I

Perceptions of clinical decision-making: a matrix model

Mooi Standing

Overview

This chapter defines and discusses clinical decision-making in relation to cultural influences, professional identity, decision theory and a matrix model that cross-references nurses’ perceptions of clinical decision-making with their conceptual understanding of nursing. Although most of the discussion and examples relate to nursing, the issues are relevant to other health professionals. The requirement for all health professionals to be publicly accountable in demonstrating sound clinical judgement and decision-making sets the context against which these skills, together with critical thinking and problem solving, are discussed. Normative, prescriptive and descriptive decision-making models are related to contrasting scientific and experiential processes (and sources of evidence) to support clinical decisions. Benner’s ‘novice to expert’ model of clinical expertise is critiqued and a matrix model, derived from a longitudinal phenomenological study of nurses’ developmental journey, acquiring and applying clinical decision-making skills, is presented. Reflective activities invite readers to relate the matrix model to their experience and perceptions of clinical decision-making. The matrix model is then critiqued with reference to decision theory.

Objectives

- Appreciate how clinical decision-making defines the nature of healthcare professions
- Describe problem solving, critical thinking, clinical judgement, and clinical decision-making
- Distinguish between normative, prescriptive and descriptive decision-making models
- Compare and contrast a ‘novice to expert’ model of skill acquisition with the matrix model
- Identify different types and sources of evidence, and ways of processing clinical decisions
- Consider common errors in clinical judgement/decision-making and how to prevent them
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- Reflect on development needs regarding clinical judgement and decision-making skills

Background

The importance of developing and using effective clinical decision-making skills was reinforced by a National Health Service (NHS) reform that introduced a system of clinical governance to facilitate quality-assured healthcare and greater public accountability of health professionals (DH 1998). This was supported by calls for evidence-based decisions to raise standards of care, accompanied by performance-related pay to encourage health professionals to review and adapt their practice in line with organizational and managerial changes (NHS Executive 1999; DH 1999). The NHS Plan identified targets to increase public access to high quality healthcare, established criteria to monitor achievement of targets via NHS Service Frameworks, and advocated a flexible multidisciplinary workforce to improve the coordination, efficiency, and effectiveness of health services (DH 2000). The concept of ‘working together, learning together’ through lifelong learning acknowledged the ongoing education and training implications of developing health professionals’ core skills in communication, information processing, teamwork, and clinical competence. Partnerships between Workforce Development Confederations and higher education institutions were established to tailor education to health service providers’ requirements in matching skills to local clinical demands (DH 2001).

Background summary

- In the United Kingdom a policy of healthcare for all, freely available at the point of delivery, is achieved via the NHS, the largest employer in the country, publicly funded by taxation.
- Government-led NHS reform aims to improve its efficiency, quality, and cost effectiveness on behalf of the public who elected them and whose taxes indirectly pay for services.
- Organizational changes such as setting health targets and clinical governance mean that the actions of health professionals are subject to greater managerial and public scrutiny.
- Health professions continue to self-regulate standards of practice but, as NHS employees, practitioners are also assessed through quality audit and individual performance appraisal.
- The increased public accountability of health professionals means that clinical judgements, decisions and interventions must be explained, justified, and defended when challenged.
- Changes in health professionals’ education complement NHS reform by linking theory to evidence-based practice, developing skills, and encouraging interprofessional learning.

The above factors have implications for reviewing the role and function of health professionals (Chapter 2), adapting the organization and management
Perceptions of clinical decision-making (Chapter 3), and, continuing interprofessional development in clinical judgement and decision-making (Chapter 4).

The impact of cultural change and NHS reform also poses a challenge to the professional identity and autonomy of healthcare workers in accommodating government health targets, principles of evidence-based practice, and public accountability for their clinical judgements and decisions. This chapter explores these issues in relation to nursing, the largest professional group in the NHS, but the points raised are also relevant to other health professionals.

Nursing, clinical decision-making and professional identity

For many years the following definition was thought to convey the essential nature and professional identity of nursing:

The unique function of the nurse is to assist the individual, sick or well, in the performance of those activities contributing to health, or its recovery (or to a peaceful death) that he would perform unaided if he had the necessary strength, will or knowledge.

(Henderson 1966: 15)

Thirty-three years later the (then) regulating body for nursing stated that this ‘definition of nursing has not been bettered’ (UKCC 1999: 15). Indeed, Henderson’s patient-centred, needs-focused, collaborative, and goal-directed emphasis appears as relevant now as it was then but the cognitive skills necessary to determine and demonstrate how best to ‘assist the individual’ were not made explicit. More recently the Royal College of Nursing has redefined nursing as:

The use of clinical judgement in the provision of care to enable people to improve, maintain, or recover health to cope with health problems, and to achieve the best possible quality of life whatever their disease or disability, until death.

(RCN 2003: 3)

Both definitions support the view that nursing, ‘as a human science focuses on life and health as humanly experienced’ (Pilkington 2005: 98). However, the emphasis upon ‘use of clinical judgement’ distinguishes the RCN definition from earlier versions and shows how nursing is continually adapting to cultural change, including NHS reform, in order to meet new challenges and role requirements that enhance the quality of care and accountability for clinical decision-making.

The subtle shift in focus from what nurses do, to how they think about what they need to do, places clinical judgement and decision-making skills at the forefront of nurses’ professional identity. This is also true for other professions since comparing judgements and decisions made by different healthcare professionals enables the identification of their distinctive contribution to patient care. The implications for nurse education led to reform of pre-registration programmes through the introduction of practice-orientated...
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Curricula designed to equip nurses with relevant clinical skills so they are ‘fit for practice and purpose’ (UKCC 2001). In other words, theoretical knowledge is of limited value unless it helps to inform and guide high standards of patient care that is responsive and adjusted to individual needs and circumstances. This capacity to integrate theory and practice underpins the notion of the nurse as a ‘knowledgeable-doer’ (Benner 1984) and it is also needed ‘to justify, explain and defend judgements and decisions’ (Dowding and Thompson 2002: 190).

Hence, the Nursing and Midwifery Council (the current regulating body) require pre-registration nursing programmes to prepare nurses who can ‘demonstrate sound clinical decision-making’ (NMC 2004: 33) and these skills are internationally acknowledged as core competences in nurse education (Gonzalez and Wagenaar 2005). All registered nurses and midwives in the United Kingdom are bound by a code of conduct which states ‘As a professional, you are personally accountable for actions and omissions in your practice and must always be able to justify your decisions’ and, ‘You must deliver care based on the best available evidence or best practice’ (NMC 2008: 7). Other health professions’ regulatory bodies stipulate similar requirements for their practitioners. Clarifying what is meant by the terms clinical judgement and decision-making is, therefore, needed in healthcare.

Problem solving, critical thinking, clinical judgement, and clinical decision-making

Healthcare involves addressing health problems and the nursing process is a well-established problem-solving approach to systematically assess, diagnose, plan, implement, and evaluate individualized care using intellectual, interpersonal, and technical skills (Yura and Walsh 1973). Each stage of the nursing process requires the use of judgement and decision-making and this is more effective when critical thinking skills are applied. Indeed, criticisms of the nursing process focus mainly on its uncritical application: Parse (1981) argued it was too mechanistic; Hurst et al. (1991) reported that the more cognitively demanding planning and evaluation stages were neglected; Corcoran-Perry and Narayan (1995: 70) asserted that it ‘delineated neither the underlying thinking processes nor the specific knowledge involved’; and Benner et al. (1996) claimed it led to the routine use of standardized care plans that militated against individualized care planning. The development of clinical judgement and decision-making skills can, therefore, complement the nursing process by encouraging the application of critical thinking from assessment to evaluation.

A panel of experts put together a consensus statement in defining critical thinking as follows:

We understand critical thinking to be purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well
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as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based.

(American Philosophical Association (APA) 1990)

Problem solving is goal-directed and involves evaluating the outcome of interventions so, like critical thinking, it is purposeful and involves self-regulatory judgement. For example, the nursing process and judgement are linked together in a new international classification of nursing practice (ICN 2005). The above features of critical thinking can be linked with problem solving, as follows:

**Six steps to effective thinking and problem-solving**

(Facione 2007: 23)

<table>
<thead>
<tr>
<th><strong>Ideals</strong></th>
<th><strong>Five Whats and a Why</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify the problem</td>
<td>What's the real question we're facing here?</td>
</tr>
<tr>
<td>Define the context</td>
<td>What are the facts and circumstances that frame this problem?</td>
</tr>
<tr>
<td>Enumerate choices</td>
<td>What are our most plausible three or four options?</td>
</tr>
<tr>
<td>Analyse options</td>
<td>What is our best course of action, all things considered?</td>
</tr>
<tr>
<td>List reasons explicitly</td>
<td>Let's be clear: Why are we making this particular choice?</td>
</tr>
<tr>
<td>Self-correct</td>
<td>Okay, let's look at it again. What did we miss?</td>
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Identifying the problem and context correctly is vital, as anyone who is misdiagnosed understands, so it requires careful consideration of available evidence using appropriate assessment criteria or tools, and conceptual knowledge and understanding to make sense of (interpretation) and draw reasonable conclusions (inferences) from the information gathered. Enumerating choices and analysing options in planning actions are enhanced by reflecting on experience in dealing with such issues, awareness of pertinent policies or procedures, and critical application of relevant research evidence that is methodologically sound. This is an important stage in being able to satisfy the requirement for ‘care based on the best available evidence or best practice’ (NMC 2008: 7). Listing reasons to implement the chosen intervention challenges practitioners to be very clear about their rationale for using this approach and it also enables them to explain and justify decisions to others. Self-correction is the hallmark of an autonomous practitioner who is able to evaluate the strengths and weaknesses of adopted strategies in achieving desired outcomes, and, can then reassess the problem and/or consider alternative options that might be more effective in addressing it.

Effective problem solving in healthcare employs critical thinking skills, clinical judgement and decision-making in all stages of the process. Clinical judgement is defined as ‘the application of information based on actual observation of a patient combined with subjective and objective data that lead to a
conclusion’ (Mosby 2008). It, therefore, represents a practitioner’s informed opinion based on both qualitative (subjective) interpretations and quantitative (objective) analysis of observations and other relevant information sources that guide clinical decision-making. Hence, clinical judgement and decision-making are closely inter-related; the former involves assessment of alternative options whereas the latter involves choosing between alternative options (Dowie 1993).

Defining clinical decision-making

Defining clinical decision-making is important because, in doing so, the nature of healthcare itself is revealed. A valid definition of clinical decision-making in nursing must, therefore, reflect the realities of practice that nurses experience. ‘Decision-making is a case of choosing between different alternatives’ (Bloomsbury 2002: 408) is a simple definition highlighting a key component of decisions in committing to one course of action as opposed to others, as observed by Dowie. However, this definition is not specific to nursing and does not convey the knowledge required to determine what the available choices are, or how to review and select the most effective strategy. Advocates of evidence-based healthcare argue that the most trustworthy source of knowledge is achieved from the results of scientific research and rigorous tests of its validity and reliability:

Without knowledge which flows from a comprehensive and sound research and development programme, the first building block in evidence-based clinical decision-making will be missing. When such knowledge is generated it must be converted into information which is tailored to the needs of health professionals taking clinical decisions. This means focusing on the means by which evidence is made accessible and equipping staff with the skills to know how to evaluate and apply it in individual situations. (NHS Executive 1999: 8)

The promotion of research evidence-based clinical decisions to improve the quality of care is one of the aims of current NHS reforms. The National Institute for Health and Clinical Excellence (NICE) was established to conduct extensive healthcare research and produce evidence-based guidelines to inform practice. This enables local practice to benefit from a far greater accumulation of relevant information from national databases than individual practitioners’ clinical experience can provide. For example, NICE guidelines for assessment and management of head injuries advise replacing skull X-rays with CT (computerized tomography) cranial scans which are far more accurate in detecting intra-cranial pathology (Hassan et al. 2005). However, it can be difficult to implement such guidelines where they depend on round-the-clock availability of specialist practitioners. In one study, of 88 patients who should have had a cranial CT scan under NICE guidelines, only ten patients did as most attended at evenings or weekends when radiologists were not at work.
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(Harris et al. 2006). One of the critical incidents discussed later may have had a less tragic outcome if NICE guidelines for the assessment/management of head injuries had been applied.

It is, therefore, important for nurses and other health professionals to apply relevant research in evidence-based clinical decisions but it is not always possible without additional resources. Furthermore, while it may be desirable, it is not realistic to develop research-based guidelines for every conceivable decision that nurses make. They also need to be able to process and respond to a much wider range of evidence (e.g. observations of patients, feedback, reflective practice) in addition to that provided by formal scientific research methods (Rycroft-Malone et al. 2004).

A broader and more practical understanding of clinical decision-making is conveyed in the following definition developed for nursing (but could apply to other health professions):

Clinical decision-making is a complex process whereby practitioners determine the type of information they collect, recognize problems according to the cues identified during information collection, and decide upon appropriate interventions to address those problems.

(Tanner et al. 1987)

This definition acknowledges that nurses may be able to think and act systematically to identify and address problems even when research evidence is not available to inform decisions. However, it does not convey the critical thinking skills needed or professional accountability for the decisions.

The following, more comprehensive, definition was developed in a longitudinal phenomenological study of nurses’ perceptions of clinical decision-making (which is discussed later):

Clinical decision-making is a complex process involving observation, information processing, critical thinking, evaluating evidence, applying relevant knowledge, problem solving skills, reflection and clinical judgement to select the best course of action which optimizes a patient’s health and minimizes any potential harm. The role of the clinical decision-maker in nursing is, therefore, to be professionally accountable for accurately assessing patients’ needs using appropriate sources of information, and planning nursing interventions that address problems and which they are competent to perform.

(Standing 2005: 34)

This definition of clinical decision-making accommodates problem solving, critical thinking, judgement, scientific evidence-based practice, experiential reflective practice, ethical values and professional accountability (it could also be adapted by other health professions). It suggests that qualitative research can be valuable in portraying practitioners’ perceptions of everyday reality of practice in which professional knowledge, clinical judgement and decision-making are embedded.
Clinical judgement and decision-making

Normative, prescriptive, and descriptive decision-making models

According to Thompson et al. (2004) clinical decision-making models need to specify decision characteristics, information sources, decision-making processes and inter-relationships. Developing decision-making models, therefore, involves describing the types of decisions taken, identifying the knowledge and evidence required to inform decisions, critical review of methods used to process information, and understanding how all the elements are combined in clinical decision-making. Bell et al. (1995) classified decision-making models as normative, prescriptive or descriptive.

Normative models

Normative models are associated with rational, logical, scientific, evidence-based decisions informed by statistical analysis of large-scale experimental and survey research which is representative of a target population to whom the findings can be applied. Normative models are evaluated regarding their theoretical adequacy in enabling decision-makers to predict and explain the outcomes of decisions. Clinical trials that test the efficacy of new medicines and treatments are examples of this approach. Applying scientific test results also enables understanding of complex physiological processes and helps minimize judgement errors from 'base rate neglect' (Thompson 2002), for example, failing to recognize the significance of a patient’s low oxygen saturation level.

Prescriptive models

Prescriptive models are associated with frameworks, guidelines or algorithms designed to enhance specific decision tasks. Prescriptive models are evaluated regarding their pragmatic adequacy in facilitating more effective decision-making. The nursing process (Yura and Walsh 1973) is an example of a prescriptive model that continues to guide systematic problem solving (ICN 2005). Prescriptive models often apply principles and findings of previous scientific research (associated with normative models), for example, in developing assessment tools and NICE clinical guidelines.

Descriptive models

Descriptive models are associated with studies that observe, describe and analyse how decisions are made by managers and professionals in relation to their day-to-day responsibilities. Descriptive models are evaluated regarding their empirical adequacy in supporting assumptions made about decision-making processes with relevant examples from a suitable period of observation. Dreyfus and Dreyfus (1980) developed a five-stage skill acquisition model in the training of United States Airforce pilots. Benner (1984) adapted Dreyfus and Dreyfus’ model to describe the transition from rule-governed novice to intuitive expert nurse by eliciting practitioners’ accounts
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of ‘reflection-on-action’ in tape-recorded ‘phenomenological’ interviews and applying the findings to support the model. The ‘thinking aloud technique’ where practitioners tape record what they are thinking about as they carry out actions (reflection-in-action) can also be used to develop a descriptive model of nursing and healthcare decisions (Corcoran-Perry and Narayan 1995; Schön 1983).

Applying decision-making models

Cognitive continuum theory, which combines elements of all three (normative, prescriptive, and descriptive) decision-making models, will be discussed in Chapter 5. Decision-making models and theories can be applied as educational tools: to develop conceptual understanding and relate this to practical experience; reflecting upon practice to identify professional development needs in learning and applying knowledge and skills; and practitioners mapping their experiences of clinical decision-making against decision models to help inform, analyse, explain and justify their actions. Decision theories and models can also be applied as practice guides to enhance clinical decision-making, for example, understanding how to use different evidence-based health assessment tools.

Summary of cultural influences in developing clinical decision-making skills

So far, this chapter has indicated that the clinical judgement and decision-making of nurses and/or other healthcare practitioners are subject to considerable cultural expectations from:

- **Central government** – NHS reform: reorganization, health targets, clinical governance
- **NHS trusts** – Employment contracts, appraisal, quality audit, risk management
- **Regulating bodies** – e.g. Nursing and Midwifery Council Code, professional accountability
- **Policy advisors** – NHS Service Frameworks, National Institute for Health and Clinical Excellence (NICE)
- **Educators** – Continuing professional development in evidence-based healthcare
- **Public** – Community health council, clinical governance committee, public accountability
- **Patients** – Safe, accurate and effective clinical decision-making, patient accountability.

The question then arises as to how, in light of the above influences, practitioners’ clinical decision-making skills are perceived, developed, applied, and incorporated within their professional identity.
Critique of ‘novice to expert’ model regarding clinical judgement and decision-making

Benner’s (1984) stages of skill acquisition (adapted from Dreyfus and Dreyfus) of novice, advanced beginner, competent, proficient, and expert have been widely used to portray nurses and other healthcare professionals as less reliant on rules, abstract ‘calculative rationality’ and analysis as they become receptive to contextual cues through experience, ‘embodied knowing’ and intuition. This has been helpful in suggesting how knowledge and skills are progressively, experientially integrated in developing professional identity and expertise, and in exercising clinical judgement. However, its relevance needs to be reassessed given the time that has elapsed and the many changes (referred to above) in the healthcare system that impact upon clinical decision-making. Given the importance of critical thinking in effective problem solving, clinical judgement and decision-making, criteria from the expert consensus on critical thinking (American Philosophical Association (APA) 1990) are applied to critique Benner’s adaptation of the novice to expert model.

Purposeful, self-regulatory judgement (interpretation, analysis, evaluation and inference) and explanation of evidence, concepts, methods, criteria, and contexts, in ‘novice to expert’

Strengths

- Purposeful, self-regulatory judgement informed by practitioners’ interpretations/inferences derived from observations, interactions, and previous experience in similar clinical contexts
- Knowledge, skills and understanding embedded in and derived from practical experience which leads to the accumulation of tacit, context-sensitive, responsive, intuitive expertise.

Weaknesses

- Purposeful, self-regulatory judgement is limited where it excludes analysis and evaluation of relevant explicit scientific evidence (Benner is critical of such ‘calculative rationality’).
- Without analysis and evaluation it is more difficult to explain, justify and defend clinical judgements and decisions, as necessitated by public and professional accountability.
- The model is borrowed from elsewhere (how to fly a plane) and it is not sufficiently representative of the complex influences in healthcare affecting clinical judgement and decision-making.
- Nurses’ interview responses were used to support application of ‘novice to expert’ model in nursing which is inconsistent with phenomenological principles and the methods described.
Perceptions of clinical decision-making

- Instead of interviewing the same nurses over a long period to demonstrate their transition from ‘novice to expert’, different nurses were used at each interview stage to save time.

In summary, Benner’s adaptation of the ‘novice to expert’ model is biased in favour of intuition and against analysis, which is at odds with the new culture of scientific evidence-based healthcare and the principle of open-minded, critical thinking ‘honest in facing personal biases’ (APA 1990: 22). Despite Benner championing experiential and contextual understanding, the model derives from a completely different occupational context and nurses’ responses are used to support it (a bit too neatly) rather than developing new concepts derived from nurses’ unique ‘lived experience’. The matrix model, which follows, offers an alternative which addresses many of the above criticisms.

Perceptions of clinical decision-making – a matrix model

A matrix model of clinical decision-making was developed during a longitudinal study (2000–2004) recording the developmental journey of the same respondents throughout their pre-registration nursing programme and first year as registered nurses (Standing 2005, 2007). Its timing coincided with NHS and educational reforms, discussed earlier, and its phenomenological methods focused on eliciting and understanding respondents’ ‘lived experience’ in acquiring and applying clinical decision-making skills, including coping with their responsibilities as first year staff nurses. A series of in-depth, tape-recorded interviews were the main source of data collection that explored:

- Conceptions of nursing
- Perceptions of clinical decision-making
- Personal, theoretical, and practice influences upon clinical decision-making skills
- Critical incident analysis of clinical decision-making as registered nurses.

Conceptions of nursing were included to explore respondents’ understanding of professional identity and to compare this with their perceptions of clinical decision-making as they gained experience and took on more responsibility. The interviews were timed to coincide with significant milestones that provided a context to explore respondents’ experience and ‘reflection-on-action’:

1. 3–5 months After completing introduction to programme
2. 18–20 months After completing common foundation
3. 32–34 months Before completing Adult/Mental Health/Child Branch
4. 42–48 months After completing preceptorship as newly registered nurses

In addition, respondents kept reflective diaries of their experiences, achievements and challenges throughout the study and referred to these during
interviews to reduce problems of recall. They were also given transcripts to check and shown examples of how their extracts had contributed to the thematic analysis of interview data. Hence, respondents acted as co-researchers to document experiences, create inter-subjective understanding during interviews, and to validate the accounts, analysis and co-constituted (agreed) meaning of their lived clinical experience (Drauker 1999). The sample \( (n = 20) \) was reasonably representative of the student cohort \( (n = 134) \) from which it was taken in terms of education, age range, gender, ethnicity, and nursing branch preference.

### Identifying ‘conceptions of nursing’ themes from interview transcripts

Respondents were asked about their personal history, why they wanted to be nurses, and their views on the role, attributes and qualities needed. Ten conceptions of nursing were identified:

<table>
<thead>
<tr>
<th>Conceptions of nursing</th>
<th>Related terms used</th>
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</thead>
<tbody>
<tr>
<td>Caring:</td>
<td>Cheer people up, supportive, helping through tough time, friendly</td>
</tr>
<tr>
<td>Listening and being there:</td>
<td>You need patient to express what they feel, spending time with</td>
</tr>
<tr>
<td>Practical procedures:</td>
<td>Hands-on care, assessments, bandaging, injections, life saver.</td>
</tr>
<tr>
<td>Knowledge and understanding:</td>
<td>Clued up, holistic, infection control, analysing, constantly evaluating.</td>
</tr>
<tr>
<td>Communicating:</td>
<td>Talking to patients, giving information or advice, acting as advocate.</td>
</tr>
<tr>
<td>Patience:</td>
<td>Tolerance, right temperament, you have to have a fairly long fuse</td>
</tr>
<tr>
<td>Teamwork:</td>
<td>Bridge between patient and doctor, gain trust of other staff</td>
</tr>
<tr>
<td>Paperwork:</td>
<td>Record observations, administration, planning care, medical history</td>
</tr>
<tr>
<td>Empathizing/Non-judgemental:</td>
<td>Not judging or making their worries seem insignificant, have respect</td>
</tr>
<tr>
<td>Professional:</td>
<td>Know boundaries; manage emotions, conscientious, competent.</td>
</tr>
</tbody>
</table>

All of the themes were identified in Interview 1. The respondents were also asked to describe their conceptions of nursing in Interviews 2–4. Their responses confirmed themes previously identified with a particular emphasis on mastering practical procedures, developing greater knowledge and understanding, valuing teamwork as source of support, and a growing awareness of responsibility in becoming a professional nurse. Their apparent broad understanding of nursing so early in the programme was associated with previous healthcare experience, a high proportion of mature entrants, caring for children as parents, and long-standing motivation e.g. family history of nursing.
Perceptions of clinical decision-making

Reflective activity 1.1

Imagine you are asked to prepare an hour-long talk describing your own healthcare profession to a group of school leavers:

1. Write down the first things that spring to mind in describing your role and the attributes and personal qualities needed to perform it.
2. Think about your own reasons for becoming a nurse (or other healthcare professional) and make notes about what the profession currently has to offer new potential recruits.
3. If you are a nurse, write down the above list of conceptions of nursing, then go through each one and identify examples showing how they relate to your own area of practice. If you are not a nurse, devise your own list of conceptions and give examples of each one.
4. Ask one or two colleagues to do the same activity and then arrange to meet up, compare notes regarding responses to steps 1–3, and amend lists if desired.
5. Reflect upon whether or not you think the true nature of professional identity has been revealed. Is there anything you want to add? Do you feel able to explain it to others?

Identifying ‘perceptions of clinical decision-making’ themes from interview transcripts

In Interview 1 respondents were asked how they made decisions using examples from family or social life and work experience. In Interview 2 they reflected on their observations of a ‘typical day’ in practice placements regarding contact with patients, tasks involved in, choices made, and what they learned about clinical decision-making. In Interview 3 they described examples of how they had contributed to planning patient care and were prompted to explain and justify their rationale. In Interview 4 they engaged in critical incident analysis of their clinical decision-making experiences as newly registered nurses. Ten perceptions of clinical decision-making were identified.

Perceptions of clinical decision-making

| Collaborative: | Discuss care with patients/relatives, colleagues, other professionals |
| Experience (and intuition): | Previous similar cases inform actions (and ‘unconscious’ assessment’) |
| Confidence: | Less self-conscious, can justify decision, able to perform tasks safely |
| Systematic: | Assess, plan, implement and evaluate care, logical, critical thinker |
Clinical judgement and decision-making

Prioritizing: Organize care re: emergencies, patient dependency, health targets
Observation: Respond to patients’ vital signs, appearance, ‘read’ body language
Standardized: Apply policies, assessment tools, procedural guidelines, care plans
Reflective: Think about experience, learn from it; work out what to do differently
Ethical sensitivity: Break ‘bad news’ compassionately, dealing with treatment dilemmas
Accountability: Explain actions to patients, report mistakes, law e.g. Child Protection

The first five themes in the list were identified in Interview 1 (except that ‘intuition’ was added to ‘experience’ in Interview 4). The other five themes were identified in Interview 2. All of the themes were applicable in subsequent interviews and no new ones were needed to explain additional data. Collectively the themes summarize respondents’ four-year developmental journey in acquiring and applying clinical decision-making skills from novice students to competent registered nurses. In doing so they convey awareness and response to cultural influences associated with NHS reforms, health targets, public accountability, evidence-based decisions, enhancing the quality of patients’ experience and outcomes of care, and effective organization and collaboration in delivering care. The themes also offer support for Standing’s definition of clinical decision-making described earlier.

Reflective activity 1.2

Imagine you are asked to do a one-hour talk to a group of third year students about the application of clinical judgement and decision-making skills in your area of healthcare practice.

1. Write down the first things that spring to mind in describing the clinical decisions you have to make and the way you go about making a decision.
2. Reflect upon how your understanding of clinical judgement and decision-making has developed since you were a student and write down what has helped and/or guided you.
3. Write down the list of perceptions of clinical decision-making, identify examples for each of the themes relating them to your own clinical practice, and then add them to your list.
4. Ask one or two colleagues to do the same activity and then arrange to meet up, compare notes regarding responses to steps 1–3, and amend lists if desired.
5. Reflect upon whether or not you think the true nature of clinical decision-making has been revealed. Is there anything you want to add? Do you feel able to explain it to others?
Perceptions of clinical decision-making

Matrix combining conceptions of nursing and perceptions of clinical decision-making

So far, ten conceptions of nursing and ten perceptions of clinical decision-making have been listed separately, but professional identity and clinical judgement/decision-making are closely linked, as indicated in the RCN definition of nursing (2003). (Readers who are not nurses could substitute their own profession where nursing is referred to as the principles are transferable.) Miles and Huberman (1994) described how matrices are useful to organize and present different categories of data, so to show how respondents’ accounts linked the two thematic categories a matrix was generated for each set of interview data. Therefore, the matrix model is made up of a series of four matrices that cross-reference perceptions of clinical decision-making with conceptions of nursing, highlighting any inter-relationships over a four-year developmental journey from novice nursing students to competent registered nurses (Standing 2005, 2007). If information in a transcript extract supports both a perception of clinical decision-making and a conception of nursing then an inter-relationship is recorded on the matrix. Figure 1.1 cross-references perceptions of clinical decision-making and conceptions of nursing in Interview 1: 3–5 months (novice nursing students):

In Figure 1.1, 20 respondents revealed five inter-relationships (out of a potential 50) between perceptions of clinical decision-making (upper case) and conceptions of nursing, as follows:

A. **COLLABORATIVE/Teamwork:** Choosing different members of the team to approach according to the nature of the decision and who you think would be best suited to advise you.

B. **EXPERIENCE/Knowledge and understanding:** Mistaken for a staff nurse (mufti worn) by students on placement due to ability to teach them about both patient care and role/function of the unit.

C. **CONFIDENCE/Teamwork:** Healthcare assistant working alone at night worried about elderly patient summoned night supervisor, problem resolved, felt satisfied it was right to call for help.

D. **SYSTEMATIC/Listening and being there:** Listened to children’s fear of flying, went by boat, next year took them to watch planes taking off/landing several times, eased concerns before flight.

E. **PRIORITIZING/Knowledge and understanding:** Understanding some patients are more dependent and less able to help themselves than others, and making their care a priority.

All of these examples referred to respondents’ experience before starting the nursing programme and most relate to healthcare assistant work. Even novice students may have previous life experiences which are relevant to clinical judgement and decision-making in their chosen healthcare profession. Although the ‘systematic’ example was about a family holiday it was included because the skills of listening to anxieties, changing plans, devising and implementing an action plan to reduce children’s fear, are transferable to clinical
### PERCEPTIONS OF CLINICAL DECISION-MAKING

(Perceptions influenced by personal interpretation of previous life experience + introduction to theory + visits to community agencies)

<table>
<thead>
<tr>
<th>Conceptions of nursing</th>
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**KEY**

- No clear interrelationship
- Interrelationship indicated

**Figure 1.1** Matrix 1: Perceptions of clinical decision-making/conceptions of nursing after 3–5 months as nursing students (n = 20) (Standing 2005, 2007)
Perceptions of clinical decision-making

decision-making (especially given that this respondent elected to specialize in children’s nursing). The small proportion of inter-relationships reflects the timing of interviews and a disparity between respondents’ conceptual understanding of nursing and their actual experience of clinical decision-making. Figure 1.2 shows a considerable increase in inter-relationships between perceptions of clinical decision-making and conceptions of nursing themes by Interview 4: 42–48 months (after 6–12 months as staff nurses):

In Figure 1.2 ten respondents revealed 65 inter-relationships (out of a potential 100) between clinical decision-making (upper case) and conceptions of nursing themes by reflecting on critical incidents with a ‘discernible impact’ (Polit and Hungler 1999: 332) on them, as they came to terms with a wide range of clinical decision-making responsibilities as registered nurses. For example:

A. **COLLABORATIVE/Teamwork:** Dealing with an emergency on ward when received phone call that one of our patients had collapsed elsewhere in hospital, asked nurses from next ward for help, they stabilized him, we discovered he had a problem that was missed during assessment.

B. **EXPERIENCE and INTUITION/Professional:** Refused to give prescribed injection to child in A&E who was fitting, did not feel competent, unfamiliar drug so corrosive it needed a glass syringe, doctor gave injection, read up on drug and would give it next time. Felt I made right decision.

C. **CONFIDENCE/Communicating:** First patient cared for after qualifying was depressed, always lying on bed not interacting with anyone, primary nurse busy, so I talked to him, engaged him in planning care, addressed dietary issues, mood lifted, discharged home. I felt I had contributed.

D. **SYSTEMATIC/Knowledge and understanding:** A lady shouted her baby had turned blue, I was on my own, had no experience of this but remembered lesson from nurse tutor, recognized signs of severe respiratory distress, airway was obstructed, cleared obstruction and revived the baby.

E. **PRIORITIZING/Teamwork:** Patient very pale, sweating, complaining of chest pain and terrible indigestion, suspected M.I. (myocardial infarction), asked colleague to call ‘Crash’ team, then patient in next bed said her chest hurt, so asked what pain was like, I knew it was not her heart.

F. **OBSERVATION/Knowledge and understanding:** Assessing A&E patient with history of slow onset weakness, confusion. I suspected TIA (trans-ischaemic attack). Then pupils ‘blew’, he vomited, transferred to ‘Resus’, but died two hours later. Discovered from wife he bumped head in car accident day before, had skull X-ray (different hospital), did not show anything wrong so was sent home. Angry with self for missing head injury/vowed to get more accurate history in future.

G. **STANDARDIZED/Practical procedures:** Procedure for intravenous infusion stipulates use of an automatic pump but they were all being used, set flow rate manually instead, flow rate sped up, went through
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<th>Conceptions of nursing</th>
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KEY:  = No clear interrelationship  = Interrelationship indicated (1–4 examples)  = strong interrelationship (5 or more examples)

**Figure 1.2** Matrix 4: Perceptions of clinical decision-making/conceptions of nursing after 6–12 months as registered nurses (n = 10) (Standing 2005, 2007)
Perceptions of clinical decision-making

too fast, had to fill in ‘incident form’, should have got pump from site coordinator.

H. **REFLECTIVE/Knowledge and understanding:** Patient with history of drug misuse asked for PRN (pro re nata – to be given at nurses’ discretion) medication every day. It was addictive, worried I might be encouraging misuse so I asked him why he needed it, sometimes he just smiled so I didn’t give it; if he gave valid reason for being stressed I did give it – always reviewing decision.

I. **ETHICAL SENSITIVITY/Caring:** Elderly patient (98), no living relatives, not eating or drinking enough and refusing alternatives. Dilemma: without intravenous fluid/nutrients she might die quite soon; with them she would live longer but we would be denying her right to choose. Team agreed to respect her wishes but to continue offering food and drink, and someone to talk to.

J. **ACCOUNTABILITY/Professional:** Gave intravenous antibiotic to patient, phone rang, asked me to say he could not talk, forgot to sign drug chart resulting in later shift giving an extra dose, had to report to matron, explain mistake to patient and consultant, will finish task first in future.

The nurses described their role transition as registered nurses (6–12 months) as a ‘steep learning curve’ in which they had to ‘think on their feet’ without the ‘comfort blanket’ of student status. The strong ‘Collaborative’, ‘Experience and Intuition’, ‘Standardized’, ‘Reflective’, and ‘Accountability’ perceptions in Figure 1.2 show a heightened awareness of: joint decision-making; value of practical experience; approved way to do procedures; ongoing review of actions; and professional status and responsibilities. Six critical incidents involved the nurses intervening in life-threatening situations (A, B, D, E, F, I) and in one case (F) the patient died. In four critical incidents they had to resolve dilemmas (A, B, H, I) in deciding what to do when: simultaneous emergencies occur and you cannot manage both; a child urgently needs an injection but you do not feel competent to give it; a patient who misused drugs requests discretionary medication and you’re not sure he needs it; an elderly patient declines food and drink and will not consent to intravenous fluids or supplements.

The urgency and complexity of healthcare problems described highlight the challenging nature of clinical judgement and decision-making in nursing, and the potential risks if mistakes are made.

Three critical incidents involved errors of judgement (F, G, J) that are linked to non-compliance with ‘Standardized’ procedures. If head injury patient (F) had been managed according to NICE guidelines at the first hospital he would have had a cranial CT scan and might still be alive as it is more likely an intra-cranial haemorrhage would have been detected and treated. Head injuries account for 10–20 per cent of all emergency department admissions (Hassan et al. 2005) so in patients with neurological symptoms the proportion of head injuries is much higher. Not knowing the history, the nurse made a plausible provisional diagnosis that excluded head injury. This type
of mistake is an example of ‘anchoring bias’ and ‘base rate neglect’ (Thompson 2002) that disregards relevant head injury incidence and morbidity. In incident G the problem arose due to a lack of ‘Standardized’ equipment (automatic pump) for the procedure. The flow rate speeding up without the nurse noticing (distracted looking after other A&E patients) is an example of ‘interference error’ which is prevented by more frequent ‘Observation’. In incident J, giving injection, answering patient’s phone, forgetting to sign drug chart is an example of ‘omission following interruption’ (Thompson 2002). The incidents (F, G, J) had a profound effect on the nurses’ understanding of their ‘Accountability’ for clinical decisions, and they were ‘Reflective’ about feelings/thoughts/actions in learning how to avoid such mistakes in future.

All of the registered nurses’ clinical decisions (including errors) can be understood in relation to the ten identified perceptions of clinical decision-making in the matrix model. The summaries of critical incidents (A–J) show each perception individually applied to one aspect of different situations. This helps clarify distinctions between them but in practice each situation involved applying many of the perceptions collectively. The growing pattern of inter-relationships between clinical decision-making and conceptions of nursing themes corresponds with the respondents’ transition from novice nursing students to competent registered nurses. They associated their development as nurses with personal influences (e.g. maturing), theoretical influences (e.g. research awareness), and practice influences (e.g. accountability for care delivery). This supports the view that ‘Professional practice requires knowledge derived from research and theory, from professional practice, and from personal experience’ (Higgs and Titchen 2001: 4–5). The matrix model helps to explain how practitioners make sense of and integrate personal understanding, theoretical and experiential knowledge, and their practical experience of acquiring and applying clinical decision-making skills.

Reflective activity 1.3

Refer back to the examples you were asked to identify in Reflective activities 1.1 and 1.2.

1. Look at each conception of nursing/healthcare profession example and identify one or more perceptions of clinical decision-making that you associate with it and explain why.

2. Look at each perception of clinical decision-making example and identify one or more conception of nursing/healthcare profession that you associate with it and explain why.

3. Draw a matrix grid identifying the perceptions of clinical decision-making on one axis and conceptions of nursing/healthcare profession themes on the other axis.
4. Refer to information generated in steps 1 and 2 and plot inter-relationships between perceptions of clinical decision-making and conceptions of nursing/healthcare profession on matrix grid.

5. Do you notice a pattern? How much interaction is there between perceptions of clinical decision-making and conceptions of nursing/healthcare profession? Does the matrix enable you to relate clinical decision-making processes to your own sense of professional identity?

6. Consider how you might apply the matrix model to describe and reflect upon your own clinical decision-making and in identifying any ongoing professional development needs.

Critique of the matrix model of clinical decision-making

Decision theory (Bell et al. 1995; Thompson et al. 2004) and critical thinking criteria (APA 1990) referred to earlier are applied to evaluate the strengths, weaknesses and relevance of the matrix model of clinical decision-making in nursing and healthcare.

Is the matrix a normative, prescriptive or descriptive decision-making model?

The matrix model is based on a relatively small-scale qualitative (phenomenological) study so it is not a normative model. However, the ‘Standardized’ theme incorporates normative features, for example, nurses referred to having ‘to know the normal ranges of blood’ when reviewing test results, and using research-based guidelines such as an ‘inventory of suicidal intention’ when assessing risks associated with caring for a depressed patient. The matrix model is not prescriptive as it seeks to explain how nurses perceive clinical decision-making rather than give advice on what to do, and it does not advocate a preference for any particular style of decision-making. However, the ‘Systematic’ theme incorporates prescriptive features, for example, nurses referred to applying the nursing process to assess, diagnose, plan, implement and evaluate care. The matrix is a descriptive model informed by nurses’ ‘reflection-on-action’, describing their experience and understanding of clinical decision-making, during in-depth audio-taped interviews. Each clinical decision-making theme is supported by transcript extracts which attest to its empirical adequacy.

Matrix model decision characteristics, information sources, processes, and inter-relationships

Qualitative studies, such as the one from which the matrix model is derived, may be criticized for being too localized and having such small samples
Clinical judgement and decision-making

that generalizing findings to a wider population is not viable. A good test of the matrix model’s relevance is to compare it with a large-scale survey of nurses’ research information use and classification of nursing decisions (Cullum 2002):

Comparison of decision characteristics

<table>
<thead>
<tr>
<th>Matrix model</th>
<th>Survey nurses’ information use</th>
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<tr>
<td>(Standing 2005)</td>
<td>(Cullum 2002)</td>
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<tr>
<td>Practical procedures</td>
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<td>Communication</td>
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<td>management</td>
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<tr>
<td>EXPERIENCE and INTUITION</td>
<td>Experiential, understanding or hermeneutic</td>
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<tr>
<td>ETHICAL SENSITIVITY</td>
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<td>ACCOUNTABILITY</td>
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As illustrated above, all of the broad categories of decision characteristics identified in Cullum’s large survey are represented in the matrix model. In addition, the matrix model identifies ‘Ethical sensitivity’ and ‘Accountability’ which, as NHS reforms emphasize and the above extracts indicate, are also significant factors influencing decisions. This indicates that the findings of an in-depth qualitative study, summarized in the matrix model, are supported by and add to the findings of a larger quantitative study. The matrix model appears relevant, topical and representative of the wide variety of clinical decision characteristics associated with nurses more generally.

Matrix model information sources include ‘Knowledge and understanding’ (personal, theoretical, experiential, and practical), ‘Observation’, ‘Listening and being there’, and ‘Confidence’ (trust in evidence). In this way the matrix model balances formal/explicit and informal/tacit knowledge and skills that inform clinical judgement and decision-making (Eraut 2000; Gabbay and le May 2004).

Matrix model clinical decision-making processes synthesize contrasting styles: ‘Standardized’ and ‘Systematic’ themes relate to evidence-based practice or ‘technical/calculative rationality’, while ‘Collaborative’ and ‘Reflective’ themes relate to reflective practice and ‘professional/embodied knowing’ (Schön 1983; Benner 1984). In addition, ‘Caring’, ‘Empathizing and non-judgemental’, and ‘Professional’ themes convey an awareness that clinical judgement, decision-making and nursing interventions must be in patients’ best interests and of a high standard (NMC 2008).

Inter-relationships define the structure of the matrix model where conceptions of nursing are cross-referenced with perceptions of decision-making. Snyder (1995: 33) says a ‘conceptual model used by a nurse provides the basis for making the complex decisions that are crucial in the delivery of good nursing care’. However, nurses may not usually be aware of their personal,
Perceptions of clinical decision-making

...tacit ‘mental models’ and how these influence behaviour (Krejci 1997). Rather than impose a theoretical framework to analyse respondents’ experience, their experience produced the themes that were applied and revised to interpret their continuing development. Therefore, the matrix model collates and articulates nurses’ understanding and experience of: a wide range of decisions; evidence referred to; clinical decision-making strategies used; and professional values they associate with nursing.

**Purposeful, self-regulatory judgement (interpretation, analysis, evaluation and inference) and explanation of evidence, concepts, methods, criteria, and contexts, in the matrix model**

**Strengths**
- Purposeful, self-regulatory judgement informed by practitioners’ interpretations/inferences derived from observations, interactions, and previous experience in similar clinical contexts, plus systematic problem solving, analysis and evaluation of relevant scientific evidence.
- Knowledge, skills and understanding are embedded in and derived from practical experience which leads to the accumulation of tacit, context-sensitive, responsive, intuitive expertise. It is also explicit, evidence-based, applying relevant research findings from wider population.
- The criteria of conceptions of nursing/healthcare and clinical decision-making perceptions enable practitioners’ understanding, acquisition and application of decision-making skills to be described and continually related to the development of their professional identity.
- The concepts/themes identified in the matrix model are derived from research evidence of extensive verbatim transcript extracts and are also supported by current relevant literature.
- A new comprehensive definition of clinical decision-making in nursing (which could be adapted by other health professions) was developed from the matrix model (see page 7).
- Phenomenological (hermeneutic) methods ensured credibility of the findings via repeated in-depth interviews of the same respondents over four years, reflecting upon the knowledge embedded in the ‘average everydayness’ (Heidegger 1962: 38) of their clinical practice.
- A new critical framework was developed (Standing 2005, 2009) to critique trustworthiness and rigour of the research study on which the matrix model is based by synthesizing phenomenological and qualitative evaluation criteria (Lincoln and Guba 1985; Sandelowski 1986; Annells 1999) with hermeneutic concepts and existential philosophy (Heidegger 1962).

**Weaknesses**
- Dependence on self-reports (retrospective reflection-on-action) has been criticized as a less reliable form of evidence than direct observation of...
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clinical practice (Thompson et al. 2004). However, there are ethical and practical difficulties in direct observation of patient contact.

- There was a high attrition rate as only ten of the original 20 respondents remained at the final interview. This is not uncommon in longitudinal studies (Murphy-Black 2000).
- The matrix is not a normative or prescriptive decision model so it is limited in advising what, how, or why decisions should be made. As a descriptive model it is useful in representing, explaining and raising practitioners’ awareness of their clinical decision-making skills.

Summary

This chapter has indicated that nurses and other health professionals are subject to considerable cultural pressure from government, health service providers, regulators, advisors, educators, the public, and patients in their care to demonstrate safe and effective clinical decision-making skills. Clinical decision-making was described as the product of clinical judgement and critical thinking skills applied to problem solving within healthcare settings. Analytical scientific, evidence-based and intuitive reflective, experiential processes of clinical judgement and decision-making were discussed in relation to normative, prescriptive and descriptive decision models and professional identity in healthcare. Benner’s ‘novice to expert’ model was considered to be biased in favour of intuition and against analysis, and an alternative matrix model, derived from an in-depth longitudinal study of nurses’ development of clinical decision-making skills, was presented. This revealed that registered nurses are responsible for a wide range of challenging decisions affecting the well-being and survival of patients, using various information sources, combining both evidence-based and reflective decision-making processes within ethical, accountable nursing practice. A definition was developed to reflect the complexity of clinical decision-making in nursing/healthcare. A critique of the matrix indicated it is a relevant descriptive model of clinical decision-making skills. Reflective activities were suggested to enable readers to apply the matrix model and associated research findings to their own healthcare experience and to identify professional development needs.

Key points

- Professional identity is embedded within healthcare practitioners’ clinical judgement/decision-making and related care patients receive.
- NHS reform, reorganization and clinical governance require greater scrutiny and public accountability of healthcare practitioners’ clinical decision-making skills.
- Clinical judgement is informed opinion about available options; decision-making is choosing an option in order to take action; and, both apply critical thinking to problem solving in healthcare.
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- Nursing (e.g. caring), and decision-making (e.g. collaborative, systematic, standardized, reflective) themes, summarized in a matrix model, were derived from nurses' reflections.
- The matrix model combines elements of reflective practice, evidence-based practice, ethical sensitivity, professional accountability, and personal/practical/theoretical knowledge and skills.
- Decision errors from inattentiveness or restricted focus (anchoring bias) were linked with non-compliance to guidelines, high workload and lack of equipment/services, e.g. no '24/7' CT scan.
- Registered nurses have to 'think on their feet' to cope with a high volume/intensity of constantly changing clinical demands, including life-threatening emergencies and ethical dilemmas.

References


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Nursing and Midwifery Council (NMC) (2004) *Standards of Proficiency for Pre-registration Nursing Education*. London: NMC.


Perceptions of clinical decision-making