

CHAPTER 5

Clinical Reasoning: Action-Focused Thinking

Cheryl A. Tucker
Martha J. Bradshaw

Instructors in the health professions, who also are practitioners in their fields, are compelled to assist students in developing their clinical reasoning skills as beginners in the health professions and as novice thinkers. Sound reasoning is essential in preserving the standards of the profession and promoting quality patient outcomes. Health professions literature has long addressed this process as *critical thinking*. However, the critical thinking model is limited in that it does not move learners to the level of thinking about their thinking. Recent literature is addressing this awareness and the need to move to a deeper level of thinking. This process is **clinical reasoning**. Within the various health professions, many terms and models exist. With the call to interdisciplinary education and collaborative patient care, healthcare professionals need a shared model of clinical reasoning. This chapter provides an overview of what clinical reasoning is and why it should be taught in a purposeful way, and it presents a model that can be implemented across the healthcare disciplines.

■ Clinical Reasoning Framework

In 2003, the Institute of Medicine (IOM) published its report *Health Professions Education: A Bridge to Quality*, which examined the need to transform health professions education. The IOM's vision for the education of health professionals is articulated in its core competencies, which assert, "All health professionals should be educated to deliver patient-centered care as members of an interdisciplinary team, emphasizing evidence-based practice, quality improvement approaches, and informatics" (IOM, 2003, p. 3). *The Future of Nursing: Leading Change, Advancing Health* (IOM, 2010) further addresses these core competencies and explores the necessity of transforming professional nursing education. The American Association of Colleges of Nurses (AACN) supports these core competencies as delineated in the *Essentials of Baccalaureate Education for Professional Nursing Practice*, which highlights such areas as "patient-centered care, interprofessional teams, evidence-based practice, quality improvement, patient safety, informatics, clinical reasoning/critical thinking, genetics and genomics, cultural sensitivity, professionalism, practice across the lifespan, and end-of-life care" (AACN, 2008, p. 35).

Various professional organizations use *critical thinking*, *clinical judgment*, and *clinical reasoning* interchangeably. A definition of *clinical judgment* is “an interpretation or conclusion about a patient’s needs, concerns, or health problems, and/or the decision to take action (or not), use or modify standard approaches, or improvise new ones as deemed appropriate by the patient’s response” (Tanner, 2006, p. 204). *Clinical reasoning* is the ability of the health professions student to use critical thinking skills in the practice environment. It should include the “context and concerns of the patient and family” (Benner, Sutphen, Leonard, & Day, 2010, p. 85). Clinical imagination and reflection are also part of clinical reasoning (Benner et al., 2010). The thought is that critical thinking is a snapshot in time, whereas clinical reasoning can accommodate the changing nature of the clinical settings. Tanner (2006) acknowledges that *problem solving*, *critical thinking*, *decision making*, and *clinical judgment* are often used in the literature to mean the same thing.

In varying degrees, all students need guidance with transfer or application of knowledge to specific patient situations. This process, also called *knowledge translation*, is the means by which new knowledge is organized, given meaning or understood, and put in to action (Leahey & Svavarsdottir, 2009). As the teacher builds clinical reasoning abilities in the student, the individual student learns (or should learn) to recognize the meaning of knowledge (information) and then grasp how to use (apply) this knowledge. Transfer of knowledge is critical for success in the healthcare arena.

The IOM (2003) report *Health Professions Education: A Bridge to Quality* articulates the need for healthcare professionals to be amply prepared to address the healthcare needs of an ever-changing patient population. The IOM report calls for healthcare providers to collaborate on delivering individualized, yet comprehensive health care. This requires purposeful, thoughtful, analytical processing of information and deliberate communication of this process to other healthcare professionals. For this to happen, the educational process must be transformed into one that cultivates clinical reasoning.

What role does the health professions teacher play in the development of clinical reasoning in his or her students? Health professions teachers have been utilizing different tools in promoting clinical reasoning in their students. A few examples of various tools utilized in the thinking process include professional nursing’s nursing process (assessment, nursing diagnosis, planning, implementation, and evaluation), medical education’s SNAPPS (summarize, narrow, analyze, probe, plan, and select) (Nixon et al., 2014), and physical therapy’s International Classification of Functioning, Disability and Health (ICF). These tools promote the student’s thinking through various steps of the clinical reasoning process. When health professions students collaborate on patient care problems, the professionals must speak the same language as they develop their clinical reasoning skills. To develop those skills in an interdisciplinary manner, the students collectively should use a decision-making tree, based on the scientific method, as a clinical reasoning tool. Utilizing the clinical reasoning tool, students acknowledge the clinical problem and gather data; analyze the information, develop solutions or a plan, and make a decision; implement the decision(s); and evaluate the decision(s).

The scientific method of thinking, which uses problem definition, analysis, decision making, implementation, and evaluation, has long been used by healthcare providers. Every profession uses this method in some way, although each uses different nomenclature for the steps of the process. A proposed model for clinical reasoning (see **Table 5-1**) incorporates all of the analytical methods used by educators in the various health professions. The categories are similar in content, are sequential, and serve as a means for novices to understand their thinking as they move through the process.

Health care continues to grow more complex, and health professionals must be better prepared to utilize their clinical reasoning skills. Teaching clinical reasoning is difficult; it must be purposeful and can be both planned and spontaneous. In the IOM report (2010, p. 544) states, “. . . Faculty report spending most of their time supervising students in hands-on procedures, leaving little time focused on fostering the development of clinical reasoning skills” (McNelis & Ironside, 2009). It is essential that classroom and clinical experiences be interwoven with real-life clinical experiences. Health professions teachers assist the students to make connections between gaining and applying knowledge, so that students stitch a strong tapestry of clinical reasoning skills for the diverse and complex healthcare environment (Benner et al., 2010).

■ Types of Learners

Teaching of clinical reasoning to the student will vary in style and depth depending upon where the student is in the health professions program. Beginning students need a foundation based on the essential course work such as basic sciences, psychology, sociology, and the like. Furthermore, a fundamental condition for learning and practice in all health professions students is the ability to obtain and manipulate information from a variety of sources, organizing it in a meaningful way to bring about purposeful decision making. Students come to the learning environment with different learning styles and preferences. When faced with new knowledge, students gravitate to their dominant learning style and successfully assimilate new information when the teaching strategies utilized are in harmony with their preferred style. (Learning styles are discussed more thoroughly elsewhere in this text.)

Clinical practitioners also need the physical abilities to provide safe and competent care. To assist educators, the Americans with Disabilities Act (ADA) has defined core competencies, with the intent of clarifying minimal expectations for entry-level applicants (ADA, 1990). Each health profession then can develop specific criteria as appropriate for the benchmark of that profession. Examples of typical core competencies and the ways they are defined in nursing are displayed in **Table 5-2**.

Prerequisite courses and core competencies assist beginning health professions students as they progress to clinical courses where their thinking about patient problems is transformed into clinical reasoning. There also are essential attributes of learners that will contribute to the development of clinical reasoning. These attributes are:

- *Motivation*: A willing learner who desires to become a health professional
- *Attention to details*: Recognize and use vital information to promote safe patient outcomes

Table 5-1 A Clinical Reasoning Model for Healthcare Professions

Healthcare Professions	Scientific Method^a	Nursing^a	Medicine^b	Physical Therapy^c
Clinical reasoning model	Scientific process	Nursing process	SNAPPS	The physical therapy clinical reasoning and reflection tool (PT-CRT)
Recognition				
Identify the clinical situation and collect relevant data	Define the problem; gather information (data)	Assessment (data collection): History taking, physical assessment, results of diagnostic tests	Summarize briefly the history and findings	Initial data-gathering/interview
Appraisal				
Analyze findings and formulate conclusions	Analyze the information (data)	Nursing diagnostics: Consider assessment database and identify problems; choose nursing diagnosis	Narrow the differential to two or three relevant possibilities	Generate initial hypothesis
Formulate Actions				
Develop interdisciplinary strategies to resolve clinical situation	Develop solutions; make a decision	Planning: Determine desired outcomes; choose interventions to achieve those outcomes	Analyze the differential by comparing and contrasting the possibilities	Examine/evaluate/plan of care
Implement Actions				
Accomplish strategies using interdisciplinary collaboration	Implement the decision	Implementation: Carry out the interventions	Plan management for the patient's medical issues	Interventions
Clinical Judgment				
Evaluate decisions and outcomes and revise strategies as needed	Evaluate the decision	Evaluation: Assess the result of the interventions; determine if outcomes have been achieved; revise the plan if outcomes are not being met; terminate interventions no longer needed	Select a case-related issue for self-directed learning	Reexamination/outcomes

^aData from deWit, S. C., & O'Neill, P. A. (2014). *Fundamental concepts and skills for nursing* (4th ed.). St. Louis, MO: W.B. Saunders.

^bData from Wolpaw, T., Papp, K. K., & Bordaage, G. (2009). Using SNAPPS to facilitate the expression of clinical reasoning and uncertainties: A randomized comparison group trial. *Academic Medicine*, 84, 517–524.

^cData from Atkinson, H. L., & Nixon-Cave, K. (2011). A tool for clinical reasoning and reflection using the International Classification of Functioning, Disability and Health (ICF) framework and patient management model. *Physical Therapy*, 91, 416–430.

Table 5-2 Example Core Performance Standards

Requirements	Standards	Examples
<i>Critical Thinking</i>	Critical thinking ability for effective clinical reasoning and clinical judgment consistent with level of education preparation	Identification of cause/effect relationships in clinical situations Use of scientific method in the development of patient care plans Evaluation of the effectiveness of nursing interventions
<i>Professional Relationships</i>	Interpersonal skills sufficient for professional interactions with a diverse population of individuals, families, and groups	Establishment of rapport with patients/clients and colleagues Capacity to engage in successful conflict resolution Peer accountability
<i>Communication</i>	Communication adeptness sufficient for verbal and written professional interactions	Explanation of treatment procedures, initiation of health teaching Documentation and interpretation of nursing actions and patient/client responses
<i>Mobility</i>	Physical abilities sufficient for movement from room to room and in small spaces	Movement about patient's room, work spaces, and treatment areas Administration of rescue procedures such as cardiopulmonary resuscitation
<i>Motor Skills</i>	Gross and fine motor abilities sufficient for providing safe, effective nursing care	Calibration and use of equipment Therapeutic positioning of patients
<i>Hearing</i>	Auditory ability sufficient for monitoring and assessing health needs	Ability to hear monitoring device alarm and other emergency signals Ability to discern auscultatory sounds and cries for help
<i>Visual Ability</i>	Visual ability sufficient for observation and assessment necessary in patient care	Ability to observe patient's condition and responses to treatments
<i>Tactile Sense</i>	Tactile ability sufficient for physical assessment	Ability to palpate in physical examinations and various therapeutic interventions

Reproduced from Sample Core Performance Standards table of the Americans with Disabilities Act, Implications for Nursing Education Web page, © Southern Regional Education Board. Used with permission.

- *Ability to formulate questions:* For the purposes of clarifying, acquiring, and processing information
- *Awareness of knowledge gaps:* Based upon known information, can identify what is not known and can identify resources for narrowing the knowledge gap
- *Awareness of own thinking:* Attention to own strategies for thinking through a problem and recognition of hindrances to effective problem solving
- *Ability to draw analogies:* Taking known information and applying it to new situations such as a challenging patient example

As learners gain more exposure in the clinical setting, they have more experiences and knowledge to draw on for their clinical reasoning. Individual students develop their own success strategies for developing clinical reasoning. Verbal learners, who process and absorb new knowledge through logic and sequence, are typically left-brain thinkers. These left-brain thinkers will learn clinical reasoning best through a linear process as exemplified by nursing process care plans. Students who have a learning tendency toward right-brain thinking processes absorb information visually, holistically, and often intuitively. Right-brain thinkers prefer a more global approach, such as the use of concept maps (Worden, Hinton, & Fischer, 2011).

■ Conditions for Learning

Effective Teaching for Clinical Reasoning

To cultivate clinical reasoning in the health professions student, the instructor should possess a comprehensive command of the subject and must facilitate thinking by the student rather than merely presenting information. Current practice knowledge is imperative and should include professional standards, guidelines, practice recommendations, and research evidence. The instructor's clinical practice background is beneficial in providing clinical scenarios that are realistic and promote retention of concepts that are useful in clinical practice. Furthermore, the instructor must possess the same attributes of the learner as listed in the previous section. Thus, the ideal teacher is one who can articulate and bring about clinical reasoning in his or her own self and in students.

A teaching style that incorporates Socratic questioning is ideal for developing clinical reasoning in the student. The questioning format stimulates clinical curiosity ("What would we expect in the patient when we see ____?"), and the process leads students to start thinking in the form of questions ("Why did this happen?"). The Socratic method also allows faculty and students to listen to each other's thinking processes and decision making (Oyler & Romanelli, 2014). When using Socratic questioning, the faculty member constructs questions purposefully to lead the student down a particular path of thinking. The process of moving through a scenario brings the student to outcomes the faculty wishes to reach. As the guide in this process, the faculty member redirects the student's thinking when needed, explores potential outcomes of the situation, challenges the student's clinical reasoning abilities by exploring options, and then discusses alternative actions. An example of this process appears in **Box 5-1**.

As can be seen in the example in Box 5-1, the student's clinical reasoning is not enhanced when the faculty member assumes control of the situation. Promoting clinical reasoning includes assessment, often through questioning, of the student's knowledge and potential knowledge gaps or misunderstandings. The instructor then can correct the student's thinking to bring about more accurate reasoning. Due to the nature of the clinical setting, the instructor, at times, may need to be more directive in the approach with the student. In another illustration, in the teaching example at the end of this chapter, it would be easier for the faculty

Box 5-1 Case Example: Guiding a Student in Clinical Reasoning

On a routine clinical day, it was time for the student to give his patient an insulin injection. The student and the instructor met in the medication room to review pertinent information prior to preparing the injection. The student had all the correct information and began to prepare the insulin injection. During the process of drawing up the medication, the student drew up the wrong dose of insulin—50 units of insulin instead of 5 units. The instructor remained calm and thought about how to point out the medication error to the student in such a way that the student could learn from the experience, accept constructive criticism, and not lose self-confidence.

The instructor gave the student the opportunity to recheck each step in the process, in hopes that the student would identify the medication error. Unfortunately, the student did not realize that he had prepared an incorrect dose. Using the Socratic method, the instructor began to ask the student questions concerning the medication in an effort to determine if a knowledge gap could be identified. If so, the instructor could provide additional direction and provide time for further review. Although the student knew the drug information, it became apparent that the student could not accurately read calibrations on a syringe. It was now time for the instructor to intervene. So, the instructor asked the student to identify where on the syringe the 5-unit mark was for the correct dose. The student pointed to the 50-unit mark. The instructor directed the student to the correct calibration on the syringe. The student immediately realized his mistake and corrected the medication dosage. The instructor discussed with the student the potential outcome if he had administered the wrong dosage. Working through the steps of the clinical reasoning model, this situation became an opportunity for the student to explore the potential negative consequences to the patient. He then administered the insulin injection correctly.

As a follow-up, the instructor referred the student to the clinical skills lab for remediation.

member to take action to correct the problem, but this does not promote the development of independent thinking and the student's clinical reasoning skills. Again, the role of faculty in developing clinical reasoning is to cultivate clinical reasoning in others.

Reflective practice serves as a basis for future action or as a guide in gaining understanding about an experience. Effective teachers can benefit from self-analysis through reflection prior to the teaching experience by asking such questions as "Where do I want them to demonstrate progress today?" "What are the clinical goals for the day?" "How can I promote clinical curiosity in my students?" "Is there anything about my teaching style that impedes the students?" Such self-reflection by teachers will lead to beneficial effects in students, in the form of development and enhancement of clinical reasoning.

Student Considerations That Promote Clinical Reasoning

An important condition that must be considered is that of student self-concept, which includes self-confidence. Learners who begin a program with limited self-concept or weak self-confidence lack the ability to trust their own judgment and feel good about their clinical decisions. Low self-confidence in a student often hinders initiation of care or projects to the patient and family a lack of competency. Thus, the patient may develop a lack of trust in the care provider, which jeopardizes

the patient–care provider relationship. To guide the student in overcoming a lack of confidence, the instructor approaches the learning situation in progressive steps. A first step can be to identify a simplistic hurdle that can easily be overcome. An example is talking a student through improving a psychomotor skill such as sterile procedure. Often students need reassurance that they have the knowledge and skill to perform safely in the clinical environment. To assist the student in developing his confidence, the clinical instructor can talk through the steps with the student prior to entering the patient room. Also, the instructor can role play the patient situation with the student, anticipating questions the patient may have while care is being provided.

The goal of the educational program is to create a student who thinks like a health professional. In the skills practice lab, students prepare for clinical practicums, yet once in the patient care setting do not see themselves as the legitimate care providers. They do see themselves as students in an academic setting; therefore, the faculty member must elevate the student's concept of self as a health professional. Research by Etheridge (2007) addressed experiences students identified as beneficial in both their clinical nursing judgment and their role in making these judgments. Students stated that multiple clinical experiences helped them to increase self-confidence and learn responsibility for decisions and care outcomes. Also, students stated that having the opportunity to discuss clinical care experiences with their peers was helpful in validating decisions and gaining further insight. Active discussion assisted the students in learning to trust themselves and their thinking while developing collaborative care. Furthermore, students expressed personal growth through the support of the clinical instructor and through interactions with supportive professional staff. This evidence points to the value of the personal presence of the clinical teacher during student patient care experiences. The teaching example at the end of this chapter explains how the instructor guides the student through clinical reasoning to solve a clinical problem.

■ Potential Problems

For the student to develop clinical reasoning abilities, the student must be motivated to learn and apply information in the academic and clinical arenas. Preparation such as reading and completion of other assignments is fundamental for knowledge application, and is essential in both the classroom and clinical settings. In fact, college students often do not read prior to class, but wait to see what important content is covered in class, and then read that information (Starcher & Proffitt, 2011). However, the basis for clinical reasoning is core knowledge essential to the professional field. In the ideal learning environment, where Socratic questioning, active discussion, and case scenarios are used, it is assumed that at the time of class the student possesses preliminary information related to the topic of the day. Based on this assumption, learning outcomes are achieved and the student is equipped to use the information as a foundation for clinical decisions and actions. Without this fundamental

information, the student will not be able to provide the appropriate level of care. Even though the faculty emphasizes the value of class preparation, the student may not appreciate this importance until after the first graded assignment. For those students who seek counseling after a failing grade, the instructor should explore time management and study strategies. If the student has been reading, the instructor can provide suggestions for more efficient reading. If the student has not been reading, the instructor can reiterate the benefit of reading and preparation.

In the clinical setting, the student who does not possess the fundamental information and skills will struggle with reasoned decisions necessary for safe and appropriate care. As can be seen in the example in Box 5-1, the unprepared student would not be able to move through the thought processes to arrive at the correct conclusions. A student who is unable to process the information and display clinical reasoning has the potential to jeopardize patient care and his or her own success in the clinical course. As the student gains more knowledge and skill and increases in confidence, she or he should increase in independence. If this is not occurring, the student will not employ clinical reasoning and the instructor will need to have a conference with the student to determine the obstacle(s) and develop a remediation plan.

Many students are successful in the didactic portions of their academic programs but are unable to demonstrate transfer of knowledge and concepts into the practice setting. Benner and colleagues (2010) indicate that this may be due to the type of teaching strategies employed. These strategies may be unidirectional, didactic, content-driven teacher-talk, with no opportunity for the students to manipulate and fully understand the information presented, much less apply it. Benner et al. further recommend that educators in health professions programs use strategies focused on the patient and care activities. Examples that can be found in this text include human patient simulation, case studies, and problem-based learning.

Educational programs must employ a continuous strategy that assesses a student's ability to transfer theoretical knowledge to the clinical practice. Part of this strategy should examine the learner's ability to overcome ethnocentrism and stereotypical thinking, because these limit the learner's ability to be open to clinical reasoning that is unbiased and patient centered. In a similar fashion, some students enter their professional program with a work-related background that influences their thinking. A typical example is a student who has been a paramedic and enters medical school. This student likely has preconceived notions about his or her chosen field of study and his or her personal abilities related to the practice. Likely this is a misdirected self-concept, in that the student sees himself or herself as competent and qualified to perform in the new clinical setting. The student may be competent in the previous field, yet not display clinical reasoning and skills appropriate in the new field. This can lead to overconfidence on the part of the student, which then leads to safety risks. It is the duty of the instructor to bring these erroneous notions to the student's attention and redirect his or her thinking.

Teaching Example: Clinical Reasoning in Practice

It was the first day of clinical practice for first-semester nursing students. The students were prepared with care plans in nervous hands. A hundred thoughts raced through their heads. “Is my care plan good enough?” “Will my patient like me?” “I just have to get through this first day safely!” In preconference, the instructor discussed the student assignment for the day, which was to assist their patients with activities of daily living (including bathing, toileting, and nutritional needs), as well as assessment of vital signs. As a part of the assignment, the instructor went with the students to each patient’s room to validate the students’ assessment of the vital signs.

In one instance, as they entered the room, the instructor scanned the room and quickly noted two safety issues. First, the IV pump was blocking easy access to the bathroom for the patient. Second, the bedside table holding the patient’s water, cell phone, and call light was across the room and out of the patient’s reach. Furthermore, the head of the hospital bed was pressed up against the wall, preventing easy access to the sphygmomanometer (blood pressure cuff) attached to the wall above the headboard.

The instructor knew she needed to guide the student in recognizing and correcting these safety issues. The first step was for the instructor to ask the student to take a mental snapshot of everything in the room; the instructor patiently waited while the student complied. Then the instructor asked, “What is wrong with this picture?” The student accurately identified the two safety issues and rectified them immediately.

Then she proceeded with her assessment of the vital signs, which was her next priority. During this time, the instructor wondered how this particular student would reach the blood pressure cuff. It was challenging in this situation because this student had dwarfism and had abnormally short arms and legs for her age. The student successfully measured the patient’s temperature, radial and apical pulse, and respirations. Then it was time to take the blood pressure. The student moved to reach the blood pressure cuff and was unable to reach the equipment. The student asked the instructor to please get the blood pressure cuff for her.

The instructor paused and thought about a correct response. The instructor recognized the unique teachable moment of this opportunity and acknowledged that the greatest benefit would be for the student to use clinical reasoning to solve the problem rather than seek assistance. The instructor said to the student, “As you move through your nursing career, you will have many challenges. You will need to solve this problem on your own without my assistance.” The student received this response positively and proceeded to discuss a solution with the instructor. The student’s first action was to find a step stool. Using the stool, the student still could not reach over the patient to retrieve the cuff. She then reasoned that she needed to move the bed. After having done so, she realized she could reach the cuff without the step stool. She then proceeded with the rest of her assessments and completed her clinical assignment.

In this actual scenario, the student approached the problem using a reliable fall-back method (step stool) that did not solve the problem in this new setting. Therefore, the student *recognized* that she needed to approach a challenge with a new way of thinking, which is the first step in clinical reasoning.

This student had success in this and subsequent clinical courses and graduated from the program.

■ Conclusion

Educators in the health professions are recognizing that successful patient outcomes call for more than critical thinking. Positive effects of patient care demand more than intellectual manipulation of content and critical analysis. The proficient healthcare provider fuses critical analysis with thoughtful, rational, and reflective deliberations. The healthcare professional faced with a clinical challenge must engage in clinical reasoning to process data from multiple sources, quickly synthesize the information to draw conclusions, and take action to bring about quality care. Teaching clinical reasoning calls for awareness of how students learn and think, and thus necessitates the use of a variety of teaching strategies. Effective teachers engage in self-reflection about their own teaching style, are willing to be flexible with students to accomplish learning on an individual basis, and are able to recognize and address barriers in the student that hinder clinical reasoning.

Discussion Questions

1. Discuss key strategies for application of the clinical reasoning model for the healthcare professional to your profession's designated decision-making tool.
2. Describe a personal clinical teaching experience that enhanced a student's clinical reasoning skills. Obtain feedback concerning your teaching experience with this student.
3. How would an instructor utilize the Socratic method in developing clinical reasoning skills in learners?

References

- American Association of Colleges of Nursing (AACN). (2008). *The essentials of baccalaureate education for professional nursing practice*. Washington, DC: AACN. Retrieved from <http://www.aacn.nche.edu/education/pdf/BaccEssentials08.pdf>
- Americans with Disabilities Act. (1990). Pub. L. No. 101-336, 42 U.S.C. § 12101.
- Atkinson, H. L., & Nixon-Cave, K. (2011). A tool for clinical reasoning and reflection using the International Classification of Functioning, Disability and Health (ICF) framework and patient management model. *Physical Therapy*, 91, 416–430.
- Benner, P., Sutphen, M., Leonard, V., & Day, L. (2010). *Educating nurses: A call for radical transformation*. Stanford, CA: Carnegie Foundation for the Advancement of Teaching.
- deWit, S. C., & O'Neill, P. A. (2014). *Fundamental concepts and skills for nursing* (4th ed.). St. Louis, MO: W.B. Saunders.
- Etheridge, S. (2007). Learning to think like a nurse: Stories from new nurse graduates. *Journal of Continuing Education in Nursing*, 38(1), 24–30.
- Institute of Medicine (IOM). (2003). *Health professions education: A bridge to quality*. Washington, DC: National Academies Press.
- Institute of Medicine (IOM). (2010). *The future of nursing: Leading change, advancing health*. Washington, DC: National Academies Press.
- Leahey, M., & Svavarsdottir, E. K. (2009). Implementing family nursing: How do we translate knowledge into clinical practice? *Journal of Family Nursing*, 15, 445–560.
- McNelis, A. M., & Ironside, P. M. (2009). National survey on clinical education in prelicensure nursing education programs. In N. Ard & T. M. Valiga (Eds.), *Clinical nursing education: Current reflections* (pp. 25–38). New York, NY: National League for Nursing.

- Nixon, J., Wolpaw, T., Schwartz, A., Duffy, B., Menk, J., & Bordage, G. (2014). SNAPPS-plus: An educational prescription for students to facilitate formulating and answering clinical questions. *Academic Medicine*, 89(8), 1174–1179. doi:10.1097/ACM.0000000000000362
- Oyler, D. R., & Romanelli, F. (2014). The fact of ignorance: Revisiting the Socratic method as a tool for teaching critical thinking. *American Journal of Pharmaceutical Education*, 78(7), 144.
- Starcher, K., & Proffitt, D. (2011). Encouraging students to read: What professors are (and aren't) doing about it. *Journal of Teaching and Learning in Higher Education*, 23, 396–407.
- Tanner, C. A. (2006). Thinking like a nurse: A research-based model of clinical judgment in nursing. *Journal of Nursing Education*, 45(6), 204–211.
- Wolpaw, T., Papp, K. K., & Bordaage, G. (2009). Using SNAPPS to facilitate the expression of clinical reasoning and uncertainties: A randomized comparison group trial. *Academic Medicine*, 84, 517–524.
- Worden, J. M., Hinton, C., & Fischer, K. W. (2011). What does the brain have to do with learning? *Phi Delta Kappan*, 92(8), 8–13.