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a challenge for academia and
health care**

La Trobe University, Bendigo

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Worner Research Lecture 2002

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Biography



Professor Ruth Endacott has a wealth of experience in intensive care nursing research, practice and education. Recently arrived from the UK, Professor Endacott was a member of the UK government Expert Group on Intensive Care and contributed to national policy development over a number of years. She has managed two large Department of Health research grants, focusing on the effectiveness of specialist education in critical care. Her other research experience includes an exploration of the needs of critically ill children in intensive care units and the nature of nursing dependency and nursing workload in intensive care. As well as managing the Department of Nursing at La Trobe University, Bendigo, Professor Endacott is managing research projects exploring aspects of specialist nursing in rural Victoria and is a Visiting Professor of Clinical Nursing at the University of Plymouth, UK.

Developing clinical wisdom: a challenge for academia and health care

Ruth Endacott

Introduction

Imagine the scene: a busy Emergency Department on a Saturday night. The patient in cubicle 1 has been brought in with symptoms of delirium by his girlfriend. Cubicles 2, 3 & 4 contain victims of a road traffic incident, ages ranging from 2 years to 65 years. Further patients, with a range of vague (and not so vague!) symptoms, sit in the waiting room. The Resuscitation Room is busy, with a further victim of the road traffic incident who has suspected severe internal injuries, a middle-aged man complaining of chest pain and a child who has swallowed some of her mother's medication.

Some of the doctors on duty are new to emergency; the on-call anaesthetist is busy in theatre and the second anaesthetist is occupied in intensive care. The Department is in the hands of an experienced registered nurse, who is supervising a team of students and other nurses with a range of clinical experience.

How are decisions made in this type of environment? How have those junior doctors been prepared for this situation? Are there simple protocols to be followed? How does the experience of the nurse guide the rest of the team and the patients to the optimal outcomes? Perhaps the answer to the last of these questions lies in the concept of clinical wisdom.

This paper will not assume to provide answers to all of these questions but provides an opportunity for exploration of the concept of clinical wisdom and the challenges it poses for both academia and health care.

It is important to emphasise the premise on which this paper develops. Firstly, whilst the focus of this paper is on nursing, the principles apply to a wider range of professionals. The above scenario would also involve doctors, and paramedics who would possibly have had to make a judgment regarding the patient's condition upside down, in a ditch, in the dark.

Secondly, the principles are not in any way confined to the type of situation identified a few moments ago. This paper will use scenarios and research data from critical care to illustrate key points but applies equally well to the nurse working with mentally ill clients in their own home.

Why should we be particularly interested in this area?

We are in the business of preparing undergraduate and postgraduate nurses to work in a range of settings. It is acknowledged that new nursing graduates are expected to 'hit the ground running' (Madjar et al 1997, cited in McMillan et al 2002). However, some of our undergraduate and postgraduate nurses will also be taking up positions in rural settings where the lack of doctors is well documented (Alexander 1998; Best 2000). As a result, nurses in rural areas often make clinical decisions that are 'unsanctioned' (Blue 2002 p200) and can undertake skills for which they aren't legally covered (Handley & Blue 1998). Sometimes this happens through the nurse's desire to protect the doctor from an unrealistic workload (Blue & Fitzgerald 2002). Similarly, nurses...

fill the gaps caused by the lack of medical or allied health professionals: they take x-rays when there is no radiographer, dispense medications in the absence of a pharmacist and provide advanced life support to those requiring this intervention (Hegney & McCarthy 2002 p244).

However, it is not just nurses who are facing these challenges, as Blue comments:

Like the rural GP, the rural surgeon is often working in isolation with few backup resources, and with little other than his or her own courage to do what can be done in any given circumstances" (Blue 2002 p198).

The need for all clinicians facing situations such as these to have the opportunity to develop 'clinical wisdom' is obvious. It is of interest, however, that the need to develop clinical wisdom is notably absent from many discourses about curriculum for rural health.

This paper draws on research undertaken in the 'real world' of clinical practice, particularly observation of how nurses (and other clinicians) make decisions about the care of patients. Before exploring the concept of clinical wisdom further, it is helpful to articulate the nature of healthcare practice.

The nature of healthcare practice

In the healthcare system, clinicians (by which I mean nurses and doctors) are frequently working with patients whose problems are

- unknown
- unpredictable, or
- undiagnosed (particularly in emergency situations).

To use a scientific analogy, the clinicians cannot control all the variables. Hence clinicians will develop individual 'theories' about patients, as seen in the following excerpts from a research study undertaken in paediatric intensive care units (Endacott 1998):

"With some children, you'd start CPR [resuscitation] with a brady[heart rate] of 50 but he [the child] seems to be coping alright".

In this study, nurses often made reference to earlier experiences with the individual child:

"I wonder if she's a bit lighter [less well sedated]? When this [potentially dangerous rise in blood pressure] happened last night she wasn't all that well sedated. I think she's waking up"

The clinicians in these examples were expert paediatric intensive care nurses. Had they relied solely on textbook knowledge (possibly inappropriate) steps would have been taken to raise the heart rate or reduce the blood pressure in these situations.

Examples such as these have been referred to as 'paradigm cases' (Benner et al 1999, p8) as they shape (or re-shape) the worldview of the clinicians. The scientific analogy continues, with the clinician then testing those individual theories. However, the theory developed by the nurse arises from observation of (in these instances) the child, and the wider situation and drawing on previous experience – an inductive process! Of interest to us in our deliberations is the insight, intuition or perhaps clinical wisdom that led the nurse to develop the theory (that the child did not need

resuscitation at that point, or that the rise in blood pressure may be due to lack of sedation). As Benner and colleagues suggest (1999, p15) "Being a good problem solver is not sufficient if the most crucial problem is overlooked or defined in misleading ways. Sometimes the *definition* of the problem makes it unsolvable, and *redefining or reframing* the problem creates new options." An example of this can be seen in the following nursing story (Merner D, cited in Benner 1999):

A 67-year-old man was admitted to the psycho-geriatric assessment unit from his own apartment. He was divorced and lived alone. His presenting diagnosis was acute behavioral problems. His other diagnoses were COPD (chronic obstructive pulmonary disease) and terminal cancer with metastasis to the lungs and brain..... He was loud, exhibiting obnoxious physical and verbal behavior..... He was showing his anger over his increased dependency and loss of power. His admission was like an invasion of the unit.

The patient's history showed that he was a very sociable retired newspaper man. He exhibited a fiery intelligence and a fierce independence. Soon after his admission, dissension was created between himself and the staff. He felt he should have access to the staff coffee supply when thirsty just as the staff did. Suffering from periodic bouts of nausea, he didn't always eat his meals when they were available. The staff denied him access to the coffeepot. He solved the problem by escaping from the hospital. He returned the next day with his own identical coffeepot plus coffee..... The opportunity to have and to offer people coffee was an integral part of his lifestyle.

This incident precipitated considerable discussion among the nursing staff, which resulted in getting permission and special safety clearance from the hospital biomedical engineering department. The nurses agreed that the patient would have to be monitored closely to prevent him from burning himself or leaving the pot on while empty..... Planned outings to the mall to purchase his own supplies would prevent further hospital disappearances. The coffee would provide an avenue for interaction with the rest of the multidisciplinary team. He was a Jewish agnostic but gained great comfort from serving coffee and talking to the chaplain about how he did not believe in God. He also did not believe in psychiatry, but became much less agitated when the psychiatrist chatted over coffee about his recent emotional upheavals.

He was estranged from his family, and we were able to encourage them to come in for coffee and a visit. The alienated family members eventually "stopped by" for coffee and to say hello. As his condition deteriorated, he still enjoyed the opportunity of offering coffee to others. It served as a solace and relieved visitors' discomfort, allowing the emphasis to be on the coffeepot instead of the illness.

This story and the preceding data excerpts illustrate more than just re-framing a problem; they demonstrate the confidence of the nurses to try out different solutions to those commonly found in a textbook. These data also highlight the distinction between the body of nursing knowledge to be gleaned from textbooks and the knowledge gained by an individual nurse through experience (Cox et al 1991; Kikuchi 1992). This is illustrated in the following excerpt from a research study exploring how nursing knowledge and skills develop: an emergency nurse describes her initial assessment of patients arriving at the emergency department:

Initially, it's a visual assessment you are making of the patient. What they're looking like. I try to communicate with the patient. Not generally asking questions, just a simple hello to see if they respond and what response I'm getting. Are they looking at me, are they making any comments or talking, do they say "hello" in fact. ...What I do then, I am watching the patients whilst I'm getting handover from the ambulance crews. So I am getting all this information coming at me, and I am making a decision as quickly as possible with the information. From experience I have had in the past, the information that comes through helps me to channel the patient into a triage category ... where I know I need them to go

(Burkitt et al 2002, p85)

No doubt some of you in the audience will have been 'triaged' by an emergency nurse, perhaps without realising the wisdom behind the process. Part of the challenge for nursing is the steps we take to develop a 'collective wisdom' through sharing these experiences.

What is clinical wisdom?

Wisdom is defined as "*experience and knowledge, together with the power of applying them critically or practically*" (Oxford English Dictionary). Through extensive observation research in intensive care units, Benner (1999) proposes that clinical wisdom embraces two 'habits of thought and action': **clinical grasp** and **clinical forethought**.

Clinical grasp has four components:

1. **Making qualitative distinctions:** distinguishing between a 'textbook' set of physiological signs and what those signs might mean in the individual patient.
2. **Engaging in detective work:** keeping track of what has been tried and what has worked (or not worked) with a particular patient;
3. **Recognising changing clinical relevance:** the differing interpretation of signs when management of the patient moves from primarily curative to primarily palliative care;

4. **Developing clinical knowledge in specific patient populations:** the opportunity to develop expertise through working with, for example, school age children or the frail elderly will give the clinician a background set of expectations against which to judge the progress of a particular patient.

Clinical forethought encapsulates anticipatory actions related to the specific diagnosis or injuries that the patient has and the likely crises, risks or vulnerabilities. It also includes the ability to 'notice the unexpected'; in the paediatric intensive care study (Endacott 1998) this was observed when nurses tuned in to a change in the breathing pattern or the rhythm of the cardiac monitor, without any machine alarms sounding.

It is suggested that clinical wisdom requires "judgement" because certainty is missing (Benner et al 1999, p24). Beresford (1991) identified three sources of uncertainty:

1. **Technical sources**

Insufficient information to adequately predict prognoses or the effects of interventions. Also, paradoxically, the growth in medical information can leave the clinician unsure as to whether they are up-to-date with the latest evidence;

2. **Personal sources**

Relates to situations when the patients wishes are unknown;

3. **Conceptual sources**

Inability to assess differing patient needs competing for the same resources and the difficulty that occasionally arises with applying general policy to individual patients. This source of uncertainty also relates to general uncertainty regarding the future.

The work of Beresford (1991) highlights the misconception that providing more information is the sole solution to uncertainty. Similarly, whilst technical uncertainty can be reduced, personal and conceptual uncertainty will always be present in clinical situations. However, it is suggested that uncertainty is sometimes (consciously or sub-consciously) denied by clinicians, with more experienced clinicians more likely to admit to uncertainty at least to colleagues, if not to patients (Katz 1984). Further the impact of uncertainty can be seen in doctors tendency to resolve the ambiguity by **action** rather than **inaction**, for example, through increased hospital admissions (Beresford 1991) and ordering of investigations (Kassirer 1989). The preference to continue treatment, rather than withdraw it, is also seen in intensive care situations if an element of uncertainty about the prognosis of the patient is present (Christakis & Asch 1993).

There are two broad approaches to decision-making: the hypothetico-deductive, rational information processing approach; and the interpretive, intuitive approach.

1. **The information processing approach**

The information processing approach is based on the premise that human behaviour is logical and consistent. It proposes that clinicians either weigh clues in order to derive a diagnosis or choose an action that has the highest probability of success (Tanner 1986 p6). This approach is often subjected to mathematical modelling (for example, Hammond et al 1967; Hayes 1989) or used to create decision trees.

2. **The interpretive or intuitive approach**

The interpretive approach was proposed initially by Dreyfus and Dreyfus (1986), who described a hierarchy of practitioners ranging from novices (who have little or no experience of the situations in which they are expected to perform) to experts (who have no reliance on guiding rules or maxims and have an intuitive grasp of situations). It is suggested that experts approach clinical assessments with a different set of questions and use a wider range of data including contextual information and previous experiences. Further, it is suggested that it is intuitive judgment that distinguishes the expert from the novice. The expert no longer relies on analytical principles to connect their understanding of a situation to appropriate action (Thompson 1999). In practical terms, clinicians are often described as using intuition when they are not able to describe how a decision is made (Hall 2002, Denig et al 2002).

Intuition has been defined as:

"A perception of possibilities, meanings and relationships by way of insight (Gerrity 1987 p63)

"The immediate knowing of something without the conscious use of reason" (Schraeder & Fischer 1987 p45)

"a cognitive short-circuiting where a decision can be reached even though the reasons for the decision cannot be easily described" (Dowie 1994).

This latter definition is emphasised in two separate studies exploring doctors' prescribing decisions; both studies found that the doctors were often not able to describe how they made decisions (Evans et al 1995; Denig et al 2002).

Taken as sole entities, both of these approaches have their difficulties. How can the clinician communicate the rationale for decisions where such a rationale is 'subconscious'? Similarly, the information-processing model is criticised for not considering all the variables, failing to analyse decision-making in the real clinical situation and ignoring the dynamic nature of clinical practice (Bucknall 2000). An exploration of factors other than clinical evidence that contributed to the decisions

made by General Practitioners identified: the practitioner; the patient; and the practitioner-patient relationship as important mediators (Mears & Sweeney 2000). Bucknall (2000), in her observational study reviewing decision making in intensive care units, also suggested that individual and environmental factors influence nurses' clinical decision-making. Limitations of the information-processing approach to decision-making were also evident in a study of coronary care nurses (Norrie 1999). In a climate where the amount of data potentially available from 'the technology' was huge, the study attempted to clarify which particular data items would be most likely to be used by coronary care nurses when making decisions about patient management. The experienced coronary care nurses involved in the study found the methodology frustrating and expressed an inability to make such judgements, stating instead their preference to select the most pertinent items on an individual patient basis.

In his exploration of clinical reasoning by medical students, Hammond (1980, cited in Hamm 1988, p81) suggested the conceptualisation of these two approaches to decision-making as a continuum, with analytical and intuitive cognition at opposing poles. He further suggests that clinicians move backwards and forwards between the two poles according to the individual situation. Similarly, King & Appleton (1997) propose that the use of intuition actually accelerates the analytical process.

The work of those exploring the intuitive/interpretive approach to decision-making acknowledges that 'experts' do use the information processing approach, particularly when a new or unexpected challenge arises. It is worthy of note that the training of clinicians at all stages of 'expertise' to deal with emergency situations (for example cardiac arrest and major trauma situations) relies solely on an algorithm or protocol (analytical) approach, often learnt by rote learning methods. However, such training situations tend to result in much discussion when experienced clinicians are participating, with questions about "what if...". In the early days of such an approach, there was a firm reluctance by some clinicians to leave their intuitive, on-the-spot decision-making behind. However, the benefits of the protocol driven approach are clearly seen when clinicians who don't often work together have to work as a team in a cardiac arrest situation. Dowie (1997) suggests that decision trees are not usually overtly used at the bedside but will give the clinicians the confidence that their actions have a consensus backing.

It is suggested that the expertise of the individual nurse, as perceived by medical colleagues, affects whether their analytical or intuitive judgments/solutions are accepted by other members of the multi-disciplinary team (Thompson 1999). A study exploring working relationships between doctors and nurses in four Australian rural health services found that doctors trusted nurses who communicated well, were more experienced and displayed confidence (Blue & Fitzgerald 2002). Further

examples of this were seen in the paediatric intensive care fieldwork outlined earlier (Endacott 1998). In one example, an experienced nurse was discussing the dose of a cardiac drug with the cardiac surgeon:

"...we took it down to 1.9 but she couldn't manage so it's back up to 2.1 again now"

The cardiac surgeon did not request justification for the nurse's actions or ask in what way the child "couldn't manage", merely nodded his agreement (Endacott 1998). The confidence that the doctors placed in the nurses' abilities was also reflected in the manner in which drug and fluid prescriptions were written. The prescriptions generally allowed for a range of doses/volumes of fluid to be given to maintain the child's cardiac pressures within a specific range. Again, examples were seen frequently of nurses giving bolus doses of fluid or a drug according to their judgement of the child's condition (Endacott 1999). What was also of interest, however, was the nurses' use of intuition. On several occasions, a nurse would express (often to a more junior colleague, or to the researcher) that "something isn't right". This sense would lead the nurse to prepare a drug or fluid bolus "just in case". However, whilst the intuitive sense of something being wrong would prompt anticipatory action, the nurse wouldn't actually give the drug or fluid until empirical data from the monitor or blood sample analysis showed deterioration (Endacott 1998). Similarly, on sensing that something was amiss with the child, the nurse would search for empirical evidence, for example by taking another blood gas reading. This was also highlighted by Hams (1998), who suggested that this search for evidence is part of the negotiation necessary in order for 'intuition' to be recognised.

Scholes (1996) uses the term 'subliminal practice' in preference to intuition. In a study conducted in intensive care using video as the data collection medium, experienced intensive care nurses reviewed video footage of their working day and were asked what cues had prompted certain actions. They frequently identified 'intuition' as the prompt to make them look at the monitor and notice a change in the patient's condition. The video recordings showed that the nurses regularly glanced at the monitors and other machinery but this had become such an intrinsic part of the nurses' 'rhythm' of practice that it was subconscious - a process referred to by the researcher as 'lighousing'. Only when the nurse noticed something amiss and took further action was she aware of actually looking at the visual data.

Differences between the practice of 'novices' and 'experts' were evident in both of these studies:

1. the paediatric intensive care study (Endacott 1998) highlighted the inability of junior nurses to prioritise their workload. This made the workload of the nurse

running the intensive care unit for the shift much more difficult if she was working with a team of junior nurses. A further frustration expressed by more senior nurses was the inability of novices to determine when speed was of the essence.

2. the work of Scholes (1996) demonstrated how nurses who were new to intensive care struggled with vast amounts of visual data and tended to look at each parameter separately (for example, the ventilator data, the heart monitor and the oxygenation readout). These nurses also tended to be 'thrown off balance' when alarms sounded and circumstances changed.

So having reviewed the complexity of clinical wisdom and the reality of clinical practice, what challenges present themselves? The key challenge for both academia and health care settings is how we can prepare nurses for the reality and complexity of everyday practice.

A challenge for academia

Two main issues arise for academia:

1. how can students best learn clinical wisdom?
2. how can we assess it?

In addressing these questions it is pertinent to briefly review recent trends in nursing and medical education.

Trends in medical and nursing education

Firstly, the development of '**critical thinking**' skills is a required outcome of undergraduate nursing education across the USA, Australia and the UK (Greenwood et al 2000). This is also one of the espoused benefits of moving the preparation of nurses into Higher Education. More specifically, Australian academics have identified core skills expected of all graduate registered nurses, including analytical skills, creativity, lateral thinking, problem identification and solving (Reid 1994). Further, it is suggested that employers want nurses who are competent and possess generic skills, including 'cognitive attributes' of reflective thinking, critical thinking, lateral thinking, curiosity, and 'meta-attributes' of independent thinking, intuition, mature judgment, confidence (Marginson 1993, cited in Reid 1994).

Critical thinking has been defined as:

"resting on a basic wariness, a willingness to take nothing for granted, to approach each experience as if it were unique ... [it] keeps a constant purpose to understand: but its goal leads to evaluation and thereafter judgment" (Boostrom 1996)

Brookfield (1987) identified four key components of critical thinking:

1. identifying and challenging assumptions;
2. the importance of context;
3. exploring and imagining alternatives;
4. reflective scepticism.

These four components are a recurrent theme in the literature.

Secondly, in nursing (Ironside 1999) and medicine (Denig et al 2002), as well as Higher Education generally (Watson & Taylor 1998), there has been an increased emphasis on **students as active learners** (as opposed to passive recipients of teaching). Coupled with this underpinning ethos is the drive to ensure students have access to flexible methods of learning (Nelson 2002). This presents its own challenge for students seeking to gain clinical wisdom, perhaps necessitating mandatory clinical experience to achieve this particular outcome.

The unfamiliarity that some students feel with on-line technologies was highlighted by Vaughan Prain, in his Worner lecture three years ago. He suggested that for some learners using new technology will feel like 'putting on a glove' whilst others may feel they are being expected to 'play the piano in oven gloves' (Prain 1999, p12).

Thirdly, one strategy adopted increasingly in medical undergraduate education is the use of **Problem Based Learning** (Whitehouse et al 2002) but conflicting perspectives have arisen with defining the problems e.g. the lack of attention paid to chronic problems and older patients (Finucane & Nair 2002) and the tendency to use problem based learning scenarios to describe poor health care in rural settings, with patients being rescued by clinicians in larger, teaching hospitals (Hays 2002). Problem-based learning is also criticised for creating the impression that all medical problems have solutions and therefore that all disease can be cured (Finucane & Nair 2002). In a similar vein, Ironside (1999) suggests that the nature of critical thinking can be insidiously reduced to solving problems, at the expense of other areas of nursing knowledge such as the situated understanding that comes from knowing the patient. Students of nursing have also been critical of problem based learning, preferring instead the relative security that comes from more didactic teaching approaches (Biley & Smith 1999). These concerns suggest that problem based learning should be used as a philosophy to underpin whole programs, rather than as a teaching method for one or two subjects.

Fourthly, the value placed on reflection to underpin learning. Reflection dates back to Socrates who discussed the necessity of reflectively questioning common beliefs

and explanations (McMullan et al 2002). There is growing evidence that **learning from reflection** informs practice as a result of personal and professional development (Jasper 1999). However, it is crucial that students have adequate support and guidance when undertaking reflection (Duke & Appleton 2000; Teekman 2000) to manage the negative feelings of anxiety, self-doubt and lack of confidence that can emerge (Andrews et al 1998; Foster & Greenwood 1998).

Hatton & Smith (1995) developed an evaluative tool to evidence different qualities of reflection. They identified three increasingly sophisticated levels of reflection:

1. descriptive reflection;
2. dialogic reflection – self exploration of reasons for an event occurring;
3. critical reflection – exploring reasons for an event in the broader social, ethical, moral or historical context.

Researchers reviewing the use of portfolios (a key vehicle for reflection) in clinical settings recommended that academics should ground students in the use of incrementally more complex models of reflection as the student progresses through the programme (Endacott et al 2002).

A recent review of learning outcomes and curriculum development in nursing for the Australian Universities Teaching Committee highlighted the need for opportunities for students to reflect on their clinical practice, as a means of narrowing the theory-practice gap (Clare et al 2002). However, studies suggest that there is a tendency for students, and academics, to use **reflection-on-action** (a form of cognitive post mortem Greenwood 1993, Burton 2000) rather than **reflection-in-action** ('on the spot' thinking Andrews 1996). This reflects the likelihood that it is the academic who will formally facilitate 'reflective sessions' with students, often in the classroom setting (Endacott et al 2002).

Fifthly, there is a clear drive to **teach clinical reasoning in the clinical situation**, i.e. the context in which it is to be applied (Schuwirth 2002). However, for this to be more than rhetoric, requires the clinicians who are precepting students to be experienced in reflective and narrative approaches to learning. This is influenced not only by the individual clinician but also the learning culture of the clinical setting. Researchers exploring the effectiveness of education in critical care settings developed a model (Figure 1) to demonstrate the range of learning opportunities provided in the 'real-time' clinical setting or the office in the Unit, and their impact on 'high or low intellectual interference' (Scholes & Endacott 2002, p149)

Figure 1
Model to demonstrate learning opportunities in practice and the outcome on high or low intellectual interference (Scholes & Endacott 2002, p149)

<i>High intellectual interference</i>	
Higher order Q&A of 'hot' event	Direct observation with real time Q&A Nurse-led ward rounds
Reflective review of 'cool' event Student triggered teaching amnesty: revisiting skills	Teaching reports Reviewing notes, x-rays, medications, observations
OFFICE	CLINICAL
<i>Low intellectual interference</i>	
Ward based teaching sessions Assignments Book learning Student triggered Q&A	Skills teaching Working alone

Some of these teaching and learning strategies warrant further explanation. Students (Registered Nurses) coined the phrase 'amnesty' when talking about the opportunity to re-visit skills that they may have been using for some time in their everyday work. This was described as an important stage in their learning. Nurse-led ward rounds were introduced on one of the intensive care units. The objective of these was two-fold: firstly, to ensure that the student became fluent at presenting their patient's situation in the light of underpinning knowledge and the 'detective work' described earlier, and, secondly, to increase the nurse's confidence in leading discussion with the multi-disciplinary team (Scholes & Endacott 2002, p141).

An example from clinical practice is also of benefit in highlighting the need to teach clinical reasoning in the clinical situation. If we look at the textbook definition of

class 1 shock (Figure 2), it would appear that the patient would be little changed from normal. However, an experienced clinician will tune in to the patient in this condition and take appropriate steps to identify and manage the underlying cause. An important factor in this recognition process is the guidance given to the novice clinician, enabling learning from experience. This brings us back to Benner and colleagues' (1999) contention that clinicians will recall 'paradigm cases' that changed their perspective on a particular patient problem. Most experienced clinicians will be able to recall a patient in class 1 shock. On an anecdotal note, this was brought home to me recently during an emergency care lecture with registered nurses. When discussing the difference between croup and epiglottitis, one nurse remarked "*when you've seen a child with epiglottitis, you won't forget it; they have a particular look*".

Figure 2 definition of class 1 shock (after Driscoll et al 2000)

Parameter	Changes in Class 1 shock
Blood loss	15%
Blood pressure	Unchanged
Pulse	Slightly raised
Capillary refill	Normal
Respiratory rate	Normal
Extremities	Colour normal
Complexion	Normal
Mental state	Alert

Assessing clinical wisdom

The purpose of assessment has been described as "*to contribute to the maintenance of professional standards*" (Rowntree 1987) and to facilitate judgments about the student's qualities, abilities and knowledge against pre-determined criteria (Somers-Smith & Race 1997; Milligan 1998).

One of the approaches to assessment in health care is the use of Objective Structured Clinical Examinations (OSCEs). However, the detailed checklist approach often used to assess OSCEs encapsulates some of the earlier debates about decision-making, with experts sometimes gaining lower scores because they cannot identify stages along the way towards the final decisions (Charlin et al 2000; Hodges et al 2002). The assessment of students through OSCEs has also been questioned, because of the 'adrenalin gap' as the student knows it is not a real-life situation (Neary 1992). Perhaps more pertinent is the notion that experts rely on context and whole patterns (knowing the patient, how he reacts to situations, what physiological changes really mean). This kind of engagement with the patient cannot be replicated through simulations (Benner et al 1996, p7). Similarly in real life situations, experts use

cues from the patient that are physiologically based but not easy to quantify or simulate, for example movement and posture (Schraeder & Fischer 1987). There is a trend towards using videotaped consultations to replace OSCEs as they provide the opportunity to review and learn from the 'real-life' situation in which the 'student' operates (Bond et al 1999).

The use of one-off task based behavioural observation assessment is criticised for being reductionist, ignoring underlying attributes and the complexity of performance in the real world of practice (McAleer & Hamill 1997; Manley & Garbett 2000). This approach also favours assessment of the individual when the reality of practice requires teamwork (Ashworth 1992). However, this is countered by the assessment through scenarios such as Advanced Cardiac Life Support where the efforts of the team are assessed, in addition to individual skills. Where the goal of assessment is to deem a clinician competent in a particular area of work, observation of practice is considered crucial (Scholes & Endacott 2002, p 170). However, an evaluation of assessment processes in clinical settings identified the need for three conditions to make assessment effective:

1. **the relative experience and seniority of the assessor to the assessee:** students on these programs were frequently undertaking clinical experience in their own place of work and tended to vacillate between assessor: student and collegiate working relationships. This made the objectivity and credibility of the assessment process more difficult.
2. **the assessor's ability to pose critical questions** which challenge the student and enable her to think 'beyond the moment';
3. **a clinically relevant assessment tool** which clearly indicates what is to be assessed and to what depth (Scholes & Endacott 2002, p170).

Written accounts of practice (commonly presented through a portfolio) are being used increasingly to enable academic grading of practice, although inter-assessor reliability was also notably absent from a study exploring assessment of portfolios by general practitioner trainers (Pitts et al 1999). The aforementioned observational study of assessment processes in critical care settings found that written accounts are sometimes used because the logistics of assessing practice through observation are too difficult to achieve (Scholes & Endacott 2002). There is also concern that students who possess good writing skills may produce a good account of practice that actually masks their true performance (Redfern et al 2002).

The literature suggests a further conflict between the 'developmental' nature of critical thinking and the drive to assess it. A study exploring the use of portfolios in midwifery education found that students were less likely to be open and honest when reflective writing is assessed (Mitchell 1994). Other studies identified that

students tend to write what they think the assessor wants to read (Gerrish et al 1997; Woodward 1998), hence reducing their potential for learning from the type of 'problem situation' that is more likely to trigger 'real learning' (Snadden & Thomas 1998; Harris et al 2001). A further paradox arises as portfolios – a common tool for demonstrating reflective writing – are much less likely to be used by students when they are not part of the assessment process (Harris et al 2001).

A challenge for health care

Two key issues arise from the previous discussions:

1. the importance of recognising the value of experience in providing quality patient care, and
2. how experience can best be gained by those 'learning the profession'.

To address the first of these, the implications for health care of having novice clinicians making decisions are self-evident from earlier deliberations. In rural Victoria, the extent of nurses with lower skill levels managing patients in emergency situations was highlighted by Duckett & Kenny (2000, p2). They identified that the majority of resident medical officers in rural settings were junior or overseas doctors, and that in some of the smaller rural hospitals, ward nurses managed the emergency department providing an 'on demand' service. This evidence has to be viewed in the light of Needleman's recent (2002) study findings, which demonstrated higher mortality rates when the nursing skill-mix deteriorated. Other factors such as time constraints and increased workloads have also long been considered as key factors when exploring the quality of decision-making (Holsti 1978; Bourbonnais & Baumann 1985)

On a more urgent note, a shortfall of Registered Nurses has been predicted both in Victoria and nationally (Auditor General Victoria 2002, Preston 2002). It is also suggested that some nurses will leave the profession if the degree of autonomy that they seek is not forthcoming (Preston 2002 p x). They are looking to make a significant professional contribution, and if they cannot do that within nursing they may go elsewhere. The combination of these factors highlights the need for a sustainable strategy to retain nurses in the workforce. The impact of having fewer experienced clinicians both to support new graduates and to undertake the nursing management of the patient is self-evident. This combination of factors highlights the need to articulate and celebrate the reality of what nursing is, valuing the contribution made by experienced nurses. Indeed the Department of Human Services has taken a step in this direction with their recent television advertising campaign.

The nursing profession is challenged to recognise the *intrinsic value of practice as the source of knowledge from which most, if not all, nursing theory emanates* (Birchenall 1999: p173). The issues this raises for healthcare can be encapsulated

in three questions:

1. How can appropriate clinical experiences be provided for students?
2. What constitutes an appropriate learning culture?
3. How can the development of clinical wisdom be mentored?

The answers to these questions are inevitably intertwined. However, the last of these – providing an appropriate mentor – is part of the key to success. Students enter a clinical experience with a set of outcomes to achieve. These do provide a useful framework, indeed are necessary for the University to confirm the student's suitability to register as a nurse. However, it is possible for the student to get to the end of the undergraduate program with all the 'boxes ticked' on the outcomes assessment but to have missed the opportunity to learn from the clinical wisdom of experienced nurses. One of the reasons for this is, inevitably, time constraints, as demonstrated in a study exploring learning and assessment (Phillips et al 2000). However, the potential impact of not providing adequate and appropriate clinical experience is highlighted throughout this paper, hence creative solutions have to be found.

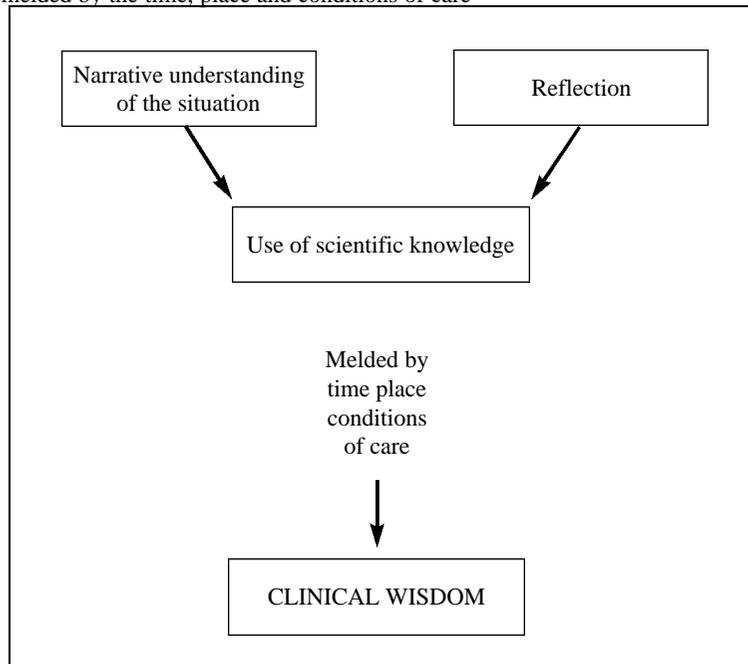
An alternative viewpoint to the formal mentoring process is the focus on 'osmotic learning' or learning from role models through immersion in the clinical setting. Whatever walk of life we're in, we can all recall fantastic role models from whom we've learnt particular skills. Role models have been demonstrated to inculcate professional values, attitudes and behaviours in young doctors (Wear 1998). Of interest to our discussions, one particular study conducted with medical students identified that a key attribute of a 'positive' role model was their willingness to share their professional experiences with the students (Wright et al 1998). This type of learning, however, is serendipitous (Paice et al 2002) and cannot be relied on for sharing clinical wisdom with students and new clinicians. The role of the mentor, on the other hand, should be a planned, committed dimension of the work pattern for that individual.

Learning through clinical experiences is also dependent on the culture of the individual ward or Department. Data from an observational research study found that factors other than time were influential in creating and using learning opportunities, notably the way in which the clinical setting was constructed as a learning environment and the extent to which teaching, learning and assessment were considered second nature by the staff who worked there. The researchers found that even in the busiest of situations, staff geared towards teaching and learning could create a learning opportunity out of the 'busy-ness' when they offered a running commentary on their actions (Scholes and Endacott 2002).

Where do we go from here?

Lynaugh (1999) suggested that clinical wisdom has three interweaved components:

1. the marriage of narrative understanding of a specific situation with reflection
2. which allows the caregiver to use scientific knowledge
3. melded by the time, place and conditions of care



This definition emphasises the need for:

- preparation of preceptors to provide a narrative interpretation of their practice
- emphasis on developing a personal knowledge base through reflection on everyday experiences
- a firm scientific knowledge base for practice
- clinicians to embrace flexibility and a willingness to be wrong
- learning that is situated in reality

Two central philosophies underpin many of the strategies being developed to make learning more 'real':

- bringing ambiguity of practice in to the lecture room, for example through presenting scenarios which are complex and in which the expected outcomes are not achieved;
- taking the learning out into the real world of practice

The use of action learning (McGill & Beaty 1995) is growing in popularity with postgraduate students. This approach uses a continuous process of learning and reflection, with the emphasis on getting things done. Through an action learning set, individuals learn with and from their peers by reflecting on real experiences and working on real problems. A key feature of the action learning set is the focus on challenging assumptions but also legitimising the reflection that is a necessary part of the process (McGill & Beaty 1995, p22). At undergraduate level, an approach taken with medical students has been to address the issue of uncertainty in decision-making, and the associated biases that can result, through the curriculum (Hall 2002).

One strategy to address the conundrum of assessing clinical wisdom is to use a combination of observation and written accounts of practice – a form of triangulation. This allows development and assessment of:

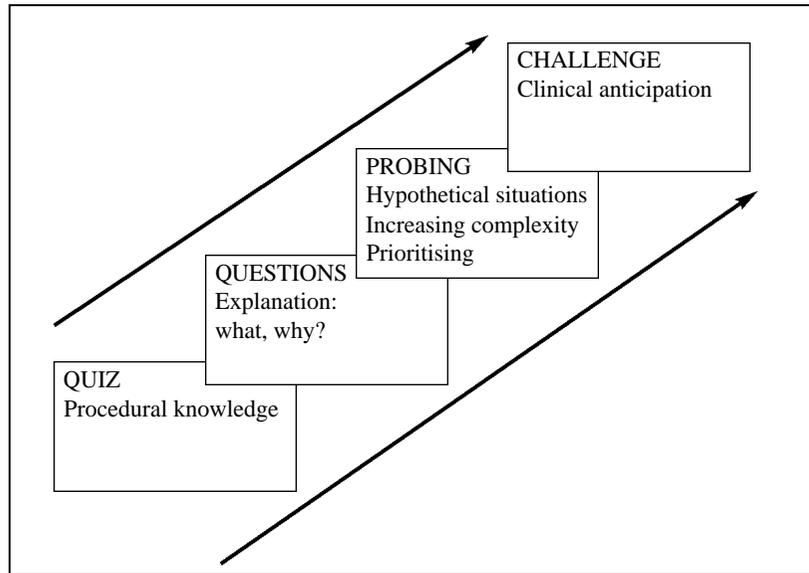
- Clinical skills
- Reflection-in-action
- Reflection-on-action (through the written account of practice)
- Academic progress (through written accounts of practice)

This approach would meet the requirements of the clinical wisdom model through an assessment strategy that is situated in reality.

However, assessment should also reflect an underlying ethos of continuous assessment, rather than a one-off event. The appropriate use of questioning at higher cognitive levels by lecturers, clinical teachers and mentors is stressed (Greenwood 2000; Phillips & Duke 2001; Williams 2001). This has implications for the preparation of clinical teachers and mentors. However, Ironside (1999) suggests that thinking is more than answering questions and applying knowledge in clinical situations. Thinking is also interpreting situations, knowing how and when knowledge relates to a particular situation. Relying too heavily on quizzing encourages students to focus on answering questions rather than on developing the interpretive skills needed for thinking in a particular situation.

In Figure 4, Scholes & Endacott (2002) propose a hierarchy of questioning approaches used to establish underlying understanding and thinking in action:

Figure 4:
Model to demonstrate hierarchy of questioning (Scholes & Endacott 2002, p 169)



This ideal model requires a time commitment from all parties – and creative approaches to achieve it in today’s climate of stretched health care resources.

In conclusion, this paper has provided an opportunity to celebrate the diversity, complexity and innovation of nurses and nursing practice. Contemporary health care does provide a range of tensions both for academics preparing nurses for practice, for clinicians working in the real world of practice, and for those managing health services. However, what has also been evident in these discussions is the creative imagination that accompanies these tensions, the multiplicity of ways in which nurses rise to the challenge of developing clinical wisdom in themselves and others. However, several imperatives are evident:

- We need to retain expert clinicians at the bedside, to optimise use of their clinical wisdom;
- Students need to have access to expert clinicians;
- Clinicians and academics need to continue to develop skills of narrative commentary, in order to pass on their cumulative wisdom to the next generation.

Keeping these imperatives at the forefront of our collective endeavours will help ensure that clinical situations such as that presented at the beginning of this paper continue to be managed in the best possible manner.

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The annual Worner Research Lecture forms a series of public lectures at La Trobe University, Bendigo. The aim of the series is to publicise research carried out at La Trobe University, Bendigo.

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Howard Worner's distinguished career in academia and industry led him to his present honorary professorship at the University of Wollongong, where he has been Director of the Microwave Applications Institute since 1989. In 1994, La Trobe University conferred on him the degree of Doctor of Science (honoris causa).

Neil Worner pursued a career in civil engineering, including the position of Chief Civil Engineer with the Snowy Mountains Hydro-Electric Authority. His career continued in senior and advisory capacities in Australia and overseas on projects such as the design and construction of major dams.

Hill Worner's career included several years on the Executive of the CSIRO and 22 years as Professor of Metallurgy and three as Dean of Engineering at The University of Melbourne, where he is now Professor Emeritus in Engineering.

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