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Using the Dreyfus Model of Skill Acquisition to Describe and Interpret Skill Acquisition and Clinical Judgment in Nursing Practice and Education

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Three studies using the Dreyfus model of skill acquisition were conducted over a period of 21 years. Nurses with a range of experience and reported skillfulness were interviewed. Each study used nurses' narrative accounts of actual clinical situations. A subsample of participants were observed and interviewed at work. These studies extend the understanding of the Dreyfus model to complex, under-determined, and fast-paced practices. The skill of involvement and the development of moral agency are linked with the development of expertise, and change as the practitioner becomes more skillful. Nurses who had some difficulty with understanding the ends of practice and difficulty with their skills of interpersonal and problem engagement did not progress to the level of expertise. Taken together, these studies demonstrate the usefulness of the Dreyfus model for understanding the learning needs and styles of learning at different levels of skill acquisition.

Keywords: *nursing practice; phronesis*

Stuart E. Dreyfus, an applied mathematician, and Hubert L. Dreyfus, a philosopher, developed a model of skill acquisition based on the study of chess players, air force pilots, and army tank drivers and commanders (S. E. Dreyfus, 1982; H. L. Dreyfus & Dreyfus, 1977, 1986; S. E. Dreyfus & Dreyfus, 1979, 1980). The Dreyfus model of skill acquisition has illuminated ongoing research on skill acquisition and articulation of knowledge embedded in expert practice in nursing. The Dreyfus model is developmental, based on situated performance and experiential learning. Three

studies of skill acquisition in nursing have been guided by the Dreyfus model of skill acquisition (Benner, 1982, 1984; Benner, Hooper-Kyriakidis, Stannard, 1999; Benner, Tanner, & Chesla et al. 1992, 1996). Hubert and Stuart Dreyfus served as consultants in each of these three studies.

The first study, conducted between 1978 and 1981 (Benner, 1982, 1984), was based on 21 paired interviews with newly graduated nurses and their preceptors, and interviews and/or participant observations were conducted with 51 additional experienced nurse clinicians, 11 newly graduated nurses, and 5 senior nursing students to further delineate and describe characteristics of nurse performance at different levels of education and experience. The interviews (small group and individual) were conducted in six hospitals: two private community hospitals, two community teaching hospitals, one university medical center, and one inner-city general hospital. A second study of skill acquisition and clinical knowledge of critical-care nurses was conducted between 1988 and 1994 (Benner et al., 1992; Benner et al., 1996). One-hundred and thirty nurses practicing in intensive care units and general floor units from eight hospitals, seven of which are located in the far western and one in the eastern region of the country, comprised the study population. Small group narrative interviews, individual interviews, and participant observation were used as data collection strategies. The two aims of the study, relevant to this article, were (a) to describe the nature of skill acquisition in critical-care nursing practice and (b) to delineate the practical knowledge embedded in expert practice. The third study was an extension of

this study, conducted between 1996 and 1997 to include other critical-care areas (including emergency departments, flight nursing, home health, the operating room, and postanesthesia care units [$N = 75$ nurses]) and to enlarge our sample of advanced practice nurses.¹ This article presents key findings of these three studies using data from each of the studies.

Nursing, like other practice disciplines, is not merely an applied field in the sense that the practice is complex, varied, and underdetermined. Good practice requires that the nurse develop skillful ethical comportment as a practitioner and that the nurse use good clinical judgment informed by scientific evidence and technological development. The sciences of medicine and nursing are broad and multidisciplinary and require translation into the particular practice situation. Basic sciences of biochemical, physical, and biological processes; physiological processes; research and development of specific therapies and technologies; and finally clinical trials and more make up a broad range of relevant science used in the practice of medicine and nursing.

A recent development in nursing and medical practice has been to aggregate clinical trial research outcomes to summarize and recommend the best evidence for treatment of specific clinical conditions. However, the logic of scientific decision making and the logic of the practitioner working with single cases or unique populations are necessarily different. The practitioner must reason across time about the particular through changes in the patient's condition and changes in the clinician's understanding of the patient's condition. Because practice in the individual case is underdetermined (i.e., open to variations not accounted for by science), the practitioner must use good clinical reasoning to intelligently select and use the relevant science. Perceptual acuity in recognizing salient signs, symptoms, and responses to therapies are required for the clinician to use good clinical judgments in particular clinical cases.

Recognizing and keeping track of clinical changes in the patient over time requires the logic of reasoning in transition (Benner, 1994; Taylor, 1993). This is a form of argument about the outcomes of successive changes. Patient changes must be evaluated as improved, stable, or deteriorating over time. Clinicians call this *recognizing trends* in the patient. Some aspects of practice can be subjected to more standardization and to what Aristotle described as *techné*. Standard measurements of vital signs and laboratory metrics are examples of clinical assessments that can be

reduced to *techné*. But note that skillfulness and craft based on experience may still be essential to successful performance of *techné*. In situations where the patient's particular response must be considered and perceptual acuity is required to recognize salient changes in the patient, as well as situations where attuned relationships and judgment require skillful comportment, both *techné* and *phronesis* (situated actions based on skill, judgment, character, and wisdom) are essential.

At the heart of good clinical judgment and clinical wisdom lies experiential learning from particular cases. Bad judgments must be refined and corrected in particular cases; anomalies and distinctions must be noticed. The Dreyfus model of skill acquisition addresses this kind of experiential learning in a complex, underdetermined field over time. The model is situational rather than being a trait or talent model because the focus is on actual performance and outcomes in particular situations. The model is developmental in that changes in the performance in particular situations can be compared across time. However, the model does not focus or identify particular traits or talents of the person that generates the skillful performance.

Nursing, as a practice, requires both *techné* and *phronesis* as described by Aristotle. *Techné* can be captured by procedural and scientific knowledge, knowledge that can be made formal, explicit, and certain, except for the necessary timing and adjustments made for particular patients. *Phronesis*, in contrast to *techné*, is the kind of practical reasoning engaged in by an excellent practitioner lodged in a community of practitioners, a practitioner who, through experiential learning and for the sake of good practice, continually lives out and improves practice (Benner et al., 1999; Dunne, 1997; Gadamer, 1960/1975; MacIntyre, 1981; Shulman, 1993). *Techne*, or the activity of producing outcomes, is governed by a means-ends rationality where the maker or producer governs the thing produced or made by gaining mastery over the means of producing the outcomes. By contrast, *phronesis* is lodged in a practice and so cannot rely solely on a means-ends rationality because one's acts are governed by concern for doing good in particular circumstances, where being in relationship and discerning particular human concerns are at stake must guide action. For example, nurses describe the excessive use of power over a patient that subjects said patient to unwanted, futile therapies to prolong his or her life at any cost as *flogging* the patient, violating both good

nursing and good doctoring (Benner et al., 1999, pp. 363-403). In such bad practice, means and ends are violently separated so that both are distorted.

Doctoring and nursing particular patients requires relational and communication skills and art. The relationship between the patient and nurse, for example, determines what will be disclosed, what can be thought about and talked about together, and what level of acceptance and endorsement of the therapies will be acceptable to patients and clinicians alike. Patients often rehearse their most fearful concerns with nurses who they expect to be more approachable and effective in helping them communicate with physicians. Technique alone cannot address interpersonal and relational responsibilities, discernment, and situated possibilities required by caring for persons made vulnerable by illness and injury. Phronesis is required. Means and ends are inextricably related in caring for the ill. Clinician and patient bend and respond to the other so that horizons and world are opened and reconstituted so that new possibilities can emerge.

As the Dreyfus model suggests, experiential learning requires the stance of an engaged learner rather than a stance of one expert in techné who skillfully applies well-established knowledge in prespecified, clear circumstances. Experiential learning requires openness and responsiveness by the learner to improve practice over time. The learner who develops an attuned, response-based practice learns to recognize whole situations in terms of past concrete experiences, as pointed out by the Dreyfus model.

We found that responding to the situation as an instance of particular concern is central to the logic of excellent practice. For example, this is a situation of heart-pump failure or fluid depletion. Interventions depend on clarifying and confirming the nature of the clinical situation at hand. The skillful practitioner learns to hold his or her background understandings in a fluid or semipermeable way so that he or she can recognize when these tacit expectations are not met. For example, a nurse with expertise in detecting heart arrhythmias on a unit where all patients' cardiac functioning is monitored will only notice aberrations in sound patterns rather than attending to the familiar sounds in the foreground of attention. Whereas in some skill situations, such as playing chess or driving a car, experts would not need to articulate their perspectives before taking action, must make a case, that includes articulating their perspective and evidence to get the appropriate physician intervention. In emergencies, when there is no physician available, the

nurse must be able to articulate clearly the reason for using a standing order or protocol or going beyond the usual boundaries of usual nursing practice. This is expected and defensible when it is critical for the patient's survival. Recognizing the unexpected (i.e., when tacit global expectations of patients' recovery are not met) is also a hallmark of expert practice.

Major Shifts in the Style of Practice With the Development of Expertise

As noted above, the nurse's capacity for effective moral agency changes with developing practice skills and insights from experience. Also, the skills of problem and person engagement grow more attuned. The development of agency and skills of involvement can be seen at each stage of skill acquisition. The nurse increasingly is able to recognize when he or she does not have a good grasp of the clinical situation, and this lack of sense of understanding guides the nurse's questioning and problem solving.

As the skill model predicts, with more experience comes increased grasp of the nature of particular clinical situations, including opportunities and constraints, which then guides the nurse's actions and interactions. Consequently, responses to patients become more contextualized and attuned. Recognition of clinical situations moves from abstract textbook accounts of general features to an experience-based response to the situation. Grasp of the situation, with its possibilities and constraints, enables the competent nurse to move from rule-governed thinking to an intuitive grasp of the situation (Dreyfus & Dreyfus, 1986).

This intuitive grasp is based on experience and not based on extrasensory powers or wild hunches. It is situated in the clinician's grasp of the situation. Improved skills of involvement create disclosive spaces in which pressing concerns or the most plausible actions can be discovered. Relational skills are schooled by learning to be at home in a highly differentiated clinical world where some actions are plausible and effective and others are experienced as ill timed or implausible. A sense of salience develops over time so that some things stand out as more plausible and appropriate than others. The proficient practitioner develops a richer sense of the ends and possibilities of practice based on shared notions of good practice within the profession (Rubin, 1996).

Because the Dreyfus model of skill acquisition is a situated and descriptive phenomenological account of the development of skill over time, it does not point to

isolated competencies nor enabling traits or talent. Consequently, it allows that a practitioner may be at different levels of skill in different areas of practice based on the particular practitioner's background experience and knowledge. For example, a practitioner skilled in caring for adults at an expert level will not be at that level of skill when caring for young children or premature infants. The continuities in patient populations one cares for determine the opportunities for experiential learning.

Novice: First Year of Education

The novice stage of skill acquisition occurs in areas on which the student has no experiential background to base approach or understanding of the clinical situation. For example, the art and skill of a range of medical and nursing interventions on particular patients will be new. The educator must offer good descriptions of features and attributes of the situation that the novice can recognize. For example, to determine fluid balance, students are given clear parameters and guidelines:

To determine fluid balance, check the patient's morning weights and daily intake and output for the past three days. Weight gain and an intake that is consistently greater than 500 cc. could indicate water retention, in which case fluid restriction should be started until the cause of the imbalance can be found. (Benner, 1984, p. 21)

An experienced clinician will immediately think of all the situations where this evaluation would be inappropriate or too stringent. But the novice is given clear directions of safe ways to proceed until the significance of fluid balance for different clinical conditions can be learned. The rules and guidelines must not require prior experience for their recognition. They must provide a safe beginning point for specific, situated learning in the clinical situation. Fluid balance is salient, but what the novice must learn is the particular salience of fluid balance for particular patients.

The rule-governed behavior of the novice is extremely limited and inflexible. The student is coached in comparing and matching textbook examples with actual clinical cases. Skills that are performed easily on a mannequin in a skills lab require adaptation and communication and reassurance skills when performed on a range of patients who may be calm or highly anxious. The nursing instructor must

carefully select patient care situations that are relatively stable and that provide coaching about possible changes in the patient's condition. The instructor forecasts for the student what he or she should expect, and students typically rely on standard nursing care plans to guide their planned care activities. Exceptions and contraindications must be identified for the student by the nursing instructor or staff nurse caring for the patient. The meanings of vital signs in the particular situation must be reviewed with the instructor or practicing nurse and the range of relevant signs and symptoms are reviewed in terms of relevance and are assessed in the particular patient. A large number of signs and symptoms (e.g., lethargy, skin turgor, mental status, etc.) can only be recognized and assessed after they have been seen in a range of patients.

The best clinical educators are good ethnographers who can give the students access to the culture and expectations of the clinical units where they are gaining clinical experience. The clinical educator offers broad guidelines and timelines to guide the student's understanding of the task world and of the subculture of expectations of a particular unit. Good informants are identified as resources for the new students in the unit, and the clinical supervision is on call to deal with questions or emergencies encountered by the student. Novices have only a very limited ability to forecast futures because of the student's lack of experience with other patients. Usually, the student must rely on textbook forecasts.

Advanced Beginner, New Graduate

The newly graduated nurse has usually functioned very close to the level of a beginning staff nurse in his or her final year of nursing education. Typically, newly graduated nurses will not have functioned in any administrative or managerial functions, though they will have studied principles and practices related to these roles. The striking change for the newly graduated nurse is that he or she now has full legal and professional responsibility for patients. This new level of responsibility and entitlement brings with it changes in the way nurses experience themselves and the practice environment. They no longer feel that they can always look to other nurses to tell them what to do or to bear their responsibility. This level of individual and team professional responsibility heightens the new nurse's sense of engagement with the patient and with clinical problems. This new level of felt responsibility increases the beginning nurse's attentiveness to his or

her recognition of features and relevant aspects of the situation; however, the style of evaluation remains detached and typically lacks integration with other objectively evaluated signs and symptoms. Beginning nurses look to patients and family members to fill in expectations of them in their newly forming role. This heightened and qualitatively different kind of engagement heightens experiential learning and spurs the development of a sense of moral agency in the professional role (Benner et al., p. 93):

The quality of learning is quite different for new as opposed to more experienced nurses. Beginners have a level of trust in the environment and in the legitimacy of co-workers' knowledge, which allows them to absorb information as fact. This trust sets up qualities of freedom and exhilaration in learning that are probably only available to those who do not yet comprehend the contingent nature of both the situation and what is known about it. This freedom in learning is furthered because advanced beginners do not yet feel responsible for managing clinical situations with which they are unfamiliar.

In what follows, an advanced beginner evidences this "lightness of being" about learning as he describes a post-operative patient who had undergone complex GI surgery. His entire statement was delivered in an excited, enthusiastic tone.

I had learned so much. There are two clinical nurse specialists involved right now. There are people on the unit who are CNII's and CNIII's who are just really knowledgeable on major GI surgery on infants. I talked to all these people and pediatric surgery were really helpful, and our Attendings and fellows were . . . I mean, I just learned so much in the last three days, I couldn't even tell you. (Benner et al., 1996, p. 52)

The advanced beginner has a heightened awareness of any feedback on performance and pays close attention to the practice of colleagues. He or she actively searches for credible sources of good and useful information. The nurses now attend their ability to recognize these aspects of the situation as they are pointed out by colleagues and as they come to notice them on their own. In the situation above, clinical nurse specialists assisted with the care of the infant but also engaged in intensive teaching of the new nurse. The advanced beginner can experience each situation as a

myriad of competing tasks, all of which may feel of equal priority to the new nurse. Anxiety and excessive fatigue are frequent experiences for new nurses. Worry and anxiety tend to be more global because the advanced beginner does not yet have a sense of salience with a range of situations, and the anxiety of learning to perform new tasks is ever present:

And I just talked to myself and I had a great night because this was the first time I did it. . . . I was (saying to myself) "Okay. Just take it one step at a time. You're only human, do one thing then go onto the next thing. It will all get done, it will get done easier if you're calm and because you think better that way". . . . And the shift went great. (Benner et al., p. 50)

In coaching an advanced beginner, strategies for keeping anxiety at bay and staying calm enhance performance capacity because the anxiety is so general. The sense of foreboding and anxiousness over particular clinical situations is not yet very attuned to the demands, possibilities, and constraints of the situation simply because of a lack of experienced past similar situations.

Anxiety is ameliorated by this very lack of attunement and sense of salience. Therefore, much of the experiential learning required of an advanced beginner has to do with recognizing more subtle aspects of the situation. Advanced beginners rely on textbook accounts of patient signs and symptoms related to diseases, injuries, and therapies, but they may have difficulty recognizing subtle variations and cannot gauge the level of severity in comparison with other cases simply because of their lack of experienced past and future trajectories with similar patients. For example, advanced beginners collect their assessment data carefully and then consult about the meanings of the numbers and signs and symptoms in a particular case. They will need to ask questions such as the following: Is this the usual amount of bleeding? Is this a frank hemorrhage in a postoperative or obstetrical patient? Drainage from wounds and tubes must be evaluated in relation to usual quantities and qualities. But these quantities may vary with specific procedures, patient conditions, and characteristics. The range and variegations cannot be captured fully in textbook, a problem known in philosophy as *the limits of formalism*. Also, the perceptual skills associated with recognizing fuzzy or family resemblances, qualitative distinctions, and real-life presentations complete with their range of

manifestations cannot be captured in two-dimensional textbooks or single case presentations. This relationship to clinical mentors is vividly illustrated in the following nursing student's account of a clinical emergency:

This man is a very pleasant fellow, very bright, very alert and awake, and was unfortunately requiring tracheal suctioning approximately every hour to two hours for moderate amounts of tracheal secretions which were relatively tenacious in character, relatively white tannish in color. He unfortunately did not tolerate the suctioning extremely well. It was relatively uncomfortable for him, caused a moderate amount of cough and gag reflex, which in turn caused a transient increase in blood pressure. Following suctioning on one occasion, as I was replacing his tracheal mist mask, he began coughing up very copious amounts of bright red blood per mouth. I mildly panicked, called for help from the nurse next door, placed him a moderate Trendelenberg position, opened his I.V. to a rapid rate, and continued to experience mild panic. Perhaps more like moderate panic. (Benner, 1984, p. 19)

This advanced beginner nurse performed well considering the enormity of the situation. The student wonders tacitly whether his suctioning technique was too traumatic and therefore whether it caused the bleed. But notice that the advanced graduate cannot know this because he has had little experience with patients with similar compromised situations and with the skill of suctioning itself. There are extraneous details of the story, and the language is couched in textbook terms. His account responds to the immediate situation, with little or no forecasting of the future. He gives a full account of his own anxiety in the situation that results, in part, from his lack of experiential knowledge about what can be done in the situation. Like the novice, the advanced beginner is dependent on others for filling in his or her experience-based comparisons, interpretations, and qualitative distinctions. Later, we will contrast this episode with the account from the expert's perspective.

Competent Stage: 1 to 2 Years in Practice

Developing skill and clinical grasp in particular cases is dependent on experiential learning. Conse-

quently, how fast someone can gain competence depends on how varied and complex his or her patient population is. Obviously, nurses working in a high-volume heart surgery center will gain more experience sooner. But even in the high-volume center, it is usually a while before the newer nurse is assigned complete responsibility for complicated postoperative patients. Competence with particular patient populations will develop unevenly depending on experience with that population and with the quality of clinical teaching available in the institution.

The competent stage of skill acquisition is typically a time of heightened planning for what are now more predictable immediate futures. The competent nurse now decides what is more or less important based on informal yardsticks learned from past experiences with other patients. The competent nurse tries to limit the unexpected through planning and analysis and by forecasting the needs and contingencies of the immediate future, but he or she realizes that there are no rules to help him or her do it. Anxiety is now more attuned to the situation, as illustrated in the following example where the nurse describes her discovery (experiential learning) that a postheart transplant surgery patient could not maintain good oxygenation when placed on the nonoperative side, a physiological principle that the new graduate would probably recognize in a formal, written test but that is more ambiguous to her in the actual situation:

Nurse: It kind of humbles you. [She realizes that the physiological explanation for this occurrence was straight forward, but that she had not been able to recognize the problem as manifested in the particular patient.] At one point, I'm feeling like I have things straight now, and I can handle the situations, and when something like this happens, I think, well, I still have a lot of learning to do. I can handle the situations that are status quo; it's the unexpected that I have to learn to deal with now. But then I think back to situations when I was brand new. Things that are status quo now weren't back then. Things I can troubleshoot and solve now were much different back then. I usually needed help. (Benner et al., 1996, p. 95)

Anxiety is now more tailored to the situation than it was at the novice or advanced beginner stage when a general anxiety exists over learning and performing well without making mistakes. Coaching at this point

should encourage competent-level nurses to follow through on a sense that things are not as usual, or even on vague feelings of foreboding or anxiety, because they have to learn to decide what is relevant with no rules to guide them. There is now enough of an experiential base to have these emotional responses to act like fuzzy recognition of similar and/or past clinical dissimilar situations. Nurses at this stage feel exhilarated when they perform well and feel remorse when they recognize that their performance could have been more effective or more prescient because they had paid attention to the wrong things or had missed relevant subtle signs and symptoms. These emotional responses are the formative stages of aesthetic appreciation of good practice. These feelings of satisfaction and uneasiness with performance act as a moral compass that guides experiential ethical and clinical learning. There is a built-in tension between the deliberate rule- and maxim-based strategies of organizing, planning, and prediction and developing a more response-based practice, as pointed out in our study of critical-care nurses:

Not needing help, ordering the task world, and planning based on goals and predictions structure what the nurse notices, and what are considered issues. It is not accidental that this vision of performance and agency is institutionally rewarded and encouraged as "standard."

Structuring the day by goals and plans, however, interferes with perceiving the demands of the situation and with timing interventions in response to the patient's responses and readiness. The competent nurse seldom sees that signs and symptoms have taken on a new relevance in a clinical situation due to changes in the patient's condition. Their skill of seeing is hampered by the need to organize data collection and to achieve goals. Inevitably the clinical situation intrudes by not matching the goals and plans and the nurse must adapt . . . conceptual descriptions do not automatically lead to recognition of actual signs, and varied responses require time to assimilate and interpret. Slavishly following one's plans and holding on to preset expectations can limit perceptual grasp. . . . Holding on to this deliberative form of agency (sense of personal influence in the situation) prevents the nurse from having expert clinical and ethical comportment because response-based organization is not yet achieved. (Benner et al., pp. 95-96)

Experiential learning with past patient care enables the nurse to develop a greater sense of salience. As illustrated in the nurse's statement above, there is an increasing sense of when the nurse has or does not have a good clinical grasp of the situation. He or she can use his or her sense of confusion or questioning to propel his or her understanding of the clinical situation. Because nurses have now lived through more clinical futures, they can now better predict immediate likely events and needs of patients and can plan for them.

Toward the upper limits of competent performance, the nurse may begin to apprehend the limits of formal and practical knowledge. Nurses can now recognize that not everyone is a proficient or expert clinician, just at the point that they realize that they must develop a perspective on the situation to perform well in the situation. They typically buy more comprehensive reference works and medical and nursing textbooks at this point because loss in confidence in the advice of specific others may be overgeneralized, and consequently, the nurse may feel hyper-responsible. This inability to trust colleagues can be aggravated by encountering incompetence and a lack of social integration and informal coaching in the particular clinical unit.

Proficiency: A Transitional Stage on the way to Expertise

It is the felt crisis in the limits of formalism and the limits of planning and prediction along with an enhanced ability to read the situation that may propel the nurse into the proficient stage of performance. Whereas skill development up until this point has been incremental, now, to progress, the learner must make a qualitative leap in the way he or she engages and performs in the situation. The nurse must literally learn to situate himself or herself differently in relation to his or her work. At this stage, first-person, experience-near narratives (Geertz, 1987) often take the form of describing changes in the perspective of a situation. The narrative structure is often as follows: "I went into the situation thinking that I knew what was going on, or that this particular thing was going on, only to have it disconfirmed by the patient's responses to my assessment." This is evidence for developing the ability to let the situation guide nurses' responses:

The nurse is now synthesizing the meaning of patient's responses through time. She imagines that a computer could capture all her readings, but she fails

to recognize that her understanding of the patient is now situated, and based upon a practical understanding of the patient's responses [and qualitative changes] made over time rather than a collection of data points. The clinician struggles with articulating this practical grasp:

Nurse: I had drawn a [blood] gas on a person and the gas was pretty poor and I took another gas to the house officer and he looked at it and said: "I don't believe this gas, the patient hasn't changed. And at that point—it takes a while to get to this point, but I felt comfortable in saying to him: "What do you mean, this patient hasn't changed?" This patient's blood pressure has gone up to 200, and I presented him with a picture of this patient that he had obviously overlooked. It takes a while to get to the point where you can feel comfortable saying this to the doctor and feeling comfortable, feeling that you can go with your instincts.

Int: What happened in that situation?

Nurse: I was right . . .

Int: How did you learn that the objective signs that you were seeing were correlated with blood gas?

Nurse: Just experience and seeing different patients and different breathing patterns and knowing by looking at the patient that this breathing pattern is effective and this one isn't, knowing whether there is air exchange there or not. These breaths aren't effective and he's wearing himself out and that could be the cause of his deterioration in his gas, and just experience and seeing different cases and how people adjust to physical things that are going on.

Though difficult to articulate, this practical grasp is not mystical. It reflects the skill of seeing practical manifestations of changed physiological states, patient responses and noticing these transitions. The nurse actively interprets the direction of the change and keeps track of what can be ruled in and ruled out. Practical grasp is perceptually grounded and response based and requires being open to correction and disconfirmation as the situation unfolds. The clinician is always in the situation with some practical understanding, and it is that practical understanding that is revised or confirmed. When the practitioner's grasp of the patient's clinical situation is jarred by changes or unexpected patient responses, the practitioner searches for a new grasp and deliberation becomes

necessary and if all goes well, experiential clinical learning occurs. They describe the frustrating situation of "chasing a problem" and never being quite "in synch" with the situation when they do not have a good perceptual grasp of the situation at hand (Benner et al., 1999, pp. 23-87; Benner et al., 1996, pp. 146-147). Engaged reasoning through transitions requires being open to correction and dis-confirmation. The ethos of openness, rather than prediction and control, and fidelity to what one sees and hears, rather than excessive suggestibility and confusion, are embodied and linked to emotional responses to the situation. Thus, one's skilled emotional responsiveness guides perceptual acuity *and* responsiveness to changes in the situations that are similar or dis-similar to past situations, but when novelty or surprise occurs, the nurse tries to figure out why and how this situation is different. (Benner et al., 1996, pp. 116-117)

The nurse gains a much more differentiated world of practice at the proficient level. The nurse feels increasingly at home in the situation and can now recognize when she or he has a good sense of the situation. In the following excerpt the nurse demonstrates this new comfort level by describing open-heart surgery patients' trajectories:

Nurse: I feel pretty comfortable, and you learn when they're warming to start giving the volume and when to stop because now maybe they need a little bit of Levophed to keep their blood pressure up, when to shut off the Levophed because they're waking up and you know their catecholamines have kicked in and that kind of thing. It's almost routine, whereas before it took a lot of trial and asking questions.

This change is based on procedural knowledge and protocols, but the transition being described is the flexible recognition of patient changes in particular situations. This recognition occurs in the context of the predictable changes over time in a recovering heart surgery patient. These decisions cannot be based on quantitative physiological measures alone, but must be based on understanding the relationship between the numbers and the way the patient looks and responds. This form of response-based action is crucial for performing well in a rapidly changing emergency... (Benner et al., P.123).

Because the proficient level nurse is learning to adjust his or her responses to the situation, the skill of both problem and person engagement be-

comes more differentiated and attuned. Observing nurses across situations reveals that they vary their relationships with patients and families based upon their understanding of what the situation requires. Timing becomes much more refined, and recognizing opportunities in the situation for patient learning or for supporting a patient is now more attuned to the needs and concerns of the patient.

Nurse: Transplant patients become so dependent on you for everything—Can I brush my teeth now? Do you think I should do this? And you have to really encourage them to take control back. It's a hard concept for a lot of them because they need to be dependent because it's safe for them to be dependent. . . . I've learned how to give them control back slowly and how to encourage them to take that control back over their own life. (Benner et al., pp. 125-126)

Once begun, the proficient nurse usually continues to refine his or her reading of particular situations. Refining discriminations through deliberate comparisons with past experiences and other patients improves the nurse's grasp of the situation.

Expertise: Phronesis (Practical Wisdom)

Once a nurse has progressed to proficiency, the style of being a situated, response-based performer propels experiential learning and the ability to switch from taken-for-granted tacit expectations to switching to focusing on aspects of the situation that are changing and creating an altered sense of the situation. The expert nurse is response based in using *techné* and *phronesis*. The expert can now integrate his or her grasp of the situation with his or her responses.

The expert is able to take up theories and ends of practice in multiple ways, often creating new possibilities in the situation (Taylor, 1991). These situated practical innovations or sensible variations in practice seem intuitively obvious to the practitioner and might not be captured easily in a narrative description of the situation. This is why observation and informal interviewing in actual situations are required to discover and describe all levels of practice, but particularly proficient and expert levels of practice. The innovations or sensible variations in practice typically make sense to others as the most effective response in the situation. They are not breaks with the understanding of good

practice; rather, they extend good practice in challenging underdetermined situations. As noted in our research, ways of seeing the situation increasingly just call for appropriate actions.

Intuitive links develop between seeing and responding to the situation. This is revealed by observing the nurse in the situation and is partially captured in the following account of an emergency situation where a patient who was hemorrhaging stopped breathing. The links between the patient's condition and action are sufficiently strong that the nurse attends primarily to actions rather than assessment of signs and symptoms. This is reasonable because, in extreme circumstances, the possible responses are fewer, but experience is required to make this shift in performance:

Nurse: So we didn't even call the code. We just called the doctor stat [emergency] and got him up there. [They had sufficient people available to resuscitate the patient, so no formal page for additional help was needed.] I looked at his heart rate and I said: "O.K. he is bradying down. Someone want to give me some atropine?" I just started calling out the drugs that I needed to get for this guy, so we started to push these drugs in. In the meantime, I said, can we have some more blood?" I was just barking out this stuff [the things that were needed and had to be done]. I can't even tell you the sequence. I was saying, "We need this." I needed to anticipate what was going to happen and I could do this because I had been through this a week before with this guy and knew what we had done [and what had worked].

The recognition and assessment language are minimal, in part, because the number of actions per problem are limited, but also because recognition and assessment language become so linked with *actions and outcomes that they become self-evident or "obvious" for the expert practitioner*. This is the kind of "maximum grasp" of the expert that is not available to the proficient performer. Immediate futures obvious to the expert order the situation. In this case the nurse becomes the situational leader because of this maximum grasp of this particular patient, and the sequence of events. The integrated rapid response is the hallmark of expertise. (Benner et al., 1996, pp. 142-143)

Based on enriched experiential learning spawned by increasing ability to read the current situation in terms of their deep familiarity with similar and dissimilar situations, nurses develop a sense of whether they have a good (better or poorer) grasp of the situation. Skilled know-how now allows for more fluid and rapid performance of procedures. Narratives often focus on new clinical learning or troubling moral dilemmas or conflicts in the situation. Qualitative distinctions associated with nuanced responses make the nurse able to know and do more than he or she can tell or think to describe (Polanyi, 1958/1962). [Good. This is expertise alright. Notice there is no talk her of innovation.]

Attunement allows for flexible fusion of thought, feeling, and action. Seeing the unexpected based on having a rich set of expectations as well as a rich sense of the particular situation requires engagement with the patient and openness to notice when things do not go as implicitly expected, and evidence that disconfirm one's assumptions can be encountered (Benner et al., 1999, pp. 85-86). The relational skills of attunement to the patient's concerns and to the clinical situation create the possibility for patients and family members to disclose or reveal their concerns and fears to the nurse and for the nurse to notice changes in the patient or family across time (transitions). The quality of attentiveness and of the relationship literally creates different disclosive spaces and moods for the patient and family so that different clinical issues are noticed based on qualitatively different disclosive possibilities. [This is as innovative as expertise gets.]

Now it is possible to compare the expert's narrative below of the situation of the patient who developed a carotid hemorrhage with the advanced beginner's account given earlier:

I had worked late and was just about ready to go home, when a nurse preceptor said to me, "Jolene, come here." Her voice had urgency in it, but not Code Blue. I walked in and I looked at the patient and his heart rate was about 120, and he was on the respirator and breathing. And I asked her: "What's wrong?" There was a new graduate taking care of him. And he just pointed down to the patient who was lying in a pool of blood. There was a big stream of blood drooling out of his mouth. This man's diagnosis was mandibular cancer, which had been resected, and about a week previous to that he had had a carotid bleed from external carotid, which had been, ligated

secondary to radiation erosion. That wound had become septic and he had developed respiratory failure and he was in ICU for that. So I looked at the dressing and it was dry, the blood was coming out of his mouth. The man had a tracheostomy because of the type of surgery that had been done. He also had an N.G. tube in for feedings, and I got to thinking that it might be the innominate or the carotid artery that had eroded. So we took him off the ventilator to see if anything was going to pump out of his trach. There was a little blood, but it looked mostly like it had come down from the pharynx into the lungs. So we began ventilating him, trying to figure what was inside his mouth that was pumping out his tremendous amount of blood. (Benner, 1984, p. 17)

This nurse went on to describe her quick actions to draw blood for a cross-match and typing and preparing the man for an immediate transfer to the operating room after marshalling all the resources for the surgical team. She gives us an immediate, direct grasp of the nature of the situation. Action, thought, and feeling are fused. She evaluates the resistance in the lungs by hand ventilating the patient. Fortunately, because of her rapid responses, the patient survived the hemorrhage.

Expert practice, by its very nature, is of local, specific knowledge; know-how; and technical and scientific knowledge that is more transferable to other practice contexts. Because practice is a way of knowing through experiential learning and embodied know-how, it is highly valuable to study and articulate the knowledge embedded in highly complex practices such as nursing and medicine. Articulation of the knowledge embedded in proficient and expert practice, plus articulation the range of practical knowledge learned by beginning practitioners in local settings, creates the possibility of self-improving practice based on making experiential learning public and therefore open to development so that experiential learning and practical wisdom becomes cumulative and shared.

Summary

Each of the studies was based on extensive first-person, experience-near narrative accounts of clinical situations that stood out in the participants' minds. In addition, a subsample of participants was observed

and informally interviewed in its practice. We deliberately sampled nurses with a range of experience and reported skillfulness and interviewed nurses with like backgrounds in small group narrative interviews. We created an open dialogue with the tenets of the Dreyfus model of skill acquisition and the philosophical basis for this model. We found that the model was predictive and descriptive of distinct stages of skill acquisition in nursing practice. The most qualitatively distinct difference lies between the competent and proficient level, where the practitioner begins to read the situation. The proficient performer begins to increasingly change his or her perception of the nature of the situation and then deliberates about changing plans or strategies in response to the new understanding of the situation. The expert develops yet another qualitatively distinct way of being in the situation by developing the capacity to fluidly respond to the situation, even as the situation changes and the relevance of the actions taken change. The study of nursing practice, because it is an underdetermined, complex practice that requires skillful comportment, articulation, and highly developed relational skills, allowed us to identify qualitatively distinct forms of moral agency and skills of involvement at different levels of skill acquisition. The development of moral agency and the influence of emotional engagement with the person and the problem, as well as emotional climate, on skill acquisition vary distinctly at each stage of skill acquisition. For example, the advanced beginner focuses on getting everything done adequately. The competent nurse increases his or her ability to advocate for the patient, getting what the patient needs or requests. At the expert level, the moral agency and skills of involvement create disclosive spaces that would not have even been imagined at the earlier stages. New possibilities and notions of good practice are instantiated in more skillful, ethical comportment and relational capacities. Expert nurses are extremely pleased when they are able to comfort or assist patients in coping with the demands of the illness.

We found that nurses who had some difficulty with understanding the ends of practice and difficulty with their skills of interpersonal and problem engagement did not go on to become expert nurses (see Rubin, 1996). They literally thought of rational calculation as the scientific and objective way of practicing, and thus, they failed to see significant moral concerns and failed to recognize qualitative distinctions between situations because they attempted to apply the same metric of rationally calculating odds, prevalence, and evi-

dence in each situation. This computational and calculative approach to practice, coupled with a disciplined stance of detachment, blocked experiential learning. The model was also useful in helping us articulate knowledge and skill embedded in the practice of nursing. The rational-technical vision of performance is that of a practitioner or technical expert developing mastery of a body of knowledge and applying that knowledge in prespecified ways for prespecified outcomes. The rational-technical model does not account for development of relational, perceptual, or skillful comportment over time. It also does not account for the role of experiential learning in learning to practice in a dynamic, underdetermined, and complex practice such as nursing and medicine. A strict technical application of knowledge does not take into account the skills required for discerning the nature of the situation and its possibilities and constraints. Even the expert in the Dreyfus model of skill acquisition must stay attuned to the situation and must remain open to the unexpected. Practitioners on the account of expert comportment provided by the Dreyfus model must remain open to experiential learning and reading changes in transitions in fast-paced, open-ended environments. In the Dreyfus model, the practitioner is assumed to dwell with increasing skill and finesse in a meaningful, intelligible, but changing, world.

Note

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