Critical Thinking Indicators (CTIs)

2016 EVIDENCE–BASED VERSION

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WHAT'S IN THIS DOCUMENT?

Critical thinking (CT) and clinical reasoning (CR) are central to safety, learning and cost-effective, quality care. Yet, many people have difficulty clarifying what these two types of reasoning involve. To improve thinking, leaders, teachers, health professionals and learners must be "on the same page" about exactly what the evidence suggests CT and CR entail. This document includes CT definitions, underlying assumptions, CT characteristics and skills, the 4-Circle CT Model®, and supporting references.

After reading this document, you should be able to:

1. Describe what CT and CR entail, including the relationship between these terms.
2. Explain what critical thinking indicators (CTIs) are, and what evidence supports them.
3. Use the 4-Circle CT Model® together with the CTIs to develop your reasoning skills.
4. Identify strategies to assess and promote CT.

RELATIONSHIP OF CRITICAL THINKING AND CLINICAL REASONING

Many health professionals use the terms *critical thinking* (CT) and *clinical reasoning* (CR) interchangeably, as the principles behind them are the same. There is, however, a slight difference. **CR is a specific term** that refers to reasoning about patient issues (for example, determining health status and diagnosing health problems). **CT is a broad term** that *includes* CR…it refers to reasoning about any issue. According to ANA standards[1,2], CR requires applying nursing process (assess, diagnose, plan, implement and evaluate). In CT, the term "critical" means "important". Thus, CT is "important thinking" you need to do to assess, prevent, or manage any situation.

Critical thinking indicators (CTIs) describe behaviors that demonstrate the knowledge, attitudes, and skills that promote critical thinking (see pages 7 and 8). They give concrete examples of what you need to *observe and do* to assess and improve thinking. Now used in U.S. and other countries (e.g., Canada, England, Spain, Kenya, Australia, New Zealand, Mexico, Argentina, and the Philippines), the CTIs give a detailed list to use to promote dialogue about specific thinking skills needed to succeed today. Feedback and questions welcomed (click on **CONTACT US** at www.AlfaroTeachSmart.com).

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DEFINITION

Critical thinking in nursing is outcome-focused (results-oriented) thinking that:

- **Is guided by standards, policies and procedures, ethics codes, and laws** (Individual state practice acts and state boards of nursing).
- **Is based on principles of nursing process, problem-solving, and the scientific method** (requires forming opinions and making decisions based on evidence).
- **Carefully identifies the key problems, issues, and risks involved,** engaging patients, families, and key stakeholders in decision-making early in the process.*
- **Applies logic, intuition, and creativity** and is grounded in specific knowledge, skills, and experience.
- **Is driven by patient, family, and community needs,** as well as nurses' needs to give competent efficient care (e.g. streamlining charting to free nurses for patient care).
- **Calls for strategies that make the most of human potential** and compensate for problems created by human nature (e.g., finding ways to prevent errors, using information technology, and overcoming the powerful influence of personal views).
- **Focuses on safety and quality, constantly re-evaluating, self-correcting, and striving to improve.**

HOW WERE THE CTIs DEVELOPED?

The process for developing the CTIs on pages 7 and 8 follows here.

- **VERSION 1 (2001).** I developed a list of behaviors that I believed promoted critical thinking based on observation, reflection, and analysis during my work as a clinician, educator, and consultant. I then studied the behaviors listed in research and literature related to critical thinking[1,2,3,4,5,6,7,8,9] and compared my own work[10,11] with these publications. I added any missing behaviors.
- **VERSION 2 (2002).** In my workshops, and via the Internet, I asked expert and staff nurses to comment on whether they agreed that the listed indicators were indeed behaviors that promoted critical thinking. I revised the indicators based on their input. I then conducted a formal study to validate the indicators. Through the use of questionnaires, expert and staff nurses were asked to decide to what extent each of the indicators were behaviors seen in critical thinkers. Data from 120 respondents showed that most nurses strongly agreed that the indicators are behaviors that promote critical thinking.
- **VERSION 3 (2002-2009).** Indicators were revised based on new literature and expert review. In 2010, major revision and re-organization was done to make concepts easier to grasp — and to address the importance of engaging patients and families, developing skilled communication, promoting healthy workplaces, and safety and learning cultures.[12,13,14,15,16,17,18,19] Implications of staffing shortages were included.[20]
- **VERSION 4 (2014).** I surveyed expert nurses to validate the updated Personal CTIs (page 7). Nurses strongly agreed that these behaviors were seen in critical thinkers (to download a summary of the study, click on **WHAT'S NEW** at www.AlfaroTeachSmart.com).
- **VERSION 5 (2016).** The 4-circle CT Model (page 6) was revised to include the importance of developing self-management skills (e.g., managing emotions; responding to constructive feedback; navigating change; learning independently).

* *Stakeholders* are the people who will be most affected by care (patients and families) or from whom requirements will be drawn (caregivers, insurance companies, third party payers, healthcare organizations.)

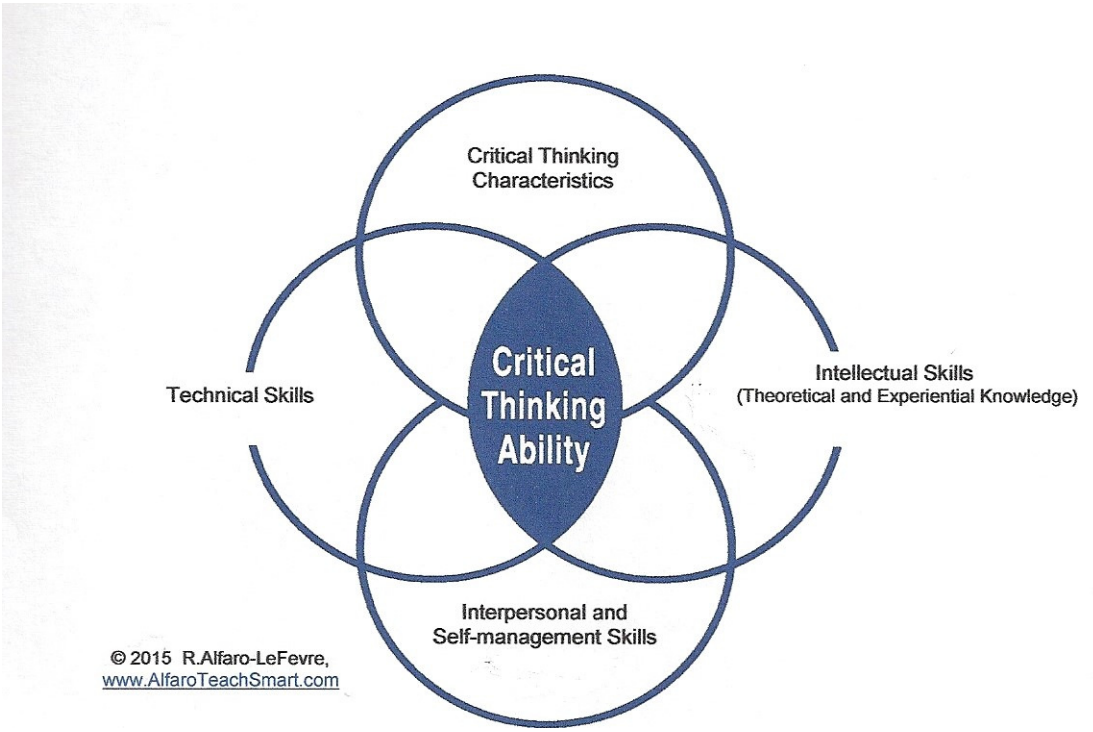
This document is NOT meant to stand alone. It doesn't replace the need for deep understanding of critical thinking and clinical reasoning in nursing, including: **1)** the complexity and circumstances of various clinical situations, **2)** how culture and diverse thinking, personality, and learning styles affect thinking, **3)** what factors influence reasoning ability, and **4)** the many sensitive issues related to assessment, teaching, and evaluation. For this reason, the CTIs are meant to be used in conjunction with the textbooks (page 5) and other related resources and literature.

UNDERLYING ASSUMPTIONS

- **Patient and caregiver safety, welfare, and engagement** must be central to all CT.
- **All CT depends on the quality of communication** (Clear? Complete? Mutually understood?).
- **A *critical thinker* is someone who demonstrates CT characteristics (Box on p. 7) and does the important thinking needed to:** 1) Judge whether information is complete, relevant, and reliable. 2) Assess, identify, prevent, and manage complex issues. 3) Create ways to improve results.
- **Because CT and CR are contextual** (they change with circumstances), you should consider reasoning in three different circumstances.
  1. **Thinking Ahead:** Being proactive**—** anticipating what might happen and what you can do to be prepared. **Examples:** Practicing what to do if things go wrong; bringing extra sterile gloves. For novices, being proactive is difficult and requires keeping references handy.
  2. **Thinking in Action:** Thinking in the moment — rapid, dynamic reasoning that considers several cues and priorities at once, making it difficult to describe. *Thinking in action* is highly influenced by *previous hands-on experience.* It's more intuitive and prone to "knee-jerk" responses than the other types of reasoning listed here.
  3. **Thinking Back (Reflecting on Thinking):** Deconstructing and analyzing the reasoning process in order to identify assumptions, look for flaws and omissions, gain insight, and correct and improve thinking. Experienced clinicians double check and reflect on their thinking in dynamic ways during *thinking in action*. However, this doesn't replace reflective thinking that happens *after the fact.* Deliberate reflective thinking that happens *after the fact* — for example, chart reviews, journaling, and open dialogue with others — brings new insights and greater accuracy. You can objectively identify "lessons learned" from experience.
- Agreeing to a code of conduct (Health Team Code of Conduct) and maintaining a healthy work environment and learning culture are required to develop CT skills.
- Critical thinking requires confidence. When confidence issues are present (e.g., with novices), more brain power goes toward worrying about *mistakes* than successfully navigating the issues.
- While clinical simulation and classroom learning are key starting points for CT development, you develop competent reasoning skills on the job when you have repeated experiences under varying circumstances.
- No one is a mind reader. To assess nurses' thinking, observe *behavior* (what they *communicate* and *do*). Also examine *results over time* (e.g., assess their patients directly; review their charting, consider peer input). If you're unsure about messages sent by behavior, clarify *intent* (e.g., "Help me understand what you're trying to do, and why you're trying to do it.")
- Mutual understanding of expectations and a sense of trust between leaders and staff and , teachers and learners are key to assessing and improving thinking. Encourage learners to identify ways to improve their thinking in their own way (each person knows him or herself best).
- Knowing how to give and take feedback (constructive criticism) is key to improving thinking.

- Even the best critical thinkers' reasoning abilities varies, depending on circumstances such as confidence, experience, practice, and familiarity with the people and situations at hand.
- Assessment of reasoning is subjective and highly influenced by the knowledge, thinking, and personality styles of those doing the assessment. To make assessment *as objective as possible* do the following: **1)** Ensure that the people doing the assessment use the same tools to assess and promote thinking. **2)** Have more than one person assess behavior using the same criteria, and **3)** Focus on *patterns of behavior* and *usual results*, rather than *single incidents*. **4)** Be sure that nurses who are being evaluated know exactly what behaviors are being assessed.
- The three CTI categories on pages 7 and 8 (Personal Characteristics, Knowledge, and Intellectual Skills) are inter-related. The ability to demonstrate *knowledge indicators* (page 8) alone does not imply critical thinking. Critical thinking requires ability to *apply* knowledge.
- The CTIs should not be used uncritically — as you review them, ask yourself how, why, and whether they apply to the context in which you teach or practice. Delete those that don't apply, add indicators as needed. The first step for using the CTIs is to ask for agreement among users that the indicators are indeed behaviors that promote CT.
- CTIs should be as specific as possible: Add or revise CTIs based on the context in which they are used. For example, for specialty practices such as maternal-child nursing, make an addendum page that includes specific knowledge and skills needed to practice maternal-child nursing. (If you have recommendations for specialty practice indicators, please let us know by clicking on CONTACT US at www.AlfaroTeachSmart.com .)
- Because the CTIs give clear descriptions of what you need to *do* to demonstrate critical thinking, share them with students and nurses *early* in their learning.
- The CTIs are listed in context of what's expected to be observed in registered nurses. Some behaviors may not be appropriate for some levels of students and nurses.
- The CTI of "health-oriented" (page 7) points out that poor health — especially if accompanied by uncomfortable symptoms (e.g., fatigue or headache) — impedes thinking.
- The lighthouse –the **Teaching Smart / Learning Easy logo**– represents the leader-staff and teacher-learner relationship at its best: Leaders and teachers (like lighthouses) should guide staff and learners (like boats at sea) to navigate challenging experiences independently.

4-CIRCLE CT MODEL®



The 4-Circle CT Model above gives "a picture" of what it takes to think critically. Going clockwise above, here's what you need to do: **1)** Develop personal CT characteristics (page 7). When someone has the characteristics of a critical thinker, the skills in the other circles come readily. **2)** Acquire theoretical and experiential knowledge, as well as intellectual skills related to CT in each particular situation.* **3)** Gain interpersonal and self-management skills. If you aren't able to manage your emotions and can't get along with others, you'll be unlikely to think critically because you'll be "out of the loop" (people will avoid you and you'll be stressed out). On the other end of the spectrum, if you're "too nice" to confront or give criticism, you contribute little to others' CT and often lose brainpower to stress*. **4)** If you don't have the related technical skills (for example, IV's, N/G's, computer skills) you'll have less brain power for critical thinking (due to the "brain-drain" of learning technical skills). An easy way to use the 4-Circle Model is to simply draw lines pointing out from the circles, then add the skills you want to work on at the end of the line (page 10 is a guide to helping you do this).

*__Chapter 6 of__ ***Critical Thinking, Clinical Reasoning, and Clinical Judgment*** gives case scenarios and practice exercises for acquiring intellectual skills related to nursing process. **Chapter 7** gives detailed guidelines for self-management and interpersonal skills managing conflict constructively, giving bad news, dealing with complaints, working as a team. ***Applying Nursing Process*** focuses on CT skills in each phase of the nursing process.

PERSONAL CRITICAL THINKING INDICATORS (CTIs)

PERSONAL CTIs are brief descriptions of characteristics and behaviors often seen in critical thinkers. These are the behaviors that promote development of CT habits. The below list is the ideal — no one's perfect. Characteristics vary depending on circumstances such as comfort and familiarity with the people and situations at hand. What matters is *patterns* of behavior over time (is the behavior usually evident?). If you're a critical thinker, you probably can pick some characteristics you'd like to improve (critical thinkers are improvement-focused).

- **SELF-AWARE:** Identifies own learning, personality, and communication style preferences; clarifies biases, 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 (gets key points across to others).
- **CURIOUS AND INQUISITIVE:** Asks questions; 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 approaches; investigates thoroughly when situations warrant precise, in depth thinking.
- **REFLECTIVE AND SELF-CORRECTIVE:** Carefully considers meaning of data and interpersonal interactions, asks for feedback; corrects own thinking, alert to potential errors by self and others, finds ways to avoid future mistakes.
- **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; acts on intuition only with knowledge of risks involved.
- **CONFIDENT AND RESILIENT:** Expresses faith in ability to reason and learn; overcomes problems and disappointments.
- **HONEST AND UPRIGHT:** Looks for the truth, even if it sheds unwanted light; demonstrates integrity (adheres to moral and ethical standards; admits flaws in thinking).
- **AUTONOMOUS / RESPONSIBLE:** Self-directed, self-disciplined, and accepts accountability.
- **CAREFUL AND PRUDENT:** Seeks help as needed; suspends or revises judgment as indicated by new or incomplete data
- **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 aren't feasible; looks for useful solutions.
- **PROACTIVE:** Anticipates consequences, plans ahead, acts on opportunities.
- **COURAGEOUS:** Stands up for beliefs, advocates for others, doesn't hide from challenges.
- **PATIENT AND PERSISTENT:** Waits for right moment; perseveres to achieve best results.
- **FLEXIBLE:** Changes approaches as needed to get the best results.
- **HEALTH-ORIENTED:** Promotes a healthy lifestyle; uses healthy behaviors to manage stress.
- **IMPROVEMENT- ORIENTED (SELF, PATIENTS, SYSTEMS):** **SELF**— Identifies learning needs; finds ways to overcome limitations, seeks out new knowledge. **PATIENTS**— Promotes health; maximizes function, comfort, and convenience. **SYSTEMS —** Identifies risks and problems with health care systems; promotes safety, quality, satisfaction, and cost containment.

KNOWLEDGE AND INTELLECTUAL CTIs

KNOWLEDGE

Requirements vary, depending on context (e.g. specialty practice):

Communicates Knowledge of:

- ❑ Nursing and medical terminology
- ❑ Nursing vs. medical and other models, roles, and responsibilities.
- ❑ Scope of nursing practice (qualifications; applicable standards, laws, and rules and regulations).
- ❑ Related anatomy, physiology, and patho-physiology
- ❑ Spiritual, social, and cultural concepts
- ❑ Normal and abnormal growth and development (pediatric, adult, and gerontologic implications).
- ❑ Normal and abnormal function (bio-psycho-social-cultural-spiritual)
- ❑ Factors affecting normal function (bio-psycho-social-cultural-spiritual)
- ❑ Nutrition and pharmacology principles
- ❑ Behavioral health and disease management
- ❑ Signs and symptoms of common problems and complications.
- ❑ Nursing process, nursing theories, research, and evidence-based practice.
- ❑ Reasons behind policies, procedures and interventions; diagnostic studies implications
- ❑ Ethical and legal principles
- ❑ Risk management and infection control
- ❑ Safety standards, healthy workplace standards, and principles of learning and safety cultures
- ❑ Inter-relationship of healthcare disciplines and systems.
- ❑ Reliable information resources

Demonstrates:

- ❑ Focused nursing assessment skills (e.g. breath sounds or IV site assessment)
- ❑ Mathematical problem solving for drug calculations
- ❑ Related technical skills (e.g. n/g tube or other equipment management)

Clarifies:

- ❑ Personal biases, values, beliefs, needs
- ❑ How own culture, thinking, personality, and learning style preferences differ from others'
- ❑ Level of commitment to organizational mission and values

INTELLICTUAL SKILLS/COMPETENCIES

Demonstrates nursing process and decision-making skills:

- ❑ Communicates effectively orally and in writing
- ❑ Identifies practice scope: applies standards, principles, laws, and ethics codes
- ❑ Makes safety and infection control a priority; prevents and deals with mistakes constructively
- ❑ Includes patient, family, and key stakeholders in decision-making; teaches patient, self and others
- ❑ Identifies purpose and focus of assessment
- ❑ Assesses systematically and comprehensively.
- ❑ Distinguishes normal from abnormal; identifies risks for abnormal
- ❑ Distinguishes relevant from irrelevant; clusters relevant data together
- ❑ Identifies assumptions and inconsistencies; checks accuracy and reliability (validates data)
- ❑ Recognizes missing information; gains more data as needed.
- ❑ Concludes what's known and unknown; draws reasonable conclusions — gives evidence to support them
- ❑ Identifies both problems and their underlying cause(s) and related factors; includes patient and family perspectives
- ❑ Recognizes changes in patient status; takes appropriate action
- ❑ Considers multiple ideas, explanations, and solutions
- ❑ Determines individualized outcomes and uses them to plan and give care
- ❑ Manages risks, predicts complications
- ❑ Weighs risks and benefits; anticipates consequences and implications — individualizes interventions accordingly
- ❑ Sets priorities and makes decisions in a timely way
- ❑ Reassesses to monitor outcomes (responses)
- ❑ Promotes health, function, comfort, and well-being
- ❑ Identifies ethical issues and takes appropriate action
- ❑ Uses human and information resources; detects bias

Additional Related Skills:

- ❑ Advocates for patients, self, and others
- ❑ Engages and empowers patients, families, peers, and coworkers
- ❑ Fosters positive interpersonal relationships; addresses conflicts fairly; promotes health workplace and learning cultures
- ❑ Promotes teamwork (focuses on common goals, respects diversity; encourages others to contribute in their own way)
- ❑ Facilitates and navigates change
- ❑ Organizes and manages time and environment
- ❑ Gives and takes constructive criticism
- ❑ Delegates appropriately (matches patient needs with worker competencies; determines worker learning needs, supervises and teaches as indicated; monitors results personally)
- ❑ Leads, inspires, and helps others move toward common goals.
- ❑ Demonstrates systems thinking (shows awareness of relationships existing within and across healthcare systems).

EXAMPLE OF USING 4 CIRCLE MODEL TOGETHER WITH CTIs

INSTRUCTIONS: Going clockwise, Identify relationships by matching boxes with circles. CTIs are abbreviated. Best understood if printed in color.

CIRCLE #1

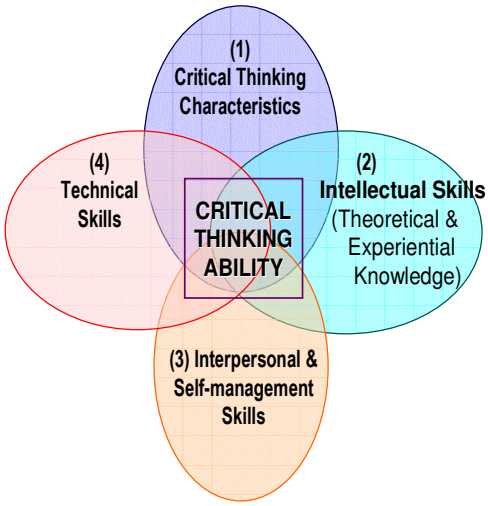
- ❑ Self-aware; authentic
- ❑ Effective Communicator
- ❑ Curious / inquisitive
- ❑ Self-disciplined
- ❑ Confident / resilient
- ❑ Analytical / insightful
- ❑ Autonomous / responsible
- ❑ Honest / upright
- ❑ Alert to context
- ❑ Proactive
- ❑ Patient / persistent
- ❑ Logical and intuitive
- ❑ Creative
- ❑ Realistic / practical
- ❑ Open and fair-minded
- ❑ Sensitive to diversity:
- ❑ Reflective / self-corrective
- ❑ Improvement-oriented

CIRCLE #2

- ❑ Communicates effectively orally and in writing.[16,17]
- ❑ Promotes safety and infection control[13]
- ❑ Applies standards, ethics codes, and nursing process principles
- ❑ Identifies scope of practice
- ❑ Includes patients in decision-making; teaches patients, self and others
- ❑ Assesses systematically and comprehensively
- ❑ Distinguishes normal from abnormal and relevant from irrelevant
- ❑ Checks accuracy and reliability
- ❑ Identifies assumptions and inconsistencies
- ❑ Determines credibility; detects bias.
- ❑ Concludes what's known and unknown; recognizes missing information.
- ❑ Considers multiple explanations and solutions
- ❑ Determines individualized outcomes
- ❑ Weighs risks and benefits;
- ❑ Individualizes interventions
- ❑ Reassesses to check responses
- ❑ Manages risks, predicts complications, promotes optimum well being
- ❑ Sets priorities; makes decisions in a timely way
- ❑ Applies evidence / research
- ❑ Identifies ethical issues — takes appropriate action
- ❑ Delegates appropriately
- ❑ Uses human and information resources

CIRCLE #4

- ❑ Manages IVs
- ❑ Gives injections
- ❑ Manages N/G's
- ❑ Manages monitoring & treatment devices
- ❑ Inserts / manages catheters
- ❑ Manages drains & suction equipment
- ❑ Uses computers
- ❑ Inserts / manages rectal tubes
- ❑ Maintains clean-liness & sterility
- ❑ Changes Dressings



CIRCLE #3

- ❑ Uses skilled communication in high stake situations[16,17]
- ❑ Establishes empowered partnerships
- ❑ Fosters positive interpersonal relationships; promotes teamwork
- ❑ Gives and takes constructive criticism
- ❑ Addresses conflicts fairly
- ❑ Deals with complaints constructively
- ❑ Upholds healthy workplace standards
- ❑ Promotes a learning and safety culture
- ❑ Leads, motivates, and manages others
- ❑ Advocates for patients, self, and others
- ❑ Facilitates and navigates change
- ❑ Manages stress, time, & energy

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ASK US ABOUT OUR CT TOOLS!

- Clinical Decision-making — Scope of Practice
- When and How to Delegate
- Healthy Workplace and Safety and Learning Cultures

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