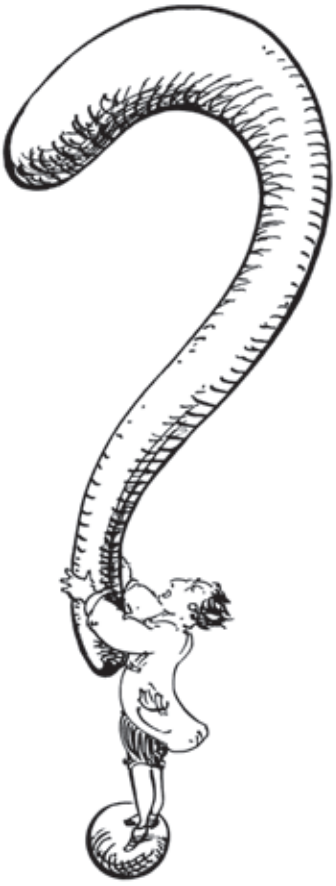
CHAPTER 2

What Is Critical Thinking?



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To emphasize the importance of this chapter's title question, we will pose some challenges for you. Consider how you would respond to these requests:

- Describe the thinking you use as a nurse.
- Improve your critical thinking.
- Tell us what critical thinking is.
- Explain how critical thinking is supposed to be practiced in nursing.

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We would venture to guess that even though you consider yourself a good critical thinker, you'd be hard pressed to provide quick, simple responses. And, if you were then asked to describe how you became a nurse who thinks critically, it might be even more challenging. Don't be concerned: first, you're not alone; and second, that's what this text is designed to help you do—respond to requests such as those just mentioned.

Most people have difficulty describing their thinking processes, even expert clinicians and faculty who teach critical thinking (CT). That's not because they aren't good thinkers; it's just that, until recently, few people asked each other about their thinking, and we simply haven't developed a vocabulary to describe such heady things. When asked to describe their thinking, many people pause and say, "I just do!" When they are pressed to elaborate, you may get a variety of emotional responses. Many people will act frustrated because the request is unusual, they don't have ready answers, and they're too busy to think about it anyway.

If they're really frustrated, they might respond, "Why is it even important to try to describe thinking? Aren't actions more important in the big scheme of things?" The answer is yes, but actions are only as good as their appropriateness to the problem or condition that prompted the action. In today's healthcare arena, those conditions change constantly. What you did yesterday might not work tomorrow or even an hour from now. You must keep abreast of new information and changing patient data and consistently make those things work together. And new information is being discovered and refined daily, if not hourly.

So what is a nurse to do? There's all this existing information, there's a constant flow of new information, and then there's the need to turn it all into working knowledge so you can provide safe, effective, efficient nursing actions. You need to bridge the gap between the ever-growing information and the actions it requires. You need a series of steps or a process to convert information into knowledge. Finally, you must translate that knowledge, which is very abstract, into practice actions, which are very concrete. That transition works best if you can recognize those steps or processes; otherwise, you are less likely to arrive at predictable and consistently successful actions.

We can't all be like Indiana Jones in the movie *Indiana Jones and the Last Crusade* (Lucas et al., 1989). He stepped off into the chasm as a leap of faith. After he found himself on firm footing, he threw pebbles back to define the bridge that was camouflaged by its surroundings. Think of CT as that bridge. We will provide some pebbles ahead of time; once you see that CT bridge, your mind will more easily transform information into knowledge, and that knowledge, albeit abstract, will be the basis of the best workable course of action. We're hoping your curiosity is so stimulated that you are bursting to learn the details that we alluded to when we used the term *CT*.

The Critical Thinking "Bridge"

CT is the metaphorical bridge between information and action, but what are those pebbles for? They're going to do for you exactly what they did for Indiana Jones: they're going to turn something that is invisible from one perspective into something visible from a new perspective. But first it might be helpful to look at the three reasons why the bridge (CT) is invisible in the first place. Reason Number 1: CT is

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intangible; you can't study it under a microscope, hold it, smell it, or examine it for a pulse. Reason Number 2: CT is very individual—no two people think in the same way, nor do they broadcast their thoughts, so it's impossible to learn how to think critically by watching only actions. Reason Number 3: CT requires effort. Many of us assume CT will just happen over time as we gain knowledge and experience, so we just wait and don't worry about it. This may have worked in the past, but time is a luxury these days. We need to use CT today, not tomorrow.

So how can you start to see this previously invisible CT? Can you do it without pebbles? To some extent, yes, you probably can. For example, think about the opposite of CT. We'll bet you can easily identify people who don't use CT. What do they do? Now think of a nurse you consider to be a great thinker. She's the person you want to work with, especially if you're a novice. If something new comes up, she's the one who can figure out how to deal with it. She's creative, open-minded, logical. Now, with this positive image, the next question is, Can you learn to get to that expert level of thinking? How, and how quickly? Can you help other nurses get there too? The good news is yes, you can. However, this is where the pebbles come in. The pebbles are the three tools that will make the process of becoming a great CT nurse easier.

Pebbles on the Metaphorical Bridge

First, you need to be clear on just what CT in nursing is—for that, you need a definition. Second, you need to know how to describe what it looks like, using words to elaborate on the definition. Both of these tasks require a vocabulary. Once you can use specific words to describe your thinking processes, you can more easily discover what you're good at and where you need to improve. With a definition and words, you can also help others identify, describe, and improve their critical thinking. Third, you will need to visualize what CT words look like in action, particularly as CT is practiced in nursing. Addressing these three points—a definition, a vocabulary, and translating words to actions—will help us figure out the *what* of CT.

Pebble #1: Defining CT

Let's start by tackling the issue of defining and describing CT in nursing. We can't do justice to that task without some contextual and historical perspective. There are many descriptions of critical thinking in the literature; however, because many of those definitions are borrowed from other disciplines, they vary in terms of usefulness to nursing. Let's focus on the historical context of CT so you can appreciate how essential this concept is to us, our patients, our students, and our society.[1]

[1] With our apologies to the historians and philosophers in our audience who are already aware of this history, we will give only a quick overview of CT's philosophical roots. For those of you who yearn for more, check out some philosophy books or go to this website, which we used for much of the information in this section: http://www.philosophypages.com (Kemerling, 2001). Being Westerners, we will also apologize to other cultures, such as those from Asia, whose CT roots could be traced, for example, to the teachings of Lao Tzu and Confucius.

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For those of you who find descriptions of history a bit boring, we've inserted a box of highlights in the historical evolution of CT (see **Box 2-1**).

Box 2-1 Tracking the Historical Evolution of CT

5th century BC	Pre-Socrates
Early 4th century BC	Socrates and the Socratic method of answering questions with questions
Mid-4th century BC	Plato and Aristotle
16th–17th century AD	Sir Francis Bacon and systematic study
Early 17th century AD	Descartes and systematic doubt
18th century	Immanuel Kant's *Critique of Pure Reason*
Early to mid-20th century	John Dewey: Thinking as part of human nature
Mid-20th century	Jean Piaget encouraged openness to multiple points of view
1986 and 1984	Dreyfus and Dreyfus *Mind over Machine* and Benner *From Novice to Expert*
1990s	Higher order thinking skills in the K–12 education system
1990	APA Delphi Study to define critical thinking
1990s	Postsecondary education and nursing, healthcare delivery
2000	Nursing Delphi Study (Scheffer & Rubenfeld)

In Western history, CT can be traced back to Socrates and his Socratic method, or answering questions with questions. Actually, Socrates emphasized deep questioning of ideas that were accepted as fact but that may simply have been beliefs. For example, everyone then believed that the earth was flat, but this did not make it a fact. Later, Plato and Aristotle expanded on Socrates's ideas to emphasize that things are not always what they seem and that sound reasoning takes into account objections to accepted ideas. During the Renaissance, Francis Bacon focused on empirical information gathering, establishing our modern research standards of systematic study. That empirical, or fact, base was important to overcome the natural biases that our minds use to understand our world and our place in it. René Descartes promoted systematic doubt: all thinking should be questioned and tested. (It may be comforting to those who spend lots of time thinking about thinking that Descartes acknowledged our existence as thinking beings to be the most factual thing to know. Even if we doubt that anything else exists, we must exist to do the doubting. Now, think about that!) In the 18th century, Immanuel Kant's *Critique of Pure Reason*

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examined the conundrum of using principles for thinking that cannot be empirically tested. Consider this statement: We are "burdened by questions … prescribed by … reason itself … [which we] are not able to ignore, but which … [we are] also not able to answer" (Kant, 1787/1965, p. 7).

John Dewey, the often-cited CT promoter in educational circles, took CT into the 20th century with his pragmatic view of thought as part of human behavior. And Jean Piaget, cautioning about the dangers of egocentric and sociocentric characteristics of human thought, emphasized the need to be open to multiple points of view. In the 1980s, the aviation industry began designing strategies to help pilots progress from novice to expert levels more quickly (Dreyfus & Dreyfus, 1986). That industry was very interested in the CT of human pilots because an aircraft's autopilot could not be programmed to react to all the dynamic events that occur when taking off, flying, and landing an airplane. As advanced as artificial intelligence is, it cannot yet replace the human thinking required in emergency situations. Patricia Benner (1984), a well-known nursing theorist, collaborated with Dreyfus and Dreyfus in the development of her Novice to Expert Model of nursing care. It is not surprising that the aviation industry and professional nursing are equally concerned about critical thinking—both deal with split-second decision making to keep people safe.

Thinking, how the brain works, and how learning takes place became dominant themes in education in Western society in the early 1980s (Hart, 1983). Initially, the focus was on teaching CT in kindergarten through grade 12, with books such as *Developing Minds: A Resource Book for Teaching Thinking* (Costa, 1985). In the early 1990s, the movement to improve thinking spread to postsecondary education. Assessment of all students' CT skills is now part of college and university accreditation standards in the United States. For example, criterion 4 of the Higher Learning Commission's Institutional Accreditation Guidelines (2010) cited the importance of "fostering and supporting inquiry, creativity, practice, and social responsibility" (p. 6).

Since the 1990s, critical thinking has become a focus in nursing and nursing education. The American Association of Colleges of Nursing's *Essentials of Baccalaureate Education for Professional Nursing Practice* (2008) lists the use of clinical/critical reasoning as one of its assumptions for a baccalaureate generalist graduate, and its accreditation arm—the Commission on Collegiate Nursing Education (CCNE)—required nursing programs to address all the components in the essentials document, including CT (Commission on Collegiate Nursing Education, 2013). The American Nurses Association also emphasized CT in its *Nursing: Scope and Standards of Practice* (2010). The language of CT is addressed in the association's scope statement and is incorporated throughout all the standards.

Outside of healthcare clinical settings, a seminal work by the American Philosophical Association (APA), under the direction of Facione (1990), defined CT using a Delphi method to survey academicians. Philosophers composed roughly half of his 46-member panel; others were from fields such as education, physics, computer science, and psychology. They arrived at this consensus statement: "We understand

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critical thinking to be purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which judgment is based" (p. 2). This definition of CT has been used extensively in nursing but, because no nurses or healthcare providers participated in the APA study, there is some question as to whether its findings are the best fit for nursing.

Because of the growing need for CT in nursing, some practitioners found it necessary to develop nursing-specific conceptualizations of CT so we could teach it better (e.g., Rubenfeld & Scheffer, 1999). In recent years, nurses have used research to describe CT and its components so that we have stronger evidence of CT in our profession. Of note is Fonteyn's work to describe thinking strategies for nursing practice (1998). Using a "think aloud" method, Fonteyn and her team studied 14 expert registered nurses from a variety of specialty areas. Twelve predominant thinking strategies were identified (see **Box 2-2**).

Following a method similar to that used by Facione for the APA, we conducted a comprehensive study to find consensus on a description of critical thinking in nursing in the mid-1990s (Scheffer & Rubenfeld, 2000). In this three-year study, we also employed a Delphi method to gain consensus from a geographically dispersed group of expert nurses through successive rounds of questions, answers, data analysis, and voting (Goodman, 1987). Our panel of 55 expert nurses was culled from practice, education, and research settings and from nine countries and 23 U.S. states. During five rounds of questions and responses, we identified and defined 10 habits of the mind and 7 cognitive skills of critical thinking in nursing.

Box 2-2 Thinking Strategies of Expert Registered Nurses

- Recognizing a pattern
- Setting priorities
- Searching for information
- Generating hypotheses
- Making predictions
- Forming relationships
- Stating a proposition
- Asserting a practice rule
- Making choices
- Judging the value
- Drawing conclusions
- Providing explanations

Source: Fonteyn, 1998.

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We started our consensus rounds with a broad question: What are the skills and habits of the mind of critical thinking in nursing? Our choice of words was deliberate; we wanted to get at not only the cognitive skills, but the affective component as well. Numerous authors (e.g., Tanner, 1997) have identified the importance of this affective component, which Facione (1990) named "dispositions." After a most helpful discussion with Dr. Pete Facione (a philosopher–scholar) and his wife, Dr. Noreen Facione (a nurse–scholar), we chose the label "habits of the mind" because we wanted to get away from some of the stereotypical views of traits or dispositions as being static. Because habits can be initiated and changed, this term seemed to be more dynamic.

For every round of our Delphi process, we analyzed data and returned reports to participants explaining what we had done with their information and asking a new set of questions based on the revised configuration of the data. By the end of five rounds, we were ready for voting on the final statement and definitions of the 10 habits of the mind and 7 skills. There was 88.2% consensus on the final statement and similar consensus on the definitions of the dimensions. (For the full report of the research method and consensus voting, see Scheffer & Rubenfeld, 2000.) The final consensus statement is as follows:

> Critical thinking in nursing is an essential component of professional accountability and quality nursing care. Critical thinkers in nursing exhibit these habits of the mind: confidence, contextual perspective, creativity, flexibility, inquisitiveness, intellectual integrity, intuition, open-mindedness, perseverance, and reflection. Critical thinkers in nursing practice the cognitive skills of analyzing, applying standards, discriminating, information-seeking, logical reasoning, predicting and transforming knowledge. (p. 357)

See **Box 2-3** for definitions of the 10 habits of the mind and 7 skills. These dimensions of CT in nursing will be used as a framework for discussing CT throughout this text, so you will want to refer to them frequently.

Box 2-3 Critical Thinking Skills and Habits of the Mind for Nursing

CRITICAL THINKING SKILLS

Analyzing: Separating or breaking a whole into parts to discover their nature, function, and relationships

Applying standards: Judging according to established personal, professional, or social rules or criteria

Discriminating: Recognizing differences and similarities among things or situations and distinguishing carefully as to category or rank

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Box 2-3 Critical Thinking Skills and Habits of the Mind for Nursing (continued)

Information seeking: Searching for evidence, facts, or knowledge by identifying relevant sources and gathering objective, subjective, historical, and current data from those sources

Logical reasoning: Drawing inferences or conclusions that are supported in or justified by evidence

Predicting: Envisioning a plan and its consequences

Transforming knowledge: Changing or converting the condition, nature, form, or function of concepts among contexts

CRITICAL THINKING HABITS OF THE MIND

Confidence: Assurance of one's reasoning abilities

Contextual perspective: Consideration of the whole situation, including relationships, background, and environment, relevant to some happening

Creativity: Intellectual inventiveness used to generate, discover, or restructure ideas; imagining alternatives

Flexibility: Capacity to adapt, accommodate, modify, or change thoughts, ideas, and behaviors

Inquisitiveness: An eagerness to know by seeking knowledge and understanding through observation and thoughtful questioning in order to explore possibilities and alternatives

Intellectual integrity: Seeking the truth through sincere, honest processes, even if the results are contrary to one's assumptions and beliefs

Intuition: Insightful sense of knowing without conscious use of reason

Open-mindedness: A viewpoint characterized by being receptive to divergent views and sensitive to one's biases

Perseverance: Pursuit of a course with determination to overcome obstacles

Reflection: Contemplation upon a subject, especially one's assumptions and thinking for the purposes of deeper understanding and self-evaluation

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In the years since 2000, the consensus definition has provided a framework for several studies related to CT in nursing and other disciplines. For example, Fogler and LeBlanc (2014), teaching engineers, used several CT dimensions from our study to illustrate thinking activities to determine why fish were dying in a river. In nursing, for example, Lunney has used the CT dimensions to focus on thinking for diagnostic reasoning (2001, 2008, 2010). A cogent exploration of CT within the philosophical

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views taken in nursing was revealed by Raymond-Seniuk and Profetto-McGrath (2011). These authors reminded us of the need not to be complacent in our use of CT words without thinking of the complexities of CT through multiple lenses. We are happy to report that the dimensions of CT as defined by Scheffer and Rubenfeld's 2000 consensus statement were well represented in this thoughtful analysis.

Comparison of the Nursing Delphi Study to the Philosophical Delphi Study

Box 2-4 compares the results of our study with those of Facione and his group. The definitions of CT skills are from Facione's 1990 Delphi study. The dispositions descriptions are taken from Facione, Sanchez, Facione, and Gainen (1995). In Facione's original work, he found 19 dispositions that fit into two types—approaches to life and living in general, and approaches to specific issues, questions, or problems.

Box 2-4 Comparison of Nursing and APA Components of CT

Nursing Skills (Scheffer & Rubenfeld, 2000, p. 358)	***APA Skills*** (Facione, 1990)
Analyzing:	**Analysis:**
"separating or breaking a whole into parts to discover their nature, function and relationships"	"to identify the intended and actual inferential relationships among statements, questions, concepts, descriptions or other forms of representation intended to express beliefs, judgments, experiences, reasons, information, or opinions" (p. 14) (Its subskills are identified as "examining ideas, identifying arguments and analyzing arguments" [p. 12].)
Applying Standards:	**Evaluation:**
"judging according to established personal, professional or social rules or criteria"	"to assess the credibility of statements or other representations which are accounts or descriptions of a person's perception, experience, situation, judgment, belief, or opinion; and to assess the logical strength of the actual or intended inferential relationships among statements, descriptions, questions or other form of representation" (p. 15)

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Box 2-4 Comparison of Nursing and APA Components of CT (continued)

Nursing Skills (Scheffer & Rubenfeld, 2000, p. 358)	***APA Skills*** (Facione, 1990)
Discriminating: "recognizing differences and similarities among things or situations and distinguishing carefully as to category or rank"	**Interpretation:** "to comprehend and express the meaning or significance of a wide variety of experiences, situations, data, events, judgments, conventions, beliefs, rules, procedures or criteria" (p. 13) (Its subskills are categorization, decoding sentences, and clarifying meaning.)
Information Seeking: "searching for evidence, facts or knowledge by identifying relevant sources and gathering objective, subjective, historical and current data from those sources"	**Inference subskill:** querying evidence: "to identify and secure elements needed to draw reasonable conclusions" (p. 16)
Logical Reasoning: "drawing inferences or conclusions that are supported in or justified by evidence"	**Explanation:** "to state the results of one's reasoning; to justify that reasoning terms of the evidential, conceptual, methodological, criteriological and contextual considerations upon which one's results were based; and to present one's reasoning in the form of cogent arguments" (p. 18)
Predicting: "envisioning a plan and its consequences"	**Inference subskill:** conjecturing alternatives: "to formulate multiple alternatives for resolving a problem . . . to draw out presuppositions and project the range of possible consequences of decisions, positions, policies, theories, or beliefs" (p. 17)
Transforming Knowledge: "changing or converting the condition, nature, form or function of concepts among contexts"	**No comparable skill**
No comparable skill; see Habit of the Mind, Reflection.	**Self-regulation**

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Box 2-4 Comparison of Nursing and APA Components of CT (continued)

Nursing Habits of the Mind (Scheffer & Rubenfeld, 2000, p. 358)	**APA Dispositions** (Facione, Sanchez, Facione, & Gainen, 1995)
Confidence: "assurance of one's reasoning abilities"	**CT Self-confidence:** "to trust the soundness of one's own reasoned judgments and to lead others in the rational resolution of problems" (p. 8)
Contextual Perspective: "consideration of the whole situation, including relationships, background and environment, relevant to some happening"	**Maturity:** "approach[ing] problems, inquiry, and decision making with a sense that some problems are necessarily ill-structured, some situations admit more than one plausible option, and many times judgments must be made based on standards, contexts, and evidence which preclude certainty" (p. 9)
Flexibility: "capacity to adapt, accommodate, modify or change thoughts, ideas and behaviors"	
Creativity: "intellectual inventiveness used to generate, discover, or restructure ideas; imagining alternatives"	**No comparable disposition**
Inquisitiveness: "an eagerness to know by seeking knowledge and understanding through observation and thoughtful questioning in order to explore possibilities and alternatives"	**Inquisitiveness:** "one's intellectual curiosity and one's desire for learning even when the application of the knowledge is not readily apparent" (p. 6)
Intellectual Integrity: "seeking the truth through sincere, honest processes, even if the results are contrary to one's assumptions and beliefs"	**Truthseeking:** "being eager to seek the best knowledge in a given context, courageous about asking questions, and honest and objective about pursuing inquiry even if the findings do not support one's self-interests or one's preconceived opinions" (p. 8)
Intuition: insightful sense of knowing without conscious use of reason	**No comparable disposition**

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Box 2-4 Comparison of Nursing and APA Components of CT (continued)

Nursing Habits of the Mind (Scheffer & Rubenfeld, 2000, p. 358)	**APA Dispositions** (Facione, Sanchez, Facione, & Gainen, 1995)
Open-mindedness: a viewpoint characterized by being receptive to divergent views and sensitive to one's biases	**Open-mindedness:** "being tolerant of divergent views and sensitive to the possibility of one's own bias" (p. 6)
Perseverance: pursuit of a course with determination to overcome obstacles	**Systematicity:** "being organized, orderly, focused and diligent in inquiry" (p. 7)
Reflection: contemplation upon a subject, especially one's assumptions and thinking, for the purposes of deeper understanding and self-evaluation	**No comparable disposition but comparable to APA skill: Self-Regulation:** "self-consciously to monitor one's cognitive activities, the elements used in those activities, and the results educed, particularly by applying skills in analysis and evaluation to one's own inferential judgments with a view toward questioning, confirming, validating, or correcting either one's reasoning or one's results" (Facione, 1990, p. 19)
No comparable habit of the mind.	**Analyticity:** "prizing the application of reasoning and the use of evidence to resolve problems, anticipating potential conceptual or practical difficulties, and consistently being alert to the need to intervene" (p. 7)

Those 19 dispositions were later consolidated to form seven dispositions in a factor analysis by Facione, Facione, and Sanchez (1994) as they began to develop a CT dispositions test.

Although the comparisons are not direct, there are striking similarities between the two study results. However, a significant difference is also apparent. Two habits of the mind and one skill were not identified by the APA group—*creativity*, *intuition*, and *transforming knowledge*. Are these dimensions unique to nursing? Or are they unique to applied sciences or to health professions? We believe our comparison shows that there are quite likely some discipline-specific dimensions of CT and some that are possibly universal.

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Pebble #2: CT Language/Words

If these 17 dimensions represent CT in nursing, let's see how your thinking fits with them. Think about your thinking. Ask yourself, for example, how strong your CT *confidence* is or how you use *analyzing* in your clinical practice. (See **TACTICS 2-1**.)

TACTICS 2-1: CT Self-Checklist

Look at **Box 2-5** and mark where you think you fall on each of the thinking continua.

This TACTIC can be used by both clinicians and educators.

Discussion

Are you beginning to see where your strengths and weaknesses lie? Let's take this further. At the beginning of this chapter, we asked how you would describe the thinking you use. Now how would you describe your thinking? Is it different now that you have the words to use? Is it easier to describe your thinking now that you know the words? Have you ever had to do this? In fact, most of us haven't been asked to describe our thinking—at least not until recently. These days, clinicians are being asked to show how they think because CT is recognized as being tied to quality of

Box 2-5 Critical Thinking Self-Checklist

1. How confident am I in my reasoning ability?
   Not very confident ⟷ Very confident
2. Do I tend to look at situations with their context in mind, or do I tend to see things as separate compartments?
   Compartmentalized thinking ⟷ Contextual thinking
3. How creative am I in my thinking?
   Not very creative ⟷ Very creative
4. How flexible is my thinking?
   Rigid ⟷ Very flexible
5. How inquisitive am I?
   Not naturally curious ⟷ Innately inquisitive
6. How much *intellectual integrity* do I have?
   Go with my assumptions ⟷ Seek the truth no matter what

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Box 2-5 Critical Thinking Self-Checklist (continued)

7. How intuitive am I?
   Not very intuitive ⟷ Always go with my gut
8. How open-minded am I?
   Quite biased ⟷ Open to all possibilities
9. How much *perseverance* do I have in my thinking?
   Once I have problems I'll stop ⟷ Keep at it no matter what gets in the way
10. How reflective am I? Do I think about my thinking?
    Not very reflective ⟷ Always striving for deeper understanding of self
11. How good am I at *analyzing* situations?
    I don't break things down much ⟷ I always pick things apart to understand them
12. How much do I pay attention to standards with my thinking?
    Not used much for judgments ⟷ Always use criteria for judgments
13. How finely do I discriminate among things?
    Don't recognize small differences/similarities ⟷ Always recognize small things
14. How good am I at seeking out information?
    I think about what's right there ⟷ I dig for all possible evidence
15. How strong is my *logical reasoning*?
    I can't always justify my conclusions ⟷ I can always trace my conclusions to evidence
16. How good are my abilities to predict consequences in situations?
    Don't see much farther than my nose ⟷ I always think, What would happen if . . . ?
17. How well do I transform knowledge from one situation to the next?
    Prefer textbook situations ⟷ Can adapt concepts to meet situation

care. We need a new language of thinking—and a mutual understanding of what the words in that language mean.

Do you remember the first time you used a computer, ran into problems, and asked for help? Depending on your age or how long ago that was, if your helper was like

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most computer-literates, he or she probably used words like *booting*, *Windows*, *drivers*, *defragging*, *cookies*, *encryption*, *beta testing*, and *right click*. Did you sit there with your mouth hanging open, feeling foolish? Were you at a loss for what to say because you didn't know the language? Eventually, you probably learned enough computer lingo to function in today's technological world. Well, learning how to describe CT is a similar process. Without the words, it's impossible to even ask useful questions.

When we first started to teach CT and asked students to describe how they were thinking, they would tell us what they were thinking about. After trying several tactics to get our point across, we finally realized that the communication problem was very basic. Very few of our students had a vocabulary to use; they were not accustomed to describing something so abstract. As we used words to describe CT in nursing more and more, eventually it became clear that a list of descriptors would help students describe their thinking. Look at **Box 2-6** and see how many of those words and phrases you use and when and where you've heard or seen others using them.

Box 2-6 Words to Describe Critical Thinking

DESCRIPTORS FOR CT HABITS OF THE MIND

Confidence

My thinking was on track, decisive; I reconsidered and still thought I made the best decision; I knew my conclusion was well founded; My thinking was clear, unambiguous, trustworthy; I was secure in my thinking

Contextual Perspective

I could see the whole picture; I considered [reflected on, reconsidered] other possibilities; I took other things [surrounding issues] under consideration; I redefined the situation in view of . . . ; Considering the circumstances, I . . . ; I broadened my view/perspective/mind

Creativity

I let my imagination go; I was inspired to think of . . . ; I stretched my mind; I took my thinking outside the box; I envisioned/dreamed up/invented . . . ; I tried to be visionary; My mind was fertile ground; I used the artistic side of my brain

Flexibility

I changed directions in my mind; I gave up on that idea and went on to . . . ; I moved away from my traditional thinking; I redefined the situation and started again; I questioned what I was thinking and considered another path; I tried to be adaptable in my thinking; I let my thinking go with the flow

(*continues*)

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Box 2-6 Words to Describe Critical Thinking (continued)

Inquisitiveness

I had a strong desire for more knowledge; I itched to know more about . . . ; I was eager to know more; I took a lively interest in . . . ; I pricked up my ears, stuck my nose in . . . ; I burned with curiosity; I was really interested in . . . ; My mind was buzzing with questions

Intellectual Integrity

I was not satisfied with my conclusion, so I . . . ; Although it went against everything I believed . . . ; I need to get at the truth; I tried to find the bottom line; I racked my brain; I questioned my biases; I asked myself difficult questions; I dug to the bottom; I reflected on my inferences; I examined why I thought that . . .

Intuition

I felt it in my bones; I couldn't put my finger on why, but I thought . . . ; Instinctively I knew . . . ; My hunch was that . . . ; I had a premonition/inspiration/impression . . . ; My natural tendency was to . . . ; Subconsciously I knew that . . . ; Without thought, I figured out . . . ; Automatically I thought that . . . ; While I couldn't say why, I thought immediately . . . ; My sixth sense said that I should consider . . .

Open-mindedness

I tried to be receptive to new ideas; I tried not to judge; I listened to reason; I looked at both sides of the issue; I tried to be objective and unprejudiced; I questioned why I thought that . . . ; I weighed the pros and cons; I tried to be neutral

Perseverance

I was single-minded in my determination to . . . ; I persistently kept at it; I plodded on through my thoughts; I was stubborn and tireless in my pursuit; I kept going, trying this and that; I would not accept that for an answer; I had to overcome so many obstacles

Reflection

I pondered my reactions; I mulled it over in my mind; I ruminated over what I had thought and done; I had to reexamine/rethink/reconsider/review things; I evaluated my thoughts; I wondered what I could have done differently; I concentrated on my thinking process; I talked to myself about . . . ; I deliberately meditated on what I was thinking

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Box 2-6 Words to Describe Critical Thinking (continued)

DESCRIPTORS FOR CT SKILLS

Analyzing

I dissected the situation; I broke things down so I could understand them better; I tried to reduce things into manageable units; I detailed a schematic of . . . ; I sorted things out; I took the whole situation apart so I could see . . . ; I looked for the parts; I made sure each component was addressed; I set it out, one, two, or three; I looked at each piece individually; I studied it bit by bit; I thought of it piecemeal instead of all together; I tried to see the trees instead of just the forest

Applying Standards

I knew I had to . . . ; There are certain things you just have to account for; I thought of the bottom line that is always . . . ; I know that some things are just right or wrong; As a professional, I knew I had to . . . ; I knew it was unethical to . . . ; I considered what my license allowed and expected me to do; I thought of/studied the policy for . . . ; I compared this situation to what I knew to be the rule; I judged that according to . . .

Discriminating

I grouped things together; I put things in categories; I tried to consider what the priority was; I rank ordered the various . . . ; I stood back and tried to see how those things were related; I wondered if this was as important as . . . ; I thought of the discrepancies in the story; I could distinguish the pieces; What I was hearing and what I was seeing was consistent [inconsistent]; I wondered what I should do first; When I focused on the finer details, I could see . . . ; This was different from [the same as] that

Information Seeking

I made sure I had all the pieces of the picture; I knew I needed to look up/study . . . ; I wondered how I could find out . . . ; I went back to look more closely at . . . ; I asked myself if I knew the whole story; I kept searching for more data; I wanted [needed] to have all the facts [knowledge]; I looked for evidence of . . .

Logical Reasoning

I deduced from the information that . . . ; I could trace my conclusion back to the data; My diagnosis was grounded in the evidence; I considered all the

(*continues*)

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Box 2-6 Words to Describe Critical Thinking (continued)

information and then inferred . . . ; I could justify my conclusion by . . . ; I moved down a straight path from initial data to the final conclusion; I had a strong argument for . . . ; I made a good case for . . . ; There was sound evidence to support . . . ; My rationale for the conclusion was . . . ; Putting two and two together, I inferred . . . ; I brought reason to bear in the situation by . . .

Predicting

I could imagine that happening if I did . . . ; I anticipated . . . ; I was prepared for . . . ; I tried to be farsighted in my view; I made provisions for . . . ; I envisioned the outcome to be . . . ; I had a feeling that would happen; I could foresee . . . ; My prognosis was . . . ; I figured the probability of . . . ; I could tell that down the line . . . ; I tried to go beyond the here and now; The immediate plan was this, but the long term needed to be . . .

Transforming Knowledge

I knew I'd have to individualize; Although this situation was somewhat different, I knew . . . ; I wondered if that would fit in this situation; I thought this would be a textbook case, but it wasn't; I took what I knew and asked myself if it would work; I tried to translate that into this; I adapted my knowledge about . . . ; I could accommodate . . . ; I improved on the basics by adding . . . ; I figured if this was true, then that would be too; At first I was puzzled, then I saw that there were similarities, too; It was easy to cross over . . .

You need the vocabulary to describe your thinking. If you think you're ready, you can go to Appendix A and look at the CT Inventory. It's a more detailed version of the checklist in Box 2-5 and can be used in a variety of situations. (You may find the descriptors in Box 2-6 helpful when answering the questions it poses.) This inventory has been used to help nurses and nursing students describe their thinking and to evaluate growth in CT. Once you take the time to complete that inventory, we think you'll have a better sense of how you think, and you will really be able to answer someone who asks, "How would you describe your thinking as a nurse?"

If, at this point, you are really excited by CT, you can tease your brain by considering the CT ironies in **Box 2-7**. If you can spend enjoyable time pondering these more esoteric points, you have the makings of a philosopher!

Pebble #3: Visualizing CT in Action

And now for CT in action: What does it look like? Can you see it? Some argue that we cannot see or measure CT because it is only manifested in actions. That is somewhat true, but there are problems with just

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Box 2-7 CT Ironies to Ponder

- If I teach you what CT is, I'm actually discouraging you from using CT to figure it out for yourself.
- If I argue that CT is impossible or unnecessary, I'm actually being contradictory because posing such argumentation demonstrates CT.
- If CT truly requires a *contextual perspective*, then I must always adapt to the context to promote CT; does then CT itself change with the context?

looking at actions. Some "right" actions are pure luck; you can't count on them happening the next time. Some right actions are based on sloppy thinking. And some right actions are based on keen CT. Which kind of thinking do you want to count on? Sometimes it's easier to see the consequences of not thinking well than to see the results of carefully considered actions. Things go wrong when nurses don't use CT. To fully appreciate CT in action, one really needs to combine descriptions of thinking with the actions that thinking produces. **TACTICS 2-2** and **TACTICS 2-3** both illustrate that combined approach.

TACTICS 2-2: *What* Do Great Thinkers Look Like?

Clinicians

Think of the people you work with; rank them in terms of their thinking. One or two people probably stand out as great thinkers. What makes you put them in the great thinker category? It's probably their actions and their communication. Now, list those characteristics and see if you can picture great thinking in action.

Educators

Have your students or staff do the preceding exercise and write down their descriptions of a great thinker they know personally, either as a formal paper or as an informal list of characteristics. Then have them share their descriptions and look for commonalities.

Discussion

In our workshops, students who do this exercise report the characteristics of great thinkers as follows: this person "always explains what he's doing … is always asking questions … can always stand up for herself when she's questioned … teaches every patient and family member he comes in contact with … rarely takes things at face value … rechecks everything … is the one we all go to for help with medication calculations … says what's on her mind … is the one we like to work with."

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TACTICS 2-3: Talking and Thinking: A Patient Scenario

Clinicians

Consider this scenario:

You are working on a medical unit. Mrs. Franks, 79 years old with a history of alcoholism, was admitted 2 days ago for heart failure. Two hours before your shift began, she was moved to your unit from the telemetry unit. According to your shift report, she has been alert and oriented, has some minor lower extremity edema, has gone from many to a few crackles in her lungs, had her Foley removed this morning, and has urinated once in the past 6 hours. Her weight has decreased 4 kg since admission. She is not on a fluid restriction and has been eating and drinking small amounts. She has used her prn oxygen rarely. You walk into the room to find a very agitated Mrs. Franks trying to get out of bed, saying, "I have to get to the store before it closes because I have company coming for dinner." Speaking in a calm voice, you ask her to tell you how she feels. Meanwhile, you check her pulse and find it at 92 but regular. You remember that she's on a beta-blocker.

Now, finish this scenario. What would you think? What would you do and why?

Educators

Use this same case or find one that works with your setting and that matches the level of knowledge of your students or staff. Service-based educators should select a unit-specific case. Set up some parameters for responding to this scene; for example, if you are trying to promote better assessment skills among one unit's staff, have the nurses list their answers and place them in a centrally located box for a drawing later. Give a prize for the best answer, or post all the answers anonymously and have the staff rate them.

Discussion

What would exemplify the best thinking in this situation with Mrs. Franks? We'll give you an idea of what an expert nurse would do. Obviously, novices would not necessarily come up with these responses.

We'd expect the nurse to assess respiratory rate, lung sounds, pulse oximetry, blood pressure, temperature, cognitive function, glucose (if there's any history of hypo- or hyperglycemia), hemoglobin level to consider if she's anemic, medications and side effects, and additional information about her alcoholism (e.g., how long since drinking last, amount consumed) and her past history of alcoholic behavior via her chart or family report, if possible. We'd also want the nurse to check patterns to see if her pulse of 92 is normal according to her baseline.

We'd expect each of those things to be assessed in just about that order. We'd expect the nurse to speak softly and confidently to the patient, ask her if she needs the bathroom or is in pain, orient her to her surroundings, help her stay in bed, and make sure she is safe before leaving her alone in the room.

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That nurse should be entertaining reasonable hunches of what might be going on and ruling them in or out, such as decreased oxygen saturation, increased pulmonary congestion, cardiac event, infectious process (such as pneumonia or urinary tract infection), medication side effect, and anxiety over the new environment. We'd expect that nurse to be considering his or her knowledge of such things as normal aging, for example, and that responses are usually blunted in elders. Other knowledge would be in such areas as typical heart failure signs, symptoms, and complications. We'd expect that nurse to communicate with the healthcare team about this event. We'd expect a nurse who has worked in that environment for several months to have some intuitive response to this situation but not jump to premature conclusions. Finally, we'd expect any nurse to take the situation seriously.

Some variations on this exercise are to have staff or students discuss such scenarios in a group, write similar scenarios, and project what "wrong" things nurses might do in such situations.

The patient scenario in TACTICS 2-3 should remind you of the nursing process, and we would like to take a little detour to discuss CT as it relates to the nursing process.

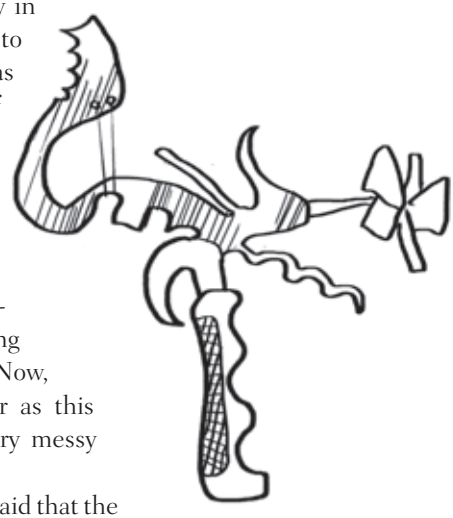
Back to Pebble #3: Visualizing CT in Action

A disheartening part of our work with critical thinking over the years has been to read and hear that critical thinking is a buzzword that nurses don't understand or use—that it is too vague and undefined to have practical applications. To some extent we understand that, especially coming from folks who don't spend time studying the defined parts of critical thinking or look at it out of context. We even wrote an editorial, years ago, titled *Critical Thinking: A Tool in Search of a Job* (Scheffer & Rubenfeld, 2006).

One of the jobs is the everyday reality of CT within the context of the nursing process, that is, what nurses do every day in patient encounters. When we first started to teach and study CT many years ago, it was in the context of the thinking and doing of the nursing process. We described great nursing as the following formula:

Patient + You + Thinking Skills + Knowledge + Nursing Process = Great Nursing

These many years later, with research-based, honed descriptions of the thinking part, we still come back to this formula. Now, obviously, nothing in nursing is as linear as this formula, but the pieces are there in every messy nursing encounter.



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Speaking of formulas, some folks have said that the nursing process—the now-familiar assessing, planning,

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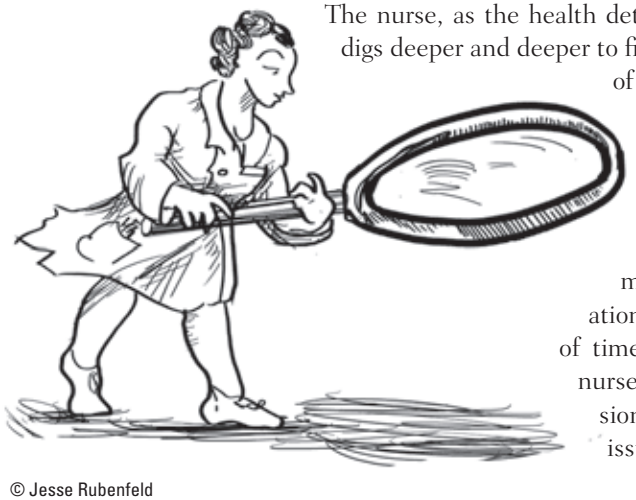
implementing, and evaluating—is just that, a recipe or formula that can be followed blindly, without thought. If one goes back to the roots of nursing process, however, it becomes clear that thinking was always integral to the process. In the late 1960s, Helen Yura and Mary Walsh, at The Catholic University of America in Washington, DC, got a group of nurses together to define what nurses do. They wrote the first edition of their book, *The Nursing Process: Assessing, Planning, Implementing, Evaluating*, in 1967 and, because of its popularity, they went on to write four more editions (Yura & Walsh, 1988). This description of the nursing process has become so familiar that few people go back to the original work. Thinking was always a part of this process, and it was never envisioned as a linear recipe. The nursing process and the thinking required to achieve it was designed to be iterative and recurrent. Nurses jump into this process at various points. What nurse starts an intervention with a patient without doing some assessing at the same time? Sometimes, as the nurse is evaluating the effectiveness of actions, it becomes clear that the actions should have been planned more completely. And on it goes.

Let's delve into the thinking within the parts of the nursing process. Assessment, which on face value is just collecting information, is much more than that. The skilled nurse is a health detective with a keen level of *inquisitiveness* for seeking relevant data. Even during data collection, the nurse has first impressions. Think *intuition* for starters. The nurse's knowledge comes into play as those data are compared to norms. Think *applying standards*. Is a 20-pound weight loss normal over a 2-week period, even if the patient had the flu? Initial hunches about what is going on start popping into the nurse's head as the *analysis* part of assessment kicks in. Being *open-minded* and *contextual*, the nurse combines those initial hunches with further *information seeking* as the nurse clusters bits and pieces of information, looking for patterns and critical indicators. We call this search for relevant data *directed data collection* because there is a need to be *open-minded* and aware of biases while getting details that might support a hunch while avoiding premature conclusions. The nurse, as the health detective in these situations, digs deeper and deeper to find out what's up. Clusters of relevant data are viewed with *discrimination* and further *inquisitiveness* before any conclusive assessment is reached.



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At some point—in microseconds in some situations, and over a longer period of time in other situations—the nurse must come to a conclusion about what a patient's issues are. There are many

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possible conclusions; it may represent a patient's strength (e.g., supportive family, stable vital signs, intact skin, effective communication skills) or it may be a health concern. The health concern could be a problem for referral (e.g., a progressive hearing loss would call for a referral to an ears, nose, and throat physician), an interdisciplinary problem (e.g., decreased strength and stamina would require work with physical therapy), or a nursing diagnosis of an actual problem or risk for a problem (e.g., chronic pain related to limited mobility; risk for injury related to poor balance and unstable transfers). See **Box 2-8** for conclusions of assessment.

Reaching a conclusion about a relevant nursing issue requires all 17 dimensions of CT. The complexities of that thinking are phenomenal at times. There are many diverse sources of data streamed into a nurse's consciousness; these data must be sorted, checked for validity, and clustered to make sense of the whole lot. It is so easy to forget about *intellectual integrity* and jump to a premature conclusion, shut off one's thinking and go with the obvious of what's in front of you. Look at the 6 strengths and 4 health concern conclusions of assessment and the supporting data clusters in **Box 2-9** and then consider how much thinking went into the nurse's 10 conclusions in this case of a patient in a nursing home environment. Also, consider that data gaps may be as relevant as data in the case of the problem for referral. Remember, a great health detective pays close attention to what is and isn't there. Arriving at any final conclusion is a process of ruling in and ruling out information

Box 2-8 Conclusions of Assessment

A. Strengths
   1. Physical
   2. Psychosocial
   3. Social
   4. Spiritual
   5. Environmental
   6. Cultural
B. Health concerns
   1. Nursing diagnoses
      a. Problem responses
         i. Actual
         ii. Risk for
      b. Wellness response
   2. Interdisciplinary problem
   3. Problem for referral

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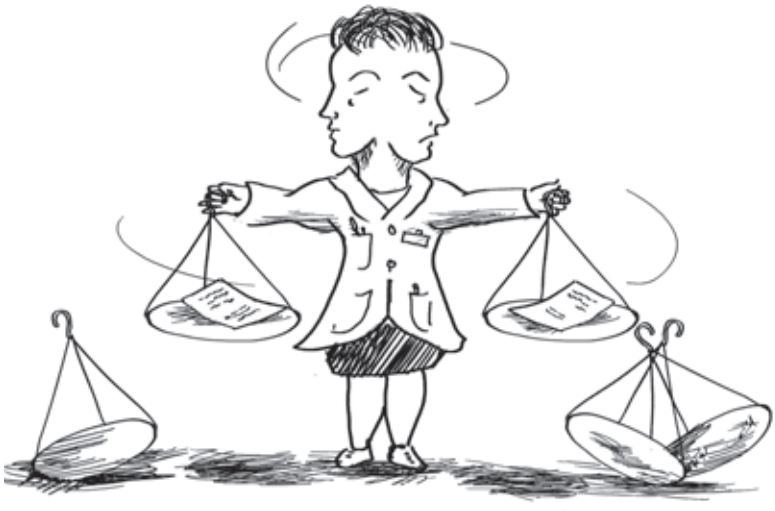

Ruling in and ruling out.
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Box 2-9 Conclusions of Assessment and Supporting Data Clusters

Strength Conclusions	***Supporting Data Clusters***
Vital signs stable	B/P 110/70, P 86, R 16, T 98.7
Adequate nutrition	Ht. 5′2,″ Wt. 105 lbs, follows 1800 cal diet, hair shiny
Adequate bowel elimination	BM every other day, soft, brown, drinks prune juice
Adequate sleep pattern	Sleeps through the night, feels rested in morning
Adequate health insurance	Has Medicare and supplemental insurance
Well groomed	Hair shiny, clean clothing, wears lipstick daily

HEALTH CONCERN CONCLUSIONS

A. Nursing diagnoses
   1. Nursing diagnosis: Impaired skin integrity related to mobility deficits, urinary incontinence, fragile skin, and compromised circulation

Diagnostic Label	
Impaired skin integrity	Coccyx and elbow reddened, ecchymosed left shin, skin tear left hand, complaints of discomfort and irritation of buttocks

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Box 2-9 Conclusions of Assessment and Supporting Data Clusters (continued)

Related Factors

Mobility deficits	Wheelchair bound, stiff joints, trouble getting out of bed, limited ROM right hip, hitting wheelchair during transfers, osteoarthritis, right hip ORIF 4 months ago
Urinary incontinence	Dribbles urine, wears diaper always
Fragile skin	Skin dry, thin, translucent
Compromised circulation	Sitting in wheelchair all day, Type 2 diabetes, ankle edema

2. Nursing diagnosis: Social isolation related to sensory deficits

Diagnostic Label

Social isolation	Spends a lot of time alone in her room listening to the radio, crocheting (noninteractive activities), says she feels alone and different from others because she is almost blind, has made no friends, sees family once a year

Related Factor

Sensory deficits	Almost blind, hearing slightly diminished

B. Interdisciplinary problem: Physical therapy and nursing

Impaired physical mobility	Wheelchair bound, stiff joints, trouble getting out of bed, limited ROM right hip, hitting wheelchair during transfers, osteoarthritis, right hip ORIF 4 months ago

C. Problem for referral:

Vision deficits	Medical Dx: Type 2 DM, legally blind, neurological changes have already affected hearing; data gaps: actual visual acuity, use of glasses, last vision exam, patient's description of actual vision limits

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and preliminary conclusions along the way. Our colleagues in medicine refer to this as the process of making differential diagnoses.

Assessment, and the thinking that goes along with it, is not ever finished; at some point the nurse and the patient need to agree on what the issues are and move on to what should be done about those issues. Of course, sometimes the patient is unable to participate in the determination of health issues and the nurse must do the thinking for both of them. Most times, however, the patient's thinking is as important as the nurse's. In deciding what the relevant issues are, the nurse and patient put their heads together. Those heads also need to be working together to decide on the priorities for planning and selecting actions for implementing care. This togetherness is called patient-centered care.

CT is as important to the planning phase of the nursing process as it is in the assessing phase. Once the nurse and patient have determined conclusions of assessment, they need to set priorities and realistic goals. Thinking dimensions of *contextual perspective*, *flexibility*, and *open-mindedness* are very important when planning care with patients. Consider the thinking that goes into setting priorities. Setting priorities, at first glance, seems to be simple. It is far from that. For example, a nurse working with Ms. Romero, who recently had an amputation, could identify the following conclusions of assessment:

- Nursing diagnosis: Body image disturbance related to feelings about recent below-the-knee amputation
- Interdisciplinary problem: Imbalanced nutrition—less than body requirements related to complexity of dietary needs and homelessness
- Problem for referral: Patient is homeless after mudslides and floods destroyed her home; she will be discharged tomorrow

At first glance, the problem for referral seems to be the highest priority, but the nurse would never know that if the patient's thinking and input weren't considered. Ms. Romero could have a large network of friends and extended family willing to have her live with them. In that case, something less obvious could become the priority.

The general guidelines for setting priorities are as follows:

1. Immediate life-threatening issues
2. Safety issues
3. Patient-identified priorities
4. Nurse-identified priorities (based on the overall picture of each health concern in relation to other concerns, the patient as a whole person, and availability of time and resources)

Guidelines 1 and 2 are often obvious, but 3 and 4 require CT by both the nurse and the patient.

Setting realistic goals or expected outcome indicators may highlight CT dimensions of *creativity*, *discriminating*, and *predicting*. A reasonable outcome for one patient will not be reasonable for another. A patient who had a stroke, for example,

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could not be expected to self-transfer within 1 week if that patient had severe mobility problems prior to the stroke, whereas another patient, who had been fully mobile pre-stroke, might be able to improve mobility quickly.

Planning interventions to meet expected outcomes is equally dependent on good thinking by both the nurse and the patient. If an expected outcome is self-administration of insulin, the interventions necessary to reach that outcome with a patient who cannot read, for example, will be very different than interventions needed with a patient who is a retired physician. Planning and implementing interventions call for the nurse to use CT dimensions of *transforming knowledge* to meet the *contextual perspective*; sometimes a large dose of *perseverance* and *creativity* are needed to move from textbook care plans to customized patient care.

The evaluation phase of the nursing process circles back to thinking and actions that are similar to assessing, except now *applying standards* becomes more obvious. First, the standard set in the planning of expected outcomes must be addressed. Was that outcome met? If not, why? Have the standards of quality and safety been met? The nurse looks at the evidence and uses *logical reasoning* to draw conclusions about the patient's progress toward achieving the expected outcomes.

This brief overview of the dimensions of thinking at play in the nursing process shows how complex the thinking during the simple-looking phases of assessing, planning, implementing, and evaluating really is. As we go back to our assertion that CT is a tool in search of a job, remember, there are many jobs that are part of nursing. The message is this: great nursing requires thinking and doing. One without the other either does not work or can be very dangerous.

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PAUSE and Ponder

Conclusions About What CT Is

This chapter was necessary to set the stage. Now, when someone asks you about CT, we hope you will have something more to say than, that's a good question! Understanding the concept of CT is essential to nursing practice, but the ideas and words that describe the concept are only building blocks. Now we need to use those building blocks to nurture and expand CT in nursing.

Reflection Cues

- CT bridges the gap between knowledge and actions.
- The Western history of CT can be traced as far back as Socrates and up to recent nursing research.
- CT in nursing is exemplified by 10 habits of the mind (*confidence*, *contextual perspective*, *creativity*, *flexibility*, *inquisitiveness*, *intellectual integrity*, *intuition*, *open-mindedness*, *perseverance*, *reflection*) and 7 cognitive skills (*analyzing*,

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applying standards, *discriminating*, *information seeking*, *logical reasoning*, *predicting*, *transforming knowledge*).

- Dimensions of nursing CT that are not found in nonnursing descriptions are *creativity*, *intuition*, and *transforming knowledge*.
- Verbalizing one's CT requires descriptive language not commonly used in the action-oriented discipline of nursing.
- It is difficult to see the CT behind the actions. Actions must be combined with descriptions of thinking.
- Although most of us can identify colleagues who are good thinkers, it is very difficult to tease out the thinking behind their actions.
- Incorporating the language of thinking into our vocabulary increases our awareness of our own thinking, our awareness of the thinking of others, and our ability to describe our thinking to colleagues.
- Critical thinking is a tool in search of a job.
- The nursing process is a daily job of nurses that requires both thinking and doing.
- Nurses, as health detectives, need to be aware of the multiple conclusions of assessment and how those conclusions are supported with the underlying thinking.
- Conclusions of assessment are prioritized with conjoint thinking by the nurse and patient.
- Planning, implementing, and evaluating care works best when nurses and patients think together.

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