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Development of a Measure of State Infrastructure for School Nursing Services Delivery

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DEVELOPMENT OF A MEASURE OF STATE INFRASTRUCTURE
FOR SCHOOL NURSING SERVICES DELIVERY

A Project Paper

by

Wendy A. Doremus

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Abstract

Healthcare systems are increasingly accountable for safety and quality. States have a key role in protecting and promoting the health of their youth, setting regulations and standards for school health services structures and processes. Yet, the lack of an instrument for state-level self-assessment of equity and quality infrastructure supports hinders progress toward improving in school health services delivery. This macro health system project, conducted in three phases, developed a valid and reliable instrument for state-level self-assessment of infrastructure necessary for supporting quality school nursing services. The phases were identification of state-level structures and processes domains and indicators; a content expert survey evaluating the validity of the measure; and a pilot test of the measure with Rhode Island state-level school health leaders. The resulting State-level School Health Infrastructure Measure, comprised of seven domains and related indicators assesses for the presence of evidence-based school nursing practice standards and resources; school nursing workforce professional competency standards and professional development; school nursing delivery of school-age population healthcare; equity in student access to professional school nursing services; cross-sector state leadership, governance, collaboration, linkages, and networks among health and youth service entities; school health information technology and data integration; and stable funding for school nursing services. The instrument appears to be feasible, cost effective, valid, and reliable for assisting states to identify and build quality school nursing services delivery capacity to improve the health of school-age youth.

Keywords: school nursing services, quality measures, state-level, infrastructure, structure, process, domains, indicators

Acknowledgements

I am indebted to the professional support of the members of the Rhode Island College School of Nursing faculty and staff, without which this project would not have been possible. In particular, I am thankful to my project advisors, Dr. Marie Wilks, Dr. Joanne Costello, and Patricia Raymond, RN, MPH (Rhode Island Department of Health) who reviewed drafts of this paper and provided guidance and perspectives that enriched this project. My evidence and findings in this report are more robust because of their input. I wish to express gratitude to Dean Jane Williams (retired), Dr. Cynthia Padula (retired), Linda Mendonca, Dr. Kara Misto, and Dr. Ronald Pitt (retired), each of whom helped guide my research methods and processes. I am also most grateful to my Massachusetts school nurse colleagues and friends, Anne Sheetz RN, MS, Jenny Gormley DNP, and Kathleen Hassey DNP for their input, direction, and encouragement. The Data and Research Committee chairpersons of the National State School Nurses Association provided instrumental assistance with facilitating survey participation. They were Linda Wolfe, former State School Nurse Consultant for Delaware (retired); Jessica Gerdes, MS, RN, IL/NCSN, State School Nurse Consultant for Illinois, and Principal Consultant, School Nursing/Health, Special Education Services Division, Illinois State Board of Education, and Estelle Watts. My appreciation also goes to members of the National Association of State School Nurse Consultants who participated in the project survey. Finally, I offer special thanks to Karin Wetherill, Rosemary Reilly-Chammat, Martha Dewey Bergren, Erin Maughan, Sandra Delack, and Suzy Barcelos Winchester whose professional support, feedback, expertise, and wisdom helped at key points in this project.

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Development of a Measure of State Infrastructure for School Nursing Services Delivery

Introduction

All children and youth deserve to have decent opportunities to grow, develop, learn, and lead a healthy life. Extensive evidence shows that health impacts educational attainment and in a reciprocal way, education is a powerful predictor of health outcomes (Basch, 2011; Braveman, Cubbin, Egerter, Williams, & Pamuk, 2010; Ickovics et al., 2014; Maughan, 2003; Michael, Merlo, Basch, Wentzel, & Wechsler, 2015; Murray, Low, Hollis, Cross, & Davis, 2007; National Academies of Sciences, Engineering, and Medicine, 2019). The Aspen Education and Society Program and the Council of Chief State School Officers enumerate ways that school health services are an integral support for student learning (2017). Yet, despite ongoing national and state efforts toward educational reform and health reform that has included increased rates of health insurance coverage for children and their families, health and educational disparities persist among youth, particularly those living in poverty (Agency for Healthcare Research and Quality [AHRQ], 2017; The Annie E. Casey Foundation, 2017).

Children of low socioeconomic status typically have poorer health and lower life expectancies than their wealthier counterparts (Wasserman et al., 2019; Jensen, Berens, & Nelson, 2017; Jiang & Koball, 2018; Olshanksy et al., 2012). Currently, 41% of children in the United States (U.S.) live in poor or low-income families and 50% of children qualify for state health insurance (Jiang & Koball, 2018; Centers for Medicare & Medicaid Services, 2018). Demographic information about school-age youth reveals that 51% of U.S. students were eligible for subsidized lunch in 2014-15 (National Center for Education Statistics, 2016). This is a proxy for low socio-economic status, as families

must submit documentation of income earnings along with the number of individuals in a household, to qualify for free or reduced school meals (Day et al., 2016).

Chronic health condition such as asthma, allergies, obesity, diabetes, or seizures affect 27% of U.S. school children (Van Cleave, Gortmaker, & Perrin, 2010; Whitney & Peterson, 2019). In addition, nearly one in six U.S. children have serious behavioral or mental health disorders (Van Cleave et al., 2010; Whitney & Peterson, 2019). Events or situations in childhood such as maltreatment, or the presence of a family member with mental illness or substance abuse problems, domestic violence, or the absence of a parent due to marital separation, divorce, or incarceration are categorized as adverse childhood experiences (ACEs) and these situations can profoundly impact the current and future health status of the school-age population (Felitti et al., 1998).

These conditions and factors are health barriers that interfere significantly with learning (Gracy, Fabian, Roncaglione, Savage, & Redlener, 2017). They may also lead to chronic absenteeism from school, defined as missing between 15 to 18 or more days of school per year. Chronic absenteeism applies to approximately 16% of the U.S. student population and correlates highly with the risk for dropping out of high school, a social determinant of health that is linked to poorer health outcomes over a person's lifetime (Allison & Attisha, 2019; Balfanz & Byrnes, 2012; Freudenberg & Ruglis, 2007; Robert Wood Johnson Foundation, 2016).

States oversee health and public education systems within their borders. Embedded within educational settings is school health, which is also an overlapping component of the larger public health system (National Association of School Nurses [NASN], 2017). States set regulations and standards for school health services delivery

and thus, have a key role in protecting and promoting the health of school-age youth (Fisher et al., 2003). However, approximately half of school children in the U.S. do not have access to adequate school health services (Basch, 2011; Willgerodt, Brock, & Maughan, 2018; Zimmerman & Woolf, 2014). Additionally, the care and quality of school health provisions vary greatly within states and across the country (Praeger & Zimmerman, 2009; Selekman & Guilday, 2003). These disparities in access to, and quality of health services in school represent gaps that contribute to healthcare fragmentation and poorer health outcomes for affected school-age youth (Maughan et al., 2018; Braveman et al., 2010; Centers for Disease Control and Prevention [CDC], 2017a; Wasserman et al., 2019).

Professional registered school nurses with specialized expertise are front line health provider of school health services (also referred to throughout this paper as school nursing services), forming a bridge between healthcare and education. This combination of primary care, public health, and population-based services reduces health inequities and educational achievement gaps. However, school nursing is often unrecognized as a crucial and cost-effective part of the public health system that provides community-based healthcare that promotes student health, advances academic success, and helps students develop to their full potential. Effective school nursing services programs and policies are associated with better student attendance and health outcomes (Maughan, 2003; Yun et al., 2018; NASN, 2017; Wang et al., 2014; Lear, 2007; Brener et al., 2017). While school-based health centers also offer health services in a small percentage of school systems, they function mostly to provide primary care. The focus of this paper is on state

supports for services provided by professional, registered school nurses as well as the policies, protocols, and infrastructure that enables the delivery of these services.

Since levels of academic achievement affect health over the lifecourse, it is critical to address barriers to educational attainment. School-age youth need high quality, coordinated healthcare to foster academic success and good health across the life span (Fiscella & Kitzman, 2009; Klebanoff Cohen & Syme, 2013). A systems approach that includes state public health agency and state education agency collaboration is essential to address improving school health services, programs, policies, practices, and standards that ensure equitable access to quality school nursing services for all students (Johnson, 2017).

Significance of the Problem

Major reforms are occurring in U.S. healthcare and educational systems that have bi-directional effects in each realm. Foremost among national healthcare initiatives is The Patient Protection and Affordable Care Act, enacted in 2014 (Patient Protection and Affordable Care Act [ACA], 2010). Educational reform is exemplified in the *Every Student Succeeds Act* (ESSA, 2015). The passage of both of these legislative reforms affect state-level functioning, with states' roles becoming increasingly important.

The ACA legislation aims to improve patient and population health outcomes and reduce health disparities through advancements in the delivery of health care services, particularly for vulnerable populations. The ACA specifically calls for structures that improve health outcomes through quality reporting, case management and coordination of care, and management of chronic diseases (ACA, 2010; Soto, 2013). The recent passage of ESSA recognized the role of health as a contributing factor in student

achievement and well-being (ESSA, 2015) and programs that support improved academic performance are now being acknowledged as public health interventions (CDC, 2014a; CDC, 2015).

These significant regulatory reforms and policy shifts in public health and educational jurisdictions impact standards that shape the quality of public health, described by The Public Health Quality Forum as “the degree to which policies, programs, services and research for the population increase desired health outcomes and conditions in which the population can be healthy” (2008, p. 3). Measurement is a fundamental part of the process of making changes to improve healthcare quality and transform healthcare systems. National mandates to improve healthcare services quality have directed much attention toward measures of adult care, primary care, and tertiary (hospital) level care settings. Organizations such as The Joint Commission (2018) apply structure and process measures as standards in certifying or accrediting hospital-related health providers or programs to improve the quality of care for the public. Chassin, Loeb, Schmaltz, and Wachter (2010) confirmed that healthcare quality measurement is used to improve the delivery of care that takes place in U.S. hospitals and other healthcare system settings. However, less focus has been targeted toward preventive healthcare system quality improvement in community and public health settings for the pediatric population, including school nursing services (Adirim, Meade, & Mistry, 2017; National Quality Forum, 2011).

The interrelationship between K-12 education and health parallels the link between the need for educational reform and efforts for healthcare improvement. Multiple national initiatives for quality improvement in healthcare call for attention to

implement strategies that address accountability, access, and cost. Health promotion that addresses social determinants of health is a fundamental consideration in decision making, strategic planning, and policy formation to support the cognitive, physical, social, and emotional development of children (Fobbs, 2015; Murray, Hurley, & Ahmed, 2015; Rudolph, Caplan, Ben-Moshe, & Dillon, 2013).

For the first time, Healthy People (HP) 2020 included the topic of social determinants of health as an overarching goal and identified educational attainment as a key, fundamental, upstream factor that impacts health (Hahn & Truman, 2015; U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion, [U.S. DHHS] 2010). HP 2020 targets a multitude of goals for school age youth (EMC-1 through EMC 5.2) ranging from addressing physical health issues such as obesity, physical activity, nutrition and healthy foods, and respiratory problems to behavioral health concerns such as ADHD, with health education and parenting topics as well.

Additional HP 2020 topics that relate to the needs of school age youth target access to health services, healthy foods, opportunities for physical activity, oral health, health education for teens, improved public transportation options, and prevention of substance misuse, including alcohol. (U.S. DHHS, 2017b). An overarching HP 2020 topic that relates to the needs of the school age youth is *Educational and Community-Based Programs*, which addresses the goal to “increase the quality, availability, and effectiveness of educational and community-based programs designed to prevent disease and injury, improve health, and enhance quality of life” (U.S. DHHS, 2017c, para 1). A key objective under this this topic heading is ECBP-5.1 which calls for an increase in the

“proportion of elementary, middle, and senior high schools that have a full-time registered school nurse-to-student ratio of at least 1:750” (U.S. DHHS, 2017c, para 37). Additional results that relate to the developmental life stage span of the school-age population are available under a new HP 2020 category “adolescent health” which defines the age group to include children beginning at age 10 through age 17. The core indicators are listed as AH-1 through AH-11.4 and cover 24 topics for adolescent health that include access to health services, healthy development, teen health education, injury and violence prevention, mental health, substance use, sexual health, and prevention of chronic diseases of adulthood (U.S. DHHS, 2017a). Closely related to these topics are additional HP 2020 objectives for strengthening public health program infrastructure at the state level as a necessary foundation for program planning, capacity building, delivery, evaluation, and improvement to protect the health of the public (U.S. DHHS, 2014) .

In 2014, the CDC and the Association for Supervision and Curriculum Development (ASCD) unveiled the Whole School, Whole Community, Whole Child Model (WSCC) which provides a comprehensive framework that focuses attention on child health in educational settings. This model fosters coordinated cross-sector alignment, integration, and collaboration among educators, school nurses, health providers, and community agencies. This updated and expanded version of an earlier coordinated school health model places the child at the focal point of all initiatives (ASCD, 2012; ASCD, 2019; CDC, 2015; Lewallen, Hunt, Potts-Datema, Zaza, & Giles, 2015; Murray, Hurley, & Ahmed, 2015). However, a 2018 report by Solomon, Katz,

Steed, and Temkin found a fragmented pattern of integration of this model into state laws and regulations.

Another strategy that supports the health of youth in schools is The Health in All Policy (HiAP) approach. This model advocates for policies of all kinds to include perspectives that take into consideration health impacts and supports a universal approach to health promotion and disease prevention (ASCD, 2012; Chiang, Meagher, & Slade, 2015; Rudolph et al., 2013). Together with HP 2020 goals and objectives, the WSCC Model and the HiAP framework provide states with structure and process guidelines for school nursing services delivery.

The National Association of State Boards of Education (NASBE) acknowledges that “schools must help students by ensuring they have not only the academic supports needed to excel academically, but also the social, emotional, health, and mental health supports needed to learn to their fullest potential” (2014, p. 5). As such, the NASBE organization maintains a state policy database on school health policies. This compilation documents each individual state’s educational and public health laws, statutes and regulations concerning student health services and requirements for addressing chronic health conditions such as asthma, allergies, diabetes; preventive health screenings for vision, hearing, dental, BMI; immunization compliance status; school nurse availability, qualifications, certification, and professional development; and health referrals and community health partners (NASBE, 2019). This database allows for comparison between states, though does not compel action on the part of states as there is not a national set of requirements for school health services delivery. For the most part, states have the responsibility to self-regulate the provision of these services.

The American Academy of Pediatrics (AAP) supports having a strong set of state-level evidence-based policies that serve to strengthen and inform school health policies at the school district levels (n.d.). Further, an AAP policy statement firmly asserts that “in all settings and circumstances, quality measures are instrumental in assessing improvements in the quality and safety for health care delivery” (Adirim et al., 2017, p. 5). According to the CDC (2017a), assessment is essential to improve school health policies and programs that impact student health. Attention to equitable access to quality school nursing services is critical, especially as a safety net for vulnerable children within the school-age population (Basch, 2011).

A few standardized tools are available to states to evaluate aspects of school health services at the local, school district, and county levels to determine if schools are adequately addressing the health needs of school-age youth. The *School Health Index* focuses primarily on individual components of student health such as physical activity or nutrition (CDC, 2018). The *School Health Policies and Practices Study* (SHPPS) is an official source of national data on school health policies and practices. This periodic national assessment monitors whether schools and school districts have policies and practices that address HP 2020 public education objectives pertaining to health, such as policies that address preparation for an infectious disease outbreak. The information is used to identify and track areas for schools to improve program planning, policy, and planning (CDC, 2014 b; CDC, 2017a). In 2012, the SHPPS included questions about state-level school health activities related to Medicaid, collaboration, professional development, and health services coordinators but did not address other areas of state support for school health services (CDC, 2013). The CDC also developed *School Health*

Profiles to assess the extent to which schools in each state implement and coordinate components of the WSCC model (CDC, 2017a). The American Academy of Pediatrics (2019) developed an instrument called the Health Services Assessment Tool for Schools (HATS) for school districts to self-assess school health services quality at the local level. Other school health services assessment tools exist that are disease-specific, addressing interventions or care for a particular health condition such as diabetes or asthma, or focus on a single dimension of a health promotion such as physical activity, nutrition, or health education. These instruments address local school or district-level implementation or single topic issues but do not macroscopically examine whether state-level infrastructure exists to systematically support the delivery of high-quality school nursing services. State-level infrastructure is comprised of the policies, regulations, personnel and training, funding and financial, technical and data systems, inter- and intra-agency communications and collaboration, and organizational leadership resources that serve as a framework for school health services delivery. This structural capacity is vital for planning, implementation, and achieving outcomes (Allensworth, Lawson, Nicholson, & Wyche, 1997; Lavinghouze, Snyder, Rieker, & Ottoson, 2013; Schmitt et al., 2016).

Dolansky and Moore (2013) advised that improvements for safe, quality healthcare must be applied at the system levels. Increasing state regulatory responsibility and accountability for health and education provisions and outcomes calls for systems-focused measurement to identify capacities and gaps in state-level infrastructure supports for school nursing services delivery. State-level self-assessment of the degree of presence or lack of state structures and processes that advance quality school health service delivery has the potential to accelerate achievement of the Triple Aim of

providing better healthcare, assuring patient satisfaction, and improving population health in a cost-effective manner (Berwick, Nolan, & Whittington, 2008; Schmitt et al., 2016).

School nursing is fundamentally intertwined with education, primary care, and public health, functioning at the nexus of local and state policy, statutes, and regulations. An integral component of the public educational and healthcare systems, school nursing is essential to ensuring comprehensive, consistent, equitable, accessible school health services for every child in each state, and in particular, low income communities. Assurances of these standards require state-level leadership for accountability of school health policy, processes, practices, interventions, evaluation, and outcomes. However, a comprehensive self-assessment measure of state-level infrastructure supports for school health services does not exist.

Purpose

The purpose of this project was to develop, pilot, and produce a valid and reliable systems-level assessment measure of state infrastructure supports for quality school nursing services delivery to advance the health of the school-age population. This project addressed the questions: What state-level structures and processes are necessary for the provision and delivery of quality school nursing services and how can these infrastructure supports be measured?

Literature Review

A literature review was conducted using the databases CINAHL, ERIC, Medline, ResearchGate, Cochrane Library, Google Scholar, and Google to search for current research articles in peer reviewed journals, as well as white papers, grey literature, book chapters, national organization policy statements, consensus study reports, and federal

and state websites. An ancestry approach, using reference lists from recent studies, expanded findings from the initial data base searches. Due to a paucity of literature on state-level supports for school health, no date restrictions were imposed though the most current literature was cited when available. The parameters searched focused on school-age youth and state-level interventions. The following key words directed the search: child / pediatric / youth / school-age population health, school nursing services, school health services, state-level, quality measures, indicators, domains, infrastructure.

Quality Measurement in School Health Services

St. Leger (2000) conducted an in-depth, international analysis of indicators for improving school health quality, highlighting the importance of alignment of health and education sectors. The author provided guidelines to follow for the appropriate selection of school health indicators that included providing assurances for the usefulness and value of data derived from the indicators and that the indicators match the size, scope, and potential of the agency capacity.

A 2003 study by Newell, Schoenike, and Lisko explored quality assurance in school nursing. The study was based in part on examining infrastructure and support needed by school nurses to ensure healthy and safe student outcomes. The authors encountered a lack of overarching quality assurance systems in school nursing to advance evidence-based practice standards but found models that could be applied to school nursing.

A 2008 case study by Hoyle, Samek, and Valois described a model for building capacity for health-promoting improvement in a large school district. The study identified key structures and processes that supported continuous improvement in school

health that embraced a whole child approach to support student readiness to learn. The conditions were management structures for effective and visionary leadership; internal and external collaboration for consultation, technical, and other supports; adequate budgetary resource development and allocation; supportive health policies and procedures; and sustained professional development efforts. This district level model has direct applications for state level infrastructure development.

A systematic review by Klassen et al. (2010) examined performance measurement and improvement frameworks in health, education and social service systems. Sixteen quality concepts were identified under five thematic headings of collaboration, learning and innovation, management perspective, services provision, and outcome. These examples of quality domains and indicators provide a basis for the development of state-level school nursing services supports measurement.

Health System Quality Domains

International attention is focused on healthcare quality, with multiple lead agencies, including some specific to school health, using various synonymous terms to classify quality domains. The Institute of Medicine (IOM) report, *Crossing the Quality Chasm* (2001) delineated domains of quality as having the properties of safety, timeliness, effectiveness, efficiency, equity, and patient-centeredness. This report was pivotal to calling attention to the need to address these essential components of healthcare.

The National Strategy for Quality Improvement in Health Care (NQS) set six priorities for healthcare quality. Similar to the IOM elements, these included safer care, patient and family engagement, effective communication and coordination of care,

prevention and treatment of chronic conditions, community collaboration, accessibility of affordable care, and the development of new models of care delivery (AHRQ, 2011).

European experts in child health and public health developed quality standards for school nursing services on the premise that “good health is a precondition for reaching education goals” (World Health Organization [WHO], 2014, p. 1). The participatory consensus-based process resulted in a framework linked to Health 2020 goals (a European document similar to the U.S.’s HP 2020) that described standards for improving student health and readiness to learn. The framework included seven recommended standards: 1) collaboration of health and education leaders to address children’s rights regarding school nursing services delivery; 2) school health services principles that address accessibility, equity and acceptability appropriate for the school age population; 3) sufficient facilities, equipment, staff, and data management to achieve school health services objectives; 4) school health services partnerships among educators, health care providers, and families; 5) sufficient school health professional competences and role clarity; 6) evidence-informed population-based public health protocols and guidelines; and 7) confidential data management systems for student health records, health trend assessment, and school health services quality assessment research. This set of criteria provides a useful example of important systems-level domains for setting standards to improve the quality of school health services delivery.

The *Framework for 21st Century School Nursing Practice* (NASN, 2015) detailed five components of safe, equitable school nursing care. These components are care coordination, community/public health, leadership, and quality improvement, including an overarching principle of standards of practice.

DeSalvo et al. (2017) called for the creation of an enhanced scope of 21st Century public health infrastructure in an initiative called Public Health 3.0. A white paper addressing this initiative, built on the work of HP 2020, described five necessary dimensions which include strong leadership and workforce; strategic partnerships; flexible and sustainable funding; timely and locally relevant data, metrics, and analytics; and foundational infrastructure (Office of the Assistant Secretary for Health, U.S. Department of Health and Human Services, n.d.)

The Quality and Safety Education for Nursing Institute (QSEN Institute) (2019) described six nursing competencies that pertain to quality and safety for nursing knowledge, skills and activities. This set of competencies consists of patient-centered care, teamwork and collaboration, evidence-based practice (EBP), quality improvement, safety, and informatics.

Each of these frameworks shares comparable goals and standards for high quality, safe healthcare (see Table 1, below). These key exemplars of dimensions of quality provide models of domain categories that are applicable to components of quality school health services delivery. The frameworks commonalities, when merged, provided the basis to identify and classify domains for measuring state-level infrastructure of school health services supports. This alignment informed the selection of the school health infrastructure domains of evidence-based practice, workforce competence, population healthcare, equity in access and quality of care, leadership and collaboration, information technology, and financial allocation.

Table 1

Domains of Quality in Frameworks

	Quality Domain Components and Descriptors						
Frame- work	EBP	Workforce Competency	Population Healthcare	Equity in Access	Leadership & Collaboration	Info Technology	Fiscal Stability
Quality Chasm (IOM, 2001)	✓ Safe	✓ Effective		✓ Equitable			✓ Efficient
NQS/ AHRQ 2011)	✓ Safer care ✓ Quality improve- ment	✓ New models of care delivery	✓ Chronic care	✓ Access- ibility of affordable care	✓ Collaboration	✓ Informatics	
WHO (2014)	✓ Evidence -informed population -based public health protocols and guidelines;	✓ Sufficient school health professional competences and role clarity	✓ Partnersh ips among educators, health care providers, & families	✓ Accessibi lity, equity & acceptabili- ty	✓ Health & education Collaboration;	✓ Confidential data management systems for student health records, health trend assessment & quality assessment research	✓ Suffici- ent facilities, equip- ment, staff, & data manage- ment;
NASN (2015)	✓ Quality improve- ment		✓ Com- munity/ public health	✓ Standards of practice	✓ Care coordination ✓ Leadership		
PH 3.0 (De- Salvo et al. 2017)	✓ Data, metrics, analytics	✓ Strong leadership & workforce	✓ Social determi- nants of health	✓ Founda- tional infrastruc- ture	✓ Strong leadership & workforce ✓ Strategic partnerships	✓ Data, metrics, analytics	✓ Flexible & sustain- able funding
QSEN (2019)	✓ Evidence -based practice	✓ Safety			✓ Teamwork & communication	✓ Informatics	

Health System Indicators

Mainz (2003) defined and classified clinical indicators for quality improvement.

He noted that structure and process indicator validity was founded upon research evidence or expert consensus when the indicators are linked to improvement or increased likelihood of improved health outcomes.

A systematic review conducted by Kötter, Blozik, and Scherer (2012) identified, described and compared methodological approaches to quality indicator development.

They found that there were not standardized guidelines to indicate one best way to develop quality indicators and concluded that a variety of methodological approaches exist for developing quality indicators.

Stelfox and Strauss (2013a, 2013b) described several key elements as important to quality indicator development. Those elements were anonymous quantitative and qualitative feedback provided by an expert panel of participants, rounds of iteration in the revision process, and statistical methods of synthesizing the participants' scoring of the validity of the indicators.

The literature search did not yield an instrument that specifically assesses state-level infrastructure or structure and process indicators for the provision of safe, timely, effective, evidence-based, equitable, and cost-effective school nursing services delivery. It is therefore appropriate to pursue developing a method to examine state-level structures and processes associated with domains and indicators of quality school nursing services.

States' Role in Supporting School Nursing Services Delivery

Padgett, Bekemeier, and Berkowitz (2004) examined collaborative partnerships among various entities at the state level and the relationship to promoting systems changes in public health infrastructure. In this descriptive qualitative study, twenty-one state-level partnerships were analyzed for themes and key elements of partnership. The researchers observed that often complex and challenging partnerships thrived best with attention to relationship development and system processes. State-level collaborative partnerships were important for supporting public health system infrastructure and transformation. Conclusively, collaborative efforts were most effective

when goals that maximized the input of several stakeholders were considered and implemented.

Pearlman, Dowling, Bayuk, Cullinen, and Thacher (2005) conducted a systematic needs assessment, intervention, and evaluation that reviewed school standards for nutrition and physical activity. The goal was to identify the need for state-level healthy school environments and policy support. This review compared differences in physical activity and nutrition programs between high and low minority enrollment public elementary schools in Rhode Island. The purpose was to determine if using the CDC School Health Index tool to assess the presence of healthy school programs led to the creation of healthier school environments. The findings revealed that high minority enrollment schools in Rhode Island were less likely to have resources or programs promoting physical activity or healthy eating, as compared to schools in communities in the state with higher socioeconomic status. Successful school interventions which addressed creating healthy activities in school were dependent upon having school principal support. Lack of data supporting positive outcomes of physical activity and nutrition was a barrier to implementing policy change to increase healthy programs. Documentation about the maldistribution of resources for healthy activities in Rhode Island schools raised questions regarding whether other structural educational and health-related resource inequities may exist between low and high minority enrollment schools in Rhode Island.

A 2015 qualitative study conducted by Knauer, Baker, Hebbeler, and Davis-Alldritt reported on interviews with California child healthcare providers and state leaders to gain perspectives on mismatches between children's health needs and school

resources. They identified deficits accompanied by recommendations for the development of statewide plans for the delivery of school health services that would include state-level reporting and tracking requirements. In addition, they called for additional research to further examine state school health services delivery supports.

The 2018 mixed-mode cross-sectional, non-interventional design of the National School Nurse Workforce Study used primary and secondary data to provide up-to-date, accurate information about the U.S. school nursing workforce (Willgerodt et al., 2018). The results showed that Western U.S. or rural public schools were less likely to have a school nurse than East Coast or urban areas. This study identified regional differences in the distribution of school health services, illuminating variability in school health services across the U.S.

Chriqui et al. (2019) comprehensively examined and quantified the extent to which each U.S. state addressed various domains of healthy schools in state policies and statutes. The researchers quantified the average percent of constructs coded per state and found that state policy and law coverage that addressed healthy school domains varied widely across the country. The authors defined the construct of health services as those policies and plans that address chronic health conditions, as well as access to care and preventive health services provided by qualified health professionals available in the school building that keep students healthy and ready for learning. The researchers provided specific details about these and other constructs for each state and described the differences in the numbers of policies between states as ranging from limited to deep. The majority of the states had a moderate number of school-age population health policies that address the role of schools in providing health services.

These studies illustrate great variation within and across states regarding state-level approaches to school health services delivery. Collectively, these studies indicate that a gap exists, exposing a need for development and expansion of state support for school health service across the country. In addition, the inequities among and within states have implications regarding equity for school-age populations in both the potential for academic achievement and health status levels through the lifespan. These studies did not investigate discrepancies in the quality of the school health services, another important consideration.

State-level Self-Assessment

States conduct various forms of self-assessment that address health and educational programs. Examples of easily obtained state-level tools were readily accessible via an internet Google search (see Table 2, below). These resources represent important elements of accountability in state self-governance. However, evidence for state infrastructure and capacity building for school nursing services is lacking, as demonstrated by the fact that a self-assessment tool for state-level school nursing services delivery support did not appear in the web search.

Table 2

Examples of State-level Self-Assessment Tools Related to Health or Education

<p>Student Attendance State Self-Assessment Tool</p> <p>https://www.attendanceworks.org/resources/self-assessment/</p>
<p>SNAP E&T State Readiness Self-Assessment Tool</p> <p>https://snaptoskills.fns.usda.gov/tools/snap-et-state-readiness-self-assessment-tool</p>
<p>Common Core State Standards Implementation Rubric and Self-Assessment Tool</p> <p>https://education-first.com/library/publication/common-core-state-standards-implementation-rubric-and-self-assessment-tool/</p>
<p>Self-Assessment Tool for States Administering Child Welfare Services for Infants and Toddlers</p> <p>https://www.zerotothree.org/resources/217-a-developmental-approach-to-child-welfare-services-for-infants-and-toddlers</p>
<p>Sustaining Reading First: State Self-Assessment Tool</p> <p>https://www2.ed.gov/programs/readingfirst/support/stateselfassessment.pdf</p>
<p>Self-Evaluation and Continuous Quality Improvement Tool for State Long-Term Care Ombudsman Programs</p> <p>https://ltombudsman.org/omb_support/pm/program-effectiveness</p>
<p>State Self-Assessment of Court Appointed Special Advocates for Children</p> <p>http://www.casaforchildren.org/site/c.mtJSJ7MPIsE/b.6242897/k.7114/State_SelfAssessment.htm</p>
<p>State Health Department Organizational Self-Assessment for Achieving Health Equity</p> <p>http://barhii.org/resources/state-toolkit/</p>
<p>State Policy Self-Assessment Tool for Community College Completion</p> <p>https://www.jff.org/resources/designforscale-state-policy-self-assessment-tool/</p>
<p>Achieving the Dream State Policy Framework Self-Assessment Tool (Community College)</p> <p>https://www.achievingthedream.org/resource/1566/achieving-the-dream-state-policy-framework-self-assessment-tool</p>

Theoretical Framework

In 1966, Avedis Donabedian introduced the structure/process/outcome (SPO) theoretical model as a set of related components of health systems which should be studied when evaluating healthcare quality. He noted that structures and processes must be in place in order for expected outcomes to occur. These interrelated factors influence the capacity to provide safe, effective, equitable quality care. To adequately assess healthcare quality, Donabedian stated that detailed information is needed “about the causal linkages among the structural attributes of the settings in which care occurs” (1988, p. 1743).

Donabedian explained structure measures of care as the materials, policies, and organizational and human resources associated with the provision of quality health care (1966). Process of care measures pertain to the capabilities of individuals or a system to conduct and deliver actions, procedures, programs, and services. Quality outcome measures are the results, dependent on a foundation of effective and efficient structures and processes (1988). This theoretical framework of quality assessment and measurement provides important acumen for healthcare systems to improve healthcare delivery and ultimately, health outcomes.

Figure 1. The Donabedian model of components of quality of care (1982).

Donabedian's structure-process-outcome theory is a relevant framework for the study of state self-assessment of supports for school nursing services. It illustrates the relationships between the three elements and provides a framework that considers the importance of context in relation to accomplishing outcomes. The model can be applied to the provision of quality state-level school nursing services structure and process measures, demonstrating connections with nursing practice improvement which ultimately impacts student health outcomes. At the state level, school nursing services structure supports are the building blocks for the outcomes of care, and may include, for example, computers with HIPAA and FERPA compliant electronic health software for school health records and intervention documentation, school nurse staffing ratio regulations, school nursing professional competency development programs, or up to date resources for evidence-based school nursing practice protocols. Process measures such as oversight of health screening programs, population health management of contagious or chronic illnesses, or utilization of aggregate data may be part of state-level supports (see figure 1, below).

Figure 1. *Application of the Logic Model and Application of Donabedian's Theoretical Model to State-level Supports for Quality School Nursing Services Delivery*

Method

Design

This three-phase macro health systems project employed a mixed-methods approach from May 2018 through completion in March 2019. The project involved developing a valid and reliable evidence-based instrument to measure state-level structures and processes that support quality school health services delivery. The instrument, named the State-level School Health Infrastructure Measure (SSHIM), was comprised of domains and indicators developed within a framework of criteria that are scientifically consistent, credible, feasibly implemented, usable for decision-making, and important in advancing the provision of high-quality healthcare services for school age

youth (AHRQ, 2018, Joint Commission, 2018; Kavanagh, Adams, & Wang, 2009; National Quality Forum, 2017; Stelfox & Strauss, 2013a; Stelfox & Strauss, 2013b).

Timeline

Effective and efficient project management of project tasks began with a detailed plan that dissected multiple, sometimes overlapping, large tasks into smaller, manageable phases and mapped the timing and sequence of planned activities in a logical and systematic way (Zaccagnini & White, 2017). To accomplish this, a Gantt chart with detailed breakdown of the tasks was created to represent a projected chronological timeline for planning and implementing the three-phase project (initial measure development, Content Expert Survey, and pilot test-retest) (see Appendix A).

The Gantt chart showed a step-wise visual guide, displaying the scheduled start and end dates for the project tasks, with a completion target of May 2019, in accordance with Rhode Island College's Doctor of Nursing Practice project requirements. The tasks of this project were delineated on the Gantt chart as steps in the phases of initial design, planning, implementation, analysis, and synthesis. The initial steps were to craft a purpose statement, conduct an extensive literature review, create an aim statement, develop methods, and prepare and present a project proposal. Preparation and submission of an institutional review board (IRB) application, administration of Content Expert Survey, revision of the instrument based on qualitative and quantitative data, completion of the pilot test and retest, analysis of data, and presentation and dissemination of the final project results were also delineated tasks. Important milestones included the proposal development and presentation, implementation of each project phase, data analysis completion, and final project presentation and dissemination.

Resources and Supports

A strengths, weaknesses, opportunities, threats (SWOT) analysis was developed to determine potential internal and external factors that could impact this project. The SWOT analysis anticipated a critical factor regarding timing of data collection since some potential participants held school calendar year positions and did not work during the summer months and might have been difficult to reach during the summer administration of an online survey. This was managed by assuring the availability of summer email addresses.

This project has been supported by the Rhode Island College School of Nursing. In addition, the Rhode Island Department of Health (RIDOH) Academic Center agreed to sponsor this project under the auspices of the Public Health Scholar program. Other stakeholders included the National Association of State School Nurse Consultants (NASSNCs) and Rhode Island Department of Education (RIDE)/Thrive/School Health Services.

Budget

Budgetary planning forecasted costs to conduct this project. The cost of conducting the pilot test was negligible since it required very little equipment or investment of personnel time. In actual practice, responding to the identified needs would take more financial and workforce capital and effort. Resources needed for this project were minimal as expected and only included printing, materials, local travel, and residual in-kind work contribution by the project leader. The pilot test required two hours of time initially from state personnel and an additional 45 minutes for the pilot retest. For RIDOH staff, this time was covered as part of an established RIDOH

Academic Center/Public Health Scholar Program partnership agreement. For RIDE and other state-level employees, time was requested as an in-kind contribution. Assistance from the RIDOH Academic Center/Public Health Scholar Program with arranging meetings with personnel from state agencies was key to facilitating community-based clinical personnel participation for the pilot test. The scope of changes, as a result of this project, may reach school health, educational, and public health sectors in Rhode Island and possibly parts of the US.

Ethical Considerations

Institutional Review Board (IRB) application and determination was obtained from RI College School of Nursing in early May 2018. One minor revision of the methodology to add a pilot retest for reliability required resubmission of the IRB which was reviewed, accepted, and approved in writing by the RI College IRB in August 2018 (see Appendix B). Anonymity of the participants in the CE Survey was assured by masking the participants' IP identity through selection of an option in the Qualtrics survey software. Data collected was compiled in aggregated data form and did not include any potential personal identifiers of the CE survey participants. The paper form of the CE survey results was maintained in a locked filing cabinet and was only accessible to the project team. The risks to participants in this project were low and did not differ from risks of participating in normal work activities.

Procedures

Phase 1: Domain, indicator, and measure development procedures. Phase 1 began in December 2018 and extended through March 2019. The initial draft of the SSHIM instrument domains and indicators were identified and generated from an

extensive review of recent evidence found in scientific literature, where available, and study of other relevant published evidence and material such as standards set by national school health and school nursing organizations, and in consultation with content experts (Adirim et al., 2017; Byron et al., 2014; Stelfox & Strauss, 2013a; Stelfox & Straus, 2013b). The project leader used a deductive approach from concept to data to inform the preliminary development of evidence-based domains and indicators of the measure.

The draft list of domains and structure and process indicators was developed into an instrument with nominal items. The format was modeled upon the CDC's *School Health Index: A Self-Assessment and Planning Guide* (2018). This procedure followed a structured approach to developing domains and indicators described by Derose, Schuster, Fielding, and Asch (2002). These researchers applied a means to quantify public health system capacity, actions, and results which translate as measures of structure, processes, and outcomes. Documentation of a URL or data location linked to the source for assessing the level of adherence or performance of the indicator was required as evidence which added to the construct validity of the instrument.

The meaning of individual item scores and the total score were intended for use as information for measuring, comparing, and prioritizing areas of need for improvement over time. Options for scoring each of the indicators was presented as a Likert-like ordinal numeric scale from zero to three. The four points on the scale represented the following: 0 (not in place), 1 (in progress), 2 (partially in place), or 3 (fully in place). While all items were equally important, some domains had more indicators than others. However, weighting of the indicators was not used. Though the domain items represent different aspects of an interdependent system, domain scores were independent of each

other. The total score was designed to serve as a benchmark only for future comparisons. Readability statistics of the measure were checked using the Flesch-Kincaid scale.

Phase 2: Content Expert (CE) Survey procedures. Phase 2 took place in the summer of 2018. Purposive stratified selection recruitment for the CE Survey commenced in May 2018 following RI College School of Nursing project plan approval and Rhode Island College Institutional Review Board (IRB) application and approval. Content experts were recruited in late spring/early summer of 2018 from among a group of adults between 25 to 64 years of age who were employed as state school nurse consultants (SSNCs) in the U.S. or as leaders in other school health services roles such as State School Nurse Directors.

The National Association of State School Nurse Consultants (NASSNC) is a qualified group of U.S. school nurse leaders comprised of knowledgeable individuals who bring expert state-level perspectives about the delivery of school health care services (NASSNC, 2008; Broussard, Howat, Stokes, & Street, 2011; McComb, 2005; Young-Jones, 2011; Sheetz, 2005; NASN, 2013). SSNCs represent all regions of the U.S. so this recruitment effort met the intentional goal for a national sample distribution. The project leader contacted the president of the NASSNC organization for assistance to recruit a minimum of 10 to 12 SSNC members from the organization. NASSNC Data and Research Committee chairpersons served as direct contacts for recruitment. SSNCs were requested to participate in the online CE Survey as content experts, by virtue of their state level positions of responsibility, expertise, and experience in school health services delivery. The project leader sent an email to the NASSNC Data Committee chairperson

with a formal recruitment request, a description of the project, informed consent information, and confidentiality assurances for participation.

The information provided the potential content expert participants with specific written guidelines for providing evaluation of the appropriateness, accuracy, completeness and representativeness of each proposed measure domain and indicator item as well as for providing evaluation of the overall content, design and readability of the preliminary draft measure, as methodologically advised by Gray, Grove and Sutherland (2017). The Data Committee chairperson forwarded this information to the NASSNC listserv in July 2018 with an online link to the SSHIM survey. The survey, powered by Qualtrics software, solicited qualitative and quantitative information about the relevance of items on the draft instrument. For two weeks in July 2018, SSNCs and other school health services experts from across the U.S. participated in the web-based CE Survey to assess the relevance and validity of the proposed instrument's domains and indicators.

Phase 3: Pilot test procedures. Rhode Island state-level school health professionals participated in a pilot test and retest of the SSHIM in December 2018 as part of further validation and reliability studies and to assess for face, content, and construct validity and appropriateness of the instrument (Gray et al., 2017).

Participant recruitment for the phase 3 pilot test targeted a separate set of school health professionals between 25 to 64 years of age who were employed in leadership roles with the RIDOH, RIDE, or other school or child health state agencies that had some portion of responsibility for oversight of healthcare services for school-age youth in RI. The participants for that were again selected through a purposive stratified method.

Four state level leaders voluntarily participated in the pilot test and retest of the SSHIM. Due to the broad nature of the information needed to complete the SSHIM, the participants met face to face to dialogue and exchange information about their collective knowledge of state level infrastructure that supported school health service delivery. The initial pilot test was conducted in Providence, Rhode Island in the state office of the Rhode Island Department of Public Health. The four raters used discussion to arrive at consensus of one score for each indicator. They provided one set of ratings in completing the SSHIM, scoring items on the four-point Likert-like scale where 0=not in place, 1=under development, 2=partly in place, and 3=fully in place. After the first administration of the SSHIM (T1), each participant individually completed a paper questionnaire comprised of a set of ten questions that offered yes or no response options regarding the ease of completing the instrument. The same four participants reconvened by conference call instead of in person, as requested by the participants for the sake of convenience, 17 days later to conduct a retest (T2) of the SSHIM. They followed the same procedures as the first administration. Since state-level infrastructures were unlikely to change within a short period of time, the retest administration was expected to yield consistent results to demonstrate reliability of reproducibility and stability.

Content validity analysis procedure. The phase two CE Survey data were analyzed for content validity. Content validity indices computations for both individual items (I-CVI) and the overall instrument (S-CVI/Ave) measured agreement about item and scale relevance of the CE Survey. According to content validity standards, items with I-CVI scores > 0.79 are appropriate; items with scores > 0.70 and < 0.79 need revision; and items with scores < 0.70 should be eliminated (Polit & Beck, 2017)

The CVI/Ave calculation indication was applied to average of the scale results rather than holding to the higher standard of the CVI/UA (universal agreement) that requires 100% agreement because of the expected variability of experience among the experts. Demographic information about the age, role, years of school health experience, and regional location of the content expert participants was also collected. The qualitative and quantitative data provided by the content experts directed the instrument modification and refinement.

Intraclass correlation analysis procedure. The phase three test-retest examined the SSHIM instrument reliability, applying the intraclass correlation coefficient (ICC) statistical test. This correlation test reveals variation in measurements between two different administrations of the same instrument under the same conditions. The calculations for the ICC are based on the ratio of true variance over true variance plus error variance, with a range of values from 0 to 1. Stronger reliability relates to values approaching 1 and represent both correlation and agreement between measures. The ICC indicates reliability in situations where the effect of the rater is not a factor, as in the use of a self-report survey instrument (Koo & Li, 2016; Polit & Beck, 2017).

The ICC statistical analysis for test-retest reliability was calculated for T1 and T2 results, using a single measurement, absolute agreement, 2-way mixed-effects model on 24 indicator items. These model parameters were used because the participants were not randomly selected and when scoring items, they reached consensus on the score for each item (Koo & Li, 2016).

Results

Phase 1: SSHIM Domains and Indicators Development Results and Analysis

The initial draft of the SSHIM instrument domains and indicators constructs were based on evidence found in the literature and in consultation with experts. The following seven categories emerged as interdependent domains: I. Evidence-based Practice School Nursing Standards and Resources, II. School Nursing Workforce Competency Development and Growth, III. School-age Youth Population Health Management, IV. Equity of Access to School Nursing Services, V. Cross-sector State Leadership, Governance, Coordination, Collaboration, Linkages, and Networks Among School Health Related State Agencies, VI. School Health Information Technology and Public Health Data Analytics, and VII. School Health Services Financing and Resource Allocations. A Flesch-Kincaid reading level of grade 6 was obtained from Microsoft Word Doc analysis which was considered acceptable.

Phase 2: Content Expert (CE) Survey Results and Analysis

CE Survey participants anonymously provided non-identifiable demographic information. All participants who completed the survey were between the ages of 25 and 64 years old, and 100% reported having more than ten years of experience working in school health. They identified their roles (with some listing more than one role) as State School Nurse Consultant or Director (n=17), State School Health Services Consultant or Director (n=3), and other (n=3): former state school nurse consultant (n=1) and program manager (n=1). The U.S. geographic distribution of CE Survey participants were as follows: Northeast (n=9), Midwest (n=4), West/Northwest (n=3), South (n=3). This totals 19 participants, though not every participant answered every question.

Draft domains and indicators of the SSHIM were presented as question items in the CE survey to obtain quantitative and qualitative data on the relevance, acceptability, and feasibility of each of the domains, indicators, and the instrument overall. The average number of responses per CE Survey question was n=18. Table 3 lists the CE Survey item content validity index (I-CVI) scores. The number of items considered relevant and appropriate based on I-CVI scores was n=36 (out of 43). The number of items considered in need of revision based on I-CVI scores was n=7 (out of 43) (see Appendix C). The number of items considered in need of elimination based on I-CVI scores was n=0 (out of 43).

Table 3

Content Expert (CE) Survey: Item-Content Validity (I-CVI) Scores

CE Survey Question #	# Relevant (Rating 3 or 4)	# Not relevant (Rating 1 or 2)	I-CVI	Interpretation
5	18	0	1.00	Appropriate
6	16	1	0.94	Appropriate
7	16	2	0.89	Appropriate
8	17	1	0.94	Appropriate
9	17	1	0.94	Appropriate
10	16	2	0.89	Appropriate
11	15	3	0.83	Appropriate
12	17	1	0.94	Appropriate
13	15	3	0.83	Appropriate
14	16	2	0.89	Appropriate
15	15	2	0.88	Appropriate
16	15	3	0.83	Appropriate
17	17	1	0.94	Appropriate
18	14	4	0.78	Needs revision
19	13	5	0.72	Needs revision
20	18	0	1.00	Appropriate
21	18	0	1.00	Appropriate
22	18	0	1.00	Appropriate
23	18	0	1.00	Appropriate
24	18	0	1.00	Appropriate
25	16	2	0.89	Appropriate
26	13	5	0.72	Needs revision
27	14	4	0.78	Needs revision
28	15	3	0.83	Appropriate
29	17	1	0.94	Appropriate
30	15	3	0.83	Appropriate
31	17	1	0.94	Appropriate
32	18	0	1.00	Appropriate
33	13	5	0.72	Needs revision
34	14	4	0.78	Needs revision
35	15	3	0.83	Appropriate
36	18	0	1.00	Appropriate
37	16	2	0.89	Appropriate
38	12	5	0.71	Needs revision
39	16	1	0.94	Appropriate
40	15	3	0.83	Appropriate
41	17	1	0.94	Appropriate
42	17	1	0.94	Appropriate
43	16	2	0.89	Appropriate
44	16	2	0.89	Appropriate
45	14	3	0.82	Appropriate
46	15	2	0.88	Appropriate
47	16	2	0.89	Appropriate

KEY: Interpretation of I-CVI Scores

I-CVI > 0.79 - Item is appropriate

I-CVI > 0.70 and < 0.79% - Item needs revision

ICVI < 0.70% - Item should be eliminated

(Polit & Beck, 2017)

The overall Scale Content Validity Index (S-CVI), the average of I-CVIs, equals 0.887 which is considered appropriate by S-CVI standards (Polit & Beck, 2017), confirming the overall relevance, acceptability, and feasibility of the instrument. Many of the participants submitted narrative comments in the allotted spaces (see Appendix D). The project leader used these qualitative data to revise the initial draft of SSHIM instrument (see Appendix E).

Phase 3: SSHIM Pilot Test/Retest and Pilot Test Questionnaire Results and Analysis

Results from Pilot Test-Retest first administration (T1) done in person and second administration (T2) done by conference phone call with the same participants 17 days later are listed in Table 4, below. Calculation of the intraclass correlation coefficient (ICC) estimate was applied using SPSS statistical package version 23 (IBM Corp., 2015) based on a single measure, absolute-agreement, 2-way mixed-effects model. Table 5 shows that the reliability of the SSHIM instrument is moderate. The ICC value was between 0.5 and 0.75, with a correlation coefficient of 0.728 in the range of 0.418 to 0.878, and a 95% confidence interval across 24 items. These findings demonstrated a significant positive correlation between T1 and T2 (Koo & Li, 2016; Polit & Beck, 2017).

The SSHIM Pilot Test Questionnaire and results indicated overall ease with completing the SSHIM (see Appendix F). Qualitative responses were used to further revise the SSHIM into a final version (see Appendix G).

Table 4

Pilot Test-Retest Results

#	Item	T1 12/3/18	T2 12/20/18	Difference
1.	I.A.1	2	2	0
2.	I.B.1	2	2	0
3.	I.B.2	3	3	0
4.	II.A.1	3	3	0
5.	II.A.2	0	0	0
6.	II.B.1	0	0	0
7.	II.B.2	0	0	0
8.	II.C.1	1	2	(+)1
9.	II.C.2	1	2	(+)1
10.	III.A.1	0	3	(+)3
11.	III.A.2	0	1	(+)1
12.	III.A.3	2	3	(+)1
13.	IV.A.1	2	3	(+)1
14.	IV.A.2	0	0	0
15.	V.A.1	2	2	0
16.	V.A.2	1	2	(+)1
17.	V.A.3	1	1	0
18.	V.A.4	3	2	(-)1
19.	VI.A.1	2	2	0
20.	VI.A.2	1	2	(+)1
21.	VI.A.3	2	3	(+)1
22.	VII.A.1	0	0	0
23.	VII.A.2	3	3	0
24.	VII.A.3	0	0	0
TOTAL		31	43	10/24 differences

Table 5

Intraclass Correlation Coefficient Results for SSHIM Pilot Tests T1 and T2

	Intraclass Correlation	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measure	0.728	0.418	0.878	7.663	23	23	.000

Discussion**Interpretation**

This project resulted in the development of a valid and reliable set of structure and process measures that are specifically applicable to state-level support for school health service delivery. Measurement is necessary for accountability though measurement alone does not advance the quality of healthcare. The resulting state self-assessment measure can identify strengths and needs, leading to prioritization and planning to begin the interprofessional collaborative work that is necessary to improve school health services delivery. In Rhode Island, the results of the SSHIM pilot test produced actionable targets for improving school nursing infrastructure that directly support achievement of the RIDOH Strategic Framework for reducing health disparities and improving population health (RIDOH, 2019). These aims are direct links to critical determinants of health.

Beginning evidence supporting validity and reliability of the SSHIM was established using mostly standard research procedures. The initial pilot (T1) was conducted in person. However, at the request of the participants who work in various locations throughout the state of Rhode Island, the retest (T2) for reliability with these same individuals was conducted via conference call, two and a half weeks later. This was

a departure from standard retest procedures that specify that it be conducted under the exact same conditions. While exact correlations between a T1 and T2 are unlikely, this irregularity may have contributed to some of the differences between the results of the two test administrations. Despite this, the intraclass correlation score (Table 5) indicated a significant positive correlation. Further scrutiny of the pilot test-retest results showed score increases by one Likert scale level in 8 out of 24 items and an increase of three Likert scale levels in 1 item out of 14. A potential factor that may have contributed to the trend towards more positive scoring could have been familiarity with having previously discussed the topics in the initial pilot test.

States can do more to strengthen school health service delivery to ensure that all students have access to quality school health services so that they can be healthy and reach their full academic potential. State educational and health agencies working together can reduce disparities in access and quality between schools and communities by sharing responsibility for actions to build capacity in school health services. The SSHIM provides a way to begin identifying, planning, prioritizing, and acting on these needs.

Limitations

The domains and indicators identified and included in the SSHIM are not all encompassing. They represent basic, yet essential, minimum state system level infrastructure necessary to support school nurses and school districts in the delivery of quality school health services to meet student health needs. This does not imply that school nurses are not providing excellent services without state level support. Many, of course, do despite limited resources and supports.

The SSHIM is completed through the process of self-report and thus, is subject to bias. However, each indicator requires documentation of supporting evidence to verify meeting the indicator standard. This evidence may be a web URL address, the name of an existing policy or procedure, or a link to a report or document aligned with the indicator item.

Participants in the CE Survey provided perspectives unique to the needs of their state and their varying role responsibilities. However, some school nurse consultant positions are paid by grants which limit the scope of their role. Informal feedback from the SSNC organization data coordinators revealed that several state school nurse consultants disclosed that the sample restriction of those over the age of 65 (set to avoid involving what is considered a vulnerable population) for the CE Survey eliminated several highly experienced and capable potential participants. The loss of the input and insights of these potential content experts decreased the size of the sample pool and likely resulted in a deficit of valuable expert opinions from various areas of the U.S.

Implications

This project is intended as an upstream model for state leaders to assess the components needed to provide quality school health services and to address disparities in this system. Unequal access to school health contributes to health and educational disparities among school age youth. Identifying and measuring these gaps in health service delivery using the SSHIM directs actions to change policies that drive current conditions. It also provides a means to monitor and evaluate progress toward achieving healthy outcomes and health equity for all students.

Equity and quality in school health services delivery have economic implications for state and community budgets that align with state strategic priorities. Accessible, evidence-based school nursing practices can prevent costly medical expenditures such as unnecessary emergency department visits or hospitalization. For schools, state funding is based on average daily student attendance. School nursing impacts both of these outcomes (Best, Oppewal, & Travers, 2018; Leroy, Wallin, & Lee, 2017; Lineberry & Ickes, 2015; McLanahan & Weismuller, 2015). Just as importantly, closing the health gap contributes greatly to closing the achievement gap, as noted by Ickovics et al. (2014).

Each state is unique in its needs, priorities, and laws. Identifying and addressing the issues that most impact a state regarding school health services delivery infrastructure is fundamental to protecting and promoting the health and academic achievement of school age youth. Therefore, the SSHIM should not be used as a summative performance evaluation. This instrument was designed as a formative guide to enable states to build capacity to systematically improve school health services.

As a system, school health is neither directly compelled nor required by federal or state initiatives to collect data or comply with quality standards because significant funding or reimbursement is not associated with this aspect of healthcare. However, ongoing policy shifts in Medicaid reimbursement for school health have created possibilities for school nursing care reimbursement, depending on individual states' integration of The Medicaid Free Care Ruling (Vance Gopalan & Karan, 2015). SSHIM data that demonstrates improvement activity in school health, and the potential for cost-effectiveness of better, more equitable student health outcomes, can positively impact

state-level decision-making to make a case for school nursing services reimbursement (Barnes, Bono, Kimmel, & Woolf, 2015).

This project broadcasts a vision where potential health barriers to learning are systematically and effectively managed through collaborative efforts between health and education sector partnerships. Intentionally building state-level interprofessional partnerships among public and private health, Medicaid, educational, academic, and health profession organizations and agencies is necessary for systems level measurement and improvement efforts in child health and well-being (Shaw et al., 2006). State-level stakeholder and policy maker teams can use the SSHIM to map state assets, identify gaps, and set priorities. This partnership approach can yield valuable data to enable translation of findings to practice for implementing evidence-based strategies, programs, practices, and policies that advance quality school health services access and equity in states.

State-level school health services infrastructure is key to shaping population health-based interventions that impact school age youth health and educational achievement. With the SSHIM, state school health leaders now have a means to identify and address upstream structure and process causes of disparities in school health services. Since the SSHIM was generated using a national sample, use of the instrument is applicable to all states. Identified infrastructure needs should be integrated and embedded as vital goals in state health and educational improvement plans. The development of these plans should intentionally include input from school health leaders from both health and educational sectors. Specific attention must be paid to advocating for the population needs of low-income communities to eliminate disparities in the health

of youth, to remove barriers to academic success, to address achievement gaps, and to attend to social determinants of health.

State school nurse leaders must serve as change agents that reach across health and education sectors to bridge health and learning. Creating connections across these sectors will help ensure that effective policies, processes, and practices are in place and implemented with fidelity to address the health needs of the school age child and to promote the WSCC and HiAP models. State-level school nursing leadership is vital for contributing expertise to related healthcare policy and regulatory decisions and for advocating for systemic interventions that support healthy outcomes for the school-age youth population. Nursing leadership must apply national healthcare initiatives for measuring system quality improvements to school nursing services to identify and address fragmentation in care and services, increase prevention interventions for the school age population, and weave an equity lens in all efforts, with deliberate attention to economically depressed regions.

Doctorally prepared advance practice nurses must exercise leadership and advocacy to help develop better models, policies, and practices of coordinated, collaborative healthcare systems that support healthy child development and a positive life course trajectory for school age youth. Investing in the well-being and health of school age youth pays dividends for their future and for the future of the country. This era of educational and health system transformations is an opportune time to address widening fissures in child health outcomes. Strengthening state-level school health infrastructure that addresses primary prevention, early intervention, and social

determinants of health will eventually permit a shift away from the need for health crisis responses and will improve population health, especially for high-risk youth.

Implementation of the SSHIM can significantly impact the health of school-age children on both individual and population health levels through enhancing the provision of quality school nursing practice services that are evidence-based; provided by a highly qualified school nursing workforce; attentive to population health needs to prevent disease, effectively managing the needs of those with chronic conditions; equitable and accessible; utilizing confidentiality-protected health information technology for data-driven and cost effective decision making and policy development; coordinated and collaborative across sectors; guided by effective leadership; assured of sustainable funding; and keeping children's health as the central purpose.

Dissemination and Sustainability

Distribution of this project and the SSHIM will occur through posting in the Rhode Island College library digital commons. A live link for accessing a web version of the SSHIM will make the SSHIM publicly accessible. Presentations of the work of this project will take place in May 2019 at a Rhode Island College Research Symposium and at the 51st annual conference of the National Association of School Nurses in summer 2019. In addition, a series of manuscripts for publication are planned. Implementation of this instrument will benefit from the future development of a toolkit with a set of instructions for use and recommendations for application to promote translation of evidence to practice.

The greatest challenge to sustainability of this project will be encouraging state level leaders to adopt it for regular use. It will be critical to ensure users of this

instrument that it is not intended as an external formative evaluation for judging performance. It should be used as an internal process measure to identify areas of strength and areas deserving attention for improvement and capacity building. The state school nurse consultants who participated in the content expert survey may feel a sense of ownership in having contributed to the validation of the instrument and may therefore likely serve as early adopters.

Future Scholarship

The SSHIM has thus far only undergone pilot testing. Further field testing needs to be done using a larger sample to complete psychometric testing such as factor analysis. This additional testing could provide evidence that may strengthen the validity of the instrument. Further refinement should be ongoing to maintain the instrument's relevance and the domains and indicators should undergo regular review and revision as healthcare evolves. Nevertheless, in its current form, this instrument has demonstrated suitability for current use.

Quality measurement using the SSHIM should result in positive school nursing practice changes such as increased implementation of evidence-based practice that lead to improved student health outcomes. Future research that examines the sustained impact of conducting the SSHIM will be the true test of its worth, as will the effect of increased cross-sector collaboration in school health. Measuring changes in disparities in access and quality of school health services is also a crucially important issue for study.

Conclusion

This project developed the first measure of state-level infrastructure supports for the delivery of quality school health services. The project leader used a three- phase process to obtain quantitative and qualitative data to develop the SSHIM instrument

domains and related measurable indicators that represent key state-level school health services structures and processes. The instrument, which demonstrates initial validity and reliability as an evidence-based instrument, may serve as a cost effective and efficient form of state self-assessment to improve school health services system delivery that addresses the health needs of school age youth.

Short-term practice improvement outcomes included operationalization of a reliable and valid instrument. Intermediate future practice improvement outcomes are the proposed use of the instrument by states across the country to establish quality and equity in school health services delivery. Operationalization of this state-level measure that identifies structure and process factors accelerates the implementation evidence-based school nursing practice that will impact student health. Long-term practice improvement outcomes are intended to counter the perpetuation of disparities in health and educational outcomes through more equitable distribution of quality nursing practice delivery. Achieving equity in the quality and accessibility of services will require state level efforts to systematically strengthen the school health services system which will ultimately result in improved healthcare and health outcomes for all school-age youth.

A systematic approach to improving the quality of school health services delivery is an essential aspect of healthcare transformation and educational reform and is critical to resolving inequities in the health and academic achievement levels of school-age youth. Healthcare and education leadership collaboration and attention to these issues have far-reaching implications for population health and life course trajectories. The SSHIM provides a practical, cost-effective, and sustainable pathway for translating, disseminating, and implementing evidence to advance quality clinical school nursing

practice, influence policy development, and enable evaluation and capacity building to improve the health and educational success of school-age youth.

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Appendix A

Gantt Chart for DNP Project Tasks

Appendix B

IRB Approval Letter

Greetings,

The proposal for the project referenced below has been APPROVED by the Institutional Review Board (IRB).

Project title: State Quality Measures for Advancing School-age Population Health

Approval #: 1718-1650

Type of review:

Proposal type: Amendment

Principle Investigator: Wilks, Marie

Fees received: 1. No fees -- RIC supervised or sponsored

Funding status:

Approval date: 8/29/2018

Expiration date: 6/19/2021

A request to renew this protocol must be received by 5/22/2021.

Click here to access the protocol:

<https://ric.topazti.net/RIC/SL/Default.aspx?linkParms=NPqkQNfZcnU8I05Lgy%2b50w%3d%3d>

Your responsibilities as the Principal Investigator on this project are as follows:

1. You may implement only those materials and methods approved by the IRB. Changes to the protocol topic or methods, including the elimination of previously-approved methods, require prior approval.
2. If you are using signed consent materials, a PDF of the form(s) with the approval stamp will be uploaded to your protocol. You must use this copy with participants.
3. Unanticipated problems or adverse events must be reported within three (3) days of your knowledge of the event.
4. If you wish to continue the project beyond the expiration date, you must complete and submit a progress/final report within 30-days prior to the expiration date. If approval to

continue the project is not finalized by the expiration date, you must discontinue all work pertaining to this protocol and wait until approval is given before resuming data collection.

5. You must keep all research data and consent documents within your possession in a secured location for at least three (3) years after the completion of the study, including publications or presentations of any reports.

Do not reply to this "RIC_Elements" email address because it will not be received by the IRB. Send all correspondence to IRB@ric.edu.

Best Regards,

Emily Cook, Ph.D.
Associate Professor
Chair, IRB
Rhode Island College
IRB@ric.edu

Appendix C

Content Expert Survey Results - Indicators Needing Revision

(as indicated by Content Validity Index Scores)

- Q18. State requirements for supervision that include requirement for district-level school health leadership
- Q19. A state requirement for school nursing supervision and evaluation to be conducted by, or in collaboration with, a health professional
- Q26. State monitoring and oversight of mandated school health records (physical exams, immunization) compliance.
- Q27. State monitoring and oversight of standardized school health screening and follow-up (e.g. vision, hearing oral, BMI, postural)
- Q33. State assurance that each publicly funded school in the state has on site, full-time professional BS/RN services and sufficient resources
- Q34. State assurance that each public school across the state maintains a safe and appropriate school nurse workload based on local metrics and acuity (of student health)
- Q38. An active State School Health Advisory Council that integrates a Health in All approach, with state school nursing leadership

Appendix D

Content Expert Survey Qualitative Data Results

Narrative Comments (the bulleted content includes verbatim comments from survey participants)

Q5/D.I: State-level infrastructure that supports evidence-based school nursing practice resources

- Infrastructure supports practice rather than resources.
- Is 'resources' needed--wouldn't it be more than supporting EBSNP resources-but all EBSNP?
- Still needs improvements
- I think this is an important feature, but our state is a home rule state and provides little state level infrastructure for practice.

Q6/D.II: State-level infrastructure that supports school nursing competency development and growth

- What do you mean by support? Does this mean oversee or just encourage?
- I think this is an important feature, but our state is a home rule state and provides little state level infrastructure for practice
- It is not regarded as highly as educators at state or local level.
- With improved state-level infrastructure supporting practice, competency development and growth should probably be done at the local level or by the state association.

Q7/D.III: State-level infrastructure that supports population health management of school-age youth

- No one else has access to state-level data and perspective.
- More than management
- I think this is an important feature, but our state is a home rule state and provides little state level infrastructure for practice

Q8/D.IV: State-level infrastructure that supports equity in student access to professional school nursing care

- Not only is there little state level infrastructure in our home rule state, there is no mandate for school nurses
- Could be identification and referral dependent upon needs of district and/or funding.
- Equity is important but will not be realized until there is a nurse in every school.
- I am thinking this has to do with staffing? Or is it health disparities (title 1) needing more support?
- This one is tricky. State-level infrastructure in our state could 'promote' equity, but our current system doesn't include financial support to influence equitable access.

Q9/D.V: State-level infrastructure that supports coordination, collaboration, linkages and networks among school health-related state agencies

- However, this is difficult when other state agencies do not support school health
- I think this is an important feature, but our state is a home rule state and provides little state level infrastructure for practice.
- Collaboration is vital.
- This is critical-but not done often-or infrastructure may not exist.
- Some state agencies may not appear to be school health related; however, if the agencies relate to social determinants of health, e.g., housing, family employment, etc. they will impact student health.

Q10/D.VI: State infrastructure that supports aggregation of school health information technology and health data aggregation, analytics, and application

- Data is critical-this wording is awkward though
- The data tells the story of school nursing.
- I think this is an important feature, but our state is a home rule state and provides little state level infrastructure for practice.

Q11/D.VII: State infrastructure that supports dedicated funding allocations for school nursing services

- Again, there is no mandate in our home rule state for school nurses, but it would be wonderful if there were!
- Sometimes we need to prioritize for them (districts).

Q12/S.I.B.1: A state school health/school nursing practice website that is fully functioning and managed, providing comprehensive, up-to-date information

- Nurses work out on an island and need to know where to access resources in an efficient manner, but it also needs to up-to-date and timely.
- I think this is a mechanism-is it a website or this information that is important?
- This is important too, but currently the various agencies have their own approach. This requires collaboration and partnerships.
- While I wouldn't disagree with this, I am not clear on what all would be included on this website. I know we try to keep ours current.

Q13/S.1.B.2: A state school health services manual that is fully developed, covering all areas of school nursing clinical practice guidelines, with text that describes state policies, procedures, regulations, laws, and statutes

- This should be on-line
- A manual is nice resource, but with the rapid changes to healthcare this may sometimes be laborious to keep maintained at the state level.
- My philosophy is to keep all of the resources on the website current. it is more efficient to keep the electronic resources current and accessible than it is to keep a hard copy manual current. things change too quickly to keep a manual updated.
- Needs work on procedures, clinical practice and standards.

- This information is important-but could it be on a website? Worried mechanism is getting in the way of content.

Q14: *A state school health services manual that is electronically accessible*

- This would be easier to maintain.
- I think all resources must be available electronically on the website, but I don't think the manual format is optimal. It is difficult to keep anything in a manual format current. it is better to keep items separate on the web site, so they can be updated easily and individually--in my opinion
- In a rural state there are still areas that have a less reliable connectivity. So both written and electronic are important.
- Like the wording on this better than the two above--all seem to be about the same thing--difference is the delivery. Seems the indicator would be topics, not delivery?

Q15/S.1.A.1: *Up-to-date state school health policies that are written and aligned with evidence-based practice (EBP)/research and in accordance with state Nurse Practice Act and national school nursing guidelines*

- Agree with up to date policies aligned with State Nurse Practices. National School Nursing Guidelines may not address specific state regulations related to nursing practice and school health services.
- I think this is an important feature, but our state is a home rule state and provides little state level infrastructure for practice
- State policies great-but in some states that are more locally controlled they may not be as critical--need to think of wording to address different state cultures.

Q16: *State school health policy standards used for school health services implementation and accountability across the state*

- I think this is an important feature, but our state is a home rule state and provides little state level infrastructure for practice.
- We are a local control state, so each school corporation can determine implementation.
- It is important and many times tasks for accountability are complete due to the audit that is connected to it.

Q17/S.II.A.1: *Established state licensing/school nurse requirements that are in place for professional practice in the specialized role of school nurse)*

- I agree that certification processes for school nursing would be best. States also have to evaluate and address workforce shortages, sustainable funding streams, and consumption of health services to meet current and future demand.
- I agree with the concept-I think what the requirements are is the critical part--some current state requirements are not focusing on most current competencies/needs nor does it help SN think more visionary (they are still in the weeds)
- In my state, there is a state certification, but it is easily and frequently bypassed by using a different title. This is important, but for us, lower on the list of priorities.

Q18: *State requirements for supervision that include requirement for district-level school health leadership.*

- This should be a local requirement, not a state.
- It sounds good, but I am not entirely clear what you mean by this.
- Would be great-but state culture of local domain makes a difference.

Q19/S.II.A.2: *A state requirement for school nursing supervision and evaluation to be conducted by, or in collaboration with a health professional.*

- This should be a local requirement, not a state.
- Our Nurse Practice Act states that only a nurse can evaluate another nurse's nursing practice.
- Not sure it is realistic to say it is a state requirement. But concept is important. How is this different than above question other than being more specific?
- This person should be a BSN with significant experience in school nurse with administration experience.
- For nursing practice, yes. For general educational employee duties, no.
- Only if this person is clinical preferably a masters trained school nurse- at min a BSN with significant experience also preferably leadership or administrative experience.

Q20/S.II.B.1: *State orientation program for new school nurses that are conducted at least annually, based on EBP and the Nurse Practice Act*

- It sounds good, but I am not entirely clear what you mean by this
- also need ongoing programs and orientation needs to be more than just EBP and NPA

Q21/S.II.B.2: *State orientation programs for new school nurses that include state policy and procedure standards*

- yes, but there are few state policies and procedures in our home rule state
- not sure splitting up what to include in an orientation is the best way-as they seem exclusive and not giving the answers you want. I would suggest thinking of rewording/reformatting a lot of these indicators to be sure you get the type of input you want.
- Yes, when those standards exist.

Q22: *State orientation programs for new school nurses that include state mandated screenings, reporting, and medication administration policy*

- see comment in 21 regarding why are these split up? Reformat-to select if an orientation is important-then what would be included, instead of asking for orientations that are limited in what is included. Focus isn't quite on right thing.
- This may be done via a state manual or self-study rather than part of an orientation program. Depends on time available. We don't need to train nurses how to be nurses.

Q23/II.C.1: *Regular and continuous provision of interprofessional development opportunities offered by the state for school health*

- This does not need to be offered by the state but can be provided by other agencies including local universities.
- Professional development is critical. Not sure it always has to be offered by state. They could coordinate it even-but this question as currently written wouldn't get at that.

Q24: *Content that centers on implementation of evidence-based school nursing practice guidelines and quality clinical care*

- Again, concern you are asking two in one. Is this about PD or having the state offer it, or what is included
- When these exist, yes.

Q25/S.II.C.2: *Statewide professional development opportunities, with continuing education credit/nursing CEUs*

- It depends on who the state is - a state agency or a stated school nurse organization can offer CEUs.
- CEUs are not required for RN licensure in my state, at this time.
- see comments above about including too many questions in the same statement. Does it have to do with offered by state, CEU, or pd
- But not necessarily done by the state

Q26/S. III.A.1: *State monitoring and oversight of mandated school health records (physical exams, immunizations) compliance.*

- This might be true, but how is this managed in our large, home rule state.
- This should be done at the local level, not the state.
- This is under the jurisdiction of the Department of Health, not the Department of Education.
- Physical exams yes. Kindergarten immunizations randomly done by Division of Public Health.
- State oversight and monitoring are different. Is this really asking about the screening or state oversight? How do states that do local control states answer (to make relevant across the country)?
- Not all states mandate these items.
- Where allowed by state law. Oversight/enforcement is missing frequently in local control states.

Q27/S.III.A.2: *State monitoring and oversight of standardized school health screening and follow-up (e.g. vision, hearing, oral, BMI, postural.*

- Again, this should be done locally, not by the state.
- This might be true but how is this managed in large, home rule state.
- No BMI.

- State oversight and monitoring are different. Is this really asking about the screening or state oversight? How do states that do local control states answer (to make relevant across the country)?
- If mandated screenings. If voluntary, I feel less strongly about this as data will be weak and inconsistent.

Q28/IIIA.1: State support for sufficient school health services across the state that address chronic absenteeism, graduation rates, drop-out prevention intervention planning

- Advocacy and education to educators necessary on the linkages
- What is meant by support? \$, technical assistance? Or is the question really asking about these particular topics?
- Not all nursing though!!
- Support in terms of resources and tools, yes. Financial support, maybe.
- Need to make the case through data for linkage of school health services with graduation rates

Q29: State support for school health services infectious disease surveillance and case finding

- No funding is available for this task, but the State Health Department and State Education Department work very well together on this topic.
- Define support. How is this different than state laws on case reporting? Need to explain more-think this may depend a lot on the state (for infrastructure reasons)
- Requires state health and education agencies collaborating.

Q30: State support for school health services chronic disease primary prevention and monitoring

- Yes, although to be honest I am not sure what you mean by "state support" in this series of questions. Does it mean training? Online resources? Sample policies/procedures? What, exactly?
- Prevention and monitoring are two different things. What 'support' are you referring to? Not sure what this question is asking.

Q31: State-level partnerships include school nursing leaders that address behavioral health and substance misuse prevention.

- State focus is on school counselors and school social workers providing this service, not state support for school nurses to provide.
- See all comments about using word 'support'. So many others address this besides school health services-so not sure what this is asking.
- Consider prevention for substance use prevention as use is generally illegal for school-age children/youth.

Q32: State support for school health services related to continuous emergency preparedness planning and monitoring

- State agencies can collaborate more to model this down into the local level, as each school community has different services available and different environmental demographics.
- Important but again many agencies involved-not as critical as other topics. Not sure what you mean by state support.
- Not just an educator function/responsibility.

Q33/S.V.A.1: State assurance that each publicly funded school in the state has onsite, full-time

professional BS/RN services and sufficient resources

- I would like to see this required by non-public schools at the state level as well.
- Encouraged but not enforced.
- Access to RN services, yes. We have districts in our state with less than 10 students so a full-time RN doesn't always make sense.
- BSN
- Yes, although there is no mandate in our state for school nurses
- I love the idea-but for local control states is this even feasible-how would states assure? Also multiple questions in this. What if agree with state assurance, but not FT onsite, or not BS (not sure what BS/RN is--seems like it is either or?) also asking about sufficient resources-what if all but that apply how would one answer?
- I agree RN, I feel less strongly about BSN- we have some wonderful nurses who are RNs and honestly some great LPNs. I think there is a role for a variety of nurses in school health.

Q34: State assurance that each public school across the state maintains a safe and appropriate

school nurse workload based on local metrics and acuity.

- To have a position/workforce is a start.
- Data not available or collected.
- Why just public schools? Important-but what if no metric/acuity tool exists? Could they answer that the concept is important?
- VERY STRONGLY AGREE!! This isn't address nearly enough!!

Q35/S.V.A.1: State assurance of school nurse consultation, assessment and care in health-related matters for students with special healthcare needs or chronic conditions meeting IDEA, IEP, ADA, IHP, and/or 504 regulations

- Encouraged but not monitored or enforced.
- Asking multiple things in this question as well. What do you mean by 'assurance'?
- I am not aware of any IHP regulations.

Q36/V.A.1: *(State school health collaboration, linkages, networks supported by) a full-time state*

school nurse consultant/director/ employed to support school nursing/student health services delivery, accountability, and quality improvement

- A consultant is important-but this is asking a lot more than that. Keep each statement to one concept. This is asking about not just having a consultant but one addressing various things-what if they person disagrees with one of these-but not the concept of consultant? How would they answer? Would you get what you want? Think of reformatting/rewording
- Should also be required by the pre-school level as well.
- Yes, although we are a large state and in all reality one consultant is not enough.

Q37/S.V.A.2: *State implementation of Whole School, Whole Community, Whole Child (WSCC) model that follows CDC guidelines and expands upon the Coordinated School Health Model.*

- Not convinced that this is priority yet. WSCC is not just CDC - ASCD should be included for a reason.
- It is ideal but think even states who think they are doing it tend to focus on just components. Think you could reword this question by taking out the part on expanding of coordination school health
- Encouraged but not enforced.
- I would recommend hyperlinking programs that you reference in case participants are unfamiliar with the program.

Q38/S.V.A.3: *An active State School Health Advisory Council that integrates a 'Health in All' approach, with state school nursing leadership.*

- This sounds good, but I don't know what that looks like or what kind of authority it has, who sponsors it? What work does it do?
- Don't know what this is.
- What is 'Heath in All Policy'? Must the council be led by state school nurse leadership?
- Interstate agencies may be functioning in this capacity without using the term State School Health Advisory.

Q39: *Regular, productive, direct state level collaboration between school nursing, public health, education, and primary care entities*

- Yes. An interesting challenge to get all of those players on the same page.
- Important-but thought this tool was about state level infrastructure?
- How do maintain productivity in this collaboration? Primary care entities?

Q40: *School nursing intervention documentation across the state that uses confidentially secure HIPAA and FERPA compliant electronic health record software*

- Yes. It would be nice if it linked into the state's Health Information Exchange.
- Local decision. Encouraged and resources given but unsure of implementation.

- EHR is critical-but worry because is this about EHR or having a state system? Ideally it would be a state system but would also be interoperable and have more than just HIPAA/FERPA compliance.
- While I agree, we have been surviving without for quite a while.

Q41: *State-level collection of a standardized set of aggregate school health data from school nurses across the state*

- This is not relevant to the quality but relevant to the equity of school health services.
- A work in progress.
- Would you want it by district or just individual nurses submitting to state?
- Whether it is from school nurses or districts may be irrelevant.

Q42: *State oversight for accountability for accurate and complete aggregate school health data*

- I only somewhat agree with this.
- Again, it sounds good, but I don't know how this is done.
- Aggregate data is critical and strongly agree-but wording of state 'oversight for accountability' is throwing me-what would this look like?
- It is only valuable if the data is accurate and reliable.

Q43: *Regular collection, analysis, and use of aggregate school health data at the state level*

- This wording is better than one above-not sure the difference.
- With the right data, yes.
- Must use what we collect. Don't just collect for the sake of collecting.

Q44: *Compilation, dissemination, and use of annual school health data and population health reports for state program planning, decision-making, and policy development*

- Yes--who does this work? Who pays for it?
- Agree data should drive work--worry you are asking more than one thing. What is difference in school health data and population health reports? Seem like two different things because called out-so then should each be in a different statement?

Q45: *Dedicated allocations for school nursing services that are fully funded across the state*

- Depends on where the funding is coming from.
- It would be wonderful, although lots of good work can be done even without this.
- Not just aide positions.
- Agree with statement-but statement needs to be reworded it is confusing. So it is dedicated state allocations? Although I agree fully funded across state is important-why is that called out and other things not?

Q46: *School nurse compensation that is on par with other educational professionals*

- Agree-but what about nursing professionals as well.

Q47: *Medicaid reimbursement utilization*

- As it should be with other private insurance providers
- Relevant, but not utilized in my state
- Agree with concept of Medicaid-but is it about relevance? States also do this so differently-how would this be accounted? Isn't it also about the funding going back to school health services-and not other things?
- Reimbursement is only of value when the funds are mandated to go back to school health services- if not, the nurses can be asked to work harder, bill more, and see no benefit for themselves or the students.
- Healthcare dollars should be supporting the healthcare delivered in school rather than putting it on the backs of education money.

Q48: (Open ended) *Are there any missing topics relate to state-level infrastructure that are relevant to the provision of quality school health services?*

- Program quality improvement projects and evaluation is essential
- The importance of an active and engaged professional organization - NASN affiliate.
- Why are domains not based on NASN's framework and/or Scope and standards? or Magnet theories?
- Parent and student engagement and supported at state level or school levels.
- I would like to see Board of Nursing support for school nurses mentioned-
- 1) state assurance of collaboration between state and local health and education agencies;
2) insert language that makes explicit student needs which drives school health services staffing
- State level professional development for new school administrators on school health services is essential. They do not receive it in their education, and yet they are the decision makers at the local level.
- What about level of authority of state consultant (some states have consultants but is a base position-others are supervisory. What about dedicated 100% to school health (many cover many other things) What about location of oversight (education vs health).
- Program quality improvement projects and evaluation is essential

Q49: (Open ended) *Are there any topics included in this survey that are NOT relevant or appropriate to the provision of quality school health services?*

- Ongoing state level meetings with other agencies and primary care providers are not practical and would be difficult logistically in a large state.
- All relevant, but are they critical? Seems like should focus on the critical as there are lots that are relevant that aren't included.

Q50: (Open ended) *Do you have any additional comments about the overall content, design, or readability of the items in this survey?*

- Q33 while a crucial indicator for SCHOOL HEALTH SERVICES, leaves no room for district staff planning based on student needs. e.g., a school of 60 students may or may not require a BS/RN fulltime school nurse all day every day and a school with 2,000 students may need two BS/RNs full time all day every day.
- Why are domains not based on NASN's framework and/or Scope and Standards? or Magnet theories?

Appendix E

SSHIM Revisions

For the CE Survey, participants were requested to respond to the statements regarding the relevance and feasibility of documenting specific indicators for state support for the provision of quality school health services. They were also asked to type in any feedback, suggestions, or questions that they may have about the content and/or wording of the statement. The CVI scores indicated that revisions were needed for seven indicators. The qualitative data that accompanied these statements guided the direction of the revisions (see Appendix D). Below are the revisions (with strikethroughs for deletions; boldface for additions) for the seven indicators plus other minor revisions based on the CE Survey qualitative data.

Q18: State requirements for supervision that include requirement for district-level school health leadership.

REVISION: (Combined with item 19, below.)

Q19/S.II.A.2: A state requirement for school nursing supervision and evaluation to be conducted by, or in collaboration with a health professional.

REVISION: A State ~~requirement~~ **policy for** school nursing **clinical supervision and evaluation in accordance with the state Nurse Practice Act, that is** conducted by a **nurse supervisor** ~~in collaboration with a health professional.~~

Q26/S. III.A.1: State monitoring and oversight of mandated school health records (physical exams, immunizations) compliance.

REVISION: State **policy that addresses** monitoring and oversight of mandated school health records ~~compliance~~ **(e.g, physical exams, immunizations)**

Q27/S.III.A.2: State monitoring and oversight of standardized school health screening and follow-up (e.g. vision, hearing, oral, BMI, postural).

REVISION: State **policy that addresses** monitoring and oversight of ~~standardized~~ **mandated** school health screenings and follow-up (e.g. vision, hearing, oral, BMI, or postural)

Q33/S.IV.A.1: State assurance that each publicly funded school in the state has onsite, full-time professional BS/RN services and sufficient resources

REVISION: (Combined with Q34, below.)

Q34/ S.IV.A.2: State assurance that each public school across the state maintains a safe and appropriate school nurse workload based on local metrics and acuity.

REVISION: State ~~assurance policy~~ that each public school ~~across the state~~ maintains a safe and appropriate **level of onsite professional RN school nursing workload workforce** based on **population** metrics and acuity **of student needs**. NOTE: Combined with Q34 above, that was then eliminated.

Q38/S.V.A.3: An active State School Health Advisory Council that integrates a ‘Health in All’ approach, with state school nursing leadership.

REVISION: An active state school/**child** health advisory council with school nursing **representation that addresses state school health matters statewide** ~~Advisory Council that integrates a ‘Health in All’ approach, with state school nursing leadership.~~

REWORDING of Domains and Indicators, based on Qualitative Data
(less extensive than REVISIONS)

Q5/D.I: State-level infrastructure that supports evidence-based school nursing practice resources

REWORDING: State-level infrastructure **for** evidence-based school nursing practice **standards and resources**

Q6/D.II: State-level infrastructure that supports school nursing competency development and growth

REWORDING: State-level infrastructure **for** school **nursing workforce professional** competency **standards** and **professional** development and growth

Q7/D.III: State-level infrastructure that supports population health management of school-age youth

REWORDING: State-level infrastructure ~~that supports~~ **for school nursing delivery** of school-age youth population ~~healthcare management of~~

Q8/D.IV: State-level infrastructure that supports equity in student access to professional school nursing care

REWORDING: State-level infrastructure ~~that supports for~~ equity in student access to professional school nursing **services**

Q9/D.V: State-level infrastructure that supports coordination, collaboration, linkages and networks among school health-related state agencies

REWORDING: State-level infrastructure ~~that supports~~ **for cross-sector state leadership, governance,** coordination, collaboration, linkages and networks among school health **and youth service entities** ~~agencies~~

Q10/D.VI: State infrastructure that supports aggregation of school health information technology and health data aggregation, analytics, and application

REWORDING: State infrastructure ~~that supports for aggregation of school health information technology and health data~~ **integration aggregation, analytics, and application**

Q11/D.VII: State infrastructure that supports dedicated funding allocations for school nursing services

REWORDING: State infrastructure ~~that supports for~~ resource allocations for school nursing services

Q12/S.I.B.1: A state school health/school nursing practice website that is fully functioning and

managed, providing comprehensive, up-to-date information

REWORDING: A **dedicated** fully functioning and managed state school ~~health/~~ nursing practice website that provides comprehensive, up-to-date, **relevant EBP** information

Q13/S.1.B.2: A state school health services manual that is fully developed, covering all areas of school nursing clinical practice guidelines, with text that describes state policies, procedures, regulations, laws, and statutes

REWORDING: **An electronically accessible and printable state** school health services manual ~~that is fully developed, covering that addresses all areas of school nursing clinical practice manual that is both electronically accessible and printable guidelines, with text that describes state policies, procedures, regulations, statutes, and laws.~~ NOTE: Combined with Q14, below.

Q14: A state school health services manual that is electronically accessible

REWORDING - NOTE: Combined with Q13, above.

Q15/S.1.A.1: Up-to-date state school health policies that are written and aligned with evidence-based practice (EBP)/research and in accordance with state Nurse Practice Act and national school nursing guidelines

REWORDING (Combined with Q16) Up-to-date state school health policies ~~that are~~ written and aligned with evidence-based practice (EBP) and research, and in accordance with state Nurse Practice Act and national school nursing guidelines, **as standards for school health services implementation and accountability statewide**

Q16: State school health policy standards used for school health services implementation and accountability across the state

REWORDING: Combined with Q15 above

Q17/S.II.A.1: Established state licensing/school nurse requirements that are in place for professional practice in the specialized role of school nurse)

REWORDING: ~~Established~~ State requirements for professional school nursing practice **credentialing or certification in place** in the specialized role of school nurse

Q20/S.II.B.1: State orientation program for new school nurses that are conducted at least annually based on EBP and the Nurse Practice Act

REWORDED: State-**approved** orientation program **provided** ~~that are conducted at least annually based on EBP and the Nurse Practice Act~~

Q21/S.II.B.2: State orientation programs for new school nurses that include state policy and procedure standards

REWORDING (combined with Q22, below): ~~State Orientation programs for new school nurses~~ includes review of state policy and procedure standards (**e.g. state mandated screenings, reporting, and medication administration policy**)

Q22: State orientation programs for new school nurses that include state mandated screenings, reporting, and medication administration policy.

REWORDED: (Combined with Q21)

Q23/II.C.1: Regular and continuous provision of interprofessional development opportunities offered by the state for school health.

REWORDING: ~~Regular and continuous~~ **Ongoing statewide** ~~provision of school nursing professional development opportunities offered by the state for school health~~ with content that ~~centers on~~ **includes** implementation of EB school nursing practice (Combined with Q24, below)

Q24: Content that centers on implementation of evidence-based school nursing practice guidelines and quality clinical care

REWORDING: (COMBINED with Q23, above.) Content that ~~centers on~~ **includes** implementation of **EB** school nursing practice ~~guidelines and quality clinical care~~

Q25/S.II.C.2: Statewide professional development opportunities, with continuing education credit/nursing CEUs

REWORDING: Continuing education credit (CEUs) **in nursing available** for state-provided professional development opportunities

Q28/IIIA.1: State support for sufficient school health services across the state that address chronic absenteeism, graduation rates, drop-out prevention intervention planning

REWORDING: State-**level decision-making with** ~~school support infrastructure for sufficient~~ **nursing leadership** ~~health services across the state~~ that addresses **school-age population health issues** (e.g. chronic absenteeism, graduation rates, drop-out prevention, infectious disease surveillance/case finding, chronic disease prevention/monitoring, substance misuse prevention, social/emotional/behavioral health, and emergency preparedness)

Q29: State support for school health services infectious disease surveillance and case finding

REWORDING: (Combined with Q28)

Q30: State support for school health services chronic disease primary prevention and monitoring

REWORDING: (Combined with Q28)

Q31: State-level partnerships include school nursing leaders that address behavioral health and substance misuse prevention.

REWORDING: (Combined with Q28)

Q32: State support for school health services related to continuous emergency preparedness planning and monitoring

REWORDING: (Combined with Q28)

Q35/S.IV.A.1: State assurance of school nurse consultation, assessment and care in health-related matter for students with special healthcare needs or chronic conditions meeting IDEA, IEP, ADA, IHP, and/or 504 regulations

REWORDING: State ~~assurance of~~ **policy that assures** school nurse consultation, assessment and **direct** care **as needed, in health-related to matters** IDEA, IEP, ADA, IHP, or 504 for students with special healthcare needs or chronic conditions ~~meeting regulations~~

Q36/V.A.1: State school health collaboration, linkages, networks supported by a full-time state school nurse consultant/director/ employed to support school nursing/student health services delivery, accountability, and quality improvement

REWORDING: Full-time state school nurse consultant/director ~~school health collaboration, linkages, and networks supported by) a /employed to~~ **that supports and maintains high quality EB** school nursing/student health services **program** delivery, accountability, and quality improvement

Q37/S.V.A.2: State implementation of Whole School, Whole Community, Whole Child (WSCC) model that follows CDC guidelines and expands upon the Coordinated School Health Model.

REWORDING: State implementation of Whole School, Whole Community, Whole Child (WSCC) model ~~that follows~~ **aligned with CDC and Association for Supervision and Curriculum Development (ASCD)** guidelines ~~and expands upon the Coordinated School Health Model.~~

Q39: Regular, productive, direct state level collaboration between school nursing, public health, education, and primary care entities

REWORDING: Regular, productive, ~~direct~~ state-level collaboration between school nursing, public health, education, and ~~primary care~~ **health and youth/family service** entities

Q40: School nursing intervention documentation across the state that uses confidentially secure HIPAA and FERPA compliant electronic health record software

REWORDING: School nursing ~~intervention~~ documentation ~~across the state that~~ uses ~~confidentially secure~~ FERPA and HIPAA compliant electronic health record software **that confidentially protects individual student health records**

Q41: State-level collection of a standardized set of aggregate school health data from school nurses across the state

REWORDING: (Combined with Q44)

Q42: State oversight for accountability for accurate and complete aggregate school health data

REWORDING: (Combined with Q44)

Q43: Regular collection, analysis, and use of aggregate school health data at the state level

REWORDING: **Statewide** collection, **compilation, analysis, and dissemination of** ~~and uses annual~~ **standardized, aggregate** school health data

Q44: Compilation, dissemination, and use of annual school health data and population health reports for state program planning, decision-making, and policy development

REWORDING: ~~Compilation, dissemination, and use of annual~~ **Statewide utilization of aggregate** school health data for population health reports, state decision-making, state program planning, and policy development

Q45: Dedicated allocations for school nursing services that are fully funded across the state

REWORDING: ~~Dedicated~~ **Resource** allocations for **funding** school nursing services ~~that are fully funded across the~~ established **statewide**

Q46: School nurse compensation that is on par with other educational professionals

REWORDING: School nurse compensation ~~that is on par with other educational~~ **and specialized services** professionals

Q47: Medicaid reimbursement utilization

REWORDING: Medicaid reimbursement ~~utilization~~, **if obtained, is used to enhance the provision of school nursing services for students**

Appendix F

SSHIM Pilot Test Questionnaire and Results

(Results in bold, with qualitative responses in quotes)

Please respond to the following questions regarding the completion of the State-level School Health Infrastructure Measure by placing an X next to "YES" or "NO":

1. Were instructions for completing the measure clearly written and understandable?
(4) Yes (0) No
2. Were the questions easy to understand?
(3) Yes – “with tweaking we discussed” (1) No
3. Did you know how to indicate responses?
(4) Yes (0) No
4. Were the response choices offered on the measure appropriate?
(4) Yes (0) No
5. Did the measure indicators require data or documentation that were readily available or could be captured without undue burden?
(2) Yes (2) No
6. Were you able to complete the measure in the expected amount of time, without undue burden?
(4) Yes (0) No
7. Could this measure could be used for quality improvement to achieve the goal of high-quality, efficient school health services for the school-age child population in this U.S. state?
(4) Yes - “ensure systems in place” (0) No

8. Could this measure be used for accountability to achieve the goal of high-quality, efficient school health services for the school-age child population in this U.S. state?

(3) Yes (1) No “To ensure high quality, not sure about accountability” after ‘achieve’

9. Would the benefits of completing the measure outweigh potential unintended negative consequences to individuals or populations?

(4) Yes (0) No

10. Please respond to the following question regarding the completion of State-level School Health Infrastructure Measure, in your own words:

What suggestions, if any, do you have regarding the addition or deletion of questions, the clarification of instructions, improvements in the process of completing the measure, or the content or format of the measure?

“Intro for intent and goals – how to use results to improve student health and learning outcomes. How it can create local advocate for state level solutions”

Appendix G

SSHM Final Version

State-level School Health Infrastructure Measure (SSHM)						
(Developed by Wendy Doremus)						
DOMAIN I. State Infrastructure for Evidence-based (EB) School Nursing Practice Standards & Resources		Not in Place	Under Develop- ment	Partly in Place	Fully in Place	Verification: Data Source or URL
	STANDARD I.A: EVIDENCE-BASED STATE SCHOOL HEALTH STANDARDS					
	Indicator:					
	1. Up-to-date state school health policies, written and aligned with EB practice and research and in accordance with state Nurse Practice Act and national school nursing guidelines as standards for school health services implementation and accountability statewide	0	1	2	3	
	COLUMN TOTALS					
	STANDARD I.A TOTAL					/3
	STANDARD I.B: STATE SCHOOL NURSING PRACTICE RESOURCES					
	Indicators:					
	1. A dedicated, fully functioning, and managed state school nursing practice website that provides comprehensive, up-to-date, relevant EBP information	0	1	2	3	
	2. An electronically accessible and printable state school health services manual that addresses all areas of school nursing practice	0	1	2	3	
	COLUMN TOTALS					
	STANDARD I.B TOTAL					/6

DOMAIN II. State Infrastructure for School Nursing Workforce Professional Competency Standards and Professional Development		Not in Place	Under Develop- ment	Partly in Place	Fully in Place	Verification: Data Source or URL
	STANDARD II.A: SCHOOL NURSING WORKFORCE PROFESSIONAL COMPETENCY STANDARDS					
	Indicators:					
	1. State requirements for professional school nurse practice credentialing or certification in the specialized role of school nurse	0	1	2	3	
	2. State policy for school nursing clinical supervision and evaluation, in accordance with the state Nurse Practice Act, that is conducted by a school nurse supervisor	0	1	2	3	
	COLUMN TOTALS					
	STANDARD II.A TOTAL					/6
	STANDARD II.B: STATE SCHOOL NURSING ORIENTATION PROGRAM(S) FOR NEW SCHOOL NURSES					
	Indicators:					
	1. State-approved orientation program that is provided at least annually	0	1	2	3	
	2. Orientation includes review of state policy and procedure standards (e.g. state mandated screenings, medication administration)	0	1	2	3	
	COLUMN TOTALS					
	STANDARD II.B TOTAL					/6
	STANDARD II.C: SCHOOL NURSE PROFESSIONAL DEVELOPMENT OPPORTUNITIES					
	Indicators:					
	1. Ongoing statewide school nursing professional development opportunities with content that includes implementation of EB school nursing practice	0	1	2	3	
	2. Continuing education credit (CEUs) in nursing available for state-provided professional development opportunities	0	1	2	3	
	COLUMN TOTALS					
	STANDARD II.C TOTAL					/6

		Not in Place	Under Development	Partly in Place	Fully in Place	Verification: Data Source or URL
DOMAIN III. State Infrastructure for School Nursing Delivery of School-age Population Healthcare	STANDARD IIIA: SCHOOL NURSING DELIVERY OF SCHOOL-AGE POPULATION HEALTHCARE					
	Indicators:					
	1. State policy that addresses monitoring and oversight of mandated school health records (e.g. physical exams, immunizations)	0	1	2	3	
	2. State policy that addresses monitoring and oversight of mandated school health screenings and follow-up (e.g. vision, hearing, oral, BMI, or postural)	0	1	2	3	
	3. State-level decision-making with school nursing leadership that addresses school-age population health issues (e.g. chronic absenteeism, graduation rates, drop-out prevention, infectious disease surveillance/case finding, chronic disease prevention/monitoring, youth with special healthcare needs, substance use prevention, social/emotional/behavioral health, and emergency preparedness)	0	1	2	3	
	COLUMN TOTALS					
STANDARD III.A TOTAL						/9

		Not in Place	Under Development	Partly in Place	Fully in Place	Verification: Data Source or URL
DOMAIN IV. State Infrastructure for Equity in Student Access to Professional School Nursing Services	STANDARD IV.A: EQUITABLE & SUFFICIENT LEVEL OF SCHOOL NURSING SERVICES STATEWIDE TO MEET THE PHYSICAL AND EMOTIONAL HEALTH NEEDS OF ALL SCHOOL-AGE YOUTH ESPECIALLY INCLUDING VULNERABLE OR UNDERSERVED POPULATIONS					
	Indicators:					
	1. State policy that each public school maintains a safe and appropriate level of onsite professional RN school nursing workforce based on population metrics and acuity of student needs	0	1	2	3	
	2. State policy that assures school nurse consultation, assessment, and direct care as needed, related to IDEA, IEP, ADA, IHP, or 504 for students with special healthcare needs or chronic conditions	0	1	2	3	
	COLUMN TOTALS					
	STANDARD IV.A TOTAL					
						/6
DOMAIN V. State Infrastructure for Cross-sector State Leadership, Governance, Coordination, Collaboration, Linkages & Networks Among Health & Youth Service Entities	STANDARD V.A: STATE-LEVEL SCHOOL HEALTH COLLABORATION, LINKAGES, NETWORKS					
	Indicators:					
	1. Full-time state school nurse consultant/director that supports and maintains high quality EB school nursing/student health services delivery, accountability, and quality improvement statewide	0	1	2	3	
	2. State implementation of Whole School, Whole Community, Whole Child (WSCC) model aligned with CDC and Association for Supervision and Curriculum (ASCD) guidelines	0	1	2	3	
	3. An active state school/child health advisory council with school nursing representation that addresses school health matters statewide	0	1	2	3	
	4. Regular, productive state-level collaboration between school nursing, public health, education, and youth/family service entities	0	1	2	3	
	COLUMN TOTALS					
STANDARD V.A TOTAL						/12

		Not in Place	Under Development	Partly in Place	Fully in place	Data Source or URL
DOMAIN VI.	STANDARD VIA: SCHOOL HEALTH INFORMATION TECHNOLOGY AND DATA INTEGRATION					
State Infrastructure for School Health Information Technology & Data Integration	Indicators:					
	1. School nursing documentation that uses FERPA and HIPAA compliant electronic health record software that confidentially protects individual student health records	0	1	2	3	
	2. Statewide collection, compilation, analysis, and dissemination of standardized aggregate school health data	0	1	2	3	
	3. State utilization of standardized aggregate school health data from for population health reports, state decision-making, program planning, and policy development	0	1	2	3	
	COLUMN TOTALS					
	STANDARD VIA TOTAL					/9
DOMAIN VII.	STANDARD VILA: RESOURCE ALLOCATIONS FOR SCHOOL NURSING SERVICES					
State Infrastructure for Resource Allocations for School Nursing Services	Indicators:					
	1. Resource allocations for funding school nursing services are established statewide	0	1	2	3	
	2. School nursing compensation is on par with other educational and specialized services professionals	0	1	2	3	
	3. Medicaid reimbursement, if obtained, is used to enhance the provision of school nursing services for students	0	1	2	3	
	COLUMN TOTALS					
	STANDARD VILA TOTAL					/9

Modeled on: Centers for Disease Control and Prevention, (2017), *School Health Index: A self-assessment and planning guide 2017*. Atlanta, GA. Retrieved from: <http://www.cdc.gov/HealthySchools/SHI>

SSHIM TOTALS

DOMAIN

STANDARD & INDICATOR TOTALS

I. State Infrastructure for Evidence-based School Nursing Practice Standards & Resources	I.A) ____/3 + I.B) ____/6 = ____/9
II. State Infrastructure for School Nursing Workforce Professional Competency Development & Growth	II.A) ____/6 + II.B) ____/6 + II.C) ____/6 = ____/18
III. State Infrastructure for School Nursing Delivery of School-age Youth Population Healthcare	III.A) ____/9 = ____/9
IV. State Infrastructure for Equity in Student Access to Professional School Nursing Care	IV.A) ____/6 = ____/6
V. State Infrastructure for Cross-sector State Leadership, Governance, Coordination, Collaboration, Linkages & Networks Among Health and Youth Service Entities	V.A) ____/12 = ____/12
VI. State Infrastructure for School Health Information Technology & Data Integration	VI.A) ____/9 = ____/9
VII. State Infrastructure for Resource Allocations for School Nursing Services	VII.A) ____/9 = ____/9

TOTAL = ____/72

KEY: TOTAL SCORE INTERPRETATION

0 - 27 = Beginning (B) to support school health infrastructure
 28 - 54 = Progressing (P) towards support for school health infrastructure
 55 - 72 = Supporting (S) school health infrastructure