), and whether (6) information is routinely generated and/or can be collected and reported by school-based or telehealth settings without undue burden (data collection). After this process, 100 measures in 15 domains moved on for Round 3 grantee review.

For Round 3, all 21 grantees were invited to voluntarily participate in scoring. Grantees were asked to score measures on two criteria: (1) the measure is routinely generated and/or can be collected and reported by school-based or telehealth settings without undue burden (data collection), and (2) the measure is useful to grantees and their partners to measure value of telehealth in school settings for sustainability (utility for intended stakeholders). Grantees were not required to score all measures, but only those for which they felt they had expertise or that were pertinent to their grant area of focus (e.g., grantees focused solely on oral health might disregard measures related to diabetes). The final review process by the SB TNGP research team sought to include measures that covered all the SB TNGP goals, including the five clinical conditions of focus and other SB TNGP goals of improving access, quality of health information, and cost-effectiveness.

Final List of Measures and Data Elements Needed for Systematic Data Collection and Analysis

Table 1 presents the final set of 27 measures identified for the cross-grantee SB TNGP evaluation. The final set includes 17 clinical measures—3 to 4 in each of the 5 targeted clinical focus areas of the SB TNGP grants—and 10 nonclinical measures, including 4 related to access, 1 related to prevention, 1 measuring telehealth process, 1 related to measuring school attendance and ability to stay in school, and 3 related to cost savings.

Because the ultimate project goal was to collect data from each of the grantees on all their grant-funded telehealth encounters, the measures were operationalized into data elements. Table 2 presents the set of 40 SB TNGP data elements and the level of data collection for each. As noted in the table, 5 data elements were collected at the school level, 8 were collected at the student level, 17 were collected at the student-specific telehealth service level, and 10 were collected at the encounter level. Four of the student-level data elements were not specifically related to the measures but were collected to accurately describe the study sample. The data elements permitted measures to be calculated but, more importantly for this project, permitted data to be collected at the necessary level for subsequent statistical analysis and reporting of project findings. A dictionary of all data elements[8] was created to define terms, indicate allowable values, provide abstractor notes, and identify measure source documents. The data element dictionary was submitted by FORHP to the Office of Management and Budget to obtain clearance for data collection from the SB TNGP grantees. In addition, data use agreements were established between RTRC and each grantee, and all involved entities secured Institutional Review Board Human Subject Review approval. To facilitate both, no protected health information was collected and data were deidentified prior to transmission to RTRC. An Excel-based tool (School-based Telehealth Evidence Collection Tool – S-TEC Tool)[9] was developed for use by each of the grantees to enter data during each measurement period. Because the context for data collection was the school setting, two measurement periods each year were defined to align with fall and spring school semesters. An S-TEC Tool User Manual[10] and S-TEC Cheat Sheet[11] were developed and distributed to grantees, and webinars were held to explain the data collection process. After each measurement period, feedback was collected from the grantees and clarifications were added to the S-TEC Tool and Data Element Dictionary, with updated versions released to grantees for use during the next measurement period.

Significance

FORHP's SB TNGP grants seek to expand telehealth in school-based settings and thus help to increase the availability and use of these services. Critical to these efforts is the need to design rigorous evaluations and monitoring measures that build on and supplement existing measurement resources and research to assess school-based telehealth's effectiveness. Studies of on-site school-based health care have demonstrated increased student access to health and preventive service use, high rates of student and parent satisfaction, and some improvements in

chronic care management.[12] But there is a demand for more rigorous studies and evaluations to establish a standardized set of school-based health indicators and to determine which components—including telehealth—are most effective in meeting community needs.[13-15] This project's goal of defining measures to assess school-based telehealth will inform future policy changes and sustainability efforts. The identification of measures and data elements plus the creation of a data dictionary and tool has led to a successful, systematic process for collecting data from the SB TNGP grantees. The resulting cross-grantee assessment will add substantially to the evidence base on the effectiveness of rural school-based telehealth.

Notes

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Figure 1. Flowchart of Measure Scoring Process

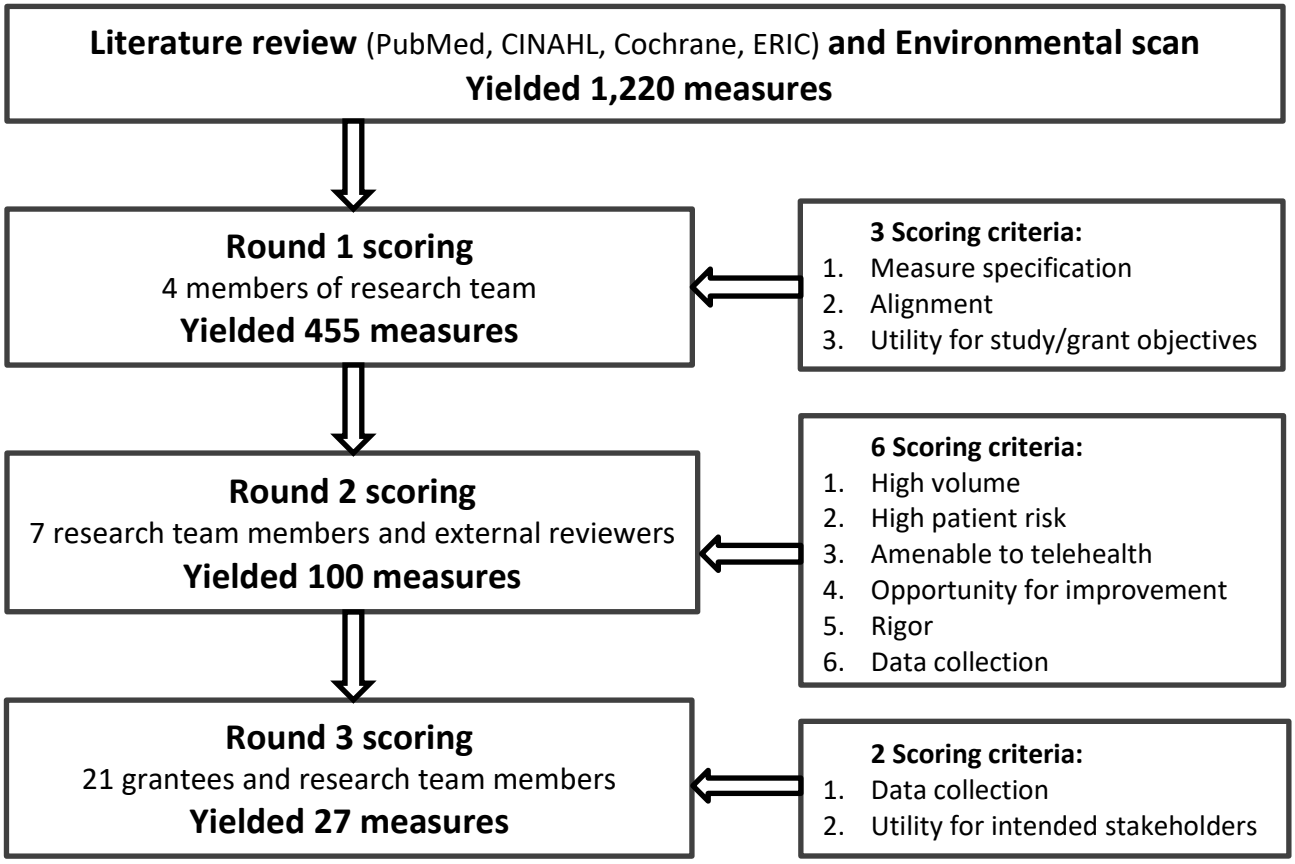

Table 1. Description of 27 Measures for the SB TNGP

Domain and Brief Description		
Asthma	1	Percentage of students with asthma who have asthma severity classification assessed in the measurement period
	2	Percentage of students with asthma who have an asthma action plan on file at the school in the measurement period
	3	Percentage of students with persistent asthma who are on appropriate medication in the measurement period
	4	Percentage of students with asthma who have rescue medication on file at the school in the measurement period
Behavioral Health	5	Percentage of students who have been screened in the measurement period with an age-appropriate risk assessment that includes a depression screening and documented follow-up, if necessary
	6	Percentage of students identified as being depressed who self-report improved mental health in follow-up counseling or medical visits in the measurement period
	7	Percentage of students with a diagnosis of major depressive disorder who have an assessment for suicide risk in the measurement period
Diabetes	8	Percentage of students with diabetes who have documented self-management goals in the measurement period
	9	Percentage of students with diabetes who have a documented HbA1c test done in the measurement period
	10	Average HbA1c value during the measurement period for students with diabetes
Healthy Weight	11	Percentage of students who have been diagnosed as obese (i.e., a BMI-for-age >85th percentile) in the measurement period
	12	Percentage of students with a BMI greater than or equal to 85th percentile who had a blood pressure percentile documented and classified as normal or abnormal in the measurement period
	13	Percentage of students who had an outpatient visit with a primary care provider or OB/GYN in the measurement period and who had evidence of the following during the measurement: (1) percentage of patients with height, weight, and BMI percentile documentation; (2) percentage of patients with counseling for nutrition; and (3) percentage of patients with counseling for physical activity
Oral Health	14	Percentage of students who received an oral health evaluation/screening in the measurement period
	15	Percentage of students who received a school-based dental screening in the measurement period and were diagnosed with tooth decay
	16	Percentage of students who were referred for follow-up oral health services in the measurement period
	17	Percentage of students who received a sealant on a permanent second molar tooth as a school-based dental service in the measurement period
Access	18	Percentage of students receiving services in the measurement period
	19	Percentage of students receiving telehealth services by service type and setting in the measurement period
	20	Number of telehealth encounters by service type and site in the measurement period
	21	Percentage of students with an identified primary care provider in the measurement period
Cost Savings	22	Percentage of patient encounters in the measurement period according to student's disposition
	23	Patient travel miles saved through the use of telehealth in the measurement period; estimated associated costs
	24	Estimated reduction or avoidance in patient travel costs as a result of avoided in-person post telehealth care in the measurement period
Other	25	Percentage of students enrolled in the school who completed a comprehensive risk assessment in which the provider discussed common health risk behaviors in the measurement period
	26	Percentage of telehealth visits that were not completed due to technical issues in the measurement period
	27	Number of school days missed in the measurement period for students receiving telehealth visits

Table 2. Description of 40 Data Elements for the SB TNGP

Level	Data Elements
School	Total school enrollment
School	Students eligible to participate in school-based telehealth services
School	Telehealth services available through SB TNGP: (1) asthma, (2) behavioral health, (3)diabetes, (4) healthy weight; (5) oral health
School	Number of distinct students seen for each available telehealth service
School	Total number of telehealth visits
Student	Age
Student	Sex
Student	Race
Student	Ethnicity
Student	Student's school days missed (if available through school records)
Student	Student completed a comprehensive risk assessment and then provider discussed common health risk behaviors
Student	Number of visits that the student received: (1) asthma (2) behavioral health, (3) diabetes, (4) healthy weight, (5) oral health
Student	Primary care provider (PCP) identified for student
Service	Asthma - severity classification was assessed
Service	Asthma - action plan on file
Service	Asthma - current asthma medication was assessed for appropriateness
Service	Asthma - rescue medication on file
Service	Behavioral Health - screening for clinical depression using an appropriate tool and follow-up plan if positive screen
Service	Behavioral Health - student identified as being depressed reported improved mental health in follow-up counseling or medical visits
Service	Behavioral Health - student with diagnosis of major depressive disorder was assessed for suicide risk
Service	Diabetes - self-management goals on file at the school
Service	Diabetes - HbA1c test was done
Service	Diabetes - student's HbA1c value
Service	Healthy Weight - student with BMI greater than or equal to 85th percentile
Service	Healthy Weight - student with BMI greater than or equal to 85th percentile whose blood pressure percentile was assessed and classified as normal or abnormal
Service	Healthy Weight - BMI percentile, counseling for nutrition, and counseling for physical activity on file
Service	Oral Health - student received a school-based oral health evaluation/screening
Service	Oral Health - student received a school-based dental screening and was diagnosed with tooth decay
Service	Oral Health - student was referred for follow-up oral health services
Service	Oral Health - eligible students who received a sealant on a permanent molar as a school-based dental service
Encounter	Type of provider seen via telehealth
Encounter	Type of services provided via telehealth
Encounter	Number of telehealth encounters that the student received
Encounter	Number of non-telehealth encounters that the student received
Encounter	Telehealth technical success
Encounter	Immediate disposition
Encounter	Follow-up referral
Encounter	Travel avoided for this encounter
Encounter	Provider if travel was avoided
Encounter	Patient travel miles to likely source of care