



10 Critical Thinking and Clinical Reasoning

LEARNING OUTCOMES

After completing this chapter, you will be able to:

1. Describe the significance of developing critical thinking abilities in order to practice safe, effective, and professional nursing care.
2. Describe the actions of clinical reasoning in the implementation of the nursing process.
3. Discuss the attitudes and skills needed to develop critical thinking and clinical reasoning.
4. Describe the components of clinical reasoning.
5. Integrate strategies to enhance critical thinking and clinical reasoning as the provider of nursing care.
6. Describe the process of concept mapping to enhance critical thinking and clinical reasoning for the provision of nursing care.

KEY TERMS

clinical judgment, 147

clinical reasoning, 144

cognitive processes, 149

concept mapping, 151

creativity, 145

critical analysis, 145

critical thinking, 144

deductive reasoning, 146

inductive reasoning, 146

intuition, 147

metacognitive processes, 149

nursing process, 147

problem solving, 147

Socratic questioning, 146

trial and error, 147

INTRODUCTION

The term “thinking like a nurse” was introduced by Dr. Christine Tanner in 2006. To think like a nurse, critical thinking and clinical reasoning must be defined and understood. This chapter examines the influence of critical thinking and clinical reasoning on the care of clients. Both these terms describe the mental processes nurses use to ensure that they are doing their best thinking and decision making.

The practice of nursing requires critical thinking and clinical reasoning. **Critical thinking** is the process of intentional higher level thinking to define a client’s problem, examine the evidence-based practice in caring for the client, and make choices in the delivery of care. **Clinical reasoning** is the cognitive process that uses thinking strategies to gather and analyze client information, evaluate the relevance of the information, and decide on possible nursing actions to improve the client’s physiological and psychosocial outcomes. Clinical reasoning requires the integration of critical thinking in the identification of the most appropriate interventions that will improve the client’s condition. The concept of clinical reasoning “evolved from the application of decision-making to the health care professions” (Simmons, 2010, p. 1153). “Clinical reasoning also guides nurses in assessing, assimilating, retrieving, and/or discarding components of information that affect patient care” (p. 1151). Clinical reasoning is often defined in practice-based disciplines, such as nursing and medicine, as the “application of critical thinking to the clinical situation” (Victor-Chmil, 2013, p. 35).

PURPOSE OF CRITICAL THINKING

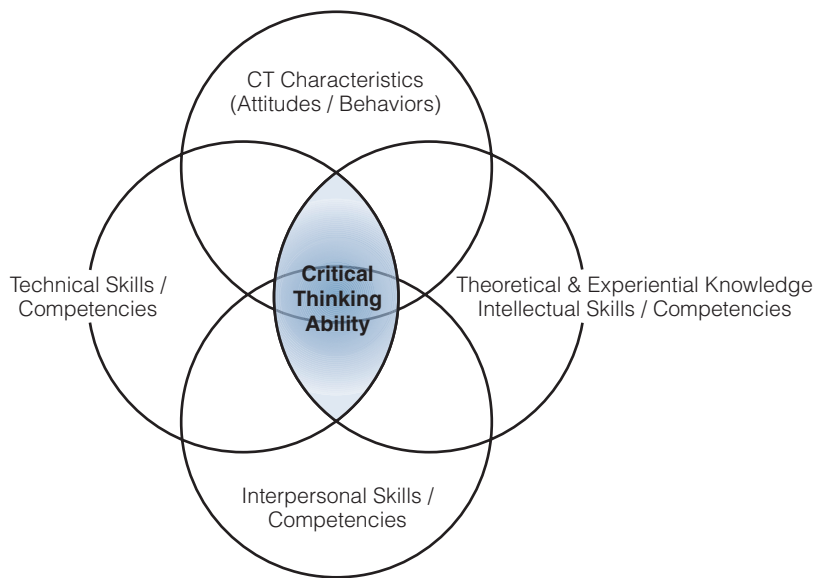
Critical thinking involves the differentiation of statements of fact, judgment, and opinion. The process of critical thinking requires the nurse to think creatively, use reflection, and engage in analytical thinking (Alfaro-LeFevre, 2013). Alfaro-LeFevre’s 4-Circle Critical

Thinking Model provides a visual representation of critical thinking abilities and promotes making meaningful connections between nursing research and critical thinking and practice (Figure 10–1 ■). Critical thinking is an essential skill needed for the identification of client problems and the implementation of interventions to promote effective care outcomes (Bittencourt & Crossetti, 2012). The process of providing feedback and reflection is vital to the improvement of nursing practice. A study by Asselin (2011) revealed that students who reflected on new knowledge developed new insights regarding practice. The insights nurses acquired led to changes in their approach to practice.

According to Scheffer and Rubenfeld (2010), critical thinking is a metaphorical bridge between information and action. Critical thinking in nursing involves habits of the mind and requires the implementation of cognitive skills. In 2000, Scheffer and Rubenfeld conducted a landmark study in which internationally diverse expert nurses from nine countries defined ten habits of the mind (affective components) and seven skills (cognitive components) of critical thinking in nursing. The ten affective components are confidence, contextual perspective, creativity, flexibility, inquisitiveness, intellectual integrity, intuition, open-mindedness, perseverance, and reflection. The seven skills are analyzing, applying standards, discriminating, information seeking, logical reasoning, predicting, and transforming knowledge. Lunney (2010) used the affective and cognitive components to demonstrate the use of critical thinking in the diagnostic process and the identification of an accurate nursing diagnosis. The study indicated that nurses need to utilize all 17 critical thinking concepts in the identification of nursing diagnoses.

Nurses use critical thinking skills in a variety of ways:

- **Nurses use knowledge from other subjects and fields.** Nurses use critical thinking skills when they reflect on knowledge derived



Starting at the top and going clockwise around the circles above, here's what you need to do to develop your ability to think critically.

1. Develop a critical thinking character. Hold yourself to high standards. Make a commitment to developing critical thinking characteristics such as; honesty, fair-mindedness, creativity, patience, and confidence.
2. Take responsibility and seek out learning experiences to help you get the theoretical and experiential knowledge to think critically. Practice intellectual skills such as assessing systematically and comprehensively. Just as practicing physical skills improves your ability to perform physically, practicing thinking skills improves your ability to perform intellectually.
3. Gain interpersonal skills such as teamwork, resolving conflict, and being an advocate. Keep in mind that "being too nice" problems (e.g., not giving constructive criticism because of concerns of not offending someone) can be as bad as "not being very nice" problems (e.g., demonstrating arrogance, sarcasm, and/or intolerance of other ways of doing things). Learn how to give and take feedback. To improve you must get through the negative aspects of criticism.
4. Practice related technical skills (e.g., using computers, managing IV's). Until these skills become like second natures, they create a "brain drain" making it difficult to focus on other important things such as monitoring patient responses to care.

Figure 10-1 ■ Alfaro-LeFevre's 4-Circle Critical Thinking Model.

Adapted with permission from *Critical Thinking Indicators (CTIs): 2014 Evidence-Based Version*, by R. Alfaro-LeFevre, 2014. Retrieved from <http://www.alfaroteachsmart.com/2014CTIrichJan.pdf>.

from other interdisciplinary subject areas such as the biophysical and behavioral sciences and the humanities in order to provide holistic nursing care. For example, when providing care to a client at the end of life, it is important to have knowledge of culture and religion to enhance the delivery of culturally sensitive care and enhance the client's spiritual well-being to promote a good death.

- **Nurses deal with change in stressful environments.** A client's condition may rapidly change and routine protocol may not be adequate to cover every unexpected situation. Critical thinking enables the nurse to recognize important cues, respond quickly, and adapt interventions to meet specific client needs at the right time. Box 10-1 lists some personal critical thinking indicators.
- **Nurses make important decisions.** Every day, and every moment during the day, nurses use critical thinking skills and clinical reasoning to make judgments about a client's care. For example, determining which observations must be reported to the primary

care provider immediately and which can be noted in the electronic medical record for later consultation with the primary care provider requires critical thinking. Also clients have different health needs simultaneously. For example, a client who is experiencing an acute asthma attack with air hunger will also experience anxiety. The nurse must administer a medication to improve breathing before addressing the client's anxiety.

Critical thinking cognitively fuels the intellectual artistic activity of creativity. When nurses incorporate creativity, they are able to find unique solutions to unique problems. **Creativity** is thinking that results in the development of new ideas and products. Creativity in problem solving and decision making is the ability to develop and implement new and better solutions for health care outcomes.

Creativity is required when the nurse encounters a new situation or a client situation in which traditional interventions are not effective. Creative thinkers must assess a problem and be knowledgeable about the underlying facts and principles that apply. An example would be a 4-year-old child who has sustained a severe burn and has been discharged from the hospital. The home care nurse has orders to soak and cleanse the wound in the bathtub. After arriving at the child's home, the nurse determines the family does not have hot water service due to an inability to pay the gas bill. The nurse warms water on the electric stove so the wound can be cleansed in the bathtub as ordered by the primary care provider. Next the nurse contacts the social worker to help the family obtain financial assistance so the gas bill can be paid and the hot water restored.

In this clinical scenario the nurse has utilized creativity by warming the water on the stove. The nurse has also utilized knowledge of the role the social worker plays in providing care to the child and family. The use of creativity provides the nurse with the ability to:

- Generate many ideas rapidly.
- Be generally flexible and natural; that is, able to change viewpoints or directions in thinking rapidly and easily.
- Create original solutions to problems.
- Be independent and self confident, even when under pressure.
- Demonstrate individuality.

TECHNIQUES IN CRITICAL THINKING

In addition to the ten affective and seven cognitive components of critical thinking, the nurse uses other techniques to ensure effective problem solving and decision making. These techniques include critical analysis, inductive and deductive reasoning, making valid inferences, differentiating facts from opinions, evaluating the credibility of information sources, clarifying concepts, and recognizing assumptions.

Critical analysis is the application of a set of questions to a particular situation or idea to determine essential information and

BOX 10-1 Personal Critical Thinking Indicators: Behaviors, Attitudes, and Characteristics

- *Self-aware*: Clarifies biases, inclinations, strengths, and limitations; acknowledges when thinking may be influenced by emotions or self-interest.
- *Genuine/authentic*: Shows true self; demonstrates behaviors that indicate stated values.
- *Effective communicator*: Listens well (shows deep understanding of others' thoughts, feelings, and circumstances); speaks and writes with clarity.
- *Health*: Promotes a healthy lifestyle; uses healthy behaviors to manage stress.
- *Careful and prudent*: Knows own limits—seeks help as needed; suspends or revises judgment as indicated by new or incomplete data.
- *Confident and resilient*: Expresses faith in ability to reason and learn; overcomes disappointments.
- *Honest and upright*: Seeks the truth, even if it sheds unwanted light; upholds standards; admits flaws in thinking.
- *Curious and inquisitive*: Looks for reasons, explanations, and meaning; seeks new information to broaden understanding.
- *Alert to context*: Looks for changes in circumstances that warrant a need to modify thinking or approaches.
- *Analytical and insightful*: Identifies relationships; expresses deep understanding.
- *Logical and intuitive*: Draws reasonable conclusions (if this is so, then it follows that . . . because . . .); uses intuition as a guide to search for evidence; acts on intuition only with knowledge of risks involved.
- *Open and fair-minded*: Shows tolerance for different viewpoints; questions how own viewpoints are influencing thinking.
- *Sensitive to diversity*: Expresses appreciation of human differences related to values, culture, personality, or learning style preferences; adapts to preferences when feasible.
- *Creative*: Offers alternative solutions and approaches; comes up with useful ideas.
- *Realistic and practical*: Admits when things are not feasible; looks for user-friendly solutions.
- *Reflective and self-corrective*: Carefully considers meaning of data and interpersonal interactions, asks for feedback; corrects own thinking, is alert to potential errors by self and others, finds ways to avoid future mistakes.
- *Proactive*: Anticipates consequences, plans ahead, acts on opportunities.
- *Courageous*: Stands up for beliefs, advocates for others, does not hide from challenges.
- *Patient and persistent*: Waits for the right moment; perseveres to achieve best results.
- *Flexible*: Changes approaches as needed to get the best results.
- *Empathetic*: Listens well; shows ability to imagine others' feelings and difficulties.
- *Improvement-oriented (self, patients, systems)*: Self—identifies learning needs; finds ways to overcome limitations, seeks out new knowledge. Patients—promotes health care systems; promotes safety, quality, satisfaction, and cost-containment.

From *Critical Thinking Indicators (CTIs): 2014 Evidence-Based Version* (p. 7), by R. Alfaro-LeFevre, 2014, Stuart, FL, p. 7. Reprinted with permission. Retrieved from <http://www.alfaroteachsmart.com/2014CTIrichJan.pdf>.

ideas and discard unimportant information and ideas. The questions are not sequential steps; rather they are a set of criteria for judging an idea. Not all questions will need to be applied to every situation, but one should be aware of all of the questions in order to choose those questions appropriate to a given situation.

Socrates was a Greek philosopher who developed the method of posing questions and seeking an answer. **Socratic questioning** is a technique one can use to look beneath the surface, recognize and examine assumptions, search for inconsistencies, examine multiple points of view, and differentiate what one knows from what one merely believes. Box 10-2 lists Socratic questions to use in critical analysis. Nurses should employ Socratic questioning when reporting about a client's condition and current status, reviewing a client's history and progress notes, and planning care.

Two other critical thinking skills are inductive and deductive reasoning. In **inductive reasoning**, generalizations are formed from a set of facts or observations. When viewed together, certain bits of information suggest a particular interpretation. Inductive reasoning moves from specific examples (premises) to a generalized conclusion—for example, after touching several hot flames (premise), we conclude that *all* flames are hot. A nurse who observes a client who has dry skin, poor turgor, sunken eyes, and dark amber urine and who is determined to be dehydrated (premise) concludes that the presence of those signs in other clients indicates that they are dehydrated.

Deductive reasoning, by contrast, is reasoning from general premise to the specific conclusion. If you begin with the premise

BOX 10-2 Socratic Questions**QUESTIONS ABOUT THE DECISION (OR PROBLEM)**

- Is this question clear, understandable, and correctly identified?
- Is this question important?
- Could this question be broken down into smaller parts?
- How might _____ state this question?

QUESTIONS ABOUT ASSUMPTIONS

- You seem to be assuming _____; is that so?
- What could you assume instead? Why?
- Does this assumption always hold true?

QUESTIONS ABOUT POINT OF VIEW

- You seem to be using the perspective of _____. Why?
- What would someone who disagrees with your perspective say?
- Can you see this any other way?

QUESTIONS ABOUT EVIDENCE AND REASONS

- What evidence do you have for that?
- Is there any reason to doubt the evidence?
- How do you know?
- What would change your mind?

QUESTIONS ABOUT IMPLICATIONS AND CONSEQUENCES

- What effect would that have?
- What is the probability that will actually happen?
- What are the alternatives?

TABLE 10–1 Differentiating Types of Statements

Statement	Description	Example
Facts	Can be verified through investigation	Blood pressure is affected by blood volume.
Inferences	Conclusions drawn from the facts; going beyond facts to make a statement about something not currently known	If blood volume is decreased (e.g., in hemorrhagic shock), the blood pressure will drop.
Judgments	Evaluation of facts or information that reflects values or other criteria; a type of opinion	It is harmful to the client's health if the blood pressure drops too low.
Opinions	Beliefs formed over time; include judgments that may fit facts or be erroneous	Nursing interventions can assist in maintaining the client's blood pressure within normal limits.

that the sum of the angles in any triangle is always 180 degrees, you can conclude that the sum of the angles in the triangle you happen to have is also 180 degrees. A nurse might start with a premise that all children love peanut butter sandwiches. Thus, if the nurse is trying to encourage a child to eat, then the nurse should offer the child a peanut butter sandwich. This is an example in which the premise is not always valid and, thus, the conclusion also may not be valid. Nurses use critical thinking to help analyze situations and establish which premises are valid.

In critical thinking, the nurse also differentiates statements of fact, inference, judgment, and opinion. Table 10–1 shows how these statements may be applied to nursing care. Evaluating the credibility of information sources is an important step in critical thinking. Unfortunately, we cannot always believe what we read or are told. The nurse must ascertain the accuracy of information by checking other documents or with other informants. Hence, the expanding need for evidence-based nursing practice. To comprehend a client situation clearly, the nurse and the client must agree on the meaning of terms. For example, if the client says to the nurse “I think I have a tumor,” the nurse needs to clarify what the word means to the client—the medical definition of a tumor (a solid mass) or the common lay meaning of cancer—before responding. People also live their lives under certain assumptions. Some people view humans as having a basically generous nature, whereas others believe that the human tendency is to act in their own best interest. The nurse may believe that life should be considered worth living no matter what the condition, whereas the client may believe that quality of life is more important than quantity of life. If the nurse and client recognize that they make choices based on these assumptions, they can still work together toward an acceptable plan of care. Difficulty arises when people do not take the time to consider what assumptions underlie their beliefs and actions.

APPLYING CRITICAL THINKING TO NURSING PRACTICE

When a nurse uses intentional thinking, a relationship develops among the knowledge, skills, and attitudes that are ascribed to critical thinking and clinical reasoning, the nursing process, and the problem-solving process.

Implementation of the nursing process provides nurses with a creative approach to thinking and doing to obtain, categorize, and analyze client data and plan actions that will meet the client's needs. The **nursing process** is a systematic, rational method of planning and providing individualized nursing care. It begins with assessment

of the client and use of clinical reasoning to identify client problems. The phases of the nursing process are assessing, diagnosing, planning, implementing, and evaluating. These phases are described in detail in Chapters 11 through 14 ∞.

Problem Solving

Problem solving is a mental activity in which a problem is identified that represents an unsteady state. It requires the nurse to obtain information that clarifies the nature of the problem and suggests possible solutions. Throughout the problem-solving process the implementation of critical thought may or may not be required in working toward a solution (Wilkinson, 2012). The nurse carefully evaluates the possible solutions and chooses the best one to implement. The situation is carefully monitored over time to ensure that its initial and continued effectiveness returns the client to a steady state. The nurse does not discard the other solutions, but holds them in reserve in the event that the first solution is not effective. Therefore, problem solving for one situation contributes to the nurse's body of knowledge for problem solving in similar situations. Commonly used approaches to problem solving include trial and error, intuition, and the research process.

TRIAL AND ERROR

One way to solve problems is through **trial and error**, in which a number of approaches are tried until a solution is found. However, without considering alternatives systematically, one cannot know why the solution works. The use of trial-and-error methods in nursing care can be dangerous because the client might suffer harm if an approach is inappropriate. However, nurses often use trial and error in the home setting due to logistics, equipment, and client lifestyle. For example, when teaching a client to perform a colostomy irrigation, a bent coat hanger hung on the shower curtain rod provides an appropriate height to perform the irrigation. In the hospital setting a lowered intravenous (IV) pole is more likely utilized.

INTUITION

Intuition is a problem-solving approach that relies on a nurse's inner sense. It is a legitimate aspect of a nursing judgment in the implementation of care (Wilkinson, 2012). Intuition is the understanding or learning of things without the conscious use of reasoning. It is also known as sixth sense, hunch, instinct, feeling, or suspicion. As a problem-solving approach, intuition is viewed by some people as a form of guessing and, as such, an inappropriate basis for nursing decisions. However, others view intuition as an essential and legitimate aspect of clinical judgment acquired through knowledge and experience. **Clinical judgment** in nursing is a decision-making process to

ascertain the right nursing action to be implemented at the appropriate time in the client's care. The nurse must first have the knowledge base necessary to practice in the clinical area and then use that knowledge in clinical practice. Clinical experience allows the nurse to recognize cues and patterns and begin to reach correct conclusions.

Experience is important in improving intuition because the rapidity of the judgment depends on the nurse having seen similar client situations many times before. Sometimes nurses use the words “I had a feeling” to describe the critical thinking element of considering evidence. These nurses are able to judge quickly which evidence is most important and to act on that limited evidence. Nurses in critical care often pay closer attention than usual to a client when they sense that the client's condition could change suddenly.

Although the intuitive method of problem solving is gaining recognition as part of nursing practice, it is not recommended for novices or students, because they usually lack the knowledge base and clinical experience on which to make a valid judgment.

RESEARCH PROCESS

The research process, discussed in Chapter 2 ∞, is a formalized, logical, systematic approach to problem solving. The classic quantitative research process is most useful when the researcher is working in a controlled situation. Health professionals, often working with people in uncontrolled situations, require a modified approach for solving problems. For example, unlike many experiments with animals in which the environment can be strictly regulated, the effects of diet on health in humans are complicated by a person's genetic variations, lifestyle, and personal preferences. However, it is becoming increasingly important for nurses to identify evidence that supports effective nursing care. One critical source of this evidence is research.

ATTITUDES THAT FOSTER CRITICAL THINKING

Certain attitudes are crucial to critical thinking. These attitudes are based on the assumption that a rational person is motivated to develop, learn, grow, and be concerned with what to do or believe. A critical thinker works to develop the following nine attitudes or traits: independence, fair-mindedness, insight, intellectual humility, intellectual courage, integrity, perseverance, confidence, and curiosity.

Independence

Critical thinking requires that individuals think for themselves. People acquire many beliefs as children, not necessarily based on reason but in order to have an explanation they comprehend. As they mature and acquire knowledge and experience, critical thinkers examine their beliefs in the light of new evidence. Critical thinkers consider seriously a wide range of ideas, learn from them, and then make their own judgments about them. Nurses are open-minded about considering different methods of performing technical skills—not just the single way they may have been taught in school. Nurses should not ignore what other people think, but they should consider a wide range of ideas, learn from them, and then take the time to build their own judgments (Wilkinson, 2012).

Fair-Mindedness

Critical thinkers are fair-minded and make impartial judgments. They assess all viewpoints with the same standards and do not base their judgments on personal or group bias or prejudice (Wilkinson,

2012). Fair-mindedness helps one to consider opposing points of view and to try to understand new ideas fully before rejecting or accepting them. Critical thinkers strive to be open to the possibility that new evidence could change their minds. The nurse listens to the opinions of all members of a family, young and old. Sometimes the traditional approach will emerge as the most effective strategy, whereas at other times a new and possibly unproven approach should be tried. In every case, the nurse must be able to provide the rationale for any action taken.

Insight into Egocentricity

Critical thinkers are open to the possibility that their personal biases or social pressures and customs could unduly affect their thinking. They actively try to examine their own biases and bring them to awareness each time they think or make a decision. By failing to reflect on personal biases, the nurse may reach inappropriate conclusions for the individual client. For example, a nurse spends extensive time teaching a client who is obese about nutrition and weight loss to prevent recurrence of back pain, but is mystified when the client appears uninterested and does not follow the nurse's advice. The nurse's bias of assuming that all clients will incorporate preventive care (just because the nurse would do this) resulted in an inaccurate assessment of the client's motivation; both the nurse's and the client's time was wasted. Possibly, the client's cultural views of weight are different from those of the nurse. Had the nurse assessed the client's background and beliefs about weight and collected sufficient evidence, the nurse might have identified a problem more relevant to the client's priorities and, thus, developed a better care plan.

Intellectual Humility

Intellectual humility means having an awareness of the limits of one's own knowledge. Critical thinkers are willing to admit what they do not know; they are willing to seek new information and to rethink their conclusions in light of new knowledge. They never assume that what everybody believes to be right will always be right, because new evidence may emerge. A hospital nurse might be unable to imagine how an older adult's wife will care for her husband who has recently had a stroke. However, the nurse also recognizes that it is not really possible to know what the couple can achieve.

Intellectual Courage to Challenge the Status Quo and Rituals

With an attitude of courage, a nurse is willing to consider and examine fairly his or her own ideas or views, especially those to which the nurse may have a strongly negative reaction. This type of courage comes from recognizing that beliefs are sometimes false or misleading. Values and beliefs are not always acquired rationally. Rational beliefs are those that have been examined and found to be supported by solid reasons and data. After such examination, it is inevitable that some beliefs previously held to be true will be found to contain questionable elements and that some truth will emerge from ideas considered dangerous or false. Courage is needed to be true to new thinking in such cases, especially if social penalties for nonconformity are severe. For example, many nurses previously believed that allowing family members to observe emergency procedures (such as cardiopulmonary resuscitation) would be psychologically harmful to the family and that members would get in the health care team's

way. Others felt that blanket exclusion of family members was unnecessary and extremely stressful for some of them. As a result, nurses initiated research that has demonstrated that family presence can be accomplished without detrimental effects to the nurse, the client, or the family. This is also an example of how evidence, rather than just tradition, guides our nursing practice.

Integrity

Intellectual integrity requires that individuals apply the same rigorous standards of proof to their own knowledge and beliefs as they apply to the knowledge and beliefs of others. Critical thinkers question their own knowledge and beliefs as quickly and thoroughly as they challenge those of another. They are readily able to admit and evaluate inconsistencies within their own beliefs and between their own beliefs and those of another. A nurse might believe that wound care always requires sterile technique. Reading a new article on the use and outcomes of clean technique for some wounds leads the critically thinking nurse to reconsider.

Perseverance

Because critical thinking is a lifelong endeavor, nurses who are critical thinkers show perseverance in finding effective solutions to client and nursing problems. This determination enables them to clarify concepts and sort out related issues, in spite of difficulties and frustrations. Confusion and frustration are uncomfortable, but critical thinkers resist the temptation to find a quick and easy answer. Important questions tend to be complex and confusing and therefore often require a great deal of thought and research to arrive at an answer. The nurse needs to continue to address the issue until it is resolved. For example, the nurses on a unit have tried to establish a policy for selected clients to leave the hospital on a pass rather than have to be discharged and readmitted in the same day. The need for involvement of nursing, medical, administrative, and accounting staff gradually generates solutions to obstacles. The development of the policy moves forward, although very slowly.

Confidence

Critical thinkers believe that well-reasoned thinking will lead to trustworthy conclusions. Therefore, they cultivate an attitude of confidence in the reasoning process and examine emotion-laden arguments using the standards for evaluating thought, by asking questions such as these: Is that argument fair? Is it based on sufficient evidence? Consider nurses attempting to determine the best way to allocate holiday time off for staff. Should they go by seniority, use random selection (lottery), give preference to those who have children, use “first-come, first-served,” or use another method?

The critical thinker develops skill in both inductive reasoning and deductive reasoning. As the nurse gains greater awareness of the thinking process and more experience in improving such thinking, confidence in the process will grow. This nurse will not be afraid of disagreement and indeed will be concerned when others agree too quickly. Such a nurse can serve as a role model to colleagues, inspiring and encouraging them to think critically as well.

Curiosity

The mind of a critical thinker is filled with questions: Why do we believe this? What causes that? Does it have to be this way? Could

something else work? What would happen if we did it another way? Who says that is so? The curious nurse may value tradition but is not afraid to examine traditions to be sure they are still valid. The nurse may, for example, apply these questions to the issue of moving responsibility for a procedure such as the drawing of arterial blood samples among the nursing, respiratory therapy, or laboratory department staff.

COMPONENTS OF CLINICAL REASONING

Clinical reasoning is the analysis of a clinical situation as it unfolds or develops. It requires the nurse to use cognitive and metacognitive processes. **Cognitive processes** are the thinking processes based on the knowledge of aspects of client care. Cognitive skills are learned through reading and applying health-related literature. Cognitive skills are enhanced through the use of critical thought to understand and apply content the nurse has previously learned. **Metacognitive processes** include reflective thinking and awareness of the skills learned by the nurse in caring for the client. The nurse reflects on the client's status, and through the use of critical thinking skills determines the most effective plan of care.

Benner, Sutphen, Leonard, and Day (2010) state that thinking like a nurse requires clinical reasoning (p. 85). They identify clinical reasoning as the ability to reason about a clinical situation as it unfolds (p. 46). It is important for the nurse to be “tuned in” to the client's experiences and concerns. As the client's condition changes, the nurse must assess the client and then identify the interventions that will lead to the improvement of the client's health-related outcomes. Changes in a client's condition can occur in an instant. It is the responsibility of the nurse to detect these changes, implement nursing assessments and interventions, notify members of the health care team, and evaluate the client's response. Benner et al. (2010) describe the components of clinical reasoning to include setting priorities, developing rationales, learning how to act, clinical reasoning-in-transition, and responding to changes in the client's condition. It is also important to reflect on the care provided and the client's response.

Setting Priorities

In the current nursing world, nurses have to think quickly to resolve problems. In the often fast-paced clinical environment, the nurse must know what assessments, tasks, requests, and concerns need to be completed first. Priority setting needs to be dynamic or flexible because the clinical environment can change quickly, requiring changes in priorities. Beginning nursing students often view everything as being of equal importance. They are often task oriented and focused on what needs to be done and not necessarily on what is most important. As they gain more clinical experience, they start to determine which data are most relevant and important to each client's situation. Most nursing programs require beginning students to complete preclinical preparation. This is a strategy to help them set their priorities based on information they gathered before the actual clinical experience. It is important for students to remember that, once they begin providing client care, the priorities they set in the preclinical preparation may change based on the *current* client situation. See Box 10–3 for examples of questions for nursing students to ask themselves before and during client care that will help increase their clinical reasoning abilities.

BOX 10-3 Questions to Develop Clinical Reasoning**QUESTIONS TO ASK BEFORE PROVIDING CLIENT CARE**

1. What clinical data from the client's chart is relevant and must be recognized as significant to the nurse?
2. What nursing priority will guide the plan of care?
3. What is the desired client outcome?
4. What nursing interventions will be initiated based on this priority and desired outcome?
5. How will the effectiveness of the nursing interventions be evaluated?
6. What assessment(s) will be focused on based on the client's primary problem or nursing care priority?

QUESTIONS TO ASK WHILE PROVIDING CLIENT CARE

7. What recently collected clinical assessment data are relevant and must be recognized as significant?
8. What relevant clinical assessment data need to be closely watched to detect a possible change in status?
9. What is the worst possible/most likely complication(s) to anticipate today with this client?
10. What nursing assessments need to be initiated to identify if this complication develops?

© 2014 Keith Rischer, RN, MA, CEN, CCRN/<http://www.keithrn.com/downloads/clinical-reasoning.questions-develop-nurse-thinking/>

Home Care Considerations Communication and Clinical Reasoning**TEAMWORK AND COLLABORATION**

- Interview the client in a nonthreatening, relaxing setting.
- Utilize the client's words when describing the chief complaint.
- Communicate with the family to gain insight into the changes in the client's condition.
- Inform the primary care provider of the client's physiological and psychosocial status.
- Consult with other health care team members to determine if they have experience with clients who have had

similar health problems whose conditions changed. Ask them what interventions were implemented and the outcome of care.

- If the client's status has not improved, consult with the health care team and continue to implement critical thinking strategies to address the client's health-related outcomes.

Developing Rationales

After assessing the data and determining what is relevant to the client's condition and concerns, the nurse identifies interventions and sets priorities for the most urgent needs (Benner et al., 2010). This is when the nurse transfers nursing knowledge to the clinical situation to justify the plan of care. Nursing students are often asked to explain the "why" of their priority setting and subsequent interventions. Being able to state the rationale, based on nursing knowledge, acts as a check for potential errors, justifies the nurse's actions, contributes to client safety, and helps the beginning nursing student learn how a nurse thinks in practice.

Learning How to Act

The nurse must know how and when to respond in a clinical situation by recognizing what is most urgent or significant. To take action, the nurse needs to understand the relevant medical and nursing information and translate this knowledge into a plan of care (Benner et al., 2010). An example is thinking about potential complications given the client's current problems. Applying this knowledge increases the nurse's ability to quickly identify assessment data that indicate a potential complication. Thus, the nurse can initiate nursing interventions or actions quickly because he or she prepared for the possibility. Avoiding potential complications promotes client safety.

Clinical Reasoning-in-Transition

It is important to realize that clinical situations are complex and always changing, especially given the acuity level of clients in today's hospital settings. Clinical reasoning-in-transition is the ability to recognize subtle changes in a client's condition over time. It includes the evaluation of nursing interventions and the trending of relevant assessment data. Nurses need to develop a sense of what is most important in each changing clinical situation and remember that the primary focus is on the client's well-being.

Responding to Changes in the Client's Condition

Nurses spend more time with clients than do other health care providers. As a result, an important aspect of nursing practice and the nurse's responsibility is to detect changes in the client's condition, recognize a change in priorities, adjust nursing care, and alert the primary care provider when appropriate.

Clinical reasoning involves an understanding and assessment of the client's relevant history and current condition and how it may be changing. By closely monitoring and comparing any changes from previous assessment data, the nurse is able to recognize a change in status that may prevent an adverse outcome.

Reflection

Reflection is a key to the success of clinical reasoning. Through reflection the nurse identifies factors that improved client care and those that required changing or elimination. It is important to reflect on whether the client was assessed accurately and in a timely manner. The nurse thinks back on the interventions implemented and whether they were effective. Most importantly, reflection includes information on the outcome of care. The nurse also reflects on previous clinical experiences similar to this one to determine if the outcomes of care improved the clients' conditions.

INTEGRATION OF CRITICAL THINKING AND CLINICAL REASONING

Nurses use critical thinking and clinical reasoning skills when making decisions about client care. The decision-making process includes prioritizing care not only with one client but when providing care to many clients. Nurses must make decisions and also assist clients to

make decisions. When faced with several client needs at the same time, the nurse must prioritize and decide which client to assist first.

In the home care setting, the nurse must decide if the client's condition can be managed in the home or requires hospitalization. The nurse must assess the ability of the caregiver and client to understand and follow all aspects of the health care teaching the nurse has provided.

The nurse must consider the client's cultural and religious background because both influence the outcomes of care. For example, in the Muslim religion, it is traditional for female relatives to care for a new baby, thus allowing the new mother time to rest. If the nurse fails to review cultural practices and insists that the new mother provide the parenting, then the nurse has not utilized critical thought in the process of clinical reasoning during the implementation of care.

Logical reasoning is a critical thinking skill that closely aligns with clinical reasoning. In the planning of care, nurses must question whether knowledge they possess about the care of the client is consistent with the most current evidence-based practice. The nurse must review the most current nursing and health-related literature prior to implementing care.

A nurse's ability to accurately implement and integrate critical thinking, clinical judgment, and clinical reasoning is enhanced with a commitment to lifelong learning. Andersson, Klang, and Petersson (2012) conducted a study of clinical reasoning in a pediatric facility. They found that experience and increased education or training were important in the development of professional competence and also enhanced clinical reasoning.

CONCEPT MAPPING

Concept mapping is a technique that uses a graphic depiction of nonlinear and linear relationships to represent critical thinking. Also known as *mind mapping*, concept maps are context dependent and can be used to develop analytical skills. The attributes of the concept are linked, making meaning of the concept they represent. Concept maps provide an opportunity to visualize things in your own way

(Alfaro-LeFevre, 2014). The concept map allows the nurse to map words on a page and focus on concepts and relationships. A general benefit of these maps is that they are quicker than note taking and highlight key ideas (Alfaro-LeFevre, 2014). This text contains more than a dozen concept maps that demonstrate care planning and physiological processes.

Concept Mapping and Enhancing Critical Thinking and Clinical Reasoning

Concept mapping provides nurses with a link between existing nursing knowledge and new information. This learning strategy enhances the critical thinking process and can assist the nursing student in understanding complex concepts (Chabeli, 2010). Concept maps foster the demonstration that nurses and health care providers have acquired the body of knowledge and understanding of concepts pertinent to the delivery of safe and effective care (Daley & Torre, 2010). Rather than address one single client problem, the concept map can incorporate multiple problems. This allows the nurse to demonstrate interrelationships among a client's problems and determine care based on the complexity of those problems (Billings & Halstead, 2012). Thus, concept mapping may be a valuable tool to improve critical thinking. Four basic types of maps are described in Box 10-4 and Figure 10-2 ■.

BOX 10-4 Types of Concept Maps

- Hierarchical maps—concept and attributes arranged in a hierarchical pattern and typically constructed in a descending order of importance. Relationships are identified between and among a concept and its attributes (see Figure 10-2A)
- Spider maps—depict the interrelatedness of the concept and its attributes in the map (see Figure 10-2B)
- Flowchart maps—linear diagrams demonstrating sequence or cause-and-effect relations (see Figure 10-2C)
- Systems maps—inputs and outputs illustrate relationships among the concept and its attributes (see Figure 10-2D)

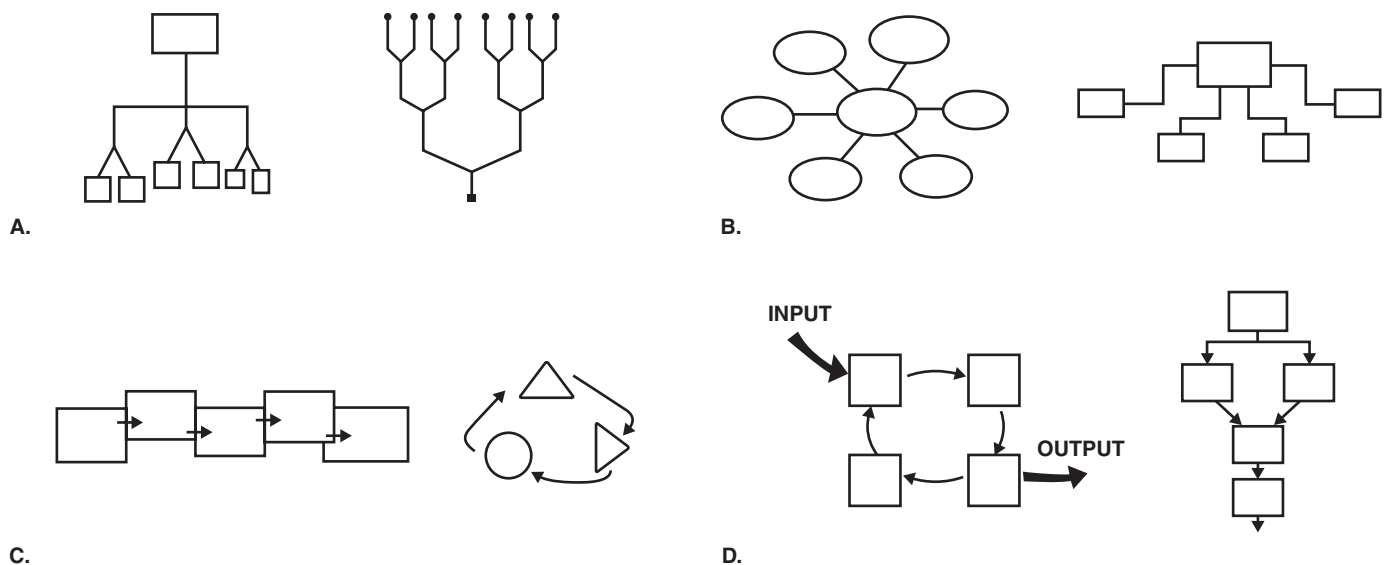


Figure 10-2 ■ Types of concept maps: A, hierarchical; B, spider; C, flowchart; D, systems.

Evidence-Based Practice How Does Clinical Reasoning Affect Client Safety in the Administration of Medications?

EVIDENCE-BASED PRACTICE

Dickson and Flynn (2012) conducted a study to understand nurses' experiences in preventing medication errors. The authors gathered the data for the study by visiting nurses in the hospitals where they were employed. They interviewed 50 medical–surgical nurses from 10 mid-Atlantic hospitals in the United States. The first research question was “What are the thoughts and actions hospital nurses use to identify medication errors and prevent them from reaching their clients?” The second question was “What factors in the environment have an impact on the medication safety care practices identified by hospital nurses?”

The researchers found that the nurses ensure client safety when administering medications by interacting with the client and the family. The nurses acknowledged that it was crucial for them to administer the right drug, to the right client, in the right dose, at the right


time, and via the right route. However, they felt that safe medication administration practices did not end with the five rights. The nurses stated that they needed to analyze the data from evidence-based practice articles and engage in clinical reasoning to administer medications safely. They also revealed that they experience strong and lasting emotions after making a medication error.

IMPLICATIONS

When administering medications to clients, nurses must ensure client safety by taking the time to understand the medication effects and maintaining a quiet zone while medications are administered. They must also utilize clinical reasoning to advocate for the client and coordinate care with health care providers, experienced nurses, and other members of the health care team.

LIFESPAN CONSIDERATIONS Health Care Decisions

CHILDREN

Parents most often make decisions about the health care of children. Growing children, however, can participate in those decisions in age-appropriate ways. As described by Piaget, the ability of children to reason and think critically about themselves and their situation develops gradually (see Chapter 20 ). At each stage, nurses should be aware of the ways children think and be sensitive to how they can be involved in health care decisions:

- Infants progress from reflexive behavior to simple, repetitive behavior and then to imitative behaviors, learning the concepts of cause and effect and object permanence. Though not involved in making decisions, they need to be comforted and secure as care is given.
- Toddlers and preschoolers are very egocentric and engage in magical thinking. They cannot reason out the implications of care, but need explanations in language they can understand. Play therapy and use of dolls and toys can help them adjust to care, and they can sometimes be given options (e.g., do you want your dressing changed before breakfast or after?).
- School-age children tend to be concrete thinkers. They benefit from simple, direct explanations; hands-on exploration of equipment and materials; and helping the care provider as

appropriate during procedures. Involving these children in care can increase cooperation and decrease anxiety.

- Adolescents are increasingly able to think abstractly and may make many of their own health care decisions. They should be actively consulted as a part of the family system.

OLDER ADULTS

It is important to include all adult clients in decision making and planning nursing care, but it is especially difficult to do this when working with older adults who have impaired cognitive abilities as is seen with, for example, Alzheimer's disease. The nurse should allow them as much control and input as possible, keeping things simple and direct so they understand. Older adults with impairments are usually unable to perform multiple tasks or even to think of more than one step at a time. The nurse must have patience and be willing to calmly repeat instructions if necessary. Presenting and discussing issues in basic terms helps to maintain respect and dignity and allows older adults to participate in their own care for as long as possible. If the older adult is unable to perform self-care activities such as bathing or health-related activities such as a dressing change, the nurse should seek appropriate alternative methods for assisting the older adult with these.



Critical Thinking Checkpoint

Mr. W. is a 63-year-old recently retired engineer with a history of irritable bowel syndrome that causes frequent diarrhea and rectal bleeding. His wife is a schoolteacher. In mid-December he comes to the acute care clinic complaining about “not feeling good.” You conclude he is having a recurrence of his intestinal problem.

1. What questions would you ask yourself to check this assumption?
2. How would you demonstrate that you are using the critical thinking attitude of “confidence in reasoning”?

3. Socrates might ask you about the consequences of your conclusion by posing the question “What are the implications of your thinking?” How would you answer? Consider the implications if you are correct and if you are incorrect in your assumption.
4. Critical thinkers look for subtle cues. Which cues in this situation require follow-up?

See Critical Thinking Possibilities on student resource website.

Chapter 10 Review

CHAPTER HIGHLIGHTS

- Nurses need critical thinking skills and attitudes to be safe, competent, skillful practitioners.
- Nurses use clinical reasoning skills to assess each client's condition and identify interventions that improve clients' physiological and psychosocial outcomes.
- Creativity enhances critical thinking. Creative nurses generate many ideas rapidly, are flexible and natural, create original solutions to problems, tend to be independent and self-confident, and demonstrate individuality.
- Critical thinking skills include the ability to do critical analysis, perform inductive and deductive reasoning, make valid inferences, differentiate facts and opinions, evaluate the credibility of information sources, clarify concepts, and recognize assumptions.
- Critical thinkers have certain attitudes: independence, fair-mindedness, insight, intellectual humility, intellectual courage to challenge the status quo and rituals, integrity, perseverance, confidence, and curiosity.
- Nurses utilize cognitive processes in clinical reasoning, and their thinking is based on the knowledge of the aspects of client care.
- Nurses also utilize metacognitive processes in clinical reasoning through the knowledge they gain in the care of clients.
- Clinical reasoning-in-transition is the ability to recognize subtle changes in a client's condition over time.
- Reflection is the identification of factors that improve client's care.

TEST YOUR KNOWLEDGE

1. A client with diarrhea also has a primary care provider's order for a bulk laxative daily. The nurse, not realizing that bulk laxatives can help solidify certain types of diarrhea, concludes, "The primary care provider does not know the client has diarrhea." What type of statement is this?
 1. A fact
 2. An inference
 3. A judgment
 4. An opinion
2. A client reports feeling hungry, but does not eat when food is served. Using clinical reasoning skills, the nurse should perform which of the following?
 1. Assess why the client is not ingesting the food provided.
 2. Continue to leave the food at the bedside until the client is hungry enough to eat.
 3. Notify the primary care provider that tube feeding may be indicated soon.
 4. Believe the client is not really hungry.
3. A client complains of shortness of breath. During assessment the nurse observes that the client has edema of the left leg only. The nurse reviews evidence-based practice literature and reflects on a previous client with the same clinical manifestations. What do these actions represent?
 1. Clinical judgment
 2. Clinical reasoning
 3. Reflection
 4. Intuition
4. The client who is short of breath benefits from the head of the bed being elevated. Because this position can result in skin breakdown in the sacral area, the nurse decides to study the amount of sacral pressure occurring in other positions. What decision making is the nurse engaging in?
 1. The research method
 2. The trial-and-error method
 3. Intuition
 4. The nursing process
5. In the clinical reasoning process, the nurse sets and weighs the criteria, examines alternatives, and performs which of the following before implementing a plan?
 1. Reexamines the purpose for making the decision.
 2. Consults the client and family members to determine their view of the criteria.
 3. Identifies and considers various means for reaching the outcomes.
 4. Determines the logical course of action should intervening problems arise.
6. The nurse is concerned about a client who begins to breathe very rapidly. Which action by the nurse reflects clinical reasoning?
 1. Notify the primary care provider.
 2. Obtain vital signs and oxygen saturation.
 3. Request a chest x-ray.
 4. Call the rapid response team.
7. The nurse is teaching a client about wound care during a follow-up visit in the client's home. Which critical thinking attitude causes the nurse to reconsider the plan and supports evidence-based practice when the client states, "I just don't know how I can afford these dressings"?
 1. Integrity
 2. Intellectual humility
 3. Confidence
 4. Independence
8. When the nurse considers that a client is from a developing country and may have a positive tuberculosis test due to a prior vaccination, which critical thinking attitude and skill is the nurse practicing?
 1. Creating environments that support critical thinking
 2. Tolerating dissonance and ambiguity
 3. Self-assessment
 4. Seeking situations where good thinking is practiced

9. A client in a cardiac rehabilitation program says to the nurse, "I have to eat a low-sodium diet for the rest of my life, and I hate it!" Which is the most appropriate response by the nurse?
1. "I will get a dietary consult to talk to you before next week."
 2. "What do you think is so difficult about following a low-sodium diet?"
 3. "At least you survived a heart attack and are able to return to work."
 4. "You may not need to follow a low-sodium diet for as long as you think."
10. Which reasoning process describes the nurse's actions when the nurse evaluates possible solutions for care of an infected wound for optimal client outcomes?
1. Intuition
 2. Research process
 3. Trial and error
 4. Problem solving

See Answers to Test Your Knowledge in Appendix A.

READINGS AND REFERENCES

Suggested Reading

Deschenes, M., Charlin, B., Gagnon, R., & Goudreau, J. (2011). Use of a script concordance test to assess development of clinical reasoning in nursing students. *Journal of Nursing Education, 50*(7), 381–387. doi:10.3928/0148434-10110331-
In response to the lack of evidence for assessing and measuring the clinical reasoning skills of nurses, the authors developed a script concordance test. This test is an examination of prototypical clinical practice situations that possess ambiguous, complex, and incomplete information. The scoring of the instrument is based on the responses of 15 expert panelists. Thirty first-year nursing students completed the test. The students' responses are compared to the responses of the expert panel. The study revealed that script concordance tests allow educators to assess the quality of students' organization of knowledge. They also evaluate students' ability to make appropriate decisions related to nursing interventions and professional practice.

Related Research

Fossum, M., Alexander, G. L., Goransson, K. E., Ehnfors, M., & Ehrenberg, A. (2011). Registered nurses' thinking strategies on malnutrition and pressure ulcers in nursing homes: A scenario-based think-aloud study. *Journal of Clinical Nursing, 20*, 2425–2435. doi:10.1111/j.1365-2702.2010.03578.x

Lapkin, S., & Levett-Jones, T. (2011). A cost-utility analysis of medium versus high-fidelity human patient simulation manikins in nursing education. *Journal of Clinical Nursing, 20*, 3543–3552. doi:10.1111/j.1365-2702.2011.03843.x

References

Alfaro-LeFevre, R. (2013). *Critical thinking and clinical judgment: A practical approach to outcome-focused thinking* (5th ed.). Philadelphia, PA: W. B. Saunders Elsevier.

Alfaro-LeFevre, R. (2014). *Critical thinking indicators (CTIs): 2014 evidence-based version*. Retrieved from <http://www.alfaroteachsmart.com/2014CTIrichJan.pdf>

Andersson, N., Klang, B., & Petersson, G. (2012). Differences in clinical reasoning among nurses working in highly specialised paediatric care. *Journal of Clinical Nursing, 21*, 870–879. doi:10.1111/j.1365-2702.2011.03935.x

Asselin, M. E. (2011). Using reflection strategies to link course knowledge to clinical practice: The RN-to-BSN student experience. *Journal of Nursing Education, 50*, 125–132. doi:10.3928/0148434-20101230-08

Benner, P., Sutphen, M., Leonard, V., & Day, L. (2010). *Educating nurses: A call for radical transformation*. San Francisco, CA: Jossey-Bass.

Billings, D., & Halstead, J. (2012). *Teaching in nursing* (4th ed.). St. Louis, MO: Elsevier.

Bittencourt, K., & Crosetti, M. (2012). Theoretical model of critical thinking in diagnostic processes in nursing. *Online Brazilian Journal of Nursing, 11*(2), 563–567.

Chabeli, M. M. (2010). Concept-mapping as a teaching method to facilitate critical thinking in nursing education: A review of the literature. *Health SA Gesondheid, 15*(1), 1–7.

Daley, B. J., & Torre, D. M. (2010). Concept maps in medical education: An analytical literature review. *Medical Education, 44*, 440–448. doi:10.1111/j.1365-2923.2010.03628.x

Dickson, G. L., & Flynn, L. (2013). Nurses' clinical reasoning: Processes and practices of medication safety. *Qualitative Health Research, 22*, 3–16. doi:10.1177/1049732311420448

Lunney, M. (2010). Use of critical thinking in the diagnostic process. *International Journal of Nursing Terminologies and Classifications, 21*, 82–88. doi:10.1111/j.1744-618X.2010.01150.x

Scheffer, B., & Rubenfeld, M. (2000). A consensus statement on critical thinking in nursing. *Journal of Nursing Education, 39*, 352–359.

Scheffer, B., & Rubenfeld, M. G. (2010). *Critical thinking TACTICS for nurses*. Boston, MA: Jones & Bartlett.

Simmons, B. (2010). Clinical reasoning: Concept analysis. *Journal of Advanced Nursing, 66*(5), 1151–1158. doi:10.1111/j.1365-2648.2010.05262.x

Tanner, C. A. (2006). Thinking like a nurse: A research-based model of clinical judgment in nursing. *Journal of Nursing Education, 45*, 204–211.

Victor-Chmil, J. (2013). Critical thinking versus clinical reasoning versus clinical judgment, differential diagnosis. *Nurse Educator, 38*(1), 34–36. doi:10.1097/NNE.0b013e318276dfbe

Wilkinson, J. M. (2012). *Nursing process and critical thinking* (5th ed.). Upper Saddle River, NJ: Pearson.

Selected Bibliography

Beyer, D. A. (2011). Reverse case study: To think like a nurse. *Journal of Nursing Education, 50*(1), 48–50. doi:10.3928/0148434-20101029-06

Chang, M. J., Chang, Y.-J., Kuo, S.-H., Yang, Y.-H., & Chou, F.-H. (2011). Relationships between critical thinking ability and nursing competence in clinical nurses. *Journal of Clinical Nursing, 20*, 3224–3232. doi:10.1111/j.1365-2702.2010.03593.x

Krupat, E., Sprague, J. M., Wolpaw, D., Haidet, P., Hatem, D., & O'Brien, B. (2011). Thinking critically about critical thinking: Ability, disposition, or both? *Medical Education, 45*, 625–635. doi:10.1111/j.1365-2923.2010.03910.x

Lewis, R., Strachan, A., & McKenzie-Smith, M. (2012). Is high fidelity simulation the most effective method for the development of non-technical skills in nursing? A review of current evidence. *The Open Nursing Journal, 6*, 82–89. doi:10.2174/1874434601206010082

Noonan, P. (2011). Using concept maps in perioperative education. *Association of Operating Room Nurses Journal, 94*, 469–478. doi:10.1016/j.aorn.2011.02.013

Thompson, C., & Stapley, S. (2011). Do educational interventions improve nurses' clinical decision making and judgment? A systematic review. *International Journal of Nursing Studies, 48*, 881–893. doi:10.1016/j.ijnurstu.2010.12.005

Wotton, K., Davis, J., Button, D., & Kelton, M. (2010). Third-year undergraduate nursing students' perceptions of high-fidelity simulation. *Journal of Nursing Education, 49*, 632–639. doi:10.3928/0148434-20100831-01