

# Validation of a Model for Developing Evidence-Based Clinical Practice Guidelines for School Nursing

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## Abstract

The paucity of scientifically rigorous school nursing clinical practice guidelines (CPGs) presents barriers to evidence-based care of students with special health-care needs. A *Model for Developing Evidence-Based Clinical Practice Guidelines for School Nursing* (School Nursing CPG Model) was developed under the auspices of the National Association of School Nurses (NASN) to address this need. To test and validate this School Nursing CPG Model, a trial CPG development project was conducted to (1) identify structure and process gaps and areas for improvement within the School Nursing CPG Model and (2) develop an evidence-based CPG for school nursing practice that addresses a priority student health condition: seizures and epilepsy. The School Nursing CPG Model was validated through a trial CPG project which followed the systematic, standardized process of the School Nursing CPG Model while responsively implementing quality improvement measures through the Plan–Do–Study–Act cycle. Both specific aims were accomplished.

## Keywords

evidence-based practice, clinical practice guideline, school nursing, students with special health-care needs, children with seizures and epilepsy, national association of school nurses

## Scope of the Problem

Approximately 56.6 million children attend school in the United States (National Center for Education Statistics, 2018). An estimated 20% of these students have special health-care needs (U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau, 2014). The *Framework for 21st Century School Nursing Practice* (National Association of School Nurses [NASN], 2016) and *Standard 13: Evidence-Based Practice and Research of the School Nursing Scope and Standards of Practice* (American Nurses Association [ANA] and NASN, 2017) emphasize that evidence-based school nursing practice is essential to providing safe and effective health care for these children and youth at school. Yet engaging in evidence-based practice is challenging for many school nurses due to overloaded schedules, pressing job demands, and professional isolation, as well as limited time, resources, and skills to stay current with the rapidly evolving health sciences literature (Yonkaitis, 2018).

Evidence-based clinical practice guidelines (CPGs) are a mechanism to ensure that school nurses are meeting the needs of their student populations by providing the highest

quality of care (Shannon, 2018). According to Melnyk and Fineout-Overholt (2015), *evidence-based CPGs* are “specific practice recommendations grouped together that have been derived from a rigorous review of the best evidence on a specific topic” (p. 12). School nursing CPGs promote NASN’s strategic plan population health and research objectives goals to “1) Inform school nurses in the application of data to practice. 2) Facilitate collection, analysis, dissemination and use of data” (NASN, 2018a, para. 8).

## A Model for Developing Evidence-Based CPGs

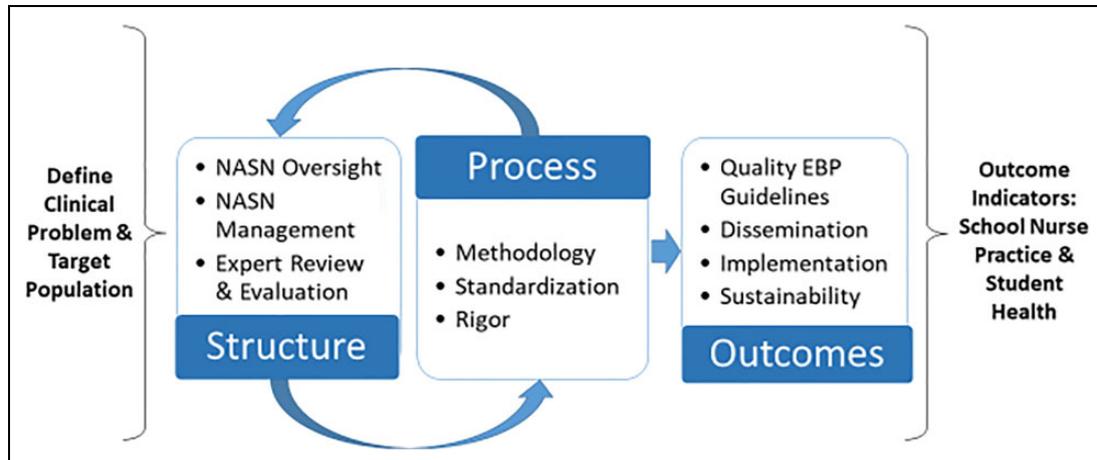
The School Nursing CPG Model incorporates the quality standards for CPG development established, respectively, by the U.S. Department of Health and Human Services

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**Figure 1.** Model for developing evidence-based clinical practice guidelines for school nursing.

(USDHHS) Agency for Healthcare Research and Quality (AHRQ, 2014), the Institutes of Medicine (2011), and the Appraisal of Guidelines for REsearch and Evaluation Instrument (AGREE Next Steps Consortium, 2013). These standards outline the CPG criterion for professional, systematic search and critical appraisal of the literature, evidence-based practice recommendations, independent expert review, and sustainability.

*The purpose of the School Nursing CPG Model is to offer school nurse scholars, pediatric specialists, school health content experts and school nursing leaders a professional structure, standardized process, and rigorous methodology to create evidence-based CPGs for school nursing practice under the auspices of NASN. The goal of CPGs for the specialty of school nursing is to ensure that strong evidence-based practice recommendations are accessible to improve health, well-being and educational outcomes for students with special healthcare needs.* (Shannon & Maughan, 2019)

The conceptual framework of the School Nursing CPG Model follows the Donabedian framework (1988) by outlining the *structure* and *processes* needed to develop a rigorous CPG (*outcome*) on a clinical problem based upon the strongest available evidence (Figure 1). NASN is responsible for the structure and management of CPG development including (1) oversight, (2) proposals, (3) team composition, (4) project timelines, (5) documentation and submission, (6) expert review and appraisal, (7) revision and adoption, (8) dissemination and education, (9) cycle of revision, and (10) sustainability.

The CPG development process is methodically outlined with concise instructions on how to systematically search and appraise the literature, derive evidence-based practice recommendations based upon the strength of the evidence, and compose a standardized CPG according to domains of care and the nursing process and the *Standards of School Nursing Practice* (ANA and NASN, 2017). Tools are offered

for each step of CPG development including a collective findings table; an evidence decision tree, schema for grading the quality, level, and strength of the evidence; and a standardized template to compose the practice recommendations. The anticipated outcomes of rigorous school nursing CPGs are higher quality of care and improved student health outcomes.

## Testing and Validation of the School Nursing CPG Model

### Specific Aims

To test and validate the School Nursing CPG Model, a trial CPG development project was conducted with two specific aims: (1) to identify structure and process gaps and areas for improvement within the School Nursing CPG Model and (2) to develop an evidence-based CPG for school nursing practice that addresses a priority student health condition.

### Determining the Practice Priority

NASN determined that students with seizures and epilepsy presented a priority for the development of a CPG for school nurses. Three percent of the 20% of U.S. children who have special health-care needs have a diagnosis of epilepsy or roughly 6.3/1,000 students (Pastor, Reuben, Kobau, Helmers, & Lukacs, 2015; USDHHS, Health Resources and Services Administration, Maternal and Child Health Bureau, 2014; Zack & Kabou, 2017). When seizures and epilepsy are not properly managed at school due to the lack of standardized nursing guidelines and/or the absence of a school nurse, students lose instructional time secondary to absences and hospitalizations, and loss of instructional time negatively impacts academic achievement (Pastor et al., 2015; Russ, Larson, & Halfon, 2012). For some children, seizures and epilepsy can present as life-threatening emergencies, which may result in status epilepticus, neurologic devastation, and even death (Hartman et al., 2016).

To confirm this practice priority, a needs assessment survey of school nursing care for students with seizures and epilepsy was distributed by NASN through the general membership listserv in February, 2018. Of the 707 total respondents, 698 were eligible to participate as practicing school nurses from across the United States. The results demonstrated challenges in caring for students with seizures and epilepsy specifically related to communication barriers between school nurses, parents, and health-care providers; barriers in obtaining, administering, and delegating rescue medication; and lack of standardized policies and procedures at the school and district level. Respondents indicated that a seizure and epilepsy evidence-based CPG would be beneficial in standardizing and aligning their school nurse practice with the most current evidence-based practice recommendations (NASN, 2018d).

## Method

The trial CPG project, *School Nursing Evidence-Based Clinical Practice Guideline: Students With Seizures and Epilepsy* (Seizure CPG; NASN, 2018c), was conducted using the Plan–Do–Study–Act (PDSA) cycle of the Model for Quality Improvement (Associates in Process Improvement, 2017). Exemption from research was granted by the University of Illinois at Chicago Institutional Review Board. The PDSA cycle allowed for dynamic improvements to the School Nursing CPG Model as the Seizure CPG was developed. Three overarching questions of the PDSA cycle were systematically asked and answered throughout the project to identify gaps and overcome challenges in implementing the CPG Model: (1) “What are we trying to accomplish?” (2) “How will we know that a change is an improvement?” and (3) “What change can we make that will result in improvement?” (Langley, 2009, p. 23).

The CPG project team discussed the strengths and weaknesses of the School Nursing CPG Model as they emerged. Responsive revisions and enhancements were made to School Nursing CPG Model’s methodology as indicated. All improvements were reciprocally reflected in the Seizure CPG.

The detailed methodology outlined in the *Clinical Practice Guideline Development Process* of the School Nursing CPG Model was followed to build the guideline itself. As the rigorous literature review was completed, minor changes were made to the graphic representations of the *CPG evidence decision tree*, so that the flowchart symbols accurately reflected the direction, input or output operations, and decision steps within the algorithm. Subsequently, the findings from the literature review were systematically appraised using the respective grading schema for the *quality, level, and strength of the evidence*. The evidence decision tree and grading tools were easy to use and allowed for logical critical appraisal of the evidence-based practice (EBP) literature in terms of the hierarchy of evidence.

During synthesis of the literature, the PDSA cycle revealed the need for a method to better organize the findings according to relevant themes. The action taken was to add a column to the collective findings table to account for thematic *domains of care*. For the Seizure CPG, the domains of care emerged as clinical guidelines, seizure action plan, rescue medication, special education, care coordination, and education/training. This small test of change resulted in an effective approach to organize and translate the literature into clear evidence-based clinical practice recommendations. Congruently, instructions on deriving domains of care during the synthesis of evidence and translation into clinical practice recommendations were elucidated, and a column for domains of care was added to the *evidence-based clinical practice recommendations* template.

Next, the Seizure CPG document was composed using the evidence-based clinical practice recommendations template, which was revised in response to issues that came to light through the PDSA cycle. Indicated improvements included clarification and simplification of instructions resulting in a streamlined method for CPG composition. Organizing the evidence-based clinical practice recommendations template according to the nursing process/School Nursing Standards of Practice (ANA and NASN, 2017) and domains of care proved to be a logical strategy to reinforce the strength of the evidence according to the scientific founding unique to nursing.

Upon completion of the above steps, the Seizure CPG was submitted to the NASN staff lead as depicted under the *structure* of the School Nursing CPG Model. From there, NASN managed the critical appraisal of the guideline by compiling a review panel of professional experts on seizures and epilepsy, including representatives from the Epilepsy Foundation’s Professional Advisory Board, expert practicing school nurses, pediatricians, and university nursing faculty. These experts appraised the Seizure CPG using the AGREE II Instrument (AGREE Next Steps Consortium, 2013) to ensure that the finished product would be congruent with the inclusion criteria of the *National Guideline Clearinghouse* (USDHHS, AHRQ, 2014)<sup>1</sup>.

Blinded feedback, comments, and AGREE II ratings from the expert review panel recommended the Seizure CPG for use with select modifications which were incorporated. However, an additional opportunity for improvement was revealed during this phase of the trial through the PDSA cycle. The review panel feedback indicated that evaluating the CPG while simultaneously learning to use the AGREE II instrument was burdensome. Therefore, the NASN structure and management outlined in the School Nursing CPG Model was amended to include a two-step review and appraisal process. The CPG content review will be conducted by a *clinical expert peer review panel* who will focus on the relevance, accuracy, and strength of the practice recommendations. Then the CPG team will make the indicated revisions based on the expert panel’s feedback. Subsequently,

the extant CPG draft will be appraised by a *guideline expert appraisal panel* who will evaluate the rigor of the guideline according to the CPG quality standards.

## Results

The trial CPG project found that the School Nursing CPG Model exemplifies a standardized, comprehensive, and evidence-based approach to CPG development and appraisal. Both specific aims of the trial CPG project were achieved. First, all constructs of the Donabedian (1988) framework within the School Nursing CPG Model were validated. NASN found the guideline management *structure* to be clearly outlined and effective. Under NASN oversight, critical appraisal by an expert panel found the guideline to be of high quality and suitable for use. The methodology, standardization, and rigor of the *process* were achieved in the mechanism and integrity of literature review and critical appraisal of the evidence. The identification of domains of care and the addition of a two-step critical review and appraisal method promotes confidence in CPG practice recommendations.

The second specific aim was accomplished with the adoption and publication of *School Nursing Evidence-Based Clinical Practice Guidelines: Students With Seizures and Epilepsy* (NASN, 2018b) on the NASN website during the summer of 2018. The Seizure CPG addresses the special health-care needs of students with seizures and epilepsy and empowers school nurses to provide optimal evidence-based nursing care to this complex population. The Seizure CPG was disseminated via a podium presentation at the 2018 NASN Annual Conference and was well received. The practice recommendations were published in *NASN School Nurse* (Lepkowski & Maughan, 2018) and introduced in a NASN national webinar (NASN, 2018b). School nurses can freely access the Seizure CPG and begin implementing the practice recommendations at the school and district level.

## Implications for School Nursing Practice

Under the auspices of NASN, the *Model for Developing Evidence-Based Clinical Practice Guidelines for School Nursing* establishes a rigorous and standardized methodology for building a robust repository of quality CPGs for practicing school nurses. *School Nursing Evidence-Based Clinical Practice Guideline: Students With Seizures and Epilepsy* (NASN, 2018c) is the first contribution toward that goal. Based upon this trial CPG development project, NASN endorses the application of the *A Model for Developing Evidence-Based Clinical Practice Guidelines for School Nursing* by academic partners to construct CPGs for school nursing care of students with priority special health-care needs. Multiple modes of dissemination of the School Nursing CPG Model are planned, including conferences and educational offerings, as well as networking with school

nurse educators, experts, and leaders. The School Nursing CPG Model with additional information and appendices is available for members on the NASN website.

Opportunities are limitless for school nurse/nurse researcher teams to collect data and study outcomes related to the implementation of evidence-based CPGs developed using this model. There is confidence that the rigor of the structure, process, and outcomes of the School Nursing CPG Model will prove germane to the development of evidence-based CPGs for other nursing specialties as well. NASN's continued stewardship of evidence-based CPG development will expectedly benefit the specialty practice of school nursing on behalf of the better health and education of students with special health-care needs.

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## Author Contributions

All authors contributed to the conception of the article, were involved in critical revisions, gave final approval, and agreed to be accountable for all aspects of work ensuring integrity and accuracy. A. M. Lepkowski drafted the article.

## Declaration of Conflicting Interests

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## Note

1. Although the National Guideline Clearinghouse criterion is still published on the AHRQ website, the National Guideline Clearinghouse closed in July 2018 due to lack of budgetary support from the current Presidential Administration. Therefore, the repository of CPGs therein is no longer publicly available. Support to reinstate funding is urged.

## References

- AGREE Next Steps Consortium. (2013). *The AGREE II instrument: Update*. Retrieved from <http://www.agreetrust.org>
- American Nurses Association and National Association of School Nurses. (2017). *School nursing: Scope & standards of practice* (3rd ed.). Silver Spring, MD: Author.

- Associates in Process Improvement. (2017). *Model for improvement*. Retrieved from <http://www.apiweb.org/>
- Donabedian, A. A. (1988). The quality of care: How can it be assessed? *JAMA*, *260*, 1743–1748.
- Hartman, A. L., Devore, C. D. L., & Doerrer, S. C., Section on Neurology, American Academy of Pediatrics, Council on School Health, American Academy of Pediatrics, and the Section on Neurology, & Council on School Health. (2016). Rescue medicine for epilepsy in education settings. *Pediatrics*, *137*, e20153876. doi:10.1542/peds.2015-3876
- Institute of Medicine. (2011). *Clinical practice guidelines we can trust*. Retrieved from <http://nationalacademies.org/hmd/~media/Files/Report%20Files/2011/Clinical-Practice-Guidelines-We-Can-Trust/Clinical%20Practice%20Guidelines%202011%20Report%20Brief.pdf>
- Langley, G. J. (2009). *The improvement guide: A practical approach to enhancing organizational performance* (2nd ed.). San Francisco, CA: Jossey-Bass.
- Lepkowski, A. M., & Maughan, E. D. (2018). Introducing NASN's new evidence-based clinical guideline: Students with seizures and epilepsy. *NASN School Nurse*, *33*, 345–350. doi:10.1177/1942602X18806824
- Melnik, B. M., & Fineout-Overholt, E. (2015). Making the case for evidence-based practice and cultivating a spirit of inquiry. In B. M. Melnik & E. Fineout-Overholt (Eds.), *Evidence-based practice in nursing and healthcare: A guide to best practice* (3rd ed., pp. 3–23). Philadelphia, PA: Wolters Kluwer.
- National Association of School Nurses. (2016). Framework for 21st century school nursing practice. *NASN School Nurse*, *31*, 45–53. doi:10.1177/1942602X15618644
- National Association of School Nurses. (2018a). *About*. Retrieved from <https://www.nasn.org/nasn/about-nasn/about>
- National Association of School Nurses. (Producer). (2018b, October 17). *Implementing NASN's school nursing evidence-based practice seizures and epilepsy clinical guideline [webinar]*. Retrieved from <https://www.pathlms.com/nasn/courses/9476>
- National Association of School Nurses. (2018c). *School nursing evidence-based clinical practice guideline: Students with seizures and epilepsy*. Silver Spring, MD: Author.
- National Association of School Nurses. (2018d). [Seizures and Epilepsy: SN Feedback]. Unpublished raw data.
- National Center for Education Statistics. (2018). *Fast facts: Education statistics*. Retrieved from <https://nces.ed.gov/fastfacts/display.asp?id=372>
- Pastor, P. N., Reuben, C. A., Kobau, R., Helmers, S. L., & Lukacs, S. (2015). *Functional difficulties and school limitations of children with epilepsy: Findings from the 2009–2010 national survey of children with special health care needs*. Retrieved from <https://doi-org.proxy.cc.uic.edu/10.1016/j.dhjo.2014.09.002>
- Russ, S. A., Larson, K., & Halfon, N. (2012). A national profile of childhood epilepsy and seizure disorder. *Pediatrics*, *129*, 256–264. doi:10.1542/peds.2010-1371
- Shannon, R. A. (2018). School nursing EBP clinical guidelines: What they are and are not, and why they matter. *NASN School Nurse*, *33*, 104–105. doi:10.1177/1942602X17753602
- Shannon, R. A., & Maughan, E. D. (2019). A model for developing evidence-based clinical practice guidelines for school nursing. *The Journal of School Nursing*. doi:10.1177/1059840519880938
- U.S. Department of Education, National Center for Education Statistics. (2018). *Fast facts: Back to school statistics*. Retrieved from <https://nces.ed.gov/fastfacts/display.asp?id=372>
- U.S. Department of Health and Human Services & Agency for Healthcare Research and Quality. (2014). *National guideline clearing house: Inclusion criteria*. Retrieved from <https://www.ahrq.gov/gam/summaries/inclusion-criteria/index.html>
- U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau. (2014). *Child health USA: Children with special health care needs*. Retrieved from <http://mchb.hrsa.gov/chusa14/population-characteristics/children-special-health-care-needs.html>
- Yonkaitis, C. F. (2018). Evidence-based practice and school nurse practice: A review of literature. *The Journal of School Nursing*, *34*, 60–67. doi:10.1177/1059840517728108
- Zack, M. M., & Kobau, R. (2017, August 11). National and state estimates of the numbers of adults and children with active epilepsy—United States, 2015. *MMWR. Morbidity and Mortality Weekly Report*, *66*, 821–825. Retrieved from <https://www.cdc.gov/mmwr/volumes/66/wr/mm6631a1.htm>

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