

ENHANCING CLINICAL DECISION MAKING: DEVELOPMENT OF A CONTIGUOUS DEFINITION AND CONCEPTUAL FRAMEWORK



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Clinical decision making is a term frequently used to describe the fundamental role of the nurse practitioner; however, other terms have been used interchangeably. The purpose of this article is to begin the process of developing a definition and framework of clinical decision making. The developed definition was “Clinical decision making is a contextual, continuous, and evolving process, where data are gathered, interpreted, and evaluated in order to select an evidence-based choice of action.” A contiguous framework for clinical decision making specific for nurse practitioners is also proposed. Having a clear and unique understanding of clinical decision making will allow for consistent use of the term, which is relevant given the changing educational requirements for nurse practitioners and broadening scope of practice. (Index words: Clinical decision making; Advanced practice nurses; Nursing education; Consensus definition) J Prof Nurs 30:399–405, 2014. © 2014 Elsevier Inc. All rights reserved.

NURSE PRACTITIONERS MUST be effective in synthesizing knowledge in order to assess and manage patients. These abilities are characteristic of an expert nurse practitioner and lead to the provision of quality care (Higgs, Burn, & Jones, 2011). However, there is a lack of agreement on one term that best captures this process for nurse practitioners. Clinical decision making has more commonly been used as a term in the nurse practitioner literature, but it has often been used interchangeably with other terms. The American Association of Colleges of Nursing and National Organization of Nurse Practitioner Faculties include decision making a

component of nurse training; however, they have not defined the term.

Strengthening the quality of nurse practitioner education and, ultimately, the quality of patient care depends largely on how educators can facilitate the development and application of clinical knowledge and expertise. A clear and consistent definition and framework of clinical decision making will be helpful in the education and practice of nurse practitioners. The purpose of this article is to describe the process and outcomes of developing a preliminary definition and framework of clinical decision making. Our development of a preliminary definition for clinical decision making included three steps: (a) literature review of clinical decision making; (b) review and refining of an initial clinical decision making definition by a nurse practitioner/educator panel; and (c) review and refining of that definition by an external expert panel. Afterward, a framework for clinical decision making was developed that was contiguous with the definition.

Developing a Preliminary Definition of Clinical Decision Making

First, the literature was searched to examine how clinical decision making had been previously defined and described. A comprehensive search was conducted using PubMed, CINAHL, ERIC, and Embase to identify

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studies where clinical decision making was evaluated within the context of nurse practitioners. Over 100 articles were pulled for initial review; however, only 9 research-based articles were found among nurse practitioners. The search was expanded to identify nonresearch-based articles where the definition and process of clinical decision making was explored. Articles older than 5 years were included in the review because much of the clinical decision-making literature comes from the period of 1990–2000. Although beyond the scope of reporting for this article, a comprehensive review of the literature concluded that *clinical decision making* was the best term for use with nurse practitioners (Tiffen & Simmons, 2014).

Clinical decision making has often been defined as the process of choosing between alternatives or options (Thompson & Stapley, 2011). It is a complex process where data are gathered and evaluated, and then a decision, judgment, or intervention is formulated (Chumbler, Geller, & Weier, 2000; Hoffman, Donoghue, & Duffield, 2004; Pirret, 2007; Pritchard, 2006; White, Nativio, Kobert, & Engberg, 1992). It has also been defined as a series of decisions (Lauri & Salanter, 1998); a series of judgments (Higgs et al., 2011); an ability to identify, prioritize, and establish a plan (Grossman, Campbell, & Riley, 1996); a problem-solving activity (Higuchi & Donald, 2002); and a formulation of hypotheses or nursing interventions (Shin, 1998; Tschikota, 1993).

Some authors have defined clinical decision making as a process that includes clinical reasoning as part of the decision-making process in which information is collected and evaluated and then an action is taken or decision is made (Clack, 2009; Croskerry, 2002; Jefford, Fahy, & Sundin, 2010; Matteson & Hawkins, 1990; Orme & Maggs, 1993). A decision in this context may be the outcome, but the term *decision making* describes a process that may include antecedents such as considering information, gathering information, and weighing the risks and consequences (Matteson & Hawkins, 1990).

Matteson and Hawkins (1990) described the attributes, antecedents, and consequences of decision making. Those authors found that decision making was a deliberate mental choice in which the decision maker chose between two and more options and then took committed action based on the evidence. Antecedents of a decision include gathering and considering information while being aware of the options available and weighing any potential risks or consequences of that action. The consequences of the decision include taking action, considering subsequent decisions, and/or putting an end to any doubt about the decision.

Based on the literature, a tentative definition was developed:

Clinical decision making is a continuous, back and forth process that may involve data gathering from multiple sources, including the history and physical; data interpretation with further data gathered as necessary; data evaluation with consideration of the

data for relevant and irrelevant information; and the formulation of a decision.

Second, a panel of nurse practitioners was asked to provide feedback on the developed definition. Following institutional review board (IRB) approval, a panel of 10 nurse practitioners who were also nursing faculty was asked to review the literature-based definition of clinical decision making and provide feedback to guide refinement of the definition. These panelists were a convenient sample of nurse practitioners at the same institution as the authors. They were selected because they had both current clinical practice and were teaching nurse practitioners. The panelists had a range of experience working as a nurse practitioner from 5 to 20 years in areas of family, women's health, geriatrics, acute care, mental health, and internal medicine. In addition, they were all actively employed as 50–100% faculty teaching nurse practitioner students. The panelists were asked to respond to three questions: (a) Does the definition describe the process of clinical decision making you use as a practitioner? (b) Is this definition applicable to nurse practitioners at all levels (students, novice, and experienced)? (c) Is this process reflected in your approach and dissemination of information while teaching decision making to students? The three questions were developed by the authors because no prior examples were available for capturing this information.

Overall, the 10 panelists responded that the term *back and forth* did not reflect the dynamic, evolving process inherent in clinical decision making. They commented that, as written, the definition was more applicable to practicing nurse practitioners as compared with nurse practitioner students. Several commented that their decisions were most often based on comparing their collected data to their evidence-based guidelines, and they encouraged adding that piece into the definition. They also concluded that the definition was too wordy. Based on the feedback, the definition was revised to the following:

Clinical decision making is a continuous and evolving process in which data are gathered, interpreted, and evaluated in order to apply evidence to formulate a decision.

The third step in the process of developing a preliminary definition and framework of clinical decision making was to get feedback from a panel of experts who had experience publishing in the area of decision making and/or were recognized for their contributions to educating nurse practitioners. IRB approval was obtained to collect the panelist feedback. These panelists were selected purposefully because they were known to be well cited in the nursing literature as experts in clinical decision making. Expert 1 was an internationally known nursing professor with an abundance of publications in the area of clinical decision making. Expert 2 was an associate dean and nursing professor with extensive publications in the area of clinical reasoning. Expert 3

was a nursing professor and nationally known clinician who taught clinical decision making to nurse practitioner students. The experts were provided with the revised definition of clinical decision making and were asked to respond to the following three questions: (a) Does the definition fit with how you view the process of clinical decision making? Why or why not? (b) Is the definition applicable to how nurse practitioners nurse practitioners at all levels (students, novice, and experts) make decisions? Why or why not? (c) If you are currently practicing as a nurse practitioner, does the definition fit with how you practice on a regular basis? Why or why not? These questions were developed by the authors based on a review of the questions and data garnered from the first panel review.

Two of the three experts commented that the definition should capture a process in which the decision maker must choose from several options. All three indicated that a definition portraying the process of clinical decision making needs to reflect the characteristics of the practitioner or the situation in which the decision is being made because those are keys to how a novice or experienced practitioner would proceed. These included the education and experience of the provider. Based on the feedback from the three expert panelists, the definition of clinical decision making was further refined to the following:

Clinical decision making is a contextual, continuous, and evolving process, where data are gathered, interpreted, and evaluated in order to select an evidence-based choice of action.

Developing a Preliminary Framework of Clinical Decision Making

To form a beginning framework, considering our preliminary definition, several more commonly cited clinical decision-making theories were reviewed. Articles older than 5 years were included in the review because they are the original studies introducing the theory and also the theory critiques.

Decision Analysis

Decision analysis is a prescriptive theory where a problem is constructed, the decision options and consequences are identified, and a final decision is chosen based on values or preferences (Donahue & Martin, 1996; Raiffa, 1968). An assumption of decision analysis is that, if clinicians are more aware of their choices and the consequences of those choices, they are more likely to make fewer bad decisions, and patient care could improve. The process of decision analysis can be constructed with simple or complex decisions, and a decision can be reproduced and evaluated (Corcoran, 1986; Rashotte & Carnevale, 2004). However, decision analysis has been criticized because it is a linear model that does not explicitly consider characteristics that may influence the decision process; for example, the experience and knowledge of the decision maker or patient characteristics (Marks-Maran, 1999). The theory also assumes that there is only one

final decision, which is contrary to many situations that nurse practitioners face, where there is often more than one alternative (Gerdtz & Bucknall, 1999). The sequential steps in decision analysis may not capture the daily clinical decision making of nurse practitioners, who may use a more iterative process.

Information Processing Theory

The information processing theory has been described as a four-stage process that involves data gathering, hypothesis generation, data interpretation, and hypothesis evaluation (Banning, 2008). Central to the theory, is how the experience and knowledge of the decision maker influences how a decision is formulated (Narayan & Corcoran-Perry, 1997). As decision makers gain knowledge and experience, they are able to process more information (Greenwood, 1998). This model resembles the process taught to nurse practitioner students when learning how to develop differential diagnoses. However, a major assumption of the information processing theory is that there are limits to the ability to think rationally about a decision, which may not reflect the clinical decision-making process of an experienced nurse practitioner (O'Neill, Dluhy, & Chin, 2005). Experienced nurse practitioners may not deliberately go through each step of the process. Instead, they may use intuition to arrive quickly at a decision instead of considering several hypotheses. In addition, the linear process of the model may not reflect the dynamic process that nurse practitioners use or the true complexity of clinical decision making (Lee et al., 2006; Narayan & Corcoran-Perry, 1997; Rashotte & Carnevale, 2004).

Intuition

Intuition, defined as an understanding without a rationale, has been cited as a method nurses use to make decisions (Benner & Tanner, 1987). An expert nurse relies on intuition to focus on a patient problem quickly, as compared with a novice nurse who may have to rely on analytical principles (e.g., rules and guidelines). A strength of the theory is the recognition of experience as a central component in the clinical decision-making process of clinicians. As a clinician becomes experienced, he or she observes for patterns and themes and can quickly differentiate between relevant and irrelevant information (Benner, 1984). However, intuition has been criticized as a process that involves guessing where the final decision may be based on a "hunch" rather than the actual evidence (Jones, 1988). If a nurse practitioner considers information relevant when it is inaccurate, the process of pattern matching may be unsound (Banning, 2008). In addition, the nurse practitioner's intuition may be context specific and not transferable (Thompson, 1999). For example, if a nurse practitioner with 20 years of primary care experience moves to cardiology, her intuition in specific situations involving cardiology patients may not be at an expert level, and she may have to rely on an analytical process to make decisions.

Cognitive Continuum Theory

The cognitive continuum theory includes both analytic and intuitive cognition along a continuum (Hammond, 1988). The characteristics of the task will cause the decision maker to move from one mode to another, and if for example, an analytic approach fails, then the decision maker will revert to using intuition. The theory is broad and can be applied to several different characteristics and tasks that nurse practitioners may encounter, and it recognizes that the decision-making process is fluid rather than linear. However, the theory is complex and may not be useful for teaching nurse practitioners how to make decisions.

Preliminary Framework

After developing the preliminary definition of clinical decision making and reviewing more commonly cited theories of decision making from the literature, a framework of clinical decision making was developed that was meant to be contiguous with the developed definition. The framework is depicted in Figure 1 (The X Framework for Clinical Decision Making). The framework depicts the clinician as the primary decision maker in an evolving process where data may be gathered, interpreted, and evaluated to formulate a decision. Practitioner characteristics are attributes of the clinician (e.g., experience and clinical specialty) that may influence how that provider engages in this process.

The clinical decision-making process includes four potential steps. Data gathering involves the collection of pertinent information that will lead the practitioner forward. The two most important aspects to data gathering for clinical decision making are collecting a history and performing a physical examination. Nurse practitioners are taught how to take a history by collecting essential data about the patient and their family. These activities include getting a detailed description of the history of the present illness, the patient and family past medical history, social history, and other relevant information about the patient and their complaint. The history will usually lead the practitioner forward to determining a focused physical examination and then subsequently lead him or her to formulate differential diagnoses that will drive the need to collect further data or request laboratory or radiographic tests as needed. Data interpretation involves examining the initial history and physical assessment

data in order to make a determination about how to proceed in the clinical decision-making process. A practitioner may often develop an early diagnosis(s) that then is used to guide their collection of additional data (e.g., laboratory or other diagnostic tests).

After practitioners identify an initial differential diagnosis and collect additional data, they will then evaluate the data to determine which information is pertinent. This process is often described as developing differential diagnoses, where the clinician may tentatively or definitively choose a diagnosis from the potential alternatives. The practitioner considers the discriminating features of the tentative diagnosis, and these features by their presence or absence help to narrow the choice of diagnosis.

Clinical decision making may involve formulating a final choice, as depicted in the framework. *Choice* is a comprehensive term that may include the practitioner choosing a final diagnosis, collecting further data, establishing a management plan, or providing patient education. By keeping the outcome of the clinical decision-making process broad, the framework is applicable at all levels of advanced practice and potentially applicable for other health care providers (e.g., nurses, physicians, and physician assistants).

The framework depicts the clinical decision-making process as a fluid process rather than linear. A clinician may begin the process with data gathering and move forward in the process using each step, or the clinician may move in a more iterative manner, depending on attributes of the clinician and the situation. The sunrise design is meant to express a process that is evolving.

Several variables, including practitioner and situational characteristics, may strengthen or hinder clinical decision making. In the proposed framework, attributes of the decision maker that influence clinical decision making are represented by the term *practitioner characteristics* rather than giving specific examples because a clear relationship has yet to be confirmed in the literature between these characteristics and the clinical decision-making process.

Practitioner characteristics may influence how a situation is appraised or how complex the task is perceived, which in turn may influence how that practitioner proceeds in the clinical decision-making process. For example, a nurse practitioner's experience may facilitate the perception of a task as straightforward, whereas a novice practitioner may perceive that same task differently. Situational characteristics may also influence practitioner characteristics. For example, if a nurse practitioner sees a patient with an unfamiliar condition, he or she may have less confidence in the ability to make decisions, regardless of experience. The process or steps used to make decisions may be unique depending on the practitioners and the situation with which they are faced.

Discussion

Although the proposed clinical decision making definition and framework are preliminary in nature, we believe that they are a good starting point for moving to a unified

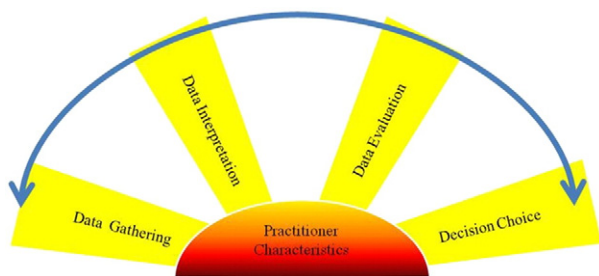


Figure 1. X framework for clinical decision making.

definition and framework for nurse practitioner education and practice. A major strength of the definition and framework is the connection between the two. Such a connection is not found individually with other decision-making theories, such as decision analysis, information processing theory, intuition, or the cognitive continuum theory.

Decision analysis and the information processing theory have been criticized as depicting decision making as linear; however, a linear or ordered set of steps is not representative of the clinical problems that nurse practitioners face, where continuous back-and-forth decision making occurs rather than a one-time four-stage event. The dynamic steps of decision making are central in the proposed definition and framework, which recognizes that nurse practitioners may enter and exit these stages at different times, and move between steps rather than strictly follow the steps in order.

The definition and framework are not explicitly a rational or intuitive approach to decision making; however, they have qualities of both, where the complexity of the task, the ambiguity of the task, and the nature of the task determine the approach used by the nurse practitioner. This more dynamic process is similar to an assumption of the cognitive continuum theory.

The definition and framework emphasize the contextual nature of the decision-making process. For example, the experience and knowledge of the decision maker are central to how a decision may be formulated, which is similar to the information processing theory, intuition, and cognitive continuum theory. The framework also recognizes the importance of the setting and situation where the decision making is occurring.

The process of clinical decision making in this framework can be fit with simple or complex decisions, which may potentiate being able to reproduce and evaluate the framework as well as optimize or standardize decisions making. The conceptualized framework is appropriate for practicing nurse practitioners with all levels of experience, knowledge, and backgrounds and is also appropriate for nurse practitioner students. For instance, the framework could be used to teach students the steps in clinical decision making but also could be used to guide an evaluation of the specific decisions that are made by nurse practitioners. Overall, the framework is broad and inclusive.

The proposed definition and framework have several limitations. First, the initial set of panelists was a fairly homogenous sample from one institution. They provided their responses in writing rather than verbally, which may have created limits to their responses. In addition, there was no ability to clarify comments they may have provided, and they did not provide feedback on the revised definition. There were similar limitations with the second group of expert panelists. The group was small, and although they were known to be experts in their field, a larger sample should have been used. In addition, it would have been beneficial for them to receive the initial definition of clinical decision making along with the revised definition.

The proposed definition and framework provide one view of the process and influences of clinical decision making of nurse practitioners, but it is not a theory of clinical decision making where there are fully developed relationships between concepts. In addition, although the definition and framework are meant to be broad, they do not explicitly consider external influences or potentially the collaborative manner in which many decisions occur. These two areas are central in another theory of decision making, the situated clinical decision-making framework, which may warrant further assessment of other theories and frameworks that were not considered on first review.

Implications

The clinical decision making definition and framework proposed here are works in progress. Although the definition and framework were developed in relationship to each other, a next step will be to use a significantly larger panel of nursing educators and clinicians to critique the connection between them. In addition, each aspect of the framework will need to be fully defined.

Following that, the framework could be evaluated. One approach for testing the framework would be to consider the use of “think alouds.” With this approach, nurse practitioners could talk aloud as they engaged in the process of clinical decision making, and a comparison could be made between the process they use and the proposed framework. Initially, this approach could be used within highly specific nurse practitioner populations and settings; however, it could be replicated with other specialties, levels of experiences, and contexts.

Ideally, the proposed framework could be integrated throughout the nurse practitioner curricula as a guide for making safe and thoughtful decisions. The stages of the clinical decision-making process could be introduced in health assessment. Generally in this course, students are taught how to recognize and integrate information about signs and symptoms with general health conditions rather than connect the data to a specific diagnosis. However, if students are exposed to examples where the information is taken forward to formulate a diagnosis or choice, then they could see the big picture much earlier.

The clinical decision-making process could be further introduced into core courses (e.g., coordination of care, pharmacology, physiology, and pathophysiology). These courses serve as the foundation for students to recognize and begin to formulate ideas about a problem and connect data. In addition, students learn how to search the literature or find evidence to support or refute their assumptions and then have to formulate a judgment or choice. In clinical classes, a student will apply these steps to ultimately take action. Having multiple methods to teach these steps would be ideal.

The definition and framework would evolve through research among those deeply involved in nurse practitioner education and practice, and the process would invite and include feedback to establish an accepted definition and framework among nurse practitioners. Buy-in from faculty and other stakeholders should be

assured as the definition and framework are refined through the research and feedback process.

Conclusion

The purpose of this article was to describe the process of developing a preliminary definition and framework of clinical decision making that can be used to guide the education and practice of nurse practitioners. The proposed definition and framework attempt to capture a complex and dynamic process that is influenced by practitioner and situational characteristics. The framework can be used to study ways to standardize and maybe improve clinical decision making.

According to an Institute of Medicine (2010) report, there is a need for competency-based nursing education with activities that are not task based but rather focus on higher level abilities that represent the ability to demonstrate mastery over coordination of care and provide a foundation for clinical decision-making skills in diverse clinical situations across care settings. To continue to better understand and evaluate how health care education can make the necessary shift toward getting students to assess and organize information, apply knowledge appropriately in situations, and use knowledge to understand and take action, it will be essential to have a unified definition that describes that process.

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