Descriptive title: Preferred information sources for clinical decision making: Critical care nurses' perceptions of information accessibility and usefulness

Short title: Preferred information sources for clinical decision making

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ABSTRACT

Background: Variability in clinical practice may result from the use of diverse information sources to guide clinical decisions. In routine clinical practice, nurses privilege information from colleagues over more formal information sources. It is not clear whether similar information-seeking behaviour is exhibited when critical care nurses make decisions about a specific clinical practice, where extensive practice variability exists alongside a developing research base.

Purpose: This study explored the preferred sources of information intensive care nurses used and their perceptions of the accessibility and usefulness of this information for making decisions in clinically uncertain situations specific to enteral feeding practice.

Methods: An instrumental case study design incorporating concurrent verbal protocols, Q methodology and focus groups was used to determine intensive care nurses' perspectives of information use in the resolution of clinical uncertainty.

Findings: A preference for information from colleagues to support clinical decisions was observed. People as information sources were considered most useful and most accessible in the clinical setting. Text and electronic information sources were seen as less accessible, mainly because of the time required to access the information within the documents.

Discussion: When faced with clinical uncertainty, obtaining information from colleagues allows information to be quickly accessed and applied within the context of a specific clinical presentation. Seeking information from others also provides opportunities for shared decision-making and potential validation of clinical judgement, although differing views may exacerbate clinical uncertainty.

Conclusion and implication for practice: The social exchange of clinical information may meet the needs of nurses working in a complex, time-pressured environment but the extent of the evidence-base for information passed through verbal communication is unclear. The perceived usefulness and accessibility of information is premised on the ease of use and access and thus the variability in information may be contributing to clinical uncertainty.

Keywords: critical care; enteral nutrition; information seeking behaviour; knowledge translation; case study method; Q sort

INTRODUCTION

Variability in clinical practice, which is evident in many areas of health care (Galway et al. 2003), has been linked to the perceived failure of clinicians to consistently recognise the need for information to support the clinical decision making process (Thompson & Dowding 2001). Over the last 20 years, the evidence based practice movement has also raised, both for clinicians and the wider community, the now well-established expectation that clinical decisions are routinely based on the best available evidence. The anticipated outcome of an evidence-based approach to clinical decision making is improved consistency within clinical practice, however, variability continues to be observed (Davis et al. 2004).

While there are a variety of information sources (with or without a strong evidentiary base) available for health care professionals to use to guide clinical decisions (Estabrooks et al. 2005; Profetto-McGrath et al. 2010), the plethora of studies examining information use by health care professionals have mostly concentrated on the use of specific, and often singular, information sources such as the internet (Westberg & Miller 1999), library services (Bowden et al. 1994), indexes and databases (Curtis et al. 1997; Griffiths & Riddington 2001). Within the nursing literature a particularly strong emphasis on nurses' use of research to inform clinical practice (Estabrooks & Wallin 2004; Squires et al. 2007) is also evident. In the context of routine clinical nursing practice (which may influence the type of information sought) information is reportedly most commonly accessed from the patient, clinical monitoring equipment (McKnight 2001) and the patient notes (Corcoran-Perry & Graves 1990), demonstrating a preference for patient-specific information that is reasonable given the high proportion of information required for direct patient care. Hence, variability in nursing practice may also be the result of the use of multiple and/or diverse sources of information which have been selected to inform the clinical decisions made in a particular

practice context.

Estabrooks et al's (2005) comprehensive longitudinal cross-section comparison of preferred knowledge sources for routine clinical nursing practice used data from three studies conducted over a six-year period (Baessler et al. 1994; Estabrooks 1998; Estabrooks et al. 2005) to establish that personal interactions with co-workers or patients and personal experience were the most commonly used knowledge sources. Importantly, this study also highlighted personal experience as a source of practice knowledge; an important consideration given personal experience has been widely recognised as essential for nursing practice (Luker & Kenrick 1992; Kennedy 1998).

Thompson et al. (2001a) who investigated nurses' information use in decision making in three large acute care hospitals in the United Kingdom also reported the preference for using colleagues as a source of information and that nurses valued information they considered to be, useful, accessible, accurate, and of high quality. These participants also valued research-based information but demonstrated a preference for obtaining information through social means. Colleagues were identified as the most useful sources of information for the resolution of uncertainty providing the individual was viewed as having clinical credibility (Thompson et al. 2001a). The physical and intellectual accessibility of the information was also explored and again colleagues were considered more accessible than text based and electronic sources of information, although all were available within the workplace. While people, specifically those who combined a research utilisation remit with clinical work, were seen as most accessible, it was also noted that clinicians who held a position of influence may be more readily accessed or used as a source of information because of their clinical rather than research credibility (Thompson et al. 2001b).

Critical care nurses provide care for patients with complex, rapidly changing clinical

contexts requiring clinical decisions to be made quickly and with consideration for the unique situation of any particular patient and there are clearly many sources of information that can be accessed to support these clinical decisions. Although findings suggest that in the context of routine clinical practice, nurses preferentially seek information from colleagues in preference to more formal information sources (Thompson et al. 2001b; Estabrooks et al. 2005) it is not clear whether similar information-seeking behaviour is exhibited when critical care nurses make decisions about a specific clinical practice such as enteral feeding, where extensive practice variability exists alongside a developing research base (Marshall & West 2006; Persenious et al. 2006).

This study therefore aimed to explore the preferred sources of information intensive care nurses used and the perceptions of the accessibility and usefulness of this information for making decisions in clinically uncertain situations in one area of critical care nursing practice (enteral feeding).

METHODS

This qualitative naturalistic research study was designed according to the tenets of case study method as espoused by Yin (2003) and Stake (1995) so as to capture the uniqueness of a case constructed out of naturally occurring social situations (Hammersley 2000). The use of an instrumental case study design (Stake 1995) supported our focus on developing an understanding of the phenomenon of information use in clinical decision-making rather than case-specific particulars. Approval for the study was granted by both hospital and university Human Research Ethics Committees. Pseudonyms were allocated to all participants.

Study setting and participants

Data were collected **between 28 July 2005 and 13 July 2006** in a 13-bed Level III intensive care unit within an Australian tertiary teaching hospital. Participants were recruited for each data collection stage using informal unit based communication systems. Demographic details for participants in each stage of the study are detailed in Table 1.

Table 1 Characteristics of participants

Characteristics		Data Collection Stage		
		Think aloud [1]	Q sort [2]	Focus Group [3]
Age (yrs)	21-25	2	1	0
	26-30	1	7	2
	31-35	0	6	3
	36-40	0	1	1
	41-44	1	2	0
	45+	2	0	0
Gender				
	Male	3	4	2
	Female	3	13	4
Number of years as a RN				
	1-2	1	0	0
	3-5	2	4	0
	6-10	2	11	2
	11-15	1	2	4
Experience in critical care (yrs)				
	Mean	3.2	5	10
	Range	1-7	1.5-14	6-15
Initial nursing qualification				
	Hospital certificate	1	0	1
	Diploma of Nursing	1	6	1
	Bachelor of Nursing	4	11	4
Highest nursing qualification				
	Hospital certificate	1	0	0
	Diploma	0	3	0
	Bachelor of Nursing	2	6	0
	Postgraduate qualification	3	9	6
Specialty qualifications				
	Intensive Care (Adult)	2	7	6
	Cardiac/Cardiothoracic	2	1	0
	Critical Care	2	3	0

Data Collection and Analysis

Data collection occurred between July 2005 and July 2006. As it is the examination of the case from multiple aspects that locates and explains a case within the wider societal context (Stake 1995), the study was designed in the following three sequential stages.

Stage 1 – Concurrent verbal protocols (Think Aloud) with retrospective probing

Think aloud data were produced continually while a participant provided patient care during the first two hours of the participant's shift. Analysis of these data were aimed at capturing the participant's thinking at that time (Aitken & Mardegan 2000) with non-participant observation used to contextualise data and retrospective probing used as a strategy for gaining further insight into the think aloud data (Young 2005).

Stage 1 data were first analysed using a content analysis to identify the types of information sources used by the participants (Table 2). An inductive approach to data analysis was then used to 'derive concepts, themes, or a model through interpretations made from the raw data...' (Thomas 2006) (p. 238) to develop an understanding of information use in clinical decision-making.

Table 2: Sources of information identified during document audit (shaded) & think aloud data collection (unshaded).

Human (n=19)	Print (n=23)	Electronic (n=13)
Personal experience	Patient notes	Clinical practice guideline
Registered Nurses: - more experience than participant	Monthly Index of Medical Specialties	Intranet
Registered Nurses: - same experience as participant	Clinical practice guideline	ICU homepage
Registered Nurses: - less experience than participant	Hospital clinical policies, practices & guidelines	Internet
Clinical Nurse Specialist	Textbook	Original research
Team Leader	<i>Bedside algorithm</i>	<i>ICU protocol</i>
Clinical Nurse Educator	<i>Abbreviated policy at bedside</i>	<i>Critical Care Competencies</i>
Nursing unit manager	<i>Intensive care unit protocol</i>	<i>Systematic review</i>
Registrar	<i>Infection Control Policies & Procedures</i>	<i>Literature review</i>

Resident Medical Officer	<i>Critical Care Competencies</i>	<i>Case study</i>
Senior Registrar	<i>Product information</i>	<i>Textbook</i>
Intensivist	<i>General ICU staff meeting minutes</i>	<i>Original research</i>
Clinical Nurse Consultant	<i>Hospital policy manual</i>	<i>Professional organisation website</i>
Staff Specialist	<i>Poster - clinician</i>	
In-service information	<i>ICU department meeting minutes</i>	
<i>Dietician</i>	<i>Library services hospital</i>	
<i>Research Nurse</i>	<i>Textbook</i>	
<i>Medical Intern</i>	<i>Conference information</i>	
<i>Nurse Academic</i>	<i>Library services university</i>	
	<i>Hospital General Circular</i>	
	<i>Notes from university course</i>	
	<i>Poster - corporate</i>	
	<i>Department of Health Memo</i>	
	<i>Newsletter</i>	
	<i>Department of Health Media Release</i>	
	<i>Pre-registration course notes</i>	

ICU = intensive care unit

Stage 2 – Q methodology

Q methodology, a data collection method that enabled the study of the complex underlying structure of subjective views (Watts & Stenner 2005), was used to specifically explore the accessibility and usefulness of information sources. **Accessibility was considered to be either physical accessibility that related to the ease of attainment or intellectual accessibility incorporated the notion that the source of information was capable of being understood (Thompson et al. 2001b). The concept of usefulness was considered in the context of a specific condition of instruction describing a clinical scenario where uncertainty was present. Usefulness was defined as how well the source of information was able to address the area of clinical uncertainty (Thompson et al. 2001c).**

Information sources (the Q sample) were derived from Stage 1 data collection and an audit of documents available in the intensive care unit and contained a total of 56 items (Table 2).

Following a prescribed Q sort distribution (Table 3), participants sorted the information sources first while considering the usefulness of information sources in the context of a

clinical scenario highlighting variability in practice, then while they reflected on a situation in which they had previously experienced clinical uncertainty.

Table 3: The Q sort distribution

	Agree					Uncertain			Disagree				
Value	+6	+5	+4	+3	+2	+1	0	-1	-2	-3	-4	-5	-6
Number of statements	1	2	3	4	5	8	10	8	5	4	3	2	1

Q methodology is based on the mathematical-statistical tool of factor analysis, incorporating a by-person factor analysis (Barbosa et al. 1998). Data were analysed using PQMethod software (Schmolck 2002) and commenced with the production of a correlation matrix before data were subjected to factor analysis. Principal component analysis was then used to identify the number of natural groupings of individual Q sorts (Donner 2001). Both Eigenvalues (greater than 1.0) and theoretical understandings were used to determine the optimal number of factors to rotate (McKeown & Thomas 1988). An orthogonal rotation (Varimax) method (Schmolck 2002) was used to analytically rotate the factors to help identify simple factorial structure (McKeown & Thomas 1988).

Participant loading was determined through the automated process of pre-flagging and assessed manually to determine whether nuances in the data justified adjustments to the pre-flagging. Factor loadings greater than 0.4 were considered strong and those 0.8 or greater considered very strong (Donner 2001). Data were analysed for cross-loadings (loadings greater than 0.4 on more than one factor) and where cross-loadings were present the number of factors rotated was increased and data re-analysed. If cross-loadings persisted, excluding a participant from analysis was considered in order to produce a cleaner factor structure and to minimise (i) production of excess subgroups and (ii) minimise the number of consensus

statements in the data (Donner 2001). Normalised Factor Scores allowed the identification of items ranked as more/less important and analysis of each group's Qsort distinguishing and consensus statements allowed for differentiation between the views of each group.

Stage 3 –Senior Nurse Clinician Focus group

As the senior nurse clinicians were responsible for the acquisition of print and electronic information sources, a focus group was used to explore their perspectives on the accessibility and usefulness (for resolving clinical uncertainty) of the information sources identified in Stage 2. While the focus group allowed for exploration of group interpretations of information use within the intensive care unit, it also allowed for individual experiences and perspectives to be presented and for the group to then discuss and attempt to collectively make sense of the issue (Morgan & Krueger 1993).

Focus group data were transcribed verbatim and analysed inductively (Thomas 2006). To uncover the complexities of the issues and as a means of facilitating interpretation, identified statements were initially examined within the context of the broader discussion (Knodel 1993).

FINDINGS

Within the clinical environment of this intensive care unit, registered nurses had many different sources of information available to help inform their decision-making and resolve their clinical uncertainty (Table 2). The findings reported here describe participants' perceptions of the accessibility and usefulness of the information available to them and their preferred information sources.

Preferred sources of information

People were the information sources most commonly identified in the analysis of the think aloud process and retrospective probing (Table 2) with print-based and electronic sources of information, achieving much lower rankings on Q sort (Table 4 and Figure 1).

Table 4 Factor Q-Sort Values and Z score for accessible information sources:

	Factor Array	Z score
*Personal experience	6	2.420
*Registered Nurse (more experience)	5	1.848
*Clinical nurse specialist	5	1.789
*Registered Nurse (same experience)	4	1.605
*Team leader	4	1.585
#Patient notes	4	1.451
*Clinical Nurse Educator	3	0.982
^Intensive care unit protocol	3	0.949
*Nursing unit manager	3	0.883
^Intranet	3	0.859
^Intensive care unit homepage	2	0.853
*Registrar	2	0.781
#Clinical practice guideline	2	0.756
*Registered Nurse (less experience)	2	0.736
*Resident medical officer	2	0.723
*Senior Registrar	1	0.707
#Hospital clinical policies, practices & guidelines	1	0.626
#Bedside algorithm	1	0.595
#Abbreviated policy at bedside	1	0.583
*Intensivist	1	0.569
^Critical Care Competencies	1	0.443
*Clinical nurse consultant	1	0.379
#Monthly Index of Medical Specialties	1	0.367
#Intensive care unit protocol	0	0.308
*Staff Specialist	0	0.130
#Infection Control Policies and Procedures	0	0.088
^Internet	0	0.039

*Dietician	0	-0.033
^Clinical practice guideline	0	-0.146
#Critical Care Competencies	0	-0.177
*In-service information	0	-0.188
^Systematic review	0	-0.196
^Literature review	0	-0.261
#Product information	-1	-0.278
^Case study	-1	-0.376
^Textbook	-1	-0.378
^Original research	-1	-0.398
#General ICU staff meeting minutes	-1	-0.455
#Hospital policy manual	-1	-0.493
*Research Nurse	-1	-0.510
#Poster - clinician	-1	-0.671
#ICU department meeting minutes	-2	-0.706
#Library services hospital	-2	-0.762
#Textbook	-2	-0.896
#Poster - corporate	-2	-0.917
*Intern	-2	-1.035
*Nurse Academic	-3	-1.133
#Conference information	-3	-1.150
#Library services university	-3	-1.252
#Hospital General Circular	-3	-1.265
#Notes from university course	-4	-1.275
^Professional organisation website	-4	-1.304
#Dept of Health memo	-4	-1.420
#Newsletter	-5	-1.586
#Dept of Health Media Release	-5	-1.750
#Pre-registration course notes	-6	-2.029

ICU = intensive care unit RN = registered nurse

* = people as information sources   ^ = electronic information   # = print-based information

Figure 1 Q sort rankings for distinguishing and consensus statements for the usefulness of information

*personal communication

printed information

^ electronic information

Abbreviations: DOH – Department of Health; ICU – intensive care unit; MIMS – Monthly Index of Medical Specialities; RN – registered nurse

In seeking information from others, data indicates that participants clearly discriminated between individuals and more frequently approached those whose position was associated with a higher level of experience, clinical relevance (such as a Clinical Nurse Consultant or Clinical Nurse Educators) or perceived specific expertise, for example specific expertise related to enteral feeding. The preference for accessing information from others is illustrated by David (RN) who said, *“Generally I’d ask.....I’d always go to the person next to me first”* thus also suggesting that proximity was an important factor in selecting who to ask. For many others, including Robert (RN), who commented that his *‘first step would be to ask whoever is next to me....if they are more experienced’*, experience as well as the proximity of the individual was an important consideration.

The preference for using people as a source of information was sufficiently strong that if clinical uncertainty was not resolved in the first instance, many participants described or were observed to seek additional information from a different person. Importantly, in these situations it was common to seek the advice of someone they perceived to have a higher level of expertise than themselves as described here, *‘And if my colleagues weren’t able to help me I might go further up the chain, like a doctor or my NUM 3 [Nursing Unit Manager Level 3] ...’* Abigail (RN)

Using people as the only source of information could also be problematic. Some participants were particular about the characteristics a person should exhibit before they would approach them for information in the clinical setting; a strategy that was not always possible with changes in staffing mix or when less staff was available as identified by John (RN) when discussing accessing the information needed for a particular episode of clinical uncertainty *‘it was on nights so it was a little more difficult’*.

Although different sources of information, including text- and electronic-based information were available in the clinical area these were only infrequently identified as sources of information used to support clinical decision-making in either the think aloud or Q sort data. The notable exception was the use of text-based information when administering medications, the use of a drug manual being specifically described as,

...if it were a drug then I would probably look up a MIMS [Monthly Index of Medical Specialties] in preference to asking a colleague because you are....I think you should be responsible if you are giving a drug. I don't expect another colleague to be...I want to be responsible myself. Abigail (RN)

Using research as information to inform clinical practice was viewed as problematic by the nurses working at the bedside and by the senior nurse clinicians. The volume of available information was considered daunting and this, coupled with the expertise needed to both locate and critique the published literature, made using peer-reviewed research literature as a source of information prohibitive from the perspectives of both ease and time. This perspective is clearly illustrated by Patricia's (RN) suggested use of "literature by proxy" where someone "trusted" could review the literature and locate the best and most relevant papers thereby "saving you hours and hours of searching to just find crap that you throw away." The notion that individual nurses should directly base their clinical practice on the best available evidence was not supported by the senior nurse clinicians who also saw the body of literature available to guide nursing practice as being variable and therefore not useful for clinical decision making, a position exemplified by the following comment.

...every clinician knows ...that if [you look at the] literature you'll get 10 different stories. That is why guidelines are so popular. Eden, senior nurse clinician

The expanse of literature and variability in recommendations from individual papers is perhaps difficult to navigate for individuals. The senior clinician focus group discussed the

possibility of a team approach to appraising the literature and formulating recommendations but consensus on how this should be done was not achieved. For some participants this dilemma had been resolved by deciding that clinical nurses did not have a role in evaluating research-based literature as illustrated by the following:

...you can get a panel of the best experts, with the best literature available from RCTs and [decide what the recommendation should be]. It's inappropriate for people at the bedside to be having to make those decisions. Reid, senior nurse clinician

With the variety of information sources available to nurses and the clearly evident preference for using colleagues for information, it was clearly important to look more closely at the perceived usefulness and accessibility of available information sources.

Accessibility of information

Q Factor analysis identified one perspective on the accessibility of information which accounted for 61% of the explained variance (Table 4). Of the 56 information items available, 15 were ranked $\geq +2$ and of these 15, the majority ($n=10$) were human sources of information, three were electronic-based information and two were text-based information sources (Table 4). Accessibility is thus clearly linked to responsibility for direct patient care with the importance of proximity with colleagues who were frequently in the clinical area established through the higher ranking for this group. Hence the speed at which information could be obtained, particularly if there was a perceived lack of available time for locating literature-based or even institutional-based documents is exemplified by this comment:

But if I can find that result from someone more simply because it is sort of effective time management, staff is the best option in my mind for that... David (RN)

Hence, for David, the idea of accessing information is described in terms of a demand for instantaneous resolution of the dilemma; getting information quickly was potentially more

important than getting accurate information. David then extended this framing to explain his position in terms of increasing societal impatience:

Well, it [asking another person] is faster, more accurate. In the fast food society that we are, we like things quickly and if it goes well then that is the better option than spending longer getting the same result, which maybe more precise, more thorough.

David (RN)

Despite valuing the quality of print-based information, particularly those developed by the organisation, the lack of time to access this remained a concern for some as exemplified here.

... I don't have a lot of time to go running through policies and generally if a question comes up there isn't time at that point to go and dig it out and read through it and decide if it relates to the patient and that sort of thing. It is daunting to have a stack of them to go through. You don't know where to start. Patricia (RN)

Electronic information did not rank highly in terms of accessibility with only three of the 11 available electronic information sources rating positively (Table 4). The absence of bedside computers in this intensive care unit and the limited availability of information technology (only one computer for every three patient beds) may however, have impacted on the perceived accessibility of electronic information sources.

The ease of access to the information also appeared to outweigh the accuracy and completeness of what information might be obtained. Despite being able to articulate the different sources of electronic information, discuss the authority associated with peer-reviewed and institutional-based information and knowing that the quality of electronic information was widely variable participants displayed a preference for locating electronic information by using search engines such as Google™, as illustrated by John (RN) who

commented, *'I'm a bit naughty and I would just probably put it into a search engine and see what websites come up'*.

Being able to easily locate the information also appeared to be a barrier for some, as exemplified by John, RN who described the process of locating literature as *"hunting for it"* and Abigail who stated that she wouldn't look up research because that type of information was *"hard to access"* and she wasn't *"very good at doing a search so it would be too hard and too time-consuming"*. Such challenges in accessing electronic information must be impacting on locating published, peer-reviewed literature that is predominantly available electronically in this intensive care unit. Even for those individuals who were skilled in accessing electronic information, barriers to access such as difficulty accessing passwords were still present and sufficient enough to cause frustration and therefore abandonment of the search for electronic information.

Usefulness of information

Analysis of the Q sort of 56 items highlighted perspectives of two distinct groups of individuals that explained 60% of the total variance (Perspective 1- 51%; Perspective 2 - 9%) (Figure 1). Distinguishing statements highlighted information sources that were ranked differently by each subgroup ($p < 0.01$). Of the 56 items sorted, 20 items were considered consensus statements, that is the response to the statements did not help distinguish between the two groups (Schmolck 2002) however, as only seven consensus items rated positively but only scored either +2 or +1 these were not particularly useful to the analysis.

The differences in information sources considered useful in the context of enteral feeding practice highlighted the perspectives of the two groups. The predominant perspective (Perspective 1) reflected the views of 15 of the 17 participants who completed the Q sort. Twenty-seven sources of information were identified as distinguishing items; 14 of these were positively ranked and considered useful and 10 of these were people (Figure 1).

The alternate perspective (Perspective 2) represented the views of two participants. These participants positively ranked 12 sources of information of which less than half (n=5) were people. Who these participants ranked most highly also differed; the Clinical Nurse Consultant (+6); Dietician (+5); and Professor of Critical Care Nursing (+4) were considered more useful than clinical nurses who spend a higher proportion of time in the clinical area. Analysis of participant characteristics for each group, (age, specialty qualification, years of experience or position) did not highlight any unique differences that may help explain either perspective.

Participants in each perspective rated two print-based sources of information positively. Those in Perspective 1 ranked the enteral feeding clinical practice guideline as +5 and the ICU enteral feeding protocol +2. Those in Perspective 2 ranked conference information as +3 and library resources as +1 (Figure 1).

Electronic sources of information did not rate as highly for usefulness as their print counterparts. For example, the print-based clinical practice guideline was ranked +5 in Perspective 1 while the electronic version of the same document was ranked +2. Conversely, those in Perspective 2 identified electronic documents as being more useful than print-based documents with the electronic version of the clinical practice guideline ranking more highly than the print-based version (+5 vs -1) (Figure 1).

The usefulness of sources that provided pre-appraised information, such as hospital- and unit-based documents, was rated more highly than original sources of information such as research reports (Figure 1). Bryan, a senior nurse clinician suggested that using organisational documents provided some protection or assurance in the making of a clinical decision so that the nurse *“wasn’t practicing outside the boundaries of what was expected in that unit”* and therefore wasn’t *“exposing [themselves] to a [performance management] issue”*. The use of research to inform practice was seen by another Reid, a senior nurse clinician, as an

ineffective use of time, a strategy that wouldn't provide a definitive answer and ultimately futile because "*the policy is always going to override [anything else]*".

Although sources of information can be considered useful, if they are difficult to access their usefulness in helping to resolve uncertainty in clinical practice will be negligible. For many participants the usefulness of the information was therefore considerably affected by what was considered accessible.

DISCUSSION

The preference for using colleagues as information sources, and the value of accessible and useful information when making clinical decisions and resolving clinical uncertainty, were the key findings of this study. Every participant indicated a preference for using other people as sources of information which is not surprising given the close working relationships of nurses which promote interaction and discussion, and contribute to a pervasive oral culture (Flaming 2003). The identification of the preferential use of information sourced from colleagues, that is through social interaction, is consistent with other work examining information use within the context of clinical nursing practice (Estabrooks et al. 2005) and within other health disciplines (Dee 1993; Gravois et al. 1995; Hall 1995; Thompson 1997).

Social interaction as a means of obtaining information to support clinical decisions may reflect the immediate and context-specific nature of the information required in a dynamic, complex and uncertain environment, such as the intensive care setting. Approaching a colleague for information creates the opportunity to discuss and clarify patient care options. Entering into this type of dialogue requires individual and collective assessment and interpretation of the clinical situation in order to fully engage in a collaborative decision making process. If the collaboration results in validation of the nurses' feelings and actions then they may experience what Estabrooks et al. (2005) refer to as 'affirmational support' (p. 464) and a sense that the clinical uncertainty has been resolved. However the potential for

ongoing uncertainty exists if concordance is not achieved. In a judgement analysis of heart failure specialty nurses, Thompson et al (2008a) demonstrated variability across a range of clinical judgements of varying complexity despite access to similar information. The potential for lack of agreement suggests that seeking information from colleagues may not necessarily result in agreement and thus also has the potential to exacerbate uncertainty.

It is possible that discussing an issue of clinical uncertainty with a colleague may also be considered a strategy for sharing the responsibility and perhaps even accountability for the decision. This might particularly be the case when a less experienced nurse seeks information from a more experienced colleague. Participants in this study indicated that they would seek information from more experienced colleagues and rarely, if ever, from a colleague who had less experience. While the literature has a plethora of research examining shared decision making between patients and health care professionals, and between doctors and nurses, no reports of shared decision making between nurses was located highlighting a potential area for future research.

Using a colleague as a source of information was considered to be more efficient than accessing either print- or electronic-based information sources. The perception that there was insufficient time to access more formal sources of information was evident. Time as a factor in seeking information during the context of clinical work has been described previously (Hutchinson & Johnston 2004; Hutchinson & Johnston 2006) however, how nurses conceptualised time in the context of clinical practice remains unclear. We do know that being busy is highly valued, and perhaps even rewarded, in nursing practice (Thompson et al 2008b). Others report that task completion is considered more important than reflection- on-practice or the use of or engagement with research (McCaughan et al. 2002; Thompson et al. 2008b). The decreasing emphasis on the thinking aspect of nursing work and its increasing invisibility may be a deterrent to accessing research-based information in the workplace because it is not considered “real” nursing work (Scott-Findlay & Golden-Biddle 2005).

Accessibility of information sources is an important factor in selecting information when making clinical decisions. We have reported the preference for using colleagues as information sources in the intensive care unit however not all colleagues were considered accessible. The intensivist and the clinical nurse consultant were considered useful as information sources but were also poorly ranked in terms of accessibility, probably because the nature of their work required them to work in geographically separate locations within this large intensive care unit and also to assume administrative, teaching and research roles which detracted from the amount of time spent in the clinical area.

Some electronic sources of information, such as the enteral feeding protocol, were considered accessible and useful by most participants yet were not used in observed clinical practice. This may have been a consequence of the limited access to information technology in this intensive care unit which did not have bedside computers. **Likewise, except for the enteral feeding clinical practice guideline and enteral feeding protocol, print-based information was generally not considered accessible or useful.** It is possible that other sources of information were considered not accessible or not useful because, while they did contain some information about enteral feeding practice, they were not comprehensive or definitive sources of information on this topic.

Both the enteral feeding clinical practice guideline and enteral feeding policy were documents developed by the institution, specifically for use in the intensive care unit. **It was intended that these documents be developed to incorporate current best evidence, however the explicit evidence base for various aspects of the guidelines or policy was not present and often these documents contained only a brief list of references, many of which were not primary research.** Data from our study highlighted the perception that practice consistent with institutional policies and procedures provided security in decision-making and while nurses indicated that following unit-based practices was important they were still more likely to determine what these were by asking others than by accessing the

original documents. The preference for people as an information source and the valuing of institutional policies may present a conflict when the quality of information is considered and may contribute to variability in practice despite the belief that information provided by others reflected institutional policies.

It may seem that the reliance on information obtained from colleagues is contrary to the current expectations of evidence-based practice (Australian Nursing and Midwifery Council 2006). There is ample evidence from this study and the work of others (Thompson et al. 2001c; Estabrooks et al. 2005) to suggest that the use of original research to inform clinical decisions is not common amongst registered nurses. However this does not necessarily mean that nursing practice is not research- (or evidence-) based. It is quite possible that information obtained from colleagues may have a research base. Profetto-McGrath et al.'s (2007) work with Clinical Nurse Specialists illustrated how nurses in clinical leadership roles may be effective conduits of evidence-based practice. Seeking information from others may be a way of getting evidence to the bedside although at present the extent to which information sought from and provided by others is research-based is unclear.

While there is value in using information obtained from colleagues, Estabrooks (2005) cautions against the indiscriminate trust of this type of information because of its potential to introduce bias into decision making. This, together with the challenges of determining if information obtained from others is valid, reliable or accurate (Thompson 2001), highlights the need for nurses to think critically about not only the source of information but the information itself.

Study Limitations

This study was conducted in one Australian intensive care unit and data were collected with a specific focus on enteral feeding practice. Context influences the ways in which nurses access and use information in clinical practice, consequently, readers should exercise caution when

considering the findings in relation to their workplace. Context may have also been influenced by the timing of the think aloud data collection. Observation of the first two hours of patient care was intended to capture a time when the most comprehensive patient assessment would occur and when unfamiliarity with the patient was most likely to generate clinical uncertainty. However it is possible that during this period, nurses had little time to purposely access information and it is possible that information seeking behaviour may change relative to work-related demands. The reasonably small sample sizes for both the think aloud data collection and the Q sort are acknowledged. While participant numbers for the Q sort data collection were sufficient to identify specific perspectives around the accessibility and usefulness of information (Schmolck 2002), these data were collected from 25% of the registered nurses employed in this intensive care unit and additional data may have allowed identification of additional perspectives.

Implications for practice

The findings from our study highlight the pervasiveness of social interaction as a means of seeking information for intensive care nurses. While this exchange of information may meet the needs of nurses in the clinical setting, it is unclear to what extent information passed through verbal communication is based on evidence. Additionally, assessing the quality of verbal information may be difficult and the potential for variability in information may do little to resolve clinical uncertainty. Consequently, identifying and developing clinical practice leaders capable of communicating evidence-based information in a way that allows assessment of information quality would be an asset in any clinical area.

CONCLUSION

The findings indicate that, although there are a wide variety of information sources available in the clinical setting, that critical care nurses have a clear preference for information obtained through social interaction. The time pressures associated with the complex and

rapidly changing clinical environment of the intensive care unit may dissuade the use of more formal sources of information because, although seen as more accurate, they are perceived to be time-consuming. The perception of information usefulness and accessibility appears to be premised on the ease of use and access rather than on the quality of the information obtained.

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APM designed the study, collected and analysed the data, and drafted the manuscript

SHW contributed to the study design, data analysis and writing of the manuscript

LMA contributed to the study design, data analysis and writing of the manuscript

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Ethical approval

The study was approved by the Local Research Ethics Committee and ratified by the University of Sydney Human Research Ethics Committee.

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