Clinical judgment: An integrated model

Literature on clinical judgment is discussed as a background for proposing an integrated model of diagnostic–therapeutic and ethical reasoning. Information processing and nursing process components related to problem identification and problem solving serve as a framework for the integration of the two domains of clinical reasoning. Discussion focuses on the integration of process components, identification of areas of research, and the use of the model in education and practice. Key words: *clinical judgment, diagnostic–therapeutic reasoning, ethical reasoning, information processing, nursing process*

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DESPITE ITS obvious importance in care delivery, clinical judgment in nursing practice has received little attention. Nurses' judgments influence the lives of individuals and families, yet neither research nor nursing education has emphasized this area of practice until recently. Current interest in clinical judgment can be attributed to various factors; among these are the North American Nursing Diagnosis Association's development of a diagnostic language and taxonomy of nursing diagnoses,[1] interest in clinical intuition,[2,3] the concept of expert and novice judgment,[3,4] and publications on diagnostic and ethical reasoning.[5,6]

Clinical judgments required in nursing practice can be classified into two major types: diagnostic–therapeutic and ethical. Although the content of reasoning in the two domains differs, the overall reasoning processes used to arrive at the different types of judgment are similar. Little atten-

tion has been given to the relationship be-
tween the two domains of judgment. Yet
rarely do diagnostic and treatment decisions
occur without reference to values. Con-
versely, most ethical concerns arise in the
context of nursing assessment, diagnosis,
caregiving, and evaluation. Ethics has not
been viewed as an integral part of each nurs-
ing process component; rather, it is seen as
an area to be learned and practiced as a sepa-
rate entity.

With the introduction of professional
practice models, nurses have assumed re-
sponsibility for diagnostic, therapeutic, and
ethical decision making, as well as collabo-
rative decision making in the domain of dis-
ease-related technology and medical treat-
ment. Many find time for serious reflection
on the moral and value dimensions of their
daily practice. Yet for reflection to be mean-
ingful, a language and framework are re-
quired for thinking about the moral dimen-
sions of nursing process.

This article briefly reviews models com-
monly used to describe clinical judgment in
the health professions and presents a new
model that encompasses diagnostic–thera-
peutic and ethical judgment. The model can
be used to guide a program of research and
to provide a structure for teaching and
evaluation.[7] The article emphasizes how
these domains are interwoven when viewed
from the perspective of information pro-
cessing theory.

CURRENT MODELS OF REASONING AND JUDGMENT

The study of human judgment emerged as
a research area in the 1950s, when psy-
chologists began to look beyond strict
stimulus–response theory and Freud's un-
conscious motivation to cognitive opera-

tions, computer simulation models, and arti-
ficial intelligence.[8] Early work evolved into
three major themes of inquiry: (1) clinical
judgment analysis or policy capturing,
which involves statistical modeling of the
reasoning process with particular emphasis
on the study of cue utilization or on judg-
ment accuracy[9]; (2) behavioral decision
analysis and the use of subjective expected
utility (SEU) theory, which is used in the
study of therapeutic decisions and develop-
ment of utilitarian models of ethical judg-
ment (eg, Bayesian conditional probability
theory)[9]; and (3) information processing
theory that uses a process tracking approach
with verbal reports as data.[10]

As research in psychology accumulated,
shifts occurred in these approaches. View-
points have converged. Quantitative repre-
sentations in the Bayesian and regression
approaches have decreased. The linear re-
gression model has been simplified, and
concepts of hypothesis generation, memory,
and perception have been introduced into
the "black box."[11] Decision theorists
Tversky and Kahneman[12] enriched the in-
formation processing model with concepts
of hypothesis availability, representative-
ness, and subjective worth. They have at-
tempted to capture the heuristics and biases
used in judgment. Judgment analysis and
decision theory describe how clinicians
should make judgments, as opposed to de-
scriptions of how they *do* make judgments
(information processing theory). Other in-
vestigators have contributed to current un-
derstanding of reasoning and judgment
from a developmental perspective.[13,14]

Information processing theory

Information processing theory has par-
ticular relevance to descriptive, as opposed
to prescriptive, theory development. The

early work of cognitive psychologists such as Bruner, Goodnow, and Austin[15] on concept attainment and decision making strategies; the work of Newell, Shaw, and Simon[16] on problem solving; and the recognition of the computer's potential for building models of judgment have advanced theory development. Central to this theory of clinical judgment is the idea of bounded rationality,[10] which describes the inherent limits of human information processing, such as the relatively small size of short-term working memory. How human beings adapt to these limitations has stimulated research on information processing strategies. The goal of research and theory development is to describe and explain human judgment by identifying the cognitive processing, operations, and capabilities involved. Models are based on process tracking, which uses subjects' verbal reports to trace the reasoning leading to a judgment. Generally, models are nonmathematical.

Statistical, Bayesian, and SEU models

In contrast to information processing theory, statistical, Bayesian, and SEU models are based on a "black box" approach. When probabilities of events have been established for a judgment task (eg, diagnosis of rheumatic fever), mathematical representations of judgment and decision making can be constructed. Reviewers[8,17] have referred to these approaches as behavioral decision analysis (a priori decomposition of the judgment process) and judgment analysis (a posteriori decomposition). Decision analysis is a prescriptive model that uses the probabilities of occurrence and the subjective utility of each alternative to determine the best judgment. A posteriori analyses reveal a subject's "judgment policy" over a series of judgments. Prescriptive models involve decision trees, base rate of occurrence data, and a series of calculations; they have not been used to any great extent in clinical practice.

Developmental models of ethical reasoning

Contemporary moral issues in health care have fostered a role for the place of moral philosophy in the everyday clinical judgments of health care practitioners. To date, however, there is a gap between the theoretical and technical approach—that is, between the methods of moral philosophy and the practical approach to resolution of ethical problems in clinical settings. To bridge this gap, a more empirical approach to the study and measurement of ethical reasoning is needed.

The construct used to trace nurses' reasoning in the area of ethical judgment is the philosophers' notion of moral claims. Tradition holds that in situations requiring ethical judgment, there is a conflict of claims or values of a moral quality, responsibility, or duty.[18] In most instances these conflicting claims constitute an ethical dilemma that requires making a choice that favors one party's claim over that of another.[19,20] In the tradition of moral philosophers, all morally responsible agents are held accountable for the moral choices they make; they must be able to give reasons for their moral judgments. These reasons, or moral justifications, are usually based on moral virtues, ideals, rules, or principles.[18] To develop a nursing theory of moral reasoning, the ethical component of a model has to describe the nurse's ability to recognize ethical cues, gather critical information regarding the nature and basis of relevant parties' ethical claims, and arrive at an ethical choice and plan of action through a process of weighing

reasons in a disciplined and systematic manner.

In an attempt to organize existing research and to form a framework for future research in moral psychology, Rest[21] developed a four-component model to approach the complex study of the interrelationship of ethical reasoning and behavior. Rest's four basic psychologic processes are as follows:

1. The moral agent must be able to interpret a moral situation in terms of possible choice of action and its consequences with regard to the welfare of the parties involved.
2. The moral agent has to be capable of making a judgment about a morally desirable or obligatory course of action.
3. The moral agent must be able to give priority to morally obligatory values above other personal values.
4. The moral agent must have sufficient ego strength, commitment, and skills required for implementation to carry out or behave in the predetermined morally correct way.

Research on the ethical dimension of nurses' clinical reasoning, judgment, and action has been primarily descriptive and within the conceptual framework of the moral developmentalists, such as Kohlberg[14] and Rest.[21] This methodologic approach focuses on the structure of the subjects' moral reasoning or their moral justification for certain choices in response to hypothetical moral dilemmas. It is largely limited to moral evaluation and does not explicitly measure how the subject perceives moral cues or formulates the moral problem. In addition to the developmentalists' approach, Omery[22] used a qualitative method to investigate moral justification of

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nurses' reasoning. A small number of studies have focused on how nurses interpret and apply ethical principles in choosing nursing actions; nurses' participation in ethical decision making; dilemma recognition; and nurses' choice of action when patients', physicians', and employers' claims conflict.[23]

An analysis of the moral dimension of practice has often been divorced from an understanding of its cognitive dimension as described in diagnostic and treatment activities. This is not peculiar to nursing, but rather is a tradition within the human sciences.[24] Wright[25] posed a link between clinical and ethical decision making but did not expound on the integrating linkages. He listed five considerations that inform clinical decision making:

1. key data that are critical to decision making,
2. taking account of action constraints (eg, time and resources),
3. understanding value components of a decision (situation, care provider, and patient),
4. attending to the components of the decision making process, and
5. awareness of the ethical theoretical framework used by the decision maker.[25(pp76–77)]

No studies were found linking the nursing process and ethical dimensions of nursing practice in a framework suitable for guiding research, education, and practice.

INTEGRATED CLINICAL JUDGMENT MODEL

The common factor that permits linking nursing ethics, nursing diagnosis, and nursing therapeutics in a model is an information processing theory of clinical judgment and an assumption about the nature of clinical nursing judgment. Information processing theory is useful for interpreting both qualitative and quantitative data. Also, the theory may benefit from knowledge developed in nursing. An "integrated" model, by definition, is one in which all the parts necessary for making the whole are brought together.[26] Assumptions basic to the integrated model are that clinical judgment is a multidimensional concept and that every act of clinical judgment in nursing has diagnostic, therapeutic, and ethical dimensions. Ethical dilemmas occur during assessment, diagnosis, and treatment. In addition, diagnostic and treatment activities have a moral or value dimension. An integration of the domains of judgment does not negate the value of research in each judgment domain. Studies based on an integrated model will provide a more complete perspective about clinical judgment in nursing. Integrating the domains will also provide a more efficient way to teach and measure both domains.

Fig 1 contains a schematic representation of the integrated model of reasoning and judgment. In the center of the diagram is generic information processing, which is central to understanding reasoning in any of the three domains. The generic structure (center boxes) represents a summary of human judgment. The content within the components of the two domains, diagnostic–therapeutic (left boxes) and ethical judgment (right boxes), is derived from nursing philosophy, theory, and research. The model is presented as a flow diagram to indicate that at one level of description, reasoning moves through a set of interrelated, interdependent operations. This is consistent with the familiar problem identification–problem solving sequence. For example, judgments about solving a problem cannot precede some level of problem recognition.

Although represented as a linear process, clinical reasoning within any of the components is complex and does not proceed in a predetermined, stepwise manner. More likely, clinicians consider multiple components (see center boxes) in an iterative manner, going back and forth among the components. For example, in ethical reasoning, prioritizing claims may require a reanalysis of information collected earlier in the process or may require the collection of additional information from a party in the dilemma. In addition, the flow diagram cannot capture adequately the dynamic interaction among domains within a component of clinical reasoning. Frequently, as a therapeutic judgment is being made, the clinician may reframe clinical data from an ethical perspective and subsequently identify a dilemma.

Information collection and interpretation

The first generic component (center boxes) of the Integrated Clinical Judgment Model is information collection and interpretation. Most of the early research on human reasoning did not take into account the complex, multiple cue tasks that are characteristic of clinical judgment. Elstein, Schulman, and Sprafka[27] in their review of re-

INTEGRATED   MODEL

Diagnostic, Therapeutic, and Ethical Reasoning

GENERIC PROCESS

Diagnostic
Reasoning

Information
Collection &
Interpretation

Ethical
Reasoning

Functional Health
Pattern Assessment
(FHP)

Parties, Claims, Basis

GENERIC PROCESS

Diagnostic
Reasoning

Problem
Identification

Ethical
Reasoning

Statement of
Nursing Diagnosis

Statement of Ethical
Dilemma

GENERIC PROCESS

Therapeutic
Reasoning

Plan for
Problem Solving

Ethical
Reasoning

Prioritized Problems/
Interventions/
Outcomes

Prioritized Claims
and Action Plan

GENERIC PROCESS

Therapeutic
Reasoning

Implementation of
the Plan

Ethical
Reasoning

Nursing Action

Moral Action

GENERIC PROCESS

Therapeutic
Reasoning

Evaluation

Ethical
Reasoning

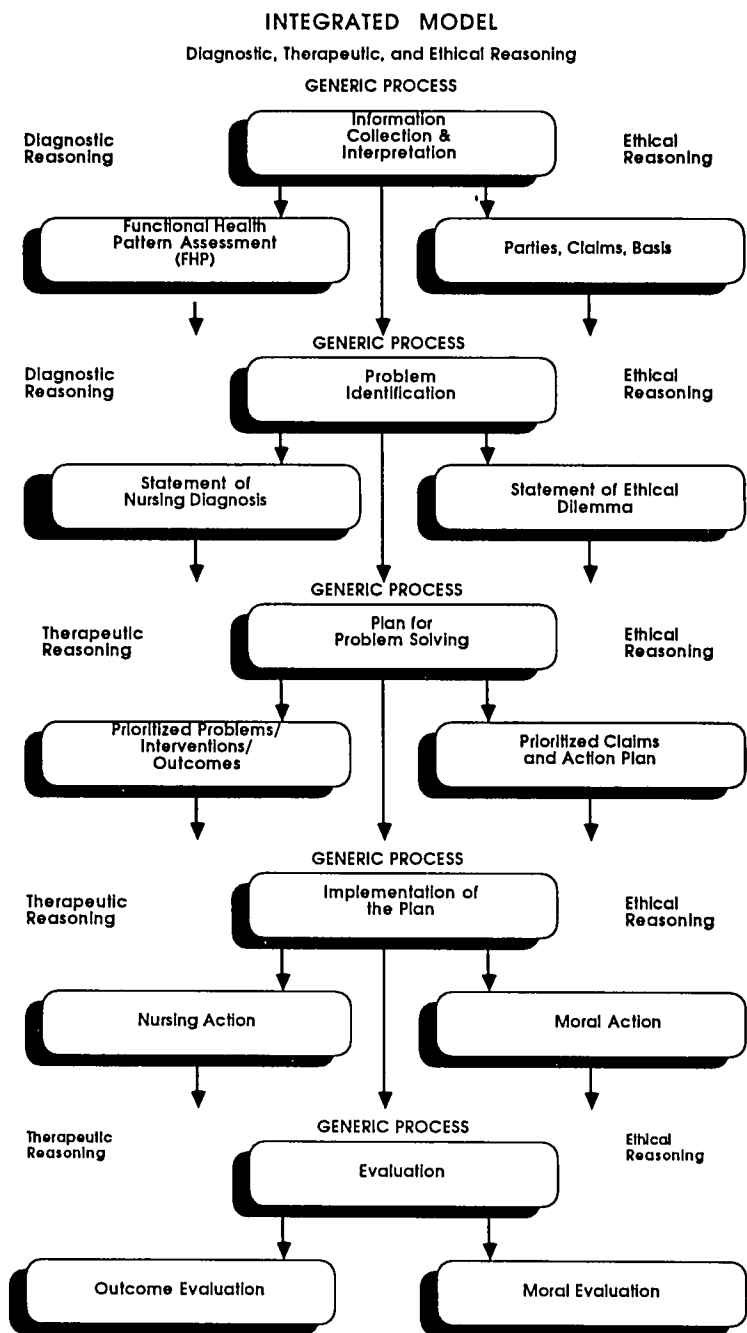Outcome Evaluation

Moral Evaluation

Fig 1. Integrated model of diagnostic–therapeutic and ethical reasoning.

search noted that in many studies of human judgment, information is provided to subjects, whereas in real life tasks, information is purposefully collected and analyzed within some format that reflects the clinician's interest. Also, ecologic validity in research argues for recognition of the purpose, or motivation, for engaging in a judgment task; this is expressed in a psychologic set. The helping role and the set to describe and explain a situation are examples of psychologic sets that act as motivational variables in nursing.[6]

Studies of information collection and interpretation have used high-fidelity simulations representing clinical situations. Subjects have considered videotaped vignettes,[28] case studies or patient management problems,[29,30] and simulated patients played by actors that allowed subjects to control information collection.[7,27]

In the ethical or diagnostic domain, interpretation of information is influenced by variables such as the conceptual focus (scope of assessment), motivational set of subjects (purpose), and the reliability and validity of information. To interpret is to derive meaning from a piece or pieces of information. Information takes on meaning when placed in a network of concepts. For example, restlessness, when viewed as a sign of anxiety, takes on extended meaning because of the network of knowledge, beliefs, and expectations in long-term memory associated with the concept of anxiety. When identification of a phenomenon is not immediately perceptible, human beings generate hypotheses early in the assessment. These hypotheses are used as tentative meaning structures to guide further cue search.

Hypothesis generation has been studied in diverse contexts, such as developmentally in school children[13] and in chess players.[31] Gale and Marsden[29] suggested that hypothesis generation serves to structure or restructure the meaning of cues as information collection proceeds. The source of hypotheses has been of interest in social cognition as well as in general psychologic research. Consistent with earlier explanations by Bruner,[32] hypotheses about persons are thought to be generated from schemata, or previously learned prototypes that are stored in long-term memory. Yet with all the research in person perception and impression formation, the following question posed by Asch has not been answered: "This remarkable capacity we possess to understand something of the character of another person, to form a conception of him as a human being, as a center of life and striving, with particular characteristics forming a distinct individuality, is a precondition of social life. In what manner are these impressions established?[33(p283)]

The integrated model of diagnostic–therapeutic and ethical reasoning would suggest a number of important considerations in information collection and interpretation. First, scope of information collected is influenced by a nurse's philosophic basis for practice, especially the beliefs about nursing's conceptual focus and its social mandate. Values, implicit or explicit, underlie choices about what information is worthy of collection, particularly in situations where time constraints exist. For example, assessment of diseases or mental disorders may be of higher priority than a person-oriented assessment. Second, the personal and sometimes confidential nature of clinical

data and the personal style of interaction used to collect information suggest that autonomy, beneficence, and confidentiality may influence information collection and interpretation. Mishler[34] raised similar questions about integration of values into diagnostic and therapeutic reasoning in medicine. He suggested discourse analysis as a research approach to the study of care provider–patient interactions. In nursing, studies of admission assessment using discourse analysis techniques would provide interesting information on integration of ethical and diagnostic–therapeutic content.

Structure for information collection

As seen in Fig 1, the Integrated Model employs functional health patterns and parties–claims–basis as the structure for organizing information collection. The 11 Functional Health Patterns[6] provide a framework and holistic approach to admission assessment, developmental assessment, and evaluation of life patterns and quality of life. This framework takes into account the effect of ethnic–cultural variables and areas of possible ethical concern. Cognitive–perceptual, value–belief, and health perception–health management patterns provide information on client values, decision-making capabilities, quality of life, and other ethically relevant data.[35] A sensitivity to actual dilemmas or risk factors for dilemmas can be integrated into a screening assessment of the functional health patterns.

When diagnostic cues to health problems are encountered during a functional pattern assessment, the clinician shifts from information collection to the diagnostic process.[6] When cues to an ethical dilemma are present, the branching sequence includes obtaining information about all parties in-

> **When cues to an ethical dilemma are present, the branching sequence includes obtaining information about all parties involved, their individual claims, and the moral basis for their claims.**

volved in the dilemma, their individual claims, and the moral basis for their claims. A *party* is defined as an interested person or institution involved in a moral dilemma. A *claim* is a statement of what a party specifically wants or believes he or she is entitled to have. The *moral basis* of a claim is a valid moral argument that supports the claim as judged from the viewpoint of the individual making the claim. Rest[21] reviewed research on how people collect, interpret, and integrate information about social situations in which the welfare of people and their interests are at stake. He concluded that many people lack sensitivity and have difficulty interpreting the moral dimensions of social situations. Studies of nurses also suggest that some have difficulty defining or describing ethical dilemmas.[36–38] The most significant strength of an integrated approach to information collection is to encourage sensitivity to ethically relevant cues in the admission and daily assessment.

Reasoning strategies

The idea of strategies, adapted from the work of Bruner, Goodnow, and Austin,[15] provides a way of describing information collection, the sequence of collection, and the way information is used. This is a useful way of thinking about the reasoning process, whether or not subjects are conscious of the strategies they employ in judgment.[39]

Two research models have captured the interest of nurse researchers. Investigators interested in the analytic strategies of information collection and interpretation have employed a hypothetico-deductive model of hypothesis generation–hypothesis testing.[7,28,39] Studies support the usefulness of this model as a description of certain aspects of diagnostic judgment, but no one theory has been sufficiently tested in nursing. Emphasizing nonanalytic models, Benner and Tanner[3] suggested that intuition is an important element of expert clinical judgment. It is a form of nonanalytic reasoning in which patterns and relations provide a holistic grasp of a situation. Most likely, as descriptive models of information interpretation in nursing emerge, they will encompass both analytic and nonanalytic reasoning.

Other interesting lines of research examine variables influencing intuition. For example, processing of information about familiar others seems to be schema based; this is not the case with strangers. A schema in memory may serve as a reference point for intuitive knowing. When familiar with a patient, a nurse may detect a change in the patient's condition prior to the presence of overt clinical signs. Information collection and interpretation in nursing probably contain the same biases reported in other studies. These include availability, representativeness, anchoring, and adjustment bias.[40] Human beings seem to employ these heuristics to simplify information processing tasks.

Problem identification

The second component in the integrated model in Fig 1 (center boxes) is problem identification. A *problem* can be defined as a situation that creates a sense of uncertainty, perplexity, and difficulty. It can be in the domain of diagnosis–treatment or ethics. Identification is an act of classifying or naming the problematic situation or the dilemma. It is the judgment that something is "this and not that." When describing diagnostic–therapeutic or ethical judgments in nursing, precise classifications are required similar to those contained in a typology of ethical problems or a diagnostic classification system.

An integrated approach to reasoning and judgment in the area of problem identification leads to the appreciation that diagnostic and therapeutic judgments form the context in which dilemmas or ethical problems arise. For example, during interpretation of information, a diagnosis may suggest the need for further information collection from an ethical perspective. When judging a patient's decision-making capacity, it is important to assess the patient's ability to understand, reason, and deliberate about treatment-related decisions. A nursing diagnosis of impaired reasoning suggests that the patient may not be able to give informed consent or choose among treatment options. The converse is also possible; a dilemma may produce secondary problems that need to be investigated within the context of nursing diagnosis. An example is the anticipatory anxiety patients experience when their families want them to have a course of treatment that they wish to refuse.

Formulation of the ethical problem as a dilemma is a necessary but not sufficient condition for the successful completion of an ethical analysis. Clinical situations can be of moral concern as an ethical "problem" but may not necessarily be an ethical dilemma for the clinician. That is, there may

be an element of concern for the welfare of one or more persons, and the situation may require some consideration of the moral obligations or duties of the health care provider. For example, caring for a terminally ill patient who is having a great deal of pain requires that nurses consider their moral responsibilities to "do good for the patient" by alleviating pain and suffering as much as possible. This situation does not become a moral dilemma, by definition, until the patient experiences a conflict of claims (right to be free of suffering versus avoidance of harm from side effects of pain medication).

A conflict of claims among parties related to the patient can also occur. For example, the nurses may perceive that their obligation is to keep the patient heavily medicated to relieve suffering, even if it ultimately hastens the patient's death. The family, or perhaps the physician, may perceive their moral obligation to be the preservation of the patient's life, even if it means that the patient has to endure greater pain and suffering to continue to live. This situation is now transformed into an ethical dilemma because there is more than one choice of action that can be morally desirable, justifiable, or permissible, and there are conflicting claims based on perception of moral duties or rights of the parties involved in the situation.

Based on collection and interpretation of the essential information in the first component of the model (Fig 1), the nurse formulates the problem. This is done by framing the statement of the ethical dilemma in terms of the interested parties and their conflicting claims, the latter of which imply the existence of alternative choices of action. Factors identified as contributing to the skill of dilemma formulation are

- knowledge of the criteria that define an ethical dilemma,
- sensitivity to the needs or welfare of others in terms of one's own moral duties or obligations to others in the situation, and
- the ability to assess social situations for essential information regarding interested parties, their claims, and the basis of their claims whenever there is potential for conflict of ethical interests or claims.

Similar factors influence diagnostic formulations. These include knowledge and skill in the use of the diagnostic concepts and diagnostic criteria, sensitivity to cues, and ability to assess health patterns. In addition, the importance of the match between the mode of reasoning and task characteristics has been emphasized by Hammond[41] (eg, intuitive, analytic, or a combination of both).

Both ethical and diagnostic judgments have to be expressed in statements that facilitate communication. A diagnosis is a concise statement that summarizes a set of cues to a health problem or process as well as the contributing (etiologic) factors. It is an inferential judgment that is probabilistic in nature because of the inherent uncertainty in the cue–category relationship. How nurses use categories in their reasoning, how clinical data are used to justify a decision, and judgments about theoretical or causal linkages between problem and contributing (etiologic) factors are some areas for future research.

The North American Nursing Diagnosis Association defines a nursing diagnosis as involving either a problem or a life process (eg, grieving) that necessitates nursing care; responses provide the observable, support-

ing data for diagnostic judgment: "A nursing diagnosis is a clinical judgment about individual, family, or community responses to actual or potential health problems/life processes. Nursing diagnoses are the basis for selecting interventions for which the nurse is accountable."[1(p5)] Each diagnosis has a theoretical base and provides a focus for a program of research.[42]

Aids to problem identification that have been proposed include expert systems and models based on numerical probabilities of cue–diagnosis relations. Bayes' theorem,[43] a frequently used model in medical judgment research, prescribes how various items of data are combined and how a diagnostician should change probabilities based on new information. The theorem requires estimates of the probability that each of the cues would be observed, given a particular nursing diagnosis. These estimates produce the numerical probability of a diagnosis, given that the cues were observed. The lack of nursing research using this theorem can be attributed to the lack of research-based information on cue–diagnostic category probabilities. The effect of multiple diagnoses on cue–category probabilities negates the usefulness of this theorem. Yet studies of this type can identify strategies that contribute to efficiency and accuracy in diagnostic judgment.

Plan for problem solving

Within the integrated model (Fig 1), the resolution of either an ethical dilemma or a nursing diagnosis can be viewed from the perspective of generic problem solving or decision making. Problem resolution requires a choice among alternative actions. Various descriptive and prescriptive theories have been proposed to deal with thera-

peutic choices. Decision theory and most normative decision rules are based on utilitarianism and the social good. From this perspective, the best decision is guided by the rule, the greatest good for the greatest number. Alternatively, care providers may use a decision theory with the implicit rule that the best decisions are those with the best consequences for the patient regardless of the societal effect.[44]

Decision analysis requires the construction of a decision tree that maps out alternative decisions, outcomes of each decision and the best estimate of their probability of occurrence, the utility value assigned to each outcome, and expected utility—that is, the product of the utility plus the probability of occurrence for each outcome. A "duty based" theory is an alternative method of decision analysis in ethics. This decision framework uses adherence to universal moral principles as the sole determinant of choice of action and excludes consideration of outcomes.[45] Analyzing decisions forces a decision maker to view multiple alternatives and bases for a decision prior to its occurrence. Decision analysis is both a method for representing data and an aid to decision making.[8]

Therapeutic judgment (problem solving) in complex situations involves prioritizing diagnoses consistent with the particular level of health care being delivered or problems that cause, or may cause, immediate discomfort, distress, or danger. For example, critical care nurses would not develop an elaborate treatment plan to reduce the risk of nonadherence to a medication regimen after discharge, but they would place high priority on physiologic instability or the diagnosis of a high risk for skin breakdown. Diagnosis-specific outcomes,

such as "intact skin at discharge," would be projected, and interventions designed to achieve this outcome would be included in the problem solving plan. Little research has been done on how these decisions are made, despite the fact that these are common nursing activities.

A second aspect of therapeutic judgment used in planning is outcome projection. The patient (or the nurse if the patient is unable) is helped to determine a desired outcome for the problem. For example, 20-lb weight loss in 12 months may be a realistic goal for a patient. Outcome projection involves forecasting based on human, material, and economic resources. A third aspect of therapeutic judgment is determining interventions that suggest a high probability of outcome achievement. A care plan has core interventions that are diagnosis specific, but it is individually designed based on the particular client–environment configuration. Therapeutic reasoning is based on conditional logic of the "if–then" type, as, for example, a prediction that if certain interventions are done, then the desired health outcome will be achieved. One model of the process is "working backward" using a means–end analysis strategy. This is a prescriptive model; it suggests what the clinician and patient should do to solve a problem and attain a desired outcome.

Interventions are designed to resolve a problem or to minimize adverse sequelae, traumatic impact, and severity of the problem. In the case of potential problems or high-risk states, interventions reduce risk factors and prevent the problem. A delineation of interventions and outcomes for each nursing diagnosis would provide a knowledgebase for practice. Research-based knowledge of this type will not be generated

quickly but requires many experimental studies of nursing care with consideration of relevant variables. A beginning step in the development of an intervention classification system has been reported by McCloskey and Bulecek.[46] Outcome classification systems that can be used in therapeutic decision making will also require nursing research.

When the problem is primarily of an ethical nature, prioritization of claims and action plans is required. After a moral conflict has been formulated, the nurse must differentiate the relevant parts of the conflict and resolve it. The model's five-part construct consists of (1) which persons are involved in an ethical dilemma, (2) what each party wants (their claim), (3) what the bases of these claims are, (4) whether the claims are ethically valid, and (5) which claims take precedence.

The validity of a moral argument is customarily determined by the presence of the language of rights, duties, obligations, principles, or welfare consequences in the basis for the claim. After reviewing all morally valid claims under consideration, the nurse must then determine which morally valid claim is the strongest based on the most legitimate argument or moral basis. This "most valid," or strongest, claim and its basis are given priority or preference in the resolution of the dilemma.

Selection of the claim to receive priority can be based on a number of factors. In

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some situations it may be the force of a particular moral argument in that it is a universal right (the right to health care, the right to life, the right to make decisions about one's own life, and so forth). In other situations it may be the probability of certain consequences actually occurring regarding the welfare of a party in the dilemma. For example, a family member's claim for placing a terminally ill patient with lung cancer on a ventilator based on the possibility that a cure for lung cancer could be developed and perfected in the next 48 hours is highly improbable. The nurse's best judgment could be that placing a great weight or giving priority to a claim with a basis (cure for lung cancer) with a very low probability is a fallacy in reasoning. Second, the nurse may consider the claim is not in the best interest of the terminally ill patient. An opposing claim (to allow the patient to die peacefully without invasive, ineffective life-prolonging assistive devices) might then be given priority by the nurse. After the nurse determines which claim takes precedence in the resolution of the dilemma, he or she develops an action plan to recognize the most valid moral claim.

Implementation of the plan

The implementation component (Fig 1) is an important aspect of therapeutic and ethical judgment. It offers a test for the adequacy of problem solving. Depending on the problem and the problem-solving strategies employed, a variety of factors influence implementation.

Implementation of the plan is one of two components in the model where there is a high nurse–patient interaction dimension. Information collection is the second. The other components, information interpretation, statement of a problem, planning, and evaluation, are products of reasoning rather than interaction. Consideration of the currently identified nursing diagnoses suggests that a broad range of nursing skills is required for diagnosis-based treatment. The situation is similar to the growing number of moral issues in health care. Implementation of the plan draws on cognitive, affective, and motor skills and the ability to establish a therapeutic relationship with the client. Nurse–client interactions during implementation further tailor interventions to the individual client. As Brown commented, "How one uses talk or speech is, of course, a very personal and unique characteristic of each nurse. One uses one's own personality, background, experiences, and interpersonal style to establish relationships with clients and to pursue clinical objectives."[47(p32)]

Moral actions are the basis for implementing a plan in the ethical domain. This component of the model describes the enactment of the strategies within the plan for moral action. Moral actions are taken to ensure that the claim of the party that has been given priority will be acknowledged. Further development of this component of the model will be based on studies of moral action.

A theory of moral action has posed numerous measurement obstacles in research and theory development on moral judgment and action. Moral psychologists from the 1960s to the mid-1980s acknowledged the general failure of ethical theory and research to accurately predict moral action, primarily because of the discrepancy between a subject talking about behaving in a particular, morally desirable way and actually behaving in that way. Ketefian's[48] re-

search on nursing moral judgment and action raised some of these questions.

Rest's[21] four-component model addresses the complexity of the possible intervening variables affecting moral action. He noted, "good intentions are often a long way from good deeds."[21(p3)] Executing and implementing a plan of moral action for Rest are a complex process; he commented that it involves "figuring out the sequence of concrete actions, working around impediments and unexpected difficulties, overcoming fatigue and frustration, resisting distractions and allurements, and keeping sight of the eventual goal. Perseverance, resoluteness, competence, and character are attributes that lead to success."[21(p3)] Rest noted, however, that these "ego strength" characteristics can also enable one to rob a bank and carry out genocide.

Until the mid-1980s, moral psychologists focused on measurement of moral reasoning outside of the context of real situations to avoid psychometric problems in reliability and validity. Rest[21] identified a new phase of moral judgment research in the late 1980s that is moving away from issues of instrumentation to questions of the real-life conditions that influence moral judgment and vice versa.

Studies in nursing suggest that nurses have difficulty acting on courses of moral action.[35,36] A preference for certain ethical principles in guiding moral action (eg, the choice of beneficence and nonmaleficence over justice and autonomy) was supported in two studies.[49,50] Several investigators found that conception of the nurses' role in the practice setting was associated with the nurse's choice of moral behavior in the resolution of an ethical dilemma.[5,23,35] Moral action is the logical outcome of ethical reasoning and judgment. The link between judgment and action lies in the study of cognition, affect, and behavior.[21]

Evaluation

How are decisions made to revise a judgment about a diagnosis or dilemma, a planned action, or a projected outcome? Are treatment decisions revised in the face of conflicting information? Do moral action plans proceed without challenge? Each of these questions is a fruitful area of research. In Fig 1, evaluation refers to appraisal of outcome attainment in the ethical or therapeutic domains. It is also a thread throughout the other components of the Integrated Model. Examples of the use of evaluation within other components include judging the sufficiency of an admission database or the information supporting a diagnosis or a dilemma. In helping a client manage a nursing diagnosis, the estimate of the worth of a set of interventions relative to projected outcomes is part of therapeutic judgment. Evaluative judgments about outcome attainment are the basis for revision of a plan and, in some cases, revision, deletion, or refinement of a diagnosis or ethical problem.

Following an attempt to resolve an ethical dilemma, the nurse or moral agent evaluates the outcome and the moral justification for the behavioral choice and its implementation. This process is a final check to see whether the action plan was effective and if it truly reflected the weighting of each party's claims as intended. The nurse also checks to be certain that the action plan has reflected adherence to relevant, universal, guiding, moral principles. Evaluation is also important in other respects. It provides feedback regarding clinical judgments made by the nurse. As a self-correcting process, it

can be a major feedback loop that contributes to refinement of clinical judgment skills and professional growth in this area of practice.

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The proposed Integrated Model of Clinical Judgment can be used in research on clinical judgment, as a framework for structuring content in teaching, and as a structure for evaluating the outcomes of a course. In addition, it can guide research on the complex process of ethical analysis as developed in the more traditional philosophic methods. In diagnostic–therapeutic–ethical analyses, the model can provide a framework for analyzing data. As with the parent information processing theory, it can be classified with models that attempt to capture the components of successful judgment in clinical situations.

The diagnostic–therapeutic dimension does not break with the tradition of the nursing process but views the process as nonlinear, which is congruent with real life situations. It is characteristic of the model that all situations are viewed from an integrated perspective and that all clinical situations have diagnostic–therapeutic and ethical dimensions.

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