Quality and safety education for nurses (QSEN): The key is systems thinking

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Abstract

Over a decade has passed since the Institute of Medicine’s reports on the need to improve the American healthcare system, and yet only slight improvement in quality and safety has been reported. The Quality and Safety Education for Nurses (QSEN) initiative was developed to integrate quality and safety competencies into nursing education. The current challenge is for nurses to move beyond the application of QSEN competencies to individual patients and families and incorporate systems thinking in quality and safety education and healthcare delivery. This article provides a history of QSEN and proposes a framework in which systems thinking is a critical aspect in the application of the QSEN competencies. We provide examples of how using this framework expands nursing focus from individual care to care of the system and propose ways to teach and measure systems thinking. The conclusion calls for movement from personal effort and individual care to a focus on care of the system that will accelerate improvement of healthcare quality and safety.

Citation: Dolansky, M.A., Moore, S.M., (September 30, 2013) “Quality and Safety Education for Nurses (QSEN): The Key is Systems Thinking” OJIN: The Online Journal of Issues in Nursing Vol. 18, No. 3, Manuscript 1.

DOI: 10.3912/OJIN.Vol18No03Man01

Key words: QSEN, quality, safety, systems, QSEN competencies, education, measurement

QSEN is a national movement that guides nurses to redesign their ‘what and how’ they deliver nursing care so that they can ensure high-quality, safe care.

In 2005, nursing leaders responded to the IOM call to improve the quality of healthcare by forming the Quality and Safety Education for Nurses (QSEN) initiative funded by the Robert Wood Johnson Foundation. The QSEN initiative consisted of the development of quality and safety competencies that serve as a resource for nursing faculty to integrate contemporary quality and safety content into nursing education (QSEN Institute, 2013). The focus of QSEN, now the QSEN Institute, has expanded from undergraduate nursing students’ education to include quality and safety education for all nurses. The mission of QSEN is to address the challenge of assuring that nurses have the knowledge, skills, and attitudes (KSA) necessary to continuously improve the quality and safety of healthcare, and propose ways to teach and measure systems thinking.
Although QSEN competencies have spurred quality and safety in nursing education, it is now time to accelerate their use and impact. The healthcare systems in which they work. QSEN is a national movement that guides nurses to redesign the 'what and how' they deliver nursing care so that they can ensure high-quality, safe care. Linda Cronenwett, PhD, RN, FAAN, the founder of QSEN, often states that QSEN helps nurses to identify and bridge the gaps between what is and what should be and helps nurses focus their work from the lens of quality and safety (Personal Communication, 2013).

Viewing nurses’ work through the lens of quality and safety requires a contemporary approach that incorporates systems thinking. A crucial skill, systems thinking helps nurses to meet the challenge of improving healthcare as they move beyond the application of the QSEN competencies from individual patients and families to accelerate the overall improvement of healthcare quality and safety. In this article, we review the history of QSEN and propose a framework that expands nursing focus from individual care based on personal effort and care of the individual to systems thinking and care of the system. Examples are provided to demonstrate how to integrate systems thinking in the application of QSEN competencies and how systems thinking can be taught and measured.

QSEN History

In response to calls for improved quality and safety, leaders from schools of nursing across the country joined forces to create the Quality and Safety Education for Nurses (QSEN) initiative. The Robert Wood Johnson Foundation in 2005 funded QSEN Phase 1 and three subsequent phases followed (Table 1). The major QSEN contribution to healthcare education was the creation of six QSEN competencies (modeled after the IOM reports) and the pre-licensure and graduate-level knowledge, skills, and attitude (KSA) statements for each competency (Cronenwett et al., 2007). The competency statements provide a tool for faculty and staff development educators to identify gaps in curriculum so that changes to incorporate quality and safety education can be made (Barnsteiner et al., 2013). The QSEN website serves as a national educational resource and a repository for nurses to publish contemporary teaching strategies focused on the six competencies: patient-centered care, teamwork and collaboration, evidenced-based practice, quality improvement, and informatics. Currently, there are over 100 teaching strategies posted.

Table 1. History of QSEN

<table>
<thead>
<tr>
<th>Phase</th>
<th>Details</th>
<th>Websites and References</th>
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<tbody>
<tr>
<td>Phase 1</td>
<td>OSEN competencies and their requisite KSAs</td>
<td>qsen.org/competencies/pre-licensure-ksas/ Cronenwett et al., 2007</td>
</tr>
<tr>
<td>October 2005-March 2007</td>
<td>QSEN.org website</td>
<td></td>
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<tr>
<td>April 2007–October 2008</td>
<td>Peer reviewed teaching strategies on the website</td>
<td></td>
</tr>
<tr>
<td>Phase 3</td>
<td>National forums to educate nursing faculty</td>
<td><a href="http://qsen.org/conferences/">http://qsen.org/conferences/</a></td>
</tr>
<tr>
<td>November 2008-February 2012</td>
<td>Incorporation of nurses into the Veterans Affairs (VA)</td>
<td>VAQS.org</td>
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<td></td>
<td>Quality Scholars program (VAQS- 2 year pre or post-doctoral fellowships in quality and safety)</td>
<td><a href="http://qsen.org/faculty-resources/learning-modules/">http://qsen.org/faculty-resources/learning-modules/</a> Barnsteiner et al., 2013</td>
</tr>
<tr>
<td></td>
<td>Faculty modules to the QSEN website</td>
<td><a href="http://qsen.org/faculty-resources/aacn-workshop-modules/">http://qsen.org/faculty-resources/aacn-workshop-modules/</a></td>
</tr>
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<td></td>
<td>8 regional Faculty Development workshops (train the trainer) were coordinated by the AACN</td>
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The full effect of the QSEN competencies to improve the quality and safety of care can only be realized when nurses apply them at both the individual and system levels of care. The QSEN competencies have been used by national nursing organizations and are the central focus of the National Council of State Boards of Nursing (n.d.) Nurse Residency program, the foundational concepts in the Massachusetts Future of Nursing Framework (Massachusetts Department of Higher Education, 2010), and the Ohio Hospital Association (Ohio Organization of Nurse Executives, 2013). The QSEN competencies also have been incorporated into nursing textbooks such as the medical-surgical text by Ignatavicious and Workman (2013), and other books, such as Quality and Safety in Nursing: A Competency Approach to Improving Outcomes (Sherwood & Barnsteiner, 2012), Second Generation QSEN, a special issue of the Nursing Clinics of North America (Barnsteiner & Disch, 2012) and Quality and Safety for Transformational Leadership (Amer, 2012).

Systems Thinking

Although QSEN competencies have spurred quality and safety in nursing education, it is now time to accelerate their use and impact. Many nurse educators report that the QSEN competencies are already integrated into their curriculum, but in our practice, we have noted that often this integration is at the individual level of care, rather than at the level of the system of care. The full effect of the QSEN competencies to improve the quality and safety of care can only be realized when nurses apply them at both the individual and system levels of care. Figure 1 provides a display of how the six QSEN domains are linked to optimal patient care through both vigilant individual care and vigilant systems of care. Traditionally, nurses have focused primarily on vigilant individual care; less attention has been given to assisting nurses to provide vigilant systems of care. We propose that in addition to the emphasis on teaching critical thinking skills (Simpson & Courtney, 2002), nurses also need to be taught the knowledge and skills associated with systems thinking. In their day-to-day work, nurses’ abilities to engage in better problem-solving, priority setting, delegation, interactions and collaborations, decision making, and action-taking are greatly influenced by their ability to view how any one component of their work system is related to other components and to the whole.
Systems thinking is the ability to recognize, understand, and synthesize the interactions and interdependencies in a set of components designed for a specific purpose. This strategy includes the ability to recognize patterns and repetitions in interactions and an understanding of how actions and components can reinforce or counteract each other. These relationships and patterns occur at different dimensions: temporal, spatial, social, technical or cultural (Oshry, 2007). Systems thinking links a person’s environment to his/her behavior. In the delivery of nursing care, this involves the nurse’s understanding and valuing how components of a complex healthcare system influence care of an individual patient. Systems thinking can be viewed as a continuum, ranging from the individual to the larger internal and external environmental components. Figure 2 shows examples of care approaches that represent increasing levels of systems thinking.

How nurses view both themselves as nurses, and their work, is shaped by the structures and processes of the systems in which they work. Most nurses provide care in healthcare organizations that are characterized as complex, multilevel, and multifunctional. Greater knowledge and application of systems thinking skills by nurses have the potential to mitigate errors in practice, improve nurse priority setting and delegation, enhance problem solving and decision-making, improve timing and quality of interactions with other professionals and patients, and enhance workplace quality improvement initiatives. The ability to engage in systems thinking has been viewed as a key component in the successful delivery of safe and high quality care (Batalden, 1997; Batalden & Leach, 2009; Batalden & Stoltz, 1993; Senge, 2006). Systems thinking is required to redesign healthcare to improve the quality and safety of care.

The importance of systems thinking in quality improvement (QI) initiatives was identified in early literature on application of QI techniques to healthcare (Batalden & Stoltz, 1993; Deeming & Appleby, 2000) and, more recently, was highlighted in reports from the Institute of Medicine (IOM, 2003), the Accreditation Council for Graduate Medical Education (Varkey, Karlapudi, Rose, Nelson, & Warner, 2009) and the article, “Quality and Safety Education for Nurses” (Cronenwett, Sherwood & Barnsteiner, 2007). Given the hypothesized importance of systems thinking in the success of quality and safety in healthcare, it is probable that if nurses engage in better systems thinking, greater improvements in outcomes will be achieved. Knowledge and skills associated with systems thinking, however, are seldom addressed in basic or continuing nursing education. The next sections describe strategies for teaching and learning systems thinking, especially as related to QSEN competencies, and a newly developed tool for measurement of systems thinking.

Teaching and Learning Systems Thinking

Systems thinking is an essential skill for nurses. Yet, there has been little knowledge disseminated about how to assist nurses to better engage in this type of thought process, despite their key roles in planning, delivering, and improving patient care in complex organizations. To teach systems thinking it is important...
to enhance the learner’s awareness of the interdependencies in people, processes, and services and to view problems as occurring as part of a chain of events of a larger system, rather than as independent events.

The clinical environment is an ideal place to teach systems thinking in undergraduate, graduate, and staff development education. During the clinical experience, the faculty preceptor can broaden the learner’s problem solving skills and ability to view problems as occurring as part of a chain of events of a larger system. Table 2 provides examples of this continuum of systems thinking using the QSEN competencies. An example of a teaching technique for systems thinking is to have learners create grids such as those presented in Table 2 to expand their scope of thinking from the individual to the system level of care. Students might obtain outcome data from their unit and identify reasons for variation across time. Enhancing systems thinking skills also can be done by having learners complete an assessment of their unit or microsystem.

Assessment tools are available from the Clinical Microsystems (2013) Green Books for inpatient, emergency room, long-term care, and outpatient groups. These free workbooks from the Dartmouth Institute have been developed to help individuals assess the complexity of the system in which they work. Another approach to expand learners’ scope of thinking to a systems level is to have them connect nursing skills and clinical issues to national quality and safety initiatives (Armstrong & Barton, 2013). For example, urinary care is connected to the National Quality Forum (2013) Catheter Associated Urinary Tract Infection (CAUTI) prevention and the Joint Commission’s (2013c) National Patient Safety Goal Number 7.

Table 2. Examples of Continuums of Systems Thinking for QSEN Domains

<table>
<thead>
<tr>
<th>QSEN Competency</th>
<th>Personal Effort/Individual Care</th>
<th>Systems Thinking/System Care</th>
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<tbody>
<tr>
<td>Patient-Centered Care</td>
<td>Document the presence and extent of my patients’ pain</td>
<td>Participate in medical record review of my unit’s pain management documentation</td>
</tr>
<tr>
<td></td>
<td>Use concise definitions, terms and rating scales in documenting my patients’ pain</td>
<td>Formulate pain management plans for my patients, their families, and other healthcare professionals</td>
</tr>
<tr>
<td>Evidence-Based Practice</td>
<td>Differentiate clinical papers from research and evidence summaries</td>
<td>Question the rationale for routine care approaches on my unit that are not evidence-based</td>
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<tr>
<td></td>
<td>Discuss conflicting evidence in the literature with my colleagues</td>
<td>Participate in unit-based meetings to share evidence-based care strategies</td>
</tr>
<tr>
<td>Teamwork and Collaboration</td>
<td>Ensure that my patient is ready for discharge by making sure they have all of their paperwork</td>
<td>Participate in improving the discharge process through team meetings to ensure communication during a patient’s hospital stay</td>
</tr>
<tr>
<td>Safety</td>
<td>Wash my hands at the appropriate times in the care of my patients</td>
<td>Observe other nurses handwashing technique and provide feedback</td>
</tr>
<tr>
<td>Quality Improvement</td>
<td>Ensure that I care for central lines using evidence-based practice</td>
<td>Study the workarounds on my unit and create an effective diagram to summarize how nurses do not wash their hands</td>
</tr>
<tr>
<td>Informatics</td>
<td>Protect the confidentiality of my patients’ protected health information in the electronic health record (EHR)</td>
<td>Participate in a quality improvement project to improve compliance with central line bundle on our unit</td>
</tr>
<tr>
<td></td>
<td>Attend in-service training updates to learn about new cellular in the department</td>
<td>Participate in an agency-wide committee to update the agency’s CRI system</td>
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</table>

Nurses can also learn systems thinking by creating flowcharts or process diagrams that elicit the steps of a care process and the multitude of healthcare workers involved in that process. This mapping technique is one of the first steps of a quality improvement project. For example, to improve the care coordination of preparing hospitalized patients for discharge, teams of healthcare professionals could map steps in the course of a patient’s stay leading to discharge. This exercise has been shown to increase knowledge about system factors and enhance awareness of the importance of interprofessional collaboration (Brennen, Olds, Dolansky, Estrada, & Patrician, in press).

Another approach to teach systems thinking is to have learners conduct a root cause analysis (Lambton & Mahlmeister, 2010; Tschannen & Aebbersold, 2010). Root cause analysis (RCA) is a widely used technique to assist people to move beyond blame of an individual for errors made in the workplace to understanding the system factors that may have contributed to errors. Healthcare organizations routinely perform RCA after an event so that appropriate changes can be made in the system to prevent future errors. This technique could be used to understand system factors even when events “almost happen.” Having nursing students participate in RCAs during their undergraduate education has been shown to be beneficial (Dolansky, Druschel, Helba, & Courtney, 2013). For example, having students conduct an RCA for addressing a medication error may lend a new perspective to how system level factors interact with individual level factors in the creation of that error.

In the classroom setting, systems thinking also can be enhanced by using case studies. The book Set Phasers to Stun (Casey, 1998) includes stories of design, technology, and human error that can be discussed in class. These stories identify the close connection between technology and humans. Another book, Systems Concepts in Action (Williams & Hummelbrunner, 2011), is a practitioner’s toolkit to teach the principles of systems thinking, such as system dynamics, outcome mapping, and social network analysis. Highly effective and very interactive, the game Friday Night in the ER (2009) guarantees learning and fun. The game is played by four people and simulates the challenge of
managing a hospital during a 24-hour period. Each player is in charge of a unit. The demands of the
game demonstrate that systems thinking is the key to success.

Lastly, teaching systems thinking requires guided reflection. Faculty need to assist learners to look for
and recognize patterns in systems of care by standing back, reflecting on data, and considering the
system as a whole. Too often in healthcare we make quick judgments that are based on limited
information and preconceived ideas. Teaching nurses to step back and consider the dependencies and
interconnectedness of system components will lead to a broader understanding of the healthcare system
and the quality of care that results from that system.

Measurement of Systems Thinking

To improve systems thinking, we need to be able to measure it. A valid and reliable measure of systems
thinking is now available. The Systems Thinking Scale (STS) is an instrument that measures healthcare
professionals’ systems thinking specifically related to system interdependencies. The 20-item STS has
good reliability as demonstrated by a test-retest reliability assessment (N=36; correlation of .74) and
internal consistency testing (N=342) using Cronbach’s alpha (.89) (Case Western Reserve University,
2013b).

Data from recent studies indicated that systems thinking can be
taught and learned and an individual’s level of systems thinking can be
changed (Abourmatar et al., 2012; Moore, Dolansky, Palmieri,
Singh, & Alemi, 2010). Moore and colleagues tested three groups
of healthcare professions students (n= 102) who received high,
low, or no dose levels of systems thinking education. There were no
differences in STS mean scores at pretest. At posttest, the high-
dose systems thinking education group scored significantly higher
on the STS than both the low and no-dose groups (p= .05 and .01,
respectively). The STS is now publicly available for use and a
website has been established to provide information on its use
(Case Western Reserve University, 2013a).

Conclusion

Almost 10 years have passed since the QSEN competencies were developed, and the field of quality
and safety is rapidly advancing. The time has come to consider what new competencies should be
added. We propose that the current QSEN competencies and knowledge, skills, and attitudes (KSAs) be
reviewed and evaluated. Do the KSAs need to be updated, reclassified, or expanded? Should a systems
perspective be made more prominent in the QSEN model? The QSEN competencies were developed to
be a tool to promote better education for nurses in healthcare quality and safety. We need to update the
QSEN competencies to be as useful as possible to prepare all nurses to ensure the highest level of care
possible.

Throughout QSEN history, reports from nurses and nurse faculty
are that they already integrate the QSEN competencies into
education and practice. However, we have observed that, despite
the fact that contemporary approaches to quality and safety
emphasize a systems view, much of the nursing education
approach to teaching quality and safety (including application of the
QSEN competencies) emphasizes personal effort at the individual
level of care. Although we believe that personal expertise of the
nurse with individual patients is necessary, a safe and high quality
system of care requires that all healthcare professionals take
responsibility to learn and apply skills associated with improving the
wider system of care. We argue, therefore, that the QSEN
competencies should be integrated into nursing curriculum and
practice with a strong systems-perspective emphasis. Nurse faculty
and staff development educators must critically evaluate the extent
to which they apply QSEN competencies and at what levels.

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to health behavior change with patients.

References

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efficacy and system thinking among medical students. BMJ Quality and Safety. 21(5).


Table 1. Resources for Quality and Safety. The QSEN Competencies (see Table 2) provide a framework focused on improving healthcare that is applicable to all nursing specialties. They transparently overlap the Orthopaedic Core Competencies (National Association of Orthopaedic Nurses, 2007) and enhance the role of the orthopaedic nurse by increasing the focus on quality and safety across the lifespan. The Orthopaedic Core Competencies (see Table 3) address pertinent topics in orthopaedic care including subspecialties of pediatrics, geriatrics, and palliative care. Experienced nurses realize that quality and safety cannot be attributed to knowledge and carefulness of individuals alone; hence, they use data to optimize system-based solutions to protect patients. The Robert Wood Johnson Foundation answered the call with Quality and Safety Education for Nurses (QSEN) to develop minimum standards for safe nursing practice. Once standards were established, national nursing education credentialing bodies responded by requiring that QSEN competencies and systems thinking be integrated into program curricula. After over a decade of deliberate transformation attempts, system-related errors were still being identified as a primary cause of death in the United States, translating to over 400,000 preventable deaths. So, why haven't QSEN and efforts to Practice Standards -Quality & safety education for nurses (qsen ) the american nurses association (ana) the. QSEN -. quality & safety education for nurses. image source: QSEN -. quality & safety education for nurses. jody young melissa hayes patricia burgess jackie wirth. The Image of Nursing -. darlene dâ€™arcangelo, rn ferris state university. what is. Jeannie Couper, MSN, RN-BC Seton Hall University May 2, 2012 -Qsen in practice. jeannie couper, msn, rn-bc seton hall.Â Goals â€¢ To alter nursingâ€™s professional â€˜identityâ€™ so that when we think of what it means to be a respected nurse, we think not only of caring, knowledge, honesty and integrityâ€¦. â€¢ But also, that it means that we value, possess, and collectively support the development of quality and safety competencies.