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An Examination of how Nurses use the Waterlow Scale for Judgement and Decision Making in Continuing Care

A thesis submitted to the University of Stirling for the degree of Doctor of Philosophy in the Faculty of Human Sciences

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ABSTRACT

Using an information processing approach, this study examines how nurses working in the area of continuing care for older people in Scotland use the Waterlow scale to inform their judgement and decision making in risk of pressure ulcers and plan of care. While assessment tools are commonly used, a number of assumptions surround their use for nurse practice and for patient care. To date, there appears to be no research which actually examines how nurses use assessment tools to assess patient's needs and plan care, despite the emphasis placed on evidence based practice. Assessment is a fundamental activity when caring for an older person where multipathology and the potential for health state deterioration are likely. This study consists of 3 parts. Part 1 identified the number and type of assessment tools that are routinely used within continuing care settings using a postal survey, revealing that the Waterlow scale is the most routinely used tool to assess pressure ulcer risk. Part 2 examined how continuing care nurses assess pressure ulcer risk through the use of observation and interview. Part 3 involved a detailed examination of the cognitive processes used by nurses when assessing pressure ulcer risk and planning care using simulation and a technique known as 'Think aloud'. The results of this study indicate there were no differences between continuing care nurses working in either hospital wards or nursing homes in how the assessment was carried out, as neither group based their assessment or plan of care solely on the Waterlow scale. However, the Waterlow scale was found to be used differently according to the nurses' experience with those with more than 2 years experience, less likely to base their assessment of pressure ulcer risk or plan of care on Waterlow derived information.

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DECLARATION

I declare that no part of the work alluded to in this thesis has been presented in support of an application for another degree or qualification at the University of Stirling, or any other institute of learning for that matter.

..... Date.....

Susan Baxter

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DEDICATION

This thesis is dedicated to Kevin Hugh Wynne, my best friend and partner, for his continuous love, support, faith and practical help with helping me achieve what I never thought possible.

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1. INTRODUCTION

1.1 Background to the Study

In the past, the practice of nursing has largely been derived from knowledge based on anecdote and tradition (McInnes et al 2001). However, in health care today a number of policies exist which emphasize that all health care practitioners, including nurses, should seek out and maximise the incorporation of appropriate and up to date evidence within their practice (NMC 2002, Ellis 2000, DOH 2002, DOH 2001, DOH 1998). Because of the existence of such policies, nurses need to be able to account for the decisions that they make, as well as the ways in which they make their decisions (Thompson & Dowding 2002).

Assessment is thought to be one of the key components of nursing care (Vernon et al 2000, Crow et al 1995, Jacovone & Dostal 1992). Assessment has been defined as a 'critical analysis and evaluation or judgement of the status or quality of a particular condition and situation of the object of appraisal' (Miller & Keane 1987, p1043). A key issue for nurse practice is the information or 'evidence' that is gathered and used to assess the needs of patients upon which to plan and deliver care. As such, the process of assessment is considered to be the foundation of all nursing practice (Castledine 2004). Because of the central role that assessment has within the practice of nursing and in patient care, the gathering and evaluating of information needs to be accurate as an assessment is essentially a judgement about a patient's condition which may lead to further judgements being made, or lead directly into decisions being made. Any

inaccuracies in the assessment could lead to inaccurate judgements and decisions being formulated.

Within the judgement and decision making literature there have been many terms used to describe the cognitive acts of making a judgement and a decision. However, the terms as they relate to this study are clearly defined by Dowie (1993), who defines a judgement as 'an assessment of alternatives' and a decision as 'choosing between alternatives' (p8). The process of assessment is therefore, not only the foundation of nursing practice, but also an important and necessary component of nurse decision making. Central to any care decision that is made is the assessment process, as no care intervention can be prescribed or delivered without first of all formulating an assessment judgement.

One of the ways suggested to assist nurses with incorporating research based evidence within their practice is through the use of assessment tools (Castledine 2004, Soderhamn & Berthold 1993). It is often advocated that use of an assessment tool is a means by which nurses may collect information to inform their judgement and decision making whilst providing evidence for practice (Johnson & Griffiths 2001). It is often assumed that these tools shall enable the nurse to collect the necessary information, therefore, improving the accuracy of the assessments made (McCormack 1999, Soderhamn & Berthold 1993). As a result, it is also assumed that use of an assessment tool will assist the nurse with making the 'correct' decision about patient care. Furthermore, it is also assumed that assessment tools will somehow ensure that all

patients with similar needs shall receive similar standards of care, irrespective of the experience and knowledge of the assessing nurse. However, these assumptions currently appear to remain unsubstantiated within the literature.

One area of nursing practice where assessment is emphasised, and has been a constant theme within the literature is that of continuing care for older people (Reed & Clarke 1999, Jacques & Ryan 1997). Current demographic data show that people over the age of 65 years account for just over 15% of the total Scottish population (Wood & Bain 2001). However, this group of individuals is expected to make up 24% of the population by the year 2031 (Wood & Bain 2001). Demographic data also shows that with the older population of Scotland living longer, the likelihood of a prolonged mental and (or) physical disability occurring is probable, with multipathology of ailments common amongst older individuals (SE 2000). The multifaceted nature of an older persons health care needs means that health state deterioration is likely, which in turn results in increased levels of health care dependency and a demand for continuous nursing care.

With the current and expected increase in the number of older people in Scotland, one of the priorities of the NHS for the millennium is to ensure that adequate health care provisions, such as continuing care, are available for older people with an emphasis placed on assessment of an individual's needs. Since the beginning of the 1990's, the area of continuing care has seen an increase in the number of older individuals requiring such care, in both the NHS and independent health care sectors (Ford 2001,

Wood & Bain 2001). With the rising number of older people who need such care within Scotland, there is a comparable call for nurses to assess the needs of patients to detect signs of health state deterioration in order that they may prescribe and deliver care on the basis of those needs, whilst ultimately ensuring that such care is based on appropriate high quality research. Therefore, central to the quality of care an older person receives is the ability of a nurse to carry out an accurate assessment.

As well as policy emphasis, a number of authors have reinforced the need for nurses to make use of assessment tools within continuing care (Heath 2000, McCormack 1999, Soderhamn & Berthold 1993). However, there is some evidence within the literature to suggest that assessment tool information may not be used by continuing care nurses to assess and plan care for older patients. For instance the Clinical Research Audit Group (CRAG) (2000) found that in spite of an increased use of nutritional assessment tools within 23 NHS and 6 non NHS continuing care units over a three year period, there failed to be a reduction in the number of older people who were undernourished.

In addition to the findings of the CRAG (2000) report, the author, during her time nursing older people, observed on occasion that the assessment practice of some nurses seemed to take the form of a paper exercise, with the ticking of boxes implying that a tool had been used and that, therefore, an 'assessment' had taken place. There did not seem to be any direct relationship between the findings from the assessment tool and the care decisions that followed. From a first hand perspective of assessment tool use within this care domain, the author began to question the usefulness of assessment tools

for nursing practice, together with the 'evidence' base upon which nurses formulate their assessment judgements and care decisions for older people.

While there is much emphasis placed on the need to ensure that nurses base their practice on research based evidence, as well as the need to ensure that older people receive appropriate and effective care, it seems that research is needed which examines how nurses actually use assessment tools within their practice. It is only by undertaking such research that we may begin to understand how nurses use such tools to inform their judgement and decision making, and ultimately understand how the care an older person receives is determined.

1.2 Overview of the Study

This thesis presents a sequential study consisting of 3 parts, which has been designed to answer a series of research questions from a number of stand points. The first part of the study sought to identify the number and type of assessment tools that are routinely used by nurses in continuing care units across Scotland. Using a postal survey questionnaire, this part of the study found that the Waterlow scale was the most commonly used assessment tool in both hospital wards and nursing homes providing continuing care for older people. As the Waterlow scale was found to be the most commonly used tool, this provided the foundation to the rest of the study. Using non-participant observation and semi structured interviews, part 2 of the study explored how continuing care nurses use the Waterlow scale to assess pressure ulcer risk and plan care for an older person. Following this, simulation by means of an enacted patient and

think aloud were used in the last part of this study to examine in-depth, the judgement and decision making processes used by nurses when assessing pressure ulcer risk and planning care.

1.3 Organisation of the Thesis

Chapter 2 presents a review of the judgement and decision making literature as it relates to nurse practice, followed by a review of the nursing assessment literature. Details of the postal survey that was carried out, together with the results and a discussion of the findings are presented in chapter 3. Chapter 4 then reviews the literature on pressure ulcers and the tools used to assess their likelihood of occurrence. Details of the observations and interviews that were performed with nurses in part 2 of the study are presented in chapter 5. Again details of the methodology used, the results and a discussion of the findings are presented in this chapter. Chapter 6 relates to the third part of the study, where simulation and think aloud were used. Chapter 7 draws the findings from each of the three parts of the study together and uses the pertinent results to answer the research questions posed. A number of conclusions drawn from the study are put forth in chapter 8.

2. JUDGEMENT AND DECISION MAKING IN NURSE PRACTICE

2.1 Introduction

Fundamental to the delivery of appropriate and effective health care is the nurses' ability to make judgements concerning the needs of their patients and decisions of how best these needs can be met. Assessment tools are often advocated to be a useful aid for nurse judgement and decision making as they are assumed to provide guidance in the collection of information to inform assessment, as well as provide structure to the task and evidence upon which practice can be based (Vernon et al 2000). In order to understand how continuing care nurses use assessment tools to assess and plan care for older patients, it was, therefore, necessary to examine theoretical approaches to judgement and decision making. The descriptive approach of information processing was selected (Thompson & Dowding 2002, Buckingham & Adams 2000, Newell & Simon 1972), providing the theoretical underpinnings to this study. The reasoning strategies used by individuals to process information are reviewed, after which consideration is given to the factors that influence the processing of information. The review then moves on to consider the information sources and cues that are used by nurses when assessing and planning care. The final part of the review centres on assessment as a thought process before examining the accuracy of assessment tools for nurse practice since it is assumed that such tools are more accurate than the use of clinical judgement alone. The review also considers the relevance of the judgement and decision making literature to the assumptions commonly made about the role of

assessment tools in nursing; that they are used by all nurses in a consistent way, that they contain the necessary information for a particular assessment and care planning task and that the use of assessment tools improves judgement accuracy, compared to the use of clinical judgement alone.

2.2 Literature Search Strategies

Literature was identified through searching computerised databases, hand searching of specific journals and 'follow on' searches. Relevant literature was accessed using appropriate search themes and terms (Table 2.1) in the following health science databases; BNI (British Nursing Index), CINHAL (Cumulative Index to Nursing and Allied Health Literature), Medline and Psychinfo. Social science databases included UKOP online (United Kingdom Official Publications) and SOSIG (Social Science Information Gateway). All searches were limited to the use of the English language from the year 1990 to 2005.

Regular hand searching of nursing, psychology and medical journals was also undertaken (Table 2.2). Journals were selected on the basis of local availability and relevancy. References were also identified through reading relevant papers and followed up when considered appropriate.

Search Themes	Key Terms
Nurse judgement and decision making	Continuing care, Long term care
Clinical judgement and decision making	Judgement and decision making
Clinical assessment tools	Nurse assessment, Assessment tools
Pressure area care	Care planning
Use of written vignettes in research	Pressure area care, Pressure ulcers
Patient simulation	Written vignettes, Patient simulation

Table 2.1: Literature search themes and terms

Journals
British Journal of Nursing
British Journal of Psychology
British Medical Journal
Journal of Advanced Nursing
Journal of Gerontological Nursing
Journal of Tissue Viability
Medical Decision Making

Table 2.2: Journals searched

2.3 Approaches to the Study of Judgement and Decision Making: An Overview

There are three main approaches to the study of judgement and decision making, namely; normative, prescriptive and descriptive, each of which are considered in turn for their suitability of application to this study.

2.3.1 Normative Approaches

Normative approaches such as Subjective Expected Utility theory (SEUT) and Bayes theorem are concerned with how an individual *should* make a judgement or a decision, rather than the actual process of judgement and decision making (Lilford & Braunholtz 2000, Panniers & Walker 1994, Knill-Jones 1993, Llewelyn & Hopkins 1993). A major

assumption underlying these approaches is that humans are rational and logical beings, who are in possession of an accurate and complete knowledge base, and as such are 'database' orientated (Apkon 2003, Tavakoli et al 2000, Hughes & Dvorak 1997). The type of data required to apply effectively these approaches to health care when assessing a patient are the prevalence rates of the condition being assessed within the general population, as well as estimated or known probabilities to predict, for example, the likelihood that a patient has or will go on to develop a specific condition (Narayan et al 2003, Stanton et al 1998, Thornton et al 1992). However, the data needed to estimate probabilities often does not exist, thus resulting in the use of subjective estimates which can be problematic, more so when patients present with multiple co-existing conditions as normative approaches assume that each condition is statistically independent of the other (Narayan et al 2003, Thornton 1996, Fletcher et al 1995, Knill-Jones 1993, Williams 1985).

2.3.2 Prescriptive Approaches

Prescriptive approaches to judgement and decision making such as decision analysis (which is part of SEUT), are concerned with trying to *improve* an individual's judgement and decision making when faced with conditions of uncertainty, a concept prevalent in the practice of health care (Thompson & Dowding 2001, Dowie 1996). Decision analysis breaks down the decision into a number of choices (Dowie et al 1993, Llewlyn 1993). The decision problem is illustrated through the use of a decision tree where numerical values are attached to each choice, thus indicting the probability of an event occurring as a consequence of a particular choice (Thornton 1996).

Various methods are used to measure an individuals utility (ideally eliciting the decision makers own utility) such as rating scales (where the decision maker is asked to mark their preferred health state or treatment outcome on a straight line with defined end points and marked intervals), time trade off measurements (involving the decision maker deciding the amount of time in a particular health state they would be willing to forgo to live fewer years in a 'perfect' health state) or the standard gamble method (which would involve the decision maker being told, for example, that they could live for a period of time in their current health state or undergo treatment which guarantees a preferred state of health but that there is a chance that death could occur) (Elkin et al 2004, Woloshin et al 2001, Thornton 1996, Torrance et al 1987). Utilities are typically measured between 0 – 1, with 0 usually defined as the worst health state (or death) and 1 as the best health state (or perfect health) (Woloshin et al 2001, Thornton 1996). However, use of these scales can be fraught with difficulties. For instance, they are non-linear in their approach to measuring utility (such as asking a patient to place a value on a state of health that could occur years into the future), thus making the decision task appear too hypothetical to the decision maker (Thornton 1996). A further difficulty relates to a person's (current or preferred) state of health being equated with a numerical value, often health states such as loss of a limb are immeasurable (Donald-Sherbourne et al 1999, Balla et al 1989, Torrance et al 1987).

The aim of decision analysis is to clarify complex decisions, helping steer the decision maker to select the choice which maximises their expected utility, assuming that an individual is a logical and rational decision maker (Narayan et al 2003, Arkes et al

1988). However, there is the possibility that the decision tree may oversimplify or complicate the decision in question (Balla et al 1989, Wulff 1981). As with normative theories, similar difficulties exist in the construction and application of decision analysis as all the possible outcomes to a situation may not be known, and even when they are, the probability of various outcomes occurring are based on subjective estimates (Narayan et al 2003, Thompson & Dowding 2002).

Despite varying in approach, both normative and prescriptive approaches assume that individuals are logical and rational decision makers, who are in possession of an accurate and complete database of information. Application of this database is assumed to direct the decision maker to select the decision outcome which maximises their expected utility. However, because of a lack of research into how assessment tools are used for judgement and decision making, appropriate databases do not exist. Therefore, normative and prescriptive approaches were not considered to be suitable for this study.

2.3.3 Descriptive Approaches

Descriptive approaches to the study of judgement and decision making offer a very different perspective. The aim of these approaches is to describe *how* individuals actually make their judgements and decisions, rather than focusing on the outcome of a judgement or a decision (Thompson & Dowding 2002, Buckingham & Adams 2000). Examples of descriptive approaches include social judgement theory and information processing theory.

2.3.3.1 Social Judgement Theory

Social judgement theory is based on the theoretical work of Brunswick who developed the Brunswick lens model (Figure 2.1) to examine how individuals use information (also known as cues) to arrive at their judgements (Doherty & Kruz 1996, Engel et al 1990, Hammond et al 1975). Social judgement theory has been used extensively within the field of medicine, and to a lesser extent within nursing and other health care disciplines, primarily focusing on judgement accuracy and on examining how different practitioners reach different judgements while using the same information (Smith et al 2003, Harris & Harris 2001, Westenberg et al 1998, Unswoth et al 1997, Doyle & Thomas 1995, Rosenthal et al 1992). The results of such studies have, in the main, shown that individuals use information inconsistently, frequently weighting irrelevant information as important (Smith et al 2003, Harris & Harris 2001, Westenberg et al 1998, Unswoth et al 1997, Doyle & Thomas 1995, Rosenthal et al 1992).

When the lens model is applied to clinical practice, the left hand side of the model represents the 'ecological state' of a patient (Ye), which is the patient's actual (or real) health state (Wigton 1996, Hammond et al 1975). Different cues (X1-4), such as the signs and symptoms displayed by a patient, are the clinical pieces of information available for consideration. Each of these cues varies in their correlation with the patient's ecological state, as each has different ecological validity (Cooksey 1996, Hammond et al 1975). The importance or weight a practitioner attaches to these cues will also vary (Cooksey 1996). Cues are then used to formulate a judgement which is represented by the right hand side of the model (Ys) (Hammond et al 1975). If a

practitioner weights the cues in the same way as they reflect the ecological situation in question, then their judgement will be accurate (Cooksey 1996). However, if the importance of cues is weighted differently so as to not reflect the ecological situation, then the practitioner's judgement will not be accurate (Cooksey 1996).

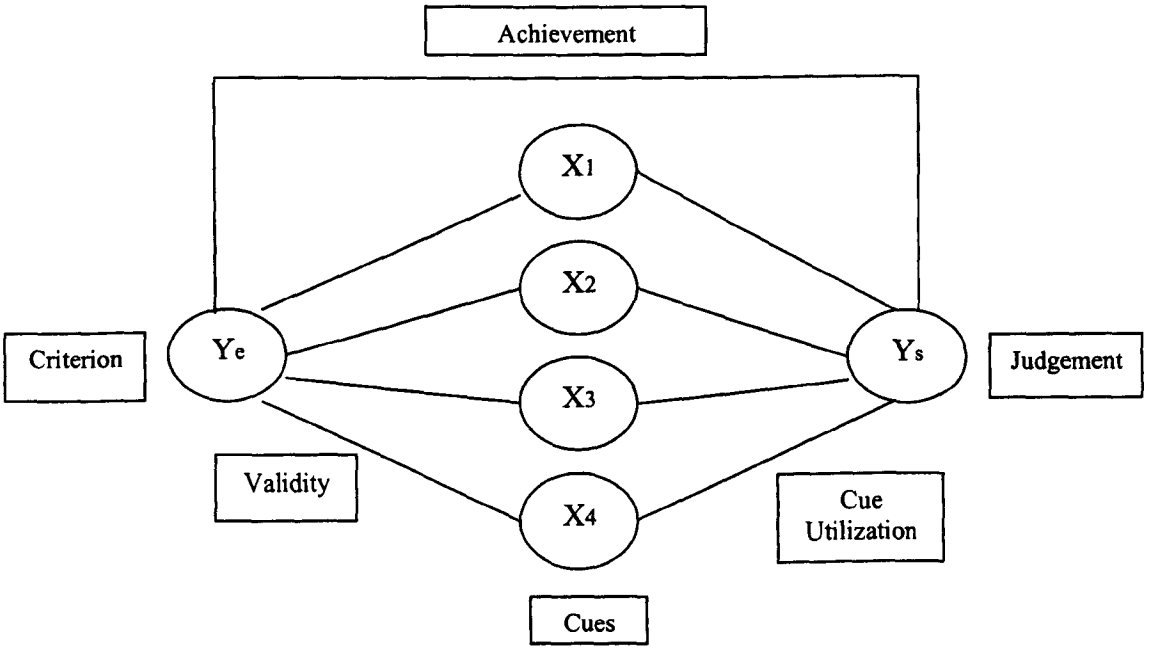

Figure 2.1: Brunswick's lens model (Hammond 1975, p. 274)

Social judgement theory assumes that the judgement maker can identify all the cues used to formulate a specific judgement. The identification of cues is an important part of policy capturing and analysis (Cooksey 1996). Cue identification primarily involves reliance on the verbal reports of judgement makers of their interpretations of their cue use (Cooksey 1996). As a consequence, there is the potential that some cues may be omitted or have their importance distorted (Harris & Harris 2001). Since known cues

are subsequently presented to judgement makers to determine their use of such cues (facilitated by the use of statistical regression techniques to determine weight), the social judgement approach offers no insight into how information is processed, or provide insight into the need for information in the first place.

2.3.3.2 Information Processing Theory

Derived from the seminal work of Newell and Simon (1972), information processing theory suggests that the human brain when engaged in a problem solving task, functions as an information processing system (Figure 2.2). The crux of this system is the processor (the short term memory (STM)), where information is processed after being received through the senses and stored, albeit temporarily, or carried over to the long term memory (LTM) (Newell & Simon 1972). Should information be retrieved from the LTM, it is transferred back to the STM for holding until it is needed, thus leading to an end point to the problem solving task.

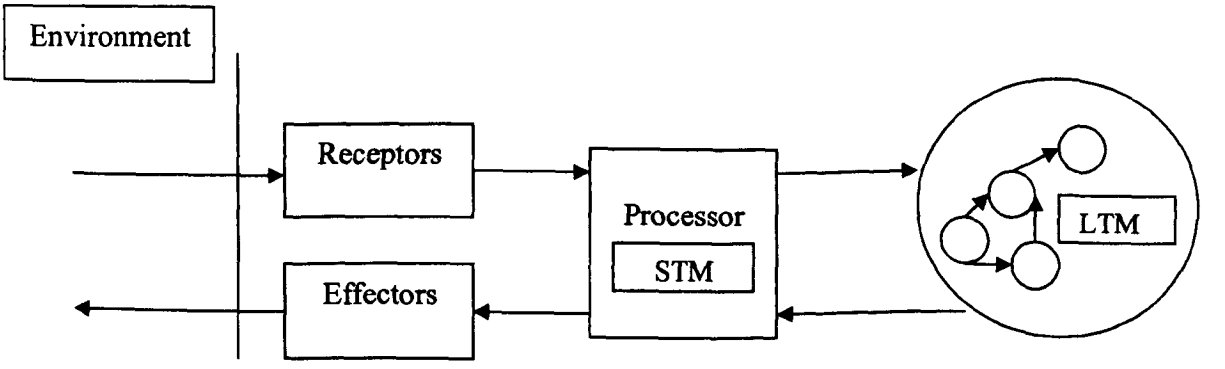

Figure 2.2: Illustration of an information processing system (Newell & Simon 1972, p. 20)

A major assumption underlying this theory is that the information processing capacity of humans for rational thought is limited (Newell & Simon 1972). Owing to the limitations of both the STM and LTM, human reasoning is seen as 'bounded' (Newell & Simon 1972). The STM is often referred to as the 'working memory' as this is where conscious thought takes place, and where only a small amount of information can be attended to and stored for short periods of time (Newell & Simon 1972). There is evidence to suggest that the capacity of the STM is seven, plus or minus two 'chunks' of information (Newell & Simon 1972, Miller 1956). The limitation of the LTM is that in spite of its infinite storage capacity, the issue of accessibility and retrieval of information (Newell & Simon 1972).

With such limitations on memory, an individual cannot attend to all the elements of the problem solving task at any one time, and must, therefore, selectively attend to the elements of the problem which are considered relevant. In addition to this, when an individual is faced with a complex problem solving task, where potentially large amounts of information are available, the demands on memory increase resulting in potentially high levels of cognitive strain (Simon 1979). In order to overcome this, information processing theory suggests that an individual develops a simplified representation of the task in question in order to avoid information overload (Newell & Simon 1972). It, therefore, looks as though the problem solving ability of an individual is dependent on their ability to adapt to the limitations of both their STM and LTM.

The overall purpose of this study is to examine how nurses use assessment tools for judgement and decision making. As such, it is the process by which judgments and decisions are made that is of interest here, rather than the outcome. While social judgement theory assumes that the information needed to undertake a judgement and decision task can be identified, it can also identify why individuals may use information inconsistently. However, social judgement theory does not give insight into the need for information or how it is processed. On the other hand, information processing theory, despite assuming that human reasoning is bounded by the limited capacity of human memory, does actually examine what information is used and how it is processed. Therefore, the theory of information processing is considered suitable for this study as it allows for an examination of how continuing care nurses use assessment tools to assess and plan care for an older person.

2.4 Reasoning Strategies

Using the conceptual structures of information processing theory, a large number of nursing, as well as medical studies, have examined how practitioners from these disciplines process information. The results of such studies suggest that practitioners use a variety of reasoning processes to process information such as hypothetico-deductive reasoning, heuristic reasoning and rule based reasoning, none of which are mutually exclusive of one another. For the purpose of this review they are presented separately in order to facilitate ease of discussion.

2.4.1 Hypothetico-Deductive Reasoning

Early studies of information processing were undertaken by Elstein et al (1978, 1972) within the field of medicine. Elstein et al (1978, 1972) found that doctors and medical students commonly go through a number of phases when making judgements and decisions, resulting in the generation of Elstein et al's (1978) model of diagnostic reasoning (Figure 2.3).

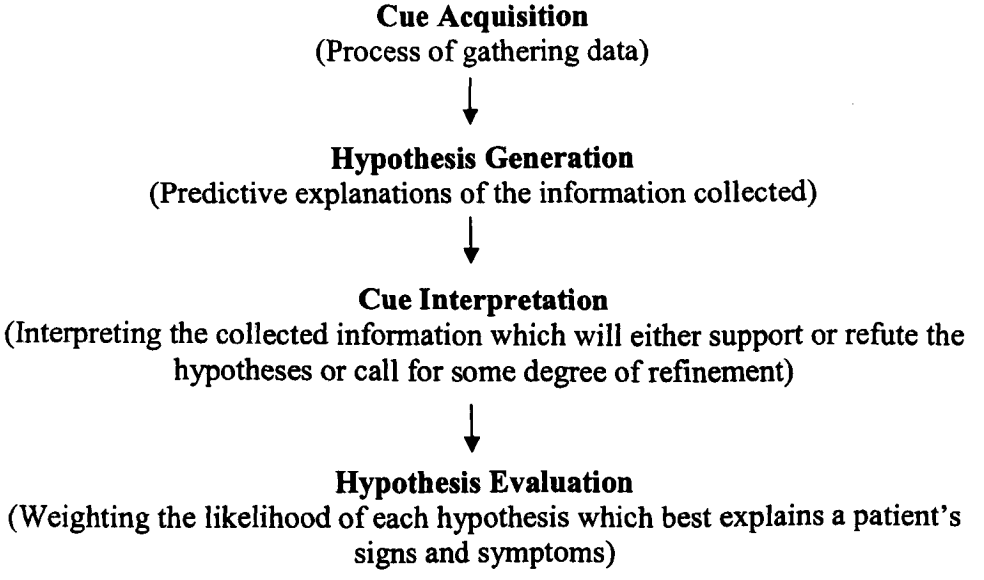

Figure 2.3: Elstein et al's (1978) four stage process of diagnostic reasoning

Figure 2.3 illustrates that the first stage of the reasoning process is concerned with collecting information, which can be obtained by a variety of methods from a number of sources (Junnola et al 2002, Taylor 2002, Lamond et al 1996, Luker & Kendrick 1992). The second stage, hypothesis generation, is concerned with the explanations an individual forms based on the information that has been collected. Usually the number of hypotheses which an individual considers simultaneously is between four and five,

seldom exceeding six or seven (Elstein & Bordage 1988, Elstein et al 1978, Newell & Simon 1972, Miller 1956). Information is interpreted in the third stage of the process, leading to confirmation or refutation of a hypothesis (Elstein et al 1978). Some cues, however, might cause an individual to conclude neither confirmation nor refutation of a hypothesis, thus calling for some hypothesis refinement (Elstein et al 1978). In the final stage of the process each hypothesis is evaluated and the one favoured by the majority of the evidence is selected (Kassierer & Kopelman 1989).

While Elstein et al's (1978) model of diagnostic reasoning originated from the field of medicine, and has since been tested extensively within medicine (Salantera et al 2003), the model has subsequently been applied to a number of studies which have examined how nurses and nursing students reason when making judgements and decisions (Hamers et al 1994, White et al 1992, Grobe et al 1991, Padrick et al 1987, Tanner et al 1987, Westfall et al 1986).

Westfall et al (1986) applied the model of diagnostic reasoning to examine whether nurses and nursing students alike generated diagnostic hypotheses using a simulated patient scenario. A total of 43 participants, comprising of 28 nursing students and 15 staff nurses (from general medical and surgical backgrounds with more than 2 years post qualifying clinical experience) took part in the study. All participants were verbally given information through a change of shift style report and were shown a videotape of a patient portraying various signs and symptoms that were suggestive of several problems. The participants were asked to verbalise their thoughts using think

aloud whilst they sought further information and identified the patients' problems. The verbal protocols were then coded for various features of hypothesis generation such as comprehensiveness, efficiency, proficiency, complexity and earliness of hypothesis generation. Westfall et al (1986) reported that there was no significant difference between the two groups of participants in the number of hypotheses generated. Similarly no difference was reported in the earliness of hypothesis generation or in the scores pertaining to comprehensiveness, efficiency or proficiency between the two groups. However, the study found that the hypotheses generated by qualified nurses were more complex than the hypotheses generated by student nurses. The complexity of the hypotheses generated by experienced nurses is, as acknowledged by Westfall et al (1986), suggestive of not only a greater knowledge base, but is a reflection of their cognitive ability to deal with more complex situations compared to less experienced nurses. This implies that the experience and knowledge of an individual has an effect on the way in which information is processed. It is, however, unclear from the results of the study whether any variation existed in the information cues used and in the problems identified between the nurses and nursing students. Nevertheless the results of Westfall et al's (1986) study appear to support the second component of hypothesis generation in Elstein et al's (1978) model.

A limitation of Westfall et al's (1986) study is that little reference is made to the measures taken to ensure that the judgement and decision making task was representative of a 'real' clinical situation. As a result, the participants' utterances cannot be assumed to be a valid illustration of the thought processes which would

normally occur in clinical practice (Lamond et al 1996, Fonteyn et al 1993). Elstein et al (1990) point out that a model of reasoning stripped of its content cannot account for the variability in clinical reasoning observed across practitioners and tasks. Westfall et al (1986) also report that while participants were encouraged to verbalise their thoughts whilst identifying patients' problems, they were simultaneously questioned about their rationale for requesting additional data and for their interpretations of the data. Ericsson and Simon (1984) advise against the use of such in-depth probing as it interrupts flow and content of thought.

Tanner et al (1987) examined junior nursing students' (n = 15), senior nursing students' (n = 13) and nurses' (n = 15) use of hypothesis generation, data acquisition and hypothesis evaluation using three simulated patient cases (based on actual patient scenarios). For each simulated case, participants were given information relating to the patient (such as age, diagnosis, length of hospitalisation, type of surgery and any major complaints) via a shift handover style of report after which a video tape was shown of a patient who appeared to have a number of health problems. After watching the video tape, participants were asked to recount their initial thoughts and were informed that they should seek additional information and continue to ask questions (as they normally would do in practice) until they had identified the patient's major problems and had decided on how such problems should be managed. Using protocol analysis to analyse the verbal data, data were scored according to hypothesis activation (in terms of the number of accurate and possible hypotheses generated, and the earliness in which hypotheses were generated), data acquisition (in terms of the number of questions

asked) and hypotheses evaluation (in terms of judgement accuracy). Tanner et al (1987) found that the number and earliness of hypothesis generation and judgement accuracy were found to be relatively task specific. However, experienced nurses were found to generate more hypotheses to a greater degree of accuracy than less experienced nurses. As participants were given general descriptions of each patient case, it is possible to suggest that the task specific findings may be attributed to the actual knowledge required in the formulation of such hypotheses and judgements. However, one can only speculate on this finding as Tanner et al (1987) did not examine the knowledge participants had used to arrive at their hypotheses and judgements. Data acquisition strategies (such as the number and relevancy of questions asked) on the other hand were found to be more generalisable across the three cases. The tendency to ask a varied number of questions and the focus of such questions may, as suggested by Tanner et al (1987), be dependent on the strategies characteristically employed by the participants and not necessarily reflect the content of the task. Despite the limitations of Tanner et al's (1987) study, the results appear to support Elstein et al's (1978) model of diagnostic reasoning. However, the small sample size precludes generalisation of the findings.

An alternative model of reasoning is offered by Carnevali et al (1984), outlining a seven stage process of reasoning (Figure 2.4). Unlike Elstein et al's (1978) model, Carneavali et al's (1984) model is not derived from primary research evidence; rather it is an illustrative classification of a complex nursing phenomenon. Perhaps it is the foundation underpinning this model which explains why very few studies have

employed Carnevali et al's (1984) model compared to a significantly larger number of studies found to employ Elstein et al's (1978) model. Despite this, common threads appear to exist between both models, such as the acquiring of data, the generation of hypotheses, the interpretation of information and the selection of an appropriate hypothesis.

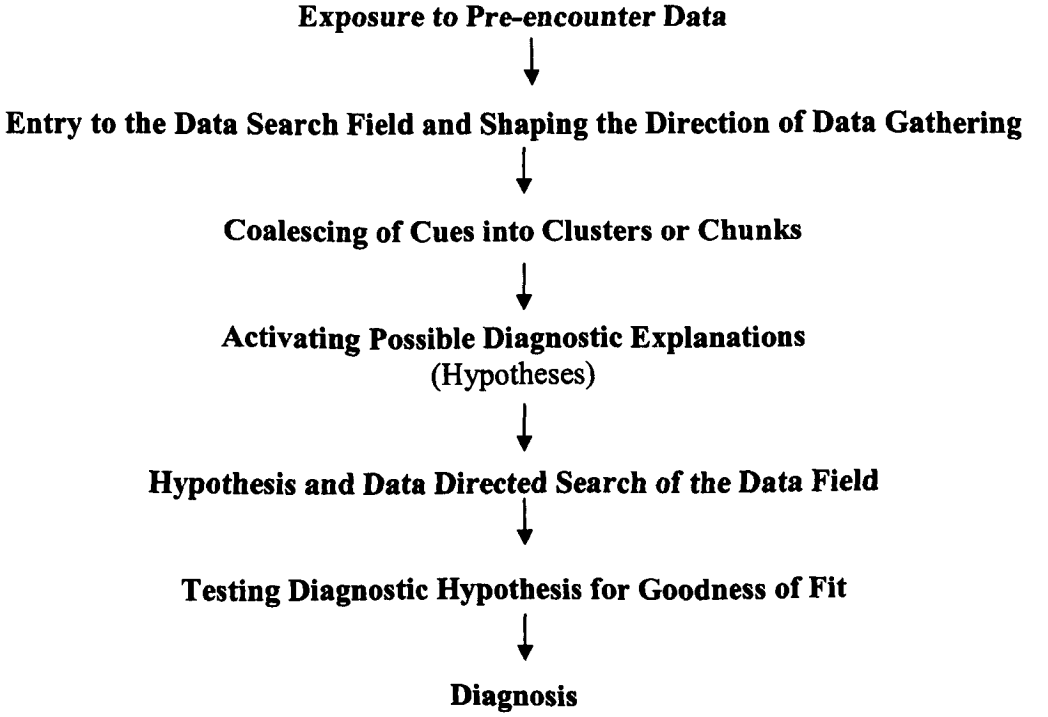

Figure 2.4: Carnevali et al's (1984) seven stage model of diagnostic reasoning in nursing

Taylor (2002) used Carnevali et al's (1984) model of reasoning to examine whether differences existed between novice and expert nurses in the sources of information used prior to undertaking a procedural care task (e.g. taking blood pressure, testing a urine

sample, dressing a wound, taking a blood glucose measurement) involving real patients. A total of 18 nursing students (classified as novices) and 15 nurses (classified as experts) with more than 5 years experience were selected from acute surgical and rehabilitation hospitals. All participants were observed in their preparation for undertaking the procedures, and were subsequently interviewed following each procedure about the information they had accessed. Using content analysis to analyse the transcribed interviews, Taylor (2002) reports that the participants used at least one of four main sources of information; shift handover report, patient documentation, previous knowledge of the patient and verbal information sought from colleagues (such as other nurses and doctors).

Whilst Taylor's (2002) study identified that nurses use a variety of information sources to inform their judgement and decision making, the results of the study are not sufficient to conclude that the process of reasoning outlined by Carnevali et al (1984) was employed. The only firm conclusion that can be drawn from Taylor's (2002) study is that all participants used some form of 'pre-encounter data', thus reflecting the first component of Carnevali et al's (1984) model. However, it could also be argued that the results of Taylor's (2002) study are equally reflective of the first stage of Elstein et al's (1978) model, the cue acquisition stage, where the gathering of data may occur either before, during and (or) after a patient encounter.

In summary, collectively the results of the above studies indicate that nurses appear to use hypothetico-deductive reasoning to process information in judgement tasks, where

the seeking and utilising of information leads to hypothesis generation about a patient's condition (or situation). This in turn leads to the testing of differing hypotheses until an appropriate hypothesis is selected.

As mentioned previously, information processing theory suggests that individuals develop simple illustrations which are representative of a task in order to avoid information overload. When the results of the above studies are linked to the theory of information processing, it is possible that the results may be interpreted to suggest that nurses chunk similar pieces of information together, consequently increasing storage capacity and freeing up space in the working memory (Simon 1979, Newell & Simon 1972). As such, this could explain why Tanner et al (1987) found that experienced nurses generated a greater number of hypotheses than nurses with less experience, and why Westfall et al (1986) found that experienced nurses developed more complex hypotheses than novices. Research has shown that experienced nurses' because of their developed knowledge base, derived from experience, chunk information with similar pieces of information (Hamers et al 1994, White et al 1992, Grobe et al 1991, Padrick et al 1987, Tanner et al 1987, Westfall et al 1986). Thus suggesting that the way in which knowledge is organised within an individuals LTM, affects how information is processed and managed within the STM (Elstein et al 1990).

A number of other studies have suggested that when processing information, nurses employ the use of cognitive short cuts, such as heuristics and rule based reasoning.

2.4.2 Heuristic Reasoning

Heuristics or 'rules of thumb' have been found to be employed in conditions of uncertainty and of great complexity (Cioffi 2000, Bazerman & Tenbrunsel 1998, Cioffi & Markham 1997, Kahneman & Tversky 1982, 1972). According to Kahneman and Tversky (1972), uncertainty refers to the cognitive state of an individual when no definitive answer is immediately obvious, and when all possible answers to a situation cannot be known. Complexity on the other hand refers to the vastness of a problem task which makes the consideration of all possibilities unattainable (Corcoran 1986a). Reliance on the use of heuristic reasoning is said to increase as the level of situational complexity and individual uncertainty increases (Kahneman & Tversky 1982). The employment of heuristics in such conditions, are in essence, assessments of probability as they are used to estimate the likelihood of a particular outcome occurring (Kahneman & Tversky 1979, Howell & Burnett 1978). It is argued that heuristics are employed by individuals because they are easy and fast to use, usually resulting in reasonably valid inferences most of the time (Abelson & Levi 1985). However, by the very nature of heuristic reasoning, cognitive strain is limited by reducing the number of possibilities one has to consider, as a consequence, the 'correct' solution might be overlooked (Cioffi & Markham 1997).

From the seminal work of Kahneman and Tversky (1979, 1972), three types of heuristics have been identified; representativeness, availability, and anchoring and adjustment.

2.4.2.1 Representativeness

The representativeness heuristic is characterised by an assessment of an events properties in order to judge the probability that such properties are similar to events which have been previously encountered (Kahneman & Tversky 1972). If the representativeness heuristic is applied in the reasoning process of a nurse, they, for example, could judge that the signs and symptoms displayed by a patient are indicative of a similar clinical condition that they have previously encountered (Cioffi 2001, 2000, Offredy 1998, Cioffi & Markham 1997, Jacovone & Dostal 1992). Should this type of heuristic be applied, possible situational outcomes need to be determined, with the estimated likelihood of such outcomes occurring based on an individuals prior experience (and knowledge) of similar situations (Kahneman & Tversky 1979). Formation of these likelihood judgements relies on base rate frequencies (or prior probabilities) of a particular condition which are founded on the experience (and knowledge) of an individual (Kahneman & Tversky 1979, 1972). There is some evidence to suggest that the use of base rates for estimating clinical conditions (such as breech presentation and fetal complications) influence the use of the representativeness heuristic, resulting in higher probabilities being attributed to subsequent events (Cioffi & Markham 1997).

Cioffi (2001) examined the use of past experiences in the decision making of nurses when faced with an emergency situation (such as suspecting that a patient will have a cardiac arrest). A total of 32 nurses from a variety of clinical specialities (such as coronary care, renal, orthopaedics etc.) with more than five year's nursing experience

were interviewed about their experience of calling emergency assistance to their patients. All interviews were audio-taped and transcript analysis revealed that nurses' past experiences were most commonly expressed in the form of the representativeness heuristic. Nurses were found to describe their recognising of similar situations of a recent patient (who required emergency assistance) with that of patients they had previously cared for (who also required emergency assistance). Direct quotes taken from Cioffi's (2001) study illustrate representativeness heuristic activity;

> "You see similar things. You recognise it looks like something you have seen before" (Cioffi 2001, p 593)

> "You remember past experiences of similar patients with similar conditions. You sort of recall that from the past experiences of those patients" (Cioffi 2001, p 593).

2.4.2.2 Availability

The availability heuristic suggests that individuals make decisions based on the ease with which instances of similar conditions come to mind (Friedlander & Stockman 1983, Kahneman & Tversky 1972). Recency, vividness and saliency have been found to affect the retrieval and construction of recalled instances (Slovic et al 1982, Nisbett & Ross 1980, Kahneman & Tversky 1972). Kahneman and Tversky (1979) suggest that where an individual has been exposed to a vast number of similar events, recall of such will be better and faster than those events which have been experienced to a lesser extent. Drawing again on the work of Cioffi (2001), there is evidence that nurses use the availability heuristic (albeit in emergency decision making situations);

> "What's happening now is a similar story to what happened to another particular patient and you think of the consequences of what happened to that previous patient and you think OK I need to keep a close eye on this for a while" (Cioffi 2001, p 594)

> "I have had two really close calls with incomplete miscarriages where they've really bled. If they are actively bleeding on transfer from Emergency I always make sure I look after them very quickly because of these two experiences" (Cioffi 2001, p 594).

2.4.2.3 Anchoring and Adjustment

The anchoring and adjustment heuristic involves an individual establishing an anchor point (or base line), then making adjustments from the anchor point to take into account additional information, leading to the arrival at a final estimate of probability (Cioffi 2000, Cioffi & Markham 1997, Schraeder & Fischer 1987, Kahneman & Tversky 1972).

An example of the use of this heuristic is evident within Cioffi and Markham's (1997) study which used simulated patient scenarios to examine whether varying levels of task complexity influenced a midwife's use of heuristic reasoning. A sample of 30 volunteer midwives (each with varying lengths of experience) were individually given two simulated patient cases (which were based on real patients) consisting of an uncomplicated established labour which was of low complexity, and an antepartum haemorrhage which was considered to be of high complexity. Midwives were instructed to think aloud while they assessed the 'patient' and arrive at a decision regarding patient care. Participants were told that they should seek information about the patient as they normally would do until a decision was reached. All verbalisations

were audio recorded and analysed using protocol analysis. An example of the use of the anchoring and adjustment heuristic is illustrated in the following quote taken from the study;

> "gravida 7, parity 6, probably going to be very very quick to deliver"
> (Cioffi & Markham 1997, p 269).

Cioffi and Markham (1997) also found that midwives commonly combined use of the anchoring and adjustment heuristic with the heuristic of representativeness;

> "no increase in bleeding, half a cup of bright red blood, moderately soaked pad – may have been a slightly heavier than usual show"
> (Cioffi & Markham 1997, p 269).

Statistical tests were subsequently applied to the data revealing that midwives, regardless of case complexity, relied on the representativness heuristic the most as a means of processing information. The proportion of this heuristic was found to be greater in the case of high complexity than in the case of low complexity. Similarly the proportion of availability and anchoring and adjustment heuristic activity was also found to be greater in the most complex of the two cases. This result supports the claim of Howell and Burnett (1978) that as task complexity increases, there is a heavier dependency on the use of heuristics. The result also confirms a similar conclusion put forth by Kahneman & Tversky (1979, 1972).

Both the representativeness and availability heuristics rely on a nurse having had experience of previous similar patient situations upon which they may draw on. However, the application of the anchoring and adjustment heuristic may be derived from an individual's use of either their practical or theoretical knowledge.

As with the hypothetico-deductive approach, it appears that use of heuristics is dependent on an individual's knowledge and organisation of that knowledge together with the context of the task. Individuals who have more experience of a particular decision situation probably chunk similar items of information together, leading to the use of heuristics (Cioffi & Markham 1997, Newell & Simon 1972). While the results of both Cioffi (2001) and Cioffi and Markham's (1997) studies indicate that nurses and midwives use heuristic strategies to process information, it remains unclear the extent to which heuristic activity influences the accuracy of the judgements and decisions made. There is some evidence to show that heuristic reasoning may result in judgement and decision error, usually as a result of hindsight bias or overconfidence in the correctness of ones own knowledge (Kahneman & Tversky 1979).

In most studies identified in nursing and midwifery, heuristic reasoning appears to have largely been examined using 'paper' patient simulations or through the use of retrospective interviews following an event or completion of a task. Owing to the methodologies used, this limits the extent to which the results can be generalised and an understanding of heuristic reasoning in nurse practice. Perhaps an advance over the use of such methodologies would be to replicate the situation in question using actors to

take on the role of patients, thus moving closer to the creation of situation realism in a controlled manner.

2.4.3 Rule Based Reasoning

A small number of studies have found that nurses incorporate the use of rules within their reasoning (Jacovone & Dostal 1992, Gordon 1980). As with heuristics, rule based reasoning serves to reduce cognitive strain by synthesising the amount of information to be processed (Gordon 1980). An example of rule based reasoning can be seen in an excerpt from a coronary care nurse cited in Jacovone and Dostal's (1992) study which examined nursing judgement in the assessment and management of cardiac pain;

> "my philosophy and my rationale for the basis on which I make my decisions is that, if a patient is having chest pain, even remotely suggestive of myocardial ischemia, we rule that out first. We operate on the assumption that it is myocardial ischemia until we can prove otherwise..." (p57).

A further example of rule based reasoning can be found in a study by Gordon (1980) who examined hypothesis testing by nurses;

> "If it were a later day, I'd suspect atelectasis, thrombophlebitis, or wound infection. If it were the first or second day, I'd suspect hemorrhagic shock or urinary retention" (Gordon 1980, p 44).

In applying such rules to practice, it is assumed that an individual has sufficient knowledge and experience of a decision task to know, a) that the rule works and that, b) certain cues can be identified in order to consider the suitability of employing a particular rule to a particular situation. However, as with the use of heuristic strategies,

employing the use of rules can be potentially flawed as an individual may be confronted with a situation that is the exception to the rule, thus the value of the rule becomes redundant.

While heuristics and rule based reasoning are clearly two different information processing strategies, both require an individual to have knowledge and (or) experience of the presenting situation, or of similar situations in order that they may be used in the judgement and decision making task. As such, the use of heuristics and rule based reasoning are used to incorporate cues, estimate situational outcomes and synthesis information and prior knowledge.

From a review of the literature it appears that nurse's process information in a variety of ways. The way in which information is processed appears to be influenced by a number of factors; such as the complexity of the task to be undertaken, as well as the experience and knowledge of the individual in a particular task. In order to understand the effect of such factors on the processing of information, it is necessary to examine each of these factors in detail.

2.5 Factors which Influence the Processing of Information

2.5.1 Task Complexity

Corcoran (1986a) examined the effect of task complexity on the reasoning process of novice (n =5) and expert (n = 6) hospice nurses when planning pain control for three simulated patients. A novice was defined as a nurse who had less than 6 months

experience of hospice nursing and an expert was defined as having had at least 18 months hospice nursing experience. The simulated patient cases were based on actual patients, depicting three types of severe chronic pain and three levels of complexity. Complexity levels were determined by two factors, the first being the number of pain related problems of the case, and the extent to which hospice protocols could be applied for pain control. Each case was presented in written form to the nurses individually who were required to read, develop and write a drug administration plan whilst thinking aloud. All verbalisations were recorded and analysed using protocol analysis. The study found that despite the varying levels of complexity of the three cases, experts did not vary in their initial approaches to planning, neither did the novices. Expert nurses were found to use consistently broad approaches to planning, often interrelating cues. Contrastingly novices used narrow focused approaches, seeing each pain related problem as separate from the next. The study also found that experts generated a greater number of alternatives for each case compared to novices and adopted different approaches depending on level of case complexity. For the most complex cases, experts adopted an opportunistic approach, seeking information where possible along the care planning process, and for the least complex a systematic approach which involved a more directed approach. Novices on the other hand were found to use consistently an opportunistic approach regardless of case complexity.

In another study by Corcoran (1986b), which formed part of the study discussed previously (Corcoran 1986a), Corcoran (1986b) found that in the least complex of the three patient cases, both novices and experts generated fewer alternatives. However, in

the remaining two cases, which were of moderate and high complexity, a greater number of alternatives were generated by both groups of nurses. Corcoran (1986b) reports that there was no significant difference between the novice and expert nurses in the total number of alternatives generated for each of the three cases. The study also found that nurses' evaluation of the alternatives which they generated was influenced by the complexity of the task. Thus, as the complexity of the cases increased, fewer alternatives were evaluated by the novices and the experts. In addition to this, Corcoran (1986b) reports that an analysis of the formulated drug administration plans revealed no relationship between the quality of the plans and the complexity of the cases. However, while experts were generally found to develop better care plans than novices (which were measured against four quality criteria), the relationship between expertise and quality of plans was not as strong as expected. Corcoran (1986b) suggests that the variability in nursing experience of the novices may account for this find. Two of the novices were noted to have between 7 and 10 years experience in nursing. Thus, while they were new to hospice nursing, they were not unfamiliar with planning patient care.

The results of Corcoran's (1986a, b) studies indicate that task complexity influences the processing of information, with such processes found to vary according to the task experience of the nurse. While Corcoran (1986a, b) used simulated cases based on real patients, little information was offered as to the measures taken to select such cases, and whether such cases are representative of the health states of patients receiving hospice care. Another shortcoming of these studies relates to the use of a gold standard care plan for each case, which served as the basis upon which the quality of the

formulated care plans was judged. One nurse consultant, who was experienced in hospice nursing, devised the gold standard care plans. While these care plans provided a criterion of performance, it cannot be assumed that the care plans represent the most appropriate plan of care for the case in question. A final point of note relates to the information contained within the case descriptions. For example Corcoran (1986a) states that 'the categories included patient characteristics that could influence the choice of drug for pain control' (p108). Thus it would appear that nurses were not presented with a list of drugs from which they could choose. As it is not within the professional and legal remit of the majority of nurses to prescribe medication, this raises the question as to whether hospice nurses would normally be expected to devise a plan of care for pain control without knowing first what analgesic medication was prescribed.

In another study of task complexity, Hughes and Young (1990) examined the relationship between task complexity and decision making consistency using a normative approach. A total of 101 nurses, from twelve medical-surgical and surgical intensive care units across America participated in the study. Each nurse was asked to complete two questionnaires. The first was used to collect information about their educational background and clinical experience, while the other, the Decision Analytic Questionnaire (DAQ), was used to measure the consistency of their decision making. The DAQ was developed using three simulated patient scenarios which would normally be encountered by medical-surgical and surgical nurses, such as a patient's post operative risk of developing deep vein thrombosis. Using expert nurse input together with text book information, clinical narratives were written for each of the simulations.

Each narrative described post-operative situations that required nursing intervention(s). Four interventions were listed for each situation and nurses were asked to rank each intervention according to their perceived importance. The study considered nurses to be consistent decision makers if their highest and lowest ranked decisions corresponded with the prescribed decisions having the greatest and lowest expected utilities. Statistical analysis of the data revealed that many nurses make decisions that corresponded with their stated beliefs and knowledge of clinical probabilities, especially in task situations of low to moderate complexity. However, Hughes and Young (1990) found that the consistency to which medical-surgical and surgical nurses' make decisions, decreased as the complexity of the task increased, suggesting that a systematic approach does not work for complex decisions. While the results of Hughes and Young (1990) study is consistent with the findings of Corcoran (1986a, b), they offer little explanation as to why nurses varied in their consistency to make decisions as task complexity increased. Perhaps, as previously suggested by Corcoran (1986a), a systematic approach to decision making is of little use when dealing with highly complex tasks due to the demands made on memory. Despite collecting biographical data from each nurse, Hughes and Young (1990) do not appear to have examined whether or not a relationship exists between the consistency with which nurses make decisions and their educational and experiential characteristics.

One of the limitations of the studies examining task complexity appears to be a lack of consistency in the variables used to define complexity, such as the number and type of problems associated with a patient case, and the extent to which a protocol can be

applied to patient care (Hughes & Young 1990, Corcoran 1986a, b). As such, it is suggested that there is some uncertainty within the literature as to what task complexity is and how it is measured. Nevertheless it seems that the nature of the decision task does affect an individual's performance as a result of their experience (or lack of) in a particular decision task.

2.5.2 Experience and Knowledge

As highlighted previously, experience and knowledge of a particular task appear to influence how an individual processes information. Often it is these two properties that distinguish the novice from the expert (Hamers et al 1994, Benner et al 1991, Bordage & Lemieux 1991, Schmidt et al 1990, Thompson et al 1990, Benner & Tanner 1987, Kassirer et al 1982). For this reason many studies have examined how information is processed by novice and expert nurses by comparing their performance and the accuracy to which they make their judgements and decisions (Hamers et al 1997, Greenwood & King 1995, Tschikota 1993, Grobe et al 1991, Itano 1989, Corcoran 1986a, b).

2.5.2.1 Performance

Itano (1989) examined whether experienced nurses and student nurses varied in the number and type of cues used when undertaking an initial patient assessment. 13 final year student nurses and 13 experienced nurses took part in the study. All experienced nurses worked in medical-surgical wards, with their experience of medical-surgical nursing ranging from 1 – 16 years. A total of 26 patients from medical-surgical wards

took part in the study, with each patient being assessed once. Data collection for the study was conducted in two parts. First of all, each nurse was required to listen to a change of shift report then review the patient's medication chart, after which they undertook a general assessment of the patient. During the assessment all verbal exchange between the nurse and the patient was audio recorded while all non verbal cues (i.e. checking intravenous fluids, checking oxygen regulator) were observed and recorded by a data collector. Following the assessment, nurses were asked to state their conclusions about the patient's state of health. In part two of the study, portions of the audiotapes was played back to the assessing nurse where they were asked to review their thoughts. Again all verbalisations were audio recorded. All transcripts were then coded using a scheme for classifying cues. The study found that experienced nurses consistently collected a significantly greater number of cues than student nurses. The study also found that the most common cue elicited by both groups of nurses was the patient's current health state, with the patient's current contextual cue collected the least.

Given that different patients were used in Itano's (1989) study, it is possible to suggest that the various health states of individual patients may have warranted greater cue elicitation as some patients may have presented with more complex signs and symptoms than others. This implies that the number of cues collected might not necessarily by a reflection of the experience and knowledge of the nurse, but rather be a feature of the task itself. However, no firm conclusion can be drawn here as Itano

(1989) provides no insight into the types of conditions the patients had, or how nurses were assigned to assess individual patients.

The results of a later study by Greenwood and King (1995) appear to conflict with the results of Itano's (1989) study. Nine pairs of novice and expert orthopaedic nurses were asked to assess and plan care for real patients who had undergone recent hip replacements. Each pair of nurses (consisting of one novice and one expert) individually assessed and planned care for the same patient whilst thinking aloud. Each nurse was asked to provide a rationale for their thoughts in a retrospective think aloud session. All verbalisations were recorded and analysed using protocol analysis. The results of Greenwood and King (1995) study suggest that novices collected more information cues than the experts did.

While there appears to be a conflict of results between Itano (1989) and Greenwood and King (1995) study, neither study examined whether the cues gathered were actually useful or necessary to the judgement and decision making process of the nurse. The difference in the number of cues collected could be attributed to the studies differing methodologies. However, further research is needed as the link between information use and the judgements and decisions made appears to have been ignored.

Grobe et al (1991) examined the reasoning process of seven nurses, all of whom had more than two years experience in the care of chronically ill adults. Using written information which described the simulated patient case, nurses were asked to think

aloud while planning a home care referral for a patient who had been hospitalised. All verbalisations were recorded and analysed using protocol analysis. The study found that early in the task, nurses considered the patient's problems and care interventions in a concurrent manner rather than as a distinct and linear process. As suggested by Grobe et al (1991), experienced nurses by virtue of their 'developed' knowledge base and knowledge organisation are able to link categories of information together and recognise important information. The result appears to support the work of Corcoran (1986a, b) referred to earlier in that experienced nurses handle information in such a way that reduces cognitive strain. The results also support the chunking concept of information processing theory to conserve space in the STM.

Using a simulated patient case, Tschikota (1993) examined how student nurses reason when planning patient care. A total of 19 students took part in the study, all of whom were asked to think aloud while they planned care for a female patient following a cholecystectomy who had subsequently developed a wound infection. Analysis of the recorded verbalisations revealed that student nurses viewed each piece of information of equal importance and processed information in a serial fashion, considering problems and interventions separately. Such a result suggests that novices due to their limited experience and knowledge base are unable to distinguish important cues from unimportant cues, running the risk of information overload. Moreover, the non simultaneous consideration of problems and interventions is suggestive of the novices' inability to group or link cues.

2.5.2.2 Accuracy

Other studies have focused on the accuracy to which novice and experienced nurses make their decisions (Lamond & Farnell 1998, Bordage & Lemieux 1991, Tanner et al 1987, Corcoran 1986a, b, Westfall et al 1986).

Lamond and Farnell (1998) examined the use of knowledge and information in relation to the accuracy with which novice and expert nurses made their decisions about the treatment of pressure ulcers. In total, 14 nurses took part in the study, involving seven novices and seven experts, all of whom were recruited from a variety of clinical specialities (i.e. orthopaedic, acute surgery, acute medicine, gerontology). Novices and experts in the area of wound care were identified using peer review and according to their length of experience. Following completion of a demographic questionnaire, nurses were given 16 cards, of which eight contained photographs of pressure ulcers (reflective of different grades and locations on the body) while the remaining eight had names of various dressings printed on them. All cards had a number between 1 and 16. Nurses were asked to 'sort' the cards into various categories and were then asked to explain their placement of cards with their response audio-taped. Nurses were then given three simulated patient cases, with each containing a photograph of a pressure ulcer and various items of information about the patient (i.e. level of mobility, incontinence and wound exudate). Nurses were asked to decide and explain what treatment action they would take for each ulcer using the information cues available on the reverse of the cards; again nurse verbalisations were audio-taped. Following transcription, data from the first part of the study was content analysed, revealing that

knowledge organisation was not dependent on task expertise. Some nurses were found to sort the cards by pressure ulcers or by dressings, while others placed the pressure ulcer cards with the dressing that they considered to be most suitable in the same category. Data collected in part two was compared to a treatment gold standard which had been recommended by an expert panel in wound care. Various points were awarded to individual nurses depending on how accurate their decisions matched the expert panel's recommendations. The scores were statistically analysed revealing that experts made significantly more accurate decisions than novices. The results also showed that there was little difference in the amount of data used by both the novices and the experts to make their decisions. However, experts were found to focus on certain types of cues more frequently than novices. Accuracy scores were then compared with knowledge organisation strategies, revealing that no links appeared to exist between organisation strategy and decision accuracy.

Although the study used a small sample, limiting the extent to which conclusions can be drawn and results generalised, the findings appear to be consistent with that of previous studies which have found that expert (or experienced) nurses make more accurate decisions than novice (or less experienced) nurses (Tanner et al 1987, Corcoran 1986a, b, Westfall et al 1986). The findings of Lamond and Farnell's (1998) study also supports the results of previous research which has indicated that decision accuracy is linked with the ability of the decision maker to focus on information which is relevant to the task (Ettenson et al 1987, Cianfrani 1984). This could explain why

Lamond and Farnell's (1998) study found that expert nurses focused on certain types of information compared to novices who were found to focus on non-specific information.

It appears that task complexity, task experience and knowledge influence how nurses process information. The effects of such factors have in the main been examined experimentally through the use of simulation and small samples, thus impacting on the extent to which the results can be generalised. As well as the factors which have been found to influence the processing of information, the very basis on which judgements and decisions are made, i.e. the actual information used to feed these cognitive processes, should also be considered.

2.6 Information Use

2.6.1 Sources of Information

It has been highlighted by a number of studies that unless nurses have access to various sources of information, they will not be able to make key judgements and decisions about different aspects of patient care (Lamond et al 1996, Tschikota 1993, Luker & Kendrick 1992, Thiele et al 1991, Thiele et al 1986).

Lamond et al (1996) carried out a study to identify what sources of information medical and surgical nurses used when making assessment judgements. A total of 114 nurses were interviewed at the end of their shift about the assessment judgements they had made throughout their shift relating to patient care. Using content analysis to analyse the transcribed interviews, they identified that nurses used four main sources of

information; verbal, observation (of the patient), prior knowledge (of the patient) and written information (about the patient). Verbal information was found to be used the most, accounting for 41% of the total sources mentioned followed by observation (21%), prior knowledge (20%) and written information (17%). Additionally Lamond et al (1996) report that medical and surgical nurses were found to use verbal and written information to a similar extent, however, medical nurses were found to use observation and prior knowledge slightly less frequently than surgical nurses.

Although it remains unclear from Lamond et al's (1996) study exactly what kind of assessments the nurses had performed throughout the course of their shift (i.e. pressure ulcer risk assessment, pain assessment etc), the results of the study clearly highlight that nurses use a variety of information sources to inform their assessments of patients.

In another study examining information source use, Luker and Kendrick (1992) explored sources of influence on the decisions made by community nurses. Through the use of observation, individual nurse interviews and group discussion involving 47 community nurses, 35 sources of influence were identified (three of which were unable to be classified). Data was content analysed and classified into categories of influence. The results suggest that community nurses largely use practice based knowledge (n = 20), followed by a mixture of research and practice based knowledge (n = 6), research based knowledge (n = 3) and common sense (n = 3) to make their decisions. The results of Luker and Kendrick's (1992) study suggest that nurses rely on the use of subjective rather than objective information to inform their decision making.

What appears not to have been examined within the literature is the importance an individual places on a particular source of information as well as whether or not similar information sources are used by individuals to inform judgement and decision making for a particular task. While studies by Lamond et al (1996) and Luker and Kendrick (1992) have examined the sources of information used between nursing specialties as well as within a speciality domain, there appears to be no research which examines whether nurses with differing levels of experience in a decision task use similar or different information sources for a particular task.

2.6.2 Types of Information Cues Used

Several studies have examined the cues that nurses attend to when making their judgements and decisions (Junnola et al 2002, Hallett et al 2000, Skaner et al 2000, 1998).

Junnola et al (2002) looked at the kind of information nurses needed in order to assess and plan care for a cancer patient. In total, 107 nurses from various clinical areas (i.e. oncology, general medicine and surgical) were presented with a simulated patient scenario which depicted a female patient with metastases receiving a 6 month course of chemotherapy to alleviate pain. Following presentation of the simulated scenario, nurses were asked to indicate from the information they were given what information they required in order to be able to define the patient's problems and to subsequently plan care. Cues such as patient's pain, family situation, pain medication, spread of

cancer, the patient's employment status and general wellbeing were all incorporated in the judgement and decision making of the nurses.

Another study which examined cue use was conducted by Hallett et al (2000) who examined wound care decision making of 62 community nurses. Using semi-structured interviews, nurses were asked to comment on what information they felt was important to enhancing the quality of care patients received. Nurses were asked to speak about three different patient scenarios; palliative care, patients who had been recently discharged from hospital and wound care. Using content analysis, Hallett et al (2000) found that community nurses used a number of cues to inform their judgement and decision making namely; the nutritional status of a patient, weight, mobility, general wellbeing and the patient's attitude to treatment (which was often linked with the likelihood of treatment compliance).

The results of these studies clearly highlight that nurses use a variety of information cues when formulating their judgements and decisions. However, these studies do not appear to have examined the value placed on particular information cues for judgement and decision making. Correlation studies which examine the relationship between cues and the accuracy to which judgements and decisions are required in order to understand cue use in a particular task.

In summary, it appears that nurses use a variety of reasoning strategies to process information such as hypothetico-deductive reasoning, heuristics and rule based

reasoning, with the use of such strategies serving to lessen cognitive strain in order that information can be managed in a judgement and decision task. However, a number of factors have been identified which appear to influence how information is processed, such as task complexity as well as the experience and knowledge that an individual has of performing a specific task. Such factors have also been found to affect the accuracy and consistency to which an individual makes their judgements and decisions. The review has also highlighted that as well as drawing on one's own experience as a source of information, nurses use a number of other information sources such as prior knowledge (of a particular patient or patient groups), observation, written and verbal information. In addition to the sources of information used, studies have highlighted that nurses use a variety of information cues to inform their judgement and decision making, with such comprising of subjective and objective information.

After reviewing the literature relating to nurse judgement and decision making, the review now considers, in detail, the purpose of assessment and that of assessment tools as they relate to judgement and decision making in nurse practice.

2.7 Nursing Assessment

An assessment (as referred to previously in chapter 1) is defined as a 'critical analysis and evaluation or judgement of the status or quality of a particular condition and situation of the object of appraisal' (Miller & Keane 1987, p1043). In response to this definition, Crow et al (1995) cite that the purpose of an assessment is to form an evaluation or judgement about a patient's condition or situation, thus providing an

accurate picture of such. On this note, patient assessment is, therefore, the most important element of nursing as it provides the basis to any given care intervention.

2.7.1 Assessment in Action

Jacavone and Dostal (1992) observed and interviewed eight coronary care nurses as they cared for a patient in order to examine the cognitive processes used during the assessment and management of cardiac pain. The results of the study seem to indicate that an assessment of a patient's condition appeared to assist the nurse with deciding whether or not to continue administering a nitroglycerine infusion to a patient with low blood pressure. When asked what had influenced the decision, one nurse stated that she had concentrated on the patient's blood pressure, pulse, colour, demeanour, level of consciousness and restlessness, and that the patient felt warm.

The nurse expressed her judgement by stating "you're not yet in frank shock, but you're headed in that direction.....you're in cardiac shock. You're going to die before we can get you to the hospital" (p610). Based on this quote, it seems that nurses formulate judgements when they are assessing a patient to estimate their condition. As indicated by Crow et al (1995), who examined the cognitive component of nursing assessment, nurses verbalise their judgements in the form of predicative statements, "you're going to die", to which it is implied that an event will occur based on a patient's current condition. Crow et al (1995) also cite that nurses appear to alter their judgements depending on whether there has been a change in patient's condition, suggesting that nurses reassess patients and revise their judgements.

Mason and Webb (1997) explored the assessments made by children's nurses using a case simulation based on an infant (known as Katrina) who was admitted to hospital for emergency surgery. From a sample of 10 nurses, each nurse was asked to document information contained in the case simulation which they felt was important, after which they were asked to document their rationale for the information that they had selected. Analysis of the data found that from a total of 258 available information cues, collectively the nurses selected 29 of those for use, with such pertaining to continuity of care, support for the family, impact of illness, medical and nursing diagnosis and the family's participation in the infant's care. A written statement taken from the study illustrates one nurse's assessment, "provide Katrina with comfort, but only when their (family) tiredness and distress has been dealt with" (p52).

The assessment indicates that the nurse based her plan of care on the information that had been collected, thus enabling the nurse to determine the intervention(s) needed, but to also prioritise the order in which such interventions would be given.

Following Miller and Keane's (1987) definition of assessment, it seems from the results of both the reviewed studies that the purpose of an assessment is also to gather information in order to decide on what course of action should be taken, and the order in which this action should occur. The results of the studies suggest that in the main, nurses use a patient's current state (as well as the state of others i.e. the patient's family) to assist them with their judgement and decision making. Using the quote drawn from Jacavone and Dostal's (1992) study, it seems that nurses also assess in

order to predict the occurrence of an event based on their estimation of a patient's current state. As such, it is therefore, imperative that assessments are as accurate as possible if the action to be taken arising from the assessment is to be accurate also. If there are any inaccuracies in the judgements formulated then the assessment could be potentially flawed, which in turn is likely to lead to an inaccurate decision being made (Crow et al 1995).

While it was not the aim of Jacovone and Dostal (1992) or Mason and Webb (1997) to examine the consistency with which nurses used information in their assessments (of cardiac pain or the needs of an infant), the results of the studies suggest that nurses did not all use the same information or attach the same importance to each of the information cues used despite assessing the same or a similar situation. If nurses use different information cues with which various degrees of importance are attached, they may not necessarily make similar assessments about patients with similar needs. Therefore, it is likely that nurses will differ in the judgements and decisions that they make, consequently resulting in patients who have similar needs not necessarily receiving similar standards of care. It is put forth that there is likely to be a degree of subjective judgement making involved in an assessment of a patient's condition or situation, thus possibly accounting for the variation in the cues used and the varying levels of importance attached to them by individual nurses (Harris et al 1998).

2.7.2 Nursing Assessment Tools

Within the literature assessment tools are referred to as devices upon which nurses can base their judgements and decisions (Vernon et al 2000, Harris et al 1998). Assessment tools are described as criterion referenced devices that are based on a range of factors which are believed to be important to the assessment task (Gould et al 2004, Harris et al 1998). Commonly a numerical score (or weight) is assigned to each factor and then tallied to obtain an overall score, which is then matched to a standard reference measure to which an action is recommended. Assessment tools not only direct the search for relevant information, they also direct the processing and the output of that information. Therefore, suggesting that assessment tools provide the nurse with a 'way of thinking' about an assessment task.

Within the literature there are a number of assumptions which surround the use of assessment tools for nurse judgement and decision making. One of the main assumptions made is that nurses formulate judgements and make decisions based on the information contained in and produced by an assessment tool. It is also assumed that assessment tools enable the collection of information in a structured and systematic manner, therefore, improving the accuracy of the assessments made, and by implication the judgements and decisions that are made (McCormack 1999, Soderhamn & Berthold 1993). Furthermore it is also assumed that use of assessment tools will somehow ensure that all patients with similar needs shall receive similar care, irrespective of the experience and knowledge of the assessing nurse (Harris et al 1998, Mallick 1981). As yet, many of these assumptions appear to remain unsubstantiated in the literature. It

seems that the focus of these assumptions is the nurses' ability to make accurate judgements and decisions concerning a patient's needs and care interventions. A small number of studies have identified that use of an assessment tool does not always ensure that this is the case (Gould et al 2004, VandenBosch et al 1996, Kruse et al 1988, Pinholt et al 1987).

Kruse et al (1988) compared the accuracy with which nurses and doctors predicted the likelihood of a patient dying whilst in hospital, with that of the predicted outcome scored by the APACHE II tool (Acute Physiology and Chronic Health Evaluation). Over a course of 5 months, a total of 366 patients were admitted to a single intensive care unit. At the time of a patients admission, medical (n = 57) and nursing (n = 33) staff were asked to assess, using professional judgement alone, the patients mortality risk during hospitalisation. Participants expressed their probability judgement in the form of a percentage, with below 50% equating to patient survival and above with death. The assessment judgements were then compared with the predictive accuracy of the APACHE II assessment tool. The study concluded that the professional judgement of nurses, doctors and the APACHE II were equally highly predictive of the patient's mortality outcome during hospitalisation.

The results of Kruse et al's (1988) study have shown that the clinical judgement of both nurses and doctors was as accurate as that of the APACHE II assessment tool. However, a major limitation of the study relates to the predictability of mortality for

such a patient group as Kruse et al (1988) give no indication as to what a reasonable level of mortality prediction might be.

VandenBosch et al (1996) compared the professional judgement of nurses with the predictive validity of the Braden Scale on the risk of pressure ulcer development. The study involved 16 nurses, 8 of whom were trained to use the Braden Scale and 8 who were trained to assess a patient's skin and pressure ulcer risk status. The study found that the nurses not using the Braden scale predicted correctly that 51.7% (n = 53) of the 103 patients assessed would develop a pressure ulcer, but wrongly predicted that 41.1% (n = 43) of patients who did not develop an ulcer would do so. The study also found that the nurses who were trained to use the Braden Scale, correctly predicted that 59% (n = 61) of patient assessed as being at risk of developing a pressure ulcer did so, yet 41% (n = 42) of patients predicted not to develop a pressure ulcer did go on to develop an ulcer. When the results were compared to the sensitivity (59%) and the specificity (59%) of the Braden Scale, the Braden Scale was found to be only slightly better at identifying at risk cases and not at risk cases than the use of clinical judgement alone.

A major weakness of VandenBosch et al's (1996) study centres on the issue of assessment accuracy. Two types of criterion measures were used; one, the measurement of the patient's pressure risk status and the other the actual patient's condition whilst in hospital. In applying such a measure, VandenBosch et al (1996) appears not to have addressed what effect the preventative action taken for those patients identified as being

at risk may have had on the outcome of a patients condition. Consequently, it is difficult to establish how accurate the nurses' assessment judgments may have been.

The results of the above studies suggest that assessment tools are not any more accurate than the use of professional judgement alone, thus leading us to question the usefulness of assessment tools for practice. Yet despite this, a number of assessment tools have been introduced to nursing, with a search of the nursing literature identifying a total of 20 assessment tools (Appendix 2.1). The areas of health which had the most number of identified assessment tools was pressure area care (n = 8) followed by nutrition (n = 5). While the areas of physical status, global health assessment, falls, mobility, mental health and pain were found to be assessed, relatively few assessment tools were identified in the literature for use in these areas.

It is likely that assessment tools are introduced into an area of clinical practice as policy in response to clinical governance issues as opposed to the need for assessment accuracy alone. In addition, the use of assessment tools from a management perspective ensures a written record of activities being completed, which is vital to demonstrating overall standards of care provision. However, from the tools that were identified, many were found to be used in a variety of care settings and as such, it is not known which assessment tools are used in a particular area of nursing, or if use of a specific tool is widespread within nursing.

From the number of tools identified, together with the results of studies which have found that assessment tools are not any more accurate than the use of clinical judgement alone, there appears to be a general lack of formal assessment tool evaluation. This is surprising given the assumed purpose of assessment tools together with the emphasis placed on the use of such tools to formalise nurse judgement and decision making. It is, therefore, advocated that rather than focusing on the outcome of a judgement and a decision (i.e. the accuracy with which an assessment is made) that the actual process of how an individual uses these tools for judgement and decision making be examined. As assessment has been found to be the most important element of nurse judgement and decision making, it may, therefore be said that the most important element of any assessment tool is, arguably, the way in which it is used.

It is evident through the literature review that there appears to be a lack of research which examines the reasoning strategies used by nurses, such as those previously highlighted, when using an assessment tool to assess and plan care for a patient. If an assessment tool is viewed as a device which synthesises information, in that a number of information cues are combined together from which an action (or an outcome) is recommended or generated by a tool, it would seem that assessment tools may serve to contain the necessary information needed for a particular assessment and care planning task, thus potentially lessening cognitive strain as the number of information cues to be managed is reduced. However, there appears to be a lack of research which examines whether the information cues contained in an assessment tool are actually used by nurses when assessing and planning care, and whether such cues are used in

conjunction with other cues not listed in a tool, or instead of. Furthermore, there also appears to be a paucity of research which examines whether the factors that have been found to influence nurse judgement and decision making would be applicable in the use of an assessment tool. Given the effect that task complexity, knowledge and experience has on the processing of information, it seems reasonable to assume that an assessment tool, by means of its structured and standardised format, is likely to minimise the effects of such as assessment tool users are not usually required for instance to have prior experience of the assessment task. If such factors are assumed to be non influential in assessment tool use, then it may be suggested that nurses, regardless of their experience, knowledge and complexity of an assessment task are likely to make similar judgements and decisions. Consequently, it may, therefore, be assumed that patients with similar needs will receive similar standards of care no matter who assesses them. However, there appears to be no research which actually examines if this is the case or not.

2.8 Summary

This review has highlighted that nurses collect information from a variety of sources, and process information in a number of ways. The method of processing appears to be influenced by a number of factors such as task complexity, knowledge and experience. However, there appears to be no research which examines the relationship between these factors and how assessment tools are used, despite the emphasis placed on use of assessment tools together with the number of tools identified for nurse practice. It also remains unclear in the literature as to what areas of nursing the identified assessment

tools are available for use in, and whether other assessment tools which have not been identified within the literature may also exist. As such, the number and type of assessment tools that are used in the area of continuing care for older people is not known.

Assessment is important in nursing as it is essentially a judgement about a patient's condition which may lead to further judgements, or directly into the decisions that are made. As such, assessment is a key element of nurse judgement and decision making as it is a thought process which involves the evaluation of information, and is therefore, a key element in the quality of care that patients ultimately receive. Use of assessment tools is assumed to be a central element to nursing practice and to the practice of nursing in the area of continuing care for older people. It is therefore necessary that the number and type of assessment tools that are used by nurses to assess and plan care for an older person in continuing care be identified before use of such tools for judgement and decision making can be examined.

The review has also highlighted that there are a number of gaps within the literature surrounding the use of assessment tools to assess and plan care. Despite the number of unfounded assumptions concerning how nurses use assessment tools, no research was found which actually examines how assessment tools are used by nurses in practice. In addition to this, the effect that assessment tools have on the judgement and decision making process of nurses also needs to be determined in order to obtain insight into

how assessment tools are used to assess and plan care for older people in continuing care.

2.8.1 Research Aims

Derived from a review of the literature, the research aims set for this study are to:

- identify the number and type of assessment tools that are routinely used by nurses within NHS and independent continuing care settings for older people in Scotland, which is addressed in the first part of this study.
- Part 2 then examines how continuing care nurses use assessment tools to assess and plan for older people in both NHS and independent settings,
- followed by an investigation in part 3, into what effect assessment tools have on the judgement and decision making process of nurses when assessing and planning care for an older person in continuing care settings.

3. SURVEY OF CONTINUING CARE UNITS

3.1 Introduction

It is clear from the literature reviewed that a great number and variety of assessment tools exist for nurse practice, and that there is a need to identify exactly how nurses working in the area of continuing care for older people use these tools for judgement and decision making. However, in order to examine how assessment tools are used, it is necessary to first of all identify the assessment tools that are actually used by continuing care nurses. Therefore the aim of this part of the study was to identify the number and type of assessment tools that are used by nurses in NHS and independent continuing care settings for older people in Scotland. A further aim was to recruit a sample of continuing care units for use in subsequent parts of this study, examining how nurses working within this area of care use assessment tools for judgement and decision making.

3.2 Research Design

A descriptive survey was used to address the above aims. This type of survey is designed to accurately portray the characteristics of interest in a specific population in order that such characteristics may be described (Sapsford 1999, Bowling 1997, Nachmias & Nachmias 1996). A descriptive survey was considered appropriate over the use of an analytic survey as it allowed for various associations between the described characteristics to be identified, rather than seek to establish cause and affect relationships amongst variables (Kelly & Long 2000, Bowling 1997).

3.2.1 Methods of Data Collection

A postal self-administered questionnaire was used to obtain a written response to a predefined set of questions from a sample of continuing care units dispersed across Scotland. Because of the number and geographical spread of the continuing care units, a postal questionnaire was considered to be the most appropriate means of collecting data compared to the use of face to face or telephone interviews (Wilson & McClean 1994). The predetermined nature of the questionnaire also provided an element of standardisation to the data collection approach, as response comparisons were to be drawn between hospital wards and nursing homes in order to determine if differences and similarities exist between the two types of unit (Sapsford 1999, Wilson & McClean 1994).

3.2.1.1 Questionnaire Development

The questions used in the questionnaire were developed following the literature search examining nursing assessment tools. Questions were constructed on the basis of simplicity and clarity in order to maximise participants' potential for full understanding, as there would be little opportunity to reaffirm answers or seek missing data (Sapsford 1999). Once the questionnaire was constructed, an expert panel of three individuals assessed its content validity. All panel members were recruited through colleague recommendations as they were considered to have expert knowledge and experience in the areas of patient assessment and continuing care of older people. The panel consisted of one nurse consultant and one clinical nurse specialist employed by the NHS, and a director of nursing services from the independent sector.

3.2.2 Sampling Frame

Prior to the distribution of the questionnaire, written contact was made with the Director of Nursing Services in all 12 NHS Primary Health Care Trusts (PHCT) and 15 Health Boards (HB) in Scotland, requesting information regarding inpatient continuing care provisions for older people. Information was received from 10 PHCT and 13 HB (Table 3.1).

Scottish Primary Health Care Trust (PHCT) Contacted	Response Yes (Y) No (N)	Scottish Health Board (HB) Contacted	Response Yes (Y) No (N)
Ayrshire & Arran	Y	Ayrshire & Arran	Y
Borders	Y	Argyll & Clyde	Y
Dumfries & Galloway	Y	Borders	Y
Fife	Y	Dumfries & Galloway	Y
Forth Valley	Y	Fife	Y
Grampian	Y	Forth Valley	Y
Greater Glasgow	Y	Grampian	Y
Highland	N	Greater Glasgow	Y
Lomond & Argyll	Y	Highland	Y
Lothian	Y	Lanarkshire	Y
Renfrewshire & Inverclyde	N	Lothian	Y
Tayside	Y	Orkney	N
		Shetland	N
		Tayside	Y
		Western Isles	Y
No. of PHCT responded	**10**	**No. of HB responded**	**13**

Table 3.1: Response rates from Primary Health Care Trusts and Health Boards in Scotland

The care services provided by each of the individual continuing care units were compared to the registration/care criteria supplied by the PHCT and HB. This highlighted that not all continuing care units listed provided an inpatient continuing

care service for older people. Following this, eligibility criteria for unit inclusion were developed to reflect key elements of continuing care provision (Table 3.2). These criteria were then used to identify continuing care units that would be eligible to participate in this part of the study.

NHS PHCT Hospital Ward	Independent HB Nursing Home
• To be identified via a representative from the appropriate Scottish PHCT. • To offer an in-patient/client service to older people who have single or multiple continuing health care needs. Health care needs are non specific. • To employ registered nurses. Registration speciality not applicable.	• To be registered with a Scottish HB, either with a joint or single registration. • To offer an in-patient/client service to older people who have single or multiple continuing health care needs. Health care needs are non specific. • To employ registered nurses. Registration speciality not applicable.

Table 3.2: Eligibility criteria of continuing care units

Following the application of the criteria on the original sample frame, which consisted of 700 continuing care units (108 hospital wards and 592 nursing homes), 609 continuing care units were identified as eligible. This figure included 106 hospital wards and 503 nursing homes.

The sample frame was divided into two parts with part one listing all eligible PHCT hospital wards, and part two listing all eligible HB nursing homes. Identification codes were then assigned to each continuing care unit in order to facilitate tracking of correspondence sent to and from the units, and to ensure unit anonymity to third parties.

3.2.3 Ethics

Ethical approval was sought and obtained from the University of Stirling Nursing and Midwifery Department's Research Ethics Committee in July 2002 (Appendix 3.1). All clinical mangers of the continuing care units who were sent the questionnaire were informed that should they choose to complete and return the questionnaire, it was assumed that they were consenting to their unit taking part in the study.

3.3 Pilot Study

Prior to the main study taking place, a pilot study was conducted. The aim of the pilot study was to test the questionnaire's practicality, to ensure that the instructions and questions were clear and easily understood by participants.

3.3.1 Sample

A stratified random sample was used to select continuing care units for the pilot study. Use of this sampling method was necessary for ensuring that the proportions of hospital wards and nursing homes were regionally represented (Polgar & Thomas 2000, Parahoo 1997, Blaxter et al 1996). Other types of probability sampling were not considered suitable as they would not have ensured proportionate regional representation of both types of continuing care units, thus creating an element of bias in the sample (Bowling 1997, Parahoo 1997, Fink 1995).

The sample frame was stratified according to unit type and regional location of individual units. Simple random sampling was then applied to each stratum using an in

house computerised programme until the required sample size was reached. This figure included 1 hospital ward from each of the 10 participating PHCT, and 1 nursing home from each of the 13 participating HB. Piloting of the questionnaire was considered necessary in all 23 sites in order to discover if there was any regional, as well as unit type differences relating to the aim of the pilot study.

3.3.2 Procedure

Piloting of the questionnaire took place during the months of July and August in 2002. Prior to distribution, each questionnaire was coded manually with a unit identification code. Accompanying the questionnaire was a letter which gave details about the study and why it was being carried out (Appendix 3.2). The letter also asked participants to comment on the questionnaire following its completion and return it using the prepaid envelope provided. Each letter was addressed to a named individual who held a clinical management post (i.e. Charge Nurse or Matron) within each unit. A reminder letter was sent to the units that had not replied within three weeks of the initial letter being sent out.

3.3.3 Results

Completed questionnaires were received from 7 units (4 hospital wards and 3 nursing homes), a total of 30% of the original sample of 23 units. 12 units responded to the questionnaire, of which 5 units indicated that they did not wish to participate, giving a total response rate of 52%. 11 reminder letters were sent from which no response was obtained.

From the 7 completed questionnaires, all questions had been answered, suggesting that the instructions and questions had been understood. Participants indicated that on average the questionnaire took 28 minutes to complete (range 15 minutes – 50 minutes). Comments about the layout of the questionnaire were received from 5 units, suggesting that it appeared cramped and recommended the use of one question per page.

Based on the results of the pilot study, two modifications were made to the questionnaire, which involved stating on the instruction sheet of the questionnaire an estimated completion time and altering the questionnaire's layout. The alterations made to the layout of the questionnaire resulted in the use of one question per page (Appendix 3.3).

3.4 Main Study

3.4.1 Sample

As with the pilot study, stratified random sampling was used to select units for the main study. The pilot sample figure (n = 23) was subtracted from the original sample figure of eligible units (n = 609), giving a total sample frame of 586 continuing care units (96 PHCT hospital wards and 490 HB nursing homes) for the main study. Because of the relatively low number of hospital wards compared to the number of nursing homes, all 96 wards were sent a copy of the questionnaire. On the basis of data manageability, 50% of the nursing homes identified as eligible in each region were randomly selected, resulting in the use of a disproportionate stratified sample. With the total number of

nursing homes (n = 250) combined with the total number of hospital wards (n = 96) selected for the sample, 347 questionnaires were distributed in the main survey.

3.4.2 Procedure

The main survey took place during October and November 2002. The same method of questionnaire distribution used in the pilot study was used in the main study. Together with the questionnaire, a letter was sent to the units providing details of the study (Appendix 3.4). The letter asked that participants include copies of all assessment tools and assessment policies that they use as part of their response. A 'response slip' was also included (Appendix 3.5) with the questionnaire and letter to allow participants to indicate whether or not they would be willing for their unit to take part in further research relating to this study. As before, reminder letters were sent to the units that had not responded to the questionnaire within three weeks of its initial distribution.

3.4.3 Analysis

Data were entered into a computerised database using SPSS (Statistical Package for the Social Sciences) (Version 10). Non-parametric tests were used as the data were of nominal value. The level of significance was set at $p<0.05$, thus if the significance value of a test is equal to or less than the set level, it was concluded that there was a real relationship between two variables which was not the result of chance (Pett 1997).

Chi-square was used when comparing two sets of categorical data such as differences in assessment tool use between hospital wards and nursing homes. In the instance where a

data cell had an expected frequency count of less than 5, the result of Fisher's Exact Probability test is given (Pallant 2001, Fielding & Gilbert 2000). Where a variable had only two categories, producing a 2 by 2 table to correct the overestimation of the chi-square value, the result of Yates's Correction for Continuity test is given (Pallant 2001, Fielding & Gilbert 2000).

3.5 Results

3.5.1 Questionnaire Response Rates

A total of 121 questionnaires from an original sample of 347 were returned, giving a response rate of 35%. Of the questionnaires returned, 50 units (41%) completed the questionnaire while 71 units (59%) responded indicating that they did not wish to take part. Completed questionnaires were received from 23 hospital wards (24% of the 96 sent) and 27 nursing homes (11% of the 250 sent). 230 reminder letters were sent, from which a further 4 completed questionnaires were received (Appendix 3.6).

3.5.2 Sample Characteristics

Table 3.3 provides a breakdown of bed and nurse staffing structure for hospital wards and nursing homes. Within the 50 units there were a total of 1771 continuing care beds for older people, 522 (29%) were in hospital wards and 1249 (71%) in nursing homes.

From the numbers of nursing staff reported in the questionnaire responses, staff to patient ratios was calculated on the assumption that each ward and nursing home operates on a basis of three shifts per day (early, late and night shift). As such, the

average nurse to patient ratio was found to be 1:6 in hospital wards and 1: 13 in nursing homes. The average nursing assistant to patient ratio was 1:4 in hospital wards while nursing homes had a slightly higher ratio of 1:6.

Unit Type	Units	Beds	Charge Nurses	Staff Nurses	Nursing Assistants
Hospital Ward					
No. (%)	23 (46)	522 (29)	31 (32)	212 (48)	364 (37)
Mean (SD)	---	22.7 (10.6)	1.36 (0.72)	9.33 (3.49)	16.05 (7.29)
Nursing Home					
No. (%)	27 (54)	1249 (71)	67 (68)	231 (52)	630 (63)
Mean (SD)	---	46.26 (21.12)	2.50 (1.67)	8.42 (3.55)	27.83 (11.19)
Totals (%)	**50 (100)**	**1771 (100)**	**98 (100)**	**443 (100)**	**994 (100)**

Table 3.3: Number of continuing care units, beds and members of nursing staff

3.5.3 Areas of Health Assessed and Assessment Tool Use

The units formally assessed a total of 17 health areas (Table 3.4). In addition to the 11 pre-listed areas of health given in the questionnaire, the units identified 6 other areas of health that they formally assessed such as activities of daily living, bed rail need, cognitive function, personal hygiene, sleep and spiritual need. Such areas, however, were found to be assessed by a small number of units in comparison to the number of units which assessed the pre-listed areas of health. The areas of pressure area care, nutrition, urinary incontinence, moving and handling, wound care and falls were found to be assessed by the greatest number of units. Chi-square found no statistical difference in the areas of health assessed according to the type of continuing care unit.

Assessed Areas	Hospital Ward (%)	Nursing Home (%)	Total (%)	Sig.
Pressure Area Care	23 (100)	27 (100)	50 (100)	1.00
Nutrition	23 (100)	26 (96)	49 (98)	1.00
Urinary Incontinence	23 (100)	26 (96)	49 (98)	1.00
Moving & Handling	23 (100)	24 (89)	47 (94)	0.24
Wound Care	21 (92)	25 (93)	46 (92)	1.00
Falls	22 (96)	20 (74)	42 (84)	0.06
Mobility	18 (78)	21 (78)	39 (78)	1.00
Bowel Care	18 (78)	17 (63)	35 (70)	0.39
Pain	14 (61)	16 (59)	30 (60)	1.00
Behaviour	12 (52)	16 (59)	28 (56)	0.83
Oral Care	16 (69)	11 (41)	28 (56)	0.08
Bed Rail Need	2 (9)	4 (15)	6 (12)	0.67
Cognitive Function	3 (13)	2 (17)	5 (10)	0.65
Sleep	3 (13)	2 (7)	5 (10)	0.65
Activities of Daily Living	2 (9)	2 (7)	4 (8)	1.00
Personal Hygiene	1 (4)	2 (7)	3 (6)	1.00
Spiritual Need	0	1 (4)	1 (2)	1.00

Table 3.4: Areas of health assessed

In total, 56 assessment tools were received from which 16 different assessment tools were identified by name (Appendix 3.7). Of these tools, 40 (80%) were pressure ulcer risk assessment tools of which 30 (75%) were the Waterlow Scale (Waterlow 1985). No assessment tools were received from the units relating to the non pre-listed areas of health.

None of the units provided further data in the questionnaire about the non pre-listed areas of health. Therefore, the remainder of the results presented in this chapter relate to the pre-listed areas of health only.

Information relating to the length of time units had been using current assessment tools was sought. All 50 units indicated that they did not know how long their assessment tools had been used within their unit.

It was apparent from questionnaire responses that two different categories of nursing staff use assessment tools; qualified nurses only and a combination of qualified and unqualified nursing staff. Both qualified nurses and nursing assistants used assessment tools in 12 (52%) of the hospital wards and in 15 (56%) of the nursing homes.

Participants were asked to indicate if nursing staff received any form of training relating to the use of assessment tools within their unit, either through formal training (e.g. study day) or by means of consulting an instruction handbook (Table 3.5). A greater number of both hospital wards and nursing homes provide nursing staff with formal training in the use of assessment tools compared to the handbook method in all 11 areas of health. The form in which assessment tool training was given was not found to be significant between the different types of unit.

	Formal				Handbook			
Assessed Areas	**H/Ward (%)**	**N/Home (%)**	**Total**	**Sig.**	**H/Ward (%)**	**N/Home (%)**	**Total**	**Sig.**
Behaviour	9 (75)	8 (50)	17	0.25	3 (25)	3 (19)	6	1.00
Bowel Care	9 (50)	10 (59)	19	0.85	4 (22)	4 (24)	8	1.00
Falls	11 (50)	11 (55)	22	0.76	4 (18)	3 (15)	7	1.00
Mobility	11 (61)	13 (62)	24	1.00	3 (17)	3 (14)	6	1.00
Moving & Handling	15 (65)	15 (63)	30	1.00	6 (26)	4 (17)	10	0.49
Nutrition	14 (61)	15 (58)	29	1.00	6 (31)	8 (31)	15	1.00
Oral Care	7 (44)	7 (64)	14	0.70	4 (25)	1 (9)	5	0.35
Pain	9 (64)	9 (56)	18	0.94	5 (36)	2 (13)	7	0.20
Pressure Area Care	16 (70)	18 (67)	34	1.00	8 (35)	6 (22)	14	0.50
Urinary Incontinence	16 (70)	15 (58)	31	0.57	6 (26)	4 (15)	10	0.48
Wound Care	15 (71)	16 (64)	31	0.82	5 (24)	6 (24)	11	1.00

Table 3.5 Assessment tool training

Comparisons were then drawn between the units which formally assessed an area of health with that of units which actually provided training in the use of assessment tools (Table 3.6). Not all units which formally assess an area of health provide assessment tool training, particularly in the areas of falls and mobility.

Assessed Areas	No. of Units that Assess Area	No. of Units that Provide Assessment Tool Training	Deficit
Behaviour	28	23	-5
Bowel Care	35	27	-8
Falls	42	29	-13
Mobility	39	28	-11
Moving & Handling	47	40	-7
Nutrition	49	44	-5
Oral Care	27	19	-8
Pain	30	25	-5
Pressure Area Care	50	48	-2
Urinary Incontinence	49	41	-8
Wound Care	46	42	-4

Table 3.6: Comparisons between the number of units which assess an area of health and provide assessment tool training

Participants were also asked if their unit had any policies on the use of assessment tools (Table 3.7). From the total number of units who indicated formal assessment of the pre-listed health areas, a greater number of both hospital wards and nursing homes had a policy concerning the assessment of an area of health, compared to those units which did not. No statistical significance was found between the units with a policy and the area of health assessed. None of the units supplied copies of their policies for analysis.

Assessed Areas	With Policy			Without Policy			
	H/Wards (%)	N/Homes (%)	Total	H/Wards (%)	N/Homes (%)	Total	Sig.
Behaviour	7 (58)	13 (81)	20	5 (42)	3 (11)	8	0.32
Bowel Care	11 (61)	15 (88)	26	7 (39)	2 (12)	9	0.79
Falls	12 (55)	14 (70)	26	10 (45)	6 (30)	16	1.00
Mobility	10 (56)	17 (81)	27	8 (34)	4 (11)	12	0.27
Moving & Handling	17 (74)	22 (92)	39	6 (26)	2 (8)	8	0.76
Nutrition	17 (74)	19 (77)	36	6 (26)	6 (23)	12	1.00
Oral Care	9 (56)	11 (100)	20	7 (42)	0 (0)	7	0.92
Pain	10 (44)	13 (48)	23	4 (56)	3 (52)	7	0.96
Pressure Area Care	17 (74)	22 (81)	39	6 (26)	5 (19)	11	0.763
Urinary Incontinence	16 (70)	20 (77)	36	7 (30)	6 (23)	13	0.97
Wound Care	16 (76)	21 (84)	37	5 (24)	4 (16)	9	0.73

Table 3.7: Units with policy on use of assessment tools

A greater number of both hospital wards and nursing homes formally assess an area of health when a patient is admitted and on an 'as required' basis than at any other frequency interval (Table 3.8). From the number of units which indicated that they assessed an area, there were significant differences in the frequency with which hospital wards and nursing homes formally assess different health areas. Nursing homes were more likely to assess the areas of behaviour ($p = 0.01$), bowel care ($p = 0.04$), mobility ($p = 0.03$), moving and handling ($p = 0.02$) and pain ($p = 0.05$) on a monthly basis than were hospital wards. In contrast, hospital wards were more likely to assess the areas of moving and handling ($p = 0.01$), nutrition ($p = 0.03$), pressure area care ($p = 0.01$) and urinary incontinence ($p = 0.01$) on a weekly basis.

Assessed Areas	Frequency	H/Ward (%)	N/Home (%)	Total	Sig.
Behaviour	Admission	10 (83)	13 (81)	23	0.96
	Daily	3 (25)	5 (31)	8	0.71
	Weekly	1 (8)	0 (-)	1	0.46
	Fortnightly	1 (8)	1 (6)	2	1.00
	Monthly	0 (-)	7 (58)	7	**0.01**
	As Required	8 (67)	14 (88)	22	0.35
Bowel Care	Admission	13 (72)	14 (82)	27	0.96
	Daily	5 (28)	7 (41)	12	0.98
	Weekly	5 (27)	3 (18)	8	0.44
	Fortnightly	1 (6)	1 (6)	2	1.00
	Monthly	2 (11)	10 (59)	12	**0.04**
	As Required	7 (39)	9 (53)	16	1.00
Falls	Admission	18 (82)	18 (90)	36	0.55
	Daily	1 (5)	2 (10)	3	1.00
	Weekly	3 (25)	2 (10)	5	0.85
	Fortnightly	2 (9)	1 (5)	3	0.58
	Monthly	6 (27)	12 (60)	18	0.29
	As Required	17 (77)	13 (65)	30	0.11
Mobility	Admission	13 (72)	20 (95)	33	0.31
	Daily	2 (11)	4 (19)	6	0.67
	Weekly	4 (22)	1 (5)	5	0.16
	Fortnightly	1 (6)	1 (5)	2	1.00
	Monthly	5 (28)	15 (71)	20	**0.03**
	As Required	12 (67)	8 (38)	20	0.18
Moving & Handling	Admission	18 (78)	21 (88)	39	1.00
	Daily	3 (13)	1 (4)	4	0.32
	Weekly	5 (22)	0 (-)	5	**0.01**
	Fortnightly	2 (9)	1 (4)	3	0.45
	Monthly	2 (9)	1 (4)	3	**0.02**
	As Required	13 (57)	13 (54)	26	0.75
Nutrition	Admission	18 (78)	21 (88)	39	1.00
	Daily	0 (-)	3 (12)	39	1.00
	Weekly	8 (35)	2 (8)	3	**0.03**
	Fortnightly	1 (4)	1(4)	2	1.00
	Monthly	9 (39)	16 (62)	15	0.25
	As Required	14 (61)	14 (54)	28	0.72
Oral Care	Admission	13 (81)	11 (100)	24	0.40
	Daily	1 (6)	3 (27)	4	0.61
	Weekly	2 913)	0 (-)	2	0.20
	Fortnightly	1 (6)	1 (9)	2	1.00
	Monthly	2 (13)	5 (45)	7	0.43
	As Required	12 (75)	10 (91)	22	0.43
Pain	Admission	10 (71)	15 (94)	25	0.57
	Daily	5 (36)	3 (19)	8	0.44
	Weekly	1 (7)	0(-)	1	0.46
	Fortnightly	1 (7)	1 (6)	2	1.00
	Monthly	0 (-)	5 (36)	5	**0.05**
	As Required	10 (71)	16 (100)	26	0.27
Pressure Area Care	Admission	18 (78)	22 (85)	30	1.00
	Daily	5 (22)	5 (19)	10	1.00
	Weekly	5 (22)	0 (-)	5	**0.01**
	Fortnightly	1 (4)	1 (4)	2	1.00
	Monthly	8 (34)	14 (52)	22	0.34
	As Required	14 (61)	18 (67)	32	0.89
Urinary Incontinence	Admission	19 (83)	22 (85)	41	1.00
	Daily	2 (9)	3 (12)	5	1.00
	Weekly	6 (26)	0 (-)	6	**0.01**
	Fortnightly	1 (4)	1 (4)	2	1.00
	Monthly	7 (30)	11 (42)	18	0.64
	As Required	14 (61)	17 (65)	31	1.00
Wound Care	Admission	13 (62)	20 (80)	33	0.31
	Daily	3 (14)	6 (24)	9	0.47
	Weekly	3 (14)	2 (8)	5	0.65
	Fortnightly	1 (5)	1 (4)	2	1.00
	Monthly	2 (10)	6 (24)	8	0.26
	As Required	15 (71)	20 (80)	35	0.70

Table 3.8: Frequency of assessment

3.5.4 Choice of Areas of Assessment and Assessment Tools

Units were asked why particular areas of health were formally assessed. Participants could choose from six responses and select as many responses as applied to their unit (Table 3.9). The main reason indicated by hospital wards and nursing homes for formally assessing an area of health was to standardise nursing practice. The second reason was the results of past audits. High occurrence rates of a condition and to reduce financial expenditure were the least often given reasons as to why units formally assessed an area of health.

Reasons for formally assessing a particular health area also appear to vary according to the area of health being assessed and type of unit. There was a significant difference between hospital wards and nursing homes in their reasons for assessing pain, with more hospital wards highlighting the results of an internal audit as a factor ($p = 0.03$). In contrast, more nursing homes stated that the standardising of nursing practice was a factor for formally assessing wound care ($p = 0.04$).

Participants were also asked to indicate why a particular assessment tool had been selected to formally assess an area of health (Table 3.10). The most common reason for selecting an assessment tool was through recommendation from a professional body (e.g. Royal College of Nursing). The second most common reason for selection of a particular tool was that it had been compiled by clinical peers. Nursing homes were found to use significantly more tools compiled by clinical peers compared to hospital wards, especially in the area of wound care ($p = 0.04$).

Finally, use of an assessment tool which had been recommended in the literature (e.g. nursing journal) was more likely to be used by a significantly greater number of nursing homes than hospital wards in the areas of mobility ($p = 0.04$), moving and handling ($p = 0.04$) and nutrition ($p = 0.02$).

Assessed Areas	Reasons	H/Ward (%)	N/Home (%)	Total	Sig.
Behaviour	Past External Audit	1 (8)	0(-)	1	0.42
	Past Internal Audit	3 (25)	2 (13)	5	0.62
	High Rates of Condition	1 (8)	1 (6)	2	1.00
	Decrease Monetary Costs	0 (-)	0(-)	0	1.00
	Standardise Nurse Practice	4 (33)	12 (75)	16	0.06
Bowel Care	Past External Audit	3 (17)	0 (-)	3	0.22
	Past Internal Audit	5 (28)	3 (18)	8	0.69
	High Rates of Condition	0 (-)	1 (6)	1	0.48
	Decrease Monetary Costs	0 (-)	0 (-)	0	1.00
	Standardise Nurse Practice	12 (67)	13 (76)	25	0.71
Falls	Past External Audit	4 (18)	0 (-)	4	0.10
	Past Internal Audit	6 (27)	7 (35)	13	0.83
	High Rates of Condition	1 (5)	0 (-)	1	1.00
	Decrease Monetary Costs	0 (-)	0 (-)	0	1.00
	Standardise Nurse Practice	15 (68)	14 (70)	29	1.00
Mobility	Past External Audit	2 (11)	1 (5)	3	0.58
	Past Internal Audit	5 (28)	6 (29)	11	1.00
	High Rates of Condition	1 (6)	0(-)	1	1.00
	Decrease Monetary Costs	1 (6)	0 (-)	1	0.46
	Standardise Nurse Practice	11 (61)	17 (81)	28	0.31
Moving & Handling	Past External Audit	7 (31)	4 (17)	11	0.44
	Past Internal Audit	7 (31)	6 (25)	13	0.92
	High Rates of Condition	0 (-)	3 (13)	3	0.23
	Decrease Monetary Costs	0 (-)	0 (-)	0	1.00
	Standardise Nurse Practice	16 (70)	19 (79)	35	0.67
Nutrition	Past External Audit	10 (43)	4 (15)	14	0.06
	Past Internal Audit	7 (30)	4 (15)	11	0.35
	High Rates of Condition	2 (9)	2 (8)	4	1.00
	Decrease Monetary Costs	0 (-)	0 (-)	0	1.00
	Standardise Nurse Practice	13 (57)	19 (73)	32	0.36
Oral Care	Past External Audit	6 (38)	1 (9)	7	0.18
	Past Internal Audit	3 (19)	0(-)	3	0.24
	High Rates of Condition	0 (-)	0 (-)	0	1.00
	Decrease Monetary Costs	0 (-)	0 (-)	0	1.00
	Standardise Nurse Practice	8 (50)	9 (82)	17	0.12
Pain	Past External Audit	3 (21)	0(-)	3	0.09
	Past Internal Audit	6 (43)	1 (6)	7	**0.03**
	High Rates of Condition	0 (-)	1 (6)	1	1.00
	Decrease Monetary Costs	0 (-)	0 (-)	0	1.00
	Standardise Nurse Practice	8 (57)	12 (75)	20	0.44
Pressure Area Care	Past External Audit	6 (26)	3 (11)	9	0.27
	Past Internal Audit	9 (39)	6 (22)	15	0.32
	High Rates of Condition	0 (-)	2 (7)	2	0.49
	Decrease Monetary Costs	0 (-)	0 (-)	0	1.00
	Standardise Nurse Practice	15 (65)	19 (70)	34	0.93
Urinary Incontinence	Past External Audit	6 (26)	2 (8)	8	0.12
	Past Internal Audit	7 (30)	4 (15)	11	0.35
	High Rates of Condition	0 (-)	3 (12)	3	0.23
	Decrease Monetary Costs	1 (4)	3 (12)	4	0.61
	Standardise Nurse Practice	13 957)	19 (73)	32	0.36
Wound Care	Past External Audit	5 (23)	2 (8)	7	0.22
	Past Internal Audit	4 (19)	5 (20)	9	1.00
	High Rates of Condition	0 (-)	1 (4)	1	1.00
	Decrease Monetary Costs	0 (-)	0 (-)	0	1.00
	Standardise Nurse Practice	10 (48)	20 (80)	30	**0.04**

Table 3.9: Reasons for assessing an area of health

Assessed Areas	Reasons	H/Ward (%)	N/Home (%)	Total	Sig.
Behaviour	Prof. Body Recommendation	2 (16)	3 (19)	5	1.00
	Complied by Clinical Peers	3 (25)	6 (38)	9	0.68
	Literature Recommendation	2 (17)	3 (19)	5	1.00
Bowel Care	Prof. Body Recommendation	5 (28)	6 (35)	11	0.90
	Complied by Clinical Peers	5 (28)	8 (47)	13	0.40
	Literature Recommendation	1 (6)	3 (18)	4	0.33
Falls	Prof. Body Recommendation	6 (27)	7 (35)	13	0.83
	Complied by Clinical Peers	7 (32)	8 (40)	15	0.81
	Literature Recommendation	3 (14)	4 (20)	7	0.69
Mobility	Prof. Body Recommendation	5 (28)	7 (330	12	0.47
	Complied by Clinical Peers	5 (28)	9 (43)	14	0.08
	Literature Recommendation	1 (6)	4 (19)	5	**0.04**
Moving & Handling	Prof. Body Recommendation	10 (43)	7 (29)	17	0.47
	Complied by Clinical Peers	5 (22)	10 (42)	15	0.08
	Literature Recommendation	1 (4)	7 (29)	8	**0.04**
Nutrition	Prof. Body Recommendation	8 (35)	10 (38)	18	1.00
	Complied by Clinical Peers	5 (22)	6 (23)	11	1.00
	Literature Recommendation	2 (9)	10 (38)	12	**0.02**
Oral Care	Prof. Body Recommendation	6 (38)	4 (36)	10	1.00
	Complied by Clinical Peers	2 (13)	4 (36)	6	0.18
	Literature Recommendation	3 (19)	1(9)	4	0.62
Pain	Prof. Body Recommendation	4 (29)	3 919)	7	0.67
	Complied by Clinical Peers	3 (21)	5 (31)	8	0.68
	Literature Recommendation	2 (14)	7 (44)	9	0.11
Pressure Area Care	Prof. Body Recommendation	9 (39)	12 (44)	21	0.92
	Complied by Clinical Peers	4 (17)	7 (26)	11	0.70
	Literature Recommendation	3 (13)	8 (30)	11	0.28
Urinary Incontinence	Prof. Body Recommendation	10 (43)	13 (50)	23	0.86
	Complied by Clinical Peers	5 (22)	7 927)	12	0.93
	Literature Recommendation	2 (9)	4 (15)	6	0.67
Wound Care	Prof. Body Recommendation	9 (43)	7 (28)	16	0.45
	Complied by Clinical Peers	4 (19)	13 (52)	17	**0.04**
	Literature Recommendation	2 (10)	5 920)	7	0.15

Table 3.10: Reasons for using a particular assessment tool

3.6 Discussion

The overall aim of the survey was to identify the number and type of assessment tools routinely used by nurses within NHS PHCT hospital wards and independent HB nursing homes. However, the results of the survey also highlighted a number of other issues connected with the use of assessment tools in continuing care units in Scotland.

3.6.1 Continuing Care and Assessment Tool Users

Despite an almost even split in terms of the number of hospital wards and nursing homes, nursing homes tended to have more beds (71%) than hospital wards (29%). This finding is suggested to reflect the shift in continuing care provisions for older people away from NHS establishments towards nursing home care, with the independent sector being the largest provider of in-patient care for older people (Wood & Bain 2001).

Based on the assumption that each of the units that completed the survey work on the basis of three shifts per day, the ratio of qualified nurses to patients in nursing homes is half that of the nurse to patient ratio in hospital wards. The ratio of unqualified nursing staff to patients was calculated as similar in both hospital wards and nursing homes, suggesting that in both environments nursing assistants constitute over 60% of the nursing workforce. It could be suggested that unqualified members of nursing staff are more likely to be the main deliverers of patient care. This suggestion is mirrored in the results of other studies which found that because of an increase in the work load of qualified nurses, nursing assistants were at the forefront of delivering care to older people (Perry et al 2003, Thornley 2000).

Nursing assistants appear to use assessment tools to assess the heath care needs of an older person. Use of assessment tools by nursing assistants was found to occur in a greater number of units (54%) than in those where nurses are the only users of assessment tools (46%). When comparisons were drawn between the types of units in which nursing assistants use assessment tools, use of assessment tools by unqualified members of nursing staff occurred in a similar number of hospital wards and nursing homes (12 and 13 respectively).

While it remains unclear from the survey as to what areas of health nursing assistants are assessing, the frequency with which they assess and their degree of involvement in the actual assessment process, it is concerning that individuals who do not hold a nursing qualification are assessing the needs of patients. Consequently this raises questions as to who exactly is using the information generated from assessment tools and ultimately who is making care decisions.

3.6.2 Training in use of Assessment Tools

The results of the survey suggest that a greater number of both hospital wards and nursing homes provide formal training in the use of assessment tools than by handbook instruction. However, the results do not distinguish whether training in the use of assessment tools has been received by unqualified nursing staff as well as qualified staff. Not all units which formally assess an area of health actually provided training in the use of the tool, with the largest deficit noted to be in the areas of falls, mobility, bowel care, oral care and urinary incontinence. If training in the use of a tool is not

provided it cannot be assumed that all tool users will use the tool correctly and consistently, and that the users of the tool will have the skills and knowledge to do so. The most common reason given by both hospital wards and nursing homes for formally assessing an area of health was to standardise nurse practice. In light of this it may be suggested that if policies are not put in place to guide the practice of nurses, as well as training given in the use of assessment tools, it seems unlikely that nursing practice will be standardised within the area of continuing care for older people.

3.6.3 Areas of Health Assessed and Tools Used

In addition to the 11 areas of health which were pre-listed on the questionnaire, a further 6 areas were identified to be assessed. Of these 17 health areas, pressure area care was found to be the most commonly assessed area within all 50 units, followed by the areas of nutrition, urinary incontinence, moving and handling, wound care and falls, with the remaining areas such as bed rail need and sleep found to be assessed by a lesser number of units. Given the high number of units which assess the aforementioned areas, it could be suggested that there maybe a correlation between the number of units which assess the same area of health and the risk of a need occurring, such as pressure ulcer occurrence and malnutrition. However, this suggestion is based on the assumption that use of assessment tools shall, in some way, identify risk to which action can be taken to reduce the likelihood of such conditions occurring.

The Waterlow scale was found to be the most commonly used assessment tool accounting for 75% (n =30) of the total number of pressure ulcer risk assessment tools

received. Other tools such as the Braden, Norton, Medley and Stratheden were also found to be used to assess pressure ulcer risk but by a fewer number of units.

While a number of assessment tools were used which have been recommended by the literature as well as a professional body, a number of units used assessment tools which had been compiled by clinical peers. When comparisons were drawn between hospital wards and nursing homes, more nursing homes tended to devise assessment tools than hospital wards, particularly for the assessment of wounds ($p = 0.04$). This result is concerning as it seems that a number of assessment tools were being used which were not validated. The content of such tools may not be based on information known to be associated with the area of health being assessed, and consequently may not be of beneficial application to the tool user and ultimately to the patient being assessed. Research is therefore needed which examines if the generation of in house compiled assessment tools occurs in other areas of nursing practice and more importantly, to identify why there is a need to develop tools in this manner.

There also appears to be considerable variation in the frequency with which hospitals and nursing homes assess different areas of health. Areas such as pressure area care, nutrition and oral care are not all assessed when a patient is admitted, even though it is recommended that such areas be assessed at this time (RCN 2003, Sizer 1996). The Royal College of Nursing (2003) for example recommend that pressure ulcer risk assessment should take place within 6 hours of admission and at appropriate intervals depending on a patient's risk score. Similarly, the British Association for Parenteral and Enteral Nutrition recommends that all patients who are at risk of being malnourished

should be assessed on admission and thereafter on a routine basis (Sizer 1996). Assessment of health areas that are applicable to a patient should be assessed on their admission to hospital or nursing homes in order for base line data to be obtained, and for care to be planned. If patients' needs are not identified at this time, it is likely that the care offered thereafter will be less than optimal.

The results also indicate that hospital wards are more likely to assess areas of health on a weekly basis than nursing homes, which were found to commonly assess patients on a monthly basis. This is indicative of contextual differences between the two types of continuing care units, a point not raised before in the literature, but accepted as common practice in both hospital wards and nursing homes. Furthermore, if the care needs of patients are not assessed at appropriate time intervals this too is likely to be detrimental to the quality of care that is given.

3.7 Conclusion

The results of the survey have highlighted that a number of differences and similarities exist between hospital wards and nursing homes in the use of assessment tools even though both types of units provide continuing care for older people. The most noticeable difference between the two types of unit was in the areas of health assessed and in the frequency with which different areas of health are assessed. While contextual differences have been put forth to account for this, further work is needed which explores how the context in which care takes place effects the use of assessment tools.

A number of assessment tools were found to exist for nurse practice, with a number of these devised by clinical peers, thus highlighting that assessment is an important activity within the area of continuing care for older people, as emphasised by policy (NHS QIS 2005, CRAG 2002, Reed & Clarke 1999, Jacques & Ryan 1997). However, irrespective of such emphasis, it appears that unqualified members of nursing staff are involved in the use of assessment tools to assess the health care needs of patients, an issue not previously raised before within the literature. Furthermore, not all users of assessment tools were found to have received formal training in their use, therefore, it cannot be assumed that assessment tools are being utilised correctly.

The findings of this survey should be interpreted with some caution owing to the limitations of the small sample size. Although attempts were made to ensure a representative sample, survey response rates were poor. The information sent in response from the units was also poor as not every unit sent copies of their assessment tools or polices, despite indicating formal assessment of an area and that they had corresponding assessment policies in place.

Since this part of the study found that the Waterlow scale is the most commonly used tool to formally assess pressure ulcer risk in older people in continuing care settings, the remainder of the study examined how continuing care nurses use the Waterlow scale to assess and plan care for an older person.

4. PRESSURE ULCERS AND RISK ASSESSMENT TOOLS

4.1 Introduction

Pressure area care was found to be the most frequently assessed area of health within continuing care, across both contexts. This suggests that pressure ulcers are a frequent occurrence amongst older patients in this type of care environment. pressure ulcer risk assessment tools are used in continuing care settings to assess the likelihood that an older person may develop a pressure ulcer. This chapter provides a review of the literature on pressure ulcers and the assessment tools used to assess an individual's pressure ulcer risk.

4.2 Pressure Ulcers: Why a Concern in Continuing Care?

Pressure ulcer risk assessment in older people in particular is of high importance in order to avoid impairment of skin integrity which if compromised, may diminish quality of life and current health state (Vap & Dunaye 2000). The incidence of pressure ulcers is highest in the older patient population, particularly in frail older people (Horn et al 2002, Margolis et al 2002, Levett & Smith 2000, Martin et al 1995) which would account for why detection of risk and prevention are given high priority in continuing care settings.

Pressure ulcers are a major drain on health care resources, with financial estimates of the cost of pressure ulcer treatment ranging from between £40 million (McSweeny 1994), to £180 million (Smith et al 1991) per year. As well as treatment costs, Tingle

(1997) reported litigation costs of £4500 to £125,000 for individual patients claiming that inadequate care contributed to pressure ulcer development.

Pressure ulcers can cause extensive and unnecessary suffering, and they can also jeopardise the health status of patients as they may cause anaemia, cellulitis and systemic infection, which in turn can contribute to an increased length of in-patient stay, and in extreme cases death can occur (Bliss 1994).

The occurrence as well as the prevention and management of a pressure ulcer is often regarded as a quality of care issue as it is seen as an important indicator of the quality of care a patient receives (Gould et al 2004, Bridel 1993, Dealey 1992). Poor standards of patient care are considered by some to be the main cause of pressure ulcers, and are therefore regarded as preventable (Papanikolaou et al 2003, Anthony et al 2000). In order to provide an optimal pressure ulcer prevention regime, it is considered necessary that an individual's pressure ulcer risk be formally assessed (Papanikolaou et al 2003, NMPDU 2002, Rycroft-Malone & McInness 2000).

Considerable effort has been put into the prevention of pressure ulcers by trying to identify 'at risk' individuals (Papanikolaou et al 2003, Bridel 1993). One such example of this effort is exhibited in the numerous pressure ulcer risk assessment tools which have been developed to assist nurses with accurately identifying patients at risk of developing a pressure ulcer. Therefore consideration is given to the aetiology of pressure ulcers and to the risk factors that are known to contribute to pressure ulcer risk.

4.3 Aetiology and Risk Factors

In order to identify individuals who are at risk of developing pressure ulcers, it is necessary to have an understanding of how they occur, and the factors which may contribute to this.

4.3.1 Aetiology of Pressure Ulcers

Pressure on an area of skin covering a bony prominence is the main cause of a pressure ulcer occurring (Cannon & Cannon 2004, Morison 2001, Braden & Bergstrom 1987). Pressure on the skin is frequently discussed according to its components; intensity and duration (Cannon & Cannon 2004, Macklebust 1997, Bliss 1993, Braden & Bergstrom 1987).

Pressure intensity refers to the level of localised pressure applied to an area of the skin (Mino et al 2001, Guyton 1992). Phillips (1994) suggests that the body's auto regulatory process, which is responsible for maintaining the flow of blood, breaks down when high levels or sustained low levels of pressure are applied to the skin, potentially resulting in total occlusion of a vessel causing it to collapse. If pressure is unrelieved, ischemia and subsequent tissue necrosis will occur (Defloor 1999, Webster 1991). A number of studies have attempted to universalise pressure thresholds with most suggesting that there is high variability between individuals (Phillips 1994, Frantz et al 1993, Bennet & Lee 1985). Others account for such variability by suggesting that the interplay of external forces on the skin such as friction and shearing further complicate matters (Webster 1991, Bader 1990). Friction of the skin is said to cause accelerated wear to the epidermis consequently exposing underlying soft tissue (Webster 1991).

The interplay of friction and pressure is described as the mechanism by which shearing of the skin takes place, as friction inhibits the free movement of the skin, while pressure promotes the downward movement of the skeletal structure (Halfens et al 2000, Defloor 1999).

There is also evidence that there is a strong relationship between pressure and time, with the duration of pressure of greater importance than the degree of pressure applied (Brienza et al 2001). While no universal pressure thresholds have been established, there is some evidence which suggests that increased pressure over a period of more than one hour is considered to be a critical factor (Kosiak 1961, Husain 1953). However, most of these studies have been performed on small mammals and it is therefore unclear if the same time threshold applies to humans. Norton et al (1975) attempted to ascertain whether or not the incidence of pressure ulcers occurring could be reduced if patients were turned frequently. Turning patients involved rolling them from one side onto their backs then onto the opposite side at regular time intervals. Based on 100 female patients, all free of pressure ulcers at the time of their admission into an older persons' unit, Norton et al (1975) found that patients who were turned 2-3 hourly were at low risk of developing a pressure ulcer compared to patients in other groups who were turned between 4 hourly intervals to 4 times a day.

While there can be no doubt as to the effect pressure, friction and shearing have on the skin, it is also thought that a number of factors effect the tolerance of the skin to pressure, increasing the risk of ulcers.

4.3.2 Risk Factors

A number of risk factors that are thought to contribute to the development of pressure ulcers have also been identified. Factors such as elevated sacral skin temperature, low levels of serum albumin, poor nutritional status, low systolic blood pressure and low levels of haemoglobin are also thought to predispose patients to pressure ulcer formation (Sae-Sia et al 2005, Papanikolaou et al 2003, Mino et al 2001, Anthony et al 2000, Theaker et al 2000, Clark & Cullum 1992, Eck et al 1991). Such risk factors are often classified as either intrinsic or extrinsic. Intrinsic factors are those which relate to aspects of a patient's physical state, while extrinsic factors are those which stem from aspects of the patient's environment (Barbenel 1991, Krouskop 1983, Torrance 1983).

Theaker et al (2000) examined the effects of 22 potential risk factors (which were extracted from the literature) in the development of pressure ulcers in critically ill adult patients (Table 4.1). Data were collected from 332 intensive care and high dependency patients who were pressure ulcer free at the start of the study. All 22 risk factors were evaluated for each patient, who were assessed on an 8 hourly basis until discharge or until pressure ulcer occurrence using the Lowthian Scale (Table 4.2). From the total number of patients involved in the study, 23% (n = 77) developed a pressure ulcer during their stay. Analysis of all 22 risk factors indicated that 18 were significantly related to pressure ulcer development. These 18 risk factors were then analysed using multivariate analysis, which indicated that patients who received a norepinephrine infusion for more than 60% of their stay were likely to develop a pressure ulcer. The study also found that patients who had an initial APACHE II score greater than 13, who were anaemic, faecally incontinent and who had a stay of 3 days or more, were at a

greater risk of developing a pressure ulcer than patients who were not associated with these risk factors.

Risk Factor	Study Definition
Age	0 if age < median of 60 years 1 if age > median of 60 years
Anaemia	0 if haemoglobin > median of 10g.dl 1 if haemoglobin < median of 10g.dl
APACHE II score	0 if APACHE < median of 13 1 if APACHE > median of 13
Coagulopathy	Abnormal ranges of platelets and/or prothrombin time and or activated partial thromboplastin time
Diabetic	Insulin-dependent diabetes mellitus or non-insulin dependent diabetes mellitus
Dobutamine	As an infusion (prescribed to increase cardiac output)
Dopamine	As an infusion (prescribed for the treatment of shock and low cardiac output)
Epinephrine	As an infusion (Prescribed to increase cardiac output)
Faecal incontinence	Greater than once every 8 hours
Friction	Frequent repositioning of patient
Length of stay	0 if < median of 3 days 1 if > median of 3 days
Low serum albumin	0 if > median of 15g.dl 1 if < median of 15g.dl
Moisture/perspiration	Visual appearance of moisture on skin
Norepinephrine	As an infusion (prescribed to raise blood pressure)
Oedema	Pitting oedema present in > 1 peripheral site
Pain	Patient acknowledged upon enquiry
Peripheral vascular disease	Known history
Reduced nutritional intake	As identified on a calorific flow chart
Smoker	History of smoking in the past 5 years
Steroids	Has received steroids in last 3 months
Too unstable to turn	Patient too haemodynamically unstable to allow turning
Urinary incontinence	Greater than once every 8 hours

Table 4.1: Definition of Risk Factors in Pressure Ulcer Formation (Theaker et al 2000)

Grade of Pressure Ulcer	Description
Grade I	Discolorations of intact skin, including nonblanchable erythema, blue/purple and black discoloration.
Grade II	Partial thickness skin loss or damage involving the dermis and/or epidermis.
Grade III	Full thickness skin loss involving damage or necrosis of subcutaneous tissue, but not through the underlying fascia and not extending to underlying bone, tendon or joint capsule.
Grade IV	Full thickness skin loss with extensive destruction and tissue necrosis extending to underlying bone, tendon or joint capsule.

Table 4.2: The Lowthian Scale

The APACHE II is an assessment tool which assesses the severity of a patients illness by measuring a number of physiological factors; such as blood pressure, heart rate, respiratory rate, body temperature, serum sodium, potassium and creatinine concentrations, arterial pH, alveolar-arterial oxygen gradient, hematocrit and white cell count (Knaus et al 1985). An APACHE II score of 13 and above was found to be related to an increased risk of pressure ulcer development. This suggests that a number of other singular risk factors not explicitly referred to in Theaker et al's (2000) study might also contribute to an individual's risk of pressure ulcer development. However, the statistical significance of each individual factor listed on the APACHE II with that of pressure ulcer formation does not appear to have been examined within the study.

The results of Theaker et al's (2000) study suggest that pressure ulcer development in critically ill patients is dependent on a multitude of factors. However, the study does not make it clear whether or not the patients condition remained stable during the time in which data were collected, nor is there any reference made as to the type of pressure ulcer preventative measures delivered to patients (if any) during their stay in intensive

care and high dependency. This information would have been useful as it may be assumed that should a patients acuity level increase (i.e. they become more unwell), pressure ulcer risk factors will also potentially increase which may have some bearing on the type of preventative strategies put in place. It is also unclear whether or not any training was given to the data collectors, particularly in the use of the Lowthian Scale and, exactly who the data collectors were (i.e. researcher(s) or nursing staff) as the skill of the individuals involved in data collecting needs to be taken into consideration. While the evaluated risk factors are clearly defined, the descriptors of the Lowthian Scale are not as clearly defined. There has been some controversy as to the clarity offered by pressure ulcer classification tools in classify various grades of pressure ulcers (Nixon et al 2005a, b, Clark & Cullum 1992). To improve reliability in the study, two data collectors could have independently assessed the patient's skin for pressure ulcer. An alternative to this would have been to also provide pictorial descriptors (i.e. coloured photographs) of the various grades of pressure ulcers.

Schoonhoven et al (2002) examined 12 risk factors in adult patients undergoing scheduled surgery of different types lasting more than 4 hours (i.e. cardiac surgery, neurosurgery, head and neck oncology, vascular surgery, orthopaedics, oncology, gastroenterology, plastic surgery and urology) (Table 4.3). Risk factor information was obtained by consulting the patient's medical and nursing notes or by asking the patient directly.

Risk Factors	
Malnutrition	
Preoperative medication:	Anticoagulants
	Beta blockers
	Analgesia
Length of surgery	
Type of surgery	
Posture on the operating table	
Mattress on the operating table:	Air mattress
	Warming mattress
Method of anesthesia	
Number of days in intensive care	
Reason for admission to intensive care	

Table 4.3: Pressure Ulcer Risk Factors (Schoonhoven et al 2002)

208 patients took part in the study, with each having their skin inspected (by 4 members of the research team) the day before surgery and if possible, directly postoperatively then daily for 14 days or until discharge (which ever came first). 23 patients developed 37 pressure ulcers post operatively which were graded by all 4 members of the research team using Haalbomm et al's (1997) pressure ulcer classification tool (Table 4.4).

Grade of Pressure Ulcer	Description
Grade I	Discoloration of intact skin that does not blanch.
Grade II	Skin lesion limited to the epidermis, blistering, abrasion, and/or shallow ulcer without undermining the underlying tissue.
Grade III	Skin lesion of the epidermis and dermis, without affecting the underlying bone, connective tissue, or joints.
Grade IV	Skin lesion of the epidermis and dermis, with affection of the underlying bone, connective tissue, or joints.

Table 4.4: Pressure Ulcer Classification System (Haalboom et al 1997)

Risk factors were analysed for their statistical significance using multiple logistic regression techniques, with the results suggesting that the length of surgery was the only factor associated with the occurrence of pressure ulcers.

The results of Schoonhoven et al's (2002) study suggest that the risk factors studied were not predictors of pressure ulcers. Although not explicitly stated in the study, the risk factors studied were selected on the basis that some evidence already exists to suggest a possible link with pressure ulcer development. One of the limitations of Schoonhoven et al's (2002) study is that the risk factors are undefined, suggesting that there may be some inconsistency with the information collected by the research team in relation to the risk factors studied. Although attempts were made by the research team to enhance the reliability of the observations of pressure ulcers by using trained individuals in the use of Haalboom et al's (1997) pressure ulcer classification tool, it is unclear as to how these observations were performed (i.e. independently or collectively), and how disagreement (if any) between raters was resolved.

The studies reviewed so far have been concerned with identifying risk factors which contribute to pressure ulcer formation in adults who are hospitalised. These studies have included patients from a broad age range, and are not confined to identifying risk factors which are specific to older people. Therefore consideration is given to the limited number of studies which have examined risk factors associated with pressure ulcer developments in older patients (Mino et al 2001, Baumgarten et al 2003).

Mino et al (2001) identified clinical risk factors associated with pressure ulcer development in bedridden Japanese people over 60 years of age. Using a case control trial of 924 participants, who were free of pressure ulcers, had no history of pressure ulcers, were not considered to be critically ill and who had an admission period of longer than 16 weeks, 117 patients were identified to have developed a pressure ulcer during the year long study. All patients had their pressure ulcer risk assessed using the Braden scale at the time the study commenced. In conjunction with this, patients were also assessed for pre-existing pressure ulcer risk factors such as stroke, diabetes, albumin levels, cholesterol, haemoglobin levels and lymphocyte count. Patients who developed a pressure ulcer during the duration of the study had their ulcer graded on a weekly basis. Multiple logistic regression analysis was then carried out on the subscale items of the Braden scale as well as on the pre-existing risk factors, suggesting that of the patients who developed a pressure ulcer, decreased serum albumin levels and impaired ability to self position in bed were significant risk factors. Inability to self position in bed as a risk factor has also been recognised by Garber and Rintala (2003) who examined the development of pressure ulcers in veterans with spinal cord injury.

While Mino et al's (2001) study identified different risk factors significant to pressure ulcer development in older people compared to that identified by Theaker et al (2000) and Schoonhoven et al (2002), one of the limitations of Mino et al's (2001) study is that it is unclear exactly who assessed patients pressure ulcer risk. No reference is made to whether or not the assessors were members of nursing or research staff, and if they were trained in the use of the Braden scale. It is also unclear whether or not patients were assessed by one individual assessor or more. If more than one assessor was

involved this would have contributed to the degree of reliability in using the assessment scale. In addition, no reference is made to the preventative measures put in place (if any) should a patient be identified to be at risk of pressure ulcer development at the beginning of their hospital admission. The use of preventative measures need to be acknowledged as they will have some bearing on whether an individual develops a pressure ulcer or not.

Baumgarten et al's (2003) study sought to identify risk factors for pressure ulcer development among older patients admitted to hospital with hip fractures. Data were collected by reviewing the medical notes of 9400 patients who were over the age of 60 years, free of pressure ulcers at time of admission and who had received surgical repair for a fractured hip from one of 20 hospitals in 4 American states (Table 4.5).

Risk Factors	
Age	
Female	
ADL score (Activities of daily living) (range 0-3)	
Confused	
Cachexia or malnutrition	
History of diabetes	
Charlson comorbidity index (range 0-7)	
Sickness at admission score:	< 3.00
	3.00 – 5.34
	5.35 – 8.49
	8.50>
Race:	Caucasian
	Black
	Other
Waited > 1 hour before transport to hospital	
Day of surgery relative to day of admission:	Same day
	1 day later
	2 days later
	> than 2 days
Surgical anaesthesia lasting 2 hours or more	
Preoperative use of physical restraints	
Preoperative ICU stay	

Table 4.5: Risk Factors for Pressure Ulcer Development in Older patients with Hip Fractures (Baumgarten et al 2003)

Using a standardised form, data were collected by a number of nurses trained in its use from the time of patient admission through to the 30th day post surgery, or to date of discharge if before the 30th day following surgery. Based on the information contained in the notes, two measures were completed; the Charleson Comorbidity Index (used to predict morbidity in hospitalised patients) and the Sickness at Admission scale (used to predict morbidity in hip fracture patients). Data was collected on 9400 patients of whom 824 had a pressure ulcer at time of discharge. Various statistical regression techniques were used to estimate the association between pressure ulcer formation and the information collected. The results of this analysis found that the time between admission and surgery was significant, particularly if patients had to wait 3 or more

days for surgery. The risk of pressure ulcer occurring was also found to be significantly related to having and having surgery which lasted 2 hours or more which required general anaesthesia. An increase in age, impairment in activity of daily living, being black, detection of cachexia or malnutrition on admission was also found to be significant, as were the scores on the two morbidity measures.

The results of Baumgarten et al's (2003) study highlighted a number of risk factors not indicated previously in other studies (Schoohoven et al 2002, Mino et al 2001, Theaker et al 2000). However, Baumgarten et al's (2003) study, unlike that of the other studies mentioned, was based solely on a review of patient's notes and did not involve observation of patient's skin. It is possible that imperfections in the data may have been present such as the under reporting of less severe pressure ulcers and other factors of interest to the study. No information is given by Baumgarten et al (2003) as to whether or not patients' stayed in hospital longer because they had a pressure ulcer.

Evidence from the above studies suggests that a number of diverse factors may contribute to pressure ulcer formation. A common contributory factor to the occurrence of pressure ulcers amongst the studies was length of hospital stay and length of time spent in surgery. As older people in continuing care usually receive care over a prolonged period of time (Wood & Bain 2001, Victor et al 2000), and as length of stay appears to be a consistent risk factor, this would suggest that older people in this care setting are at risk of pressure ulcer formation. This factor combined with the multiple health problems that older people often present with in continuing care, means that it is almost certainly true that older people are at risk of tissue vulnerability.

4.4 Pressure Ulcer Risk Assessment Tools

Pressure ulcer risk assessment tools are criterion referenced measures that are based on a range of risk factors which are believed to be significant to contributing to a patient's risk of developing a pressure ulcer (Gould et al 2004, Waltz et al 1991). Commonly, a numerical score (or weight) is assigned to each of the risk factors and then tallied to obtain an overall 'risk' score, which is then matched to a standard reference measure, indicative of the patient's degree of pressure ulcer risk (Gould et al 2004). In some tools (i.e. the Waterlow scale) a list of recommended care interventions are available, with each recommendation corresponding to the risk score parameters of the tool. As such, the care interventions recommended are risk score specific (Gould et al 2004).

The primary aim of pressure ulcer risk assessment tools is to assist nurses to identify patients who are at risk, as well as determine the degree of risk of developing a pressure ulcer (Shakespeare 1994). There is an assumption that pressure ulcer risk assessment tools assist the nurse with identifying and collecting the 'necessary' information in order to formally assess how likely it is that an individual will develop a pressure ulcer. It is also assumed that this information will provide the foundation for appropriate preventative care (if needed). Implicit in these assumptions, is that all nurses regardless of experience, will be able to collect the same information in a similar manner and make similar judgements and decisions about patient care. It is also assumed that based on the use of an assessment tool, patients with similar needs will receive similar care interventions. Therefore, it is assumed that use of a pressure ulcer risk assessment tool will not only provide the 'evidence' upon which to base practice, but that use of such

tools will in some way result in standardisation of practice. However, this is dependent upon the assessing nurse using the tool in the first place.

In order to identify links between risk factors listed in assessment tools and evidence on pressure ulcer aetiology, three of the most commonly used pressure ulcer risk assessment tools that were identified from the results of the survey are examined in turn.

4.4.1 The Norton Scale

In 1962, the first pressure ulcer risk assessment tool, the Norton scale, was developed in the UK (Norton et al 1975). While Norton et al (1975) report that the scale was primarily developed for research purposes to identify older people at risk of developing a pressure ulcer, depicted by a score of 14 or less, no preliminary work is reported on which the Norton scale was based (Flanagan 1993). As a consequence this raises questions about the basis upon which the tool was developed. However, following the tool's development, Norton et al (1975) tested the scale with older hospitalised patients (n = 250), concluding that measures such as applying soap to patients heels and other topical treatments (i.e. witch hazel and zinc cream) were ineffective in preventing pressure ulcers. Norton et al (1975) did report that frequent turning of a patient (from side to back to side) seemed to reduce the occurrence of pressure ulcers. Despite this, the scale does not list any care interventions which are known to be effective according to the level of risk the patient is identified to be at.

The Norton scale comprises 5 items; physical condition, mental state, activity, mobility and incontinence. Each item contains a performance descriptor which is scored from 1 to 4, with a score of 1 depicting the worst state and a score of 4 depicting the best state. The maximum score a patient can receive is 20, and the minimum score which could be assigned is 5. The higher the score, the lower the risk of a pressure ulcer occurring. The original cut off score given by Norton was 14 but she has since written that a score of 15 or 16 should be treated as at risk because of factors such as medications (Hamilton 1992). Also shown in the tool are 4 risk score parameters with each corresponding to a text description of risk, thus placing the risk score into some form of context.

4.4.2 The Waterlow Scale

The Waterlow scale is based on the Norton scale and is derived from work carried out in the area of surgical, orthopaedic and older peoples care wards involving 650 patients (Waterlow 1985, 1991). As with the Norton scale, Waterlow does not report any preliminary work that was carried out on developing the scale. Based on Waterlow's paper published in 1985, it seems that while nurses on the aforementioned wards had the scale explained to them, the majority of the patient assessments seem to have been carried out by Waterlow herself. As such, inter-rater reliability of the tool does not appear to have been checked and it also appears that there was no follow up of the score in terms of assessing the predictive accuracy of the scale. Listed on the Waterlow scale is a number of recommended care interventions, yet Waterlow does not appear to have reported the effectiveness of such interventions on reducing pressure ulcer risk.

The Waterlow scale consists of 7 items; build/weight for height, visual assessment of the skin, sex/age, continence, mobility, appetite and special risk factors with such factors divided into tissue malnutrition, neurological deficit, major surgery/trauma and medication. The highest and lowest scores for each item vary. For instance the score for continence ranges from 0 to 3, whereas mobility is scored from 0 to 5. There are 3 at risk categories; a score of 10 to 14 is identified to be at risk, 15 to 19 as at high risk and a score of 20 and above as at very high risk. The Waterlow scale gives care recommendations based on the score generated by the tool. Should a pressure ulcer be present it is classified using the Stirling Pressure Sore Severity Scale (Waterlow 1991) and recommendations are given to the treatment of the ulcer.

4.4.3 The Braden Scale

The Braden scale was developed in the United States (Bergstrom et al 1987), and is reported to have been based on a conceptual schema in which current knowledge relating to pressure ulcer formation can be organised. The items on the scale are suggested to be the critical determinants of pressure ulcers; intensity and duration of pressure and tissue tolerance (Braden & Bergstrom 1987). As reported by Braden and Bergstrom (1987), the conceptual scheme upon which the Braden scale is based, rests on a number of hypothetical relationships between pressure ulcer risk factors and pressure ulcer development. Consequently the extent to which the factors listed accord with pressure ulcer development is not known.

The scale comprises of 6 items; sensory perception, moisture, activity, mobility, nutrition, friction and shear. Each item is score between 1 and 4, with each score

accompanied by a descriptor. The lower the score the greater the risk a person is at from developing a pressure ulcer, and the higher the score a person has the less likely they are to develop a pressure ulcer. Generally a cut off score of 16 is used to classify patients at risk or not at risk. At a score of 16, the Braden is reported to have a sensitivity of 0.83 and specificity of 0.64 in predicting pressure ulcer formation (Brown 2004, Bergstrom et al 1987).

4.4.4 A Comparison of Pressure Ulcer Risk Assessment Tools: Norton, Waterlow and Braden

When comparing the items in the three scales, only two; mobility and moisture/incontinence/continence are common amongst the scales. The descriptors assigned to these items, together with their score (or weights) are not consistent across the scales. For example, the descriptors of mobility within the Norton and Braden are similar and are scored using a 4 point scale with full mobility scored as a 4 and no mobility scored as 0. In the Waterlow this item is categorised differently and is scored on a five point scale, with full mobility scored as 0 and no mobility scored as a 5. The items of activity and mobility are both listed as two separate items in the scales of Norton and the Braden, whereas in the Waterlow, these two items appear to be categorised together under the item; mobility. In the Norton and Braden a distinction exists between individuals who are bedfast and chairbound, with both tools allocating a score of 1 for individuals who are bedfast and a score of 2 for those that are chairbound. The Waterlow on the other hand does not make such a distinction and allocates a higher score of 5 to individuals that are chairbound.

The item of moisture/incontinence/continence within the scales also varies in descriptors and scores. In the Norton and the Waterlow, incontinence is scored by both tools on a 4 point scale, however, within the Waterlow incontinence is divided into 2 categories, that is with or without catheterisation. In the Braden scale there is no item of incontinence, rather the focus is on the degree of moisture the skin is exposed to such as perspiration or urine.

Items only found in the Braden and Waterlow scales are those of nutrition/appetite and sensory perception/neurological deficit. Although both scales score the item of nutrition/appetite on a 4 point system, the Braden gives a higher score when an individual has no problems with their dietary intake compared with the Waterlow which allocates a higher score when no food or liquid consumption takes place. Similarly, the item of sensory perception/neurological deficit is scored differently by the Braden compared to the Waterlow, with the Braden allocating a score of 1 to 4, whereas the Waterlow scores this item between 4 and 6.

Mental state and physical condition are only listed on the Norton scale and friction and shear only listed by the Braden scale. Visual assessment of the skin, sex/age and special risks are only listed by the Waterlow scale.

From a review of the Norton, Waterlow and Braden scales it is clear that what constitutes a risk factor for pressure ulcer formation varies from scale to scale. It is also clear that while each of the scales reviewed share a common purpose, which is to identify an individual's risk of developing a pressure ulcer, the risk factors are varied,

suggesting a lack of consensus regarding the relative importance of a number of risk factors. The risk factors contained within each of the scales reviewed do not always appear to have been derived from empirically based research. If one takes the risk factors that are known to contribute to pressure ulcer risk as highlighted previously and compare them with those listed on the pressure ulcer risk assessment tools reviewed. Nutritional status (indicated by serum albumin) and length of time in surgery are the only two empirically devised factors listed on the Braden and the Waterlow scales. It is frequently cited that the risk factors contained within pressure ulcer risk assessment tools reflect expert opinion and have been devised by nurses on the basis of clinical experience (Schoonhoven et al 2004, 2002, Papanikolaou et al 2003). There also seems to be a paucity of adequate statistical testing relating to the scores (or weights) attributed to these individual risk factors (Lyne et al 1999). Given the lack of empirically based research surrounding the development of these tools, it seems that the predictive value of these tools is questionable.

4.5 Reliability and Validity of Pressure Ulcer Risk Assessment Tools

There is evidence to suggest that problems exist with both the reliability and validity of many pressure ulcer risk assessment tools.

4.5.1 Reliability Studies

For an assessment tool to be reliable, the same or similar results should be produced when used by two or more individuals assessing pressure ulcer risk in the same individual (Thompson 2005, Thomas 1997).

Cook et al (1999) assessed the inter-rater reliability of an adapted Waterlow scale. The study was carried out in an older persons unit consisting of a stroke and an acute/medical rehabilitation ward. Using a sample of 28 nurses recruited from these wards (26 of whom were qualified nurses and 2 final year nursing students), who had prior experience in the use of the adapted Waterlow scale and who knew the patient they were assessing, 14 pairs of nurses independently assessed a total of 15 patients each during the 7 days in which data were collected, yielding a total of 210 assessments. The assessment scores of the nurses were recorded and statistically analysed using percentage agreement and correlation techniques with the results revealing a weak to moderate degree of inter-rater reliability. The results of Cook et al's (1999) study suggest that use of pressure ulcer risk assessment tools does not always ensure standardisation of practice, even when nurses have prior knowledge of the patient they are assessing. Based on the result of Cook et al's (1999) study it seems reasonable to suggest that as inter-rater reliability in the use of the adapted Waterlow scale is moderately low, the planning of preventative care for patients with similar needs is also likely to vary amongst nurses.

Halfens et al (2000) examined the reliability of the Braden scale in 11 hospital wards (i.e. surgical, medical, neurological and orthopaedic) in the Netherlands. Over a period of 10 months, 320 patients admitted to these wards met the inclusion criteria (free of pressure ulcers on admission, anticipated to have an in-patient stay of at least 10 days and able to give consent). Following a review of the literature and in depth discussions with experts in the field of tissue viability and with practicing nurses, the Braden scale was extended to include the risk factor of blood circulation. To test inter-rater reliability

of the Braden scale, two nurses in each ward independently assessed the first five patients of that particular ward every fifth day of the patients stay. The results of the study suggest that inter-rater reliability of individual risk factors ranged from good to very good (0.71 – 0.86) according to Cohen's kappa, and that the overall risk score was very good (0.85). The results of Halfens et al's (2000) study clearly indicate that the Braden scale is a reliable tool when used in the above care environments. However, they provide no data on the nurses who took part in the study, such as how long they had been qualified and whether or not they had received training in the use of the tool. Therefore, it cannot be concluded from the results of Halfen et al's (2000) study that use of the Braden scale by nurses with varying nursing experience and knowledge of the tool will necessarily yield similar results of reliability.

Lindgren et al (2002) assessed the reliability of a risk assessment tool known as the risk assessment pressure sore scale (RAPS); devised largely from elements of the Norton scale. Ten pairs of nurses from a variety of clinical areas (such as acute care, medical, surgical, orthopaedic, rehabilitation and elderly care wards) assessed a total of 116 patients. Each pair of nurses assessed between 9 and 15 patients concurrently, but independently of each other once they had nursed patients for at least 2 days. Various measures were used to examine the reliability of the RAPS with results indicating that on average an overall percentage agreement of 70% was achieved between the raters. The results of Lindgren et al's (2002) study suggest that the RAPS scale is a reliable tool in a variety of care settings. However, use of a tool should not be dependent on a nurse having knowledge of the patient being assessed as an assessment of pressure ulcer risk is commonly recommended to take place on admission. As with the above

studies, Lindgren et al (2002) makes no reference as to how nurses were paired together, if random pairing occurred or if pairing accorded with the length of time a nurse had been qualified or clinical grade for example.

4.5.2 Validity Studies

Validity of an assessment tool is the ability of a tool to measure what it is intended to measure (Thompson 2005). Predictive validity, which is a component of validity, is concerned with the ability of an assessment tool to consistently predict true positive (i.e. number of individuals who did develop pressure ulcers compared to how many were identified by a tool to be at risk) and true negative outcomes (i.e. number of individuals who did not develop pressure ulcers compared to how many were identified by a tool as not being at risk) (Maylor & Roberts 1999).

A number of studies exist which have examined the predictive validity of pressure ulcer risk assessment tools (Defloor & Grypdonck 2004, Gould et al 2004, Schoonhoven et al 2002, Gould et al 2001, Halfens et al 2000, Pang & Wong 1998, Chan et al 1997, VandenBosch et al 1996).

Chan et al (1997) aimed to evaluate the effectiveness of the Norton scale with the Waterlow scale in predicting the occurrence of pressure ulcers in patients over the age of 70 years in a Hong Kong hospital. Using 2 hospital wards (one male and one female) for older people, 185 patients were recruited onto the study. For inclusion in the study patients had to be over the age of 70 years, have a hospital stay of more than 24 hours, be pressure ulcer free at the time of their admission and be able to provide consent.

Over a period of 4 weeks, all patients who met the study's criteria were assessed on admission then on a weekly basis using both the Norton and Waterlow scales until discharge or transfer unless death occurred. Pressure ulcers which occurred during data collection were graded for their severity. Chan et al (1997) found that the Norton scale identified 65 out of the total number of patients to be at some degree of risk of developing a pressure ulcer, while the Waterlow scale identified 134 patients to be at some degree of risk (Table 4.6). At the end of the data collecting period, eight patients had developed a pressure ulcer, three of them had a grade one ulcer and five had a grade three ulcer. Chan et al (1997) reports that the Norton scale identified 6 of the 8 patients who developed a pressure ulcer, whereas the Waterlow scale identified 7 patients out of the total number who developed a pressure ulcer. Chan et al (1997) also report that one patient who was assessed not to be not at risk by both scales later went on to develop a pressure ulcer.

Name of Scale	No. of Patients at no risk	No. of patients at low risk	No. of patients at moderate risk	No. of Patients at high risk
Norton	120 (65%)	21 (11%)	19 (10%)	25 (14%)
Waterlow	51 (28%)	59 (32%)	51 (28%)	24 (13%)

Table 4.6: Scores Distribution in Norton and Waterlow Scales (Chan et al 1997)

Based on the raw observations of the results (in Table 4.6) it appears that the Norton scale might be more specific than the Waterlow scale at identifying patients not at risk, but be less sensitive at identifying patients at low and moderate risk compared to the Waterlow scale. However, it appears that both scales are equally as sensitive at

identifying high risk cases. While this may well be the case, Chan et al's (1997) study is not without its limitations. First of all two pressure ulcer risk assessment tools have been used to assess patients therefore it is possible that the results of the first pressure ulcer risk assessment tool may have influenced the results of the second tool. Secondly, Chan et al (1997) make no reference as to whether or not the assessments were carried out by one or more assessors, and whether or not data were collected by nursing or research staff. A third limitation of the study is that it is unclear what interventions were put in place for patients who were identified as being at some degree of risk; "All subjects who were identified as 'at risk' by the Norton score were given the usual treatment as this was the usual practice" (p167). Any pressure relieving intervention put in place may have some effect on whether or not a pressure ulcer develops, meaning the true predictive validity of any pressure ulcer risk assessment is difficult to assess.

In another comparative study, Pang and Wong (1998) examined the predictive validity of the Norton, Braden and Waterlow scales within a rehabilitation hospital. A total sample of 106 patients (of various ages) who were free of pressure ulcers at the time of their admission, and who were expected to stay in hospital for 14 days or more took part in the study. All patients had their skin assessed within 48 hours of their admission then every day for 14 days by three independent assessors with each assessor using one of the three scales. Measures were also taken to ensure inter-rater reliability of the scales by having two assessors simultaneously rate the same patient using a particular scale. In addition to this, the types of pressure relieving measures which each patient received was recorded using a 'Nursing intervention checklist'. Pressure ulcers were classified according to their severity using Torrance's classification of pressure ulcers.

Of the total number of patients who took part in the study, 21 patients developed a pressure ulcer of which 17 were classified as a grade one ulcer and 4 were a grade two. Pang and Wong (1998) report that they found no relationship between the preventative interventions recorded with that of pressure ulcer incidence, but do not offer any comment as to the level of risk a patient was assessed to be at and the type of interventions put in place. They also reported that when the risk scores of each scale were compared, the study found that the Waterlow scale had the highest sensitivity of the scales with a rate of 95 %, but the lowest specificity of the scales with a rate of 44%. The Braden scale had the highest specificity of 62% and relatively high sensitivity rate of 91%. The Norton scale had a sensitivity of 81% and specificity of 59%. Based on these results it seems that the Braden scale is a more reliable tool in terms of predicting who would develop a pressure ulcer and those who would not. However, there is a limit as to how far one can comment on the results of Pang and Wong's (1998) study as the limitations are similar to those highlighted for Chan et al's (1997) study. While each of the studies share a number of methodological flaws, Pang and Wong's (1998) is an advance over Chan et al's (1997) study as the skill of the assessors has been taken into consideration with each of the assessors trained in the use of a particular scale, meaning it is unlikely that the assessors would develop expertise as data collecting progressed.

Gould et al (2004) examined the concurrent validity of the Norton, the Waterlow and the Braden scales. In the first part of a two part study, Gould et al (2004) devised four simulated anonymised patient scenarios (A, B, C and D) (based on the use of real patients) which consisted of a photograph of a patient's sacral area and a brief written

description of the patient such as age, height, weight, medication etc. Using an expert panel of three tissue viability experts each was asked to assess independently each of the scenarios risk of developing a pressure ulcer on a scale of one to ten using a visual analogue scale (VAS). A total of 236 nurses were then each given the four scenarios to assess using each of the three pressure ulcer risk assessment tools (mentioned above) as well as a visual analogue scale to obtain the nurse's own clinical judgement. After the results were analysed using cross-tabulation to determine the amount of times that the assessments fell within the same risk categories (i.e. low risk, medium risk and high risk), Gould et al (2004) found that the nurse's own clinical judgement showed a greater number of exact matches with expert opinion than with any of the three assessment tools used. When the VAS scores were matched against the pressure ulcer risk assessment tools, the Waterlow scale yielded an exact match of 20% of cases, the Braden scale had an exact match of 8.5% and the Norton an exact match of 4.6%. When 'reasonable' matches (within one category of expert opinion) were examined 82.4% of the assessments agreed with the experts, whereas the Waterlow had an agreement rate of 63.4%, the Braden a rate of 35.9% and the Norton a rate of 29.6%. Based on these results, Gould et al (2004) suggest that with the use of clinical judgement alone, nurses were more likely to give a valid estimation of pressure ulcer risk than any of the three tools examined.

A second study was conducted using a different sample of nurses drawn from the same clinical specialisms (general medical wards, general surgical wards, orthopaedics, older peoples care, critical care and community) to determine if the clinical judgement of nurses would match that of expert opinion (sought earlier) or in this instance, the

Waterlow scale. Using scenarios C and D, with C being the most straightforward of the cases and D being the most complicated, 115 nurses were asked to assess both patient scenarios using the Waterlow scale and a VAS. Again using cross tabulation to analyse the data, the results suggest that for patients C and D, the clinical judgement of nurses more closely matched that of the expert panel than the Waterlow scores. Based on the feedback nurses gave relating to each of the patient scenarios, Gould et al (2004) also found that nurses did not perceive either of the patients to be more difficult to assess than the other. However, within the comments nurses gave, there was an expression for more information about the patient relating to weight, height, continence, level of mobility, mental outlook, social circumstances and medication.

While Gould et al's (2004) study is considered to be an advance over Chan et al (1997) and Pang and Wong's (1998) studies as various measures have been taken to ensure control of all potentially influencing variables (i.e. change in patient's condition, different patients being assessed), Gould et al (2004) highlight a number of the study's limitations. For example, employing the use of an expert panel to assume the role of the 'gold standard' could suggest that the members of the panel are representative of all experts in the field of tissue viability. However, there are issues as it is unclear as to how representative the knowledge and experience that these individuals have reflects that of nurses in clinical practice. As each of the experts assessed each of the scenarios independently, it seems unlikely that any of the panel members compromised their own assessment result in order to achieve consensus. Another shortcoming of the study relates to the lack of attention paid to the ecological validity of information sources which nurses would normally use in their clinical practice of pressure ulcer risk

assessment. For example, by asking the nurses to comment on the patient scenarios it seems that not being able to touch the patient's skin, or communicate with the patient as well as the need to 'know' the patient may have had an effect on how they carried out pressure ulcer risk assessment. It is possible that the nurses involved in Gould et al's (2004) study may not have assessed the simulated patients in the same way as they would have done in real practice, owing to the lack of information that would naturally be available to them in clinical practice. Finally, while Gould et al (2004) devised the simulations of real patients, it would have been interesting to know whether or not such patients actually did go on to develop pressure ulcers or not. If such information is known, comparisons between the risk predictions made by nurses (whether using the VAS or a pressure ulcer risk assessment tool) could have been made with the actual patient outcome. This would give some indication as to whether or not the clinical judgement of nurses is as accurate, or better or worse then the outcome predicted by the tool.

4.6 Summary

The review of the literature has highlighted that a number of pressure ulcer risk assessment tools, particularly that of the Norton, the Waterlow and the Braden scales, are not developed from risk factors that are empirically known to contribute to an individual's risk of pressure ulcer formation. The risk factors used by these tools to predict pressure ulcer risk appear to be largely based on anecdotal evidence, calling onto question the accuracy with which they can predict individuals who will develop a pressure ulcer as well as those that will not. A number of studies examine the predictive validity of pressure ulcer risk assessment tools. However, they also have a number of

methodological flaws which limit the extent to which conclusions may be drawn regarding their validity.

4.7 Gaps in the Literature

From a review of the literature, a number of assumptions exist relating to the use of pressure ulcer risk assessment tools for nursing practice and for patient care. Firstly, despite the common assumption that such tools (together with other assessment tools) will bring an element of standardisation to the practice of pressure ulcer risk assessment and planning of treatment to minimise pressure ulcer occurrence, no research appears to exist which actually examines if this is the case. A number of reliability studies have been carried out, with one revealing poor risk agreement between nurses when using the Waterlow scale, while others found high levels of agreement in risk scoring when using the Braden and Norton scales. However, unlike the Waterlow scale, neither the Braden nor the Norton scale contain care interventions for a particular risk score, therefore the consistency to which similar or different care interventions are recommended is unknown. Secondly, it is assumed that use of an assessment tool will assist the nurse to collect the necessary information in order to assess an individual's pressure ulcer risk and plan care accordingly. However, there is a lack of research that examines whether nurses actually structure their assessment of pressure ulcer risk according to the factors listed on the tool or incorporate the use of other information. Thirdly, it is often assumed that the judgements and decisions that nurses make concerning a patients level of pressure ulcer risk and planning of treatment to minimise risk are based on the information produced by the tool. Finally, much of the literature surrounding pressure ulcer risk assessment tools relates to the acute care areas, not the

area of continuing care for older people. It cannot therefore be assumed that these results are extrapolated with the area of continuing care for older people. In light of these assumptions, research is needed which examines how continuing care nurses use pressure ulcer risk assessment tools to assess risk and plan care for an older person.

5. OBSERVATIONS AND INTERVIEWS WITH NURSES PERFORMING PRESSURE ULCER RISK ASSESSMENTS

5.1 Introduction

The results from the survey found that pressure area care was assessed in all of the continuing care units that completed and returned the questionnaire. The Waterlow scale was the most commonly used assessment tool to carry out such an assessment. The focus of this part of the study was to examine how continuing care nurses actually carry out an assessment of pressure ulcer risk for an older person and plan care using the Waterlow scale. From a review of the literature on pressure ulcers, and the tools used to assess the likelihood of their occurrence, it seems that a number of assumptions surround the use of such tools for nurse practice and for patient care. One of the assumptions made about the use of pressure ulcer risk assessment tools is that they enable the nurse to collect the information that is needed in order to assess risk and plan care in a structured and systematic manner. It is also assumed that such tools contain the necessary information which will assist the nurse with determining what care a patient requires based on the overall risk score generated by the tool. Therefore, two further aims for this part of the study were to identify what sources of information nurses use when assessing pressure ulcer risk and planning care, and to examine the role of the Waterlow scale in the assessment and care planning process.

5.2 Research Design

In order to address the above aims, a case study research design was used. Case study research is commonly cited as an in depth investigation that is conducted within the

context in which the phenomenon of interest occurs (McDonnell et al 2000, Yin 1994, Meiher & Pugh 1986). To that end, case study research is concerned with the interplay of variables present in real situations in order to provide as complete an understanding of the investigated phenomenon as possible (Bergen & While 2000, Pegram 1999). Three types of case studies have been identified, namely descriptive, explanatory and exploratory cases (Yin 1994). Descriptive cases aim to present a detailed description of the phenomenon within its context, explanatory cases aim to present data relating to cause and effect by explaining which causes produce which effects, and exploratory cases seek to generate a number of hypotheses (Yin 1994, Hamel et al 1993). In this part of the study, case studies comprising all three elements were undertaken in the context of continuing care nurse practice, involving older patients who were scheduled to receive formal assessment of their pressure ulcer risk status. This approach was considered appropriate as the pressure ulcer risk assessment activity of the nurses could be explored and explained, the information sources used could be identified and described, and the role of the Waterlow scale in the assessment process could also be explored and explained.

5.2.1 Methods of Data Collection

Data were collected by means of unstructured observations and semi-structured interviews. The use of multiple data collection methods is common in case study research in order to gain perspective totality which may otherwise be missed if single methods are used (Vallis & Tierney 1999, Gray 1998).

5.2.1.1 Unstructured Observations

Unstructured observations were used to observe how nurses carried out pressure ulcer risk assessments and to identify the information sources used. This method of data collection allowed for the observation of how nurses actually assessed a patient's pressure ulcer risk and planned care from a first hand perspective (Sarantakos 1998). As a consequence, reliance was not placed on the verbal reports of nurses had they been asked to recall the assessment event (Couchman & Dawson 1995, Pretzlik 1994). In addition to this, the detail that was sought may have been hampered by nurses inaccurately recalling the event as they may have inadvertently recalled similar past events, thus potentially biasing the data (Mulhall 2003).

Advantages of using unstructured observation include unlimited insight into the interactions of individuals with others and their environment, thus displaying the whole 'picture' and capturing context (assuming that disruption to the 'normality' of the investigated phenomenon is kept to a minimum) which would otherwise not have been gained had structured or semi-structured observation been employed (Mulhall 2003, Robson 2002, Turnock & Gibson 2001). It was also considered that other observation techniques involving a greater degree of researcher involvement in task observation might have interfered with the usual assessment practice of individual nurses therefore, the researcher adopted a non-participant observation approach (Mulhall 2003, Yin 1994).

5.2.1.2 Semi-Structured Interviews

Immediately following the observations, semi-structured interviews were carried out in order to explore the role of the Waterlow scale in the assessment process. An interview is described as a 'conversation between one or more interviewers and interviewees with the purpose of eliciting certain information' (Robson 2002, p295). There are three types of interview; structured, semi-structured and unstructured, with each varying in function and characteristic, with their own associated benefits and drawbacks (Robson 2002).

Given that the actual role of the Waterlow scale in the assessment process was unobservable, face to face semi-structured interviews with the nurses were considered appropriate. As the interviews were based on the results of the observations, this permitted a degree of structure to the interview format. Face to face semi-structured interviewing also facilitated question exploration and flexibility since the researcher had no way of knowing in advance how nurses would actually carry out pressure ulcer risk assessment, and the information sources they would use owing to the individual circumstances of each patient (Bowling 1997, Wilde 1992, Waltz et al 1991). In light of this, the researcher felt that the use of structured interviews or a questionnaire style of self report would not have proved a suitable data collection method.

5.3 Ensuring Methodological Rigour

Rigour in quantitative research commonly refers to the concepts of reliability and validity, where reliability is concerned with the extent to which a method is replicable and validity is concerned with the extent to which a method measures what it is

intended to measure (Polgar & Thomas 2000). It is suggested by Guba and Lincoln (1989) that such concepts are of little relevance in qualitative research as reliability of qualitative observations and interviews cannot be replicated due to the uniqueness and contextual factors surrounding each of the observations and interviews. Instead the concepts of accuracy and credibility are considered to be more appropriate in qualitative research, where the overall trustworthiness of a study is important (Koch & Harrington 1998). Sandelowski (1995, 1993) and Guba and Lincoln (1989) suggest that a study can be claimed to be trustworthy when an accurate description of data is presented to participants from which they can recognise their experience. It is also said that credibility can be gained when conclusions are drawn from the study that are grounded in the data by means of returning to the original transcripts (Sandelowski 1993, Guba & Lincoln 1989).

As data were gathered using unstructured observations and semi-structured interviews, with the former providing the foundation to the latter, the observations were validated by the nurses as they were able to recognise through the researchers line of questioning, how they had assessed a patient's pressure ulcer risk and planned care, and the information sources they had used to do so. In addition to this, this form of validation also minimised the occurrence of observer bias (Mulhall 2003, Turnock & Gibson 2001). As nurses were interviewed once after each observation session, a form of validation was not available for interview data. However, all nurses were informed that they could obtain a copy of completed interview transcripts for comment if they so wished.

5.4 Sample

On the basis of the responses to the questionnaire in the first part of this study, 2 health board regions in Scotland were selected which contained the greatest number of eligible PHCT hospital wards and HB nursing homes willing to take part in further research. A purposive sample of 4 continuing care units, involving 1 hospital ward and 1 nursing home from each of the 2 regions were contacted and asked to reaffirm, in writing, their willingness to participate in another part of this study (Appendix 5.1).

Purposive sampling was used to recruit 2 nurses from each of the 4 units, giving a total of 8 nurses (Table 5.1). While the sample size was small for this qualitative part of the study, the researcher acknowledges the limitations of any claim to be representative, owing to the possibility of sample bias (Gerrish & Lacey 2006). However, because of the volume of rich data that was anticipated, this sample size was deemed to be sufficient for exploring the phenomenon under investigation (Robson 2002). According to Robson (2002), there are no rules about calculating sample size in qualitative research rather, the sample size is determined according to the aims of the research. The sample size was pre-determined prior to data collection. No restrictions were put on the registration specialty of the nurses however, it was considered essential that participating nurses had previously used the original version of the Waterlow scale in order to ensure nurse familiarity with the assessment tool. Agency, bank and student nurses were excluded due to the temporary nature of their practice.

Purposive sampling was also used to select patients from the participating units (Table 5.1). As before, an appreciation of the limitations of using a small sized sample is

acknowledged here (Gerrish & Lacey 2006). Owing to the researcher's experience of working in the continuing care setting, she acknowledges the 'typicality' of patients health states and as such, recognises the potential for sample bias as patients with 'non-typical' health states were unlikely to be selected because of the sampling inclusion criteria set for patients. The number of patients involved in the study was predetermined prior to data collection as each participating nurse was asked to assess 2 different patients. Thus a total of 16 patients participated in this part of the study. Both male and female patients who had a continuing health care need were eligible for participation, providing that they had no pressure ulcers at the time of data collection and were identified by a doctor or a nurse as able to give informed and competent consent.

Participant Criteria	Continuing Care Unit	Nurse Eligibility	Patient Eligibility
Inclusion Criteria	To use the original version of the Waterlow Scale To have indicated in writing a willingness to participate in further studies.	To be a registered nurse (registration speciality not applicable) To have used the original version of the Waterlow Scale	Male and female patients To have a continuing health care need (specific need and level of need not applicable) To be absent of pressure ulcers at the time of the study To be identified by a doctor/nurse as being able to give and express informed and competent consent
Exclusion Criteria	Units which did not complete and return the survey questionnaire Units which use the modified version of the Waterlow Scale	Agency, Trust bank and students nurses	Patients who have a pressure ulcer at the time of the study Patients who do not have a recognised continuing health care need. Patients who were identified by a doctor/nurse as being unable to give or express informed and competent consent.

Table 5.1: Sample inclusion and exclusion criteria for participants in part two

5.5 Ethics

Ethical approval was sought and gained from the University of Stirling Nursing and Midwifery Department's Research Ethics Committee in April 2003 (Appendix 5.2). Subsequent ethical approval was then sought and obtained from both the relevant local research ethics committees, together with appropriate hospital trust management approval (Appendices 5.3, 5.4, 5.5, 5.6).

5.5.1 Informed Consent

All nurses who expressed an interest in this stage of the study were given an information sheet (Appendix 5.7). All nurses who indicated their willingness to take part was given the opportunity to ask questions prior to signing a consent form (Appendix 5.8). In accordance with the patients' inclusion criteria, each participating nurse was asked to identify 2 patients who would be able to give informed and competent consent, ensuring that no patient would be assessed twice. The study was verbally explained to the identified patients, who were then given 2 information sheets (with one containing information about the study while the other contained general information about pressure ulcers) (Appendix 5.9 and 5.10). Each patient who agreed to participate was given the opportunity to ask questions prior to signing a consent form (Appendix 5.11). Both nurses and patients were assured by the researcher that anonymity, privacy and confidentiality of collected information would be maintained at all times (Downie & Calman 1994).

5.5.2 Respect for Patients Dignity

As the focus of the assessment was for the nurse to determine a patient's pressure ulcer risk, it was recognised by the researcher that a nurse may wish to examine areas of a patient's body which are considered to be vulnerable to pressure, some of which might be intimate areas, such as the sacral area. When the assessment did involve a patient being in a state of undress, a privacy screen (i.e. bed curtain) was placed between the researcher and the patient to maintain the patients' dignity whilst enabling the researcher to hear the verbal exchange of information between the nurse and the patient.

5.6 Procedure

5.6.1 Negotiating Access

As all 4 units had reaffirmed their willingness to participate in further research relating to this study, the researcher contacted the clinical managers of each unit by telephone in order to discuss this part of the study further.

5.6.2 Participant Recruitment

Following discussion, an information day was scheduled for each of the units where all the units' nurses were invited to attend. All nurses who attended the information day were verbally given information about the study as well as an information sheet. A total of 2 nurses from each unit volunteered their involvement in this part of the study at the time the information days were held.

Once nurse participants were recruited, the appropriate hospital medical Consultants and General Practitioners affiliated to the nursing homes were contacted by letter (Appendix 5.12), and were asked to identify patients under their care who they considered to be eligible to take part in the study, based on the inclusion criteria given to them. All Consultants and General Practitioners informed the researcher (via a series of telephone calls) that they were content for participating nurses to identify suitable patients on their behalf. Once patients were identified and the study was explained to them, patients who expressed an interest in the study were given a period of 2 days in which to decide whether or not they would be willing to take part, after which the researcher contacted the unit to find out what the result of their decision had been. All patients who were initially approached by the researcher, agreed to take part in the study either at the time the study was explained to them, or following the 2 day decision period.

5.6.3 Data Collecting Process

Following nurse and patient recruitment, a mutually convenient date and time was arranged between the participants and the researcher to conduct the study, with efforts made to conduct data collection on, or as close as possible, to the date that patients were scheduled to have their pressure ulcer risk formally assessed. Data were collected over a 2 month period during August and September 2003.

Prior to commencing data collection, each nurse was informed that they should assess the patient as they normally would do. A small portable hand held audio recorder was used by the researcher to record verbally all observations, allowing for an accurate and

rapid description of the nurses actions. Use of a small audio recorder also meant that the recording of information was carried out in a discrete manner. Immediately following each observation, the researcher made written notes based on what had been observed, which provided the foundation to the interviews which were subsequently carried out with each nurse. All interviews were audio-taped using C120 minute tapes to reduce the likelihood of having to turn over the tape, minimising interruption to the 'flow' of the interviews. Demographic data about the nurse and the assessed patient were collected at the end of each interview.

5.7 Data Analysis

Once data were collected, all audiotapes were given to a transcriber to transcribe each tape in verbatim form. In order to ensure transcription accuracy, the researcher randomly selected one tape from each pair of audiotapes (a pair being 1 observation and 1 corresponding interview tape) to listen to whilst simultaneously reading the relevant transcript. In total, 16 out of 32 transcripts were checked from which no transcription inaccuracies were found.

All observation and interview transcripts were analysed by hand as two separate data sets using content analysis. Content analysis is described as a process whereby textual data are objectively and systematically analysed for their content leading to the construction of inferences (Krippendorff 1980). According to Weber (1985), there are no universal rules about how to perform content analysis, however, central to the analytical process of data content is the reduction of data, where the text is classified into few categories which are representative of the content.

5.7.1 Analysis of Observation Data

The purpose of the analysis of the observation data was to identify how nurses carried out pressure ulcer risk assessment and to identify the sources of information they used to do so. Following multiple readings of the observation transcripts, the coding framework used to content analyse the observation data was adapted from the coding scheme used by Lamond et al (1996), which was developed to identify the sources and types of information nurses in acute medical and surgical wards used to make their assessment judgements. The coding framework was then further developed to identify whether or not the assessment took place independent of the patient, to identify areas of a patient's body that had been examined, and to identify whether patients' care plans were altered following the assessment. Once the coding framework had been constructed for content analysis, all the observation transcripts were re-read and coded using the categories shown below in Table 5.2, by means of attaching the appropriate code to the text.

First Level Categories	Second Level Categories	Category Definition
A: Written	A1: Nursing Notes	Information gained from reading patient's nursing notes
	A2: Medical Notes	Information gained from reading patient's medical notes
B: Observation	B1: Examination of Pressure Areas	Information gained from looking and/or touching patient's pressure areas
	B2: Examination of Non-pressure Areas	Information gained from looking and/or touching areas of the patient's body which are not pressure areas
C: Verbal	C1: Patient	Information gained from talking with the patient
D: Patient Assessment	D1: Patient Present	Patient was present for the assessment
	D2: Patient Absent	Patient was absent for the assessment
E: Assessment Outcome	E1: Care Plan Changed	Patient's care plan changed
	E2: Care Plan Unchanged	No change made to patient's care plan

Table 5.2: Coding framework for the content analysis of observation data

5.7.1.2 Reliability and Validity

Inter-rater reliability of the coding framework was assessed using 2 raters who, after each receiving half (n = 8) of the total number of observation transcripts, independently coded their content using the devised coding framework. It was necessary to test the reliability of the coding framework in order to determine the consistency of its application (Downe-Wamboldt 1992, Bakeman & Gottman 1986). Reliability scores of the coding framework were calculated using Cohen's Kappa. In kappa's measure of agreement, a value of one indicates perfect agreement and a value of zero indicates chance agreement (Peat et al 2002). In general, a kappa above 0.5 indicates moderate agreement, above 0.7 indicates good agreement, and above 0.8 indicates very good

agreement (Peat 2002, Bland 2000). A kappa value of 0.758 was obtained for the reliability of the coding framework, indicating 'good agreement' between the raters.

Content validity of the coding framework was assessed by 6 nurse colleagues, who were given the framework together with category definitions (Cavanagh 1997). They were informed of the aims of the observations and were asked if they thought that the categories were representative of how they would carry out pressure ulcer risk assessment, and if the information sources listed were those that they would consider using. Based on the content of the coding framework, all the nurses agreed that the categories were representative of how they would carry out an assessment of a patient's pressure ulcer risk, and of the information sources they would consider using.

5.7.2 Analysis of Interview Data

All interview transcripts were also subjected to content analysis. Analysis of the interview data content involved reading, and re-reading each of the transcripts with the following questions in mind, 'How do nurses assess pressure ulcer risk?' and, 'What role does the Waterlow scale appear to have within the assessment and care planning process?' After multiple readings of the interview transcripts, a line by line examination of the text was performed to grasp statements and phrases which provided answers to the analytical questions (Sandelowski 1995). All pertinent statements and phrases were extracted from each transcript and were organised into clusters of text which appeared to share the same content (Berg 2001). Each cluster of text was then critically analysed in order to explain the data to its fullest extent (Sandelowski 1995). Original copies of the transcripts were kept to ensure that all statements and phrases were being analysed

in context. Table 5.3 illustrates the coding framework that was used to analyse the interview transcripts and Appendix 5.13 provides a worked example of the allocated coding of data.

5.7.2.1 Reliability and Validity

As before, the reliability of the coding framework was calculated for half (n = 8) of the interview transcripts using a measure of inter-rater reliability. Independent coding amongst the raters yielded a kappa value of 0.98, indicating a high level of agreement.

Content validity of the coding framework for the interviews was assessed using an identical process to that used to validate the coding framework for the observation data. The same 6 nurses were approached and informed of the aims of the interviews. All were given a copy of the interview coding framework and were asked to comment on whether or not they considered the categories to be representative of how nurses carry out pressure ulcer risk assessments and the role that the Waterlow scale appears to have in the assessment and care planning process. All nurses agreed that the categories reflected the purpose of the interview analysis.

First Level Categories	Second Level Categories	Third Level Categories	Category Definition
A: Information Gathering	A1: Problem Framing	A1.1: Matching the Score to the Patient	Refers to any data which suggest that information has been gathered from a suitable source in order to obtain an impression of the patient's pressure ulcer risk status.
		A1.2: Tool Ambiguity	Refers to any data which suggest that another information source has been used to clarify terms of condition or risk classification as defined by the Waterlow scale.
	A2: Knowledge of the Patient	A2.1: Specific Risk Factors	Refers to any data which suggest that a nurse has used specific risk factors to guide the assessment.
		A2.2: Accounts for Risk Score	Refers to any data which suggest that a nurse is able to explain why there is a change or no change in risk score.
B: Continuous Assessment	B1: Informal Assessment	B1.1: Activity	Refers to any data which suggest that a patient's pressure ulcer risk is informally assessed on a regular basis during a care activity.
C: Wider Assessment Process	C1: Other Assessments		Refers to any data which suggest that other assessments have taken place in addition to pressure ulcer risk assessment.

Table 5.3: Coding framework for the content analysis of interview data

5.8 Results

5.8.1 Demographic Results

Demographic data were collected from each of the study's participants and is presented in Tables 5.4 and 5.5. As shown in Table 5.4, the mean age of the nurses who took part was 39 years (SD 7), with hospital nurses found to be slightly younger (mean 37, SD 5) than nursing home nurses (mean 41, SD 8.4). Seven participants were female and one nurse was male. All nurses were at either grade E or F on the clinical scale. The mean length of time nurses had been qualified was 15 years (SD 8), with nursing home nurses

found to be qualified for slightly longer (mean 17, SD 10) compared to hospital nurses (mean 14, SD 6). The time in which hospital (mean 5, SD 4.3) and nursing home nurses (mean 6, SD 8) had worked in their current continuing care unit (CCU) was found to be of a similar duration, however, hospital nurses were found to have worked in the area of continuing care for older people slightly longer (mean 9, SD 2) than nursing home nurses (mean 6, SD 8). Out of the total number of nurses in this study, 63% (n = 5) held a nursing diploma, whilst the remaining 37% (n = 3) had a bachelors degree in nursing.

Nurse Characteristics	Hospital Ward	Nursing Home	Sample Total
Age (Years)			
Mean (SD)	37 (5)	41 (8.4)	39 (7)
Gender			
Male	1	0	1
Female	3	4	7
Clinical Grade			
E Grade	2	2	4
F Grade	2	2	4
Time Qualified (Years)			
Mean (SD)	14 (6)	17 (10)	15 (8)
Time in Current CCU (Years)			
Mean (SD)	5 (4.3)	6 (8)	6 (6.4)
Total Time in CC (Years)			
Mean (SD)	9 (2)	6 (8)	16 (6)
Qualifications			
Diploma	1	4	5
Bachelor Degree	3	0	3

Table 5.4: Characteristics of nurse participants according to unit type

The mean age of patients who took part in this stage of the study was 76 years (SD 9), with hospital ward patients (mean 79, SD 4) found to be marginally older than nursing home patients (mean 74, SD 12). Females accounted for 69% (n = 11) of the total

number of patients, however, the number of male and female patients across the units were similar. Unsurprisingly, hospital ward patients were found to have a shorter in-patient stay than nursing home patients, who had a remarkably longer unit stay. Stroke, diabetes, recurrent falls and inability to cope at home were the most common reasons for these patients being admitted into continuing care.

Patient Characteristics	Hospital Ward	Nursing Home	Sample Total
Age (Years)			
Mean (SD)	79 (4)	74 (12)	76 (9)
Gender			
Male	3	2	5
Female	5	6	11
Length of Unit Stay (Years and months)			
Mean	12 months	5 years	3 years 2 months
(SD)	(13)	(5)	(9)
Chief Health Complaint			
Bony Metastasis	1	0	1
Multiple Sclerosis	1	0	1
Parkinson's Disease	1	0	1
Schizophrenia	0	1	1
Self Mutilation	0	1	1
Stroke	4	2	6
Traumatic Brain Injury	0	1	1
Secondary Health Complaints (Some had more than one complaint)			
Alcoholism	2	1	3
Breast Cancer	0	1	1
Diabetes	5	2	7
Mild Dementia	2	2	4
Inability to cope at home	2	3	5
Manic Depression	0	1	1
Quadriplegic	0	1	1
Recurrent Falls	4	2	6

Table 5.5: Characteristics of patients according to unit type

5.8.2 Observation Results

The amount of time spent observing the nurses formally assessing a patient's pressure ulcer risk varied considerably, with the mean observation time being 4.5 minutes (range 1 – 15 minutes). Table 5.6 summarises the observation times according to each unit. From the total number of observations (n = 16), 6 nurses (3 hospital and 3 nursing home nurses) were observed to have assessed pressure ulcer risk separate from the patients on 6 occasions.

Unit Type	No. of Observation Sessions	Length of Each Observation Session (Minutes) (Range)	Total Length of Observation (Minutes)
Hospital Ward 1	4	6.5 (4 - 15)	32
Hospital Ward 2	4	2 (3 - 6)	17
Nursing Home 1	4	4 (1 - 7)	16
Nursing Home 2	4	6 (3 - 8)	23
Sample Total	**16**	**4.5 minutes**	**1 hour 28 minutes**

Table 5.6: Observation times according to unit type

The total frequency with which nurses were observed to use different sources and types of information is given in Table 5.7. Collectively, nurses appeared to use 3 types of information; written (information obtained from the patients notes), verbal (information obtained from talking with the patient) and observation (of the patient) in order to assess a patients pressure ulcer risk and plan care. Written information was the most frequently used information source, accounting for 61% (n = 76) of the total number of sources used. The Waterlow scale was the most frequently used type of written information, followed by the patients BMI (Body Mass Index) chart, pressure area care

plan, weight chart, medication chart and nutrition care plan. In comparison, information gained from talking with patients and observing them appeared to be used less frequently (21% and 18% respectively). The most common pressure area sites which nurses were observed to examine were a patient's heels (n = 4), elbows (n = 3) and scapula (n = 3) with ankles and the back of the head assessed the least (n = 2, n = 1 respectively). Nurses were also observed to have examined areas of a patient's body which are not considered to be at risk from pressure ulcers, such as a patient's hands, knees, forearms, wrists and neck, with observation of such areas accounting for 8% (n = 10) of the total information sources used.

Nursing home nurses used sources of information to a greater degree of frequency than hospital nurses (67 and 57 respectively). Both hospital and nursing home nurses used written and verbal information to a similar degree of frequency. However, nursing home nurses appeared to use observation more frequently as a source of information than hospital nurses.

Information Source and Type	Hospital Ward (%)	Nursing Home (%)	Sample Total (%)
Written	**38 (66.6)**	**38 (56.7)**	**76 (61.2)**
Waterlow Scale	16	16	32
BMI Chart	5	7	12
Pressure Area Care Plan	4	5	9
Weight Chart	4	4	8
Medication Chart	3	3	6
Nutrition Care Plan	3	3	6
Wound Chart	1	0	1
Mobility Care Plan	1	0	1
Medical Notes	1	0	1
Verbal	**13 (22.8)**	**13 (19.4)**	**26 (20.9)**
Patient	13	13	26
Observation	**6 (10.5)**	**16 (23.8)**	**22 (17.7)**
Examination of Pressure Areas	**3 (5.26)**	**10 (14.9)**	**13 (10.4)**
Heels	2	2	4
Elbows	1	2	3
Ankles	0	2	2
Scapula	0	3	3
Head	0	1	1
Examination of Non-Pressure Areas	**3 (5.26)**	**6 (8.95)**	**10 (8.06)**
Hands	2	2	5
Knees	0	2	2
Forearms	1	0	1
Wrists	0	1	1
Neck	0	1	1
Total	**57 (100)**	**67 (100)**	**124 (100)**

Table 5.7: Frequency of information used according to unit type nurse

As well as recording the source and type of information used, the patterns with which sources of information were used were also recorded for each assessment. A total of 5 patterns were identified, which were found to differ according to whether an assessment was performed separate from the patient or not (Figure 5.1). If an assessment was carried out separate from the patient, then the nurses only used written sources of information. When a patient was present at the assessment, the nurses used a number of patterns.

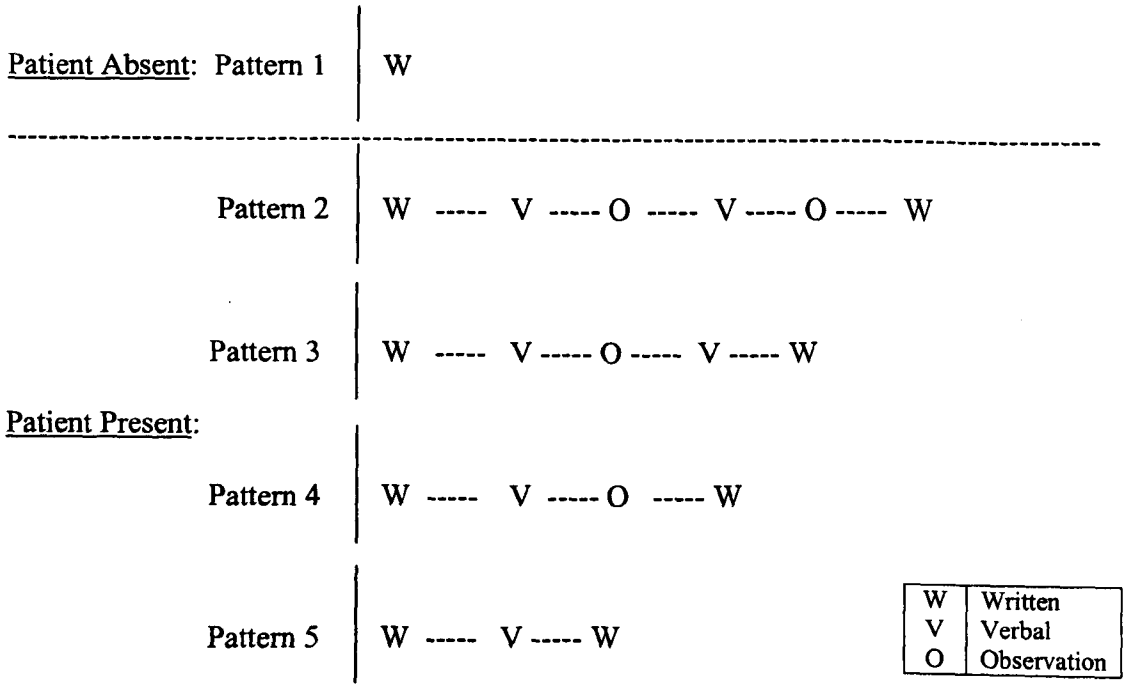

Figure 5.1: Patterns of information source use

The frequencies for the different patterns used are given in Table 5.8. Patterns 1 and 5 were the most frequently used patterns of information use, followed by pattern 4. Hospital nurses and nursing home nurses used pattern 1 to an identical frequency, with the frequency of the remaining patterns differing according to unit type nurse.

Patterns of Information Use	Hospital Ward Nurses	Nursing Home Nurses	Sample Total
Pattern 1	3	3	6
Pattern 2	0	1	1
Pattern 3	1	0	1
Pattern 4	2	1	3
Pattern 5	2	3	5
Total	**8**	**8**	**16**

Table 5.8: Frequency of information patterns used according to unit type nurse

The total frequency with which information was used by hospital ward and nursing home nurses for both patients who were present or absent at the assessment can be seen in Table 5.9. Nurses used written information to a greater degree of frequency when a patient was present at the assessment than when they were not.

Information Source	Hospital Ward		Nursing Home		Sample Total (%)
	Patient Absent (%)	Patient Present (%)	Patient Absent (%)	Patient Present (%)	
Written	15 (100)	23 (54.7)	14 (100)	24 (45.2)	76 (61.2)
Verbal	0 (0)	13 (30.9)	0 (0)	13 (24.5)	26 (20.9)
Observation	0 (0)	6 (14.2)	0 (0)	16 (30.1)	22 (17.7)
Total	**15 (12.0)**	**42 (33.8)**	**14 (11.2)**	**53 (42.7)**	**124 (100)**

Table 5.9: Frequency of information source used according to unit type nurse and patient absent or present at the assessment

During the observation sessions, nurses often verbalised a patient's Waterlow scores, stating their past and current scores. According to the Waterlow scale's pressure ulcer risk classification system, a score of 10 + indicates that a patient is 'at risk' of

developing a pressure ulcer, whereas a score of 15 + indicates 'high risk' and a score of 20 + indicates 'very high risk'. All 8 hospital ward patients were assessed as being at some level of risk, whereas 2 nursing home patients (patients 2 and 5) were assessed as not being at risk of developing a pressure ulcer (Table 5.10). The risk scores of the remaining patients, with the exception of one hospital patient (patient 5) whose risk score had decreased since a previous assessment, either remained stable or had increased. Nurses, however, were observed not to alter a patient's plan of care irrespective of whether there had been a change in a patients risk score or risk category.

Unit Type	Patient No.	Past Waterlow Score	Current Waterlow Score	Score Difference	Change in Risk Category	Care Plan Altered Yes / No
Hospital Ward	1	14	18	+4	Yes	No
	2	27	28	+1	No	No
	3	16	21	+5	Yes	No
	4	15	15	0	No	No
	5	24	16	-8	Yes	No
	6	24	24	0	No	No
	7	10	11	+1	No	No
	8	18	18	0	No	No
Nursing Home	1	14	14	0	No	No
	2	9	9	0	No	No
	3	11	13	+2	No	No
	4	12	15	+3	Yes	No
	5	7	7	0	No	No
	6	21	21	0	No	No
	7	14	16	+2	Yes	No
	8	13	13	0	No	No

Table 5.10: Patients' past and current Waterlow scores according to unit type

5.8.3 Interview Results

The total amount of time spent interviewing was 3 hours and 44 minutes, with a mean time of 10 minutes (range 12 - 40 minutes).

Content analysis of the interview transcripts revealed 3 main categories (information gathering, continuous assessment and the wider assessment process) and 9 sub categories. The findings are presented in terms of the categories used to content analyse the interviews, with the use of direct quotes to illustrate the meaning of these categories.

5.8.3.1 Information Gathering

The gathering of information was found to have a central role in how nurses carried out pressure ulcer risk assessment. From this category; problem framing and knowledge of the patient emerged. The texts related to each of these 2 categories could be further understood in 4 sub categories; matching the score to the patient, tool ambiguity, use of specific risk factors and accounting for risk score.

5.8.3.1.1 Problem Framing

Problem framing refers to any information that was gathered which was used to guide the assessment and care planning task. Analysis of the texts relating to information gathering found that nurses sought information from their external environment, thus providing them with a problem framework to the assessment, irrespective of whether the assessment subsequently took place inclusive of the patient or not. Problem framing of a patient's situation was usually characterised by a global collection of information, with the use of written information found to be particularly prevalent, followed by the use of verbal exchange of information and observation. The nurses stated that the single most important piece of information that they used was the patient's past Waterlow score(s). Analysis of the data also found that a patient's past Waterlow score, together

with the collection of other written information lead to the generation of a risk hypothesis. The generation of a risk hypothesis seemed to guide the collection of further information, with the information gathered found to be specific to the hypothesis. Following completion of the Waterlow scale at the end of the assessment, nurses were found to have evaluated their hypotheses by drawing comparisons between it and the risk score produced by the tool.

Usually if I've not worked with a patient for a while I'll look through their notes, you know care plans and stuff, have a check to see what the current issues are. Usually I'll look at their past score (Researcher: do you mean the Waterlow score?) *aye. Really it helps me form an impression of the patient, you know. I think that it's good to do this so that you know what direction you're heading. If I'm concerned about anything I've read in the notes, like, like the patient being off their food, then I start to think along the lines of maybe it's the medication, or it could be an infection, so maybe get a urine or blood test done. Or I'll be thinking, is it their mood or is something bothering them. If it's something like that then I'll have a wee chat with them, just to try and find out what the problem is. I assessed another gentleman a few weeks ago and no one could work out why he was low in mood, turned out his ex wife had died, none of the staff knew. Usually I have an idea in my head though about how a patient will score, sometimes it's different to what you get with the Waterlow, but you can always evaluate it so see where the differences are, you know within the various sections.*

(Nurse: HW3)

I had a quick read through her notes because I've not had much to do with the lady recently, you know I wanted to bring myself up to speed with what's been going on with her. I got the gist of her situation, things like she's got cancer, she's got poor mobility..... my mind was thinking she's definitely 'high risk', 'high risk'. You know I find it easier to assess them when I know their past scores as it sort of helps you know what to expect. .Looking at her past scores I knew what I was thinking was right, she tends to score quite high. Sometimes I don't always agree with the Waterlow (Researcher: you mean the final score?) *yeah, however, in this case I did. Really, if you find you don't agree with a score it's a case of trying to work out who's right or wrong. Is it me or the Waterlow, you know'*

(Nurse: HW4)

I usually look at their notes to see what's what. Normally as a matter of course I have a look at their past scores, just because I want to know what level of risk they were at according to their last assessment, that way when I do my assessment I'll know if there's any change. Sometimes I never know if it's a good thing or not to use past scores as this might cause you to expect a certain outcome. This only causes problems if what you thought would be the outcome is different to that of the score. Usually though before I complete the assessment I gather the information that is needed.

(Nurse: NH1)

I use as much information that I can, if I can read their notes I do. I usually have a peek at their previous risk scores, this helps me know what to expect from the assessment. I usually use their score as my guide. If I think their score is going to be a high one or that there might be a big change from the last score then I'll have at look at their skin and have a chat with them. Once I've done all this I'll know if what the Waterlow is telling me is true, and whether really the pressure relieving devices that they have in place are working or if things need to be revamped a bit.

(Nurse: NH2)

The frequency with which nurses' hypotheses either similar or different to that of the score produced by the Waterlow is illustrated in Table 5.11. From a total of 16 pressure ulcer risk assessments, 81% (n = 13) of the risk hypotheses generated by the nurses were similar to that of the score produced by the Waterlow. However, 19% (n = 3) of the nurses' risk hypotheses were different to that of the final score. The frequency with which hospital and nursing home nurses' hypotheses were either similar or different to that of the Waterlow score appears to be almost equal.

Patient No.	Hospital Ward Nurse		Nursing Home Nurse	
	Hypothesis Similar to Score	Hypothesis Different to Score	Hypothesis Similar to Score	Hypothesis Different to Score
1	✗	✓	✓	✗
2	✓	✗	✓	✗
3	✓	✗	✗	✓
4	✓	✗	✓	✗
5	✗	✓	✓	✗
6	✓	✗	✓	✗
7	✓	✗	✓	✗
8	✓	✗	✓	✗
Total	**6**	**2**	**7**	**1**

Table 5.11: Frequency of hypothesis affirmation according to unit type nurse

From the sections of text relating to problem framing, the following sub categories emerged; matching the score to the patient and tool ambiguity.

5.8.3.1.1.1 Matching the Score to the Patient

This sub category illuminates what course of action the nurses took when the Waterlow produced a score that did not match that of the risk hypothesis generated. In total, 3 nurses (2 hospital nurses and 1 nursing home nurse) said that their hypothesis was different to the score produced by the Waterlow, with 2 of the nurses predicting a higher score than that generated by the tool, and another predicting a lower score than was generated by the Waterlow. Analysis of the nurses' interview data found that they revised a patient's final Waterlow score in order for it to match the patient's situation as they perceived it. Matching the score to the patient was found in two of the interviews as a means of allocating pressure relieving equipment to a particular patient without their actions being questioned.

When I added up the scores I thought, this isn't right, this lady is at a greater degree of risk than this. I knew if the score didn't match the lady's needs then she wouldn't get the Nimbus mattress, so I changed the score. I mean I knew by doing the assessment that this lady needed a better mattress, so I wasn't going to go by the Waterlow. I graded her scores differently in the appetite, mobility and in the neurological deficit sections. I mean this lady has a lot of pain, her mood is low, I think she is pretty much chair bound as she needs encouragement to do anything and her appetite is very poor so I scored her as anorexic. She's got diabetes, her BM'S (Blood sugar monitoring) *have been fairly stable, but with her appetite being so poor I scored her with 6 in the neuro section. Some people might not think that she needs the Nimbus, but I do. I'm her named nurse so I know what's best for my patient, plus if you've got a score, a fact in other words, no one can question your allocation of equipment.*

(Nurse: HW1)

The Waterlow I felt put this lady at a higher degree of risk than I felt she was at. She has limited mobility, but she can walk short distances. Her body build isn't great but the lady has told me she has always been very slim. I'm not concerned as she eats okay and she takes her supplement drinks from us. She can turn herself in bed, things like that, she really is quite good. She's doesn't need a special mattress. She's got a pressure relieving cushion on her chair that she likes to sit in, she doesn't need any thing else, that's why I rejigged her score. I'm of the opinion that as long as she has her pressure relieved where she spends her time the most, the chair, then things should be okay.

(Nurse: HW2)

I have to say that I thought this man would have been scored higher by the Waterlow. I wasn't expecting that score, it was, well I thought it was a bit low for him. A lot I suppose has changed for him over the last few weeks, you know since he was last assessed. He is on a lot of diuretics at the moment for heart problems so it's just draining the fluid off him. He did have a catheter in place for this and because of his limited mobility, but he had so many infections and he's expelled his catheter twice. There's probably still some trauma in his tubes as he last expelled yesterday. So I wouldn't attempt to catheterise him as yet. He's also got loose stools, we think he's got an infection so we're just waiting on the results coming back from the doctors. With all these things going on, I want to make sure that he gets the right stuff in place, you know like equipment, not just that he is being observed all the time. Sometimes I think we have too many observation, interventions I think I can justify scoring this man like this, so why not. I don't want his problems to be exacerbated by a pressure sore.

(Nurse: NH2)

5.8.3.1.1.2 Tool Ambiguity

When nurses were asked if they had actually used the content of the Waterlow scale to guide their assessment, it was found that nurses' use of the tool was limited. Nurses stated that they perceived the Waterlow scale to be ambiguous in its content, with such ambiguity found to offer an account as to why nurses used other sources of information in order to assess and plan care.

This lady is continent but she is on diuretics at the moment, I knew this from looking at her drug kardex. This obviously increases her need to go to the toilet. This could affect her continence level and I suppose her mobility, especially if she is in a rush to get to the toilet. I think because of all the secondary effects that diuretics can have on a patient, the Waterlow scale should consider this but it doesn't. I had difficulty with this one as I thought about integrating this into the medication section or the continence section. (Researcher: what did you end up doing?). *I decided to put it in the continence section. I scored her as having occasional incontinence just to cover the effects of the diuretics.*

(Nurse: HW2)

One of the questions in the Waterlow asks you about their weight, is it average or is it above average and that can be very subjective. You know if you look at somebody, if you consider them to be above average weight for their height, it can be difficult to know how to score them. I find if I use the BMI score (Body Mass Index) *as it gives you a number and it gives you a scale. Really it's a more objective way of looking at it to see if you have observed someone right.*

(Nurse: HW4)

The neurological section in particular is a bit ambiguous. It gives you a score of 4 to 6, but it also lists 4 conditions. I find it difficult to judge what score should be assigned to what condition. I mean someone can have diabetes and it can be well controlled that you may score them with a 4. Someone may have had a slight stroke and score them with a 4 also. You know people can have a stroke and have a very dense weakness and some people may score them with a 6. I think that the way I get round it is to find out what type of diabetic they are, is it well controlled, or how dense is their stroke and has the patient adjusted to their stroke. I can only make that judgement if I read their progress notes to find out how they are getting on or by observing them, then I can decide how to score them, and not just allocate a score because they have a listed condition.

(Nurse: NH2)

This lady really has no problems with her mobility, but she has been depressed for a while. If she could, she would lie in her bed all day or just sit in the same chair and watch telly. Even though she is mobile, she really has restricted mobility because of her mood, so I scored her with a 4. I think the Waterlow should consider mood as it impacts on really all the sections I suppose. I think the section terms could be better defined. I think because I know this lady, I can score her more accurately.

(Nurse: NH3)

The frequencies with which sections of the Waterlow scale were mentioned as ambiguous within the texts were examined (Table 5.12). The most frequently mentioned section was the Build/Weight for Height section (n = 14), with Continence (n = 8), Mobility (n = 8) and Appetite (n = 8) found to be mentioned slightly less frequently. The sections on Neurological deficit (n = 6) and Medication (n = 5) were mentioned the least.

Hospital nurses mentioned the sections of Build/Weight for Height, Mobility, Neurological deficit and Medication to be ambiguous to a greater degree of frequency than did nursing home nurses. However, it appears that nursing home nurses mentioned that the Appetite section was ambiguous slightly more frequently than hospital nurses. Continence was found to be mentioned to a similar degree of frequency by both hospital and nursing home nurses.

Waterlow Section	Hospital Ward Nurse	Nursing Home Nurse	Sample Total
Build/Weight for Height	8	6	14
Continence	4	4	8
Mobility	5	3	8
Appetite	3	5	8
Neurological Deficit	4	2	6
Medication	3	2	5
Total	**27**	**22**	**49**

Table 5.12: Frequency with which Waterlow sections were mentioned as ambiguous according to unit type nurse

5.8.3.1.2 Knowledge of the Patient

The second category to emerge from the category of information gathering was the nurses' use of their knowledge of the patient. Knowledge of the patient was found to have a strong influence on whether the nurse conducted the assessment independently from the patient or not, and over the use of specific pressure ulcer risk factors. Analysis of the data found that knowledge of the patient was often referred to in terms of recency of patient contact. It seems that prior knowledge of the patient was another source of information which the nurses used to carry out pressure ulcer risk assessment. This internal source of information was found to be used in addition to the external sources of information highlighted previously.

I got this lady up this morning as I knew she was due her assessment and that I was the one to assess her. She didn't have a shower or anything, I just helped with washing and dressing. It gave me chance though to have a look at her skin without being imposing. Nothing would have changed since this morning so I didn't need to have a look at her again this afternoon.

(Nurse: HW1)

This lady is only here because of issues at home, her needs don't change that much. I see this lady every time I am on shift. I helped to get her up this morning. Usually I'll be involved in her care in some way whether it's taking her to the loo, just you know, to make sure she is okay, or helping her get up in the morning or helping her get ready for bed. Really though our involvement, in terms of direct care with this lady is limited. The lady is vocal, she will let us know if she is feeling unwell or has any pain so I don't need to actually have a look at her skin when I'm completing the Waterlow. Also if she couldn't tell us if something was up, it would be mentioned in the handover, other staff would pick up on things.

(Nurse: HW4)

I helped this gentleman to the loo yesterday and had a quick look at his sacral area. No changes there. Also when we was going to his bed last night I asked the staff to have a look at his elbows, his heels and shoulders, you know just to make sure things were okay. As it turned out staff said that things were okay.

(Nurse: NH2)

I saw this lady last night, I helped her to undress for bed. I saw her skin last night so there was no need to see her pressure areas again today. I think if I had asked to examine the lady, she would have wondered what was going on. We try to keep the formal side of care informal for the patient.

(Nurse: NH3)

The frequency with which nurses mentioned that they had used their prior knowledge of a patient was also examined, alongside the frequency counts of the external information sources used (Table 5.13). From the total number of information sources identified, knowledge of the patient appears to be the most frequently used (n = 116), compared to the frequency with which external sources of information are used (n = 122). The frequency with which hospital ward and nursing home nurses used their knowledge of the patient appeared to be almost identical.

Information Source	Hospital Ward Nurse (%)	Nursing Home Nurse (%)	Sample Total (%)
Knowledge of the Patient	56 (49.5)	60 (47.2)	116 (48.3)
Written	38 (33.6)	38 (29.9)	76 (31.6)
Verbal	13 (11.5)	13 (10.2)	26 (10.8)
Observation	6 (5.30)	16 (12.5)	22 (9.16)
Total	**113 (100)**	**127 (100)**	**240 (100)**

Table 5.13: Frequency with which all information sources were used according to unit type nurse

5.8.3.1.2.1 Use of Specific Risk Factors

When nurses were asked why they were observed to have gathered different types of information when assessing different patients, nurses stated that they saw the individuality of a patient's situation as a factor of influence on their gathering of information, with nurses using only the risk factors which they perceived to be pertinent to a patient's risk of developing a pressure ulcer. The nurses' use of specific risk factors provided the basis upon which to focus the assessment, with the use of such risk factors found to be dependent upon a nurse having knowledge of the patient being assessed.

I tend to think of my assessments, like the ones I have just done, in terms of compartments. I mean when I assessed these two ladies I was going by their issues and my experience of looking after them. I know what their problems are, each individual is different and that is why I don't structure my assessment round the Waterlow, it's too general in its outlook. I think I'm able to concentrate my assessment to a few things because the needs of these ladies don't change much. I know I have to fill in all the sections in the Waterlow to show that I have covered all the areas, but I do that at the end. Really I assess my patients according to their needs.

(Nurse: HW1)

I know this lady, you know her condition, as well as her as a person. I don't see the need to go through all the formality of the Waterlow when I know what is important to the patient.

(Nurse: HW5)

Some of the information that I used was the same, like looking at the past Waterlow scores, but really I don't have a set routine to the assessment. I like to think that I structure each assessment that I do to the patient that I'm assessing, that way you know you've covered everything that is relevant. I think it helps though when you know the patient you are assessing that way you can deviate from the general structure as your use of information can be more focused.

(Nurse: NH3)

I suppose I automatically think 'what do I know of this patient?' usually this helps me with doing their assessment. You know like if someone has had some pain for a while then I incorporate that. Really it depends on who I am assessing and what I know of them. Of course the better you know a patient the better the assessment will be as it'll be tailored to them.

(Nurse: NH4)

The risk factors mentioned by the nurses were examined and compared to the factors in the Waterlow scale (Table 5.14). The nurses used a number of risk factors which are found in the Waterlow scale to direct their gathering of information, more frequently than the use of risk factors not listed in the Waterlow. Of the factors that are listed on the Waterlow, mobility, appetite, continence and neurological deficit were used to a similar degree of frequency, with medication found to be the least used risk factor. Almost half of the total risk factors that were used were not listed on the Waterlow, with mood and pain found to be used the most frequently followed by wounds. Hospital ward and nursing home nurses used some of the risk factors contained in the Waterlow scale to similar degrees of frequency, however, nursing home nurses appeared to use a

number of risk factors not listed on the Waterlow slightly more frequently than hospital nurses.

Risk Factors Used	Hospital Ward Nurse	Nursing Home Nurse	Sample Total
Waterlow Factors	**18**	**22**	**47**
Mobility	7	6	13
Appetite	6	6	12
Continence	6	5	11
Neurological deficit	5	4	9
Medication	1	1	2
Non Waterlow Factors	**7**	**12**	**19**
Mood	4	5	9
Pain	3	5	8
Wounds (non pressure related)	0	2	2
Total	**32**	**34**	**66**

Table 5.14: Comparison of the frequencies for the risk factors used according to unit type nurse

5.8.3.1.2.2 Accounts for Risk Score

Nurses were asked why they were observed not to have altered a patient's written plan of care following the assessment, despite a change in the patients risk score. Nurses stated that being able to pin point why a patient's score had changed implied that written alteration to patient's current plan of care was unnecessary.

I think that having a final score is good in some respect as the Waterlow is clear by what the score means. The difficulty is when you know that the patient doesn't match the score, or rather that risk category because you've got interventions in place. I mean he's got a pressure relieving mattress, we move him from his recliner into a wheelchair, and he's got a propad. I don't think we could do any more.

(Nurse: HW1)

I'm not concerned that this lady gained another couple of points. I know why she has, you see. Looking at her previous score I can see the category it was for (Researcher: you mean the category where she got the extra points?), *yes. It was for her skin condition and the nurse who did the assessment previously only gave her a score of 1. This was for the ankle oedema, but I gave her an extra score for the dry skin. The dry skin was on her scalp, which I suppose is not really a concern as she is not lying in her bed all day. I decided all the same to score her as I don't know if the dryness would affect her skin vulnerability and maybe develop into a sore over time.*

(Nurse: HW3)

I didn't see the need to change this lady's care plan because of a slight change increase in her score. We already know that she has slight oedema in her legs and we are elevating them during the day, as far as she tolerates it. She is able to turn herself in bed, she eats well, can move around to some degree and is not incontinent. She has lots of interventions in place, I can't see how we could add to that. I think it's more a case of putting observational ones in place. I think what I'll do now is document that her score has increased and why it has increased, that way the record of the assessment shall be clear.

(Nurse: NH3)

There really is no point in changing what works. This man will always be at some degree of risk because that's the nature of his condition. I think sometimes that a patient score can change because of the people who are assessing them. You know I may perceive someone to have a really dense stroke and score them with a 6, whereas another nurse shall maybe score them with a 4. I think that's what's happened in this case, the change of score is really down to two different nurses assessing the patient.

(Nurse: NH4)

5.8.3.2 Continuous Assessment

The second category, continuous assessment, refers to the nurses' verbal illustration of pressure ulcer risk assessment as being a cyclical activity. Analysis of the data found that assessment of a patient's pressure ulcer risk was performed on a continual basis and that assessment of such was not limited to formal assessment intervals undertaken by qualified nursing staff. From the category of continuous assessment, a sub category emerged; informal assessment.

5.8.3.2.1 Informal Assessment

Nurses stated that informal pressure ulcer risk assessment was carried out on a regular basis by qualified and unqualified nursing staff, with informal pressure ulcer risk assessment performed to a greater degree of frequency by unqualified nursing staff than by qualified nurses during routine nursing activities.

Patients get assessed all the time, often they are not aware that they are being assessed. The support staff check patients pressure areas routinely you know, like when they are involved in putting the patient to bed and things like that. They'll tell you if they see any redness. Often they put measures in place like getting a patient to lie on their side so that they are off their bottom when they are in bed. The other nurses here if they are involved with a patient who's not in their team, they'll let you know if they are concerned about any of the patients.

(Nurse: HW2)

I don't worry about a patient's skin as I know that's someone shall notice if anything is wrong. It'll probably be the auxiliaries as they have the most to do with the patients, they are interacting with them all the time, you know like going to the loo, getting dressed, really routine stuff like that. I think if there was a change in a patient's risk that it would be noticed during doing the normal stuff, not by doing the Waterlow.

(Nurse: HW3)

I know that the A grades (Nursing assistants) *do a good job here, they'll pass on information to you, tell you if something is not right with a patient, they pick up on things. So do we, of course, but let's face it, they are more on the floor than we are. Now if I'm with a patient who needs assistance with undressing or anything like that, then I'll have a look at their skin when I'm there. Really we're checking their skin all the time.*

(Nurse: NH1)

You see we assess patients all the time. The staff here are very good, especially the auxiliary staff, they'll let you know if they think that a patient is starting to mark. We're lucky to have good auxiliary staff as it's really them that deal with the patients. We're often too busy doing paper work so the auxiliary staff will do a lot of the routine care work.

(Nurse: NH4)

The type of routine care activity in which nurses mentioned that patients' pressure areas were informally assessed was examined (Table 5.15). Nurses informally assess a patient's pressure ulcer risk while assisting the patient with dressing and undressing, washing and bathing and toileting, with the activity of dressing and undressing the most frequently mentioned activity. The activities of washing and bathing and toileting were found to be mentioned the least.

Activities where Informal Pressure Ulcer Risk Assessment Occurs	Hospital Ward Nurse	Nursing Home Nurse	Sample Total
Dressing / Undressing.	7	5	12
Washing / Bathing	6	3	9
Toileting	4	2	6
Total	**17**	**10**	**27**

Table 5.15: Care activity in which informal pressure ulcer risk assessment was mentioned to have occurred

5.8.3.3 Wider Assessment Process

Formal pressure ulcer risk assessment was often mentioned as part of a wider assessment process. Analysis of the data found that nurses often assessed other areas of health which they considered relevant to a patient when assessing pressure ulcer risk.

I know that this lady has a cut to her left buttock because she scraped herself getting out of a car. I suppose because of where it is, you know on a pressure area as such, her risk increases slightly. She is mobile through, really it's just when she is lying on her back at night and pressure is on the wound.

(Nurse: HW1)

I think it's often necessary to assess more than what's on the Waterlow as pressure ulcer risk is one of these things that can be influenced by so many things like mood and pain, this lady has really bad back pain which gets her down. I know that if she doesn't get a sleep, she is in bad form which I think aggravates the whole pain situation. I just wanted to get an idea if her levels of Oramorph were too strong for her or just right. We don't really want her falling asleep all the time.

(Nurse: HW4)

This lady has had breast cancer. Her lump was found while she was in here. Ever since she has had the lump removed she worries about another lump occurring. For her peace of mind we watch her while she checks herself. She has asked the staff to recheck her but that would just add to her obsession.

(Nurse: NH2)

We're trying to get him to cut down the amount of cigarettes that he smokes, normally we allocate 10 cigarettes a day to him. Usually we ask him at lunch time and bed time how many he has had within a given time period and mark it in his chart just so that we know when his smoking is excessive.

(Nurse: NH4)

5.8.3.3.1 Other Areas Assessed

Nurses were observed to have formally assessed a number of other areas while assessing pressure ulcer risk, particularly those of sleep, mood and pain followed by smoking and breast examination (Table 5.16) Nursing home nurses were found to assess formally sleep slightly more frequently than hospital nurses. Mood however, was found to be formally assessed to almost the same degree of frequency by both hospital and nursing home nurses. Pain was formally assessed to a greater degree of frequency by hospital nurses compared with nursing home nurses. Formal assessment of a patients smoking and breast examination was carried out by nursing home nurses only. It is however, acknowledged that the areas of health assessed are, to some extent, dependent on the health care needs of individual patients.

Other Areas of Health Assessed	Hospital Ward Nurse	Nursing Home Nurse	Sample Total
Sleep	2	3	5
Mood	2	2	4
Pain	3	1	4
Smoking	0	1	1
Breast Examination	0	1	1
Total	**7**	**8**	**15**

Table 5.16: The frequency with which other areas of health were mentioned to be assessed according to unit type nurse

5.9 Discussion

5.9.1 Assessment of Pressure Ulcer Risk with the Patient Present or Absent

It is apparent from an analysis of how nurses use the Waterlow scale to assess pressure ulcer risk and plan care in practice that they do not always carry out formal pressure ulcer risk assessment in the presence of the patient being assessed. From a total of 16 assessments observed, 38% (n = 6) were carried out separate from the patient, with 6 out of 8 nurses observed to have assessed at least one patient in this way. From the interviews it was apparent that ongoing experience of nursing a patient facilitated the nurses to carry out an assessment of a patient's pressure ulcer risk in this way, with both knowledge of the patient and the appearance of their skin condition identified as important to the assessment and care planning process. The interviews also highlighted that the recency with which a nurse had seen a patient's skin also appeared to be important. Nurses who were observed not to have looked at a patient's pressure areas mentioned that they had recently observed such areas during routine care activities with the patient, prior to the assessment taking place suggesting that pressure ulcer risk is a

cyclical activity. Of the assessments which actually involved a nurse observing a patient's skin, a limited recall of a patient's skin condition necessitated such observations to be made. This suggests that irrespective of whether a nurse formally observes a patient's skin at the time of the assessment or prior to it, possessing a recent visual representation of a patient's skin condition appears to be an important element to the assessment. This study also found that unqualified members of nursing staff frequently inspect a patient's skin during routine care giving activities (such as washing and dressing). Based on this result it seems that nursing assistants play an important part in the overall monitoring of a patient's skin condition. This aspect of the nursing assistants' involvement in pressure ulcer risk assessment does not appear to have been previously acknowledged within the literature.

While knowledge of the patient, the appearance of the skin condition and the recency with which it had been observed goes some way to explaining how continuing care nurses assess pressure ulcer risk in an older person, it is suggested that assessment of pressure ulcer risk is more complex than this in practice.

5.9.2 Sources of Information Used and their Order of Use

Nurses who assessed pressure ulcer risk separate from the patient were observed to have used written material in conjunction with the use of their prior knowledge of the patient being assessed. This is in contrast to nurses who were observed to have looked at a patient's skin, sought verbal information from the patient as well as written information. Nurses who performed the assessment with a patient present were observed to have used written information to a higher degree of frequency than nurses

who assessed pressure ulcer risk separate from the patient. The sources of information which have been identified in this study are to an extent, supported by Lamond et al (1996) who identified that nurses working in acute medical and surgical wards used similar generic sources of information to make their assessment judgements concerning global aspects of patient care. Based on the results of this study and that of Lamond et al's (1996) study, it is suggested that regardless of the judgement task in question and the context in which a task takes place (i.e. continuing care, medical, surgical wards), nurses are likely to use a variety of information sources to assist with formulating their judgements and decisions when assessing patient needs.

Also apparent from the observations was that sources of information were used in a particular order depending on whether an assessment was performed separate from the patient or not. Regardless of this, written material in the form of the Waterlow scale was observed to have been used at the beginning and end of all assessments. Analysis of the interviews found that nurses at the start of the assessment were actually looking at a patient's past Waterlow score (written on the reverse of the tool), with nurses concluding the assessment by filling out the assessment form and recording the patient's overall risk score. The order in which information was observed to have been used relates primarily to the use of generic source of information and not to the use of specific types of information (i.e. medication chart, BMI chart). Similar patterns of information use were found across and between hospital ward and nursing home nurses, although it is unclear from the results exactly what information cues were sought and used within the sources of information accessed. It is also unclear within the patterns of

information used exactly where a nurse's prior knowledge of a patient has been used and what effect, if any, that such knowledge has on the pattern of information use.

5.9.3 Role of the Waterlow Scale in the Assessment and Care Planning Process

Analysis of the interview results suggests that the Waterlow scale has a limited role in the assessment of an older person's pressure ulcer risk and planning of their care when used by continuing care nurses. While ambiguity of the tools' content accounted for this to some extent, it seems that in addition to the nurse knowing the patient and the appearance of the skin condition, knowing the patient's previous risk score enabled them to generate a risk hypothesis which provided them with a problem framework to the assessment. This suggests that such information is key to the nursing assessment of an older person's pressure ulcer risk in continuing care.

Results of the interviews also highlighted that nurses did not use all the risk factors listed on the Waterlow scale in their assessments. Nurses were also found to have incorporated the use of a number of factors not listed on the scale which they perceived to be relevant to the assessment of pressure ulcer risk, and because they also assessed other areas of a patient's health in addition to that of pressure ulcer risk. This suggests that continuing care nurses do not always use the content of the scale as the basis of their assessment, despite the common assumption that assessment tool information will be incorporated into the judgement and decision making of nurses (Vernon et al 2000). However, it is not known how nurses distinguished between relevant and irrelevant information cues while assessing pressure ulcer risk. The results also suggest that

assessment of pressure ulcer risk is part of a wider assessment process, with other areas of health found to be concurrently assessed.

Turning now to the actual risk score produced by the tool on completion of the assessment, it seems that knowledge of the assessed patient served as the basis upon which the score was evaluated. The risk score, as identified in this study, appeared to be of little value when it came into conflict with the nurse's initial risk hypothesis. When the Waterlow produced a score that did not match their original hypothesis, the nurses then altered the score in order for it match their judgement of a patient's degree of pressure ulcer risk. On the other hand, when a score was found to match that of the risk hypothesis generated, the score served only to reinforce the information cues used to inform judgement and decision making. As such, the cognitive representation of a patient held by a nurse was therefore judged to be accurate. It is apparent from an analysis of the interviews that this is how continuing care nurses use the Waterlow scale in practice. This therefore raises questions regarding the quality of care patients receive and the usefulness of the Waterlow scale (and possibly that of other assessment tools) for practice. As nurses were found to alter a patient's risk score, it appears that the Waterlow scale is likely to be no more accurate than the nurse's use of clinical judgement alone when used in this manner. Altering a tools predictive validity in this way means that the degree of risk a patient is identified to be at becomes less clear.

5.9.4 Assessment of Pressure Ulcer Risk

As mentioned previously, nurses were found to have used a number of factors not listed on the Waterlow scale. By considering (risk) factors out with the Waterlow scale, it

seems that nurses inevitably made the assessment of pressure ulcer risk more complex (Corcoran 1986a). According to Tanner et al (1987) one of the determinants of task complexity are the number of cues available for use (i.e. the higher the number of cues the greater the task complexity). This would suggest that pressure ulcer risk assessment is more than just matching the items of information on an assessment tool with that which is observed within the patents environment. However, in order for nurses to go beyond the content of an assessment tool, they need to know what to look for, how to recognise it and how best to obtain it. This result is linked to the nurse having developed specific knowledge structures for gathering and organising information about individual patients and their related conditions (Fonteyn 1997). It is nevertheless unclear from the results as to exactly the number of cues used not listed on the Waterlow scale, and the connections made between the cues used.

From an analysis of the interviews it was apparent that pressure ulcer risk assessment is an area of health which is continuously assessed, albeit more frequently on an informal than on a formal basis. Owing to the frequency with which nurses perform this task, together with their continued experience of nursing older people, they were familiar with assessing an older person's risk of developing a pressure ulcer and planning of care. The experience and knowledge that an individual has of a task is well known within the literature to influence how information is processed (Manias et al 2003, Hamers et al 1994). The results of the interviews suggest that following the collection of information, nurses handled data in ways that reduced cognitive strain, generating a risk hypothesis to guide their assessment, after which its fittingness was evaluated. It would appear that nurses used elements of hypothetico-deductive reasoning (Elstein et

al 1978) when assessing pressure ulcer risk and planning of care. However, it is unclear as to exactly what information was collected prior to the generation of a risk hypothesis, the number of hypotheses activated, the stage in the assessment process that hypotheses were activated and if they were revised.

Analysis of the interviews also suggests that nurses employed the use of the anchoring and adjustment heuristic to process information. Use of this heuristic strategy was evident in nurses being able to account for why an assessed patient's overall risk score had changed since their previous assessment. By using past experiences of these particular patients, nurses had constructed a pattern of typical responses for individual patients. (Cioffi 2000, 1998, Kahneman & Tversky 1972). Such patterns were found to act as anchor points, enabling nurses to work from a point of reference outwards (Cioffi & Markham 1997). Nurses therefore judged the patients overall risk score against known and existing patterns. This finding suggests that continuing care nurses use a form of heuristic reasoning to process information when assessing pressure ulcer risk. Use of the anchoring and adjustment heuristic has been found in the judgement and decision making of critical care nurses, triage and midwifery (Cioffi 2000, Cioffi 1998, Cioffi & Markham 1997). However, it is unclear from the results whether or not nurses used other heuristic strategies or other forms of reasoning in addition to those identified. It is possible that while the interview method enabled some nurses to describe how they assessed pressure ulcer risk and planned care, not all nurses were able to offer comprehensive accounts.

5.10 Conclusion

This part of the study has raised some important issues concerning the way in which continuing care nurses carry out formal pressure ulcer risk assessment, and the role of the Waterlow scale within the assessment and care planning process. The results indicate that nurses, irrespective of the type of continuing care setting in which they work, appear to assess and plan care in a similar way, using similar sources of information. However, it seems that assessment of pressure ulcer risk and planning of care are not always based on the content of the scale, as commonly assumed within the literature (Castledine 2004, Johnson & Griffiths 2001, McCormack 1999, Soderhamn & Berthold 1993). Rather, nurses seem to use their knowledge of a patient, the appearance of their skin and their past risk score as the basis upon which to assess and plan care. Therefore, the information cues contained in the Waterlow scale may not necessarily be the cues needed by a continuing care nurse when assessing pressure ulcer risk and planning care for an older person. Yet irrespective of this, a large body of research exists which seeks to identify risk factors which contribute to the development of pressure ulcers (Sae-Sia et al 2005, Baumgarten et al 2003, Papanikolaou et al 2003, Schoonhoven et al 2002, Mino et al 2001, Anthony et al 2000, Theaker et al 2000, Clark & Cullum 1992, Eck et al 1991).

The results of this part of study should be interpreted with caution owing to the small sample size which limits the extent to which the results can be generalised. As all of the nurses who took part had over 2 years of nursing experience in the area of continuing care, and were familiar with the task of pressure ulcer risk assessment in this care

setting, it is not known if similar results would have been yielded had nurses with less experience in this domain of care taken part.

While this part of the study has examined how continuing care nurses assess pressure ulcer risk in an older person and plan care, it is not known what information cues were actually used, the order in which information was used and whether other reasoning processes were used. Therefore the next part of the study examined the process of pressure ulcer risk assessment and care planning in more detail.

6. USE OF SIMULATION AND THINK ALOUD TO EXAMINE THE EFFECT THAT THE WATERLOW SCALE HAS ON NURSE JUDGEMENT AND DECISION MAKING

6.1 Introduction

Although the results of the observations and interviews conducted in part 2 showed that nurses used a variety of information sources, and that the Waterlow scale appeared to have a minimal role in the assessment and care planning process, it is still unclear as to exactly what effect the Waterlow scale has on the judgement and decision making processes of continuing care nurses. This third part of the study was designed to examine, in detail, what information cues are used and their order of use to determine the basis of the assessment and planning of care. This part of the study also examined the reasoning strategies used by continuing care nurses when assessing an older person's pressure ulcer risk and when planning care.

6.2 Methods

6.2.1 Think Aloud.

One of the data collecting methods used in this part of the study involved Think aloud (TA). TA is based upon the model of information processing (referred to previously in Chapter 2). As already mentioned, Newell and Simon (1972) propose that the human brain functions as an information processing system. Within this system there is a central processor whereby information that is received through the senses or from the LTM, is processed before being passed through to the working memory (the STM) where it is temporarily held (Newell and Simon 1972). TA involves asking an

individual to verbalise everything that they are thinking in order to identify what information is being concentrated on, the order in which information passes through the central processor and how such information is used to arrive at a solution to a problem task (Fonteyn et al 1993).

TA can be performed either concurrently or retrospectively. Concurrent TA involves an individual verbalising their thoughts whilst involved in a problem solving task, during which an individual accesses information from their STM (Ericsson & Simon 1993). Retrospective TA on the other hand occurs after the task has been performed, and involves accessing information which has been stored in an individual's LTM (Ericsson & Simon 1993). Based on the theory of information processing, Ericsson and Simon (1984) maintain that TA techniques are well placed to examine the information and the cognitive processes that are used by an individual when carrying out a judgement and decision making task. However, there are a number of assumptions which surround the use of TA. First of all TA assumes that the verbalisations uttered by an individual reflect the information and cognitive processes used, and that they are immediately accessible as verbal data (Fonteyn et al 1993, Ericsson & Simon 1984). A further assumption is that concurrent verbalisations do not interfere with an individuals undertaking of a problem solving task as they are a subset of the cognitive processes used (Fonteyn et al 1993, Ericsson & Simon 1984). It is also assumed that should an individual be asked to TA retrospectively, that they will be able to recall with accuracy the task which they have undertaken. This method of TA is open to contamination as an event similar to that of the problem task may accidentally be retrieved from the LTM (Ericsson & Simon 1993).

While limitations exist for each of the TA methods discussed, a limitation that relates to both methods is one of self report. Collecting cognitive data by means of TA is highly dependent on the ability of an individual to verbalise what they are thinking. Owing to the speed with which information can pass through the central processor compared with the speed which information can be verbalised, it is possible that not all that is thought is verbalised (Ericsson & Simon 1983). As a consequence verbal data may be incomplete. However, various measures are available which can encourage completeness of verbal data, such as TA exercises with individuals prior to data collecting, and through verbally prompting an individual to keep verbalising their thoughts in order to reduce the amount of data that is unreported (Fonteyn & Fisher 1995, Greenwood & King 1995, Ericsson & Simon 1993).

In meeting the aims of this part of the study, concurrent TA was considered to be the most appropriate method for obtaining cognitive data in order to identify the information that an individual attends too, the order in which it is attended and the cognitive processes used. In order to carry out this type of TA, 'real' cases or simulated scenarios may be used.

6.2.2 Simulation

TA can be conducted within either the natural or simulated setting (Lamond & Farnell 1998, Holzemer 1986, Holzemer et al 1981). Taking the natural setting first, a common rationale for examining judgement and decision making in this way is to capture the complexity and unpredictability of normal clinical practice. It is frequently stated that the incorporation of interruptions or events of influence are desirable as they may alter

the judgement and decision making process in ways that could not be foreseen (Fonteyn & Fisher 1995). However, research in the natural setting introduces an inability to exert control over variables which may occur within the setting in which TA takes place, consequently resulting in task variation (Holzemer et al 1981).

By contrast, use of simulation allows control of influencing contaminants (such as a change in a patient's health state), avoids having to wait for the event of interest to occur naturally (e.g. a cardiac arrest), ensures standardisation of information to which all participants respond, thus allowing for direct comparisons to be made between participants and allows for data to be collected simultaneously across a number of locations (Gould 2002, 2001, Lanza & Carifio 1992, Lanza 1990). Furthermore, simulation overcomes a number of ethical dilemmas associated with the use of real patients (Gould et al 2001). On the other hand, the validity of simulations has been questioned due to its artificial nature (Lanza 1990). As such, it is often suggested that the responses of participants to a simulated situation cannot be assumed to be identical to the way in which they would respond to the actual situation in question (Chau et al 2001, Lanza 1990).

While the advantages in the use of simulation have been highlighted, the importance of considering the form in which the simulation is presented to participants has also been acknowledged (Gould 2002, Lamond et al 1996). Simulation has been found to take the form of written case descriptions (Offredy 1998, Lanza 1990, Corcoran 1986a, b), photographic illustrations (Gould et al 2004, Lamond & Farnell 1998, Healey 1995), videotapes (Chau et al 2001) and to lesser extent actors who take on the role of patients

(Bryans & McIntosh 2000). Each form of simulation has its own associated strengths and limitations. For example the strengths of using written descriptions, photographic illustrations and videotapes are the consistency with which information is presented to all participants as the degree of variability is minimal (Lamond et al 1996). However, unlike with the use of actors, there is no opportunity with the aforementioned types of simulation for verbal and physical interaction to occur (Gould et al 2001, Bryans & McIntosh 2000). Yet, if simulation is presented in the form of an actor, it may not be possible to provide a script for the actor to learn owing to the dynamics of conversation (Bryans & McIntosh 2000).

Lamond et al (1996) suggest that if one is considering the use of simulation for the purpose of examining judgement and decision making when carrying out a certain task, due consideration needs to be given to the information that is normally used as well as the form of information as this may affect the cognitive processes used, and the ability of an individual to complete (or solve) the simulated task.

The results of the observations and interviews in part 2 suggest that continuing care nurses used a number of sources of information when assessing pressure ulcer risk; written, verbal, observation and prior knowledge of the patient. Therefore any simulation of the investigated task should include the opportunity for nurses to use, so long as realistically possible, all sources of information that they would normally use. Importantly, the sources of information included verbal exchange with the patient and observation of the skin. As such, a 'paper patient' or a 'videotaped patient' was not considered appropriate as there would have been no opportunity for the participants to

collect information through verbal exchange (with the patient) or though observation (of the patient), thus an 'actor' was recruited to take on the role of an enacted patient to facilitate such opportunities (Chau et al 2001). Written material (about the patient) was also available to participants in the form of 'nursing notes' which resembled, as closely as possible, the actual documentation used within the units involved in part 2 of the study (i.e. weight chart, medicine chart, progress notes etc).

While prior knowledge of the patient (identified as an internal information source) was also found to be used by the nurse participants (in part 2), no feasible way was conceived as to how such knowledge (or source of information) could be built into the simulation. Therefore this source of information was unavailable to participants in the simulated task.

6.2.2.1 Developing the Simulated Patient Case

A single patient case was developed for this part of the study. An actor was recruited to play the part of a patient. Development of the simulated patient began by reviewing the demographic data of all 16 patients who were involved in part 2. Conditions such as stroke, diabetes, inability to cope at home and recurrent falls occurred frequently within this patient group (Table 5.5). Therefore these conditions were used as the basis of the simulated patient case. With the help of an expert group, consisting of one tissue viability nurse lecturer and one gerontology nurse consultant, further detail was subsequently added to the simulated patient case such as other medical problems, physical problems, psychosocial issues and lifestyle, in order to place the 'patient' at some degree of pressure vulnerability. A fictitious set of nursing notes were complied

for the simulated patient based on this information (Appendix 6.1). Once the nursing notes had been complied, they were presented to the same expert group in order to determine if the information within the notes was of a sufficient standard to permit clinical interpretation.

Based on the characteristics and physical limitations of the simulated patient, the expert group also gave comment as to possible sites of pressure vulnerability and the appearance of such sites; such as a broken area of skin on the top outer aspect of the right ear, discoloured left elbow and right heel. However, it was not assumed that all nurses would necessarily observe any or all of these three sites, rather it was up to the individual nurse to perform the assessment as wished without knowing in advance what pressure damage was present and the location of such damage.

6.2.2.2 Actor Recruitment and Preparation for Role

Following the creation of the patient case, the St Andrews Ambulance Association (SAAA) was contacted and details of the study were explained. The SAAA identified an individual who was suitably experienced in simulated patient work and of an appropriate age for the study. In addition to this, the SAAA identified a make up artist who was experienced in the creation and application of trauma make up. After consulting with the actor and make up artist, both were willing to work on the study.

In order to prepare the actor for his role, and to assist the make up artist in the creation of making certain areas of the skin appear vulnerable to the effects of pressure, an information sheet was developed about the simulated patient's social, medical and

nursing history (Appendix 6.2). It also contained the actual simulation scenario, relating to a number of physical, verbal and non-verbal cues that were to be employed by the actor when in role. A copy of the nursing notes was also given to both the actor and make up artist to familiarise themselves, in detail, with the simulated patient case. Providing the actor with such detail allowed him to respond naturally to the nurses as they assessed and planned care. The content of the actor's verbalisations were dependent on what verbal information was sought from each assessing nurse participant.

6.2.2.3 Consistency and Validity of the Simulation

Measures that were taken to ensure that the simulation was replicated and presented to each participant in a consistent manner involved the use of the same actor, the same nursing notes and make up was applied by the same make up artist on every occasion. Prior to data collection, the make up artist created the appearance of a broken area of skin and areas of skin discolouration on the appropriate sites of the body. The expert group was approached for a third time where the actor was presented to them for comment on the appearance of these make up sites. Both members of the expert group agreed that the appearance of all three sites was credible, with appearance of tissue vulnerability highly realistic. Following the make up, each site was photographed to provide a baseline for ensuring the consistency with which make up was applied during the course of data collection (Appendix 6.3). As a measure of ensuring consistency of the actor's performance, each simulated session was videotaped to allow the researcher to check the physical appearance of the actor as well as the content of his

verbalisations. In using such equipment the actor's performance was checked with relative ease and speed after each simulated session.

Ecological validity of the simulated patient case was addressed by ensuring that the range and variety of information sources observed to have been used by continuing care nurses from the observations and interviews conducted were available and presented to the participants in an appropriate form (Lamond et al 1996, Jones 1989). Content validity of the simulation was also addressed by drawing on the use of information from existing case histories of actual patients, and by drawing on the experiences of an expert group (with each group member experienced in either the field of tissue viability or older peoples care) (Lanza & Carifio 1992, Lanza 1990). Once the simulation was designed, its face validity was assessed by giving copies of the nursing notes, and by presenting the actor in his make up state to the same group of expert nurses. Here each nurse was asked to indicate whether they thought that the content of the nursing notes was representative of what they would expect to find in a patient's notes who was in a continuing care facility. Both nurses agreed that they thought that the content of the notes was representative of such information. Secondly each nurse was asked to indicate whether they thought that the appearance of the broken and discoloured areas of skin was consistent with that of the simulated patients health state, both nurses agreed that this was the case.

6.3 Ethics

Ethical approval for this study was sought and obtained from the University of Stirling Nursing and Midwifery Department's Research Ethics Committee, followed by the

appropriate Local Research Ethics Committees and hospital Trust management approval (Appendices 6.4, 6.5, 6.6, 6.7, 6.8).

6.3.1 Informed Consent

Information sheets were given to each nurse who expressed an interest in the study (Appendix 6.9). These nurses were also given the opportunity to ask any questions that they had regarding the study prior to signing a consent form (Appendix 6.10). All nurses were assured that anonymity and confidentiality would be maintained at all times.

6.4 Pilot Study

In order to test the feasibility of the simulation a pilot study was carried out. The piloting of the simulation also allowed the actor the opportunity to get 'in role' prior to the main study taking place. Furthermore the pilot study was used to test the recording equipment.

6.4.1 Sample

All continuing care units which had previously indicated in the survey that they used the Waterlow scale, and were willing to participate in further studies (excluding the 4 units involved in the observations and interviews) were contacted by telephone to explain the study. However, none of these units were prepared to take part in this study, so out of the four units which participated in the second part of the study, the hospital ward with the most number of qualified nurses was approached. The unit with the highest number of qualified nurses was approached as this allowed for an ample

remainder of nurses to be recruited for inclusion in the main study. A convenience sample of two hospital nurses were recruited for the pilot study. Table 6.1 outlines the inclusion and exclusion criteria of nurse participants.

Inclusion Criteria	Exclusion Criteria
To be a registered nurse To be currently working in the area of continuing care for older people To have used the Waterlow Scale to assess pressure ulcer risk and plan care	Non registered members of nursing staff Bank and agency nursing staff

Table 6.1: Inclusion and exclusion criteria for nurse participants in part 3

6.4.2 Procedure

6.4.2.1 Participant Recruitment

Following agreement from the hospital ward charge nurse for the involvement of qualified nursing staff in the pilot study, an information day was held on the ward to inform nurses of the study. Information sheets were distributed to those who expressed an interest in the study (Appendix 6.11). Two nurses were recruited for the pilot study at the time the information day was held. A mutually convenient time was then arranged with each nurse in order to carry out the pilot study.

6.4.2.2 Data Collection Process

Prior to data collection, both nurses were given the opportunity to ask questions that they had relating to the study, after which they were asked to read and sign a consent form. Each nurse was then asked to complete and comment on a short questionnaire

which sought information about their clinical and educational background (Appendix 6.12). Both nurses independently commented on the questionnaire, stating that all questions had been easily understood. Following this, the researcher informed each nurse that they were to perform an assessment of pressure ulcer risk and plan care as they normally would do in clinical practice. A TA 'warm up' was then conducted with each nurse in order to familiarise them with the method (Ericsson & Simon 1993). This involved presenting them with a scrambled 12 piece jigsaw, picture side down, to which they were asked to turn over the jigsaw pieces and piece together the jigsaw whilst thinking aloud.

Each nurse was then verbally given a 'handover' of information of the simulated patient which included his name, age, primary and secondary health complaints as well as a short family history, which the researcher read from a card (Appendix 6.13). A lapel microphone (which was attached to a small recording device) was securely attached to the tunic of each nurse in order to record their verbalisations. Nurses were reminded that if they paused for longer than a few seconds, they would hear the researcher give a verbal prompt (such as "please keep talking" or "please keep thinking aloud") (Fonteyn et al 1997). They were also informed that should they require information which was not contained in the nursing folder, or was not verbally given by the actor, that they had to indicate to the researcher what information they required. This request was made of the nurses in order to ensure complete coverage of information in the main study. Prior to being escorted to the location of the enacted patient, nurses were asked to indicate to the researcher when they were ready to start, and when they had finished the task, in order to ensure that the actions and verbalisations relating to the task were recorded.

When each of the nurses indicated their readiness to commence, they were handed a folder containing the patients 'nursing notes' to consult if they so wished. Following data collection, the researcher took the opportunity to obtain feedback about what the nurse's impressions and thoughts were of the simulation. Both nurses said that they felt that the simulation was very real, commenting in particular, on the opportunity to examine the elasticity of the skin through touch. Both nurses were asked not to discuss the study with other members of staff as it was thought that this may jeopardise data collection in the main study.

6.4.3 Results

No problems were encountered with the use of the audio and visual recording equipment in the pilot study. Neither of the nurses indicated to the researcher that they required further information, therefore it was concluded that the available information was sufficient. From a review of the video tapes, it was noted that the physical posture of the actor together with his verbalisations remained consistent in appearance and content, so no alterations were made to the simulation.

6.5 Main Study

Following the pilot study, the main data collection phase took place during the months of March and April 2004.

6.5.1 Sample

Having already established that the hospital ward involved in the pilot study was also willing to participate in the main study, the remaining 3 units involved in part 2 of the

study were contacted by telephone to explain the study. Of the 3 remaining units, the second hospital ward indicated a willingness to participate, however, both nursing homes declined involvement in the study. Owing to the lack of nursing homes agreeing to take part, and in order not to jeopardise the study through insufficient recruitment, nurses who were attending post registration courses at the University of Stirling, and who were currently working in nursing homes (who used the Waterlow scale) were approached. In total, a time limited convenience sample of 12 nurses was recruited during the two month recruitment period (9 hospital ward and 3 nursing home nurses). The recruitment period was time limited as both the actor and make up artist had on going work commitments. While the sample size was small in this quantitative part of the research project, the researcher acknowledges the impact of this on the extent to which the findings can claim to be representative, particularly in the absence of power calculation in determining the required sample size (Gerrish & Lacey 2006).

6.5.2 Procedure

6.5.2.1 Participant Recruitment

Prior to commencement of the main study, a revised ethics application was submitted to the University of Stirling Nursing and Midwifery Department's Research Ethics Committee. Following the obtainment of ethical approval (Appendix 6.14), A1 sized posters were placed in the department of Nursing and Midwifery at the University informing students of the study (Appendix 6.15). Three students contacted the researcher to express their interest in the study. A verbal explanation of the study was given to each of the students as well as an information sheet. All three students

volunteered their involvement in the study at the time information was given to them. Arrangements were then made with each student in order to conduct the study.

The Charge Nurses of both hospital wards were contacted to arrange for an information day to be held on the ward in order to inform and recruit qualified nurses onto the study. All nurses who expressed an interest in the study were given an information sheet. At the time the information days were held, a total of 9 nurses volunteered their involvement in the study. Arrangements were subsequently made with each nurse in order to carry out data collection.

Prior to the actual data being collected, all participants were given the opportunity to ask any questions that they had relating to the study after which they were asked to read and sign a consent form.

6.5.2.2 Data Collection Process

The procedure used to collect data in the main study was similar to that used in the pilot study. The only difference was that the make up state of the pressure sites was checked prior to each data collection session, ensuring that the presentation accorded with that which was observed in the photographs (taken previously at the panel meeting). In addition to this, the researcher also checked the consistency of the actor's performance at the end of each data collection session by viewing a short play back of the video.

6.6 Data Analysis

Following data collection, all 12 audio tapes were transcribed in verbatim form. Once transcription was complete, 6 tapes were randomly selected by the researcher, together with corresponding transcripts in order to check transcription accuracy, from which no transcription errors were found.

Two methods of analysis were used to analyse verbal data; verbal protocol analysis (VPA) followed by statistical analysis (using the Statistics Package for Social Scientist) (SPSS version 12).

6.6.1 Verbal Protocol Analysis

VPA is based upon information processing theory (Chapter 2), with the verbal utterances of an individual seen to be a reflection of the cognitive route one takes during a problem solving task (Jones 1989, Newell & Simon 1972). As such, it is assumed that concurrent verbalisation, which is the utterances vocalised by an individual whilst engaged in a problem solving task, is reflective of the content being attended to in the STM and central processor (Newell & Simon 1972). While no single predefined method for analysing verbal protocols exists, Ericsson and Simon (1993) suggest that it is common practice and often necessary to extract the coding categories from a study of the protocols themselves. This was the approach taken in this study. The method used for analysis of the verbal protocols is based on that given by Ericsson and Simon (1984). After multiple readings of the protocols, each protocol was segmented, with each segment representing a single statement that an individual had made. A preliminary analysis of the segmented transcripts was then undertaken which

involved identifying the cognitive operators used (Table 6.2). Following this, each operator was defined and given a numerical code and all the protocols were once more analysed, with the appropriate operator code attached to a segment of text. The final stage of analysis involved presenting the contents of each protocol, together with the operators as a Problem Behaviour Graph (PBG). (See Appendix 6.16 for a worked example of the allocated coding of data).

Code	Cognitive Operators	Definition
1	Collect	Gathers data either by reading, asking or observing
2	Interpret	Interprets the data
3	Evaluate	Evaluates the patient or the patients treatment
4	Review	Summaries information
5	Connect	Considers possible relationships amongst cues
6	Calculate	Performs a calculation of the category scores
7	Plan	Formulates care plan intervention(s)

Table 6.2: Cognitive operators identified

6.6.1.1 Reliability and Validity of the Cognitive Operators Identified

Inter-rater reliability of the cognitive operators was assessed by 2 raters. After each receiving a random selection of 6 transcripts, as well as a list of the cognitive operators and their definitions, independent coding of the protocols took place in order to assess the consistency of code allocation. Reliability of the codes was scored using Cohen's Kappa, from which a score of 0.82 was obtained, indicating a high level of agreement between the raters.

Content validity of the operators was assessed by 2 colleagues (both psychologists). After each colleague was informed of the aims of the study and given a list of the operators (together with definitions), they were asked if they thought that the cognitive operators identified were representative of those which they would expect to be used by an individual when engaged in an assessment and care planning task. Both colleagues agreed that the operators identified were representative of those which they would expect an individual to use when presented with such a problem solving task.

6.6.2 Statistical Analysis

Following data entry into a computerised database, the content of the verbal protocols was analysed using SPSS. Owing to the small sized sample (n = 12) and the uneven numbers within the sample groups (hospital nurses n = 9, nursing home nurses n = 3), the data was not normally distributed, therefore the non-parametric Mann-Whitney U test was used. When data were of nominal value, chi-square was used instead. As before, the level of significance was set at $p<0.05$.

6.7 Results

6.7.1 Demographic Results

The majority of nurses were female, accounting for 83% (n = 10) of the total number of participants (Table 6.3). The nurses mean age was 35 years (range 23 - 51), with the mean age of both hospital and nursing home nurses found to be almost identical. Nurses were educated to either diploma or degree level, and all had received training in pressure area care as part of their nursing qualification. However, only half of the total number of nurses had received training in the use of the Waterlow scale, with such

training indicated to have been given by clinical peers. Of the nurses who took part in this study, two thirds (n=8) held senior posts at clinical grades E and F (this representing senior nurses with considerable experience), while 33% (n=4) of nurses held D grade posts. Hospital nurses had been qualified for a slightly longer period of time (mean 11 years, range 2 – 30) compared to nursing home nurses (mean 9 years, range 2 – 15). However, the mean length of time in which both types of nurses had worked in the area of continuing care for older people, was found to be the same.

Demographic Information	Hospital Ward Nurse (n = 9)	Nursing Home Nurse (n =3)	Sample Total (n = 12)
Gender			
Males	2	0	2
Females	7	3	10
Age (Years)			
Mean (Standard Deviation)	35 (8.79)	37 (6.02)	35 (8.02)
Qualifications			
Diploma	6	1	7
Bachelor Degree	3	2	5
Pressure Care Training Received			
Yes	9	3	12
No	0	0	0
Waterlow Scale Training Received			
Yes	4	2	6
No	5	1	6
Clinical Grade of Nurse			
D Grade	3	1	4
E Grade	5	1	6
F Grade	1	1	2
Total Time Qualified (Years)			
Mean (Standard Deviation)	11 (9.39)	9 (6.50)	10 (8.52)
Total Time in Continuing Care (Years)			
Mean (Standard Deviation)	4 (2.34)	4 (2.80)	4 (2.20)

Table 6.3: Demographic data of nurse participants in part 3

The time each nurse took to complete the assessment and care planning task varied considerably (mean 15 minutes, range 6 – 22 minutes). Hospital nurses took slightly longer performing the task (mean 15 minutes, range 8 – 22) than nursing home nurses (mean 13 minutes, range 6 – 17). There was no significant difference between the two groups of nurses with the length of time taken to perform the task (p=0.727).

6.7.2 Protocol Analysis

6.7.2.1 Cognitive Operators

Nurses used the collect operator the most, (52% (n=380) of the total number of operators used) followed by the use of operators for evaluating (18%), planning (13%), connecting (10%), reviewing (4%), calculating (2%) and interpreting (0.1%) (Table 6.4).

When operator frequencies were analysed according to the type of unit in which the nurses worked, nurses working in nursing homes used the operators of collecting and connecting slightly more frequently (57% and 11%) than those nurses working in hospital wards (51% and 9%). The planning operator was used to a greater degree of frequency by hospital nurses (15%) than nursing home nurses (8%). The remaining operators of evaluating, reviewing, calculating and interpreting were used to almost identical degrees of frequency amongst both groups of nurses. There were no significant differences between the nurses in the cognitive operators they used.

Cognitive Operators	Hospital Ward Nurse ($n = 9$)	Nursing Home Nurse ($n = 3$)	Sample Total ($n = 12$)
Collect			
Total (%)	283 (50.8)	97 (56.7)	380 (52.1)
Median	30	35	31
Range	16-42	23-39	16-42
Interpret			
Total (%)	1 (0.1)	0 (0)	1 (0.1)
Median	---	---	---
Range	1	---	1
Evaluate			
Total (%)	102 (18.3)	29 (16.9)	131 (17.9)
Median	11	11	11
Range	4-19	6-12	4-19
Review			
Total (%)	23 (4.1)	8 (4.6)	31 (4.2)
Median	2	4	3
Range	0-5	0-4	0-5
Connect			
Total (%)	52 (9.3)	18 (10.5)	70 (9.6)
Median	6	6	6
Range	2-11	2-10	2-11
Calculate			
Total (%)	12 (2.1)	5 (2.9)	17 (2.3)
Median	1	1	1
Range	1-4	1-3	1-4
Plan			
Total (%)	84 (15.0)	14 (8.1)	98 (13.4)
Median	11	5	9
Range	3-13	2-7	2-13
Totals	**557 (100)**	**171 (100)**	**728 (100)**

Table 6.4 Cognitive operators used according to unit type nurse

6.7.2.2 Information Sources Used

The frequency of the different methods used by the nurses to collect information was also calculated. Overall, information gained by talking to the patient was the most frequently used method of collecting data (46%), followed by the use of written information (36%) and observation (18%) (Table 6.5). Both hospital and nursing home nurses used each of the three methods to similar degrees of frequencies. No results of

statistical significance were found between the 2 groups of nurses and the information sources used.

Information Sources	Hospital Ward Nurse	Nursing Home Nurse	Sample Total	Sig.
Written (Blue) Total (%) Median Range	104 (36.7) 11 5-26	33 (34.0) 11 7-15	137 (36.0) 11 5-26	0.727
Verbal (Red) Total (%) Median Range	129 (45.5) 14 5-22	45 (46.3) 16 11-18	174 (45.7) 15 5-22	0.864
Observation (Green) Total (%) Median Range	50 (17.6) 5 2-8	19 (19.5) 6 5-8	69 (18.1) 6 2-8	0.600
Totals	**283 (100)**	**97 (100)**	**380 (100)**	

Table 6.5: Information sources used according to unit type nurse

6.7.2.3 Information Cues

The frequency with which information cues were mentioned during think aloud was calculated. Information cues are presented according to whether or not they are listed on the Waterlow scale, with cues not listed on the tool referred to as 'other cues'.

6.7.2.3.1 Waterlow Cues

Both hospital and nursing home nurses used a total of 13 cues from each of the 10 information categories listed on the Waterlow scale (Table 6.6). The most frequently used cue was that of the patient's pressure areas (be it through nurse examination of the patient or though patient self report), (39% of the total number of Waterlow cues) followed by cues relating to mobility (14%), appetite (10%), diabetes (6%), continence

(6%) and medication (5%), with the remaining Waterlow cues such as weight (4%), smoking (3%), age (3%), stroke (3%), weight (2%), heart disease (2%) and recent surgery (1%) used less frequently.

Hospital and nursing home nurses varied slightly in the frequency with which such cues were used, with hospital nurses using weight, height, continence, mobility, age and recent surgery less frequently than nurses working in nursing homes. Cues such as the appearance of pressure areas, appetite, heart disease, smoking, diabetes, stroke and medication were found to be used slightly more frequently by hospital nurses than nursing home nurses. No results of statistical significance were found between the 2 groups of nurses and the cues used.

		Hospital Ward Nurse				Nursing Home Nurse					
Waterlow Category	**Waterlow Cue**	**Total**	**%**	**Median**	**Range**	**Total**	**%**	**Median**	**Range**	**Sample Total**	**Sig.**
Skin Type	**Pressure Areas**	84	41.5	7	6-16	21	31.8	7	6-8	105	0.482
Mobility	**Mobility**	24	11.8	2	1-8	14	21.2	5	3-6	38	0.100
Appetite	**Appetite**	24	11.8	2	1-5	5	7.5	1	1-3	29	0.282
Neurological Deficit	**Diabetes**	14	6.9	1	0-4	3	4.5	1	0-2	17	0.864
	Stroke	7	3.4	1	0-1	1	1.5	---	0-1	8	0.282
Continence	**Continence**	10	4.9	1	0-3	6	9.0	2	2-2	16	0.209
Medication	**Medication**	12	5.9	1	0-3	2	3.0	1	0-1	14	0.482
Build/Weight for Height	**Weight**	8	3.9	1	0-3	4	6.0	2	0-2	12	0.600
	Height	3	1.4	---	0-3	2	3.0	1	0-1	5	0.482
Sex/Age	**Age**	6	2.9	1	0-1	3	4.5	1	1-1	9	0.482
Tissue Malnutrition	**Cardiac Failure**	4	1.9	---	0-1	1	1.5	---	0-1	5	0.804
	Smoking	5	2.4	1	0-1	3	4.5	1	1-1	8	0.282
Major Surgery/Trauma	**Recent Surgery**	1	0-4	---	0-1	1	1.5	---	0-1	2	0.600
	Totals	**202**	**100**			**66**	**100**			**268**	

Table 6.6: Waterlow cues used according to unit type nurse

6.7.2.3.2 Other Cues

Hospital and nursing homes nurses also used a number of cues not listed on the Waterlow scale (Table 6.7). In total, 18 other information cues were identified with mood found to be the most frequently used (25%). The patients' level of social activity was also found to be used to a high degree of frequency (14%), followed by the use of the patient's past Waterlow risk score (9%), sleep pattern (8%), general wellbeing (8%), dietician input (7%), pain (5%), motivation (5%), chiropody input (5%) and currently used pressure relieving devices (PR) (5%). A number of other cues such as wheelchair comfort (3%), circulation (2%), limb sensation (2%), rest pattern (2%), swallow (1%), blood glucose (1%), transferring ability (1%) and social services (1%) input were also found to be used, albeit to a lesser degree of frequency.

Hospital nurses used a greater number of other cues than nurses working in nursing homes (17 and 11 cues, respectively). Hospital nurses used cues such as sleep, general wellbeing and motivation more frequently than nursing home nurses. Nursing home nurses used mood, social activity, patients past risk score, chiropody input and current pressure relieving devices to a greater degree of frequency than hospital nurses. Cues such as dietician input, pain, wheelchair comfort, rest pattern, transferring ability and social services input, were used exclusively by nurses working in hospital wards.

	Hospital Ward Nurse				Nursing Home Nurse					
Other Information Cues	**Total**	**%**	**Median**	**Range**	**Total**	**%**	**Median**	**Range**	**Sample Total**	**Sig.**
1. Mood	18	23	1	0-7	8	27.5	4	0-4	26	0.727
2. Social Activity	9	11.5	1	0-4	6	20.6	2	0-4	15	0.482
3. Past Risk Score	6	7.6	1	0-1	4	13.7	1	1-2	10	0.209
4. Sleep Pattern	6	7.6	---	0-3	2	6.8	1	1-1	8	0.727
5. General Wellbeing	7	8.9	---	0-3	1	3.4	---	0-1	8	0.864
6. Dietician Input	7	8.9	---	0-3	0	0	---	---	7	0.282
7. Pain	5	6.4	---	0-2	0	0	---	---	5	0.282
8. Motivation	4	5.1	---	0-1	1	3.4	---	0-1	5	0.864
9. Chiropodist Input	3	3.8	---	0-2	2	6.8	---	0-2	5	0.727
10. PR Device	3	3.8	---	0-1	2	6.8	---	0-2	5	0.864
11. W/Chair Comfort	3	3.8	---	0-1	0	0	---	---	3	0.482
12. Circulation	1	1.2	---	0-1	1	3.4	---	0-1	2	0.600
13. Limb Sensation	1	1.2	---	0-1	1	3.4	---	0-1	2	0.600
14. Rest Pattern	2	2.5	---	0-2	0	0	---	---	2	0.864
15. Swallow	0	0	---	---	1	3.4	---	0-1	1	0.482
16. Blood Glucose	1	1.2	---	0-1	0	0	---	---	1	0.864
17. Ability to Transfer	1	1.2	---	0-1	0	0	---	---	1	0.864
18. Social Services input	1	1.2	---	0-1	0	0	---	---	1	0.864
Totals	**78**	**100**			**29**	**100**			**107**	

Table 6.7: Other information cues used according to unit type nurse

6.7.2.4 Care Interventions Recommended

A number of care interventions were recommended by the nurses (Table 6.8). From an overall total of 21 recommendations made by the nurses, the most frequently mentioned recommendation was to change the patient's mattress (9%), followed by daily monitoring of patient's dietary intake (8%), use of barrier cream on pressure areas (7%), change of antidepressant medication (7%), turning the patient at night when in bed (turning normally involves rotating the patient from side to back to opposite side at regular time intervals) (6%), use of elbow protectors (6%), night time sedation (6%), encourage activity participation (6%) and daily assessment of pressure areas (6%).

Hospital nurses made a greater number of recommendations (median 11, range 3 - 13) than nursing home nurses (median 5, range 2-7). Regardless of the number of recommendations made, the nature of the recommendations made by both hospital and nursing home nurses seem to relate to pressure ulcer prevention, psychosocial needs and medication.

Interventions Recommended	Hospital Ward Nurse				Nursing Home Nurse					
	Total	%	Median	Range	Total	%	Median	Range	Sample Total	Sig.
1. Change Mattress	6	8.3	1	0-1	2	14.2	1	0-1	8	1.000
2. Monitor Dietary Intake Daily	6	8.3	1	0-1	1	7.1	---	0-1	7	0.482
3. Barrier Cream to Sacrum	5	6.9	1	0-1	1	7.1	---	0-1	6	0.600
4. Change Antidepressant	5	6.9	---	0-2	1	7.1	---	0-1	6	0.727
5. Night Turns	5	6.9	1	0-1	0	0	---	---	5	0.209
6. Elbow Protectors	4	5.5	---	0-1	1	7.1	---	0-1	5	0.864
7. Offer Night Sedation	4	5.5	---	0-1	1	7.1	---	0-1	5	0.864
8. Encourage Activity Participation	4	5.5	---	0-1	1	7.1	---	0-1	5	0.864
9. Assess Pressure Areas Daily	5	6.9	1	0-1	0	0	---	---	5	0.209
10. Change W/Chair Cushion	3	4.1	---	0-1	1	7.1	---	0-1	4	1.000
11. Offer Regular Analgesia	3	4.1	---	0-1	1	7.1	---	0-1	4	1.000
12. Refer to Occupational Therapy	4	5.5	---	0-1	0	0	---	---	4	0.282
13. Record Weight Weekly	4	5.5	---	0-1	0	0	---	--	4	0.282
14. Encourage Talks with Staff	3	4.1	--	0-1	0	0	---	---	3	0.482
15. W/Chair Footplates	3	4.1	---	0-1	0	0	---	---	3	0.482
16. Assess for Correct W/Chair	2	2.7	---	0-1	1	7.1	---	0-1	3	0.864
17. Assess Pressure Areas Weekly	2	2.7	---	0-1	0	0	---	---	2	0.600
18. Dress Ear Wound As Required	2	2.7	---	0-1	0	0	---	---	2	0.600
19. Re-Refer to Dietician	2	2.7	---	0-1	0	0	---	---	2	0.600
20. Review Insulin	0	0	---	---	2	14.2	1	0-1	2	0.100
21. Perform Doppler Examination	0	0	---	---	1	7.1	---	0-1	1	0.482
Totals	**72**	**100**			**14**	**100**			**86**	

Table 6.8: Care interventions recommended according to unit type nurse

6.7.3 Waterlow Scores

There was wide variation in the total assessment score allocated by each nurse (Figure 6.1). The variation spanned two of the Waterlow risk categories, with seven hospital and two nursing home nurses scoring the patient at 'very high risk', with the remaining nurses scoring the patient within the category of 'high risk'.

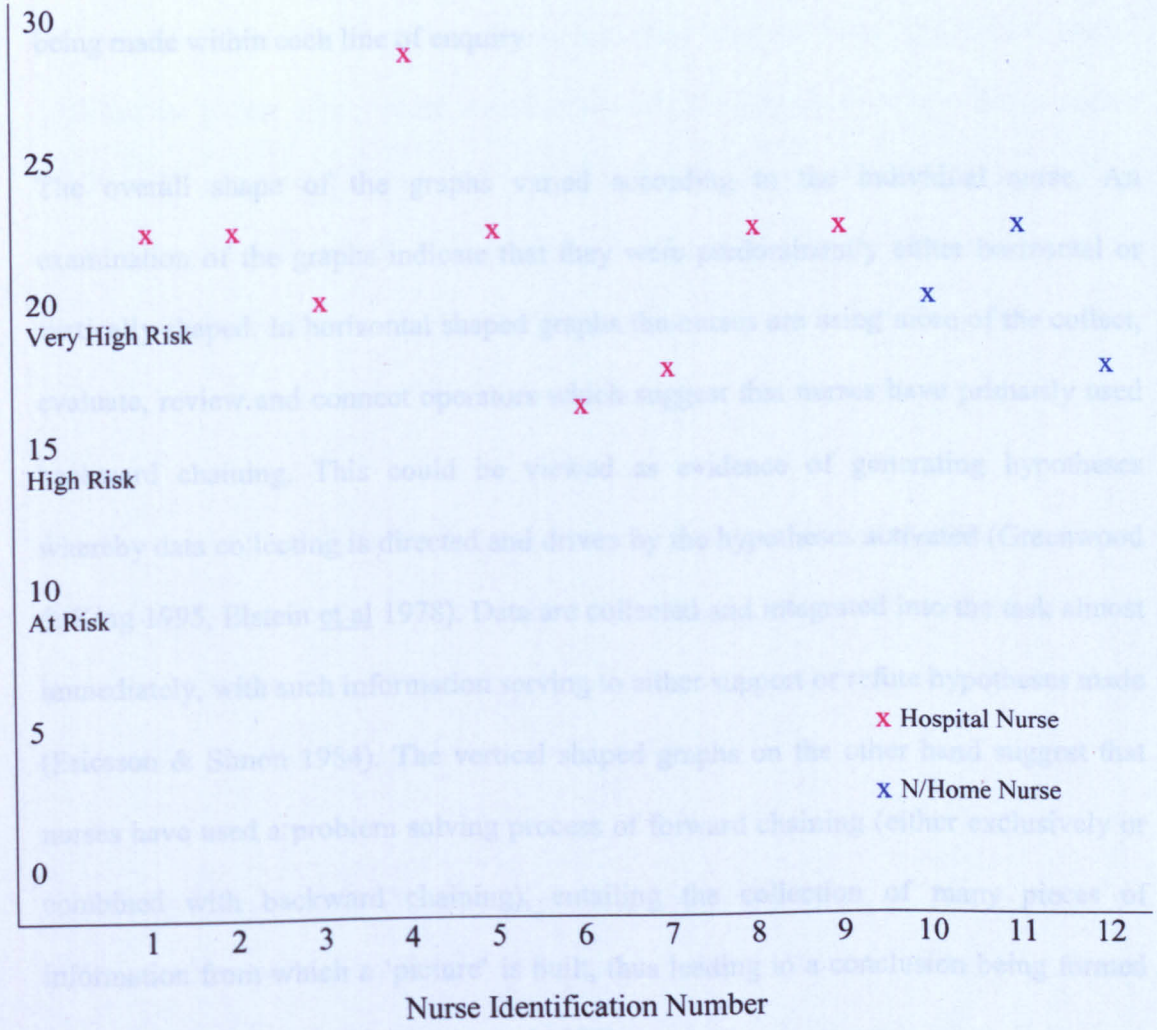

Figure 6.1: Assessment scores for each nurse according to unit type

6.7.4 Patterns of Reasoning

PBG allow for a diagrammatical illustration of the information used as well as its pattern of use, the methods used to collect the information and the cognitive operators used (Appendix 6.17). Each segment of the protocol has been numerically labelled and then plotted in sequence. The vertical axis is used to show how the participant moves from one line of inquiry to another, and the horizontal axis shows the progressive steps being made within each line of enquiry.

The overall shape of the graphs varied according to the individual nurse. An examination of the graphs indicate that they were predominantly either horizontal or vertically shaped. In horizontal shaped graphs the nurses are using more of the collect, evaluate, review and connect operators which suggest that nurses have primarily used backward chaining. This could be viewed as evidence of generating hypotheses whereby data collecting is directed and driven by the hypotheses activated (Greenwood & King 1995, Elstein et al 1978). Data are collected and integrated into the task almost immediately, with such information serving to either support or refute hypotheses made (Ericsson & Simon 1984). The vertical shaped graphs on the other hand suggest that nurses have used a problem solving process of forward chaining (either exclusively or combined with backward chaining), entailing the collection of many pieces of information from which a 'picture' is built, thus leading to a conclusion being formed (Greenwood & King 1995, Elstein et al 1978).

7 hospital and 2 nursing home nurses appeared to use a mixture of forward and backward reasoning, with the use of forward chaining alone used in the PBG of 2 hospital and 1 nursing home nurse.

When the PBG were grouped according to their overall shape (i.e. horizontal or vertical), and compared with the nurses' demographic data, there was a relationship between the PBG and the length of time a nurse had been qualified. The PBG of nurses qualified for longer than 2 years were horizontally shaped, whereas the PBG of nurses qualified for less than 2 years were vertically shaped. Because of this, further analysis of the data was undertaken. To reduce the likelihood of a Type 1 error occurring, a Bonferroni adjustment was applied to the original alpha level of $p<0.05$, thus a more stringent level was set at $p<0.025$ (Pallant 2001).

The results of this analysis are presented in the remainder of this section with nurses grouped according to the length of time qualified. As such, nurses who have been qualified for longer than 2 years are referred to here as experienced ($n = 9$), and those qualified for less than 2 years as less experienced ($n = 3$).

6.7.5 Comparison of Experienced and Less Experienced Nurses

Experienced nurses consistently took longer to perform the task (mean 16 minutes, range 12-22) than nurses with less experience (mean 7 minutes, range 9-9). This difference was statistically significant ($p=0.009$).

6.7.6 Protocol Analysis

6.7.6.1 Cognitive Operators

Nurses qualified for longer than 2 years collected, evaluated and reviewed more pieces of information than less experienced nurses, and made many more connections between different pieces of information (Table 6.9). Experienced nurses also recommended a greater number of care interventions than nurses with less experience. These differences were statistically significant.

Cognitive Operator	Experienced Nurse	Less Experienced Nurse	Sig.
Collect Total (%) Median Range	315 (50.3) 35 28-42	65 (63.7) 23 11-17	**0.009**
Interpret Total (%) Median Range	0 --- ---	1 (0.9) 0 0-1	0.482
Evaluate Total (%) Median Range	115 (18.3) 11 28-42	16 (15.6) 6 4-6	**0.009**
Review Total (%) Median Range	31 (4.9) 4 1-5	0 --- ---	**0.009**
Connect Total (%) Median Range	62 (9.9) 6 3-11	8 (7.8) 2 2-4	**0.018**
Calculate Total (%) Median Range	14 (2.2) 1 1-4	3 (2.9) 1 1-1	0.600
Plan Total (%) Median Range	89 (14.2) 11 5-13	9 (8.8) 3 2-4	**0.009**
Totals	**626 (100)**	**102 (100)**	

Table 6.9: Cognitive operators used according to experience of nurse

6.7.6.2 Information Sources

Experienced nurses used written and verbal information more frequently as a source of information than less experienced nurses (Table 6.10). The frequency with which both experienced and less experienced nurses used observation was found to be similar. There was a significant difference in the frequency with which experienced nurses used written information compared to less experienced nurses. However, there was no difference between the nurses in the frequency with which they collected information through verbal interaction with the patient and observation.

Information Sources	Experienced Nurse	Less Experienced Nurse	Sig.
Written (Blue) Total (%) Median Range	120 (38.0) 13 6-26	17 (26.1) 5 5-7	**0.018**
Verbal (Red) Total (%) Median Range	145 (46.0) 16 10-22	29 (44.6) 11 5-13	0.064
Observation (Green) Total (%) Median Range	50 (15.8) 5 2-8	19 (29.2) 6 5-8	0.600
Totals	**315 (100)**	**65 (100)**	

Table 6.10: Information sources used according to experience of nurse

6.7.6.2.1 Waterlow Cues

Overall, experienced and less experienced nurses used a similar number of Waterlow cues (12 and 13 respectively) to similar degrees of frequency, with the exception of diabetes and medication which were used more frequently by experienced nurses (Table 6.11). Pressure area(s) were found to be the most commonly used cue by both

experienced and less experienced nurses. Of the Waterlow cues used, recent surgery was found to be used exclusively by less experienced nurses. There were no significant differences between the cues used according to the experience of the nurse.

		Experienced Nurse				Less Experienced Nurse				
Waterlow Category	**Waterlow Cue**	**Total**	**%**	**Median**	**Range**	**Total**	**%**	**Median**	**Range**	**Sig.**
Build/Weight for Height	**1. Weight**	9	4.3	1	0-3	3	5.0	1	0-2	1.000
	2. Height	3	1.4	---	0-1	2	3.3	1	0-1	0.482
Skin Type	**3. Pressure Areas**	83	39.7	7	7-16	22	37.2	6	6-10	0.282
Continence	**Continence**	12	5.7	1	0-2	4	6.7	1	1-2	1.000
Mobility	**Mobility**	31	14.8	2	1-8	7	11.8	3	1-3	0.727
Sex/Age	**Age**	6	2.8	1	0-3	3	5	1	1-1	0.482
Appetite	**Appetite**	23	11	2	1-5	6	10.1	1	1-4	0.482
Tissue Malnutrition	**Heart Disease**	3	1.4	---	0-1	2	3.3	1	0-1	0.482
	Smoking	6	2.8	1	0-1	2	3.3	1	0-1	1.000
Neurological Deficit	**Diabetes**	15	7.1	1	0-4	2	3.3	1	0-1	0.482
	Stroke	6	2.8	1	0-1	2	3.3	1	0-1	1.000
Major Surgery/Trauma	**Recent Surgery**	0	0	---	---	2	3.3	1	0-1	0.100
Medication	**Medication**	12	5.7	1	0-3	2	3.3	1	0-1	0.482
	Totals	**209**	**100**			**59**	**100**			

Table 6.11: Waterlow information cues used according to experience of nurse

6.7.6.2.2 Other Cues

From the 19 other cues identified, nurses with more than 2 years experience used a greater number of cues to a greater degree of frequency than less experienced nurses (Table 6.12). Experienced nurses used mood the most frequently (26%), followed by social activity (15%), past risk score (8%), sleep pattern (8%), dietician input (7%), general wellbeing (5%), pain (5%) and input from the chiropodist (5%). Experienced nurses also used a number of other cues, but to a lesser degree of frequency. The most commonly used cue by nurses with less than 2 years experience was that of general wellbeing (33%), with cues such as the patient's past risk score (22%), motivation (11%) and swallow (11%) found to be used the least. However, these differences were not found to be significant.

	Experienced Nurse				Less Experienced Nurse				
Other Information Cues	**Total**	**%**	**Median**	**Range**	**Total**	**%**	**Median**	**Range**	**Sig**
Mood	26	26	2	0-7	0	0	---	---	0.064
Social Activity	15	15	1	0-4	0	0	---	---	0.064
Past Risk Score	8	8	1	0-2	2	22.2	1	0-1	0.727
Sleep Pattern	8	8	1	0-3	0	0	---	---	0.209
General Wellbeing	5	5	---	0-3	3	33.3	1	0-2	0.482
Dietician Input	7	7	---	0-3	0	0	---	---	0.282
Pain	5	5	---	0-2	0	0	---	---	0.282
Motivation	4	4	---	0-1	1	11.1	---	0-1	0.864
Chiropodist Input	5	5	---	0-2	0	0	---	---	0.482
PR Device	5	6.7	---	0.2	0	0	---	---	0.282
W/Chair Comfort	3	4	---	0-1	0	0	---	---	0.482
Circulation	2	2.7	---	0-1	0	0	---	---	0.600
Limb Sensation	2	2.7	---	0-1	0	0	---	---	0.600
Rest Pattern	2	2.7	---	0-2	0	0	---	---	0.864
Swallow	0	0	---	---	1	11	---	0-1	0.482
Blood Glucose	1	1.3	---	0-1	0	0	---	---	0.864
Ability to Transfer	1	1.3	---	0-1	0	0	---	---	0.864
Social Services	1	1.3	---	0-1	0	0	---	---	0.864
Totals	**100**	**100**			**7**	**100**			

Table 6.12: Other information cues used according to experience of nurse

6.7.6.3 Care Interventions Recommendations

A total of 21 care interventions were recommended by the nurses, with experienced nurses recommending all of the 21 interventions identified, whereas less experienced nurses recommended 6 interventions (Table 6.13). Of the recommendations made by experienced nurses, daily monitoring of the patients dietary intake was the most frequently mentioned (9%). Other interventions were recommended, but the most frequently mentioned included a change of antidepressant medication (7%), change of mattress (6%), use of elbow protectors (6%), use of night time sedation (6%) and to encourage the patient to partake in various activities (6%).

Nurses who had been qualified for less than 2 years suggested that a change of mattress was needed (33%), followed by the application of barrier cream to the sacral area (22%), the implementation of night time turns (11%) and the assessment of pressure areas on either a daily (11%) or weekly basis (11%).

Interventions Recommended	Experienced Nurse				Less Experienced Nurse				
	Total	%	Median	Range	Total	%	Median	Range	Sig.
1. Change Mattress	5	6.4	1	0-1	3	33.3	1	1-1	0.282
2. Monitor Dietary Intake Daily	7	9.1	1	0-1	0	0	---	---	0.064
3. Night Turns	4	5.1	---	0-1	1	11.1	---	0-1	0.864
4. Barrier Cream to Sacrum	4	5.1	---	0-1	2	22.2	1	0-1	0.600
5. Elbow Protectors	5	6.4	1	0-1	0	0	---	---	0.209
6. Change W/Chair Cushion	4	5.1	---	0-1	0	0	---	---	0.282
7. W/Chair Footplates	3	3.8	---	0-1	0	0	---	---	0.482
8. Offer Night Sedation	5	6.4	1	0-1	0	0	---	---	0.209
9. Change Antidepressant	6	7.7	1	0-2	0	0	---	---	0.209
10. Encourage Activity Participation	5	6.4	1	0-1	0	0	---	---	0.209
11. Offer Regular Analgesia	4	5.1	---	0-1	0	0	---	---	0.282
12. Encourage Talks with Staff	3	3.8	---	0-1	0	0	---	---	0.482
13. Assess Pressure Areas Daily	4	5.1	---	0-1	1	11.1	---	0-1	0.864
14. Assess Pressure Areas Weekly	1	1.2	---	0-1	1	11.1	---	0-1	0.600
15. Refer to Occupational Therapy	4	5.1	---	0-1	0	0	---	---	0.282
16. Dress Ear Wound as Required	1	1.2	---	0-1	1	11.1	---	0-1	0.600
17. Re-Refer to Dietician	2	2.5	---	0-1	0	0	---	---	0.600
18. Record Weight Weekly	4	5.1	---	0-1	0	0	---	---	0.282
19. Assess for Correct Size of W/Chair	3	3.8	---	0-1	0	0	---	---	0.482
20. Review Insulin	2	2.5	---	0-1	0	0	---	---	0.600
21. Perform Doppler Examination	1	1.2	---	0-1	0	0	---	---	0.864
Totals	**77**	**100**			**9**	**100**			

Table 6:13 Care interventions recommended according to experience of nurse

6.7.7 Waterlow Scores

Experienced nurses scored the patient to be at a greater risk of developing a pressure ulcer than did nurses with less experience, with experienced nurses consistently scoring the patient to be at a 'very high risk' (a score of 20+), whereas less experienced nurses consistently scored the patient to be at 'high risk' (a score of 15+) (Figure 6.2). There was a significant difference in the scores produced according to the experience of the nurse (p=0.009).

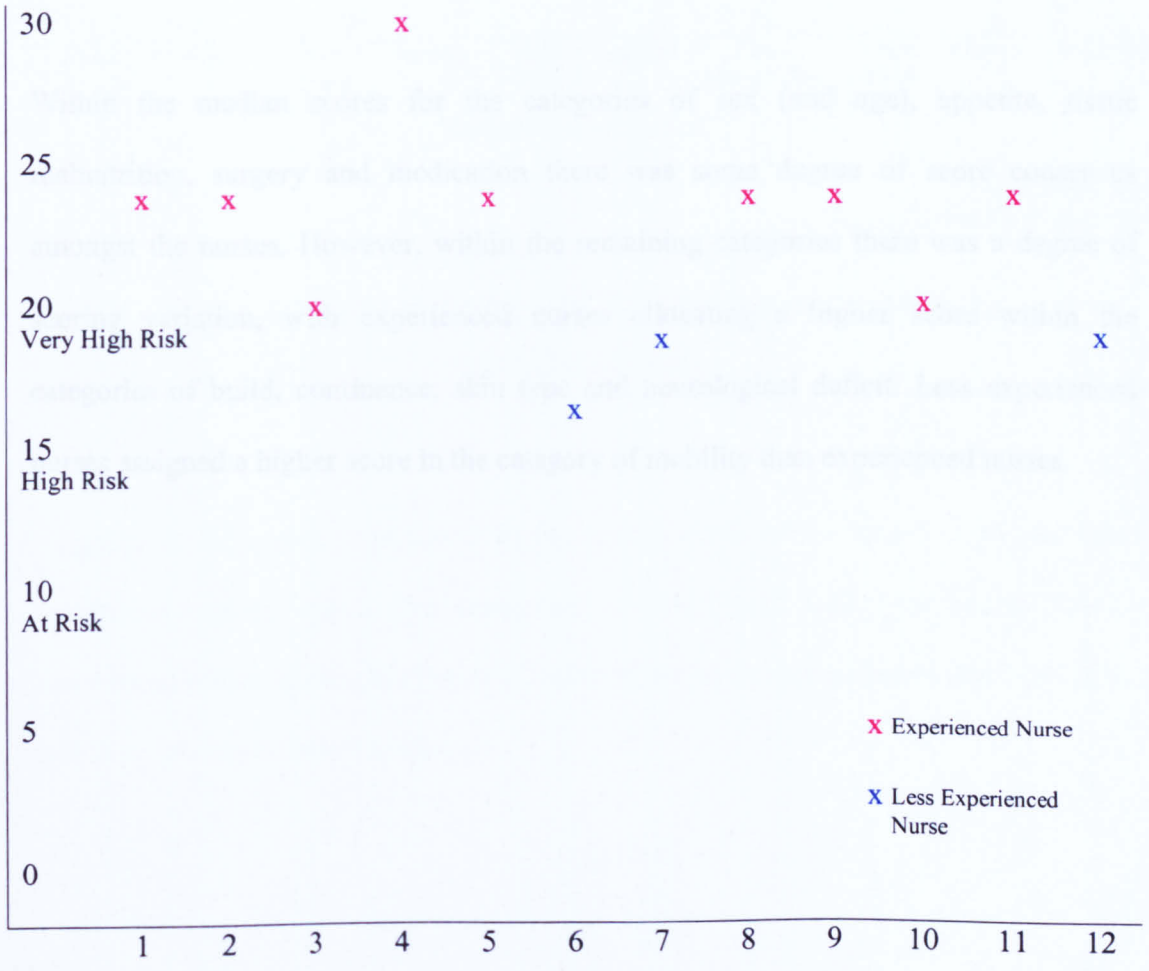

Figure 6.2: Waterlow scores according to experience of nurse

6.7.7.1 Analysis of the Subscales Scores

The Waterlow scale is comprised of a number of subscales, with each subscale having its own score parameters. To identify whether the variation in the overall score between experienced and less experienced nurses was caused by scoring variation in a particular section of the scale, the subscale scores allocated by each nurse were analysed. Figure 6.3 shows the median range of scores assigned by each nurse group (experienced and less experienced) for each scale category. The Waterlow categories are listed along the X-axis and the median score for each category along the Y-axis.

Within the median scores for the categories of sex (and age), appetite, tissue malnutrition, surgery and medication there was some degree of score consensus amongst the nurses. However, within the remaining categories there was a degree of scoring variation, with experienced nurses allocating a higher score within the categories of build, continence, skin type and neurological deficit. Less experienced nurses assigned a higher score in the category of mobility than experienced nurses.

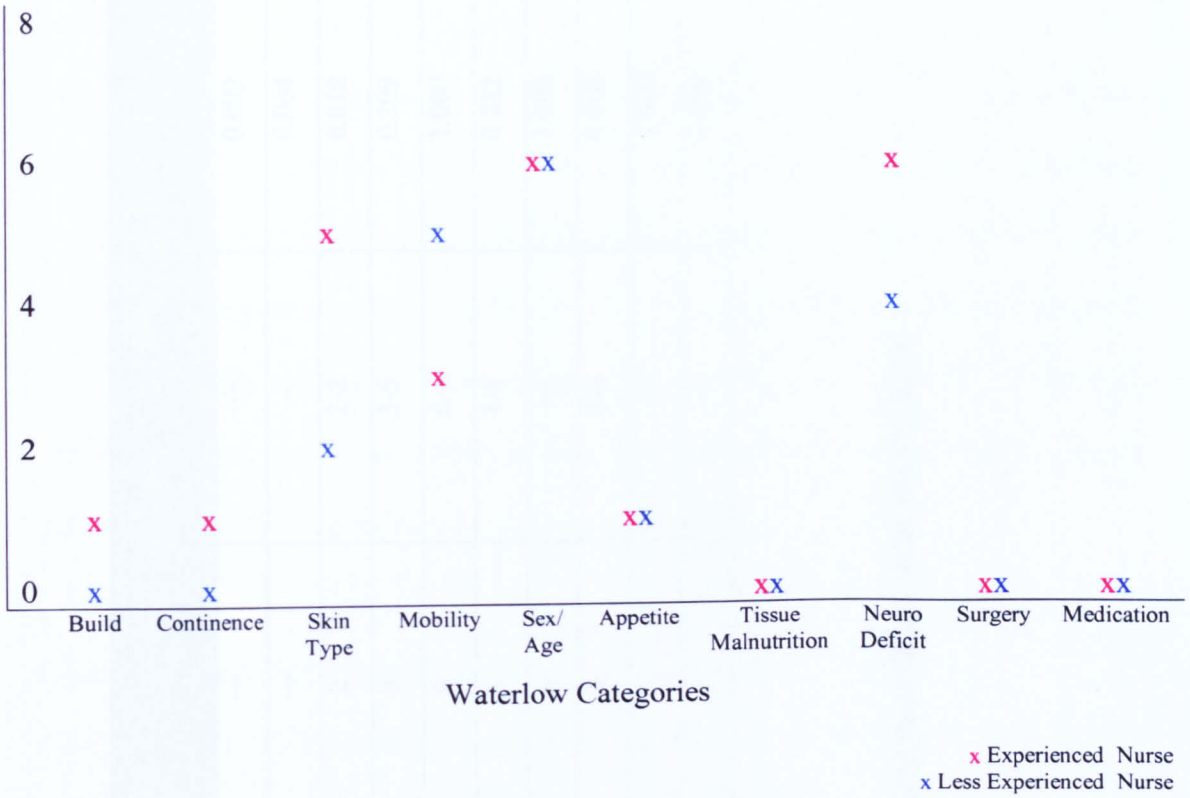

Figure 6.3: Median scores for each Waterlow category according to experience of nurse

A significant difference was found in the scores allocated by experienced and less experienced nurses within the categories of build and skin type (Table 6.14). Experienced nurses appear to allocate a higher score in the categories of build and skin more than less experienced nurses.

	Experienced Nurse		Less Experienced Nurse		
Waterlow Category	**Median**	**Range**	**Median**	**Range**	**Sig.**
Build	1	1-1	---	---	**0.009**
Continence	1	0-1	---	---	0.064
Skin Type	5	2-7	2	2-2	**0.018**
Mobility	3	3-5	5	3-5	0.209
Sex/Age	6	6-6	6	6-6	1.000
Appetite	1	1-3	1	1-1	0.282
Tissue Malnutrition	1	1-3	---	---	1.000
Neurological Deficit	6	4-6	4	4-4	0.064
Major Surgery	---	---	---	---	1.000
Medication	---	---	---	---	1.000

Table 6.14: Waterlow category median scores according to experience of nurse

6.8 Discussion

Results of this part of the study indicate that hospital and nursing home nurses do not appear to differ in their use of information and with how such information is processed. It seems that irrespective of the continuing care setting in which nurses work, they assess and plan pressure area care for an older person in a similar manner. However, when the results were analysed according to the experience of the nurse, there were differences and similarities found in how they used the Waterlow scale to assess pressure ulcer risk and plan care.

6.8.1 Information Sources and Cues Used

This part of the study found that experienced nurses were more likely to use a written source of information to a greater degree of frequency than less experienced nurses. Of the other sources used, information gained through talking with the patient was the most frequently used, whereas observation of the patient was the least frequently used for both experienced and less experienced nurses. While no obvious suggestion can be made to explain the differences and similarities with which experienced and less experienced nurses used different sources of information, it is suggested that the nurses used the information source which they believed to be the best source for the information they were seeking.

Of the nurses who took part in this part of the study, only one nurse (who was experienced), consulted a written source of information prior to commencing the assessment and care planning task. This find does not support the findings of Taylor's

(2002) study, who found that expert nurses were more likely to access multiple sources of information than novices prior to performing a procedural care task. Based on the result of this part of the study, it seems that both experienced and less experienced nurses do not always seek information in order to construct a problem framework of the situation prior to carrying out a problem solving task. It is, however, possible that this result might actually be an artefact of the design of this part of the study, as all nurses received a verbal 'handover' of information immediately prior to meeting the simulated patient and that they knew what the task was that they were undertaking.

In the pressure ulcer risk assessment and care planning task, overall experienced nurses were found to use a greater number of cues than less experienced nurses. Of the total number of cues used by experienced nurses, 60% of those were not listed on the Waterlow scale. While this result is in itself unsurprising, as it is reasonable to expect that experienced nurses by virtue of their length of time in practice are more knowledgeable about various conditions, diseases and patients' possible responses to the likes of such, it seems that experienced nurses are less likely to use the Waterlow scale as the basis of their assessment. It would appear that they have drawn on their wider pool of knowledge to provide the basis for their collection of cues. As suggested by Hamers et al (1994), the more nurses become familiar with a task in their domain, the more likely they are to accumulate a repertoire of information they considered to be critical identifiers of certain outcomes. In contrast, less experienced nurses used a greater number of cues listed on the Waterlow scale than those that were not listed (76% and 24%, respectively).

Nurses also varied in the order in which they used the cues. Experienced nurses appeared to look at an array of information, thus giving the PBG of these nurses a horizontal appearance. In contrast, less experienced nurses tended to focus on one cue at a time which is evident in the low use of the connect operator (which is the operator used to link one piece of information with another). This find is consistent with the findings of other studies (Grobe et al 1991, Corcoran 1986 a, b). This find is unsurprising as student nurses are taught to make judgements and decisions systematically (Tanner et al 1987, 1986), therefore they are likely to be more conscious of the information that they use through out the assessment and care planning process. Although no student nurse took part in this study, it is possible that because less experienced nurses had been qualified for less than 2 years, they were still in a developmental process of clinical judgement and decision making.

6.8.2 Risk Scores

A difference in the overall, as well as subscales scores was found between experienced and less experienced nurses, when assessing pressure ulcer risk using the Waterlow scale. Experienced nurses consistently scored the simulated patient to be at a 'very high risk' of developing a pressure ulcer compared to less experienced nurses who consistently scored the simulated patient to be at a lower level of risk, termed 'high risk'. Because of the difference in the scores, despite all nurses being presented with identical information, the results of this study suggest that how the Waterlow scale is used, and ultimately how one allocates scores, varies according to the experience of the tool user. The Waterlow scale is designed, as are most pressure ulcer risk assessment

tools, to produce an overall risk score which accords with a 'risk level' based on a continuum of no risk (characterised by a score of 10 and above) to very high risk (characterised by a score of 20 and above). One of the assumptions surrounding the use of pressure ulcer risk assessment tools is that the decisions which are made concerning pressure area care, at least in terms of allocating (expensive) pressure relieving equipment, are based on the degree of risk the patient has been identified to be at by the assessment tool. If the nurses in this part of the study had actually based their care interventions on the overall risk score generated by the tool, then the variability in the scores would ultimately have meant that different preventative measures would have been put in place.

As mentioned in chapter 4, the Waterlow scale consists of 10 categories, of which 4 of these require the assessor to select a rating score within them, while the remaining six require the assessor to know factual information about the patient they are assessing. In this part of the study it was noted that two particular categories were responsible for the variability in the overall score of the nurses, with experienced nurses found to be statistically more likely to allocate a higher score in the categories of build and skin type than nurses with less experience. It is unclear as so why these categories should be the categories responsible for the overall score variation. Research is therefore needed which examines why this might be the case. However, it is possible that the scores allocated may also be an artefact of this study. As this study examined nurses' use of the Waterlow scale it is not clear if the same or similar results would be found had a different pressure ulcer risk assessment tool been used.

6.8.3 Care Recommendations

Given the difference in the types of cues used by the nurses, inevitably the care interventions recommended also differed between experienced and less experienced nurses. When the recommended care interventions were examined according to less experienced nurses, they did not to correspond to those suggested by the Waterlow scoring system, despite a final score being known prior to such care interventions being recommended. This finding implies that these nurses were either not fully aware of how to use the tool or felt that none of the care interventions listed on the tool, which accorded with the risk score generated, were suitable. Given that less experienced nurses used the cues listed on the Waterlow scale as the basis of their assessment, it seems reasonable to expect that they would also use the scoring system of the tool upon which to base their care recommendations. It seems that while a lack of training in the use of the Waterlow scale does not appear to explain this finding, further research is needed in order to explore this issue further.

Similarly, the care interventions recommended by experienced nurses did not correspond with that of the actions recommended by the Waterlow scale. If one looks at the point of time in which experienced nurses made their recommendations, one can see that the occurrence of such happened concurrently with the assessment rather than after the assessment took place. Because of this, such interventions were never going to be based on the scoring system of the Waterlow as the overall risk score would have been unknown at that time. As recommendations were made in conjunction with the assessment, it is suggested that the experienced nurses were able to collect the high

number of cues that they did as they were interrelated, almost right away, with the care recommendations made. It seems that irrespective of the number or types of cues used, experienced nurses handled data in such a way that reduced cognitive strain. It could be suggested that the ability to recommend care interventions early on in the task is likely to be dependent on a process of pattern recognition (i.e. the health characteristics of the presented patient) where patterns are matched against already held prototypes, presumably built up over a substantial length of time in practice. However, a prerequisite for use of this recognition process is that an individual must already hold relevant information. Because this study found that care recommendations were consistently made by experienced nurses concurrent with the assessment, this supports the results of other studies which suggest that the development of a process of pattern recognition arises from extensive experience, whether that be with a certain patient group or with performing a certain task within a domain of practice (Grobe et al's 1991, Corcoran 1986 a, b).

While the difference found between the type of care interventions recommended between experienced and less experienced nurses could be due to differences in cognitive processing, it is possible that more practical reasons exists which might explain such differences. First of all, experienced nurses all held higher clinical grades (grade E and above), with the exception of one nurse. Because of this, it could be suggested that nurses who hold higher clinical grades are more likely to be responsible for patients with higher acuity needs than less experienced nurses. The ability to go beyond the tool suggests that experienced nurses have generic and specific expertise.

As such less experienced nurses are less likely to be assessing and planning care for complex patient cases. Perhaps the case presented was one of a complex nature for the less experienced nurses. However, regardless of how the patient case was perceived, at no point were any of the less experienced or experienced nurses observed to have sought the opinion or advise of a colleague, despite being informed at the beginning of the task that they should undertake the task as they normally would do. This result in itself implies that pressure ulcer risk assessment and care planning is an event which takes place by one person.

6.8.4 Reasoning Processes

Experienced nurses arrived at a decision more quickly as they collected fewer cues before a care intervention was recommended compared to the time taken by nurses with less experience. This finding is consistent with the results of an earlier study by Hamers et al (1994) who found that experienced nurses (or experts as they are referred to in the study) arrived at a decision quicker than less experienced nurses (otherwise referred to as novices) when assessing a child's level of pain. The speed with which experienced (or expert) nurses make their decisions has often been attributed to the way in which they organise or structure their knowledge, with such knowledge organised into meaningful chunks of information (Grant & Marsden 1987). As such, the organisation of these information chunks is thought to allow experienced nurses to access and process large amounts of data quickly and effectively (Marshall 1995).

This part of the study also found that experienced and less experienced nurses differed in the cognitive operators that they used when assessing and planning pressure area care. Experienced nurses were found to use the operators of collect, evaluate, review, connect and plan to a greater degree of frequency than less experienced nurses. Another operator which was identified was the interpret operator which was found to be the least used of the operators, with its use identified within the PGB of one nurse who had been qualified for less than 2 years. As expected, no difference was found between the nurses in their use of the calculate operator as this cognitive action was a necessary one which had to be performed by all nurses in order to arrive at a total risk score.

While the frequency data has indicated which cognitive operators are the most and least used, perhaps the operators are best discussed according to the sequence in which they were used. As indicated in the PBG, one can see that experienced nurses do not appear to use the operators in any particular sequence, unlike nurses who were less experienced as they very clearly did use operators in a definite sequence. Nurses who had been qualified for less than 2 years generally used the collect operator followed by the operators of evaluating, connecting, calculating and planning. Owing to the cognitive routes taken by the nurses it seems that experienced nurses in this study have used a mixture of forward and backward reasoning, where they have worked forward from the information collected to find a solution, and backwards from an objective to evaluate different options in order that a solution may be selected. Less experienced nurses on the other hand were found to use forward reasoning only.

6.9 Conclusion

The results of this third part of the study indicate that the experience of a continuing care nurse is an important factor in pressure ulcer risk assessment and care planning, a factor which is known to effect the processing of information (Green wood & King 1995, Hamers et al 1994, Benner et al 1991, Bordage & Lemieux 1991, Grobe et al 1991, Itano 1989, Corcoran 1986a, b). The results of this study suggest that while both experienced and less experienced nurses used cues that reflected those listed on the Waterlow, experienced nurses unlike less experienced nurses used a number of cues that were not. This indicates that experience nurses do not always use the information contained within the Waterlow as the basis of their assessment. Further to this, the results of this part of the study suggest that neither experienced nor less experienced nurses used the overall risk score produced by Waterlow scale. Therefore, it cannot be assumed that despite an emphasis on the use of assessment tools for nursing practice (NHS QIS 2005, Castledine 2004, CRAG 2002, Soderhamn & Berthold 1993, Johnson & Griffiths 2001, McCormack 1999) that such tools will be used to inform assessment and care planning

The results, however, should be interpreted with some degree of caution owing to the small sample size and uneven numbers of experienced and less experienced nurses. The extent to which these results can be generalised is limited as the results pertain only to the use of the Waterlow within the area of continuing care for older people when using a simulated patient case. While attempts were made to ensure that the simulation was as close to real clinical practice, the nurses did not have prior knowledge of the patient

they were assessing. Therefore the cognitive processes identified in the verbalisations collected may only be an indication of the processes used in the context of not knowing the patient.

7. STUDY DISCUSSION

7.1 Introduction

The overall aim of the study was to examine how nurses use assessment tools for judgement and decision making within the area of continuing care for older people in Scotland. In this chapter, findings from all parts of the study are discussed, ensuring that the study is seen as a whole and that each of the research questions posed are answered as fully as possible. There discussion of the study's results is structured around each of the research questions set for this study.

7.2 Overview of Study Findings

7.2.1 How Many and what Type of Assessment Tools are routinely used by Nurses in the Area of Continuing Care for Older People?

7.2.1.1 Number and Type of Assessment Tools

From a total of 56 assessment tools received in the survey, 16 of those were identified by name, the majority of which were pressure ulcer risk assessment tools, with the Waterlow scale being the most commonly used of these tools. In addition to the assessment of pressure ulcer risk, 16 other areas of health were formally assessed, with the areas of nutrition, urinary incontinence and moving and handling found to be the most commonly assessed. The areas of personal hygiene and spiritual need on the other hand were the least assessed areas of health.

The number and type of assessment tools identified in this study, together with the number of policies surrounding the assessment of specific health areas, may symbolise official recognition of the complex health care needs that older people present with in

continuing care units. The number and type of assessment tools may also be reflective of the importance of assessing the health care needs of older people within this care setting (Heath 2000, McCormack 1999, Soderhamn & Berthold 1993).

It is commonly assumed that assessment tools provide the nurse with the 'evidence' upon which they may base their practice. The content of pressure ulcer risk assessment tools commonly used in continuing care was compared to the factors which have been found to contribute to pressure ulcer development from the literature (Sae-Sia et al 2005, Baumgarten et al 2003, Papanikolaou et al 2003, Schoonhoven et al 2002, Mino et al 2001, Anthony et al 2000, Theaker et al 2000, Clark & Cullum 1992, Eck et al 1991). This comparison highlighted a lack of agreement between the two, raising questions about the 'evidence' used to underpin nurse practice and patient care. Other assessment tools that are used to assess and plan care for older people in continuing care may also lack this empirical foundation. If the foundation upon which assessment tools are derived from is questionable, then it cannot be assumed that such tools will provide the best available evidence for practice, or assist the nurse with making the correct judgement or decision about patient care. If older people in continuing care are to receive appropriate high quality care, then the assessment tools implemented into practice to assist nurses with their assessment must also be of a high quality, otherwise their purpose is limited.

Assessment tools need to be developed from high quality research if the intended outcome of an assessment tool is to be of use to nurse judgement and decision making.

With the number of current and expected users of continuing care predicted to increase according to anticipated population trends (Wood & Bain 2001), it is necessary that the tools used to assess the needs of an older person in continuing care be examined for their content and purpose if their needs are to be met.

7.2.1.2 Use of In House Developed Assessment Tools

Assessment tools used in practice should be both reliable and valid (Thompson 2005, Defloor & Grypodnock 2004). Reliability refers to the degree of consistency with which a tool is used, and validity the extent to which an assessment tool measures what it claims to measure. The results of this study found that in a number of continuing care units, assessment tools were developed in house by clinical peers to assess the needs of older patients. The development and use of these tools raises a number of concerns. Firstly, it is concerning that assessment tools are being used to assess the needs of older patients which have not been validated for use. Therefore, it cannot be assumed that the content of the tool is based on information which is known to be associated with the area of health being assessed. Secondly, it is likely that the quality of the judgements and decisions that are made using these tools are less than optimal. If it is assumed that in house developed assessment tools are useful to the nurses that develop them, research needs to be conducted to examine whether or not any similarities and differences exist in how such tools are used to assess and plan patient care compared to the use of named assessment tools. This may illuminate elements of an assessment tool which are useful to nurses in their judgement and decision making.

A key question regarding the development of in house assessment tools is why nurses feel it necessary to develop such tools for practice in the first place. There is therefore a need to explore why assessment tools are developed and whether they are filling a perceived practice need.

7.2.1.3 Frequency of Assessment

While guidelines exist which recommend when an assessment of a patient should take place (RCN 2003, Sizer 1996), this study found that hospital wards were more likely to assess formally the areas of moving and handling, nutrition, pressure area care and urinary incontinence on a weekly basis than were nursing homes. The areas of behaviour, bowel care, mobility, moving and handling and pain were more likely to be assessed on a monthly basis by nursing homes compared to hospital wards, thus indicating a 'routinised' nature of assessment. Possible reasons for this could be related to local and national policy on care guidelines (i.e. NHS Quality Improvement Scotland, Scottish Intercollegiate Guidelines Network) and custom of practice, with such differences in practice accepted as the norm within hospital wards and nursing homes. However, both hospital and nursing home nurses assessed areas of health on an informal basis much more frequently than assessments undertaken on a formal basis. As such, the results of the survey bear no relation to what actually happens in clinical practice, with informal assessment occurring much more frequently than formal assessment

When interviewed, both hospital and nursing home nurses suggested that they assessed a patient's pressure ulcer risk, amongst other health areas, on a regular informal basis, often on a daily basis when interacting with a patient. By undertaking routine care activities such as assisting a patient with washing and dressing, this provided the nurse with the opportunity to assess a patient's pressure ulcer risk on a continual and informal basis. This indicates that the assessment of pressure ulcer risk and other health areas occurs much more frequently than suggested by the literature on formal assessment.

The extent to which this result can be discussed further is limited as all interviewed nurses had been qualified for longer than two years, and had continued experience of nursing the older person they had assessed. It is not known if less experienced nurses informally assess pressure ulcer risk and other areas of health to a similar or different degree of frequency for an older person that they have nursed over a period of time.

7.2.1.4 Assessment Tool Training

It is commonly assumed that implementation of an assessment tool will bring about standardisation of nurse practice, consequently standardising patient care. Yet this study found that not all units provide training in the use of assessment tools, despite the main reason for implementing a tool being to ensure standardisation of nurse practice. When this result is linked to the emphasis that is placed on nurses to use assessment tools to assess the health care needs of older people and deliver care on the basis of those needs (Heath 2000, McCormack 1999, Soderhamn & Berthold 1993), it seems

fundamental that training should be provided in the use of assessment tools that are recommended for practice.

The results of this study also indicate that even when a nurse has received training in the use of an assessment tool, it does not always ensure that they will necessarily use the tool, or use it in its intended manner. Nurses in this study who had been qualified for longer than two years and who 'knew' the patient they were assessing were more likely to generate a risk hypothesis which was then matched against the actual risk score produced by the tool. If the risk score did not agree with the risk hypothesis, the score was then altered so that it did match the risk hypothesis. Altering the score in this way served as a means of nurses allocating patients with pressure relieving equipment such as mattresses without their actions being questioned. If the score did match the risk hypothesis, no alterations were made to the risk score. As such, use of the tool in this way served only to reinforce that the nurse's cognitive representation of a patient was accurate. The implications of this are that nurses may become overconfident in their judgement and decision making, applying the use of heuristics or rule based reasoning. Consequently, there may be a situation which is the exception to the norm, thus potentially resulting in a judgement or decision making error (Cioffi & Markham 1997, Jacovone & Dostal 1992, Kahneman & Tversky 1979). However, research is needed which examines the accuracy with which judgements and decisions are made when the use of heuristics and rule based reasoning strategies are employed. Further research is needed which explores if the manipulation of assessment tool information occurs when nurses use other assessment tools. Research is also needed in order to

examine whether less experienced nurses who have continued experience of nursing a patient use the Waterlow scale in a similar way. This would allow for further exploration of the concept of 'knowing' the patient in relation to the use of assessment tools. Further work is also needed to explore why nurses use assessment tools in this manner.

7.2.1.5 Assessment Tool Users

Despite the commonly held belief that patients will have their needs assessed by a qualified nurse (Green & Watson 2005), this study found that within the area of continuing care, nursing assistants are also involved in the use of assessment tools to formally assess the health care needs of older people. Such practice was found to occur in both hospital wards and nursing homes. While the results of this study do not identify whether nursing assistants have had any formal training in the use of such tools, the areas of health they assess, the frequency of tool use or the actual extent of their involvement in the use of such tools, nursing assistants do, nonetheless, use assessment tools to assess formally an area of health, a point not previously raised before within the literature.

The qualified nurses who were interviewed stated that nursing assistants regularly assessed a patient's pressure ulcer risk on an informal basis when performing routine care activities. The regularity with which nursing assistants perform such informal assessments suggests that they too carry out an assessment of pressure ulcer risk on a continual basis. Owing to the frequency with which nursing assistants informally assess

pressure ulcer risk, qualified nurses acknowledged the role of such staff members in pressure ulcer prevention, a point which has already been acknowledged in the literature (Gunningberg et al 2001).

While the role of nursing assistants in pressure ulcer prevention has been acknowledge (Gunningberg et al 2001), more research is needed which identifies the information cues they use, how they determine what measures to put in place should they 'assess' a patient to be at risk of pressure ulcer development, and how they communicate this information to other staff members.

7.2.2 How do Continuing Care Nurses Assess Pressure Ulcer Risk and Plan Care?

7.2.2.1 Performing an Assessment of Pressure Ulcer Risk in the Presence or Absence of the Patient

Formal assessment of an individual's pressure ulcer risk is often assumed to take place with the patient being assessed being present. In this study, continuing care nurses were found to assess an older person's risk of developing a pressure ulcer with the patient either present or absent from the assessment, another point which does not appear to have been raised before within the literature. It appeared that when an assessment was performed separate from the patient, continued experience of nursing an older patient permitted the nurse to assess pressure ulcer risk in this way. Regardless of when an assessment took place, knowledge of the patient, their skin condition and the recency with which a nurse had observed a patient's skin appeared to be important elements to the assessment of pressure ulcer risk and planning of care. It is not known if these elements are applicable and of the same importance in other domains of nursing

practice, and whether formal assessment of other health areas also occur separate from the patient being assessed. It is also unclear if such elements of pressure ulcer risk are applicable to less experienced nurses as the elements identified where those voiced by nurses who had been qualified for longer than two years.

The elements that nurses consider important when assessing pressure ulcer risk could be investigated further, in an attempt to develop a typology of risk factors. A series of evaluation studies could then be conducted to determine the usefulness of such a typology in the assessment of pressure ulcer risk within continuing care settings for older people.

7.2.2.2 Use of Information Sources

Nurses need to be able to access a variety of information sources when making judgements and decisions (Lamond et al 1996, Tschikota 1993, Luker & Kendrick 1992, Thiele et al 1991, Thiele et al 1986). This study found that when formally assessing pressure ulcer risk and planning care for an older person, continuing care nurses from both types of unit sought information from a variety of sources such as written documentation about the patient, verbal exchange with the patient, observation of the patient and prior knowledge of the patient. The use of such sources reflected those used by medical and surgical nurses when making an array of assessment judgements as identified by Lamond et al (1996).

However, this study found that there were differences in the use of external sources of information according to whether a patient was known to the assessing nurse or not. When a patient was known to the nurse, written information was used more frequently than information gained through verbal exchange or observation. In contrast, when a patient was not known to the nurse, verbal information was found to be the most frequently used source of information. Use of this information source in such instances could be indicative of a 'getting to know you' style of approach when assessing a patient, where verbal interaction permits conversational exchange of information. Comparisons of the information sources used according to whether a patient was known or not relates to the sources used by nurses with more than two year's experience. Therefore it is not known if less experienced nurses would have used similar sources of information to a similar or different degree of frequency had they known the patient they were assessing. The results of this study do however, suggest that when a patient is not known, experienced nurses are more likely to use written information to a higher degree of frequency than less experienced nurses. More work is needed which explores further the information sources used by nurses of various experience within the clinical setting. By doing so, the importance an individual places on a particular source of information for a task may be highlighted.

7.2.2.3 Use of Information Cues

A key part of assessment is the information that is used, as it is this which feeds directly into the assessment judgements and care decisions that a nurse makes (Taylor 2002, Lamond et al 1996, Luker & Kendrick 1992, Thiele et al 1991). It is assumed that the

content of an assessment tool provides the basis for an assessment from which a plan of care is devised, this in turn providing evidence for practice (Castledine 2004, Dunckley et al 2003).

The results of this study seem to indicate that the information contained in the Waterlow scale does not always underpin an assessment of pressure ulcer risk. While it is recognised that not all of the cues listed in the Waterlow scale are applicable to every patient (e.g. neurological deficit, major surgery etc), this study found that continuing care nurses, particularly those who had been qualified for longer than two years, often incorporated a number of information cues which were not listed on the tool in their assessment of pressure ulcer risk. Therefore, the information contained within the Waterlow scale may not necessarily be the information that a continuing care nurse needs in order to assess pressure ulcer risk, with elements important to pressure ulcer risk. The incorporation of information cues not listed on the Waterlow scale appears also to be attributed to the assessment of pressure ulcer risk often being part of a wider assessment process, with experienced nurses more likely to assess other areas of health than less experienced nurses. This result may, as suggested by Hamers et al (1994), be explained by nurses who are familiar with a task within their care domain accumulating a repertoire of information which they believe to be critical to the task in question. However, it is possible that different results may have been yielded had less experienced nurses been asked to assess pressure ulcer risk for a patient they had continued experience of nursing. Thus, patient familiarity needs to be considered when examining the judgement and decision making of nurses who have extended patient

contact, a point which does not appear to have been previously linked to the use of assessment tools within the literature.

7.2.2.4 Risk Scores and Care Interventions Recommended

The information produced by an assessment tool such as the risk score produced by the Waterlow scale, is often said to be indicative of a patient's degree of pressure ulcer risk (Gould et al 2004). It is assumed that once this score is produced, that it will be matched against a set of predefined recommended care interventions (Gould et al 2004). This study found that experienced and less experienced nurses varied in the risk score they arrived at when using the Waterlow scale, despite all nurses having access to the same information while assessing the same patient (in study three). Nurses with more than two year's experience consistently scored the patient to be at a higher degree of risk than less experienced nurses who consistently scored the patient to be at a lower degree of pressure ulcer risk. The degree of risk the patient was assessed to be at appeared to be dependent on the experience of the assessing nurse. Because of this, variability was found in the care interventions recommended, with experienced nurses more likely to recommend a greater number of different care interventions than less experienced nurses. Despite the number of care recommendations made, neither group of nurses appeared to base their plan of care on the information produced by the Waterlow scale. Had both experienced and less experienced nurses based their plan of care on the information produced by the Waterlow, there would have been variations in the type of care interventions recommended owing to the difference in risk score category. Therefore it cannot be assumed that patients with similar needs will

necessarily receive a similar quality of care, as the care prescribed is likely to be dependent on the experience of the nurse who assesses them. Further research is needed which examines whether replication of these results would come about in relation to other assessment tools that are recommended for use in continuing care settings. Research is also needed which explores nurses' attitudes to the use of assessment tools as this too may go someway to explaining the limited use of Waterlow scale.

7.2.3 What effect does the Waterlow Scale have on the judgement and decision making process of continuing care nurses?

7.2.3.1 Influences on Judgement and Decision Making

As already highlighted, it appears from the results of this study that the Waterlow scale has minimal effect on the judgement and decision making process of nurses working in continuing care settings for older people. Whilst other studies have found that experience, domain acquired knowledge and complexity of a task can influence how nurses process information (Greenwood & King 1995, Itano 1989, Ettenson et al 1987, Corcoran 1986 a, b), the results of this study suggest that prior knowledge of a patient may also influence how information is processed, and how an assessment tool is used. Nurses working in the area of continuing care who knew the patient they were assessing, did not just possess factual knowledge of that individual such as their name, age and diagnosis, they also knew the older person as an individual. Given the length of time with which older people reside in continuing care settings, compared with other care areas where a patients stay is considerably shorter (i.e. surgical, medical and palliative care wards), it is possible that the use of prior knowledge of a patient as a

source of information is likely to be a predominate feature in the judgement and decision making of continuing care nurses. Use of this knowledge may feature in the assessment and care planning of other areas of a patient's health, in addition to that of pressure ulcer risk. Further research is needed in order to examine the development of this knowledge in relation to recognising salient cues relevant to individual patients, and the use of such cues in the formation of assessment judgements and care decisions. Therefore research in the clinical setting using other assessment tools is clearly warranted as the results of this study relate only to the use of the Waterlow scale.

What the results of this study do not show is whether or not prior knowledge of the patient affects the accuracy with which continuing care nurses make their judgements and decisions. A number of studies have compared assessment tool accuracy with the use of clinical judgement alone, suggesting that assessment tools are not always any more accurate than the use of clinical judgement (Gould et al 2004, VandenBosch et al 1996, Kruse et al 1988, Pinholt et al 1987). However, such studies have not been conducted within long term care settings. Given that the use of the Waterlow scale by nurses working in the area of continuing care for older people is subject to manipulation as discussed earlier, researching what effect knowing the patient has on assessment accuracy seems likely to be shrouded in difficulty.

7.2.3.2 Reasoning Strategies

One of the assumptions made about the use of assessment tools is that as they contain and produce information which provides the nurse with a way of thinking about an area

of health (Harris et al 1998). The results of this study suggest that there is not one generic reasoning strategy which explains how continuing care nurses assess pressure ulcer risk and plan subsequent care. Nurses from both hospital wards and nursing homes appeared to use elements of hypothetico-deductive reasoning, heuristics and forward and backward reasoning. The employment of these reasoning strategies in nurse judgement and decision making is recognised within the literature (Wong & Chung 2002, Cioffi 2000, Jones 1989, Tanner et al 1987, Westfall et al 1986, Kahneman & Tversky 1982). While elements of hypothetico-deductive reasoning and heuristics were found to be employed by a nurse when assessing and planning care for a patient that they had prior knowledge of, forward and backward reasoning was used when they did not have access to this knowledge. It is possible that differences in the reasoning strategies employed may actually be an artefact of the differing methodologies used, and therefore are not necessarily related to whether or not a nurse has prior knowledge of a patient, thus warranting further research.

While no differences were found in the reasoning strategies of the nurses according to the type of continuing care unit in which they worked, differences were noted in the reasoning strategies according to the experience of the nurse. Less experienced nurses tended to use forward reasoning only, in contrast to the use of forward and backward reasoning by experienced nurses. Although all nurses were asked to undertake the same assessment and care planning task for the same patient, and were given the same information with which to do so, it cannot be assumed that information will be used in

a similar manner. Therefore, use of assessment tools by less experienced nurses cannot be assumed to mimic the way in which more experienced nurses' asses and plan care.

Although the extent of the differences as well as similarities of the identified reasoning strategies used by nurses with varying experience in the domain of continuing care is unclear, the way in which information was found to be processed can however, be explained by the theoretical underpinnings of this study (Newell & Simon 1972). It seems that irrespective of the experience of the nurse, information was processed in such a way that the amount of information held in the STM at any one time was within the limits of the working memory, reducing the potential for cognitive strain (Miller 1956). This is characterised by less experienced nurses assessing and planning care in a distinct linear fashion, viewing each cue as a separate chunk of information. Experienced nurses on the other hand were found to assess and plan care in a concurrent manner. This finding is supported by the results of other studies which have examined information use by nurses with varying lengths of experience in other care domains performing different assessment and care planning tasks (Tschikota 1993, Itano 1989).

7.3. Methodological Critique

The overall design of this study has allowed the researcher to gain a breadth of experience in using various sampling, data collection and research methods as well as various data analysis techniques. The design of this study also illuminates a clear research trail, with the results of one part of the study providing the basis to the next.

Taking the survey conducted in part 1 first, while a postal self-completion questionnaire was considered to be the most appropriate method of collecting data from a large number of named individuals from geographically dispersed units (Sapsford 1999, Wilson & McClean 1994), the response rate was poor. It is possible that the units who completed the questionnaire are likely to have been those most interested in the study, potentially creating a biased sample (Bowling 1997). Consequently, the results of the survey may not accurately reflect all the elements of assessment tool use within the continuing care setting. Despite piloting the questionnaire and efforts to increase response rates by supplying stamped addressed envelopes for the return of questionnaires as well as follow up letters expressing the importance of the study (Robson 2002, Krosnick 1999), one has to be cautious about the extent to which some of the results can be claim to be representative and the extent to which they can be generalised. For example, despite an almost even split in the number of hospital wards and nursing homes who returned completed questionnaires, it is not known if other areas of health are assessed in continuing care units that did not complete the questionnaire. Similarly, the frequency with which units formally assess a particular area of health such as oral care may also be different to that found in this survey. As the questionnaire was dependent on self-report, access to constructs such as attitudes and knowledge of assessment practice was unobservable, and the answers given may be of a socially desirable nature (Nancarrow & Brace 2000) owing to the heavy emphasis placed on the use of assessment tools in nursing practice. Taking account of these reservations from the information that was received, the results gave insight into the potential number and type of assessment tools that are used in the area of continuing

care for older people, which was the aim of the survey. Since pressure area care was found to be formally assessed in all of the units which returned completed questionnaires, with the majority of the units found to use the Waterlow scale, it was logical that this assessment tool should be the tool of focus for the remainder of the study.

The second part of the study involved directly observing nurses performing real pressure ulcer risk assessments and subsequently planning care after which, they were interviewed about the task they had undertaken. The questions each nurse was asked was dependent on their observed actions. While efforts were made to enhance the generalisability of the results by selecting both types of units from two different Scottish regions (Parahoo 1997), the nurse sample drawn from the units was small and all had been qualified for longer than two years. Therefore, the findings may not be applicable to other geographical locations and to the practice of newly qualified nurses working in the continuing care setting.

Each nurse who participated in this study was asked to select two patients, totalling 16 patients who where scheduled to have their pressure ulcer risk assessed, who were pressure ulcer free and who would be able to give informed and competent consent. It is possible that the patients who were selected may actually be individuals who had the most stable states of health and be the most compliant, which in turn may have assisted the nurse with presenting a favourable situation in which to be observed (Settersten & Lauver 2004). It is acknowledged that had other patients been selected with more acute

needs then perhaps different results may have been obtained. While efforts were taken to ensure that the researcher presence was as discrete as possible during the observations and that a good rapport with the nurses was established before data collection to minimise any concerns that they may have had having their practice observed, it is acknowledged that the effect which the researcher had as observer on the behaviour of the nurses cannot be underestimated (Robson 2002, Mason 1996).

Following each observation session, nurses were immediately interviewed about their actions and about the role of the Waterlow scale in their assessment and care planning. The immediacy of the interviews held following the observed sessions appeared to have allowed the nurses to recall the task they had performed with relative ease and accuracy. As the interviews were held separate from the patient, information could be sought and given freely from the nurse without the risk of upset to the patient. Based on the responses of the nurses, the researcher felt that they answered the questions about their practice honestly, with the manipulation of assessment tool information and its ambiguity accounting for non use of the tool given as examples.

Part 3 of the study involved a small number of nurses performing an assessment of pressure ulcer risk and plan of care for an enacted patient. Therefore, the extent to which the results can claim to be representative and generalised is limited (Robson 2002, Parahoo 1997). However, the study did give insight into how continuing care nurses use assessment tools for judgement and decision making, a phenomenon which has been largely unexplored within the literature. By using a simulation, although

developed from real patient data, the concept of 'knowing the patient' could not be explored further, a concept identified earlier in the study as an important element to the judgement and decision making of continuing care nurses. Therefore, the extent to which the verbal protocols of the nurses in this part of the study can claim to be reflective of the judgement and decision making strategies of continuing care nurses as they relate to the practice of pressure ulcer risk assessment and planning of care is limited. Retrospective semi-structured interviews could have been carried out with the nurses following think aloud, however, the researcher had concerns about inducing cognitive fatigue in participants (Ericsson & Simon 1993). The use of simulation ensured that all participants received the same information, which in turn meant that comparisons could be drawn between the nurses according to type of unit and their experience in terms of how they used the Waterlow scale to assess pressure ulcer risk and plan care.

A concern the researcher had during the process of data collecting related to the possible 'passing on' of information surrounding the simulation amongst nurse participants. Had nurses obtained such information prior to undertaking the simulated task, this may have influenced their performance of the task. The only means the researcher had of 'policing' such information was to ask participants not to discuss the study until data collection had ceased. On the whole, the researcher felt that all participants adhered to this request.

One of the difficulties encountered in use of think aloud relates to the mother tongue of two nurse participants, whose first language was not English. Often there were occasions that the utterances of these nurses would fluctuate between speaking in English and Hindu. Had the researcher anticipated the occurrence of this, the recruitment criteria would have requested that participants have English as their first language.

While there are acknowledged methodological drawbacks as they relate to each part of this study, the benefits of triangulating between observation, interviews and think aloud is that it allowed for a comprehensive overview of how nurses use the Waterlow scale to assess and plan patient care.

8. CONCLUSION

8.1 Conclusions and Implications for Policy

Assessment is an important activity in the area of continuing care for older people, as highlighted by the number and range of assessment tools apparently available for use in continuing care units participating in this study. Older people in continuing care settings are likely to have a number of different aspects of their health and behaviour assessed, supported by the use of assessment tools. Both local and national health policies place a heavy emphasis on the use of assessment tools in nursing practice as a way of assessing patient need (Evans & Means 2005, NHS QIS 2005, CRAG 2002, NMC 2002, DOH 2002, DOH 2001, Rantz et al 2000, Ellis 2000, DOH 1998). However, there are a number of unexplored assumptions surrounding the use of assessment tools for nurse practice and for patient care. The results of this study, while derived from small sized samples and non-generalisable, indicate that many of the assumptions may be unfounded, bearing little resemblance to nursing practice in continuing care settings for older people.

It is assumed that assessments tools will provide an evidence base for nurse practice, ensuring that patients receive high quality care (Castledine 2004, Soderhamn & Berthold 1993). A number of tools apparently being used by nurses in continuing care units participating in the survey were developed in-house by clinical peers. Even more widely available assessment tools, such as the Waterlow scale, may not be derived from empirical research, calling into question the 'evidence' upon which they are based. A

sound evidence base is important to nursing practice as nurses are accountable for their actions and the judgements and decisions that they make (Kitson et al 1996).

It is also assumed that assessment tools contain and provide the necessary information needed for an assessment and care planning task, improving the accuracy of a nurse's assessment and plan of care (McCormack 1999, Soderhamn & Berthold 1993). This study found that not all the information cues contained in the Waterlow scale were used by nurses when assessing pressure ulcer risk. Often nurses used more than just the information listed on the scale, suggesting that the cues listed were not necessarily the cues needed for the task. Based on the results of this study, it seems that an assessment of pressure ulcer risk was part of a wider assessment process, with nurses frequently assessing other areas of health in addition to that of pressure ulcer risk.

This study also found that nurses seldom used the overall risk score produced by the Waterlow scale as the basis for planning patient care. Nurses often suggested care interventions before knowing the final risk score, a finding that previous studies have not identified. On the occasions that a risk score was calculated prior to care interventions being recommended, nurses still did not base their plan of care on the final risk score. Therefore, it cannot be assumed that nurses will base their plan of care on the information produced by an assessment tool. However, further research is needed to determine if replication of these results would occur using another assessment tool as the results obtained in this study may be an artefact of the Waterlow scale. While a number of studies have examined assessment tool accuracy in relation to

nurse judgement and decision making (Defloor & Grypdonck 2004, Gould et al 2004, Schoonhoven et al 2002, Gould et al 2001, Halfens et al 2000, Pang & Wong 1998, Chan et al 1997, VandenBosch et al 1996, Kruse et al 1988, Pinholt et al 1987), none of these studies have actually examined the information cues used to inform judgement and decision making. The findings of this study question the extent to which using an assessment tool actually improves judgement accuracy.

Another assumption made about the use of assessment tools is that they provide structure to the assessment and care planning task (Johnson & Griffiths 2001). In this study such an assumption appears to be unfounded as nurses frequently did not use cues in a particular sequence and often assessed pressure ulcer risk and planned care in a concurrent manner. This result could be linked to the range of reasoning strategies found to be used by continuing care nurses when assessing pressure ulcer risk, indicating that nurses do not use one generic reasoning strategy. Other studies which have examined the reasoning strategies employed by nurses during a given task (Cioffi 2000, Cioffi & Markham 1997, Jacovone & Dostal 1992, Tanner et al 1987, Westfall et al 1986, Carnevali et al 1984, Gordon 1980) have identified the use of a single reasoning strategy. This, however, could be due to the methodologies employed in these studies, with one method of data collection being used compared to the range of methods used in this study.

The experience of the nurse was identified as a factor of influence in how the Waterlow scale was used to assess pressure ulcer risk and plan care. More experienced nurses

used a greater number of information cues, many of which did not correspond to those listed on the Waterlow scale. This is in comparison to less experienced nurses who were found to use a limited number of cues, most of which did match those listed on the tool. While this result supports the findings of other studies which have examined the number of cues used in assessment tasks by nurses with varying lengths of experience (Grobe et al 1991, Corcoran 1986 a, b), it cannot be assumed that nurses will necessarily use assessment tools in a similar manner. This is further evidenced in the number and range of care interventions suggested, with more experienced nurses recommending a greater number of complex care interventions compared with less experienced nurses who recommended fewer interventions. Based on this finding it seems that the care patients receive is dependent on the experience of the nurse who assess them, rather than the use of an assessment tool. This suggests that patients with similar needs may not necessarily receive similar standards of care, even if an assessment tool is used as part of that assessment and care planning process.

A number of studies suggest that experience, knowledge and task complexity influence how information is processed by an individual during judgement and decision making (Hamers et al 1997, Greenwood & King 1995, Tschikota 1993, Grobe et al 1991, Hughes & Young 1990, Itano 1989, Corcoran 1986 a, b). This study suggests that a nurse's knowledge of a patient may also influence how information is processed. It seems that when nurses 'know' the patient they are assessing and planning care for, they evaluate the risk score produced by the assessment tool to determine whether or not they perceive the score to be an accurate reflection of the patient's level of pressure

ulcer risk. If the score is judged to be accurate then the score remains unaltered. However if it is not, then the score is altered by the nurse to reflect their assessment of the patients perceived level of risk. Therefore, it cannot be assumed that assessment tools will necessarily be used in the manner in which they are intended, thus raising questions about the usefulness of assessment tools for nurse practice. However, further research is needed to examine whether or not other assessment tools are used by nurses in a similar way.

Assessment is considered to be central to nursing practice and to patient care as it informs the judgements and decisions made by nurses, subsequently shaping the care patients receive (Heath & Watson 2005, Castledine 2004, Vernon et al 2000, Crow et al 1995, Jacovone & Dostal 1992). However the results of this study have called into question the use of assessment tools as the basis for nurse judgement and decision making within the area of continuing care for older people. This has implications for health care policies which recommend the use of assessment tools.

At both local and national level, consultation exercises with nurses working in the area of continuing care for older people need to take place in order to investigate a number of issues, such as the development of in-house assessment tools, as they appear to be a common aspect of practice. Such consultations may also highlight a typology of factors which nurses' perceive to be relevant to assessing an area of health which are not listed in widely available assessment tools. With the identification of these factors, although likely to be context specific, a local as well as a national judgement and decision

making support initiative may be set up in which factors are recorded and accessed by nurses working in similar care settings. This initiative would then be evaluated for its effectiveness for nurse practice. Organisations also need to develop and implement strategies which discourage the manipulation of assessment tool information as a means by which nurses' distribute equipment (such as expensive pressure relieving equipment) without their actions being questioned. Policies need to be in place which encourages nurses to document the basis of their judgement and decision making, particularly when the information produced by an assessment tool is judged not to be accurate by the assessing nurse. Documenting the evidence base of an assessment or plan of care has the potential to illustrate the basis of nurse judgement and decision making, as well as provide a clear judgement and decision making trail, both to the individual nurse, their work organisation and external agencies.

Unless there is a shift in policy emphasis on the use of assessment tools, they seem likely to remain a feature of nurse practice in continuing care settings. The suggestions made above for policy takes this into account by putting forward initiatives which harness the use of assessment tools in the clinical area. Much work however must be done if the potential of these initiatives are to be exploited for the good for nurse practice and ultimately for patient care.

8.2 Recommendations for Future Research

Based on the results of this study, a number of recommendations for future research can be suggested.

- Given that health care policy in continuing care is of direct relevance to nurses and their practice, it seems that research is needed which examines nurses awareness of policy, particularly that relating to patient assessment.
- The effect of 'knowing the patient', which was identified as a source of information used by nurses, needs to be examined in relation to how this impacts on nurse judgement and decision making.
- Research is needed which examines how assessment tools are used by nurses in other clinical settings in order to discover if similarities and differences exist between them and nurses working in continuing care.

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APPENDICES

APPENDIX 2.1

TEXT BOUND INTO

THE SPINE

Assessment Area	Assessment Tool	No. of Assessment Tools Identified	Reference
Falls/Mobility	FRAINT (Fall Risk Assessment on Inpatients in Nevill Hall Trust). Falls Efficacy Scale	2	Parker (2000) McKee et al (2002)
Mental Health	Geriatric Depression Scale	1	Hyer et al (2001)
Nutrition	Mini Nutritional Assessment Index of Undernutrition East Orange Nutritional Screening Form Nutritional Risk Index Prognostic Nutritional Index	5	Persson et al (2002) Hall (1990) Brown & Stegman (1988) Naber et al (1997) Buzby et al (1980)
Pain	McGill Pain Questionnaire	1	Melzack (1975)
Pressure Area Care	Bedsore Liability Score Braden Gosnell I Gosnell II Knoll Norton Shannon Waterlow	8	Lowthian (1989) Bergstrom et al (1987) Gosnell (1973) Gosnell (1987) Barrett (1987) Norton et al (1975) Gosnell (1987) Waterlow (1985)
Physical Status	Barthel Activities of Daily Living Index Byron Physical Assessment Framework	2	Challis et al (2000) Harris et al (1998)
Global	Over 75 Years Assessment	1	RCN (1995)
	Total	**20**	

APPENDIX 3.1

UNIVERSITY OF
STIRLING

DEPARTMENT OF
NURSING AND MIDWIFERY

Professor Andrew Watterson
Chair, Dept Research Ethics Committee

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AEW/AA

4 July 2002

Miss Susan Baxter
Postgraduate Student
University of Stirling
Department of Nursing and Midwifery
STIRLING

Dear Susan

Nursing Assessment Tools used within Continuing Care of the Older Person

Thank you for submitting your paper, entitled as above, to the Departmental Research Ethics Committee. I am pleased to advise you that approval has been granted. Could you please provide clarification for our files on the following points:

Page 8	What was the researcher's role?
Appendix II	If the research is part of a NRIS programme this should be made explicit in a covering note.

Yours sincerely

Andrew Watterson

Andrew Watterson
Chair

APPENDIX 3.2

RIS is funded by the Chief Scientist Office, Scottish Executive

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University of Stirling
Stirling
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me
dress

te

me

rsing Assessment Tools used within Continuing Care of Older People

n a full time PhD student at the University of Stirling who is interested in investigating how nurses use clinical essment tools to inform decision making. I am particularly interested in finding out what clinical assessment tools being used by nurses within the continuing care setting for older people.

ur ward/home has been selected to take part in a small study that will test the enclosed questionnaire. The estionnaire aims to find out what clinical assessment tools are being used by nurses, and to what extent, within the ntinuing care area for older people in Scotland. If you are willing to participate in this small study, all the sponses and comments that you give shall be kept confidential and secure, and shall only be used for the purposes improving the questionnaire before its final distribution. The only parties who will have access to this information ll be my research supervisors and myself.

tached to the questionnaire is an 'Instruction Sheet', please read this carefully before you complete the estionnaire. Also attached is a comments sheet where you should write your comments of the questionnaire. Your tention is drawn to point one, which informs you 'that by completing the attached questionnaire, you are nsenting to your ward/homes involvement in the testing of this questionnaire'. Alternatively if you do not wish to ke part in this small study, please send the blank questionnaire back to myself in the prepaid envelop provided.

Please do not hesitate to contact myself at the above number should you have any questions concerning this study.

Yours sincerely

Susan Baxter (PhD Student)

APPENDIX 3.3

INSTRUCTIONS

The aim of this questionnaire is to find out what clinical assessment tools are being used by nursing staff who work with older people, and to what extent within the area of continuing care for older people.

A clinical assessment tool is defined as a tool with a structured format used by a member of nursing staff when assessing a patient to gather information.

* By completing the attached questionnaire, you are consenting to your ward or homes involvement in this survey.

* The questionnaire should take you no longer than 30 minutes to complete.

* Please read each question carefully and follow any instructions that may apply to you.

* Please send the completed questionnaire, copies of the assessment tools, assessment tool handbooks and policies etc. back to myself at the University of Stirling within the envelope provided.

Thank you for your time and assistance

Code No:_____

Survey Questionnaire

1) What is the maximum number of continuing care beds for elderly patients within your ward or home?
Please write figure in the box.

☐

2) What is the total number of nursing staff allocated to your ward or home?
Please include those who are on long-term sick, maternity leave and permanent night duty.
Please write a figure in each of the boxes that applies to your ward or home.

Hours Worked	Category Code
Full Time	1
Part Time	2

	1	2
Clinical Manager/Matron/Charge Nurse	☐	☐
Staff Nurses/Enrolled Nurses	☐	☐
Nursing Assistants/Care Assistants	☐	☐

3) What members of nursing staff use the assessment tools that are currently in use within your ward or home?
Please tick the boxes that apply to your ward or home.

Members of Nursing Staff	Category Code
Clinical Managers/Matrons/Charge Nurses	1
Staff Nurses/Enrolled Nurses	2
Nursing Assistants/Care Assistants	3

1	2	3
☐	☐	☐

4) Does your ward or home have assessment tools on the following areas of health care?
Please tick the boxes that apply to your ward or home.
If yes, please supply a copy of the assessment tools.

Answer Response	Category Code
Yes	1
No	2

	1	2
Nutrition	☐	☐
Oral Care	☐	☐
Bowel Care	☐	☐
Urinary Incontinence	☐	☐
Mobility	☐	☐
Risk of Falls	☐	☐
Moving & Handling	☐	☐
Pressure Care	☐	☐
Wound Care	☐	☐
Pain	☐	☐
Behaviour	☐	☐

Please list any other areas of health that are assessed by nursing staff using an assessment tool within your ward or home not listed above.
Please supply a copy of the assessment tools.

5) How long have the following assessment tools, covering the listed areas of health, been in use within your ward or home?

Tool Usage	Category Code
Less than 2 years	1
More than 2 years	2
Don't know	3

Please tick the boxes that apply to your ward or home.

	1	2	3
Nutrition	☐	☐	☐
Oral Care	☐	☐	☐
Bowel Care	☐	☐	☐
Urinary Continence	☐	☐	☐
Mobility	☐	☐	☐
Risk of Falls	☐	☐	☐
Moving & Handling	☐	☐	☐
Pressure Care	☐	☐	☐
Wound Care	☐	☐	☐
Pain	☐	☐	☐
Behaviour	☐	☐	☐

Any Other Areas
Please write name of assessment tools in space provided.

_____	☐	☐	☐
_____	☐	☐	☐

6) How often is an area of health assessed for a patient/client?

Frequency Usage	Category Code
On admission	**1**
Daily	**2**
Weekly	**3**
Fortnightly	**4**
Monthly	**5**
As required	**6**

Please tick the boxes that apply to your ward or ward. You may tick more than one box for each category.

	1	2	3	4	5	6
Nutrition	☐	☐	☐	☐	☐	☐
Oral Care	☐	☐	☐	☐	☐	☐
Bowel Care	☐	☐	☐	☐	☐	☐
Urinary Continence	☐	☐	☐	☐	☐	☐
Mobility	☐	☐	☐	☐	☐	☐
Risk of Falls	☐	☐	☐	☐	☐	☐
Moving & Handling	☐	☐	☐	☐	☐	☐
Pressure Care	☐	☐	☐	☐	☐	☐
Wound Care	☐	☐	☐	☐	☐	☐
Pain	☐	☐	☐	☐	☐	☐
Behaviour	☐	☐	☐	☐	☐	☐

Any Other Areas
Please write name of assessment tools in space provided.

_____	☐	☐	☐	☐	☐	☐
_____	☐	☐	☐	☐	☐	☐

7) Are there any current policies, clinical guidelines or 'Best Practice' statements within your ward or home that refer to the use of assessment tools by nursing staff within the areas of health listed below?
Please tick the boxes that apply to your ward or home.
If yes, please supply a copy of the policies, guidelines or statements.

Answer Response	Category Code
Yes	1
No	2
Don't Know	3

	1	2	3
Nutrition	☐	☐	☐
Oral Care	☐	☐	☐
Bowel Care	☐	☐	☐
Urinary Continence	☐	☐	☐
Mobility	☐	☐	☐
Risk of Falls	☐	☐	☐
Moving & Handling	☐	☐	☐
Pressure Care	☐	☐	☐
Wound Care	☐	☐	☐
Pain	☐	☐	☐
Behaviour	☐	☐	☐

Any Other Areas
Please write name of assessment tools in space provided.

_____	☐	☐	☐
_____	☐	☐	☐

8) Why have the areas of health that are assessed within your ward or home, been selected for formal assessment?

Influencing Event	Category Code
Was it the result of past external audit	1
Was it the result of past internal audit	2
Excessive or high occurrence rates of poor health in the health area (listed below)	3
To decrease monetary costs to one or more of the following areas assessed	4
To standardise nursing practice	5
Don't know	6

Please tick the boxes that apply to your ward or home. You may tick more than one box for each category.

	1	2	3	4	5	6
Nutrition	☐	☐	☐	☐	☐	☐
Oral Care	☐	☐	☐	☐	☐	☐
Bowel Care	☐	☐	☐	☐	☐	☐
Urinary Continence	☐	☐	☐	☐	☐	☐
Mobility	☐	☐	☐	☐	☐	☐
Risk of Falls	☐	☐	☐	☐	☐	☐
Moving & Handling	☐	☐	☐	☐	☐	☐
Pressure Care	☐	☐	☐	☐	☐	☐
Wound Care	☐	☐	☐	☐	☐	☐
Pain	☐	☐	☐	☐	☐	☐
Behaviour	☐	☐	☐	☐	☐	☐

Any Other Areas

Please write name of assessment tools in space provided.

_____	☐	☐	☐	☐	☐	☐
_____	☐	☐	☐	☐	☐	☐

9) Why have the particular assessment tools, that are currently in use within your ward or home, been selected for use?

Selection Usage	Category Code
Recommended by a professional body (eg RCN)	1
Assessment tool compiled by peers at ward level	2
Taken from relevant literature/journal	3
Don't know	4
Any other reasons. Please write in space provided	5

Please tick the boxes that apply to your ward or home.

	1	2	3	4	5
Nutrition	☐	☐	☐	☐	_____
Oral Care	☐	☐	☐	☐	_____
Bowel Care	☐	☐	☐	☐	_____
Urinary Continence	☐	☐	☐	☐	_____
Mobility	☐	☐	☐	☐	_____
Risk of Falls	☐	☐	☐	☐	_____
Moving & Handling	☐	☐	☐	☐	_____
Pressure Care	☐	☐	☐	☐	_____
Wound Care	☐	☐	☐	☐	_____
Pain	☐	☐	☐	☐	_____
Behaviour	☐	☐	☐	☐	_____

Any Other Areas
Please write name of assessment tools in space provided.

_____	☐	☐	☐	☐	_____
_____	☐	☐	☐	☐	_____

10) Is there any training and/or instruction handbook that accompanies the assessment tools that are currently in use within your ward or home?

Assessment Aide	Category Code
Training in the use of the assessment tool	1
Instruction handbook	2
Any other aide. Please write in space provided	3

Please tick the boxes that apply to your ward or home.

	1	2	3
Nutrition	☐	☐	_____
Oral Care	☐	☐	_____
Bowel Care	☐	☐	_____
Urinary Continence	☐	☐	_____
Mobility	☐	☐	_____
Risk of Falls	☐	☐	_____
Moving & Handling	☐	☐	_____
Pressure Care	☐	☐	_____
Wound Care	☐	☐	_____
Pain	☐	☐	_____
Behaviour	☐	☐	_____

Any Other Areas
Please write name of assessment tools in space provided.

_____	☐	☐	_____
_____	☐	☐	_____

Please send the completed questionnaire, copies of the assessment tools, assessment tool handbooks and policies etc. back to myself within the envelope provided.

Thank You

APPENDIX 3.4

RIS is funded by the Chief Scientist Office, Scottish Executive

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rsing Assessment Tools used within Continuing Care of the Older Person

a full time PhD student who is currently undertaking a research project which is part of the Nursing Research iative for Scotland 'Practitioner Decision Making' Programme based at the University of Stirling. I am interested inding out what clinical assessment tools are being used by nurses within the continuing care setting for older ple.

u are invited to take part in a survey which aims to investigate what clinical assessment tools are being used by ses and to what extent, within continuing care for older people in Scotland. If you are willing to help with this vey please complete the enclosed questionnaire and return it to myself in the prepaid envelope provided.

Attached to the questionnaire is an 'Instruction' sheet, please read this carefully before you complete the questionnaire. By completing the questionnaire, you are consenting to your ward/nursing homes involvement in the survey. If you do not wish to wish to take part in this study, please send back the blank questionnaire back to myself.

You will also find enclosed a 'Response Form'. Please use this form to indicate if you would be willing to take part in a further study. On receipt of this, I shall contact you in due course with further information upon which you shall have the opportunity to reaffirm that you are still willing to participate in the study.

Please note all responses shall be kept confidential and secure and shall only be used for the purposes of this study. The only parties who will have access to this information will be my research supervisors and myself.

Please do not hesitate to contact myself at the above number should you have any questions concerning this study.

Yours faithfully

Susan Baxter (PhD Student)

Encs: 2

APPENDIX 3.5

Response Form

An examination of how continuing care nurses use clinical assessment tools for judgement and decision making

Thank you for taking the time to complete the questionnaire. I would be grateful if you could complete this form and return it to myself at the University of Stirling in the prepaid envelope provided.

Please tick one box to indicate if you would be willing for your ward or home to participate in further studies relating to this research or not. If you indicate yes then you shall be sent the relevant information in due course. Should you indicate no, then no further contact shall be made with your ward or home.

☐ My ward or home **is** willing to participate in further studies

☐ My ward or home **is not** willing to participate in further studies

Code No: _____

APPENDIX 3.6

Region	No. of PHCTHW	Number of q'aires sent	No. of written responses	No. of completed q'aires	No. of units which indicated participation in further studies
Ayrshire & Arran	7	6	6	5	2
Borders	8	7	3	2	0
Dumfries & Galloway	12	11	5	2	0
Fife	12	11	5	2	0
Forth Valley	13	12	3	3	3
Grampian	4	3	2	1	1
Greater Glasgow	0	0	0	0	0
Lomond & Argyll	2	1	0	0	0
Lothian	38	37	17	5	4
Tayside	9	8	3	3	3
Total Number	105	96	44	23	13

Survey Response Rates from Primary Health Care Trust Hospital Wards (PHCTHW)

Region	No. of HBRNH	Number of q'aires sent	No. of written responses	No. of completed q'aires	No. of units which indicated participation in further studies
Ayrshire & Arran	49	25	8	3	2
Argyll & Clyde	32	16	6	3	2
Borders	11	6	1	1	0
Dumfries & Galloway	14	7	4	1	0
Fife	33	17	7	3	0
Forth Valley	23	12	4	1	0
Grampian	65	33	11	4	3
Greater Glasgow	73	37	8	2	2
Highland	27	14	6	2	2
Lanarkshire	49	25	5	2	1
Lothian	67	34	12	4	4
Tayside	46	23	5	1	0
Western Isles	2	1	0	0	0
Total Number	491	250	77	27	16

Survey Response Rates from Health Board Registered Nursing Homes (HBRNH)

APPENDIX 3.7

Area of Health Formally Assessed	Assessment Tool Identified	No. of HW using Tool	No. of NH using Tool	Total No. of Tools Identified per Area
Behaviour	Global Clinical Assessment	---	1	1
Bowel Care	Searby Score Chart	---	2	1
Falls	Fall Risk Assessment Scale for the Elderly	---	1	1
Mobility	Canard Risk Assessment	---	1	1
Moving & Handling	No assessment tool given/identified	---	---	---
Nutrition	Nutritional Assessment for Older People	---	1	
	Prideaux Scale	3	---	2
Oral Care	Jenkins 'At Risk' Calculator	1	1	
	The Lloyd-Grossman Oral Health Tool	1	---	2
Pain	McGill Pain Assessment	---	2	
	The Pain Ruler	---	1	2
Pressure Area Risk	Braden Scale	3	1	
	Medley	---	2	
	Norton	2	1	5
	Stratheden Scale	---	1	
	Waterlow Scale	12	18	
Urinary Incontinence	Searby Score Chart (see Bowel Care)	As above	As Above	As Above
Wound Care	Wound Care Society Assessment Chart	---	1	1
				16 Tools

APPENDIX 5.1

NRIS is funded by the Chief Scientist Office, Scottish Executive

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sessing a Patients risk of Developing a Pressure Ulcer

ank you for returning the questionnaire regarding the use of assessment tools in your unit and for indicating that u are willing for your ward or nursing home to take part in further studies. I am writing to ask if you would be erested in allowing your ward or nursing home to take part in a further study which is examining how nurses use a rticular assessment tool in their judgement and decision making.

he purpose of this study is to:

- identify the judgements that a nurse makes while assessing a patients risk of developing a pressure ulcer
- identify what information a nurses uses when assessing and planning care for a patient
- explore what influences the decisions that a nurse makes when planning patient care

is study would involve me approaching 2 nurses within your ward or nursing home to recruit onto the study. Each rse who is approached shall be given an information sheet informing him or her of the study. Should they wish to rticipate in the study, they will be asked to sign a consent form. The study shall involve me observing the nurses hile they perform a pressure ulcer risk assessment activity. Each nurse shall identify 2 patients for assessment. No tient will be assessed twice in this study. The identified patients will be approached and shall be given an formation sheet informing them of the study. If patients wish to participate they shall be asked to sign a consent rm.

llowing the assessment I shall ask the nurse some questions based on their assessment activity. The information thered will be used as the basis for a further study examining how nurses use the Waterlow Scale for judgement d decision making.

Cont/.....

Cont/.....

It should be stressed at this point that should a nurse wish to look at a patients skin as part of the assessment, that a privacy screen, such as a bed curtain, be placed between the patient and myself. This will allow me to hear any verbal interaction between the nurse and the patient. This course of action also respects the privacy and dignity of the patient.

All data collected during the study shall remain confidential and shall be stored in a locked filing cabinet based at the University. The data shall be handled by myself and where appropriate by my research supervisors. The identity of the hospital wards and nursing homes that participate, as well as nurses and patients alike, shall not be disclosed at any point during the study, as this information shall remain confidential.

If you have any questions regarding the above study, please contact me at the telephone number given overleaf. Alternatively if you are satisfied with the information that has been given to you within this letter, please return the Response form to myself within the envelope provided. Should you reaffirm your willingness to take part in this study by indicating this on the Response form, I shall contact you in due course by telephone to make suitable arrangements to visit your ward or nursing home. Alternatively, if you do not wish to take part, no further contact shall be made with you ward or nursing home.

Your help in this matter is very much appreciated.

Yours sincerely

Susan Baxter
(PhD Student)

Enc: 1

Response Form

I am satisfied with the information that I have received and I am:
(tick one box)

a) **willing** for my ward or nursing home to participate in this study ☐

b) **not willing** for my ward or nursing home to participate in this study ☐

Code No: _____

APPENDIX 5.2

UNIVERSITY OF
STIRLING

DEPARTMENT OF
NURSING AND MIDWIFERY

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AEW/TI

14 April 2003

Miss Susan Baxter
Postgraduate Student
University of Stirling
Department of Nursing and Midwifery

Dear Susan

AN EXAMINATION OF HOW NURSES USE THE WATERLOW SCALE FOR JUDGEMENT AND DECISION MAKING WITHIN CONTINUING CARE

Thank you for submitting your clarification of the above proposal, to the Departmental Research Ethics Committee on 7 April 2003. I am pleased to advise you that the committee approved your proposal.

Yours sincerely

Andrew Watterson

ANDREW WATTERSON
Chair

APPENDIX 5.3

LOTHIAN RESEARCH ETHICS COMMITTEE

CERTIFICATE OF ETHICAL OPINION

LREC Reference Number: LREC/2003/7/9
Title: An Examination of how Nurses use the Waterlow Scale for Judgement and Decision Making within Continuing Care.
Researcher: Miss Susan Baxter

The Primary Care/Public & Mental Health Research Ethics Committee of the Lothian Research Ethics Committee (the Committee) reviewed this proposed research and is of the opinion that it is ethical and appropriate to be carried out in the Lothian Area. This opinion encompasses all aspects of the application including the Patient/Subject Information Sheet and all other accompanying documentation provided.

The LREC application form, protocol, subject information sheet, information on compensation arrangements, payments to researchers and the provision of expenses to subjects (where appropriate) were reviewed and approved and the members of the Committee present at the meeting are shown on the attached *Membership List*.

This opinion is issued subject to the following conditions and is invalid if they are not followed:

- You must obtain appropriate management approval from the relevant NHS Trust(s) before starting the proposed research. It is the NHS Trust(s) that ultimately decide whether or not this research should go ahead taking account of the advice of the Local Research Ethics Committee.
- You must notify the Sub-Committee and the relevant NHS Trust(s), in advance, of any significant proposed deviation from the original protocol or application form and obtain approval for any such amendments using the *Amendment Approval Request Form.*
- You must submit reports to the Sub-Committee and the NHS Trust(s) once the study is underway if there are any unusual or unexpected results which raise questions about the safety of the research.
- You must report annually on successes, or difficulties, in recruiting subjects in order to provide useful feedback on perceptions of the study among patients and volunteers using the *Progress Report Form.*
- Where the study is terminated prematurely you must report within fifteen days indicating the reasons for early termination.
- You must submit a final report within three months of the completion of the study using the *Progress Report Form.*

Peter Reith
Secretary
Lothian Research Ethics Committee

Annette Harris
Administrator
Primary Care/Public & Mental Health
Research Ethics Committee

02 May 2003

APPENDIX 5.4

Ayrshire & Arran NHS Board

Boswell House
10 Arthur Street
Ayr KA7 1QJ
Telephone 01292 611040

NHS
Ayrshire
& Arran

AYRSHIRE & ARRAN RESEARCH ETHICS COMMITTEE

Miss Susan Baxter
PhD Student
Nursing Research Initiative for Scotland
Nursing and Midwifery Building
University of Stirling
STIRLING
FK9 4LA

Date 27 June 2003
Your Ref
Our Ref AC-1544/538-May03B /MG

Enquiries to Dr Adrian Carr
Direct line 01292 885859
Fax 01292 885890

Dear Miss Baxter

An examination of how nurses use the Waterlow Scale for judgement and decision making within continuing care

I acknowledge receipt of your letter of 25 June 2003, clarifying the points raised in the Committee's letter of 6 June 2003 and enclosing the revised documentation.

On behalf of the Ayrshire & Arran Research Ethics Committee, I can now confirm that ethical approval has been granted for the above study to proceed locally.

The terms of approval state that:

(a) The investigator authorised to undertake this study within Ayrshire & Arran is

- Miss Susan Baxter, PhD student, University of Stirling

with supervisor:

- Joanne Booth, University of Stirling

(b) The written consent of participants in the study must be obtained. The information sheets and consent forms, and the manner in which you intend to seek consent, are acceptable.

(c) Regular reports on the progress of the study require to be submitted. Your first report should be submitted to myself in six months time and subsequently at yearly intervals until the work is completed, when a final study report should be submitted.

(d) This approval is valid for a period of two years from the date of this letter, and the study must commence within this time.

(e) As indicated in the guidance notes to researchers, a copy of which you were supplied with, you will require the permission of the responsible NHS body within the Board's area prior to

Chairman Mr George L Irving
Chief Executive Mrs Wai-yin Hatton

Ayrshire & Arran NHS Board is the common name of Ayrshire & Arran Health Board

proceeding with this project. A copy of this letter has been sent to the R & D Committee of the Primary Care NHS Trust, who will make a decision on management approval of the project on behalf of the Trust.

The Ayrshire & Arran Research Ethics Committee is fully compliant with the International Conference on Harmonisation/Good Clinical Practice (ICH GCP) Guidelines for the conduct of trials involving the participation of human subjects as they relate to the responsibilities, composition, function, operations and records of an Independent Ethics Committee/Independent Review Board. To this end, the Committee adheres, as far as is consistent with its Constitution, to the relevant clauses of the ICH Harmonised Tripartite Guideline for Good Clinical Practice, adopted by the Commission of the European Union on 17 January 1997.

I enclose a copy of the Constitution of Ayrshire & Arran Research Ethics Committee, together with a list of the membership of the Committee.

On behalf of the Committee, I wish you every success with the research project.

Yours sincerely

Dr Adrian Carr
Secretary – Ayrshire & Arran Research Ethics Committee

Encs

Cc: Dr Karen Bell, R & D Manager, Ayrshire & Arran Primary Care NHS Trust, Eglinton House, Ailsa Hospital, Dalmellington Road, Ayr

APPENDIX 5.5

Lothian Primary Care NHS Trust

Lrec 2003/7/9
Our Ref: JEW/AMH/03/007
Enquiries to: Jackie Warburton
Ext. No: 0131 537 9522
Date: 28 April 2003

Headquarters
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NHS
Lothian

Ms Susan Baxter
Nursing Research Initiative for Scotland
Nursing and Midwifery Building
University of Stirling
FK9 4LA

Dear Ms Baxter

Research Proposal: An examination of how nurses use the Waterlow Scale for judgement and decision making within continuing care

I refer to your recent application to Lothian Primary Care NHS Trust. This has now been considered by the Trust's Research and Development Committee and I would like to confirm that the Lothian Primary Care NHS Trust approves your proposal subject to the written approval of the Research Ethics Sub-Committee being obtained prior to commencement of the study.

A condition of this approval is that you advise me, in advance, of any significant proposed deviation from the original protocol including significant changes to the dates when this research will be active.

I would like to remind you that research must be conducted in accordance with the research governance framework and I enclose a copy of the responsibilities of the Principal Investigator extracted from the framework. One of the conditions of the framework is that any researchers who have access to patients, patient data or records and who are not employed by the NHS must have an honorary NHS contract. If you need to arrange this please contact the Trust Research Manager.

Details of your research will be forwarded to the National Research Register in about six months time. Therefore, if for any reason this research does not go ahead I would be grateful if you could advise me.

With best wishes.

Yours sincerely

Murray Duncanson

MURRAY DUNCANSON
CHIEF EXECUTIVE

Enc

cc Simon Fawcett,

APPENDIX 5.6

Primary Care NHS Trust

NHS
Ayrshire
& Arran

Research and Development
Eglinton House
PO Box 13
Ailsa Hospital
Dalmellington Road
AYR
KA6 6AB

Tel: (01292) 513622/3664
Fax: (01292) 513665

KLB/JC

27 June 2003

Miss Susan Baxter
Nursing Research Initiative for Scotland (NRIS)
Nursing and Midwifery Building
University of Stirling
STIRLING FK9 4LA

Dear Miss Baxter

An examination of how nurses use the Waterlow Scale for judgement and decision making within continuing care (03PC24)

Thank you for returning the Data Protection Checklist. I confirm that the Ayrshire and Arran Primary Care Trust R&D Committee have granted Trust Management Approval for the above study to go ahead.

Regular reports of the study require to be submitted. Your first report should be submitted to myself in 6 months time and subsequently at yearly intervals until the work is completed.

In addition approval is granted subject to the following conditions:

- All research activity must comply with the standards detailed in the Research Governance Framework for Health and Community Care.
- The Researcher and Trust must permit and assist with any monitoring, auditing or inspection of the project by the relevant authorities.
- The Trust's Complaints procedure should be accessed if any complaints arise regarding the project and the R&D Office must be informed.
- The outcome and lessons learnt from complaints must be communicated to funders, sponsors and other partners associated with the project.

If I can be of any further assistance please do not hesitate to contact me. On behalf of the committee, I wish you every success with the project.

Yours sincerely

Karen L Bell.

Dr Karen L Bell
R&D Manager on behalf of R&D Committee

APPENDIX 5.7

NURSE INFORMATION SHEET

Title of project:

An Examination of how Nurses use the Waterlow Scale for Judgement and Decision Making within Continuing Care

I would like to invite you to take part in the above research study. Before you make a decision about participating in this study or not, it is important for you to understand why this research is being carried out and what it will involve. Please take time to read the following information on this sheet. Also please feel free to ask me any questions that you may have. I can be contacted at the telephone number given overleaf.

I am a nurse studying for a Ph.D degree who is based within the Nursing and Midwifery department at the University of Stirling. I am carrying out this research study as part of the Nursing Research Initiative for Scotland 'Practitioner Decision Making Programme'.

What will happen if I take part?

If you decide to take part in this study, you will be asked to identify 2 patients, according to an defined criteria, who you will assess and determine their risk of developing a pressure ulcer. During the assessment, I shall observe you, as it is necessary to understand the activity of pressure ulcer risk assessment. While I am observing you I shall be speaking into a small hand held tape recorder, as this shall allow me to make notes quicker about the assessment. If you should choose to examine a patient's pressure areas as part of the assessment, a privacy screen, such as a bed curtain, shall be placed between the patient and myself in order to respect their privacy and dignity. Should this happen then I will listen to what is being said between yourself and the patient. After the assessment you shall be asked a few questions concerning your assessment activity which shall be audiotaped.

If you decide to take part in the study, you will be asked to sign a consent form. Personal details of yourself, the patient and the assessment shall be kept confidential. All tapes and other information shall be stored in a locked cabinet at the University and shall be deleted and destroyed on completion of the study. You will not be able to be identified from the data that is collected.

Why have I been approached to take part in the study?

Many research studies similar to this one have certain criteria, which determines whether or not individuals are suited to take part in certain studies. For this study registered nurses working within the area of continuing care for older people who have used the Waterlow Scale previously have been identified as being eligible to participate.

What is the purpose of the study?
The main aims of this study are:

- To identify the judgements that a nurse makes while assessing a patients risk of developing a pressure ulcer.
- To identify what information a nurse uses when assessing and planning patient pressure area care.
- To explore what influences the decisions that a nurse makes when planning care.

What if I change my mind?
If you agree to participate within the study and then decide that you no longer want to take part, you are free to leave the study at any time. You do not need to give reasons. If you should change your mind, please contact me to let me know.

What do I do now?
Thank you for reading this information sheet. Please think about whether or not you would like to take part in this study. I shall come back on the ..... when I shall ask you what the outcome of your decision has been.

If you have any questions regarding this study, please do not hesitate to contact myself:

Susan Baxter
Nursing Research Initiative for Scotland
Nursing and Midwifery Building
University of Stirling
FK9 4LA
Telephone: 01786-473-171 Ext:6287

APPENDIX 5.8

NURSE CONSENT FORM

Title of project:

An examination of how nurses use the Waterlow Scale for judgement and decision making within continuing care.

1. I confirm that I have read and understand the information sheet provided for the above named study and have had the opportunity to ask questions.

☐

2. I understand that my participation is voluntary and that I am free to withdraw at anytime, without giving reason.

☐

3. I understand that my identity and any information I give concerning myself or patients and their care shall remain confidential.

☐

4. I understand that the researcher shall observe me during the study and that the interview that I participate in will be tape recorded.

☐

I agree to take part in the above study

Name of Nurse	Date	Signature
PhD Student	Date	Signature

APPENDIX 5.9

PATIENT INFORMATION SHEET

Title of project:

An examination of how nurses use the Waterlow Scale for judgement and decision making within continuing care.

You have been identified to take part in a research study that will examine how nurses use a particular assessment tool, called the 'Waterlow Scale', to assess a patient's risk of developing a pressure sore.

Before you make a decision about participating in this study or not, it is important for you to understand why the research is being carried out and what it will involve. Please take time to read the following information on this sheet. Also please feel free to ask me any questions that you may have. A contact number is also given on the back of this sheet.

I am a nurse studying for a Ph.D degree who is based within the Nursing and Midwifery department at the University of Stirling. I am carrying out this research study as part of the Nursing Research Initiative for Scotland 'Practitioner Decision Making Programme'.

What will happen if I take part?

If you decide to take part in this study, a registered nurse from your ward or nursing home shall assess you to determine how likely it is that you may or may not develop a pressure sore. While the nurse is assessing you, I shall be observing the nurse and will be speaking into a small tape recorder. The assessment may involve a nurse looking at your skin. If a nurse wishes to do so then a privacy screen, such as a bed curtain, shall be placed between yourself and I to maintain your privacy. If this should happen then I will listen to what is being said to you.

If you choose to take part, you will be asked to sign a consent form. Please note that your nursing care will not be affected in any way should you wish to take part in this study or not. The tape and personal details of the assessment shall be kept confidential and shall be stored in a locked cabinet based at the University and will be deleted and destroyed once this study is complete. You will not be able to be identified from the data that is collected.

Why have I been chosen?
Many research studies similar to this one have certain criteria, which determines whether or not individuals are suited to take part in certain studies. For this study, male and female patients within a continuing care unit such as a hospital ward or nursing home, who do not have a pressure sore, have been identified as being eligible to participate.

What is the purpose of the study?
The main aims of this study are:

- to identify the judgements that a nurse makes while assessing a patients risk of developing a pressure sore
- to identify what information a nurse uses when assessing and planning patient care
- to explore what influences the decisions that a nurse makes when planning care

What if I change my mind?
If you agree to participate within the study and then decide that you no longer want to take part, you are free to leave the study at any time. You do not need to give any reasons and this will not affect the nursing care that you receive. If you should change your mind, please contact me to let me know.

What do I do now?
Thank you for reading this information sheet. Please think about whether or not you would like to participate in this study or not. I shall come back on the ..... to find out what the result of your decision has been.

If you have any questions regarding this study, please do not hesitate to contact myself:

Susan Baxter
Nursing Research Initiative for Scotland
Nursing and Midwifery Building
University of Stirling
FK9 4LA
Telephone: 01786-473-171 Ext: 6287

APPENDIX 5.10

Pressure Sore Information Sheet

The intension of this information sheet is to give you some basic information on pressure sores and why it is important that nurses assess a patient's risk of developing such sores. If you have any questions that are not addressed in this information sheet then please ask a member of nursing staff or myself. I can be contacted at the telephone number given overleaf.

What are pressure sores?

Pressure sores are basically skin wounds that are normally found on 'bony' areas on the body such as heels, shoulder blades, elbows, hips etc.

How do pressure sores happen?

Pressure sores can develop for a number of reasons. The main reason that such sores occur is due to too much pressure on an area of skin over a long period of time. Friction or shearing of the skin can also cause pressure sores to develop.

Who gets pressure sores?

Anybody can get a pressure sore. Some people however may be more susceptible than others in developing a pressure sore for a variety of reasons. Many research studies have found that older people are more likely to develop pressure sores than compared to younger adults and children. The main reasons for this generally include a decrease in person's mobility and continence level, which are often associated with an older person.

Why assess pressure sore risk?

Pressure sores can cause a lot of pain and discomfort for people. Nurses may use a pressure sore risk assessment tool to help them decide how likely it is that a patient may develop a pressure sore. There are many different kinds of these tools available for nurses to use. The hospital ward or nursing home that you are in at the moment use an assessment tool called 'The Waterlow Scale'. This assessment tool is said to help the nurse with their assessment and with determining a patient's risk of developing a pressure sore. Depending on the result of the assessment the nurse will try to prevent a pressure sore from occurring.

How are pressure sores treated?

The treatment of pressure sores really depends of how bad a sore is. Some sores can be very small and may only need a special cream or bandage whereas other sores may need more treatment to help them heal.

Contact
Susan Baxter
NRIS
Nursing & Midwifery Building
University of Stirling
FK9 4LA
01786-473-171 Ext: 6287

APPENDIX 5.11

PATIENT CONSENT FORM

Title of project:

An examination of how nurses use the Waterlow Scale for judgement and decision making within continuing care.

1. I confirm that I have read and understand the information sheet provided for the above named study and have had the opportunity to ask questions.

   ☐

2. I understand that my participation is voluntary and that I am free to withdraw at anytime, without giving reason, without my nursing care or legal rights being affected.

   ☐

3. I understand that my identity and any information given concerning my care shall remain confidential.

   ☐

4. I understand that the researcher shall observe the nurse while he/she assess me using the Waterlow Scale.

   ☐

I agree to take part in the above study

Name of Patient	Date	Signature
PhD Student	Date	Signature

APPENDIX 5.12

NRIS

is funded by the Chief Scientist Office, Scottish Executive

Nursing and Midwifery Building
University of Stirling
Stirling
FK9 4LA

Telephone: 01786-473171 Ext: 6287

ultant/ GP
ital/ Surgery address

ultant/ GP

PhD Study: An Examination of how Nurses use the Waterlow Scale for Judgement and Decision Making in Continuing Care

a full time *PhD student funded by the Chief Scientist Office*, who is engaged in conducting the above titled rch.

ims of the study are to:

- Identify the judgements nurses make while assessing a patient's risk of developing a pressure ulcer within the area of continuing care for older people.
- Identify what information cues nurses use when making pressure ulcer assessments within continuing care.
- Identify what information cues nurses use when deciding what care to plan for an older patient following a pressure ulcer risk assessment within continuing care.
- Explore what factors influence the decision making process of continuing care nurses when planning pressure area care for the older patient.

his is a qualitative exploratory study involving observations of nurses assessments of patients using the aterlow Scale for risk of pressure ulcer assessment. My intension is to observe nurses assessing 4 of your atients on one occasion only. The patient would be identified by the nurses themselves. Following this the ndividual nurses shall be interviewed about the assessment they have performed.

have received ethical approval for this study from the appropriate Research Ethics Committee and I am writing o ask for your permission to access your patients in order to undertake this study.

I enclose a copy of the research protocol for your information and I look forward to your response in the near future.

Yours sincerely

Susan Baxter
(PhD student)

Enc: 1

APPENDIX 5.13

First level category code	Second level category code	Third level category code	Interview Data R: Researcher I: Interviewee
			R: Thanks for letting me observe you while you assessed XXXXX risk of pressure ulcers.
			I: No problem, that's okay.
			R: I'm just going to ask you a few questions based on what I observed, okay. Don't be too daunted by the microphone, try to forget that it's there.
			I: Okay, I'll try
			R: I noticed that you didn't actually look at the lady's skin during the assessment, can you tell me why?
A	A2		**I**: I saw this lady last night, I helped her to undress for bed. I saw her skin last night so there was no need to see her pressure areas again today. I think if I had asked to examine the lady, she would have wondered what was going on. We try to keep the formal side of care informal for the patient.
			R: Okay, I see. Right, Did the lady's score go up or down?
			I: It went up slightly, two points I think, yeah, two points.
			R: So since her score increased, why didn't you make any changes to her care plan?
A	A2	A2:2	**I**: I didn't see the need to change this lady's care plan because of a slight change increase in her score. We already know that she has slight oedema in her legs and we are elevating them during the day, as far as she tolerates it. She is able to turn herself in bed, she eats well, can move around to some degree and is not incontinent. She has lots of interventions in place, I can't see how we could add to that. I think it's more a case of putting observational ones in place. I think what I'll do now is document that her score has increased and why it has increased, that way the record of the assessment shall be clear.
			R: Okay. Going back to something you said earlier, you said that you saw this lady's skin last night, where you helping her with something?
B	B1	B1:1	**I**: Yes, I was helping her undress for bed. To be fair, I try to assess people when I'm doing things with them, like getting them ready for bed. I think it's good to assess somebody's skin that way.
			R: So really you are assessing all the time then, is that right?
B	B1	B1:1	**I**: Yeah, that's right. Really if you're on an early or a late, there's always the opportunity for you to see somebody's skin. Helping somebody go to the loo is

			a great opportunity.
			R: Do you think the lady's current care interventions are okay then, is that another reason for why you didn't change her care plan?
A	A1		**I**: I do, really I do. This lady can tell you if she has any problems, she'll tell you right away. You know that if you say anything to her, she listens. She is also good at telling you stuff when you ask her, she tells you honestly.
			R: Did the Waterlow scale help you with the assessment or planning her care?
A	A2	A2:1	**I**: Not really if I'm being honest. You see the thing is when you know these patients like I do, I've been here a while you see, you understand them well. You know what matters to them and you know what works and what doesn't. There can be things about a patient, like their mood that's not mentioned in a tool. But well mood, you'll know yourself, well that can have a big effect on people, like not interacting and stuff.
			R: Okay, thanks for that. I really appreciate your time

Interview Data for Nurse NH3 (Assessment 1)

APPENDIX 6.1

DRUG PRESCRIPTION AND ADMINISTRATION RECORD

Ward

SURNAME SMITH

FORENAMES JOHN

CONSULTANT G. MCKENZIE

IMPORTANT CODES

1. IF A PATIENT REFUSES A DRUG THEN A CIRCLE MUST BE DRAWN AROUND THE RELEVANT CODE LETTER ON THE RECORDING SHEET.
2. IF A PATIENT IS ABSENT FROM THE WARD AND DOES NOT RECEIVE HIS DRUGS AT THE STATED TIME, THEN A LINE "/" MUST BE DRAWN THROUGH THE RELEVANT CODE LETTER ON THE RECORDING SHEET.

SPECIAL DIETS

Date	Details	Signature

KNOWN DRUG HYPERSENSITIVITY	
1. N.K.A	2.
3.	4.
5.	6.

Tick box when medicines are prescribed on

Fluid prescription sheet	
Anticoagulant sheet	
Diabetic sheet	

Ward	Unit No.	Age	Name of Patient	Consultant
WARD 1	00123	81	JOHN SMITH	G. MCKENZIE

DRUGS BY INJECTION — REGULAR PRESCRIPTIONS

LHB 2185 (LPC)

	DATE commenced	MEDICINE BLOCK LETTERS	DOSE	Method of Admin.	TIMES OF ADMIN. a.m. 8	a.m. 10	p.m. 1	p.m. 3	p.m. 5	p.m. 8	p.m. 10	OTHER TIMES	number of days	SIGNATURE	DISCONTINUED DATE	DISCONTINUED SIGNATURE
A	2/2/04	HUMAN ACTRAPID	8UNITS	IM	✓									lg McKenzie		
B	2/2/04	HUMAN ACTRAPID	6UNITS	IM					✓					lg McKenzie		
C																
D																
E																

DRUGS BY INJECTION — ONCE ONLY PRESCRIPTIONS

	DATE	BLOCK LETTERS	DOSE	Method of Admin.	Time of Admin.	SIGNATURE	SIGNATURE Given by	SIGNATURE Checked by	Time giv if Differe

'AS REQUIRED' MEDICINES — ORAL AND PARENTERAL

	DATE	MEDICINE	DOSE	Method of Admin.	Time of Admin.	Prescribed for	SIGNATURE	DISCONTINUED DATE	DISCONTINUED SIGNATURE
1	2/2/04	SENNA TABLETS	2TABS	ORAL	PRN	CONSTIPATION	lg McKenzie		
2									
3									
4									
5									
6									
7									
8									
9									
10									

ORAL, TOPICAL AND DRUGS NOT FOR INJECTION — REGULAR PRESCRIPTIONS

	DATE	MEDICINE			TIMES OF ADMIN.													DISCONTINUED	
	commenced	BLOCK LETTERS	DOSE	Method of Admin.	a.m. 8	a.m. 10	p.m. 1	p.m. 3	p.m. 5	p.m. 8	p.m. 10	OTHER TIMES				number of days	SIGNATURE	DATE	SIGNATURE
F	2/2/04	BENDROFLUAZIDE	2.5mg	O	✓												G McKenzie		
G	2/2/04	DOXAZOSIN	1mg	O	✓												G McKenzie		
H	2/2/04	LISINOPRIL	10mg	O	✓												G McKenzie		
J	2/2/04	ASPIRIN	75mg	O	✓												G McKenzie		
K	2/2/04	PARACETAMOL	1g	O	✓		✓		✓		✓						G McKenzie		
L		SETRALINE	50mg	O	✓												G McKenzie		
M																			
N																			
P																			
R																			
S																			
T																			
V																			
W																			
X																			
Z																			

ORAL, TOPICAL AND DRUGS NOT FOR INJECTION — ONCE

DATE	MEDICINE							
commenced	BLOCK LETTERS	DOSE	Method of Admin.	Time of Admin.	SIGNATURE	SIGNATURE Given by	SIGNATURE Checked by	Time of Admin

Ward	Unit No.	Age	Name of Patient	Consultant
WARD 1	00012 3[illegible]	81	JOHN SMITH	G MCKENZIE

1 ADMISSION NOTE

2 CONTINUATION SHEETS

3 M.D.T. REPORTS

4 INVESTIGATIONS

5 CHARTS

6 NURSING CARE PLANS

7 DISCHARGE PLANS

8 TRANSFER NOTES

9 REFERRALS MADE

10 B.M.I CHART

CLASSIC
1410235
M4011462140919

ADMITTED FROM: WARD 1.	**ADMISSION DATE:**
UNIT NUMBER: 001234	**CONSULTANT / GP:** MCKENZIE
NAME: JOHN SMITH **LIKES TO BE KNOWN AS:** JOHN **ADDRESS:** 27 TREETOP ROAD REGION AA3 942 **TELEPHONE:** 0101-123-456 **DATE OF BIRTH:** 11/11/1922 **AGE:** 81 **HEIGHT:** 5'9" **RELIGION:** — **MARITAL STATUS:** WIDOWED **OCCUPATION:** RETIRED TRAIN DRIVER	**NEXT OF KIN:** WILLIAM SMITH **RELATIONSHIP:** SON **ADDRESS:** 2 KOALA AVENUE AUSTRALIA. **TELEPHONE:** **HOME:** 0007788992211 **WORK:** —
GP NAME: DR JOLLY **ADDRESS:** HEALTH CENTRE 1 HILLTOP ROAD REGION AA3 1CAB **TELEPHONE:** 0101-234-567.	**ALTERNATIVE CONTACT:** **RELATIONSHIP:** **ADDRESS:** **TELEPHONE:**
REASON FOR ADMISSION: PREVIOUS FALL AT HOME	**MEDICATION ON ADMISSION:** HUMAN ACTRAPID 8U @ 8am, 6U @ 5pm. BENDROFLUAZIDE 2.5mg @ 8am. DOXAZOSIN 1mg @ 8am. LISINOPRIL 10mg @ 8am. ASPIRIN 75mg @ 8am. PARACETAMOL 1g x 4 daily. **ALERGIES:** SENNA PRN NKA.
PRESENTING HISTORY: TYPE 1 DIABETES PAST CVA (3 YEARS AGO)	**RELEVANT PAST MEDICAL HISTORY:** BPH DIAGNOSED (5 YEARS AGO)
DATE: 2/2/04	**SIGNATURE:** J. Jones

CONTINUATION		
DATE		**SIGNATURE**
Admission	Admitted today from ward 1. Admission obs recorded on investigation sheet. Personal belongings have been recorded, no valuables handed over for safe keeping. Mr Smith has been shown around the facilities. Discussed meal times, including likes and dislikes of food. Menus completed for today and tomorrow.	D. Jones.
Date	Mr Smith appears to have slept well for first night in the unit.	S Gilchrist
Date.	BM 3.4 at 5pm. Milk and biscuits given until evening meal arrives.	S Jones.
Date.	Had bath this morning - required assistance with washing and dressing. BM 2.3 as recorded in chart	G. Murphy
Date.	Slightly tearful this morning. When asked Mr Smith said that he felt sad about his situation. Refused breakfast this morning. Encourage Mr Smith to talk about his feelings.	S Jones.
Date.	Mr Smith noted to be low in mood today - refused to discuss same	G. Murphy.
NAME JOHN SMITH	**UNIT NUMBER** 00234	

CONTINUATION		
DATE		SIGNATURE
Date.	Up at 3.6 this morning. Initially refused breakfast but managed to persuade mr smith to have some toast. Asked to have breakfast in his room.	
Date.	Up for meals today, requested meals in room. Managed to convince Mr Smith that he should eat in the Dining room. During meals Mr Smith lay on his bed for most of the day.	S Jones.
Date.	Mr Smith only managed to eat a small amount of evening meal. Slightly tearful towards late evening, Mr Smith requested to go to bed early, assisstance given.	S Gilchrist
Date.	Doctor asked to come and review Mr Smith as mood appears low.	S Gilchrist
Date.	Dr viewed Mr Smith today. Signs of Clinical depression noted, commenced on Setraline 50mgs X1 daily. To be reviewed by	S Jones
NAME	JOHN SMITH	UNIT NUMBER 001234

CONTINUATION			
DATE			SIGNATURE
(Cont)—	Dr McKenzie in 4 weeks.		S. Jones.
	Son phoned from Australia today re Mr Smith.		
	Explained how Mr Smith has been since arriving in the unit. Mr Smith spoke to Son at some length on the phone.		
	Mr Smith appeared to be slightly brighter in mood.		
	Ate all of evening meal		S. Jones.
Date.	Seen by chiropodist, toenails cut. Will see Mr Smith in appx 4 weeks.		S Gilchrist
Date.	Refused evening meal and supper tonight. When asked Mr Smith said that he simply couldn't face food. Has been in his room for most of the day.		S. Jones.
Date.	Commenced on a weekly activity chart. Staff to indicate on chart if Mr Smith refuses to perform an activity of any kind.		S. Jones.
Date.	Visited by next door neighbour today. Out for a short walk in the		
NAME	JOHN SMITH	UNIT NUMBER	001234

CONTINUATION		
DATE		SIGNATURE
	grounds. Then went out for lunch. Appeared brighter on return.	
Date.	Monthly weight to be done tomorrow.	K J Jones.
Date.	Weight taken today (US stone). 4lb lost in last four weeks since admission to unit.	S Gilchrist
Date	Pressure sore assessment done today. Score of 15 obtained.	K J Jones.
Date.	Mr Smith requested his breakfast and lunch in his room. Encouragement given to eat in Dining room. Mr Smith agreed to this. Eat a small portion of both meals.	K J Jones.
Date.	Mr Smith commenced on Food/Fluid intake chart. Staff to record when meals offered or refused. Water low - Score 18	S Gilchrist
Date	Mr Smith was asked this morning if he would like a bath, replied that he didn't see the point of washing. Encouragement and assistance given with bathing and dressing.	K J Jones.
NAME	JOHN SMITH	UNIT NUMBER 001234.

CONTINUATION		
DATE		**SIGNATURE**
[illegible]	Mr Smith ate a small amount of breakfast and lunch when offered. Stayed at bedside for most of time and refused to participate in garden therapy when asked. Random weight taken:- 14 stone 12 lbs. Re-referred to dietician.	K
Date.	Seen by Dietician today. Commenced on food supplements (Fortisips). Mr Smith to be weighed weekly in the meantime.	S. Jones.
[illegible]	Mr Smiths present weight is 14 stone 10lbs.	S. Jones.
Date	Nutritional screening tool commenced.	S. Jones.
NAME	JOHN SMITH	**UNIT NUMBER** 001234.

CONTINUATION		
DATE		**SIGNATURE**
NAME		**UNIT NUMBER**

MULTIDISCIPLINARY REPORTS

DATE	DISCIPLINE	REPORT	SIGNATURE
Date	SOCIAL WORK	Discussed with Mr Smith the issue of house keys. Nominated social worker to hold the keys. S/W & Jones present at discussion.	S. Jones.
Date	MEDICAL	Asked to Review MR SMITH AS MOOD HAS BEEN LOW. SOME SIGNS OF CLINICAL DEPRESSION NOTED. SETRALINE TO COMMENCE 50mg 1 X DAILY. TO BE REVIEWED IN 4 WEEKS TIME.	G. MCKENZIE (DR)
Date.	MEDICAL	REVIEWED MR SMITH'S MOOD UNABLE TO DETERMINE THE EXTENT OF THE EFFECT OF SETRALINE SHALL MONITOR MOOD FOR A FURTHER 4 WEEKS	G MCKENZIE (DR)
Date.	DIETICIAN	SAW MR. JONES TODAY WHOSE CURRENT WEIGHT IS 14'10 - REASSESS WEEKLY WEIGH WEEKLY, MONITOR FOOD INTAKE. SEE IN 2 WEEKS	K Ball.

NAME	JOHN SMITH	UNIT NUMBER	001234.

INVESTIGATIONS
(Record all investigations e.g. weight, wound swabs, urine specimens etc)

DATE	INVESTIGATION	SIGNATURE
Admission	Admission Obs:	
	BP 130/75, P89, T36.6.	
	Weight 15 stone 4 lbs.	
	W.S.U. obtained - NAF	S. Jones.
Date.	Weight 15 stone	S Gilchrist
Date.	weight 14 stone 10 lbs	K [illegible]

NAME JOHN SMITH **UNIT NUMBER** 001234

FOOD & FLUIDS CONSUMED CHART

NAME JOHN SMITH. - 001234.

WEIGHT 15 STONE. DATE:

Please keep an accurate record of all food and drinks taken by this patient on the date marked.

Include all snacks provided by visitors.

Please record if a patient refuses a meal.

MEAL	FOOD AND QUANTITY	DRINK AND QUANTITY
BREAKFAST	2 SLICES OF TOAST	½ CUP OF TEA (100mls).
MID MORNING		
LUNCH	HAD BOWL OF SOUP (150mls). 1 SLICE OF BREAD & BUTTER	GLASS OF MILK (100mls).
MID AFTERNOON		TEA - 50mls.
DINNER	SALAD & CHIPS WITH SOME BREAD. MANAGED ½ OF MEAL.	TEA - 100mls.
SUPPER		GLASS OF WATER

FOOD & FLUIDS CONSUMED CHART

NAME JOHN SMITH. – 001234.

WEIGHT 15 STONE. DATE:

Please keep an accurate record of all food and drinks taken by this patient on the date marked.

Include all snacks provided by visitors.

Please record if a patient refuses a meal.

MEAL	FOOD AND QUANTITY	DRINK AND QUANTITY
BREAKFAST	½ BOWL OF CEREAL.	TEA - (50mls).
MID MORNING		WATER (50mls).
LUNCH	FISH CAKES & SALAD. ½ PLATE MANAGED.	TEA - FULL CUP.
MID AFTERNOON		COFFEE (A FEW SIPS).
DINNER	COLD MEAT SALAD. EAT COLD MEAT ONLY. 1 SLICE OF BREAD.	TEA – 50mls.
SUPPER		

FOOD & FLUIDS CONSUMED CHART

NAME JOHN SMITH. – 001234.

WEIGHT 14' 12lbs (RANDOM WEIGHT) TAKEN. DATE:

Please keep an accurate record of all food and drinks taken by this patient on the date marked.

Include all snacks provided by visitors.

Please record if a patient refuses a meal.

MEAL	FOOD AND QUANTITY	DRINK AND QUANTITY
BREAKFAST	BOILED EGG X1 & 1 SLICE OF TOAST.	TEA (50mls)
MID MORNING		WATER (50mls).
LUNCH	CHEESE & BISCUITS EATEN. (½ PLATE)	TEA - FULL CUP.
MID AFTERNOON	1 APPLE.	JUICE - 100mls.
DINNER	CHICKEN CASSEROLE + 1 SLICE OF BREAD (½ PLATE).	TEA (50mls).
SUPPER		WATER ½ GLASS

FOOD & FLUIDS CONSUMED CHART

NAME JOHN SMITH. – CO 1234.

WEIGHT 14' 12lbs. DATE:

Please keep an accurate record of all food and drinks taken by this patient on the date marked.

Include all snacks provided by visitors.

Please record if a patient refuses a meal.

MEAL	FOOD AND QUANTITY	DRINK AND QUANTITY
BREAKFAST	1 SLICE OF TOAST.	TEA – 50mls.
MID MORNING		
LUNCH	SOUP – 100mls.	MILK – 50mls.
MID AFTERNOON		TEA – 50mls
DINNER	PIE & BEANS & POTATOS. (½ PLATE)	COFFEE – FULL CUP.
SUPPER		WATER – 50mls.

FOOD & FLUIDS CONSUMED CHART

NAME JOHN SMITH. – 001234.

WEIGHT 14' 10lbs. **DATE:**

Please keep an accurate record of all food and drinks taken by this patient on the date marked.

Include all snacks provided by visitors.

Please record if a patient refuses a meal.

MEAL	FOOD AND QUANTITY	DRINK AND QUANTITY
BREAKFAST		
MID MORNING	½ BOWL OF CEREAL.	TEA - 80mls. WATER - 50mls.
LUNCH	SANDWICH X 2	WATER - 50mls.
MID AFTERNOON		TEA - 100mls. (2 CUPS)
DINNER	½ PLATE OF CHICKEN & VEG.	TEA - 80mls. REFUSED FORTISIP.
SUPPER		WATER 50mls.

FOOD & FLUIDS CONSUMED CHART

NAME JOHN SMITH. - 001234.

WEIGHT 14' 10lbs. DATE:

Please keep an accurate record of all food and drinks taken by this patient on the date marked.

Include all snacks provided by visitors.

Please record if a patient refuses a meal.

MEAL	FOOD AND QUANTITY	DRINK AND QUANTITY
BREAKFAST	1 BOWL OF CEREAL.	MILK - 100mls.
MID MORNING		HAD FORTISIP -100mls.
LUNCH	1 BUTTERED ROLL (GRAIN). SOME CHEESE.	TEA - 50mls.
MID AFTERNOON		WATER - 50mls.
DINNER	½ OF FISH & CHIPS.	TEA - 50mls.
SUPPER		FORTISIP - 50mls.

FOOD & FLUIDS CONSUMED CHART

NAME JOHN SMITH. – 001234.

WEIGHT 14' 10lbs. DATE:

Please keep an accurate record of all food and drinks taken by this patient on the date marked.

Include all snacks provided by visitors.

Please record if a patient refuses a meal.

MEAL	FOOD AND QUANTITY	DRINK AND QUANTITY
BREAKFAST		
MID MORNING	1 BOWL OF CEREAL.	REFUSED FORTISIP. TEA - 50mls.
LUNCH	½ BOWL OF SOUP. REFUSED BREAD.	TEA-50mls.
MID AFTERNOON		FORTISIP – 100mls.
DINNER	PORK ROLL x 1.	TEA – 100mls.
SUPPER	1 BISCUIT. (RICH TEA).	WATER–50mls.

DIABETIC CHART

(x2 daily)

See kardex for insulin prescription.

G = Glucose
K = Ketones

[redacted] No: 001234

DATE	Morning		Noon		Evening		Night		INSULIN						REMARKS
	G	K	G	K	G	K	G	K	Morning	Prescribed by / Given by	Noon	Prescribed by / Given by	Evening	Prescribed by / Given by	
	ADMITTED →				BM	6·3									
					BM	5·6									
	BM	6·2			BM	3·4*									*milk & biscuits given.
	BM	4·3			BM	5·2									
	BM	2·3*			BM	10·1									*milk & biscuits given
	BM	6·1			BM	5·9									
	BM	5·2			BM	7·2									
	BM	4·9			BM	6·5									
	BM	4·5			BM	5·8									
	BM	3·6*			BM	5·1									*milk & biscuits given
	BM	5·1			BM	6·9									
	BM	4·3			BM	7·2									
	BM	3·1*			BM	5·6									*milk & biscuits given
	BM	4·9			BM	8·6									
	BM	6·3			BM	9·7									
	BM	2·1*			BM	5·4									*milk & biscuits given
	BM	4·1			BM	6·9									

Name: JOHN SMITH

[redacted] No: 001234.

DIABETIC CHART

G = Glucose
K = Ketones

DATE	Morning		Noon		Evening		Night		INSULIN						REMARKS
	G	K	G	K	G	K	G	K	Morning	Prescribed by / Given by	Noon	Prescribed by / Given by	Evening	Prescribed by / Given by	
	BM	*2.9			BM	7.3									* milk & biscuits given
	BM	*3.1			BM	10.3									* milk & biscuits given
	BM	*4.3			BM	6.7									* MILK + BISCUITS
	BM	5.2			BM	*4.0									* MILK + BISCUITS
	BM	4.9			BM	7.3									
	BM	5.0			BM	9.5									
	BM	6.1			BM	11.3									
	BM	5.5			BM	7.8									
	BM	4.8			BM	8.1									
	BM	5.3			BM	6.4									
	BM	6.2			BM	9.4									
	BM	4.4			BM	10.1									
	BM	3.2*			BM	11.3									* milk & biscuits given
	BM	6.8			BM	7.2									
	BM	5.9			BM	8.6									
	BM	4.7			BM	6.3									
	BM	4.5			BM	9.7									

DIABETIC CHART

BM-BD.

See Kardex for Insulin prescription.

G = Glucose
K = Ketones

[redacted] No: 001234.

DATE	Morning		Noon		Evening		Night		INSULIN						REMARKS
	G	K	G	K	G	K	G	K	Morning	Prescribed by / Given by	Noon	Prescribed by / Given by	Evening	Prescribed by / Given by	
13/4	BM-3-7.														

Name:

[redacted] No:

DIABETIC CHART

G = Glucose
K = Ketones

DATE	Morning		Noon		Evening		Night		INSULIN						REMARKS
	G	K	G	K	G	K	G	K	Morning	Prescribed by / Given by	Noon	Prescribed by / Given by	Evening	Prescribed by / Given by	

Nutritional Screening Tool

DATE						
1. WEIGHT HISTORY						
No evidence of recent weight loss	(0)	0	0	0	0	0
Recent weight loss (<3.5 kg)	2	2	2	2	2	2
Recent weight loss (3.5 – 7.0 kg)	4	(4)	(4)	4	4	4
Extreme weight loss (>7.0 kg) and / or emaciated	5	5	5	5	5	5
2. FOOD INTAKE						
Finishes most meals and drinks	0	0	0	0	0	0
Eats ½ of food and drinks offered	(2)	2	2	2	2	2
Eats < ½ of food and drinks offered	4	(4)	(4)	4	4	4
Unable or unwilling to eat and / or drink	5	5	5	5	5	5
3. ABILITY TO EAT						
Able to eat independently	0	0	0	0	0	0
Needs verbal prompting or food cut up	(2)	(2)	(2)	2	2	2
Needs total assistance with food and drink	2	2	2	2	2	2
4. MENTAL STATE						
Alert, co-operative and orientated	(0)	0	0	0	0	0
Mood swings and / or mildly confused	1	1	1	1	1	1
Mildly depressed	2	2	2	2	2	2
Depression and / or demented	3	(3)	(3)	3	3	3
5. CLINICAL CONDITIONS WHICH MAY AFFECT NUTRITIONAL STATUS (You can circle more than one answer)						
Needs modified consistency foods	2	2	2	2	2	2
Chest infection or chronic infection	2	2	2	2	2	2
History of vomiting or diarrhoea (> 3 consecutive days)	2	2	2	2	2	2
Pressure sores (Grade II or above)	2	2	2	2	2	2
Pacing up and down or other constant movement	2	2	2	2	2	2
TOTAL SCORE	4	13	13			
WEIGHT	15 14	14 12	14 10			

ACTION PLAN

LOW RISK = 0–4	MODERATE RISK = 5–9	HIGH RISK = 10+
• Reassess screening monthly • Weigh monthly	• Reassess screening score weekly • Weigh weekly • Assist with food choices and at mealtimes • Monitor food intake for 3 days using a food record chart • Offer frequent snacks	• Refer to dietician for assessment • Reassess screening score weekly • Weigh weekly • Assist with food choices and at mealtimes • Monitor food intake for 3 days using a food record chart • Offer frequent snacks

Patients name JOHN SMITH Unit number: 001234.

Admission weight 15 stone 4 lbs.

GERIATRIC DEPRESSION SCALE

		Points for Response	
	Choose the best answer for how you felt over the past week	**Yes**	**No**
1	Are you basically satisfied with your life?	0	1
2	Have you dropped many of your activities and interests?	1	0
3	Do you feel that your life is empty?	1	0
4	Do you often get bored?	1	0
5	Are you in good spirits most of the time?	0	1
6	Are you afraid that something bad is going to happen to you?	1	0
7	Do you feel happy most of the time?	0	1
8	Do you often feel helpless?	1	0
9	Do you prefer to stay indoors, rather than going out and doing new things?	1	0
10	Do you feel you have more problems with memory than most?	1	0
11	Do you think it is wonderful to be alive now?	0	1
12	Do you feel pretty worthless the way you are now?	1	0
13	Do you feel full of energy?	0	1
14	Do you feel that your situation is hopeless?	1	0
15	Do you think that most people are better off than you?	1	0

Scoring Intervals:

0-4 No Depression **5-10 Mild Depression** **11+ Severe Depression**

Date	Score	Signature
Date.	12	J. Jones
Date.	13	J. Jones
Date.	13	J. Jones
Date.	13	J. Jones
Date.	13	J. Jones

Patient's name: JOHN SMITH Unit number: 001234.

DAILY ACTIVITY CHART

NAME JOHN SMITH – 001234. **DATE** W/B

Please keep an accurate record of all activities undertaken by this patient
Please include all routine activities e.g. washing and dressing etc. Also indicate how long the patient was engaged in the activity. Indicate if the patient refuses to undertake an activity

TIME/DAY	MONDAY	TUESDAY	WEDNESDAY	THURDSAY	FRIDAY	SATURDAY	SUNDAY
MORNING	PROMPTING NEEDED FOR WASHING & DRESSING	LITTLE PROMPTING NEEDED FOR DRESSING.	HAD BREAKFAST IN DINING ROOM.	HAD BREAKFAST IN DINING ROOM.	REFUSED BREAKFAST IN DINING ROOM.	PROMPTING NEEDED FOR BATHING & DRESSING.	HAD BREAKFAST IN BED.
AFTERNOON	LAY ON BED. ASKED FOR LUNCH IN B/ROOM.	SAT O/SIDE B4 SELF FOR 1 HOUR	NEIGHBOUR VISITED – OUT FOR WALK	REFUSED WALK WITH STAFF.	LAY ON BED, WATCHED TV.	LAY ON TOP OF BED – WATCHED TV.	SAT O/SIDE ON PATIO.
MID AFTERNOON	EAT A SMALL AMOUNT OF LUNCH.	REFUSED LUNCH.	OUT FOR LUNCH WITH NEIGHBOUR	HAD LUNCH IN DINING ROOM. EAT LITTLE.	HAD A SMALL LUNCH IN DINING ROOM.	LAY ON TOP OF BED. REFUSED GAME OF BOWLS	HAD A SMALL LUNCH IN DINING ROOM.
EVENING	HAD DINNER IN DINING ROOM. LAY ON BED FOR EVENING.	WATCHED TV IN B/ROOM.	WATCHED TV IN B/ROOM.	REFUSED TO PARTICIPATE IN GAMES EVENING.	LAY ON BED.	WATCHED TV FOR ½ HOUR IN TV ROOM. LAY ON BED AFTER THIS	LAY ON BED.

DAILY ACTIVITY CHART

NAME JOHN SMITH – 001234. **DATE** W/B

Please keep an accurate record of all activities undertaken by this patient
Please include all routine activities e.g. washing and dressing etc. Also indicate how long the patient was engaged in the activity. Indicate if the patient refuses to undertake an activity

TIME/DAY	MONDAY	TUESDAY	WEDNESDAY	THURDSAY	FRIDAY	SATURDAY	SUNDAY
MORNING	EAT IN B/ROOM.	REFUSED TO HAVE A BATH THIS AM.	PROMPING NEEDED WITH WASHING & DRESSING.	EAT IN DINING ROOM.	REFUSED TO GET UP THIS AM. SLEPT LONGER	UP EARLY. MINIMAL PROMPING NEEDED.	HAD A LIE IN TODAY.
AFTERNOON	LAY ON BED. WATCHED TV.	SAT O/SIDE BY SELF FOR 1 HOUR	HAD A SMALL LUNCH	EAT ½ OF LUNCH. HAD LUNCH IN GARDEN.	APPEARS TIRED. LAY ON BED.	ASKED FOR LUNCH IN B/ROOM. EAT SMALL AMOUNT	EAT A SMALL AMOUNT FOR LUNCH.
MID AFTERNOON	REFUSED GARDEN THERAPY.	SAT IN PATIENTS TV ROOM FOR A SHORT TIME.	LAY ON BED – WATCHED TV.	LAY ON TOP OF BED. HAD SHORT SLEEP.	HAD LUNCH IN DINING ROOM.	PARTICIPATED IN THE GAMES EVENING.	SAT OUT SIDE IN GARDEN.
EVENING	HAD A SMALL MEAL IN DINING ROOM.	HAD A BATH THIS EVENING.	UP FOR EVENING MEAL. SAT IN PATIENTS TV ROOM FOR A WHILE.	HAD EVENING MEAL IN DINING ROOM.	LAY ON BED – WATCHED TV.	HAD FISH & CHIPS IN DINING ROOM WITH FELLOW PATIENT.	LAY ON BED – WATCHED. TV.

WATERLOW PRESSURE SORE PREVENTION / TREATMENT POLICY
Ring scores in table, add total, several scores per category can be used

JOHN SMITH
001234.

ild/weight for height	☆	Skin type Visual risk areas	☆	Sex Age	☆	Special Risks	☆
Average	0	Healthy	0	Male	1	**Tissue Malnutrition**	☆
bove average	1	Tissue paper	1	Female	2		
Obese	2	Dry	1	14 – 49	1	e.g. Terminal cachexia	8
elow average	3	Oedematous	1	50 – 64	2	Cardiac Failure	5
		Clammy (temp.↑)	1	65 – 74	3	Peripheral vascular disease	5
		Discoloured	2	75 – 80	4	Anaemia	2
		Broken/spot	3	81 +	5	Smoking	1
Continence	☆	**Mobility**	☆	**Appetite**	☆	**Neurological deficit**	☆
Complete / Cathetersied	0	Fully	0	Average	0	e.g diabetes, M.S, CVA	
		Restless / fidgety	1	Poor	1	Motor / sensory paraplegia	4-6
ccasional Incont.	1	Apathetic	2	N.G tube / fluids only	2		
th / incontinent of faeces	2	Restreicted	3				
		Inert / traction	4	NBM / Anorexic	3		
ubly incontinent	3	Chairbound	5				
						Major surgery/trauma	☆
						Orthopaedic-below waist spinal	5
						On table > 2 hours	5
						Medication	☆
						Cytotoxics High dose steriods Anti-inlammatory	4

ore | 10+ at risk | 15+ high risk | 20+ very high risk

aterlow 1991 Obtainable from Newtons, Curland, ,Taunton, TA3 5SG

E	SCORE	DATE	SCORE
OMISSION	/5 35		
dy 1 MONTH	/8 36		

DATE	WATERLOW SCALE	MATTRESS REQUIREMENTS	DATE ON	DATE OFF
ADMISSION	15	Soft foam.		
1st month	18	Soft foam.		

REMEMBER TISSUE DAMAGE OFTEN STARTS PRIOR TO ADMISSION, IN CASUALTY. A SEATED PATIENT IS ALSO AT RISK

ASSESSMENT: (See Over) **IF THE PATIENT FALLS INTO ANY OF THE RISK CATEGORIES THEN PREVENTATIVE NURSING IS REQUIRED. A COMBINATION OF GOOD NURSING TECHNIQUES AND PREVENTATIVE AIDS WILL DEFINITELY BE NECESSARY.**

PREVENTION:

PREVENTATIVE AIDS:

Special Mattress/ Bed:
10+Overlays or specialist foam mattresses
15+Alternating pressure overlays, mattresses and bed systems.
20+Bed Systems: Fluidised, bead, low air loss and alternating pressure mattresses.
Note: Preventative aids cover a wide spectrum of specialist features. Efficacy should be judged, if possible, on the basis of independent evidence.

Cushions:
No patient should sit in a wheelchair without some form of cushioning. If nothing else is available - use the patient's own pillow.
10+ 4" Foam cushion.
15+ Specialist Gell and/or foam cushion
20+ Cushion capable of adjustment to suit individual patient.

Bed Clothing:
Avoid plastic draw sheets, inco pads and tightly tucked in sheets/sheet covers, especially when using Specialist bed and mattress overlay systems.
Use Duvet - plus vapour permeable cover

NURSING CARE

General:	Frequent changes of position,lying/sitting. Use of pillows.
Pain	Appropriate pain control.
Nutrition	High protein, vitamins, minerals
Patient Handling:	Correct lifting technique - Hoists - Monkey Pole - Transfer Devices
Patient Comfort Aids:	Real sheepskins - Bed Cradle.
Operating Table Theatre/A&E Trolley	4' cover plus adequate protection.
Skin Care:	General Hygiene, NO rubbing, cover with an appropriate dressing.

IF TREATMENT IS REQUIRED, FIRST REMOVE PRESSURE

WOUND CLASSIFICATION

Stirling Pressure Sore Severity Scale (SPSSS)

Stage 0 - No clinical evidence of a pressure sore.
0.1 - Healed with scarring.
0.2 - Tissue damage not assessed as a pressure sore. (a) see below

Stage 1 - Discolouration of intact skin.
1.1 - Non blanchable erythema with increased local heat.
1.2 - Blue/purple/black discolouration - The sore is at least **Stage 1** (a or b).

Stage 2 - Partial-thickness skin loss or damage.
2.1 Blister **2.2** Abrasion
2.3 Shallow ulcer, no underming of adjacent tissue.
2.4 Any of these with underlying blue/purple/black discolouration or induration. The sore is at least **Stage 2** (a,b or c+d for **2.3**, + e for **2.4**)

Stage 3 - Full thickness skin loss involving damage/necrosis of subcutaneous tissue, not extending to underlying bone, tendon or joint capsule.
3.1 - Crater, without undermining adjacent tissue.
3.2 - Crater, with undermining of adjacent tissue.
3.3 - Sinus, the full extent of which is uncertain.
3.4 - Necrotic tissue masking full extent of damage.
The sore is at least **Stage 3** (b, +/- e, f, g, +h for **3.4**)

Stage 4 - Full thickness loss with extensive destruction and tissue necrosis extending to underlying bone, tendon or capsule.
4.1 Visible exposure of bone tendon or capsule.
4.2 Sinus assessed as extending to same. (b+/-e, f,g,h,i)

Guide to types of Dressings/Treatment

a. Semi-permeable membrane	f. Alginate rope/ribbon
b. Hydrocolloid	g. Foam cavity filler
c. Foam dressing	h. Enzymatic debridement
d. Alginate	i. Surgical debridement
e. Hydrogel	

NURSING CARE PLAN

ITEM	MOBILITY	
DATE	**ABILITY**	**SIGNATURE**
Date	Is able to mobilise self in wheelchair independently and safely.	S. Jones
	Is aware of own safety when in wheelchair	S. Jones.
	Is able to do a pivot standing transfer with the assistance of one person and a stick.	S. Jones.

DATE	NEED	SIGNATURE
Date	Needs soft paraffin cream applied to right hand to prevent callous forming due to hand rotation of wheels.	S. Jones.

DATE	GOAL	EVALUATION DATE	SIGNATURE
Date	To maintain independance and safety in wheelchair	Date	S. Jones.

NAME	JOHN SMITH	UNIT NUMBER	001234.

NURSING CARE PLAN			
ITEM	DIABETES.		
DATE	**ABILITY**		**SIGNATURE**
	Is able to select appropriate food and diet.		S. Jones.
DATE	**NEED**		**SIGNATURE**
	Blood monitoring to be done x 2 daily prior to insulin administration.		S. Jones.
DATE	**GOAL**	**EVALUATION DATE**	**SIGNATURE**
Date	To maintain stable blood glucose.	Date	S. Jones.
NAME	JOHN SMITH	**UNIT NUMBER**	001284.

NURSING CARE PLAN			
ITEM	WASHING & DRESSING.		
DATE	**ABILITY**		**SIGNATURE**
	Is able to select clothing which is appropriate to task and weather.		S. Jones
	Is able to select toiletries.		S. Jones.
DATE	**NEED**		**SIGNATURE**
	Requires some encouragement to wash/bathe. Also requires prompting to dress.		S. Jones
	Needs some assistance with personal hygiene.		S. Jones.
	Needs assistance with dressing and undressing		S. Jones.
DATE	**GOAL**	**EVALUATION DATE**	**SIGNATURE**
3/1/C	To initiate the task of washing and dressing.	None.	S. Jones.
NAME	JOHN SMITH	**UNIT NUMBER**	001234

NURSING CARE PLAN			
ITEM	EATING & DRINKING		
DATE	**ABILITY**		**SIGNATURE**
[illegible]	Is able to eat and drink food and fluids of normal consistency.		S. Jones.
	Is able to feed self. with right hand.		S. Jones.
DATE	**NEED**		**SIGNATURE**
	Requires some foods to be cut.		S. Jones.
	Requires the use of a plate guard.		S. Jones.
Date	Requires some prompting with eating and drinking.		S. Jones.
[illegible]	Staff to record food and fluid intake.		S. Jones.
DATE	**GOAL**	**EVALUATION DATE**	**SIGNATURE**
[illegible]	To maintain adequate amounts of food and fluids.	[illegible]	S Jones.
NAME	JOHN SMITH	**UNIT NUMBER**	001234

NURSING CARE PLAN		
ITEM	PRESSURE AREA CARE.	
DATE	**ABILITY**	**SIGNATURE**
[illegible]	Is able to feel pain / discomfort when asked how he is feeling.	S. Jones
	Is able to change position slightly when in wheelchair	S. Jones
DATE	**NEED**	**SIGNATURE**
	Requires the use of a Softform mattress	S. Jones
	Requires the use of a prepad cushion in wheelchair	S. Jones
	Pressure areas assessed on a monthly basis	S. Jones.

DATE	GOAL	EVALUATION DATE	SIGNATURE
[illegible]	TO maintain pressure area care	[illegible]	S. Jones

NAME	JOHN SMITH	UNIT NUMBER	001234.

NURSING CARE PLAN			
ITEM	MOVING & HANDLING.		
DATE	**ABILITY**		**SIGNATURE**
Date.	is able to turn self over night from his back onto his left side and vice versa.		S. Jones.
DATE	**NEED**		**SIGNATURE**
Date.	Needs the assistance of 2 people, plus glide sheet to turn onto his right side.		S. Jones.
DATE	**GOAL**	**EVALUATION DATE**	**SIGNATURE**
Date.	To alternate position in bed with assistance.	Date.	S. Jones
NAME	JOHN SMITH	**UNIT NUMBER**	00123012.

NURSING CARE PLAN			
ITEM	ELIMINATION		
DATE	**ABILITY**		**SIGNATURE**
Date	is able to indicate to staff when feeling constipated.		S. Jones
	Is able to indicate to staff when he wishes to go to the toilet.		S. Jones.
DATE	**NEED**		**SIGNATURE**
	Needs PRN Senna for constipation.		S. Jones.
	Requires the use of urine bottles when in bed overnight.		S. Jones.
DATE	**GOAL**	**EVALUATION DATE**	**SIGNATURE**
Date.	To maintain a regular bowel movement. To maintain level of independance when using bottles.	Date.	S. Jones.
NAME	JOHN SMITH	**UNIT NUMBER**	001234.

NURSING CARE PLAN			
ITEM	MOOD		
DATE	**ABILITY**		**SIGNATURE**
Date	When asked, Mr Smith is able to express his feelings and thoughts.		S. Jones
DATE	**NEED**		**SIGNATURE**
	Encourage Mr Smith to engage in activities.		S. Jones
	Encourage Mr Smith to engage in conversation with other patients and staff.		S. Jones
Date	C.D.S. to be completed weekly.		S. Jones.
Date	Staff to complete activity chart		S. Jones
DATE	**GOAL**	**EVALUATION DATE**	**SIGNATURE**
Date	To engage in activities and conversation.	Date	S. Jones.
NAME	JOHN SMITH	**UNIT NUMBER**	001234.

NURSING GOAL EVALUATION SHEET

DATE	EVALUATION	SIGNATURE
Date End of 1st month	MOBILITY - No change. Evaluate in 4 weeks.	
	DIABETES - No change. Evaluate in 4 weeks.	
	WASHING & DRESSING - Still requires prompting with washing and dressing. Evaluate in 4 weeks.	
	EATING & DRINKING - No change. Evaluate in 4 weeks.	
	PRESSURE AREA CARE - Slight elevation in score. Evaluate in 4 weeks.	
	MOVING & HANDLING - No change. Evaluate in 4 weeks.	
	ELIMINATION - No change. Evaluate in 4 weeks.	S. Jones.
	MOOD - Mr Smith is felt to be withdrawn. Avoids social interaction with other people and often does not participate in activities. Evaluate in 2 weeks. C.P.N. in place.	S. Jones.
Date: End of 2nd month.	MOBILITY - No change. Evaluate in 4 weeks.	
	DIABETES - No change. Evaluate in 4 weeks.	
	WASHING & DRESSING - No change. Evaluate in 4 weeks.	
	EATING & DRINKING - Staff to encourage Mr Smith with his intake. →	(Cont)
NAME	JOHN SMITH	UNIT NUMBER 001234.

NURSING GOAL EVALUATION SHEET		
DATE	EVALUATION	SIGNATURE
(Cont)	Evaluate in 2 weeks time.	
	WALKING & HANDLING -	
	No change, evaluate in	
	4 weeks.	
	ELIMINATION -	
	No change. Evaluate in	
	4 weeks.	
	MOOD -	
	Staff to complete weekly	
	activity chart. Evaluate in	
	2 weeks.	S. Jones.
Date.	EATING & DRINKING -	
	Staff to complete daily	
	intake chart. Same weight	
	loss noted. Evaluate in	
	2 weeks.	S. Jones.
NAME	JOHN SMITH.	UNIT NUMBER CC1234.

DISCHARGE PLANS		
DATE	**DISCHARGE DETAILS**	**SIGNATURE**
	PROVISIONAL D/CHARGE DATE:	
	CONFIRMED DISCHARGE DATE:	
	DESTINATION:	
	PATIENT INFORMED:	
	NEXT OF KIN INFORMED:	
	TRANSPORT:	
	MOBILITY AIDS:	
	HOME EQUIPMENT:	
	REFERRALS MADE:	
	MEDICATION ORDERED:	
	MEDICATION EXPLAINED TO:	
	MEEDICATION GIVEN TO:	
	GP PRESCRIPTION GIVEN TO:	
	DISCHARGE PLAN GIVEN TO:	
	DISCHARGE/TRANSFER WRITTEN:	
	HOME VISIT REPORT (if applicable)	
NAME	JOHN SMITH	**UNIT NUMBER** 001234.

Nursing Transfer Letter

Medical Ward 1
Hospital
1 Cloud Street
Region
AA1 2CD

Patient Name:	Mr John Smith
Address:	27 Tree Top Road Region AA3 9YZ
Telephone:	0101-123-456
Date of Birth:	11/11/1922
Next of Kin / Address:	Mr William Smith (Son) 2 Koala Avenue Australia
Telephone:	Not known
Date of Admission:	Admitted through A&E
Date of Discharge:	
GP Address:	Dr Jolly Health Centre 1 Hilltop Road Region
Telephone:	0101-234-567
Diagnosis:	Fall at home, suspected extension of stroke - negative.

Medication:

Human Actrapid	8 units @ 8am, 6 units @ 5pm
Bendrofluazide	2.5 mg @ 8am
Doxazosin	1mg @ 8am
Lisinopril	10 mg @ 8am
Asprin	75mg @ 8am
Paracetamol	1g X 4 daily
Senna tabs	PRN

Nursing Care on Discharge

Elimination Continent of urine and faeces. Experiences urinary frequency due to BPH. Requires senna occasionally	**Mobility & Transfers** Self propels in wheelchair. Uses a footplate for right foot. Is able to do a pivot standing transfer with the assistance of one plus a stick.
Sleep Uses 2 pillows over night. Previously received night sedation although no longer requiring this. Uses urinals overnight. Requires the use of bedrails to help turn overnight.	**Maintain Safe Environment** Has good safety awareness of wheelchair use while in the ward. Safety in the community has not been assessed.
Maintain Body Temperature No problems in this area	**Breathing** No problems in this area. No smoking history.
Communication Is able to express his needs. No language or expressive problems noted. Lacks initiation to converse with staff and other patients on the ward.	**Eating & Drinking** Is on a diabetic diet. Normal food and fluids.
Oral Care Needs some prompting with oral care. Has both sets of dentures.	**Skin** Intact.
Personal Cleaning & Dressing Needs assistance with personal hygiene and with dressing. Can manage to put on some items of clothing by self e.g. T-shirt. Requires some prompting with this area of care.	**Sexuality** Is aware that he is on a single sex ward.
Dying Not discussed.	**Social Work** Social worker is involved with Mr Smith's affairs. Prior to hospitalisation Mr Smith received home help services every alternative days.
Work & Leisure Retired train driver. Has a Neighbour who visits when he can.	**Other Information** Wife died a few months ago. Is finding the situation difficult to deal with. Mr Smith is aware that long term care is needed. Wears glasses and hearing aid in right ear.

Name of Nurse completing Transfer Letter: S/N Jessica Mosby **Grade:** E

Named Nurse: S/N Janice Dowell **Date:**

Medical Ward 1
Hospital
1 Cloud Street
Region
AA1 2CD

Date

Dear Doctor in Charge / General Practitioner

Re: Mr John Smith, 11/11/1932, 27 Tree Top Road. Region, AA3 9YZ

Thank you for taking over the care of this 81 year old retired train driver. He was admitted to us via A&E on the 5/1/04 after an extension to a stroke was suspected. All investigations prove to be negative. Apparently this gentleman had a fall at home whilst transferring himself from his wheelchair to the toilet during the night. It is thought that Mr Smith lay for a few hours before being found by his home help in the morning.

Mr Smith had a previous CVA in July 2000 which left him with a dense left hemiparisis. He has reduced sensation in his left arm. Some twenty years ago Mr Smith was diagnosed with having Type 2 diabetes which had been controlled through oral hyperglycaemics. However since his previous admission, Mr Smith is now Insulin dependent as his BM's were unstable for a large part of his stay with us. Mr Smith has a Begnin Prostatic Hypertrophy which he was diagnosed with 5 years ago. Mr Smith has been seen annually by Dr Wynne at the Urology department.

Until his admission, Mr Smith lived at home with his wife who unfortunately died suddenly some 6 months ago from an MI. Following this Mr Smith lived alone and was receiving home help services every day. As far as I am aware Mr Smith has one son in Australia and one sister who lives in London who he doesn't keep in contact with.

Present medication:

Human Actrapid	8 units @ 8am, 6 units @ 5pm
Bendrofluazide	2.5 mg @ 8am
Doxazosin	1mg @ 8am
Lisinopril	10 mg @ 8am
Asprin	75 mg @ 8am
Paracetamol	1g X 4 daily
Senna tabs	PRN

Yours sincerely

Dr Feelgood

SHO (Cardiac & Stroke Care)

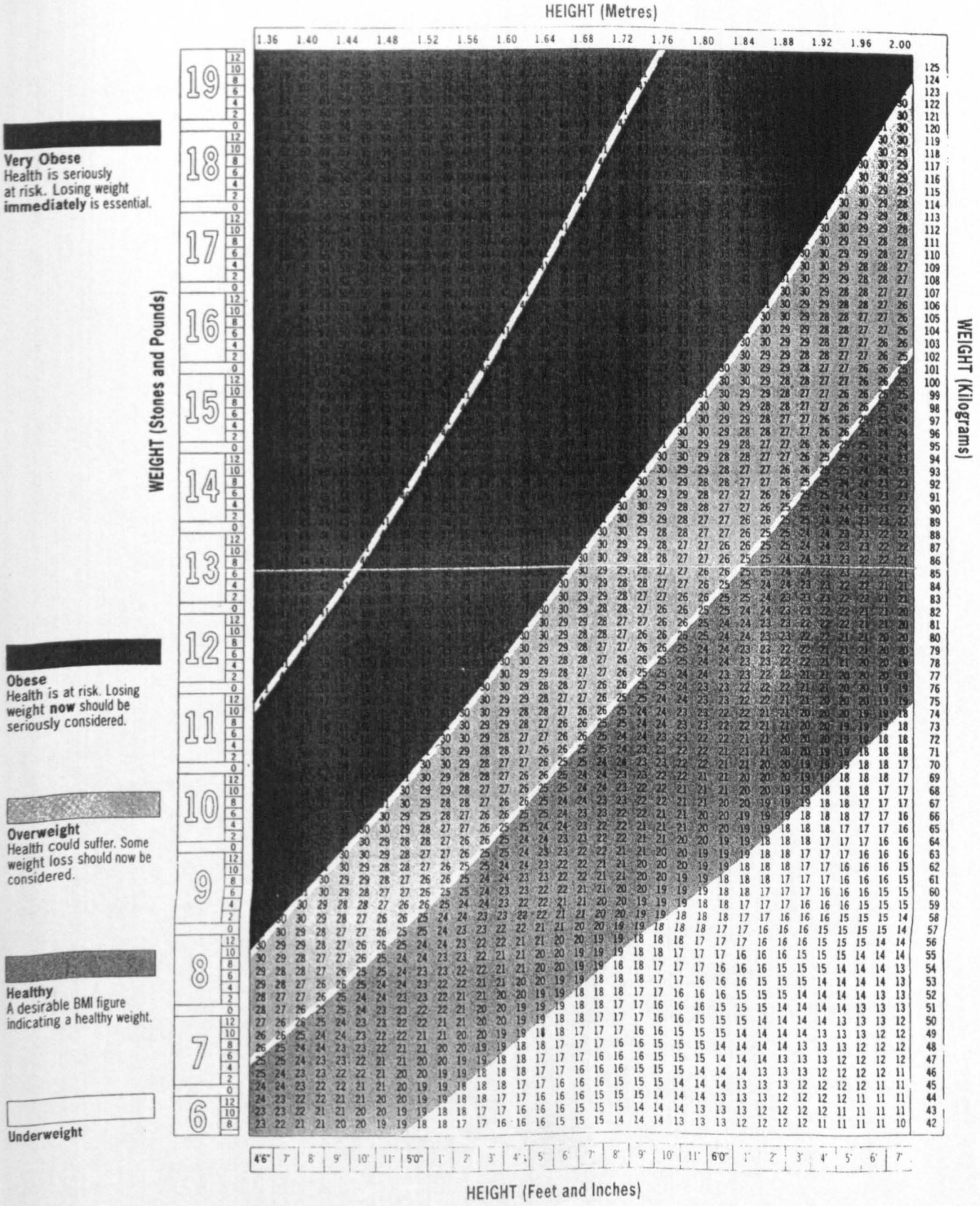
Bleep: 1234

REFERRALS MADE

DATE	REFERRALS MADE AND REASON	SIGNATURE
Date	Chiropodist referral made for toenail cutting	S Gilchrist
Date.	Social work referral made/house bag	S Gilchrist
Date	Dietician referral made due to weight loss	K [signature]

NAME	JOHN SMITH	UNIT NUMBER	001234.

Appendix 8 Body mass index chart (Adapted from Garrow J.S. in *Obesity and Related DIseases* 1988, published by Churchill Livingstone and Bray G.A. in *Human Obesity. Annals of the New York Academy of Sciences* 1989; 499. Reproduced with permission from Servier Laboratories Ltd)



APPENDIX 6.2

Information Sheet for 'Mr John Smith'

Current Medical History

- You suffered a stroke three years ago (July 2000)
    - dense left hemiparisis - arm and leg affected on left side of body. You have reduced sensation in your left arm.
    - no language problems.
- You use a wheelchair which you can self propel with the use of your right arm and leg.
- You are able to transfer with the assistance of 1 person plus with the use of a stick.
- You are a diabetic who was originally controlled by oral hyperglycemics. However since your 2nd admission to hospital following a suspected extension of your stroke you are now an insulin dependent diabetic. You were diagnosed with the condition about 20 years ago.
- You are continent and your bowels normally move every two days. However you have an enlarged prostate which makes you feel as though you need to go to the toilet more. On occasion you require the use of 'senna' for mild constipation.

Social History

- In the study you are the age that you actually are.
- You wear glasses and a hearing aid in your right ear.
- You are a retired train driver. You retired aged 65.
- After you were discharged home from hospital following the stroke your wife was your main carer. You have one son (age 36) who moved to Australia about 10 years ago for work purposes. You have no other family close by. Your wife however died suddenly 6 months ago. Since then you have lived on your own at home receiving home help services once every day in the morning.

- You had a fall 3 months ago while trying to transfer from your wheelchair to the toilet during the night. You lay for couple of hours and were found lying on the bathroom floor by the home help in the morning. A second stroke was suspected so you were admitted to hospital via A & E. Results show however that you did not suffer an extension to your stroke. You where in a medical ward for 4 weeks prior to being transferred to a continuing care unit.

Scenario

You are a patient who has been in a continuing care unit for two months. You have been experiencing some pain in your right heel for about 4 days. The pain is one of a dull/ numb sensation that varies in duration. You have a discoloured area of skin on your right heel. You complained of pain in your heel 4 days ago, which you received analgesia for. During the assessment you say to the nurse that your right heel feels sore. You also have a discoloured area on your left elbow, as you tend to position your elbow on the arm pad of your wheelchair. You are not aware of any discomfort in your elbow, as you have reduced sensation in this area. On the top part of your right ear there is a small area of skin that is broken. You experience some discomfort in your ear, but generally the small sore doesn't bother you, you have not complained of any discomfort.

During the assessment you volunteer information only about your right heel i.e. 'My right heel feels a bit sore'. You do not volunteer any other information. You only give information when asked by the nurse.

Since the death of your wife you have been quite depressed and socially withdrawn. You do not initiate conversation and are not forthcoming with information about yourself. You avoid social situations by taking regular rests on top of your bed during the day. You have been feeling particularly low in mood lately as this month is your late wife's birthday (she would have been 68). Over the last 2 months you have lost 8lbs as your dietary intake has been poor due to your low mood. For the purposes of the study you currently weigh your present weight (14 s 10lbs).

Presentational Cues for Mr John Smith

Presentation	Cues
Gender /Age	Male. 81 years of age.
Medical	CVA – dense left hemiparisis – reduced sensation in left arm. Type 1 diabetic. Enlarged prostate – Begnin Prostatic Hypertrophy. Recent fall at home – no evidence of extension to stroke.
Nutrition	Able to swallow normal food and fluids. Intake has been poor over last 2 months -8lbs lost over 2 month period.
Elimination	Continent with both bowels and urine. Experiences urinary frequency due to enlarged prostate. Occasional need for a mild apperient. Uses urine bottles in bed over night.
Mobility	Wheelchair dependent – is able to self propel with the use of right leg and right arm. Is able to do a standing pivot transfer with a stick plus 1 person.
Mood	Low mood due to wife's death recently. Does not initiate conversation and is not forthcoming with information. Has a number of rest periods on top of bed during the day.
Sleep	Doesn't call for assistance during the night for help with turning – bed rails in place. Has a number of rest periods on top of bed during the day.
Pressure Areas	Dull/numb pain sensation which varies in duration / discoloured area on right heel – Vocalises during the assessment that this area is sore. *Left elbow* discoloured due to position of elbow while in wheelchair – *reduced sensation in this limb.* Broken spot on top part of right ear – wears hearing aid on right ear.
Pressure Relieving Equipment	Propad cushion on wheelchair Soft form mattress

APPENDIX 6.3

Right Ear

Right Heel

Left Elbow

APPENDIX 6.4

UNIVERSITY OF
STIRLING

DEPARTMENT OF
NURSING AND MIDWIFERY

Professor Andrew Watterson
Chair, Dept Research Ethics Committee

University of Stirling
Stirling FK9 4LA
Scotland

Telephone: +44 (0) 1786 466340
Facsimile +44 (0) 1786 466333
E-mail: aew1@stir.ac.uk

AEW/TI

5 December 2003

Susan Baxter
Department of Nursing & Midwifery
University of Stirling

Dear Susan

An examination of how nurses use the Waterlow Scale for judgement and decision making within continuing care

Thank you for submitting your proposal, entitled as above, to the Departmental Research Ethics Committee on Monday 1 December 2003. I am pleased to advise you that the committee approved your proposal subject to a note from yourself showing how the points raised below have been addressed.

(a) *Clarification is sought on* whether the simulated participant is aware of the time required to participate in the study.

(b) Details are required of any literature on perceived adverse effects on the simulated participants.

Many thanks

Andrew Watterson

Andrew Watterson
Chair

APPENDIX 6.5

LOTHIAN RESEARCH ETHICS COMMITTEE

CERTIFICATE OF ETHICAL OPINION

LREC Reference Number: LREC/2003/7/45
Title: An examination of how nurses use the Waterlow Scale for judgement and decision making within continuing care.
Researcher: Miss Susan Baxter

The Primary Care/Public & Mental Health Research Ethics Committee of the Lothian Research Ethics Committee (the Committee) reviewed this proposed research and is of the opinion that it is ethical and appropriate to be carried out in the Lothian Area. This opinion encompasses all aspects of the application including the Patient/Subject Information Sheet and all other accompanying documentation provided.

The LREC application form, protocol, subject information sheet, information on compensation arrangements, payments to researchers and the provision of expenses to subjects (where appropriate) were reviewed and approved and the members of the Committee present at the meeting are shown on the attached *Membership List*.

This opinion is issued subject to the following conditions and is invalid if they are not followed:

- You must obtain appropriate management approval from the relevant NHS Trust(s) before starting the proposed research. It is the NHS Trust(s) that ultimately decide whether or not this research should go ahead taking account of the advice of the Local Research Ethics Committee.
- You must notify the Sub-Committee and the relevant NHS Trust(s), in advance, of any significant proposed deviation from the original protocol or application form and obtain approval for any such amendments using the *Amendment Approval Request Form*.
- You must submit reports to the Sub-Committee and the NHS Trust(s) once the study is underway if there are any unusual or unexpected results which raise questions about the safety of the research.
- You must report annually on successes, or difficulties, in recruiting subjects in order to provide useful feedback on perceptions of the study among patients and volunteers using the *Progress Report Form*.
- Where the study is terminated prematurely you must report within fifteen days indicating the reasons for early termination.
- You must submit a final report within three months of the completion of the study using the *Progress Report Form*.
- This opinion does not cover the inclusions of adults with incapacity in any study. Such opinion can only be given by the Multi-Centre Research Ethics Committee for Scotland.

Peter Reith
Secretary
Lothian Research Ethics Committee

03 March 2004

Stephanie Butler
Administrator
Primary Care/Public & Mental Health
Research Ethics Committee

APPENDIX 6.6

Ayrshire & Arran NHS Board

Boswell House
10 Arthur Street
Ayr KA7 1QJ
Telephone 01292 611040

NHS
Ayrshire
& Arran

AYRSHIRE & ARRAN RESEARCH ETHICS COMMITTEE

Miss Susan Baxter
PhD Student
Nursing Research Initiative for Scotland
Nursing and Midwifery Building
University of Stirling
STIRLING
FK9 4LA

Date 24 February 2004
Your Ref
Our Ref REC-1724/538-May03B /MG

Enquiries to Margaret Gibson
Direct line 01292 885859
Fax 01292 885890

Dear Miss Baxter

An examination of how nurses use the Waterlow Scale for judgement and decision making within continuing care

On behalf of the Ayrshire & Arran Research Ethics Committee, I acknowledge receipt of your letter of 28 January 2004 and revised questionnaire, in response to the points raised by the Committee when considering your application for ethical approval of the next phase of the above project at its meeting on 7 January 2004.

On behalf of the Committee, I can confirm that ethical approval has been granted for this phase of the above study to proceed locally.

The terms of approval state that:

(a) The investigator authorised to undertake this study within Ayrshire & Arran is

- Miss Susan Baxter, PhD student, University of Stirling

with supervisor:

- Joanne Booth, University of Stirling

(b) The written consent of participants in the study must be obtained. The information sheet and consent form, and the manner in which you intend to seek consent, are acceptable.

(c) Regular reports on the progress of the study require to be submitted. Your first report should be submitted to myself in six months time and subsequently at yearly intervals until the work is completed, when a final study report should be submitted.

(d) This approval is valid for a period of two years from the date of this letter, and the study must commence within this time.

(a) As indicated in the guidance notes to researchers, a copy of which you were supplied with, you will require the permission of the responsible NHS body within the Board's area prior to

Chairman Prof George L Irving
Chief Executive Mrs Wai-yin Hatton

Ayrshire & Arran NHS Board is the common name of Ayrshire & Arran Health Board

proceeding with this project. A copy of this letter has been sent to the R & D Committee of the Primary Care NHS Trust, who will make a decision on management approval of the project on behalf of the Trust.

The Ayrshire & Arran Research Ethics Committee is fully compliant with the International Conference on Harmonisation/Good Clinical Practice (ICH GCP) Guidelines for the conduct of trials involving the participation of human subjects as they relate to the responsibilities, composition, function, operations and records of an Independent Ethics Committee/Independent Review Board. To this end, the Committee adheres, as far as is consistent with its Constitution, to the relevant clauses of the ICH Harmonised Tripartite Guideline for Good Clinical Practice, adopted by the Commission of the European Union on 17 January 1997.

I enclose a copy of the Constitution of Ayrshire & Arran Research Ethics Committee, together with a list of the membership of the Committee.

On behalf of the Committee, I wish you every success with the research project.

Yours sincerely

Karen L Bell.

Dr Karen L Bell
Secretary – Ayrshire & Arran Research Ethics Committee

Encs

Cc: R & D Manager, Ayrshire & Arran Primary Care NHS Trust, Eglinton House, Ailsa Hospital, Dalmellington Road, Ayr

APPENDIX 6.7

Lothian Primary Care NHS Trust

Lrec *2003/7/45*
Our Ref: JEW/AMH/03/099
Enquiries to: Jackie Warburton
Ext. No: 0131 537 9522
Date: 24 February 2004

Headquarters
St Roque
Astley Ainslie Hospital
133 Grange Loan
Edinburgh EH9 2HL
Telephone 0131 537 9000
Reception 0131 537 9525
Fax 0131 537 9500
www.show.scot.nhs.uk/lpct/

NHS
Lothian

Ms Susan Baxter
Nursing & Midwifery Building
University of Stirling
STIRLING
FK9 4LA

Dear Ms Baxter

Research Proposal: An examination of how nurses use the Waterlow Scale for Judgement and Decision Making within Continuing Care (phase 3)

I refer to your recent application to Lothian Primary Care NHS Trust. This has now been considered by the Trust's Research and Development Committee and I would like to confirm that the Lothian Primary Care NHS Trust approves your proposal subject to the written approval of the Research Ethics Sub-Committee being obtained prior to commencement of the study.

A condition of this approval is that you advise me, in advance, of any significant proposed deviation from the original protocol including significant changes to the dates when this research will be active.

I would like to remind you that research must be conducted in accordance with the research governance framework and I enclose a copy of the responsibilities of the Principal Investigator extracted from the framework. One of the conditions of the framework is that any researchers who have access to patients, patient data or records and who are not employed by the NHS must have an honorary NHS contract. If you need to arrange this please contact the Trust Research Manager.

Details of your research will be forwarded to the National Research Register in about six months time. Therefore, if for any reason this research does not go ahead I would be grateful if you could advise me.

With best wishes.

Yours sincerely

Murray Duncanson

MURRAY DUNCANSON
CHIEF EXECUTIVE
cc Stephanie Butler, Simon Fawcett

APPENDIX 6.8

Community Health Division

NHS
Ayrshire
& Arran

Research and Development
Eglinton House
PO Box 13
Ailsa Hospital
Dalmellington Road
AYR
KA6 6AB

Tel: (01292) 513622/3664
Fax: (01292) 513665

KLB/JC

8 April 2004

Miss Susan Baxter
Nursing Research Initiative for Scotland (NRIS)
Nursing and Midwifery Building
University of Stirling
STIRLING FK9 4LA

Dear Miss Baxter

An examination of how nurses use the Waterlow Scale for judgement and decision making within continuing care PHASE 3 (04PC08)

Thank you for returning the Data Protection Checklist. I confirm that the Ayrshire and Arran Primary Care Trust R&D Committee have granted Trust Management Approval for the above study to go ahead.

The terms of approval state that the investigator authorised to undertake this study within Ayrshire & Arran is: -

- Miss Susan Baxter, PhD student, University of Stirling

With additional investigator(s) and/or supervisor: -

- Supervisor: Joanne Booth, University of Stirling

Regular reports of the study require to be submitted. Your first report should be submitted to myself in 6 months time and subsequently at yearly intervals until the work is completed.

In addition approval is granted subject to the following conditions: -

- All research activity must comply with the standards detailed in the Research Governance Framework for Health and Community Care.

- If any amendments are to be made to this study protocol and or the Research Team the Researcher must seek Ethical and Trust Management Approval for the changes before they can be implemented.

- The Researcher and Trust must permit and assist with any monitoring, auditing or inspection of the project by the relevant authorities.

- The Trust's Complaints procedure should be accessed if any complaints arise regarding the project and the R&D Office must be informed.

- The outcome and lessons learnt from complaints must be communicated to funders, sponsors and other partners associated with the project.

If I can be of any further assistance please do not hesitate to contact me. On behalf of the committee, I wish you every success with the project.

Yours sincerely

Karen L Bell.

Dr Karen L Bell
R&D Manager on behalf of R&D Committee

APPENDIX 6.9

NURSE INFORMATION SHEET

Title of project:
An Examination of how Nurses use the Waterlow Scale for Judgement and Decision Making within Continuing Care

I am a nurse studying for a PhD degree who is based within the Nursing and Midwifery department at the University of Stirling. I am carrying out this research study as part of the Nursing Research Initiative for Scotland 'Practitioner Decision Making Programme.

I would like to invite you to take part in the above research study. Before you make a decision about participating in this study or not, it is important for you to understand why this research is being carried out and what it will involve. Please take time to read the following information on this sheet. Also please feel free to ask me any questions that you may have. I can be contacted at the telephone number given overleaf.

What will happen if I take part?
If you decide to take part in the study, you will be given a set of nursing notes to read in order to familiarise yourself with a simulated patient's past social, medical and nursing history. A simulated patient is an individual who will act as a patient for the purposes of the above study. You will then be asked to perform a pressure ulcer risk assessment and then plan pressure area care as you normally would do, for the simulated patient.

For the assessment you shall be asked to wear a clip-on microphone. This is necessary should you wish to ask the simulated patient any questions. During the assessment and care planning activity you shall be video-taped. By video-taping your assessment and care planning activity this shall allow me to have an accurate record of how you would normally perform a pressure ulcer risk assessment and subsequently plan care. I shall be present while you are assessing and planning pressure area care for the simulated patient.

After you have performed the assessment and planned care for the simulated patient, you shall be asked a few questions concerning your assessment and care planning activity which shall be audio-taped.

If you decide to take part in the study, you shall be asked to sign a consent form and complete a short questionnaire about yourself. Personal details of yourself and the assessment shall be kept confidential. All tapes and other information shall be stored in a locked filing cabinet at the University and shall be destroyed and deleted on completion of the study. You will not be able to be identified from the data that is collected.

Why have I been approached to take part in the study?
Many research studies similar to this one have certain criteria, which determines whether or not individuals are suited to take part in certain studies. For this study registered nurses working within the area of continuing care for older people who have used the Waterlow Scale previously have been identified as being eligible to participate. Please note that should you decide to take part in the study or not, your employment and career as a nurse will not be affected in any way.

What is the purpose of the study?
The main aims of this study are to:

- identify the judgements nurses make when performing a pressure ulcer risk assessment
- identify what judgements and decisions nurses make when planning pressure area care
- identify what information nurses use when assessing and planning pressure area care

What if I change my mind?
If you agree to participate within the study and then decide that you no longer want to take part, you are free to leave the study at any time. You do not need to give reasons. If you should change your mind, please contact me to let me know.

What do I do now?
Thank you for reading this information sheet. Please think about whether or not you would like to take part in this study. I shall telephone the unit on the ..... when I shall ask you what the outcome of your decision had been.

If you have any questions regarding this study, please do not hesitate to contact myself.

Susan Baxter
PhD Student
Nursing Research Initiative for Scotland
Nursing and Midwifery Building
University of Stirling
FK9 4LA
Telephone: 01786-473-171 Ext: 6287

APPENDIX 6.10

NURSE CONSENT FORM

Title of project:

An Examination of how Nurses use the Waterlow Scale for Judgement and Decision making within Continuing Care.

1. I confirm that I have read and understand the information sheet provided for the above named study and have had the opportunity to ask questions.

   ☐

2. I understand that my participation is voluntary and that I am free to withdraw at anytime, without giving reason.

   ☐

3. I understand that my identity and any information I give concerning myself or my place or work shall remain confidential.

   ☐

I agree to take part in the above study

Name of Nurse (Print)	Date	Signature
PhD Student (Print)	Date	Signature

APPENDIX 6.11

NURSE INFORMATION SHEET
(Pilot study)

Title of project:
An Examination of how Nurses use the Waterlow Scale for Judgement and Decision Making within Continuing Care

I am a nurse studying for a PhD degree who is based within the Nursing and Midwifery department at the University of Stirling. I am carrying out this research study as part of the Nursing Research Initiative for Scotland 'Practitioner Decision Making Programme.

I would like to invite you to take part in a small research study. Before you make a decision about participating in this study or not, it is important for you to understand why this research is being carried out and what it will involve. Please take time to read the following information on this sheet. Also please feel free to ask me any questions that you may have. I can be contacted at the telephone number given overleaf.

What will happen if I take part?
If you decide to take part in the study, you will be given a set of 'nursing notes' to read in order to familiarise yourself with the simulated patients past social, medical and nursing history. A simulated patient is an individual who will act as a patient for the purposes of the above study. You will then be asked to perform a pressure ulcer risk assessment and then plan pressure area care as you normally would do.

The researcher shall ask you to either verbalise your thoughts while you assess and plan care for the simulated patient or shall ask you to only speak when asking the patient questions should you wish to do so. Independently of what you are asked to do, you shall be asked to wear a clip-on microphone and shall be video-taped. However if you are asked to do the latter, you shall be shown the video of your activity and shall be asked to talk through the activity you have performed. By video-taping your assessment and care planning activity, this shall allow me to have an accurate record of how you would normally perform a pressure ulcer risk assessment and subsequently plan care. Similarly, by audio-taping your verbalised thoughts, will allow me to have an accurate record of what you were thinking during the assessment and care planning activity. I shall be present while you are assessing and planning pressure area care for the simulated patient.

After you have performed the assessment and planned care for the simulated patient, you shall be asked a few questions concerning your assessment and care planning activity which shall be audio-taped.

If you decide to take part in the study, you shall be asked to sign a consent form and complete a short questionnaire about yourself. Personal details of yourself and the assessment shall be kept confidential. All tapes and other information shall be stored in a locked filing cabinet at the University and shall be destroyed and deleted on completion of the study. You will not be able to be identified from the data that is collected.

Why have I been approached to take part in the study?
Many research studies similar to this one have certain criteria, which determines whether or not individuals are suited to take part in certain studies. For this study registered nurses working within the area of continuing care for older people who have used the Waterlow Scale previously have been identified as being eligible to participate.

What is the purpose of the study?
The main aims of this study are to:

- identify the judgements nurses make when performing a pressure ulcer risk assessment
- identify what judgements and decisions nurses make when planning pressure area care
- identify what information nurses use when assessing and planning pressure area care

What if I change my mind?
If you agree to participate within the study and then decide that you no longer want to take part, you are free to leave the study at any time. You do not need to give reasons. If you should change your mind, please contact me to let me know.

What do I do now?
Thank you for reading this information sheet. Please think about whether or not you would like to take part in this study. I shall telephone the unit on the ..... when I shall ask you what the outcome of your decision had been.

If you have any questions regarding this study, please do not hesitate to contact myself.

Susan Baxter
PhD Student
Nursing Research Initiative for Scotland
Nursing and Midwifery Building
University of Stirling
FK9 4LA
Telephone: 01786-473-171 Ext: 6287

APPENDIX 6.12

QUESTIONNAIRE

For official use only

CCU Id code		Nurse Id code		Date	

Please write your answers in the space provided.

1) What is your gender? _____

2) How old are you? _____

3) How long have you been qualified as a nurse? _____

4) What is your present post within the unit? *(Please give clinical grade)* _____

5) How long have you been in your present post? _____

6) How long have you worked within the unit you are currently employed in? _____

7) In total how long have you worked within continuing care for older people? *(Please include other units that you have worked in)* _____

8) Please list any academic qualifications that you have or are undertaking relevant to Nursing _____

_____

9) Have you received training in pressure area care? *(Please circle)* YES NO

If yes, what form of training have you had? _____

_____

10) Have you received training using the Waterlow Scale? *(Please circle)* YES NO

If yes, what form of training have you had? _____

_____

THANK YOU

APPENDIX 6.13

HANDOVER INFORMATION
MR JOHN SMITH

Patients name is John Smith, he is 81 years of age. His PMH is that he suffered a stroke a few years ago, has reduced sensation in his left arm. Manages to propel himself independently in his wheelchair, able to do standing transfers with a stick plus one nurse. He has type 1 diabetes, also has BPH. Is able to take normal food and fluids. He is continent. Mr Smith is a retired train driver, he is a widower and lives alone. Has one son. Mr Smith was receiving home help services once a day before he came to use. He's here because he had a fall at home while transferring from his wheelchair to the toilet during the night. He was found in the morning by his home help. It was thought that he had lain for a few hours before being found. Initially it was thought that he had had an extension of his stroke, however tests all prove negative.

APPENDIX 6.14

UNIVERSITY OF STIRLING

DEPARTMENT OF
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AEW/TI

11 August 2004

Susan Baxter
Department of Nursing & Midwifery
University of Stirling

Dear Susan

An examination of how nurses use the Waterlow Scale for judgement and decision making within continuing care

Thank you for submitting your clarification letter for the proposal, entitled as above, to the Departmental Research Ethics Committee on 2 August 2004. I am pleased to advise you that the committee approved your proposal.

Many thanks

Andrew Watterson
Chair

APPENDIX 6.15

ARE YOU A QUALIFIED NURSE?

DO YOU WORK WITH OLDER PEOPLE?

WOULD YOU LIKE TO TAKE PART IN RESEARCH?

COULD YOU SPARE 1 HOUR OF YOUR TIME?

IF YOU ANSWER YES TO ALL
FOUR QUESTIONS THEN READ BELOW

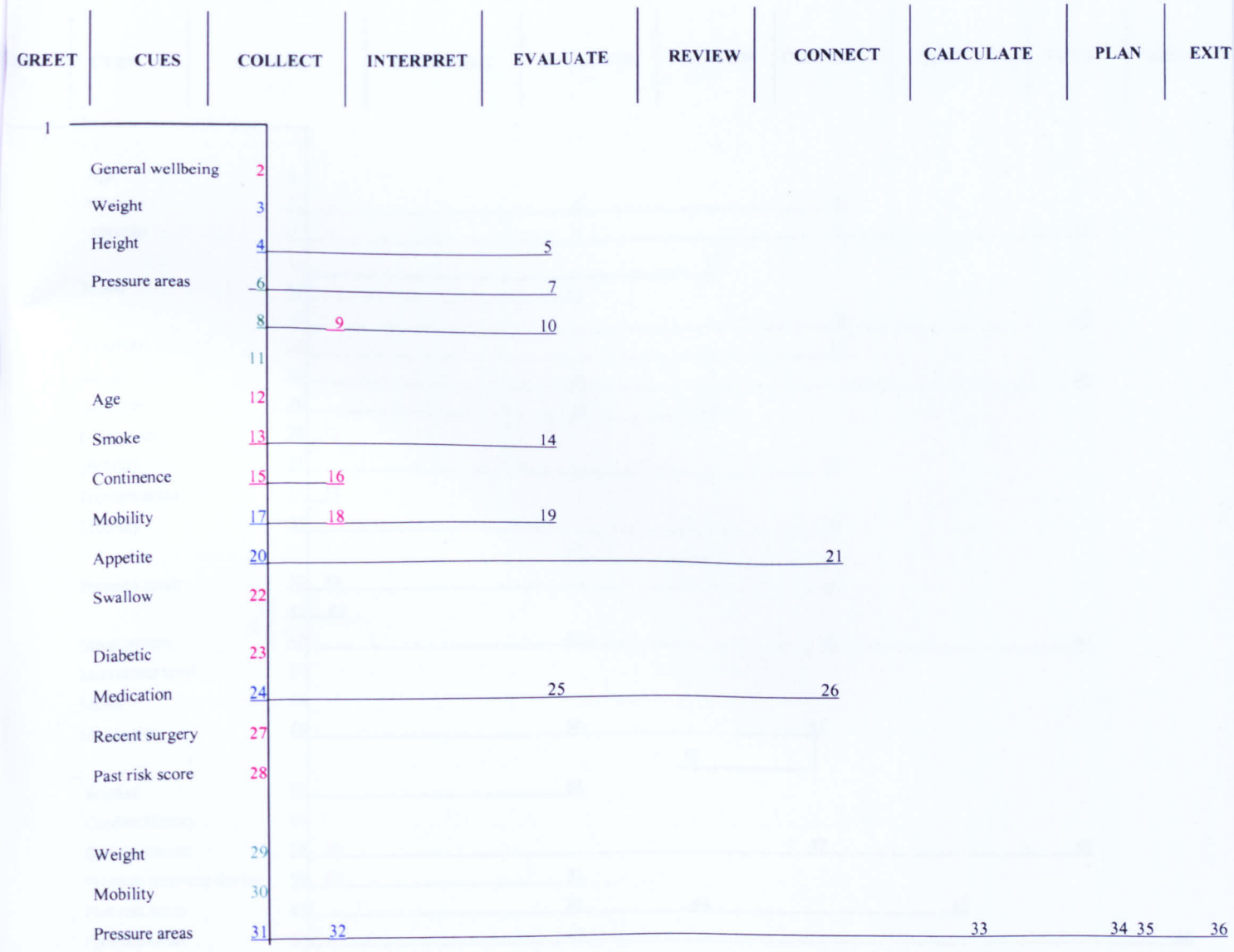
I AM LOOKING FOR QUALIFIED NURSES WHO CURRENTLY WORK WITHIN THE INDEPENDENT SECTOR CARING FOR OLDER PEOPLE WHO ARE FAMILIAR WITH USING THE WATERLOW SCALE. IF YOU WOULD LIKE TO FIND OUT MORE INFORMATION ABOUT THE ABOVE STUDY PLEASE GO TO ROOM 3B158 OR ALTERNATIVELY PHONE 01786 473 171 ext 6287 AND ASK FOR SUSAN BAXTER

APPENDIX 6.16

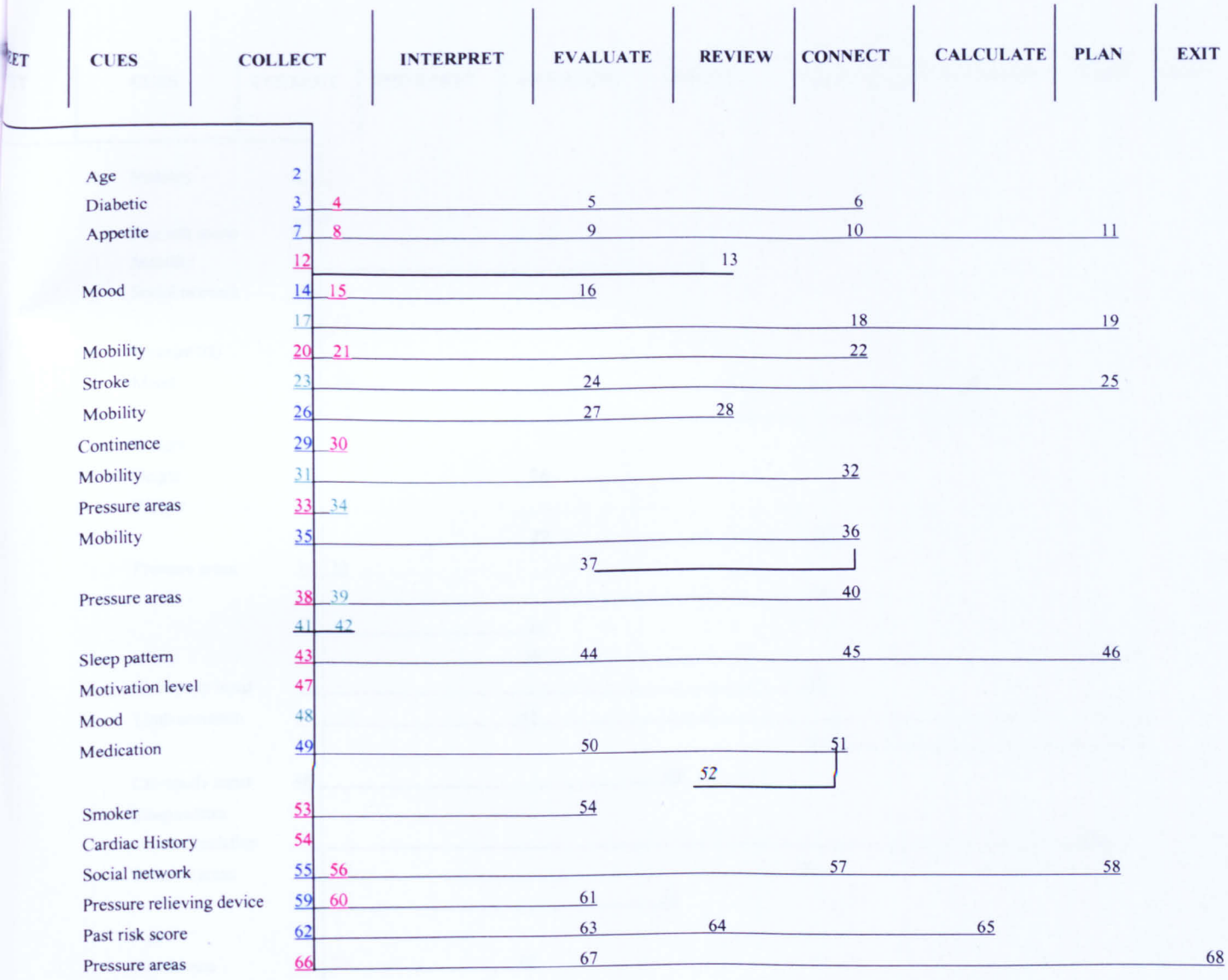
Method of Information Gathering	Cue Number	Cognitive Operator	Think Aloud Data
	1 (Greet)		Hi, my name is XXXXXX.
Verbal	2	Collect	How are you feeling? (**General wellbeing**). Right, pressure ulcer risk assessment, nothing to worry about.
Written	3	Collect	His weight. Okay (**Weight**)
Written	4	Collect	Height's next, okay (**Height**)
	5	Evaluate	Everything seems okay.
Observe	6	Collect	mmmm, this left elbow looks (**pressure area**)
	7	Evaluate	a bit red
Observe	8	Collect	I'll look at your heels (**pressure area**)
Verbal	9	Collect	Are they sore? (**pressure area**)
	10	Evaluate	right heel looked a bit red
Observe	11	Collect	Let me see your other elbow (**pressure area**)
Verbal	12	Collect	How old are you? (**Age**)
Verbal	13	Collect	So you smoke? (**Smoke**)
	14	Evaluate	That's good, he doesn't smoke
Verbal	15	Collect	How are your waterworks? (**Continence**)
Verbal	16	Collect	Bowels okay? (**Continence**)
Written	17	Collect	Right, he's limited in his mobility (**Mobility**)
Verbal	18	Collect	You manage to self propel okay? (**Mobility**)
	19	Evaluate	That's good for getting around
Written	20	Collect	Says here he's not eating much (**Appetite**)
	21	Connect	Maybe something is up with his swallow following his stroke
Verbal	22	Collect	Have you any problems swallowing? (**Swallow**)
Verbal	23	Collect	Are you diabetic? (**Diabetic**)
Written	24	Collect	Let me have a look to see what's written here about his drugs (**Medication**)
	25	Evaluate	**Medication** seems okay
	26	Connect	Wonder if they might be affecting his appetite
Verbal	27	Collect	Have you had any surgery recently? (**Recent surgery**)
Verbal	28	Collect	Do you by any chance know what your last score was for risk of pressure ulcers? (**Past risk score**)
Observe	29	Collect	I say he looks a good weight (**Weight**)
Observe	30	Collect	By looking at him I know that he's limited in his mobility (**Mobility**)
Written	31	Collect	Right, it doesn't seem to say anything here about his pressure areas (**Pressure areas**)
Written	32	Collect	Nope, nothing on pressure areas (**Pressure areas**)
	33	Calculate	2, mmmm, just adding up the scores, okay, 19
	34	Plan	Regular turning at night is needed and
	35	Plan	you need to have barrier cream applied to your sacral area to stop your skin breaking down
	36 (Exit)		Okay, that's me, nice to meet you, bye for now

Think Aloud Data – 1NH (Less Experienced Nurse)

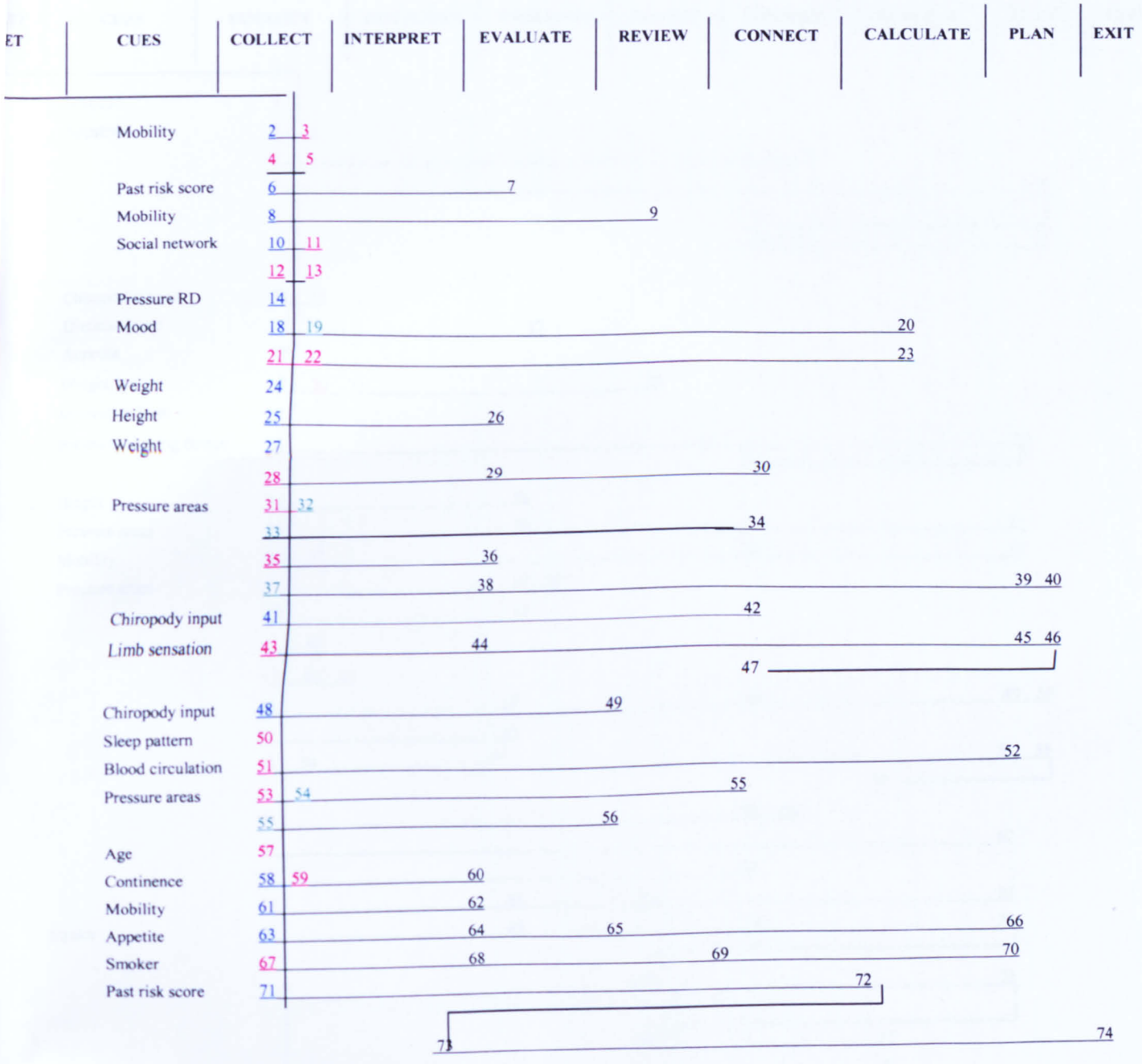
APPENDIX 6.17



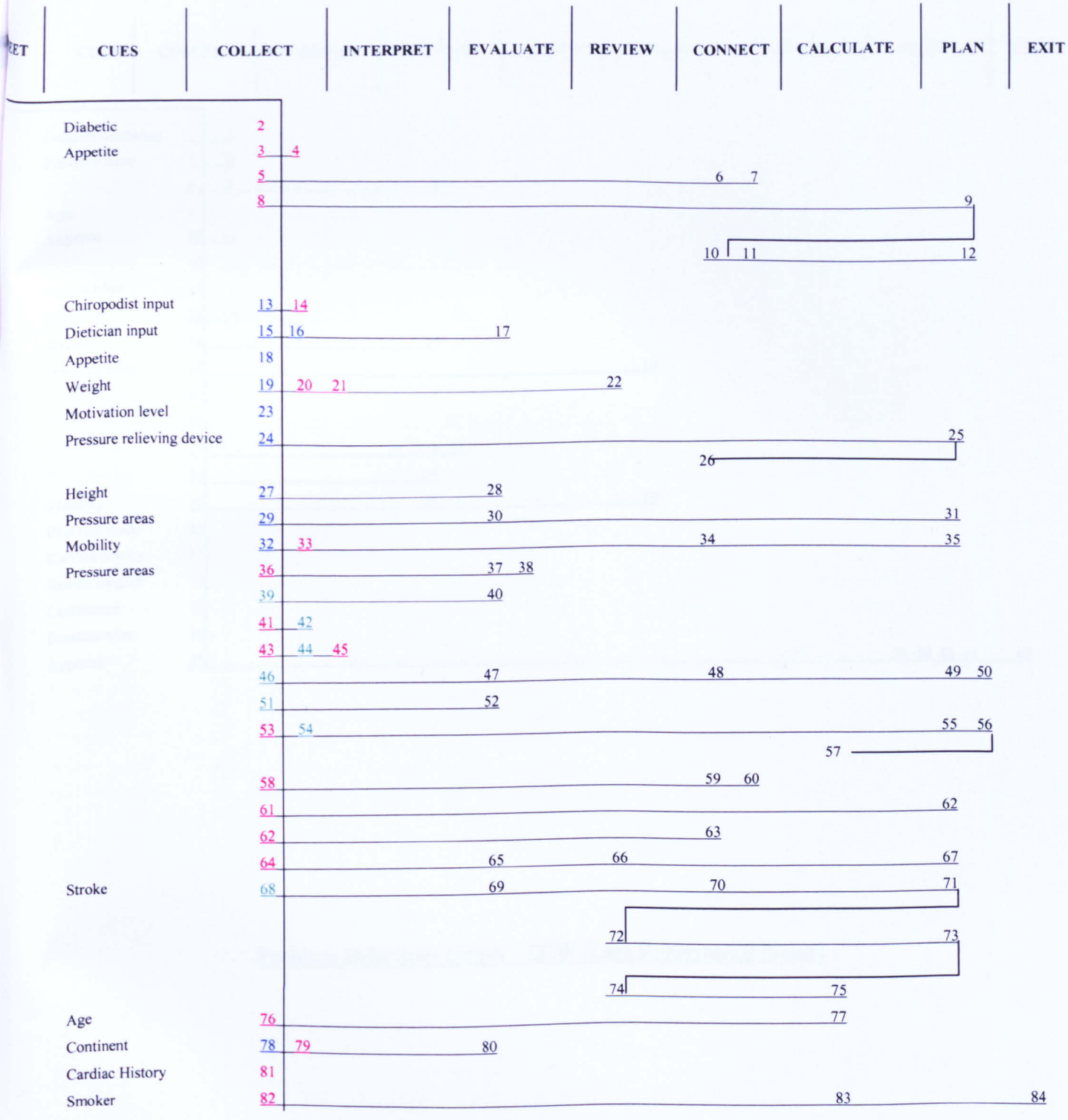
Problem Behaviour Graph – 1NH (Less Experienced Nurse)



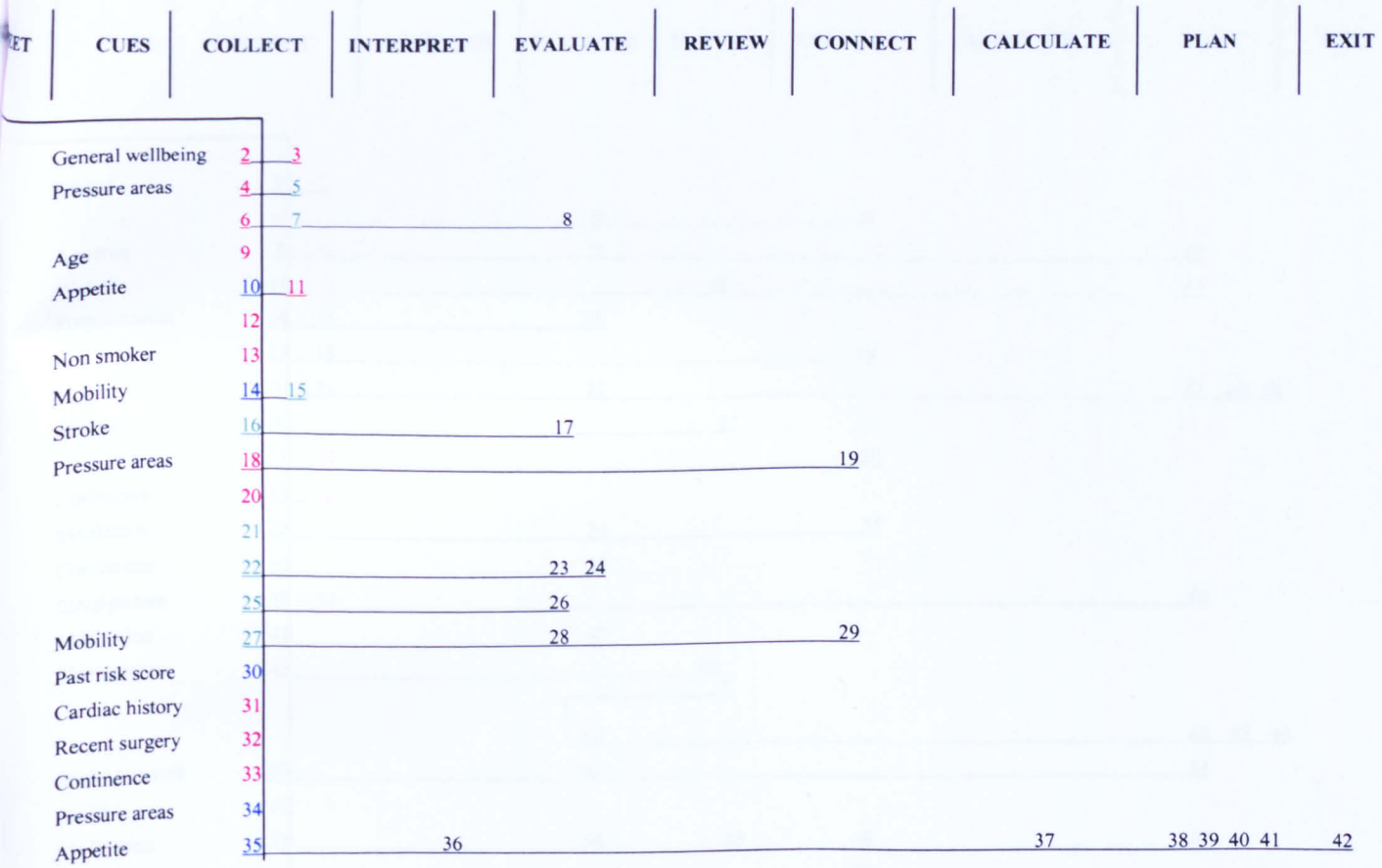
Problem Behaviour Graph - 2NH (Experienced Nurse)



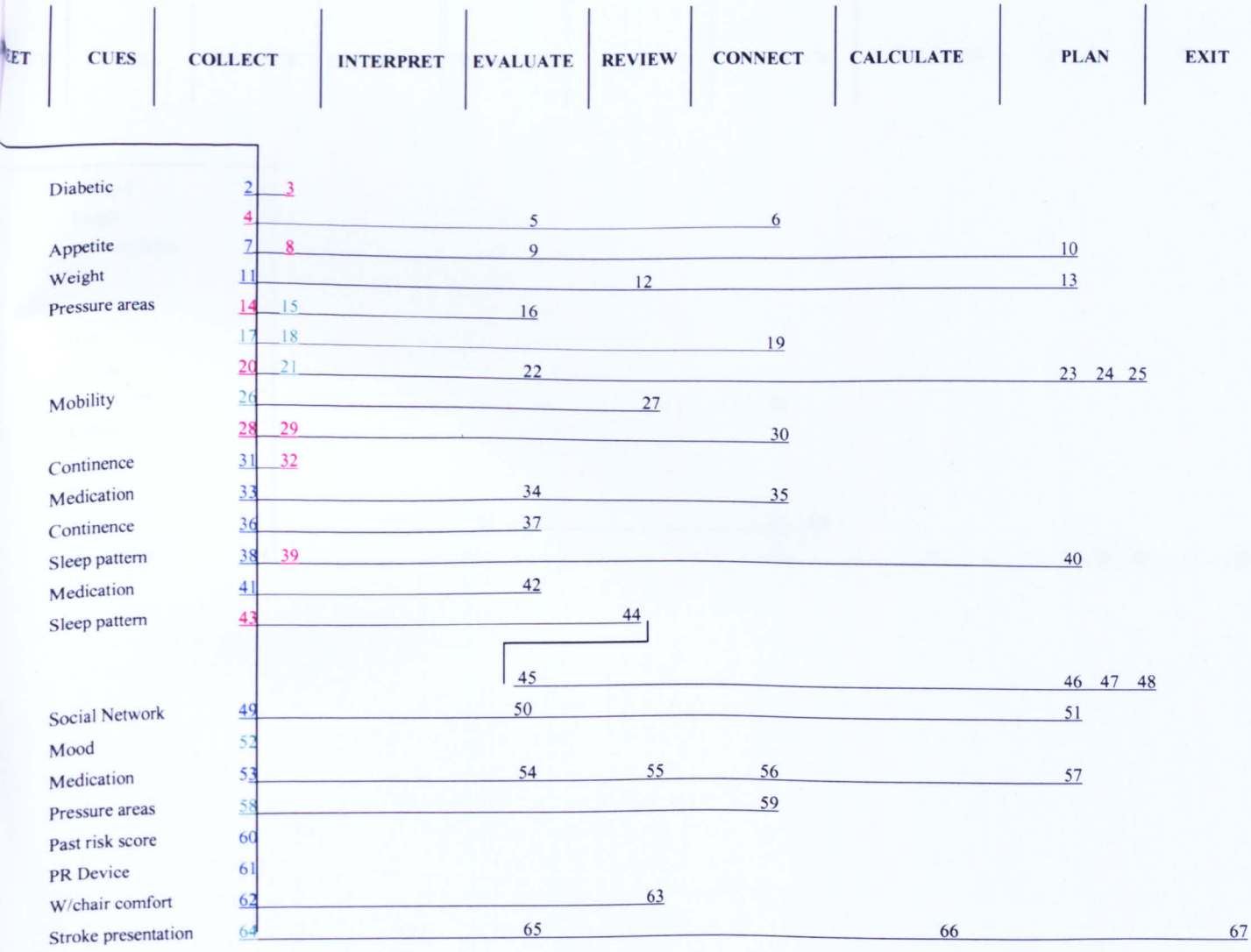
Problem Behaviour Graph – 3NH (Experienced Nurse)



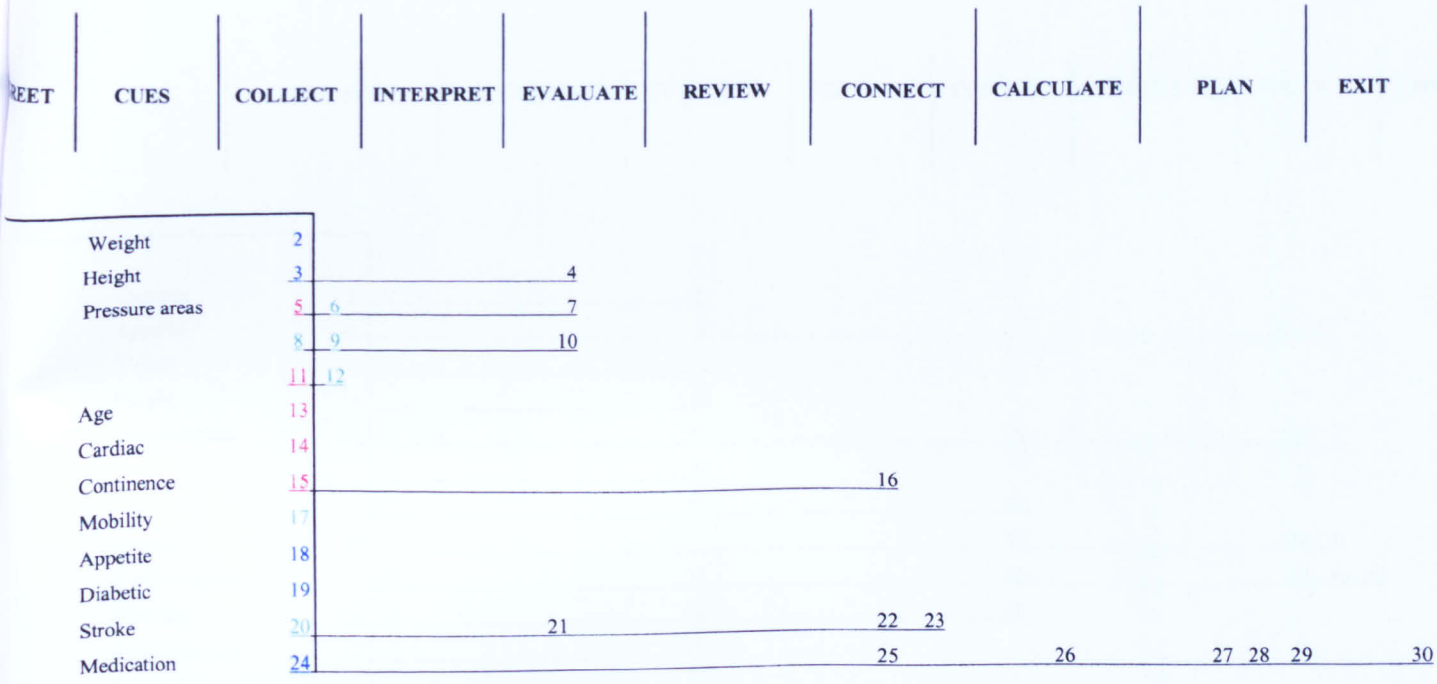
Problem Behaviour Graph – 1HW (Experienced Nurse)



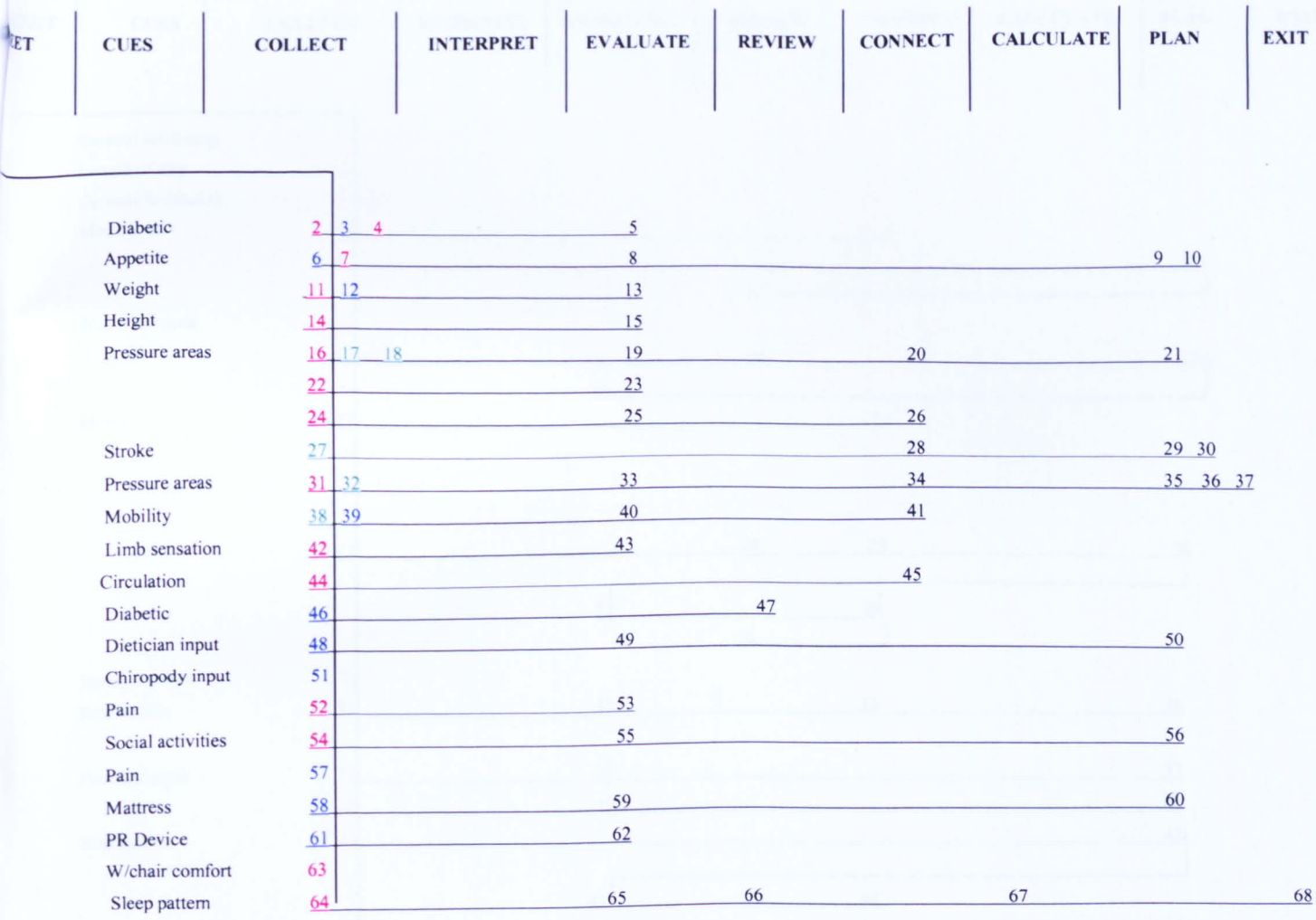
Problem Behaviour Graph – 2HW (Less Experienced Nurse)



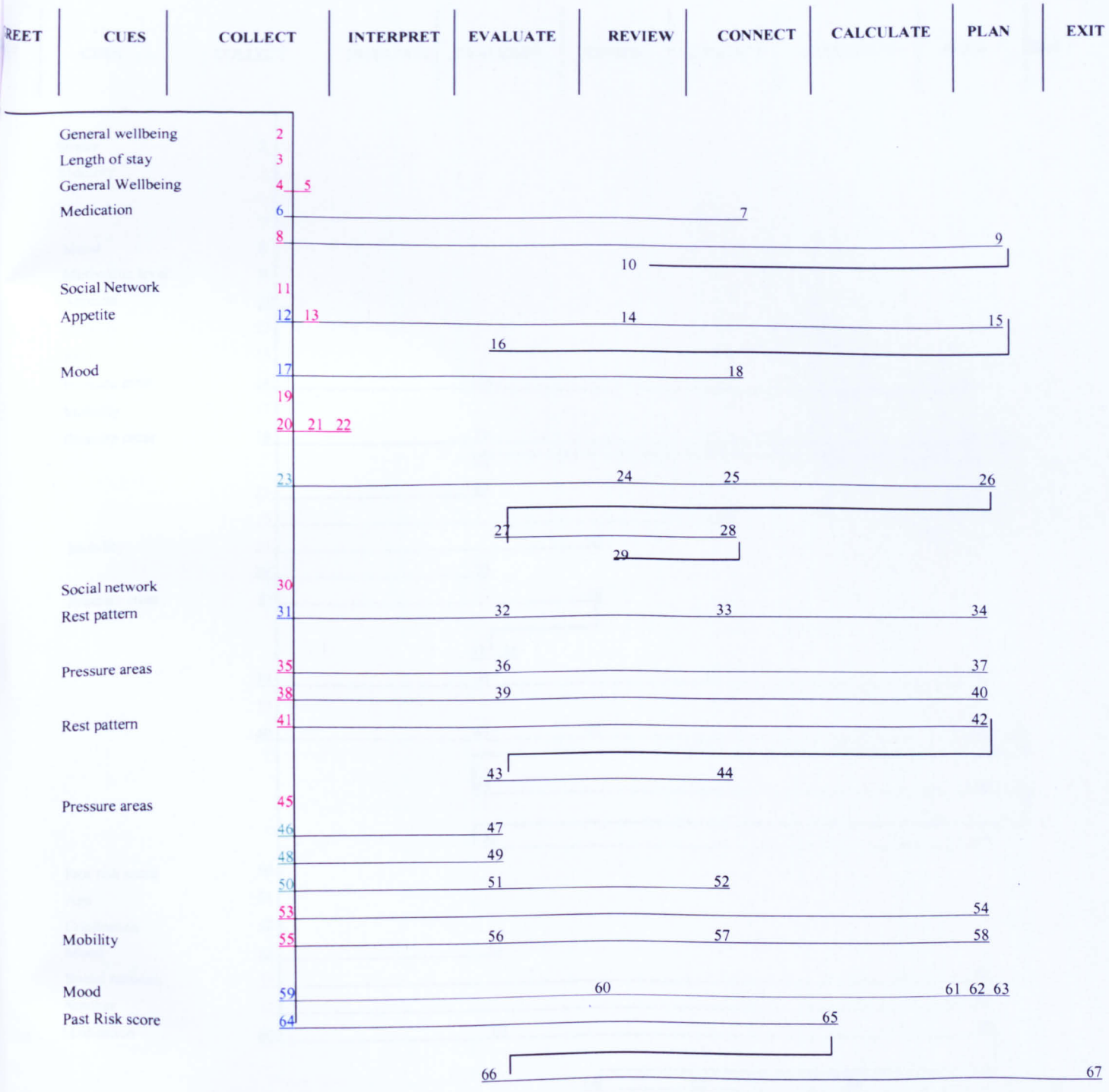
Problem Behaviour Graph – 3HW (Experienced Nurse)



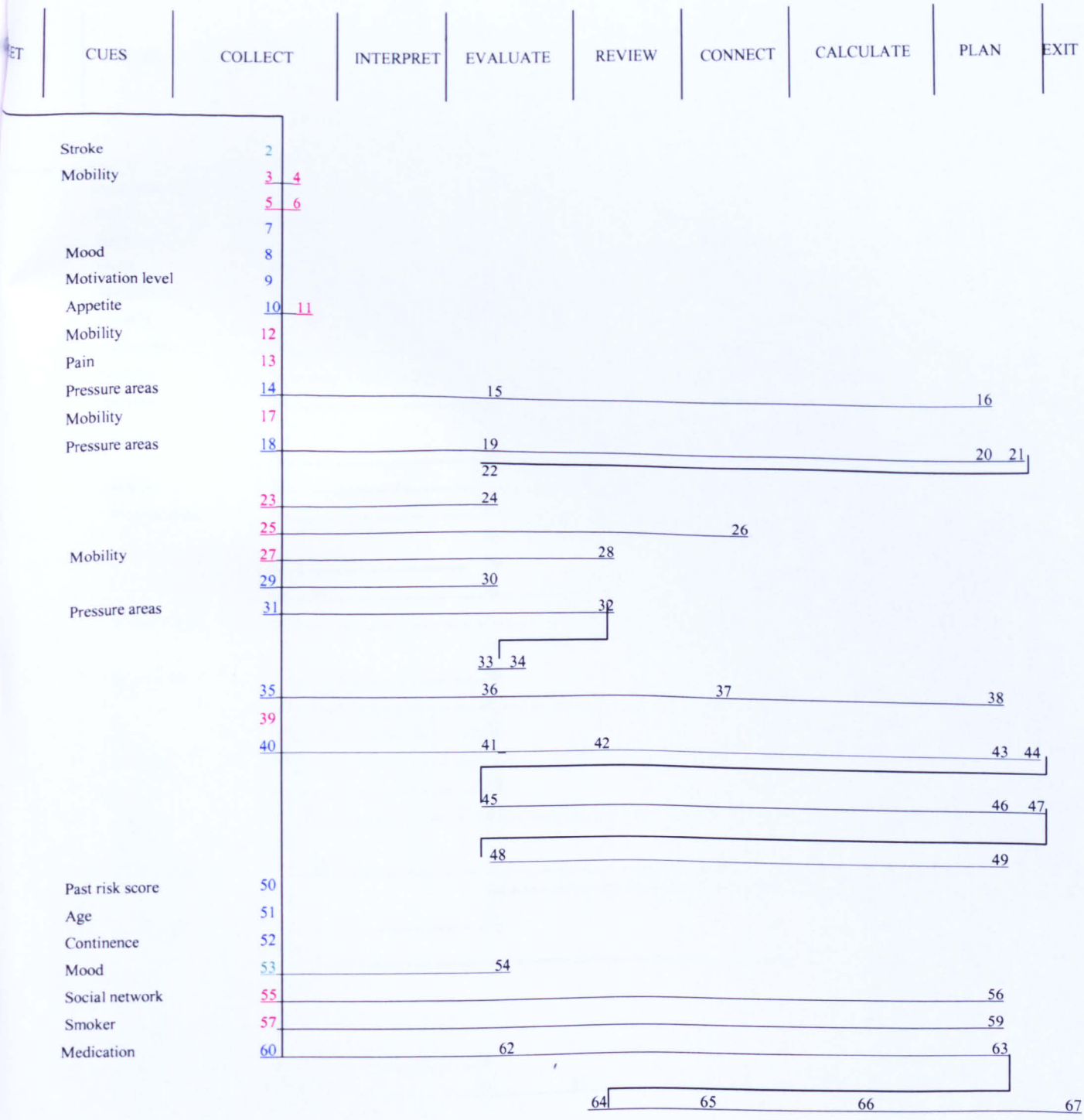
Problem Behaviour Graph – 4HW (Less Experienced Nurse)



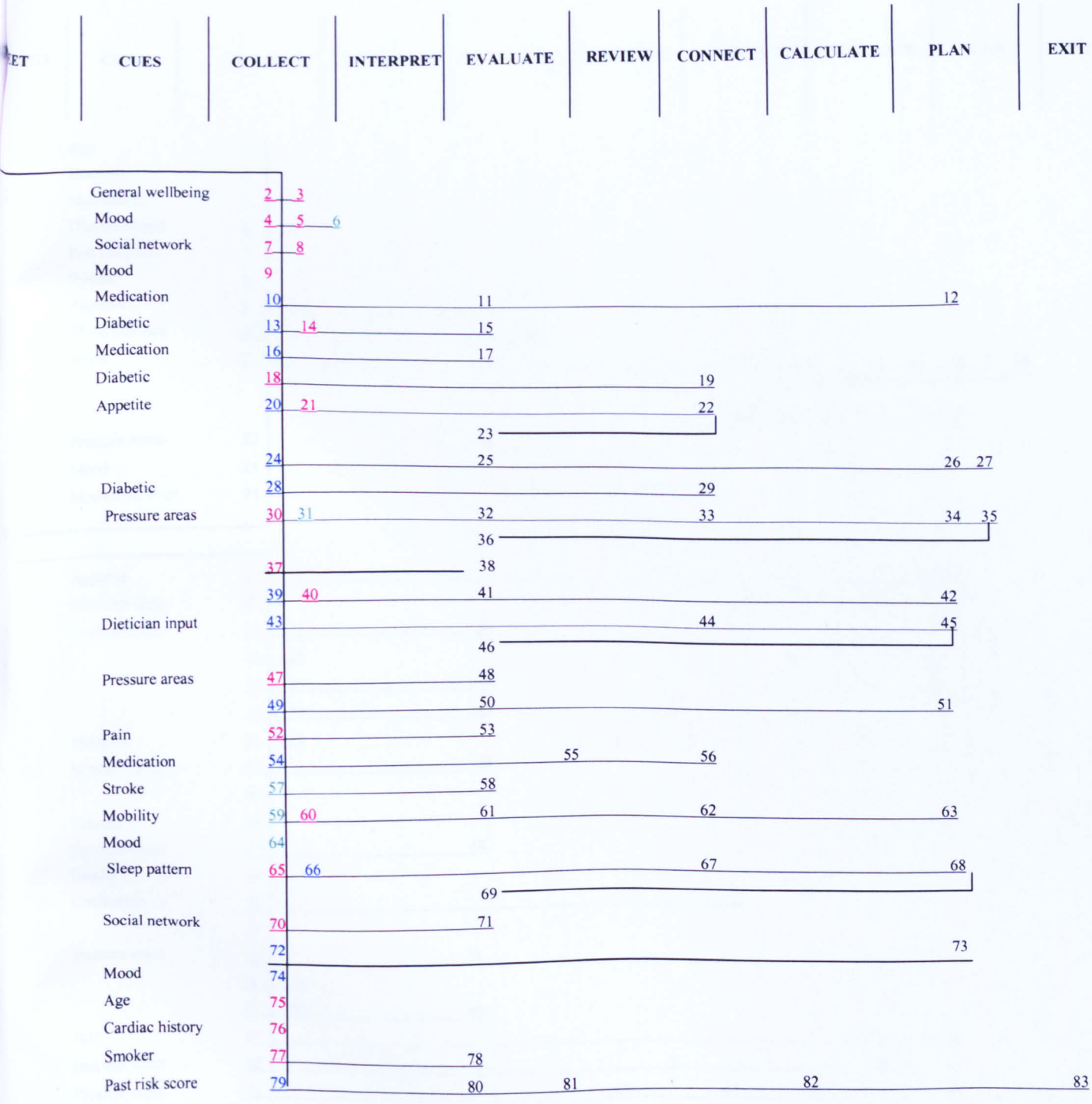
Problem Behaviour Graph – 5HW (Experienced Nurse)



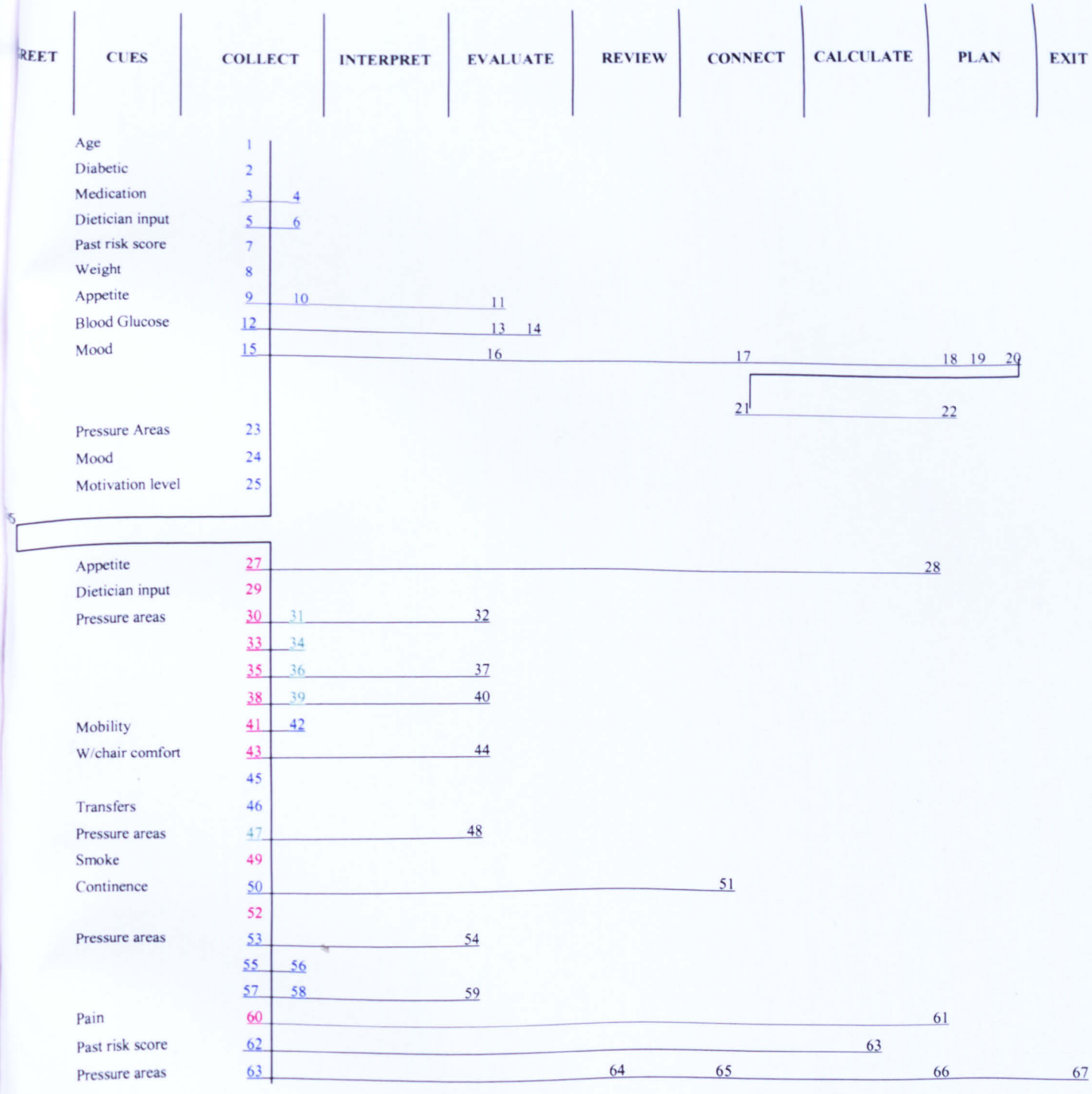
Problem Behaviour Graph – 6HW (Experienced Nurse)



Problem Behaviour Graph – 7HW (Experienced Nurse)



Problem Behaviour Graph – 8HW (Experienced Nurse)



Problem Behaviour Graph - 9HW (Experienced Nurse)