A CLINICAL STUDY TO PILOT TEST

THE ENVIRONMENTAL OPTIMIZATION INTERVENTIONS PROTOCOL

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Running Head: EOI

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CHAPTER I

SPECIFIC AIMS

Confusion with elderly patients has been a clinical, nursing problem for many years. Older adults who become confused when hospitalized, or whose pre-existing, cognitive difficulties worsen over the course of hospitalization, present a nursing challenge in terms of patient safety, client and family emotional well-being, and the individual's potential for self-care during and after the hospital stay. Our nursing texts and clinical articles relate a variety of nursing interventions, which have as a common base, the development of a supportive physical, sensory and interpersonal environment to reduce or prevent confusion in older patients. Yet, the problem of confusion with elderly patients remains a serious problem whose incidence is increasing.

Several explanations are possible. The increasing age of patients and their high acuity of illness raises the concentration of this high risk, elderly population in hospitals. This makes the problem readily apparent and significant on both the local level, for the individual hospital and nursing service, and nationally as a problem for the hospital industry and nursing profession. The shifting focus of nursing research into the study of clinically, relevant issues also helps to bring both nursing problems and practice to the forefront. But, why should the problem of confusion continue to exist with our depth and history of clinical understanding and interventions? Two arenas require investigation, and are the focus of this dissertation: 1) If nurses are using our

clinical interventions to reduce or prevent confusion, then some or all of our interventions may be ineffective; and, 2) If nurses are not using the interventions, then we need to know what factors in the hospital environment are inhibiting the practice of nursing, and begin to explore strategies for successful implementation of effective, nursing practice.

The purpose of this study was to pilot test the environmental optimization intervention protocol, which includes the environmental optimization interventions (EOI) and innovation strategies. The EOI were designed for use by staff nurses to reduce confusion with hospitalized, elderly patients. The EOI were evaluated in terms of their feasibility for implementation in the hospital setting and acceptability to patients, families and friends, and nursing staff. The specific aims of the research project are listed below:

1. Pilot a plan for implementation of the EOI protocol which includes:
    a. selection and training of nursing staff;
    b. selection of patients to represent the range of confusion;
    c. working with staff to promote the likelihood of adoption of the EOI; and,
    d. implementation of the EOI by nursing staff with elderly patients.
2. Pilot a plan for evaluation of the EOI protocol, by:
    a. comparison measures of usual nursing practice and the incidence of confusion among elderly patients;
    b. monitoring the delivery of the EOI through observational

measures, and analyses of reports regarding implementation of the EOI from the nursing staff; and,

c. analyzing the positive and negative consequences for patients, with particular attention to patient confusion, and patient and family/friend satisfaction and comfort with the nursing care, especially with regard to the EOI.

3. Refine the EOI based on the information obtained to increase the feasibility and acceptability of the interventions to staff, patients, families and friends.
4. Propose necessary revisions to the implementation program.
5. Propose ways, as necessary, to revise the program for evaluation.

CHAPTER II

BACKGROUND AND SIGNIFICANCE

Review of the Literature

Introduction

This study involved the development of interventions to prevent and reduce confusion in hospitalized, older persons. The interventions had to be appropriate and acceptable to three populations: elderly patients, their families, and the nursing staff who will be implementing the treatment approaches. The review of the literature is divided into three sections which examine confusion in hospitalized elderly patients, the development of interventions to increase their likelihood of adoption by families and nursing staff, and evaluation of the intervention and plan for implementation.

The literature review begins with the definition of confusion. This was necessary because of the interchangeable use in the literature of terms such as confusion, disorientation, acute dementia, acute confusional state, disturbances in information processing, and delirium. Terms are inconsistently used, inadequately defined, and frequently overlap in usage (Chisholm et al., 1982; Foreman, 1986; Lipowski, 1990). Studies are then presented that examine the incidence of confusion among hospitalized, elderly patients to support the need for interventions to reduce its incidence and severity. The etiology of confusion is discussed in terms of elderly person, environmental, and interactional factors to help in the targeting of the interventions. This section of the review of the

literature ends with a discussion of interventions to prevent or reduce confusion in elderly patients.

In this study, staff nurses assumed primary responsibility for implementation of the interventions. Therefore, literature focusing on the design of an implementation program to promote the adoption of the interventions was reviewed. Studies which discuss family involvement in the care of adult patients are presented to help understand this secondary caregiver population for hospitalized, older persons. The review of the literature concludes with an examination of available methods for evaluating the EOI and the effects of the implementation program.

Confusion

Definition

In this study, confusion was viewed as maladaptive behavior which occurs as a consequence of alterations in the individual's internal and/or external environment. Such behavior does not achieve a good fit between the individual and the environment, and thus creates difficulty for the person (Foreman, 1989). More specifically, for the purposes of this study, confusion was defined as a global, cerebral disorder that involves some combination of fluctuating disturbances in memory, thought, emotion, psychomotor behavior, attention, perception, consciousness, and the sleep-wake cycle.

This definition of confusion is consistent with the classification of the

terms: delirium, as found in the Diagnostic and Statistical Manual of Mental Disorders, 3rd edition (DSM-IIIR), and as used by Lipowski (1980, 1983, 1989, 1990); and acute confusional state, according to the Application of the International Classification of Diseases to Neurology (1987). There have been problems with the definition of the term confusion in the literature (Chisholm et al., 1982; Nagley & Dever, 1988), and contradictory findings as to the consistency with which nurses use and define confusion in clinical practice (Brady, 1987; Chisholm et al.; Palmateer & McCartney, 1985). Use of the medical term, delirium, would alleviate some of the problem with terminology. However, the focus of this study was on the behaviors associated with cognitive difficulties in the elderly person that nurses encounter during their patient care activities, and not the discrimination between medical conditions (delirium/ dementia) that cause the behaviors. Given this perspective, the use of the term confusion was deemed more appropriate.

Incidence

Delirium was used as a proxy variable for confusion. Delirium is a medical problem which has been defined and studied far more extensively than confusion in the hospitalized, elderly population. The behaviors associated with confusion, as identified by Wolanin and Phillips (1981) and Williams et al. (1985), are consistent with the behaviors of delirium. Although it cannot be assumed that confusion and delirium are synonymous, studies of delirium are presented to indicate the significance of the problem of confusion in this

population.

There is wide variation in the literature as to the incidence of delirium among hospitalized, elderly patients with reports ranging from 5% (Chisholm et al., 1982) to 61% (Gustafson et al., 1988). This wide discrepancy can be explained, in part, by differences in patient populations with regard to the risk factors associated with delirium, and how delirium is defined and measured (Johnson et al., 1990). Roslaniec and Fitzpatrick (1979) did some of the earliest work in which confusion associated with the hospital environment was identified as a significant problem for elderly persons. In monitoring the mental status of 25 elderly, medical patients, they found notable decreases in the patients' orientation and ability to reason abstractly by the fourth hospital day.

Williams et al. (1979) found that 16% of the older patients admitted with hip fractures had some degree of confusion on admission as measured by the Short Portable Mental Status Questionnaire (SPMSQ); however, by the time of surgery, the percentage of patients with confusion had risen to 24% using the same measure. On both postoperative days one and three, caregivers reported that over 30% of the patients exhibited behaviors indicative of confusion; 26% of the patients reported that they were unsure of their mental clarity on the first day after surgery. The incidence of confusion in this study is lower than the approximately 50% reported by Warshaw et al. (1982). A chart review for notations of disorientation in elderly patients (Lamont, Samptson, Matthias, & Kane, 1983) was also higher than that reported in the Williams' study with a

45% rate of occurrence.

The duration of confusion events was addressed by Williams. Of serious concern, is that by the fifth postoperative day, with the third repetition of the SPMSQ, there was still significant mental impairment in the sample. The findings of Billig, Ahmed, Kenmore, Amaral, and Shakhashiri (1986) and Gustafson et al. (1988) support the continuation of cognitive impairment long after the surgical event. Forty percent of the elderly patients in both studies continued to have mental difficulties one week after hospitalization with hip fractures.

Etiology

Multiple factors have been associated with the development of confusion in hospitalized, elderly patients. These etiologies can be organized as to their being internal to the individual (person factors), external to the individual (environmental factors), or as a result of the interaction of person with environmental factors (interactional factors).

Person factors. Physiological, organic and psychological characteristics of the elderly person have been the focus of investigation in the identification of risk factors for the development of confusion. Table 1 summarizes the results of 14 studies which examined person factors associated with the development of confusion in the hospitalized, elderly patient. Advanced age, particularly over the age of 75, has been found to be a risk factor in several studies. Five studies have found the older adult with impaired mobility to have a greater

Table 1

Person Factors Associated With the Development of Confusion in Hospitalized Older Patients

Citation	Date	Sample Size	Age	Sex	Alterations of Function			
					Urine	Mobility	Mental Status	Sensory
Foreman	1989	71						
Francis	1988	130			X		X	
Francis, Martin & Kapoor	1990	229			X	X	X	
Gillick, Serrell & Gillick	1982	73	X	X				
Gustafson et al.	1988	111	X				X	
Hodkinson	1973	588			X		X	X
Jordan	1988	50					X	
Levkoff et al.	1988	117	X		X			
Roberts & Lincoln	1988	94					X	X
Rockwood	1989	80	X			X	X	
Seymour & Pringle	1983	258	X	X				
Seymour & Vaz	1989	288				X		
Warshaw et al.	1982	279	X			X	X	
Williams et al.	1979	91	X	X	X	X	X	

likelihood of becoming confused than the patient who is not functionally impaired. Nine studies have identified impaired mental status upon admission, whether due to a preexisting delirium, dementia and/or depression, as a factor strongly associated with the elderly patient's development of confusion during hospitalization.

Environmental factors. While numerous theorists (Lipowski, 1983, 1990; Roslaniec & Fitzpatrick, 1979; Travers, 1970; Wolanin & Phillips, 1981) have hypothesized that environmental factors such as changes in sounds, lights, and social contacts are associated with confusion in elderly patients, few have studied the phenomenon and results have been inconsistent. For example, Kolanowski (1990) examined restlessness, a concept related to confusion, as a response to two types of artificial lighting. Methodological problems may have influenced the absence of significant findings regarding restlessness among healthy, elderly subjects. There was a significant difference in the lighting preference expressed by the older adults.

Smith (1986) developed the diagnosis of "translocation syndrome" to explain confusion which occurs when the older patient is transferred and must develop new relationships with people and the environment. Neelon, Champagne, and Moore (1989) in their studies of hospitalized, elderly patients have identified environmental factors as involved in the development of confusion in some patients.

The use of restraints is an environmental factor which has been studied

with elderly, cognitively-impaired patients. Evans and Strumpf (1989), in their review of the literature, found that the elderly person with mental status problems is the patient most likely to be restrained in the hospital. A study by Mion, Frengley, Jakovcic, and Marino (1989) is supportive of Evans' and Strumpf's findings. In their study of restraint use among patients on medical and acute rehabilitation medicine units, they found that patients who were elderly and had cognitive deficits were most likely to be restrained, both chemically and physically. Thus, those most at risk for the development of confusion are apt to be further impaired in their access and control of sensory inputs from the environment. Such environmentally-induced impairments may precipitate behavioral and perceptual responses of the patient, which may explain the disorganized behaviors of confusion (Evans & Strumpf).

The effect of noise, as an environmental factor, on hospitalized patients has been studied, although not specific to elderly patients nor the development of confusion. Topf (1983) found that the sound level in patient rooms on a surgical unit exceeded the levels identified by the Environmental Protection Agency (EPA), at which sound can potentially interfere with the activity of individuals and be perceived as annoying. However, there are numerous factors beside the level of the sound that determine whether the stimulus will be perceived as noise. Sound perceived as noise can induce the stress response that can inhibit patient recovery by delaying healing and disturbing rest and sleep (Hilton, 1985). In Hilton's study, although the sound levels on a medical

and surgical units exceeded the EPA recommendations in patient rooms, most patients were not distressed with the sounds. Those patients who were in the critical care units and were most compromised physically and psychologically did perceive the sounds as noise and find them problematic. Other factors which influence the individual's response to sound include: the person's past experience with the stimulus; perceived necessity of the sound; and, type and volume of the sound (Hilton). Thus, although noise in the hospital is an example of an environmental factor, it also demonstrates the interaction of person and environment factors on behavior.

Interaction between the person and environment. The impact, or press, of environmental factors on the elderly person's behavior is mediated by the physical, cognitive, and emotional factors of the individual and his perception of the environment. First proposed and tested in 1968 (Lawton & Simon), the environmental docility hypothesis predicts that environmental press is far more significant in influencing behavior for those elderly people who are less competent, or more compromised in person factors than those with stronger internal resources. Lawton (1982) states that environmental press is defined in normative terms, with regard to a reference group's response.

Lawton and Simon's study (1968) of elderly apartment dwellers provides support for the environmental docility hypothesis by demonstrating the heightened effect of the environment for those residents with limited physical, social and psychological resources (competencies). The physical environment,

and specifically the proximity of residents to each other in terms of their room location was more influential in determining friendship and well-being for those residents who were more compromised.

Iatrogenics are untoward consequences associated with hospitalization. Reichel's (1965) pivotal study identified the high risks associated with hospitalization for the older patient. Over 25% of patients had untoward responses or additional disease processes associated with being in the hospital. The majority of older, surgical patients will not leave the hospital without experiencing a hospital-induced problem such as delirium or factors contributing to delirium, such as respiratory complications, urinary retention, or wound infections (Seymour & Pringle, 1983; Seymour & Vaz, 1989). Such untoward responses and diseases occur much more frequently in older rather than younger adult patients (Gillick, Serrell, & Gillick, 1982; Jahnigen, Hannon, Laxson, & LaForce, 1982). These negative outcomes would be predicted based on the environmental docility hypothesis and decreased competencies of the older patient. In reviewing the literature, Steel (1984) comes to a similar conclusion regarding the increased risk of elderly patients for iatrogenic problems.

Evans' work (1987) on sundown syndrome with institutionalized, elderly residents provides additional support for the interaction of person and environmental factors in the development of confusion. The incidence of sundown syndrome, which some view as a type of delirium and confusion, was

double in the population with decreased cognitive competency (a preexisting dementia) compared to those residents who did not have cognitive difficulties. Sundown syndrome was more likely to occur in those residents who had normal hearing and impaired vision. The environmental stimulus of decreased lighting in the early evening created a negative press situation for those residents who had the decreased physical competence of impaired vision. The peak auditory acuity which normally occurs in the early evening would increase the likelihood that the elderly person would misperceive the sounds in the environment, since he had limited visual assistance secondary to the visual deficit and reduced lighting.

Roberts and Lincoln (1988) developed and tested a theoretical model of cognitive disturbance defined so that it closely matches confusion. The researchers correctly predicted the complexity of cognitive disturbance and the impact of the environment. They sought to address the significance of the environment by studying elderly adults in two major settings - the nursing home and hospital. The following variables were found to explain significant proportions of the path for the development of cognitive disturbance in hospitalized older patients: the person factors of physiologic alteration and neural structure, and the interaction of person and environmental factors of activity limitations and sensory deficits. The interaction of person and environment factors is illustrated in the finding and explanation that sensory function was only important to those older adults in the hospital as compared to

those in other institutions because of the relative novelty of the hospital environment. The model for hospitalized patients explained 30% of the variance, indicating that other factors are involved.

In summary, confusion is a significant problem for older, hospitalized persons. Multiple factors internal to the individual have been studied and associated with the development of confusion. While linkages of environmental factors and their interaction with the internal factors have been made, these associations remain predominantly theoretical. Attempts to identify and predict the multiple factors associated with confusion in older patients indicate that it is a complex phenomena which probably requires a combination of treatment approaches.

Interventions

Nursing Interventions to Reduce Confusion

The review of the literature yielded only two experimental, nursing studies (Nagley, 1986; Williams et al., 1985) which have as their focus the prevention or treatment of confusion in hospitalized, elderly patients. Both studies involved multiple, independent nursing actions which were directed at the environmental and physiological factors associated with confusion.

Nagley's exploratory study (1986) used a quasi-experimental design to test 16 nursing interventions to reduce confusion in elderly, medical patients. Thirty elderly patients who were not confused upon admission received the

interventions during their stay on the experimental unit. A similar group of patients was followed on the control unit, with measures of mental status being administered within 24 hours of admission and on the fourth day of hospitalization. The Short Portable Mental Status Questionnaire (SPSMQ) was used along with a tool developed by Nagley that involved observer rating of the patient.

The experimental treatment consisted of 16 nursing actions that had been taught to the nursing staff. They were to be implemented as part of daily care activities. The nursing actions were as follows:

> Patient has more than one blanket available and within reach; room temperature regulated between 70 to 75 degrees; maintain intake and daily weights; full pitcher of water available and within reach; intake for day and evening 800 to 1000cc per shift; bed restricted: passive or active range of motion 15 minutes twice on day shift and once evenings; ambulatory: walked in hallway twice day shift and once evenings; clock and calendar within patient's view; asked orienting questions of place, home, and person once this shift; sensory aides functional and in use (glasses, hearing aid); overbed light on while awake; privacy protected by drawing curtain or closing door when patient was exposed; personal possessions within reach; personal bedclothes used; TV, radio, or reading material used at least part of shift (days and evenings);

and, nurse-patient interaction at least 10 minutes when no other nursing actions are being carried out. (p. 28)

The nursing actions were not found to reduce confusion significantly in the experimental group. However, both groups were found to have a very low incidence of confusion. Thus, there was not an adequate opportunity to observe the treatment effect, since confusion was not present in most patients.

Fifty-seven older adults who had sustained traumatic hip fractures were the recipients of the experimental treatment in Williams' investigation (1985). As with Nagley's study (1986), the subjects did not have pre-existing cognitive deficits. In the first phase of the project, Williams and colleagues studied 170 elderly subjects to develop a confusion risk prediction model. These subjects served as the control group in the quasi-experimental study. The prediction model was used to compare the predicted over actual confusion in both the experimental and control groups. The model identified the relative effectiveness of the interventions according to the severity of confusion manifested by patients, thus addressing the lack of baseline variation problem in Nagley's study.

The experimental treatment, implemented by the regular nursing staff, consisted of the following interventions: provide normal living cues (clock, calendar, curtain open during day, daily newspaper, hand mirror available, encourage family to bring familiar objects, ask the patient's preference about the room organization, weave orienting information into conversation,

encourage reminiscence); explain, with frequent repetition, setting, routines, personnel actions, upcoming treatments; have eyeglasses and hearing aids in place when needed; use of nightlight; use of touch; eye contact at patient's level; turn and position patient on a regular basis; pace activities and avoid rushing patient; give patient as much control as possible over environment and care; limit the number of hospital caregivers; encourage family visits and help them to understand the patient; prevent pain; promote usual patterns of elimination; assess for unmet needs, and; non-verbally communicate a sense of calm, safety and security (Campbell, Williams, & Mlynarczyk, 1986). Confusion of subjects was monitored daily from admission through the fifth postoperative day using the same mental status questionnaire as in Nagley's study (the SPSMQ), but with a different behavioral instrument and a measure of patient perceived mental clarity.

In the Williams et al. study (1985), the overall prevalence of confusion was significantly less in the treatment group. However, important questions remain about the effectiveness of the interventions. Those who had mild confusion demonstrated minimal clinical improvement when receiving the interventions. In addition, one can question the limited clinical relevance of the differences in prevalence of confusion between the experimental and control groups on the fifth postoperative day. The 40% prevalence of confusion in the experimental group leads one to question the relative significance of the interventions in reducing this clinical problem.

These two studies shared several strengths. Both attempted to address a significant problem in nursing practice by using the nursing staff in their clinical settings to implement independent nursing interventions. Their measures of confusion included standard psychological screening instruments and incorporated behaviors important to nursing practice. The multi-faceted conceptualization of the etiologies of confusion led to intervention protocols which would be practical when working with patients, since a single intervention would probably not succeed. Elderly patients without preexisting cognitive deficits were selected as subjects to focus on acute confusional states associated with the hospitalization.

The strengths of the studies contributed to their limitations, which this study was designed to address. Reliance on nursing staff led to an important question about the degree of consistency with which the nurses carried out the interventions. Thus, it is unknown how much the treatment effect may have been diminished by nurses not following the protocols. Similarly, because neither study specified the current level of practice in the hospital, nurses could already have been using the interventions with subjects in the control groups, thus making the treatment effect less strong. The grouping of interventions prevented the discovery of which interventions were the most/least effective, and treatment effects may have been counteracted. Of the multiple interventions, only the following were common to both studies: clock and calendar within patient's view; sensory aides functional and in use; weaving

orienting information into conversations; and nurse-patient contact. One does not know how much the other interventions could have strengthened each study, nor how important the common interventions are for the prevention of confusion. Both studies excluded an important population of patients who experience confusion, namely, those with dementia. These limitations support the need for continued study in this area.

Families as Caregivers During Hospitalization of Adults

The involvement of family in the care of their elderly family members during hospitalization, has implications for the patient, family, and nursing staff. Chatham (1978) found that family members often wanted to help but were anxious because they did not know how they could provide assistance in the critical care setting. Instructing families in the benefits and use of touch and orienting activities was beneficial to the patient in terms of increased orientation to time, place, and person with fewer delusions and more appropriate behaviors.

Rosenthal, Marshall, Macpherson, and French (1980) used participant observation to study nursing care in a large, teaching hospital. They found that the roles family members assumed influenced how they were perceived and treated by the staff. From the staff's perspective, family members were generally considered to be important to the well-being of the adult patient, with their appropriate role being that of visitor. When family members began to go beyond the visitor role, staff granted them the roles of either patients or workers

and integrated them within the staff's routines. When the nurse viewed the family member's worker role as helpful and time-saving in the physical care of the patient, then nursing staff generally went along with, and some actively endorsed, the participation. Family participation that represented an actual or potential loss of control by nurses in the care of the patient was more problematic to nurses and sometimes resulted in conflict. In general, the worker role was mutually satisfying to family members and nurses.

Designing an Intervention to Maximize its Potential for Utilization

While many of the individual interventions included in the Environmental Optimization Intervention (EOI) protocol are currently used to varying degrees by nurses, their combination took the form of an innovation for the nursing staff. An innovation is a practice, object, or knowledge that is perceived as new by a person or some other unit of adoption, such as the nursing staff in a hospital organization (Lin & Zaltman, 1973; Rogers, 1983). The adoption of an innovation is influenced by many factors, only one of which is knowledge about the innovation. This section examines the following factors which need to be considered in the design of the EOI protocol to increase the potential for utilization of this innovation by nurses working in hospitals: characteristics of the innovation, characteristics of the adopters, and organizational climate.

Characteristics of the innovation. Rogers (1983) has identified the following characteristics of the innovation as increasing the likelihood of utilization: relative advantage, compatibility, limited complexity, trialability, and

observability. Relative advantage refers to the perceived gains seen as occurring with the innovation compared to current practice. Gains are defined by the reference group, but commonly include improvements in status, social position or economics (Rogers). For example, innovations that provide the most gain for the largest number of clients have the greatest relative advantage (Horsley & Crane, 1986).

An innovation that is compatible with the values and beliefs of the potential adopter, previously introduced ideas, or needs of the individual is more likely to be adopted (Rogers, 1983). Compatibility can also be viewed as the similarity of the innovation to an existing practice that it may supplement (Zaltman, Duncan, & Holbeck, 1984).

The complexity of an innovation refers to both the idea and its implementation (Zaltman et al., 1984). The more difficult an innovation is to understand or operationalize, the less likely it is to be implemented (Horsley & Crane, 1986; Rogers, 1983). How the knowledge about the innovation is conveyed to practitioners will influence its adoption (Rothman, 1974). For example, translating the innovation into the language of the practitioner with the clear and simple specification of the desired behaviors will make it easier to understand (Rothman).

The trialability of an innovation refers to the degree to which it can be tested on a limited basis (Rogers, 1983). Inherent in the concept is the potential for reversing the implementation decision should the innovation not

work as predicted (Horsley & Crane, 1986). The ability to pilot test an innovation increases its likelihood of adoption because needed modifications can be identified and staff concerns of the unknown can be allayed (Spradley, 1980).

The observability of an innovation, or the visibility of its results to others, positively influences its rate of adoption (Rogers, 1983). This factor is an important consideration with nursing interventions in which innovations are process oriented, involving the interaction of clients and staff, with results that may not be readily visible (Horsley & Crane, 1986).

Characteristics of the adopters. The individual members of an organization have different informal roles which reflect their ability to influence the diffusion and adoption of an innovation (Rogers, 1983; Rogers & Agarwala-Rogers, 1976). In the long run, individuals who function in the roles of liaison and opinion leader, and are also early adopters, can positively influence the adoption of the EOI on a unit and hospital-wide basis. Rogers has developed adopter categories to describe the relative traits of individuals regarding their comfort and willingness to use innovations. The opinion leader is an individual who is successfully able to influence informally the attitudes or behaviors of other members of the organization (Rogers & Agarwala-Rogers). The liaison is a member of the organization who interpersonally connects two or more groups within an system without belonging to either of the groups (Rogers & Agarwala-Rogers). Nagley (1986) used two nurses who were members of

the nursing unit to reinforce use of the experimental interventions among coworkers. However, she did not specify if these nurses were chosen because of their roles as liaison, or opinion leaders, or if they were early adopters.

The present study was limited in its ability to choose the adopters because of its reliance on nursing staff who will volunteer to test the EOI. While not a fool-proof indicator, one can assume that a volunteer is likely to be an early adopter, although roles as opinion leader or liaison may not necessarily follow. All of the nurses who volunteered for the study were identified by the nurse manager and associates as leaders on the unit who were interested in trying new things (early adopters). A weakness of this study is that it did not validate, by conferring with the staff nurses on the study unit, that these volunteers were the opinion leaders.

Organizational climate. The organizational climate is the perceived subjective effects of the formal system, the informal style of supervisors, and other environmental factors related to the attitudes and motivations of employees (Glaser, Abelson, & Garrison, 1983). The climate or culture implicitly and explicitly lets members of the organization know what is expected of them and the rewards or sanctions associated with compliance or non-compliance (delBueno & Vincent, 1986). An organization's past history of success with innovations will positively influence its innovativeness (Rothman, 1974).

The climate for change in an organization can facilitate change or serve

as a source of resistance to the adoption of innovations. The perception by its members of an organization's need for, openness to, and support of change can support the change process (Zaltman & Duncan, 1972). Relevant to the design of this study was the nursing unit's and nursing administration's experiences and views of: the conduct of research, participation by staff in research, care of elderly patients, and systematic testing of interventions. This study was timely, in that there was a positive climate for change regarding care of elderly patients on the part of the nursing administration and nursing staff on one unit. Staff had identified confusion with their patients as problematic; the fall of one confused patient which resulted in a hip fracture had drawn the attention of both administration and staff. The organizational climate on this unit was such that it provided the conditions needed for adequate pilot testing of the EOI innovation.

Pilot testing

Rothman (1986) has developed a multi-stage model of research, development, and diffusion to promote the effective utilization of social science knowledge. This model seeks to link the research and application communities, and includes the following phases: basic research, conversion and design, development, and diffusion. As part of the conversion and design phase, pilot testing is done as the initial operationalization of the prescriptive statements which resulted from the basic research. Pilot testing is needed to determine if the application concept (innovation) can work under real conditions (Rothman,

1986). Pilot testing is not seen by Rothman as hypothesis testing, for the concepts underlying the practice change are conceived as having sufficient literature support of their validity to proceed with testing for feasibility and workability (Rothman, 1980). Pilot testing has several major tasks, which include the development and testing of approaches to data collection necessary for program evaluation (Rothman, 1980).

Evaluation

Formative, or ongoing, evaluation is an important part of pilot testing to provide information about the innovation, program, and instruments (Kirkhart & Connor, 1983). This information is used by those involved in the project to make improvements during the conversion and design phase. Rothman (1986) advocates a clinical approach to evaluation which incorporates the complexity of a practice-based program rather than trying to control it. Thus, measures are developed and tested which try to blend with the tasks of practice and not hinder it (Rothman, 1980). For example, Williams et al. (1985) used an observational method to gather information in a non-obtrusive manner.

With Rothman's clinical approach to evaluation, the innovation is viewed as part of a complex process whose merit can only be determined with feedback from all of those concerned with the project (Kirkhart & Connor, 1983). A focus group was formed to implement the trial of the EOI innovation and to provide feedback regarding the implementation process. The focus group serves as an information source regarding perceptions about the

phenomena of interest (Kingry, Tiedje, & Friedman, 1990). The researcher assumes the moderator function and guides the group in a planned discussion of the topic in a permissive and non-threatening manner. Analysis and interpretation of notes and taped transcriptions is done in a manner consistent with an ethnographic approach (Kingry, Tiedje, & Friedman).

Previous Related Work

This research is the culmination of 7 years of focused clinical practice and several preliminary research activities, all directed to better understanding the manifestations of confusion in hospitalized elderly patients and to discovering ways to prevent and/or ameliorate it. Staff nurse participation has been integral to those projects.

In 1983, I began the research project entitled "Disorientation and the Hospitalized Elderly" in order to develop a behavioral observation tool which would detect behaviors indicating that the older patient was having difficulty interacting with the hospital environment. The nursing staff of a university hospital's neurological unit were concerned about the large number of elderly patients who became confused and disoriented during their hospital stay. It was thought that early detection of behaviors associated with confusion would lead to effective nursing interventions that could be implemented before more disruptive and dangerous behaviors occurred. The study was discontinued with the first attempts at interrater reliability because of a lack of elderly subjects

meeting the sample criteria.

In 1987, work resumed with staff from the university hospital and a nursing home care unit (Veterans Administration) assisting in concept and tool development and testing. In my interviews with staff nurses and gerontological clinical nurse specialists, behaviors were identified that commonly occurred with elderly clients who were having difficulty getting along in the hospital or nursing home environments. All informants linked the elderly person's behaviors to the environment, with a common theme of anxiety and unmet needs. This supported my interest in Lawton's ecological model as an aid to understanding confusion in the hospitalized, elderly population. Testing for interrater reliability with the revised, behavioral observation tool continued to be problematic because of the limited time available to staff who volunteered to help at times of peak resident and patient activity. The relatively low occurrence of behaviors associated with confusion also was a barrier to tool development. During the interim, the Neecham instrument was developed; providing a clinically relevant means to determine confusion and proceed with this study.

I was a co-investigator in the study, "Delirium in Elderly Patients at Good Samaritan Hospital" (Siemsen, Lucas, Miller, Newman, & Brown, 1990). The purpose of this study was to describe the incidence, severity and cost of delirium in that facility. As part of the Siemsen study, a training program was developed and tested for the use of the Neecham and Self-Perceived Mental Clarity instruments and two mobility items. These are used in this dissertation.

The Siemsen study examined the interrater reliability and predictive validity of the Neecham and Self-Perceived Mental Status instruments, and the contribution of the mobility items to understanding confusion. Additional important information which was considered with this dissertation included the ease of data collection, and the responses of elderly patients and research assistants to the data collection process. This study provided the opportunity for me to become familiar with the hospital units and environmental factors which had to be considered in refinement of the EOI, and to develop a working relationship with the nursing staff.

In various nursing roles, from staff nurse to consultant and educator, I have been involved for 18 years in the nursing care of confused, older adults in hospital and extended care settings. During this time, I have recognized the significance of the environment and nursing care activities to the emotional comfort of the mentally compromised adult. I have tested many of the EOI as a staff nurse with confused patients on a skilled nursing unit with positive results in terms of increased patient comfort with the environment and decreased problematic behaviors associated with confusion. And most recently, in order to understand their experiences, I have interviewed elderly patients who have been confused.

Conceptual Framework

Introduction

This study used a modification of M. Powell Lawton's ecological model to design nursing interventions with hospitalized, older persons. Lawton defines aging as a dynamic process of continual adaptations of the older person and his environment (Lawton & Nahemow, 1973). For nurses who work with the aged population, Lawton's work provides a basis for assessment and intervention by directing attention to the person in interaction with his environment. As presented in the review of the literature, the work of Rogers and Rothman guided the plans for implementation and evaluation of the interventions in this study to promote the likelihood of their adoption by nursing staff within the context of the hospital environment.

Lawton's ecological model is an interactional theory of man and his environment. Carp and Carp (1984) observed that the model incorporates Lewin's field theory, particularly in proposition that aspects of behavior are a function of the person and the environment. Lewin's theory was expanded by Lawton and Nahemow (1973) who added to the factors influencing behavior the interaction of the person's subjective experience and the external environment (Lawton, 1980). This expansion also made Lawton's ecological model congruent with the competence and ecological model developed by Rappoport (Lawton, 1982). Lawton's model directs the investigator to the importance of considering the elderly person's perception and experience as it guides the

interaction with the environment.

The representation of Lawton's model is as follows:

B = f(P,E,PxE), where B = behavior (confusion), f = function,

P = person (older person), E = environment (hospital), and

PxE = the interaction of the person's subjective experience and the environment.

Behavior

Behavior, the dependent variable in the ecological theory, includes the observable responses and the internal, affective responses of the older adult (Lawton, 1982). Behavior that is socially defined as positive is considered adaptive (Lawton & Nahemow, 1973). Positive affect is a feeling of comfort within one's environment (Lawton, Altman & Wohlwill, 1984).

Confusion as Maladaptive Behavior

For the purposes of this study, confusion was assumed to be maladaptive behavior because the elderly patient does not interact with staff and the hospital environment in a manner which is generally socially acceptable. It was recognized, however, that confusion may be an adaptive response for the older person by helping him to feel more comfortable with his present situation.

Many of the behaviors seen with elderly patients who develop confusion can be interpreted as a search for familiar environmental patterns. The elderly

patient might engage in behaviors, such as kneading or folding motions, which were associated with the household chores of an earlier environment. Reaching out via yelling for a person or place that was an earlier source of comfort and security or searching by wandering are examples of the patient's search for the comfort of familiar patterns of interaction with the environment. Disorientation to time and place are commonly used as indicators of confusion. Yet, with this framework, it can be easily understood that an elderly person who is having difficulty interacting with the hospital environment would place himself in an environment in which there was synchrony (an earlier place and time).

The Elderly Person and Decreased Competence

In Lawton's ecological model, the elderly person is examined in terms of competence. Competence is defined as the capacity of the person to function in the areas of biological health, sensation-perception, motoric behavior, and cognition (Lawton, 1982). The older adult is viewed by Lawton and Nahemow (1973) as being at a lower level of competence in comparison to younger adults, because of age-related changes in all of the types of competencies. In addition, decreases in interpersonal resources and lowered role demands can create secondary incompetencies (Lawton, 1980). It is hypothesized that the more competent the organism, the less will be the proportion of variance in behavior attributable to the environment and conditions around him (Lawton & Simon, 1968).

Biological Health Competence

According to Lawton, biological health refers to the absence of disease states as measured by laboratory tests, signs and symptoms, and medical diagnoses. Elderly persons are admitted to the hospital because of illnesses, indicating that their biological health competence is reduced.

In addition, there are certain physiological conditions which further reduce biological competence and place the elderly person at high risk for the development of confusion. These conditions have been given different labels, such as: organic disorders (Lipowski, 1980, 1990); physiologically unstable and toxic-provoked disorders (Neelon, Champagne & Moore, 1989); and, alterations in normal physiologic state and compromised brain support (Wolanin & Phillips, 1981). These labels all refer to conditions in which there is metabolic encephalopathy reflecting deranged cerebral metabolism and endosynthesis of neurotransmitters (Blass & Plum, 1983). Common diseases for the older population that cause metabolic encephalopathy by decreasing cerebral oxygenation or metabolism include: pneumonia, heart disease, infections, dehydration, hyponatremia, and hyperosmolality (Blass & Plum). Several types of medications, including sedatives, hypnotics, analgesics, anticholinergics, diuretics, antidepressants, antihypertensives, antiarrhythmics have been associated with the development of confusion in elderly persons by virtue of their direct toxic effects or secondary effects on oxygenation and metabolism (Foreman, 1989; Gustafson et al., 1988; Lipowski, 1989).

Sensation/Perception Competence

Competence in sensation and perception involves vision, hearing, olfaction, taste, somesthesia and kinesthesia (Carp & Carp, 1984). Lipowski (1983), Wolanin and Phillips (1981), and Neelon, Champagne, and Moore (1989) identify sensoriperceptual problems as contributing factors to the development of confusion in elderly patients. Information processing theory supports Lawton's identification of sensation and perception as critical to the person's ability to interact with the internal and external environment. It is also most relevant to understanding the behavior of the confused, older person, as explained by Lipowski (1990). "The patient displays defective ability to extract, process, and retain information, and to relate ongoing stimuli from the environment and his or her body to previously acquired knowledge" (p. 55). Sensoristasis is the drive state of cortical arousal which causes the individual to seek to maintain an optimal level of sensory variation. Within this select range of external stimulation, cortical arousal is maintained at a level which promotes the optimal functioning of the individual with his environment (Schultz, 1965). The reticular activating system in the brain is the means by which the person alerts and orients himself to his environment, via the reception and organization of patterns of stimulation, and control of arousal and alertness (Shelby, 1978). The incoming sensory stimuli are transformed, processed, and coded in a schemata to guide action and storage (Roslaniec & Fitzpatrick, 1979). Such schemata provide a frame of reference, or filter, by which new stimuli are

interpreted.

Motoric Skill Competence

Muscular strength and coordination, as required to carry out the activities of daily living, are involved in motoric skill competence. One can assume that those individuals who have more severe limitations in biological competence would also be most likely to have reduced motoric competence secondary to the imposed immobility from the illnesses or hospital treatments. Decreased motoric competence would also be found among those predisposed to confusion because of age-related changes in the musculoskeletal system or increased use of chemical and physical restraints with patients who have limitations in cognitive competence.

Cognitive Competence

Advanced age and cerebral damage, such as with dementia, seriously compromise the cognitive competence of the older adult. These factors have been identified by Lipowski (1980, 1990), Wolanin and Phillips (1981), and Neelon, Champagne and Moore (1989) as the major predisposing factors for the development of confusion. The population of nerve cells of the brain and their dendrite branching are reduced with normal aging to a low level, critical to maintaining function. In older adults, there is decreased activity of enzymes involved in the synthesis of certain neurotransmitters. A decreased cerebral blood flow with advanced age parallels the reduced metabolic rate of the brain and results in an organ system which is extremely marginal when taxed by

diseases that affect oxygen uptake and glucose utilization (Blass & Plum, 1983). Thus, even a mild metabolic disorder can place the older adult in a situation where the brain function is below the threshold at which clinical symptoms of confusion occur (Blass & Plum).

The Environment and Environmental Press

The concept of environmental press is very significant to Lawton's ecological model and stems from Murray's work in the 1930's. Murray defined environmental press as forces in the environment that combine with the individual's need to evoke a response by the person. Thus, the environment is neutral in that the direction and magnitude of its forces are only as defined by the needs and perceptions of the person (Lawton & Nahemow, 1973).

Hospitalization as a Negative Environmental Press Situation

In general, hospitalization can be viewed as a negative environmental press situation. Roslaniec and Fitzpatrick (1979) view hospitalization as a marked change in the elderly person's normal relationship with the environment when the elderly client has a diminished tolerance for such an alteration. The older person who is experiencing a reduced health state may not have the energy resources to deal with the intensity of change of the high information flow, hospital environment. Ryan and Smith (1990) identify the hospital experience as being potentially detrimental to the emotional well being and cognitive status of older persons because of its disruptive effect on one's sense

of self. Neelon, Champagne, and Moore (1989) view sensory alteration and activity-rest pattern disruption as environmentally-provoked factors in the development of confusion.

Sensory alteration. "Sensory alteration refers to the amount and/or type of stimuli present in the new environment in relation to the stimuli that existed previously" (Roslaniec & Fitzpatrick, 1979, p. 178). Novel stimuli that do not have a familiar pattern will disrupt the sensoristatic balance. Sensory deprivation, sensory overload and perceptual deprivation are types of sensory alteration which occur with hospitalization. Patterson (1986) views the hospital environment as hazardous to the elderly patient because of the disparity between the stimuli in the older adult's familiar environment and that encountered while hospitalized. Novel stimuli internal to the individual, such as pain or pressure with distension, will have the same effect on sensoristatic balance.

The degree of the disruption in the sensoristatic balance with sensory alteration will determine the level of individual awareness and influences on behavior. Disorganized behavior occurs when the threshold has been passed beyond which interaction with the environment cannot be handled because internal coherence has been lost or can only be maintained via withdrawal (Vickers, 1968). Some of the behaviors which can occur are: lack of concentration and coherent thinking, hallucinations as an attempt to pattern stimuli into a meaningful manner, and anxiety and fear (Shelby, 1978). Such

disturbances of mental function, labeled confusion, can occur with major disturbances in the sensoristatic balance (Schultz, 1965).

Activity-rest pattern disruption. Usual patterns of sleep, rest and activity are commonly disrupted for hospitalized persons because of hospital routines, treatments and visits by health care workers, pain, and changes in mobility secondary to the illness or treatment regime. LaPorte (1982) believes that fatigue with inadequate rest is associated with confusion. The disruption of the rest-activity cycle causes impaired oxygenation secondary to the increased demand from activity and can result in hypotension and cardiac arrhythmias. Fragmentation and depatterning of sleep, insomnia and disruption of the circadian rest-activity cycle are symptoms occurring with confusion (Lipowski, 1980).

Secondary incompetence. Admission to the hospital physically removes the older person from the significant people and animals of his home environment. Ziskind (1964) suggests that interpersonal isolation may be the most significant deprivation occurring with hospitalization. In addition, lack of continuity of staff further limits the ability of the older adult to engage in meaningful relationships (Wolanin & Phillips, 1981).

Environmental Optimization Interventions

Nursing interventions for confusion described in the literature target factors identified as contributing to the negative environmental press of

hospitalization. A unifying characteristic of the interventions is that they are attempts by the nurse to optimize the environment to be supportive of the needs of the older adult (Williams, 1988). Such a structured environment fits Lawton's (1982) conception of a prosthetic environment, one in which modifications are undertaken to promote positive, adaptive behaviors of the older adult by reducing the negative environmental press. For the elderly person whose competence is severely challenged by virtue of hospitalization, the nurse often assumes the initiator role in targeting interventions at the environment. The elderly person with high competence is more likely to be his own active initiator in achieving the goal of adaptive behavior by redesigning his environment or involvement in self-growth activities (Lawton).

The environmental optimization interventions (EOI) used in this study can be classified within the categories of: focused assessment and meeting immediate personal needs, helping clients to organize their environment, providing meaningful sensory input, and maximizing independence in activities of daily living (ADL) (Wolanin & Phillips, 1981). Assessment is key to the effectiveness of the EOI in reducing the negative press of the hospital environment, for the interventions require the nurse to know the elderly person's usual types and patterns of stimuli and activity and his perception of the hospital environment. With this assessment base, the nurse provides, mediates, and explains stimuli to maximize their familiarity and comfort for the patient. The nurse uses her knowledge of the persons' sensation/perception

competence to reduce the sensory alteration of the hospital environment through organization of the room and provision of meaningful sensory input. By helping to maximize the elderly patient's independence in ADL, the nurse is using the person's usual patterns of activity and rest to provide familiar stimuli to enhance biological and motoric competencies.

Conclusion

The elderly person who is hospitalized is at a low level of competence and at high risk for the development of maladaptive behavior in the negative press, hospital environment. For the older adult who is intensely focused on the physical demands of illness, removal from his familiar environment and significant others can create a situation in which he is unable to deal with the sensory alteration imposed by the hospital setting. Confusion can be the behavioral outcome. The environmental optimization interventions are directed at reducing the negative press of the hospital environment with the nurse assuming the initiator role and involving family members to augment and reinforce the interventions. The design, implementation and evaluation of the EOI is done with consideration of the factors intrinsic to the innovation, staff and hospital organization that can influence the adoptability of the EOI protocol. This conceptualization is summarized in Figure 1.

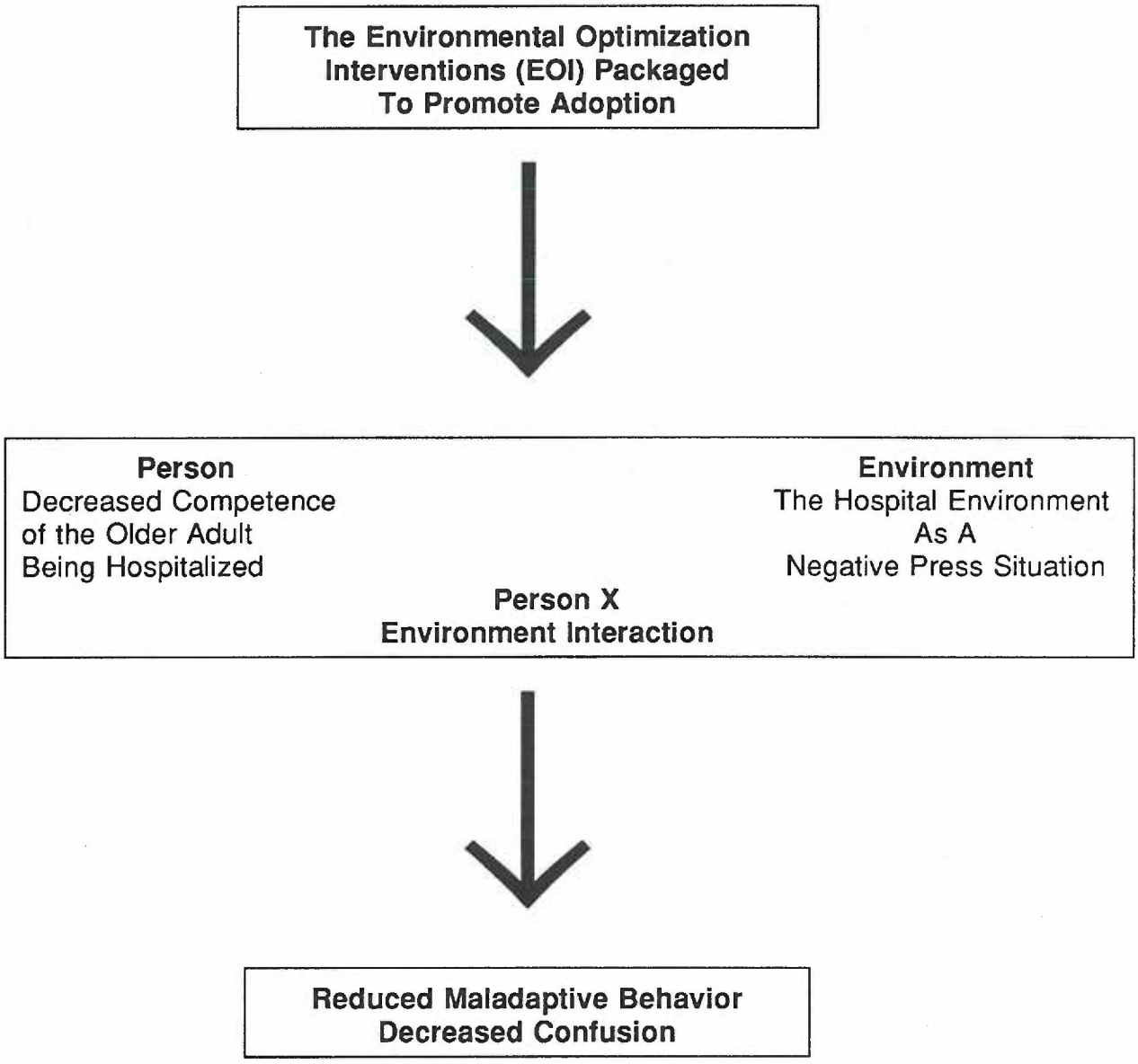

Figure 1. Conceptualization: The EOI to reduce confusion in hospitalized, older adults.

Based on the experiences of this pilot study and assessment of factors relevant to the feasibility and potential effectiveness of the EOI, the postdissertation phase of study will test the conceptual framework and the following questions:

Do hospitalized, elderly patients who receive the EOI have a lower incidence and severity of confusion than elderly patients who do not have the EOI?

Do elderly patients with the lowest competence receive the greatest benefit from the EOI in reducing the severity and duration of confusion, as compared to those elderly with higher competence?

Significance

The development or exacerbation of confusion places the older adult in a highly vulnerable position for negative consequences associated with hospitalization. Unfortunately, as shown in the review of the literature on delirium, diagnosis and treatment are frequently neglected with the elderly population, even though delirium is a substantial contributor to morbidity and mortality (Binder & Robins, 1990; Foreman, 1990; Francis, Martin, & Kapoor, 1990; Hodkinson, 1973; Levkoff, Besdine, & Wetle, 1986; Lipowski, 1989). For example, a rehabilitation facility found that a quarter of the persons admitted from hospitals were cognitively impaired, with the majority having deficits not

yet detected by family or health professionals (Garcia, Tweedy, & Blass, 1984). It must be recognized that delirium is often the marker of an underlying serious illness. Thus, the increased negative consequences seen with delirium are, in part, explained by the seriousness of the concurrent disease processes.

Lamont et al. (1983) found that elderly patients with impaired mental status, accounted for 68% of patients requiring discharge to a level of care higher than that from which they were admitted, and 70% of the patients requiring more intensive interventions while hospitalized. Similar problems with confused patients were found by Gustafson et al. (1988) with complications impeding recovery, increasing lengths of stay and nursing care requirements, and leading to poor rehabilitation outcomes. The work of Narain et al. (1988) supports these findings regarding the negative consequences of impaired thought processes on hospital length of stay and need for nursing home placement. Patients with delirium require more nursing surveillance than other patients because they are at higher risk for injury; this generates increased facility costs (Levkoff et al., 1986). There is no additional increase in prospective payment reimbursement for the complication of delirium in patients over the age of 70. Given the increased length of stay in these patients, a reduction of even one day for each confused, elderly patient would save hospitals one to two billion dollars annually (Levkoff et al.). Extensive cost savings for families and society should also occur via reductions in the need for placement in nursing homes or assisted living settings.

Because of the lack of systematic study in the area, one can only conjecture on the significance of the emotional cost of confusion to the individual. Lipowski (1983) reports that the subjective experience of delirium for patients is highly variable in its character, but almost always unpleasant. Particularly at night, the dreams which continue as hallucinations are often frightening, and fill the older patient with fear and an intense desire to escape (Lipowski, 1990). Williams et al. (1979), in their anecdotal reports from patients, indicated that confusion is associated with feelings of uncertainty and discomfort. Healthy individuals in the community which included adolescents, middle-aged adults, and the aged reported the following feelings in describing experiences of disorientation: helplessness, loss of control, bewilderment, fear, fuzziness, isolation, embarrassment, and depreciation (Castleberry & Seither, 1982). Castleberry and Seither found that the older subjects were especially reluctant to acknowledge and discuss experiences of disorientation. This reflected their anxiety about problems with mental function, which elderly adults commonly associated with psychiatric diagnoses and need for institutionalization. Lipowski (1990) also reports that the delirious patient, aware and concerned about his impairments, reacts with embarrassment and tries to appear normal. Family members who witness the behaviors of confusion are similarly frightened and anxious (Zimberg & Berenson, 1990).

Confusion significantly interferes with the older adult's ability to successfully interact with the hospital environment. The costs to the individual

are high in terms of the physical and emotional demands. The increased nursing demands and lengths of hospitalization required by this large group place a financial drain on institutions. Society loses the productivity of an important segment of the population and bears the cost of increased use of long term care settings. Yet, there are few studies which examine interventions to prevent or minimize confusion and delirium. Our rather extensive clinical nursing base remains relatively untested via research. The increasing incidence of confusion among elderly patients in hospitals gives added emphasis to the need to develop and test nursing strategies (Neelon, 1991). This pilot study built on previous research while incorporating the strong clinical base of nursing interventions.

The EOI protocol was viewed as a potential innovation within the context of the hospital organization and nursing system of the study institution. The ongoing refinement of the interventions which occurred as part of the study, and development of the plans for implementation and evaluation are based on principles to promote the future adoption of the innovation. This study was timely given the organizational climate of the study institution. The identification of confusion by some members of nursing service and administration as a significant problem in need of different interventions increased the likelihood that the innovation would be adopted. Similarly, the descriptive study designed to determine the incidence of confusion built on the values of the organization, which advocated research, to substantiate the need for a change in practice.

This pilot study had the potential for contributing to nursing care of confused, elderly patients because it tested interventions which had a limited research base within the context of nursing practice in the hospital environment.

CHAPTER III

METHODS

Overview

This pilot study, known as the Miller study, used a small, convenience sample of nurses from a nursing unit to test the EOI protocol with 13 elderly patients representing different levels of confusion. For this pilot, emphasis was given to instrument development and ascertaining the responses of patients, families and friends, and nurses to the EOI. The Siemsen study served as the control condition, with information about nursing care being obtained via interview of nurses and observation, and the incidence of confusion being ascertained from a subset of the Siemsen patient sample. Repeated measures of confusion were taken twice daily and the delivery of the EOI was monitored. The measurement of confusion occurred at hospital admission and then during the morning and late afternoon/evening of each subsequent day throughout the patient's hospitalization.

In Miller's study, the EOI were taught to nurses who then implemented them as part of their regular patient activities. The educational program involved classroom instruction blended with clinical application and two complete application trials with patients to maximize transfer to the unit setting. A focus group was the primary method used to reinforce and analyze the use and effectiveness of the EOI. Support activities were designed to remind and assist the nurses in the implementation of the EOI with consideration given to

factors which can promote or inhibit adoption of the innovation within the hospital.

Sample

There were three populations of interest in this study, namely, elderly patients, their families and friends, and hospital nursing staff. Selection for all groups was dependent on convenience sampling from the nursing unit that was the setting for the study.

Patient Participants

Initial Sample Criteria

Siemsen. The initial criteria for the patient sample in the control condition included: adults over the age of 65, who did not have a primary or secondary diagnosis of a psychiatric disorder (excluding dementia), were admitted to the study unit, and from whom consent could be obtained.

Miller. The pilot study used the same initial sample criteria as the Siemsen study. The sample was further limited to those patients for whom consent could be obtained and for whom the EOI were implemented during the admission period, continued the next day and throughout the patient's hospital stay. This last criterion was important because of the researcher's interest in the trajectory, or course, of confusion for individuals, and the nurses' workload with the EOI during different phases of patient recovery. A sampling plan was developed with the goal to obtain 12 subjects, representing the three levels of

confusion upon hospital admission: none, early/mild, and high confusion. The sample was stratified by level of confusion to gather information about 1) the relative effectiveness of the EOI with elderly patients given their different levels of competence, and 2) staff perceptions of relative gain and efficiency of EOI use with different types of patients.

Plan for comparison. The initial plan was to select randomly from the Siemsen study six subjects to represent each level of confusion, to serve as the comparison group. The threats to internal validity of using non-random sampling, specifically with regard to history and selection, were recognized.

Sample Description

Siemsen. Twenty-six elderly patients, with an average age of 78.88 years (range 65-100 years) were admitted to the study.

Miller. Initially, the patient admission period was viewed as the time when the patient was physically brought to his room on the unit. The events surrounding admission necessitated a broadened definition of admission for the study, and had implications for patients, nurses, and the nursing unit which will be discussed later. During the educational program and the practice week, the researcher was informed about, and observed, the following situations which arose frequently with patient admissions. Patients were brought to the unit near the end of a shift or during the night. The nurse who technically "admitted" the patient at these times, symbolized by the taking of vital signs, and demonstration of the bed controls to the patient, would often spend very little

time with the patient. Indeed, these admission functions were often performed by the "admissions nurse", whose job was to save the staff nurses' time by admitting patients throughout the hospital during the evening shift.

Upon admission to the unit, the patient would frequently be taken from the unit for diagnostic tests, or experience multiple medical work-ups extending for several hours. The nurses had adopted a cooperative or span-shift approach to these admissions. Thus, it might be the nurse on the next shift who helped the patient settle in, completed the functional assessment and kardex, and initiated the careplan. This was also true with admissions during the night, when it was inappropriate to keep the patient or his roommate awake any longer than necessary.

On the basis of these observations, for the purposes of determining eligibility for this study, the researcher reviewed the admission process for each potential patient subject to see how much contact the EOI nurse had with the patient around admission. For example, one patient admitted during the night, when there was not an EOI nurse present, had an EOI nurse on the day shift, and was admitted to the study. An elderly patient, admitted at the end of the day EOI nurse's shift with the nurse saying that she "... said hello and that was about it" was entered into the study because there was an evening EOI nurse who finished the admission process and cared for the patient the entire shift.

In order to try to obtain the desired stratified sample, the criteria for admission to the experimental study shifted as subjects filled the different levels

of confusion. Early in the study, with the initial patient criteria, subjects were obtained who had low confusion upon hospital admission. Later, the researcher used the person factors associated with an increased risk for confusion to change the guidelines for the EOI nurses' admission assignments towards elderly patients who were of increased age (greater than 80 years), with preexisting cognitive impairment, and male.

Seventeen elderly people were screened on admission to the unit for participation in the study. Four patients did not participate. An 88 year old patient, who gave consent, was discharged back to the nursing home within eight hours, so was not able to be in the study. Two female patients, with mild or early confusion, as indicated by their admission Neecham scores, refused to participate, citing fatigue as the reason. The family of a 95-year old woman who had an admitting history of cognitive impairment, requested that she not be in the study because they thought it might tax her.

The final sample consisted of four male and nine female patients. The entire Miller sample was used for analysis of the EOI. Data from twelve of the thirteen patients was used to examine the phenomena of confusion. The average age of subjects was 78.69 years, with a range of 71-91 years.

Decisions About Comparison Samples

Initially, it was thought that Siemsen's entire sample could be used to describe the overall incidence and nature of confusion as the control condition, with a subset of the sample used to compare the groups on the patterns of

confusion over the length of hospitalization. An important consideration in the identification of the comparison samples was the difference in timing of the admission assessments between the two studies. Both studies attempted to assess patients soon after admission to the study unit. However, the presence of this investigator on the study unit for most admissions, meant that subjects in the Miller study were screened and admitted to the study earlier in their hospital stay than those in the Siemsen study. A comparison of the Neecham scores for days 1 and 2, indicated that, for both studies, there was far more variability in the scores for patients on day 2, suggesting that the confusion trajectory may be markedly different on day one versus two of hospital stay. Thus, it was deemed most important to use only subjects who had been admitted to the study during their first day on the unit. However, because of the small number of subjects in the control group who entered the study on day 1 with early/mild confusion, one experimental subject was matched with a control subject on the basis of admission scores on day 2.

Of Siemsen's total sample, 16 subjects, or 61.5%, had an assessment of confusion done during their first day on the study unit. Three of these elderly patients were admitted with confusion, as measured by the Neecham. Siemsen reported that she may have deferred day 1, admission assessments on some patients who were acutely ill. One can assume that those elderly patients would have a higher likelihood of confusion associated with physiological instability, which would be evident on their day 2, admission assessment. The

characteristics of the control and experimental groups with regard to level of confusion on day 1, age, and sex are presented in Table 2.

Although the Siemsen subsample and Miller groups are similar with regard to age, Siemsen's comparison group has a larger representation of male patients. The groups are different with regard to the distribution of admission levels of confusion, as measured by the Neecham. This can be explained by the purposive sampling in the Miller study to try to obtain a representation of the three levels.

The investigator in the Miller study did tend to score subjects lower on their screening Neecham than the subsequent evening assessment. This may have been due, in part, to the desire to find patients with confusion. In addition, the investigator tended to score subjects lower based on her longer experience with the Neecham than the other data collectors. A comparison of the screening and evening Neecham scores on the day of admission (for the seven subjects who had both scores) showed a different level of confusion score for only one subject who was rated by the investigator has having mild/early confusion on admission, but was scored as having normal function by the evening assessment. Thus, for the description of the Miller sample, the first evening assessment was used, and resulted in a sample size of 12. With the Siemsen study, 14 of 16 subjects had their first assessment done in the evening. The two patients who had an initial morning assessment on day one, had the same level of confusion score in the evening. Thus, the use of the first

Table 2

Comparison of Control and Experimental Groups

Level of Confusion		Sample Size		Age ($\bar{x}$)		Sex M=male F=female	
		cont.	exp.	cont.	exp.	cont.	exp.
I Severe *		2	1	72 yrs	82 yrs	1 M 1 F	1 M
II Mild/ Early **	Day 1	1	7	98 yrs	80 yrs	1 F	2 M 5 F
	Day 2	1	1	71 yrs	80 yrs	1 F	1 F
III None*		13	3	80 yrs	73 yrs	6 M 7 F	3 F
Total		17	12	80 yrs	78 yrs	7 M 10 F	3 M 9 F
% Total Sample		65.38%	92.3%				

* Includes all day 1 admits.
** Includes day 2 admits for Level II - 1 patient in cont. and exp. groups.

evening comparison between the two groups seems comparable. Information about the one subject in the experimental study whose level of confusion was scored differently will be presented anecdotally for a description of confusion and consequences with the EOI, because interesting data were provided independently by the EOI nurse and physician.

Family and Friend Participants

This sample was limited to those family members and friends who were present on the nursing unit sometime during the patient's hospitalization, making them readily accessible to the EOI nurses. These participants were defined as all individuals who identified themselves as friends or relatives of the patient and received the EOI. Although their presence indicates some type of involvement with patients, it is not assumed that this convenience sample represents patients' total families or the family members and friends who were most important to the patients.

As will be presented in the results, this study was severely limited in its access to family and friend participants. Interviews were conducted with the family members of five patient subjects in the Miller study.

Nurse Participants

The initial plan was for the EOI nurses to consist of 2 to 4 registered nurses on the study unit who volunteered to participate in the study. An EOI nurse would care for a maximum of two study patients at a time (approximately

half of her total patient assignment). This number of nurses was considered the smallest group that could provide the EOI effectively to the desired patient sample in a 4-6 week period of time. It was expected that the EOI nurses would be those who: cared about elderly patients, were concerned about confusion with their patients, and/or desired to learn about nursing research. As much as possible, nurses who were considered the opinion leaders and early adopters were to be selected in order to increase the likelihood of success in the testing of the EOI and potential for later adoption of the innovation if it was found to be effective and feasible.

To be feasible within the setting and determine the efficacy of the EOI, the intervention had to be implemented in full and the pilot study conducted in the shortest possible time period. The nursing staff were asked to alter their usual practice and expend time and energy for a study with uncertain personal or professional gains. The stretched staffing patterns in this and many hospitals necessitated limiting the time period during which the nurse manager would manipulate the staff assignments so that participating nurses could have continuity in their patient assignments, essential for the EOI.

The nurse manager and associates expressed their desire to try to have a larger group of nurses involved in the study, if that was possible. After examining staffing patterns, it was decided that the goal would be to have enough EOI nurses to cover two positions on the day and evening shifts.

The EOI nurse sample consisted of three, part-time nurses on the day

shift, and three full-time, evening shift staff. All of the nurses were identified by the nurse manager and associates as being leaders on the unit who were well thought of by their coworkers. Five had their bachelor's degree in nursing. The nurse who had an associate degree in nursing had practiced as a physician in the Philippines before coming to the states. The sample of six EOI nurses is unusually strong with regard to the nurses' educational backgrounds, their longevity on the unit, and interest in gerontological nursing. These strengths make it an atypical sample of staff nurses, which needs to be considered with regard to all study findings.

The nurses had all worked on the study unit for at least two years, with three of the nurses having an association with the hospital for more than ten years. They enjoyed the rapid pace and variety of nursing challenges encountered on their unit. This offset the heavy physical work, which was reported to be more than that found on other units. There was a strong sense of support and cohesiveness among all the unit staff, which they identified as a major positive force keeping them at work.

A significant problem with confusion in elderly patients and dissatisfaction with current assessment and treatment strategies were the factors cited by four nurses as influencing their decisions to join the study. One nurse's enjoyment of education was the main reason given for participation. Three of the nurses associated themselves with gerontological nursing, by virtue of their education, work experiences, and enjoyment in working with this population.

In order to participate, each EOI nurse would have to be involved in direct patient care enough so that the EOI nurses together could provide the EOI to patients for 75% of their days on the study unit for two of the day's three shifts. One of the part-time nurses on the day shift volunteered to be assigned to four study patients whenever she worked, so that the EOI nurse coverage could be provided. One patient subject received the minimum 75% EOI nurse assignment for two shifts of care over her hospitalization. The other 12 patients received two shifts of care by EOI nurses for at least 80% of their stay on the study unit, with five of the patients having EOI nurses 100% of the day and evening shifts.

Setting

The setting for this pilot study was a 200+ bed, non-profit hospital located in a city in the northwestern United States. A 30-bed, general medicine unit was selected as the study unit because: there was a large percentage of elderly patients at high risk for the development of confusion, the managerial and staff nurses were interested in the problem of confusion among their patients, and the staffing patterns and patient census were relatively stable.

Independent Variable

Control Condition: Usual Nursing Care

Knowledge about the current nursing care provided to elderly patients on the study unit was important for the following reasons. The investigator

planned to increase the power of the experimental treatment by maximizing its difference from the control situation. As has been previously explained, it was assumed that certain aspects of the EOI were used by individual nurses in their practice. The investigator emphasized during staff training those interventions of the EOI that were not commonly implemented. Knowledge about common practice was also very useful in the design of the interventions to increase their likelihood of adoption. For example, by linking the check of the calendar in the patient's room with the nurses' customary assessment of the patient at the beginning of the shift, it was easier for the nurses to remember to carry out the intervention.

The Siemsen study served as the control condition during which information about current practice on the study unit was obtained. Given the rotation of staff assignments and formal and informal communication patterns in nursing service, it would have been difficult to prevent contamination of the treatment program to a concurrent control unit. It would also have been difficult, and of questionable ethics to expect nurses who were using the EOI with patients in the experimental group to not extend interventions that they may have found effective to their other elderly patients, thereby discounting the simultaneous use of control and experimental groups on the study unit.

Observations of nursing care were done via use of the Observation Checklist for Selected EOI during the Siemsen study. This was done to obtain comparison information about the nursing care provided to elderly patients on

the study unit prior to implementation of the EOI. Those subjects, on whom data were collected with the Observation Checklist, were selected to serve as the comparison group. The levels of confusion of these subjects were considered important, intervening variables. A nurse's decision to implement use of props associated with the EOI could have been influenced by her assessment of the patient's need for assistance in organizing or interpreting his environment.

Information about current practice came from the nurse manager and associates on the study unit who were interviewed as part of the initial negotiation and development of the study site. They were asked to describe what was done for the elderly patient who is confused or is at risk for becoming confused. They were asked about the use of the specific interventions used in the study, as listed on the EOI Report. They were also asked to describe the expected daily routines of the staff nurse. This information was used to help the investigator and managers discuss the study in terms of how the nursing activities performed by the EOI nurses compared to usual practice, and provided a means for exploring potential problems and possible solutions associated with the work of the EOI nurses.

Additional interviews occurred during the first part of the educational program, when the EOI nurses were asked to describe the usual nursing care with elderly, confused patients. The purpose of this activity was to get a description of usual practice from the EOI nurses before they were sensitized

by the educational program. They were also asked to review the EOI and discuss how those interventions compared to usual practice.

Experimental Condition: Environmental Optimization Interventions

There are four categories of EOI which were implemented by the staff nurses as part of their regular patient assignment. Although all categories of the EOI were used by the EOI nurses with each elderly subject, the relative intensity of effort fluctuated depending on the competence and needs of the patient, and involvement of family or friends throughout his hospitalization. The categories of the EOI are: focused assessment and meeting immediate personal needs, helping clients to organize their environment, providing meaningful sensory input, and maximizing independence in activities of daily living (ADL).

Specific EOI within the four categories were revised based on feedback from the EOI nurses as to their: effectiveness with patients, families or friends; acceptability to patients, families or friends, and staff; and feasibility for the EOI nurses. These revisions occurred during the educational program and focus group meetings. Revisions could only be accepted if they were consistent with the categories of EOI and their supporting rationale. Over the course of the study a total of nine changes in the EOI were made, which included: one revision, three deletions, and the addition of five interventions. Table 3 lists the EOI by category, the nature and date of revisions, and whether the

Table 3

EOI by Category & Timing of Administration

Category & Intervention	Changes	Admit	Every Shift	Hour * Intervals	Nurse Contact
Focused Assessment & Meeting Immediate Personal Needs					
assess unmet internal needs & external concerns		X		q2h	X
assess mental status		X		q2h	X
prophylactic administration of analgesics				q4h	
offer toileting assistance				q4h	
assist with position shifts				q2h	
verbally clarify unmet needs					X
record on careplan, kardex & change shift report areas pt. has problems communicating needs		X update prn			
Helping Clients to Organize Their Environment Welcoming					
instruct unit sec. to limit interruptions during adm. process and put messages in nurses order box	added 1/10	X			

*q2h = every two hours
q4h = every four hours

EOI by Category & Timing of Administration

Category & Intervention	Changes	Admit	Every Shift	Hour * Intervals	Nurse Contact
Helping Clients to Organize Their Environment Welcoming (con't)					
post "Nursing Assessment in Process Sign"	added 1/10	X			
warmly greet pt. at eye level with handshake, touch shoulder or hand	revised 1/10	X			
nurse identifies self & purpose		X			
pt's. preferred name recorded on kardex		X			
Orienting to Facility & Room					
escort pt. from admit/ER to room	deleted 1/10	X			
greet pt. at pt's. room	added 1/10	X			
ask pt. experiences with Good Sam/ hospitals		X			
during transit, orient pt. to hospital & neighborhood		X			
in room, open blinds & comment on general location		X			

*q2h = every two hours
q4h = every four hours

Table 3

EOI by Category & Timing of Administration

Category & Intervention	Changes	Admit	Every Shift	Hour * Intervals	Nurse Contact
Helping Clients to Organize Their Environment (con't)					
Orienting to Facility & Room (con't)					
initiate & review orientation card with pt.		X	review PRN		
Familiar					
medical supplies & technological support devices accessible to staff but minimally intrusive to pt's. space		X		q4h	
overbed table, bedside stand and window ledge free of equip. & supplies		X		q4h	
pt's. own bathrobe draped over foot of bed/chair where can be seen or with pt.		X		q4h	
pt's. own slippers or shoes where can be seen by pt. or with pt.		X		q4h	
personal toilet articles on overbed table or bedside stand		X		q4h	

*q2h = every two hours
q4h = every four hours

Table 3

EOI by Category & Timing of Administration

Category & Intervention	Changes	Admit	Every Shift	Hour * Intervals	Nurse Contact
Helping Clients to Organize Their Environment (con't) Familiar (con't)					
books, cards & pictures where can be seen by pt.		X		q4h	
jewelry & religious items with pt. or where can be seen by pt.		X		q4h	
ask pt. about placement of personal items in room		X	X		
encourage pt. & family to bring in personal possessions - tell benefit		X	X3		
inform pt. & family risk of loss of personal possessions		X and whenever items brought to hospital			
discuss pt's. personal possessions with pt.		X	X		

*q2h = every two hours
q4h = every four hours

Table 3

EOI by Category & Timing of Administration

Category & Intervention	Changes	Admit	Every Shift	Hour * Intervals	Nurse Contact
Helping Clients to Organize Their Environment (con't) Familiar (con't)					
card alert outside room not to move furniture, supplies & belongings		X	X assess		
conduct tour of room - identify & explain all physical props, equip. & medical devices & auditory events		X	X3 after admit		
repeat tour of room		X assess and prn each room change; new equip. or pt. looks puzzled			
verify with pt. that call light within reach & visual field of pt.					X

*q2h = every two hours
q4h = every four hours

Table 3

EOI by Category & Timing of Administration

Category & Intervention	Changes	Admit	Every Shift	Hour * Intervals	Nurse Contact
Helping Clients to Organize Their Environment (con't) Orientation Skills					
identify environmental cues to foster awareness of relative time and place		X	X3 after admission and prn		
large dial clock within pt's. field of vision		X	X		
calendar within pt's. field of view		X	daily		
discuss current schedule of daily events card with pt.		X	X review update prn		
Providing Meaningful Sensory Input Staff Contact					
reintroduce staff by name, position & purpose					X

*q2h = every two hours
q4h = every four hours

Table 3

EOI by Category & Timing of Administration

Category & Intervention	Changes	Admit	Every Shift	Hour * Intervals	Nurse Contact
Providing Meaningful Sensory Input (con't) Staff Contact (con't)					
acknowledge pt. feelings					X
focus on pt. needs					X
speak slowly & clearly in lower pitched voice					X
use short, direct, single activity statements					X
verify pt. comprehension					X
act unhurried & calm with pt.					X
nurse sits at bedside when talking with pt.	added 1/25				X
maintain eye contact with communic.					X
continuity of EOI nurse assignment			X		

*q2h = every two hours
q4h = every four hours

Table 3

EOI by Category & Timing of Administration

Category & Intervention	Changes	Admit	Every Shift	Hour * Intervals	Nurse Contact
Providing Meaningful Sensory Input (con't) Family/Friend Involvement					
orient family about hospital & services family can use to include parking, chapel, meal tray & cafeteria, recliner chair		X	reassess		
escort, security, &/or wheelchair made available to family/friend			X3 am/pm night and prn		
ask family/friend if they have any questions/ concerns			X family present or phones		
encourage family/friend to stay			X family present or phones		
express appreciation for family/friend being available to pt.			X family present or phones		

*q2h = every two hours
q4h = every four hours

Table 3

EOI by Category & Timing of Administration

Category & Intervention	Changes	Admit	Every Shift	Hour * Intervals	Nurse Contact
Providing Meaningful Sensory Input (con't) Family/Friend Involvement (con't)					
explain family/friend importance to pt. recovery			X family present or phones		
show by example & explanation use of touch, orienting information & reminiscence to help pt.					X pt-fam-nse
reinforce family/ friend continuing usual patterns of interaction with pt.					X pt-fam-nse
observe pt. symptoms of distress with visits					X pt-fam-nse
support family/ friend need for rest			X with family visits/ phone calls		

*q2h = every two hours
q4h = every four hours

Table 3

EOI by Category & Timing of Administration

Category & Intervention	Changes	Admit	Every Shift	Hour * Intervals	Nurse Contact
Providing Meaningful Sensory Input (con't) Family/Friend Involvement (con't)					
offer to call family/ friend on regular basis			X with family visits/ phone calls		
obtain phone #'s & times of access for important friends/ family		X or with family visit/ phone call immediately after admission			
phone family/ friends for pt. to help orient & calm pt.		PRN re: pt. needs/ family needs & availability			
request family/friends leave handwritten letter at bedside			X3 unless complt'd		

*q2h = every two hours
q4h = every four hours

EOI by Category & Timing of Administration

Category & Intervention	Changes	Admit	Every Shift	Hour * Intervals	Nurse Contact
Providing Meaningful Sensory Input (con't) Family/Friend Involvement (con't)					
read letters to pt. when pt. bored or anxious & family NA				Assess q2h	
Managing Sensory Input					
assess usual time, amount & type of tv, radio, music & religious services enjoyed by pt.		X			
provide interventions using above information					X
record above interventions on kardex under religious need & misc., and careplan (if Dx)		X	modify prn		
record nsg. dx., sensory alt. &/or divers. deficit on kardex and careplan (if Dx)		X	modify prn		

*q2h = every two hours
q4h = every four hours

Table 3

EOI by Category & Timing of Administration

Category & Intervention	Changes	Admit	Every Shift	Hour * Intervals	Nurse Contact
Providing Meaningful Sensory Input (con't) Managing Sensory Input (con't)					
keep door closed to pt. room when with pt.	added 1/10				X
keep door closed to pt. room	deleted 1/10				
post "keep door closed" sign	deleted 1/10	X	X		
hearing aid/ eyeglasses in use/ accessible to pt.					X
nurse moves self & equipment slowly & quietly when with pt.					X
room lighting appropriate to time of day, activity, & pt. preference					X
PM care instructions on kardex and careplan (if Dx)		X	modify prn pm's		

*q2h = every two hours
q4h = every four hours

EOI by Category & Timing of Administration

Category & Intervention	Changes	Admit	Every Shift	Hour * Intervals	Nurse Contact
Providing Meaningful Sensory Input (con't) Managing Sensory Input (con't)					
record info about hearing aids (setting, ear, freq. battery chg., when used) & glasses (when worn) on kardex and careplan (if Dx)		X			
window blinds raised in am, closed in evening (if window bed)					
Maximize Independence in ADL					
determine pt's. habits re: timing, frequency & method of bathing, oral care, activity & rest periods, meals, snacks, & toileting		X	X		

*q2h = every two hours
q4h = every four hours

EOI by Category & Timing of Administration

Category & Intervention	Changes	Admit	Every Shift	Hour * Intervals	Nurse Contact
Providing Meaningful Sensory Input (con't) Maximize Independence in ADL (con't)					
note above on kardex under bath, oral care, activity, feed & bowel & bladder care, and careplan (if Dx)		X	modify prn		
incorporate above into daily care, i.e.: bath in pm, warm milk before bed, ambulate in am					X
with all care activities, the nurse proceeds slowly, giving pt. time & encourages him to participate as much as possible					X

*q2h = every two hours
q4h = every four hours

interventions were administered: upon admission, every shift, every two or four hours, and/or with each interaction.

It was necessary to develop a procedure so that the EOI nurses, associates and nurse manager would be aware of the most current list of EOI to be implemented. Following each revision of the EOI, a new Table 3 was distributed by the researcher to all of the above individuals with an additional copy placed in the EOI file, located in the medication room. The tables were dated and the revisions highlighted, to make it easier for staff to locate the changes in the EOI. This procedure also served to reinforce awareness of the study on a periodic basis for the EOI and administrative nurses.

Focused Assessment and Meeting Immediate Personal Needs

A common thread throughout the categories of EOI is individualized care. With individualized care, the EOI nurse controls the patient's physical and interpersonal environment through the types, amount and sequencing of stimuli provided (McMahon, 1988). Basic to individualized care is ongoing assessment as to what stimuli may be appropriate given the changing needs and wants of the elderly person throughout his hospitalization and nature of the environment. For example, pain, fatigue, urinary urgency, or shortness of breath can so encompass the energy field of the patient that the person has minimal energy to interact with the environment and nurse. Such internal stimuli will increase confusion (Campbell, Williams & Mlynarczyk, 1986; Hall, 1988). The EOI nurse

recognizes such needs as a priority for care and addresses them through her interventions and by working with the patient's other caregivers.

Fluctuations in mental status, common with confusion, necessitate frequent reassessment to most appropriately provide orienting and meaningful stimuli. At least every two hours during the shift and with every additional patient interaction, the EOI nurse reassesses and tries to anticipate the patient's needs. The EOI nurse considers what internal and external environmental cues may be operating for the patient and seeks nonverbal and verbal information from the patient. Phillips (1988) believes that much of the agitation displayed by patients with confusion is the result of the patient's unsuccessful attempts to have his physical needs met. The EOI nurse is particularly sensitive to behaviors associated with: concerns about the illness or family; hunger and thirst; fatigue; shortness of breath; pain and discomfort from wounds, positioning, or abdominal distension; and the need for elimination. Problems with elimination, mobility and pain were noted by Williams et al. (1985) to be associated with the development of confusion. They noted that elderly patients generally received inadequate levels of analgesics from nurses. Similarly, Carino (1976) found that confused patients received less analgesics than nonconfused patients in an intensive care unit. The EOI nurse tries to reduce discomfort by administering analgesics prophylactically, offering toileting, and assisting the patient to change position (Campbell, Williams, & Mlynarczyk, 1986).

The EOI nurse focuses on the anticipation of needs by assessing non-verbal behaviors, recognizing the extensive effort involved for the patient in repeatedly answering questions and the difficulty that the confused person may have in correctly identifying cues. Such behaviors will include: groaning, crying or yelling; lying rigidly in the bed; shallow, rapid respirations; restlessness with rubbing of a body part, frequent body shifts, or attempts to sit up or get out of bed; eyes staring or darting; and inability to maintain attention or follow directions. The EOI nurse seeks verbal clarification, while sharing her observations with the patient. This will help the patient to order the multiple internal and external stimuli which may be overwhelming. This type of information management, or time splinting, provides the patient with relevant, orienting information (Phillips, 1988). For example, the EOI nurse, noting dry buccal membranes, concentrated urine, and that it has been four hours since the last meal, could say to the patient, "Mrs. _____, it's been four hours since lunch and you look like you might be thirsty. May I bring you a glass of juice?" The EOI nurse notes on the careplan and change of shift report form all areas in which the patient has difficulty communicating his needs.

Helping Clients to Organize their Environment

Welcoming. The admission period is considered a critical transition for the patient, as it is a time when the person is very vulnerable (Rempusheski et al., 1988). The friendliness and actions of the EOI nurse at this time can create a lasting impression and influence the course of the nurse-patient relationship

(Rempusheski). The EOI nurse will engage in a series of activities symbolic of welcoming, similar to what the adult might experience when he visits a home for the first time (Brown, 1961).

Originally, the elderly patient was to be greeted at the emergency room or admitting office by the EOI nurse. However, in early discussions with the nurse manager and associates, this intervention was viewed as not feasible for the EOI nurses, nor generally positive for the patient. These same concerns were voiced by the EOI nurses during the educational program. The unit often had little if any advance notice of admissions. If there was notice, it would not be feasible in many cases to arrange coverage for the EOI nurse's other patients while she left the unit. The nurse manager, associates and EOI nurses also reported that, on some occasions, it was better that their nurses and admission to the study unit be seen by patients as separate from their emergency room experiences. The nurse manager and associates were willing to support the EOI nurses as they tried this intervention. However, their linkage of the emergency room with experiences for patients that were not positive, led to the revision of this intervention. Instead, the EOI nurse was to greet the patient at his room.

During the educational program, the EOI nurses made two recommendations for interventions during the admission period that were congruent with the welcoming concept. The nurses related that they rarely had the opportunity to spend time with a new admission and focus on the patient

because of the following sources of interruptions: the needs of other patients, other health care providers who wanted to interview the patient, and the unit secretary with phone messages and other requests. Although it was not possible to eliminate all interruptions (eg: the needs of other patients), the EOI nurses believed that if other health care providers knew that an interview was in progress and when it would be completed, many would wait before entering the patient's room. After receiving a positive response to the idea from the associate nurse, a sign communicating this information was developed and made available for the EOI nurses' use. Similarly, if informed of the nurse's activity and its duration, the unit secretary could screen and hold messages. The EOI nurses decided that they would try to let the unit secretary know when their admission assessment was taking place, and request that they not be interrupted except for specific types of messages.

The EOI nurse warmly greets the patient, positioning herself at eye level with the patient and offering a handshake, or gentle touch of the hand or shoulder. The original greeting activities did not include the use of touch on the hand or shoulder. The EOI nurses asked that the greeting be expanded to be consistent with their usual means of greeting patients, and because a handshake was physically uncomfortable for one of the EOI nurses who had arthritis. The nurse introduces herself by how she wishes to be addressed and her position, and explains her purpose. For example, "My name is Joan. I'm the registered nurse who will help you get settled in to your hospital room."

The elderly person is asked how he prefers to be addressed, so that the EOI nurse can appropriately introduce him to other staff and share this information on the careplan (next to the addressograph).

From the beginning, the goal is to make the hospital environment familiar to the patient, in that it is organized according to his needs. Adapting nursing care according to the preferences of the patient tells the patient that he is not at the mercy of strangers, in order to positively reinforce his feeling of autonomy and sense of security (Kenny, 1990; Phillips, 1988). The EOI nurse inquires as to whether there is anything that the patient would like her to attend to right away, and actions are taken accordingly. This is done to reduce the likelihood that the elderly person is thrust into a new environment without resolution of immediate needs or external concerns, which could interfere with his ability to attend. In addition to the patient needs that the nurse periodically reassesses, external concerns about family notification, possibly lost personal possessions or a missed diagnostic test, or general anxiety with an already present delirium could limit the older person's ability to concentrate.

Concurrent with greeting and inquiring, the EOI nurse observes the patient for non-verbal behaviors associated with unmet needs, and seeks verification of her interpretation from the patient. She listens to the patient for statements of confusion, uncertainty or discomfort and observes for the behaviors (previously described on page 61) that would indicate a need to defer the orienting activities. The older person who is in a confused state because of

dementia or delirium may be unable to integrate incoming stimuli, and is frightened by much of what is going on around him (Hall, 1988; Trockman, 1978). If the EOI nurse suspects that this is the situation, then she defers many orientation activities and gets the patient settled in his room where she can filter the amount of information to avoid overload (Roberts, 1976). She verifies confusion in a non-threatening manner and orients the patient to the activity. For example, the nurse could say, "Mr. ___, you seem taxed with all the activity and hospital staff. I can help you get settled in your hospital room now, and let you rest. (Nurse seeks feedback.) Then we can talk later."

Orienting the patient to the facility/room. These important activities are included in the welcoming actions as guided by the elderly person's preferences and comfort with the situation. Initially, as a frame of reference for the welcoming activities, the EOI nurse asks about the patient's experiences with hospitals and if he has been a patient or visitor at the study hospital. This continuity promotion intervention refers the elderly person back to previous successful experiences with hospitalizations to reinforce his capabilities (Phillips, 1988). He is not asked when or how frequently he has been hospitalized, to avoid a focus on illness and possible exposure of confusion or disorientation, which could increase anxiety.

The EOI nurse orients the patient to features of the hospital and neighborhood to help the patient correctly perceive where he is and what is occurring (Trockman, 1978). For the patient who had been a visitor to the

study hospital, the nurse can use the cafeteria, lobby, or chapel as reference points. The elderly person who made use of the clinics or medical services nearby would have the physician office building or neurological sciences complex pointed out. The shops of NW 23rd could serve as an additional reference point. Because the patient will spend the majority of his time in the hospital bed, most orienting activities are conducted when he is in bed. The EOI nurse opens the blinds and comments on the general location. For example, "Your room is located on the north side of the hospital, so it doesn't get too much sun. The Fremont bridge is there, but blocked from view."

The EOI nurse provides the patient with written information about his location and health care providers as orienting reinforcers. This information is written in dark, large print on an 8 1/2x11 card in a non-glare, protective acetate sheet. The orientation card is located in Appendix B. Throughout the orienting activities, the EOI nurse uses the person's preferred name and refers to his experiences as a means of providing internal orientation (Trockman, 1978).

Making the environment familiar. Helping the patient to organize his environment and his perception of it is an ongoing task of the EOI nurse. The goal is to maintain the environment's familiarity and consistency for the older patient by minimizing intrusion and clutter from medical supplies. When the patient has roommates, the EOI nurse is sensitive to the need to protect the rights of all individuals to control their personal space. It was anticipated that maintenance of the environment's familiarity and consistency by the EOI nurse

would be more difficult when roommates are present, requiring more compromise and reorganization. The EOI nurse places the medical and technological support devices in a location which makes them accessible to staff, but as minimally intrusive as possible on the client's personal space. Use of the overbed table, bedside stand, and window ledge for the storage of equipment and supplies is avoided as much as possible.

The nurturant role is enacted by the EOI nurse as she helps the person arrange his personal possessions so that they can provide continual supportive props (Brown, 1961; Campbell, Williams & Mlynarczyk, 1986; Skeet, 1980). For example, the patient's bathrobe is draped over the foot of the bed or chair where it can be seen when not in use, rather than being put away in the closet. These symbols of the personality, such as toilet articles, slippers or shoes, bathrobe, books and cards help to keep the patient in visual touch with the familiar (Montgomery, 1987; Roberts, 1976). Cherished personal possessions, such as jewelry, religious items or pictures, can play a very important part in helping the patient to maintain a bond with his meaningful roles and life history (Sherman & Newman, 1978). The EOI nurse reviews the patient's personal items with him, and asks where he would like them placed in the room. The patient and family members or friends are encouraged to bring in personal possessions and told about their benefit in helping to make the patient's stay more comfortable. The EOI nurse, following hospital procedure, informs the person and family or friends that there is some risk of loss and that expensive

items should remain at home. Items that are brought in are carefully cataloged on the personal possession checklist as part of normal hospital routine.

At least once per shift, the nurse discusses some of the patient's possessions with him (Zimberg & Berenson, 1990). Following are examples of approaches that can be used: reading a card together and talking about the patient's relationship with the sender; reviewing the occasion on which the person received the aftershave/perfume; asking about the events associated with a picture; talking about the use of worn slippers, such as with watching television or walking the dog; reading habits and favorite bookstores; and other gifts that the person has knitted or crocheted. Such continuity promotion activities help to ameliorate anxiety by assisting the elderly patient to find familiar patterns and meaning in the environment (Phillips, 1988). At the end of each interaction with the patient, the nurse verifies with the patient that the call light is within the elderly person's reach and visual field. This intervention is done to promote the patient's familiarity and feeling of security in the hospital environment. Once per shift the EOI nurse also checks with the patient as to his satisfaction with the location of personal and medical items. After care activities, the nurse replaces the patient's possessions and stores medical equipment as previously placed. A card outside the patient's room alerts all hospital staff as to the patient's participation in a study, requesting that furniture, supplies and the patient's belongings not be rearranged (see Appendix B).

The EOI nurse strives to make the environment meaningful to the patient by explaining all the stimuli, usually unique to the hospital environment (Campbell et al., 1986; Roberts, 1976; Wolanin & Phillips, 1981; Zimberg & Berenson, 1990). The EOI nurse conducts a tour of the room, identifying and explaining the physical props which include the: bed and its operation; call light; bathroom, commode, bedpan and/or urinal; lights; thermostat; radio and television controls; and closet; as well as all medical devices, such as: suction, oxygen, drainage tubes, continuous passive motion (CPM) machines, and intravenous (IV) pumps. Commonly occurring auditory events are also explained, as the confused patient often misinterprets such stimuli as being a personal threat (Lipowski, 1990). This would include the sounds associated with: the meal cart, call lights and intercom, telephone, addressograph, pneumatic tube operations, elevators, restocking of the central supply and pharmacy carts, and staff voices from the nurse's station. Such nursing actions are conducted based on feedback from the patient as to his familiarity with the setting, and observations by the nurse as to the amount of information that can be handled at one time. At a minimum, repeat tours are done at least once so that sounds of the morning, afternoon, and evening are explained; with every room change; any time new equipment is used; and whenever the nurse observes the patient to look startled or puzzled with an auditory cue.

Orientation skills. Orientation skills are the identification of environmental cues that can help the individual maintain his awareness of relative time and

place. This is taught by the EOI nurse who uses meaningful cues that are relevant to the patient in the context of the hospital environment. These time management skills help the patient to cope with the potentially overwhelming hospital environment on a manageable, interval basis (Phillips, 1988). The timing and frequency of teaching orientation skills are guided by the EOI nurse's continual observation and patient feedback as to the patient's comfort in the environment, need for, and ability to handle information. Examples of environmental cues are: the position of the sun in the room or shadows for time of day, arrival of meal carts, physician rounds for early morning, and the association of shift changes with early morning, late afternoon, and night (Wolanin & Phillips, 1981; Zimberg & Berenson, 1990).

The teaching of orientation skills is another activity that occurs as part of the welcoming process within a flexible time frame. The welcoming process is not time limited to the hours immediately surrounding admission. As has been noted, many of the activities occur throughout the patient's hospital stay.

The EOI nurse places a large dial clock and calendar, which they mark daily, within the patient's field of vision as orienting aides (Wahl, 1976; Williams et al., 1985; Zimberg & Berenson, 1990). The clock and calendar can help to prevent or minimize the difficulties and distortions in the ability to estimate time intervals that occur when one's normally occurring events are absent (Roberts, 1976). The EOI nurse provides the patient with a schedule of daily events card, boldly printed and updated as necessary. This card lists such activities

as: meal times and snacks, physician rounds, therapy sessions, baths, vital signs, ambulation, rest and/or chair periods, medications and treatments, and family visits (Zimberg & Berenson). A schedule of events card used by an EOI nurse with a patient is located in Appendix B.

Providing Meaningful Sensory Input

Staff contact. Social interaction is an important source of input to help the elderly patient organize his environment and maintain a sense of identity. Reintroduction of staff by name, position, and purpose of each interaction helps the older person to order social interaction (Kermis, 1986; Roberts, 1976; Trockman, 1978; Wahl, 1976).

Continuity of staff assignment is an important means of minimizing the number of strangers with whom the patient must interact (Ebersole & Hess, 1985; Fulmer, Ashley & Reilly, 1986; Hussian, 1986; Kermis, 1986; Roberts, 1976; Trockman, 1978; Williams et al., 1985; Wolanin & Phillips, 1981). Developing a mechanism so that continuity could be maintained was difficult on the study unit. At first, it was thought that one to two rooms would be used as study rooms, and the EOI nurses assigned to these rooms whenever they were on duty. However, the nurse manager and associates reported that the rapid patient turnover and desire to maintain a high unit occupancy necessitated frequent "juggling" of beds. It would not be possible to hold empty beds in study rooms for only patients who were admitted to the study. Thus, for continuity to be maintained, the EOI nurses' assignments would have to be

linked to the study patients on a shift by shift basis. The advantage of this approach was the ability to screen all elderly admissions for their entry into the study, instead of just those who could be admitted to study rooms. The disadvantages of not having set study rooms were the time involved in monitoring patient locations for the research assistants' data collection activities, and the need for more orientation props, such as calendars and clocks.

The nurse associates agreed to assign the EOI nurses to the study patients, and asked that the EOI nurses or myself let them know nurse assignments on a daily basis. The investigator observed the disruptive effect of altered staff assignments on the oncoming shift, when nurses often came early so they could get a head start on their work. I was concerned that, especially with days off and the number of part-time EOI nurses, there would be many times when the EOI nurses would have to ask for assignments to be changed after the shift started. Similarly, placing the responsibility with the EOI nurse did not take into account new admissions to the study. The assignment of EOI nurses to study patients was discussed during the educational programs, with the EOI nurses requesting that I take on the task. The disadvantage of a patient assignment approach was that the EOI nurses could have assignments that were geographically spread on the unit. This was acknowledged and acceptable to the EOI nurses. A brightly colored, EOI nurse assignment sheet was developed and the procedure for distribution discussed with the nurse associates. This assignment sheet listed the room numbers, study patients by

name, their assigned EOI nurses, and the number and characteristics of new admissions to be assigned to EOI nurses. The investigator gave the assignment sheet to the associate nurses for their use in making out each day and evening shifts' assignments. Although somewhat time consuming, this procedure enabled the researcher to ensure continuity of EOI nurse assignments.

The nurse functions as a major source of security for the patient, by her continuity and manner of interaction (Hall, 1988; Phillips, 1988). With all interactions, the EOI nurse minimizes confusing, sensory input by speaking slowly and clearly in a lower pitched voice to compensate for presbycusis (Montgomery, 1987). Short, direct, single activity statements are used to avoid overloading and confusing the patient (Campbell et al., 1986; Zimberg & Berenson, 1990). The EOI nurse frequently seek verifications of comprehension, and provides consistent clarifying nonverbal cues of being unhurried and caring (Kermis, 1986; Montgomery; Trockman, 1978; Williams et al., 1985). She fosters a sense of closeness with the patient as she focuses on his needs, and shows respect for his dignity by acknowledging his feelings and through the prescribed interventions (Montgomery; Roberts, 1976; Trockman). Thus, interactions are carried out with the EOI nurse close to the patient and maintaining eye contact. During a focus group meeting, an EOI nurse recommended that the nurse sit down when interacting with the patient as a means of conveying an unhurried approach and physical closeness. The EOI

nurse believed that this would also "force" her to indeed slow down. The intervention was added following group approval.

Family/friend involvement. The EOI nurse encourages family members and friends to remain with the patient as mutually desired. This is done by providing orienting information about care, the facility, and services that can be utilized by family members and friends with provision of amenities to foster their extended visitation. With every contact, the EOI nurse explains all care activities to the family member or friend, asks if there are any questions or concerns that she can help with, and expresses an appreciation for the family member or friend being available to the patient. Based on the family member's or friend's familiarity with the facility, the EOI nurse explains about parking, the location and availability of meals including guest trays, and the availability of recliner chairs and blankets should the visitor wish to stay extended hours. The EOI nurse arranges, via volunteer services or security, to escort the visitor as necessary, and makes a wheelchair available.

The EOI nurse discusses and recommends several interventions that family members and friends can use to help the patient. Early during hospitalization, the EOI nurse requests the phone numbers and times of preferred access of those family members and friends who are important to the patient. Phone calls are used by the EOI nurse as important orienting and calming interventions for the elderly person who gets anxious or confused during the day or night. As an additional backup for meaningful social contact

and orientation, the EOI nurse requests that family members or friends provide handwritten letters before they leave the hospital. These letters are kept at the bedside and tell the patient about the circumstances of his hospitalization, when the family member or friend will visit, and any feelings or information that the writer would like to share. Sample letters are made available to family members and friends to help them with this activity (see Appendix B). The EOI nurse assists the patient in reading these letters during periods of boredom or when the patient seems more confused, and phone calls may not be possible.

The EOI nurse explains to family members and friends their importance to the recovery of the patient. The family can help the confused patient by their familiar presence, providing emotional support and orienting information about the hospitalization, which counteracts the patient's feelings of isolation and fears of abandonment (Lipowski, 1990). By example and explanation, the EOI nurse guides them in the use of touch, orienting information and reminiscence to help the elderly patient (Campbell et al., 1986; Zimberg & Berenson, 1990). The EOI nurse recognizes that family and friend interactions with the patient during hospitalization reflect patterns developed throughout their shared history. The EOI nurse prefaces her suggestions with a comment emphasizing the importance of family members and friends continuing to interact in the manner in which they feel comfortable. The following are approaches that the EOI nurse might recommend: touch, (holding hands, stroking of the head, providing

back or foot rubs, brushing hair, helping with shaving), orienting information (reading the newspaper or magazines to the patient, talking about the weather, events in the local community or neighbors, reviewing plans for upcoming holidays, home or yard repairs, starting a visit with a brief comment about the number of days in the hospital and hospital course, ending the visit by stating when the person will call or return), and reminiscence (bring in photos of important family gatherings or events to talk about, and review past challenges with successful outcomes).

The EOI nurse will also observe for indications that visits may not be helpful to the patient or visitor and intervenes accordingly. Such indications would include: increased restlessness or agitation during or after visits, complaints of fatigue, notable pallor or shortness of breath. For example, if the patient is receiving either too many visitors over the day interfering with rest periods, or the number of visitors at one time overwhelm the patient, then the EOI nurse will suggest spacing intervals. The EOI nurse will also recognize the need for the family member or friend to get adequate rest and encourage time off. The EOI nurse will offer to call the family member or friend on a regular basis, if desired, so that the person can remain at home and get some rest. The EOI nurse will also assist the patient in placing calls to family or friends as a means of maintaining contact (Campbell et al., 1986).

Managing sensory input. A knowledge of the elderly person's previous patterns of sensory input is critical to the provision of stimuli that are

appropriate in type, frequency and intensity. As part of the admission process, the EOI nurse will inquire of the patient, family and/or friend as to the time, amount, and type of radio, music, television, and religious services that are enjoyed. The EOI nurse will use this information to develop planned interventions as to when/if these sources of input should be employed. These interventions are recorded on the Kardex under religious needs and miscellaneous, with the appropriate nursing diagnoses, such as Diversional Deficit or Sensory Alteration, entered on the careplan, along with the corresponding interventions.

Extremes of sensory input will generally be avoided with the goal to minimize stimuli that can be misinterpreted (Hall, 1988; Williams et al., 1985; Wolanin & Phillips, 1981). In the original EOI, the nurse was to keep the patient's door closed to minimize noise, and post a "Please Keep Door Closed" sign, unless direct observation was necessary to prevent injury. However, the nurse manager, associates and EOI nurses all voiced concerns about this intervention. They found the unintentional pass-bys of staff and visitors to be an invaluable source of information about patients' needs and activities. The intervention was changed to where the EOI nurse would keep the door closed to the patient's room when she was with the patient.

During patient care activities, the EOI nurse will be sensitive to quiet, slow movements of herself and equipment. The EOI nurse will maintains adequate room lighting, appropriate to the time of day and a level which

promotes the correct recognition of items and staff in the patient's environment (Levkoff, Besdine & Wetle, 1986; Patterson, 1986; Zimberg & Berenson, 1990). If the patient has the window bed, then the blinds will be opened in the morning and closed in the evening, as long as glare is not a problem. PM care instructions are noted on the Kardex, with information as to the use of a nightlight, dim lighting, or bathroom light at night. This would also be recorded in the careplan, if there is a nursing diagnosis of risk for injury. The EOI nurse will obtain information from the patient, family and/or friend regarding hearing aids (ear placement, setting, when used, and frequency of battery change) and glasses (when used), and records it on the Kardex (under vs/neuro) and careplan (if sensory alteration is a nursing diagnosis) so that the devices can be appropriately made available. The patient's hearing aids and glasses are kept with the patient or within his visual field and reach at all times.

Maximizing Independence in ADL

By maximizing the elderly person's participation in self-care skills, the individual's sense of independence, control and self-esteem can be maintained to act as a buffer against the uncertainties and fears associated with hospitalization and confusion (Fulmer et al., 1986; Kermis, 1986; Leventhal, Nerenz & Leventhal, 1982; Trockman, 1978). In addition, the timing and approaches familiar to the elderly person in his daily activities of bathing, dressing, toileting, eating, and ambulation help to stabilize the person's behavior through their orienting action (Campbell, et al., 1986; Fulmer et al., 1986;

Montgomery, 1987; Phillips, 1988; Wolanin & Phillips, 1981). As part of the admission process, the EOI nurse will inquire of the patient, family and/or friend as to the person's usual habits to include timing, frequency, and method. As much as possible, these patterns will be incorporated into daily care, and noted on the Kardex (under bath, oral care, activity, feed, and bowel and bladder care) or careplan (if problem of self-care deficit). For example, if the elderly person is used to bathing in the evening then AM care is deferred to the PM shift whenever possible. A morning ambulation session would be more beneficial to the patient who did most of his activity early in the day than afternoon therapy. Physical activity through daily care activities and ambulation is an important way of engaging the individual's cognitive processes and reducing hallucinations and ineffective behavior (Campbell et al.; Oster, 1976). The EOI nurse will provide time for the elderly patient to participate, as much as possible, in all activities of daily living (ADL). The EOI nurse will recognize that the patient's ability and interest in participation will vary over the day and hospitalization depending on energy levels, previous activity, and recovery. Thus, whenever engaged in ADL with the patient, the EOI nurse will proceed slowly and encourages the patient to direct his care and level of participation.

Validation of the Independent Variable

Validation of the independent variable was done to determine the degree to which the nursing staff implemented the environmental optimization

interventions. The determination as to the effectiveness of the EOI in preventing or minimizing confusion was based on the assumption that the staff were using the EOI correctly and consistently as they work with elderly patients. The validation provided an assessment of the effectiveness of the program in educating, supporting, and reinforcing staff's use of the EOI. Information from staff obtained in the focus groups about the EOI assisted with the continual validation of the interventions as to their usefulness with specific patient populations relevant to the work environment.

Four sources were used to validate the use of the EOI by staff nurses: observation by research assistants, completion of the EOI report by the nurses, analysis of the nurses' logs, and focus group sessions.

Observation

As part of their data gathering activities regarding confusion, research assistants were on the nursing units and in patients' rooms twice daily. In both the morning and late afternoon/evening, they observed the patient and his environment for physical props associated with implementation of certain environmental optimization interventions, and completed the Observation Checklist for Selected EOI (Appendix C). The checklist was developed by reviewing the EOI for those interventions which could be seen without observing staff-patient interaction. The checklist is only a partial measure of the independent variable, and limited to those EOI for which there are physical props.

The environment included physical props with the patient, in his room, and patient records. The presence of a roommate sharing the patient's room was an important aspect of the environment because of the roommate's potential influence on the amount of environmental stimuli, and allocation, use and control of space. The patient records consisted of the kardex, admission assessment and careplan.

It had been a temptation to use the research assistants' presence on the nursing unit as a source of information about the interactional components of the EOI because it was likely that there would have been periods when the study nurse was also present and interacting with the patient. However, it was decided that the research assistant's presence would be too much of an intervening variable on nurse-patient interaction to use her for this kind of data collection. For example, with the short length of hospital stay and heavy workload of nurses, it could have been very possible that the patient would come to feel more comfortable with the research assistant than with the EOI nurse, because the research assistant would be visiting with the patient at least once daily with no interruptions or tasks which could detract from their communication. Thus, during observation periods, the patient might have interacted with her more than the nurse. It was also decided that the EOI nurses might view themselves more as members of the project and participants in the development of the EOI if they were not subjected to activities that they could interpret as being supervisory.

The importance of the research assistants as nurses with strong observation skills was not ignored, both as a source of data and out of concern for the research assistants. The research assistants were asked to note any thoughts or concerns about patients, nurses, the unit, or data collection instruments on a communication log. They were also encouraged to contact the investigator whenever they wanted to share information. These two approaches provided an outlet for their concerns as nurses, a means of keeping in touch with the other research assistants, as well as important information about patients and the study.

Initially, it was thought that it would be important for the RA to note whether the patient's assigned nurse was an EOI nurse or if family members or friends were present during the observation period. Not considered by the researcher beforehand, it became readily apparent with data collection that it was equally important to determine if an EOI nurse had been working with the patient the previous shift. This was a factor because data collection periods occurred early during the day and evening shifts, often before the EOI nurse had done any more than her preliminary assessment of the patient. Thus, measurements with the Observation Checklist might have been a more valid indication of the interventions done by the nurse on the previous shift. If the EOI were implemented by the EOI nurses and some diffusion of the innovation occurred among the staff, then there would be an overall difference between the control and experimental groups in the implementation of the props as

measured by the Observation Checklist. Thus, it was recognized that discrimination as to the presence of the EOI nurse on the designated and previous shifts, was not a major issue.

The presence of the environmental props when the EOI nurse was not working with the patient suggested the following additional possibilities: the effective communication of the EOI by the EOI nurse via the kardex and admission assessment; nursing practice of the assigned nurse not related to the study; effective implementation of the EOI by the EOI nurse as evidenced by family members or friends mediating the hospital environment during the EOI nurse's absence; or actions by family members or friends independent of the EOI nurse's communication. Similarly, the absence of the props when the EOI nurse was assigned to work with the patient could mean that family or other staff during the previous shift had rearranged the room, or that the EOI nurse did not implement the EOI associated with the props.

EOI Report

The format of the EOI Report reflects the intent of the investigator to maximize the amount of useful information obtained from staff while placing minimal demands on staff time. The EOI Report was used to gather data about the EOI nurses' evaluation of their use of the EOI during their workday (Appendix C). The EOI Report is a checklist of the interventions, organized by category. The EOI nurse recorded on the report her use of EOI interventions with her assigned patient that shift. The EOI Report includes work and patient

factors that promoted or inhibited implementation of the interventions. This instrument also served as a reinforcer for the EOI nurses by giving them a periodic reminder and listing of the interventions. The EOI Reports were reviewed weekly by the investigator, for the identification of problems, patient and care themes to guide the focus group meetings.

To limit the amount of time required for completion, five different forms of the EOI Report were developed; each representing one or two categories of the EOI. The focused assessment category was represented on more than one form because those interventions were such a major focus of care activities. This is in contrast to the welcoming and orienting to the facility group of activities, which only occurred once with the patient's admission, and was included on one EOI Report form.

The researcher developed a procedure for distribution of the EOI Reports to the nurses with the objectives that: for each patient, one EOI Report or Nurse's Log be completed every day that a subject had an EOI nurse; each EOI nurse complete no more than one report or log daily to limit documentation requirements; the EOI nurse was given different forms of the EOI Report as a reminder about all the interventions; and, there were different forms collected for each patient to obtain a view of the scope of interventions used during his hospitalization.

To encourage completion of the EOI Reports and minimize rote recall, the research assistants or investigator collected the reports from the EOI nurses

every day that it was to be completed. The EOI nurses completed and returned 100% of the EOI Reports that were distributed. The EOI nurses were encouraged to record any thoughts about patients, the EOI or their workday on the reports. Anectodal comments were noted on many of the EOI Reports.

Overall, patients had a report completed by the EOI nurses for 91% of the days that they received care from an EOI nurse. Eight of the subjects had a report completed every day that they had an EOI nurse, with one patient only having it done 60% of her stay, because of a delay in obtaining family consent for her to be formally admitted to the study. The great majority of patients (n=11) had a variety of EOI Report forms used during their stay on the study unit in accordance with the plan.

A total of 35 EOI Reports were completed by the EOI nurses, with each nurse, on the average, completing at least three of the five possible forms. The number of EOI Reports that each nurse received varied, depending on the staffing pattern (other EOI nurses on the same and opposite shifts) and her number of assigned subjects. One nurse only completed a total of two forms and one log, but she was assigned to the hallway which had private rooms, generally reserved for younger, immunocompromised patients. Thus, she cared for fewer of the subjects than other EOI nurses.

Williams et al. (1985) and Nagley (1986) both used flow sheets for the nursing staff to record the experimental interventions that they implemented with patients. The observations of project staff tended to confirm the relative

frequency of the implementation of the interventions as recorded by the nurses in the Williams study. There was concern about what seemed to be occasional episodes of copying of the previous shift's notation on the flow sheet. An end-of-study questionnaire confirmed the usefulness of the flow sheet in reporting relative use of the interventions (Williams). The researchers in Nagley's study believed that staff compliance in using the interventions was good, although how this was measured was not reported. They recognized that the flow sheets could only be viewed as a record of staff notations and not actual implementation of the treatment.

Nurses' Logs

The Nurses' Logs provided information about the use of the EOI during a workday in specific patient situations as mediated by the immediate factors that influenced nursing practice. It was important to gather data about the nurse's comfort with the EOI, and her perceptions as to: effective and ineffective EOI, facilitating factors and barriers to the use of the EOI; the usefulness of the EOI with examination as to the relative costs and benefits of specific interventions; the linkages between effective and ineffective EOI and specific patient characteristics; needed revisions in the EOI; and, effects of the EOI, not directly related to confusion, on patients, families, friends and staff.

With the rapid work pace of nurses in hospitals today and large amount of documentation required as part of their work responsibilities, it was necessary to develop some means of obtaining the more detailed information

from EOI nurses in a manner that had limited time and recording demands. To defer recording activities to a free time or end of shift limits the reliability of the information because of recall problems secondary to the passage of time and pressures of other work responsibilities. This study sought to address these potential problems with the use of a small, portable tape recorder that was kept in the nurse's uniform pocket. The goal was for each EOI nurse to use the recorder for at least one shift during the study to record her impressions as she worked with patients. To avoid overlap, this did not occur on a shift when the nurse was completing the EOI Report. As the nurse left the patient's room and was in transit to gather supplies or care for another patient, she could quickly and unobtrusively enter her comments, without additional time demands. An additional benefit with use of the tape recorder was that its presence served as a reminder to the EOI nurse about the study during the workday.

With the number of part-time nurses and short length of the study, only four of the six EOI nurses had the opportunity to use the tape recorder. The investigator was responsible for maintaining the equipment and demonstrating the correct use of the tape recorder to the EOI nurse each time it was distributed. However, information was lost because of staff error or equipment malfunction on two occasions.

Focus Group

Whereas the EOI Report and Nurses' Log gave information about the nurses' use of the EOI and perceptions for given patients in the context of the

workday, the focus group provided for analysis of the EOI by project staff on an overall patient and nursing unit basis.

Focus group interviews have the advantages of providing data with high face validity since participants who are involved in the area of interest participate in a social situation which encourages interaction and further exploration of newly uncovered areas (Krueger, 1988). An additional benefit of the focus group is that ongoing meetings with those involved with the pilot testing of the intervention serve to help the practitioners follow the procedures correctly and to identify and solve problems encountered with the innovation (Rothman, 1980). The disadvantages of focus groups include the unique and unpredictable nature of a group's personality, potential for detours and distractions with less leader control, and need for caution in analyzing results because of the social context of the comments (Krueger). There are three phases to the use of focus groups: planning the study, running the groups, and compiling and analyzing the results (Zemke & Kramlinger, 1982). The first two phases of group study will be discussed in this section, with compilation and analysis being presented under data analysis.

Planning the focus group. The first step in planning the focus group is to identify the purpose of the group and/or problem for study (Zemke & Kramlinger, 1982). The purpose of this group was to: provide regular, ongoing feedback to project staff; evaluate the effectiveness of the interventions; recommend modifications of the interventions to improve their effectiveness with

elderly patients, and increase their potential for adoption by staff; and to identify the environmental and staff constraining and facilitating factors influencing implementation, with recommendations as to how to minimize the constraining and maximize the facilitating factors.

Once the purpose of the group is identified, then the specific population of people who should have important knowledge and insight into the problem are identified for membership in the group (Zemke & Kramlinger, 1982). The recommended size of the group is from 4 to 12 members (Krueger, 1988). The focus group in this study was composed of the EOI nurses and researcher. Kingry, Tiedje & Friedman (1990) and Krueger (1988) recommend that members of the group should not know each other. Krueger explains that with familiarity could come norm adherence, which could limit the breadth of exploration. However, because one goal was for the EOI to be a unit appropriate innovation, focus group member familiarity with each other as unit staff may be a strength and not a limitation. The purposive and convenience sampling used to select group members prevents generalizing the results to the nursing staff of the unit (Basch, 1987).

The development of an interview guide completes the planning phase of focus group study. The interview guide is an outline of what the researcher wants to know along with important information to communicate to the participants. Such information includes the purpose of the meeting, kinds of information desired, how the information will be used, and protection of

participants (Zemke & Kramlinger, 1982). The interview guide helps the moderator maintain a focus which provides participants with a clear sense of the group's objectives and goals, important in order to foster cohesiveness and productive activities (Basch, 1987). The group leader uses the guide but recognizes the need to pursue other areas as important new information is uncovered (Krueger, 1988; Zemke & Kramlinger). The interview guide can be found in Appendix A.

Running the group. It is important to establish meeting times and locations which demonstrate a valuing of the participant's time and importance of the group. Meetings were scheduled in a hospital conference room close to the study unit to facilitate attendance by the EOI nurses. The meeting day and time was chosen based on the recommendations of the nurse manager and associates as to when the unit could best provide coverage during the EOI nurses' absence, and when most of the EOI nurses were scheduled to work. However, in actuality, for each focus group meeting at least two of the EOI nurses attended on non-work days, and significant travel time was required. Of the four focus group meetings, one was rescheduled because of a major nursing conference, and one was reduced in length because of a competing program. All of the EOI nurses attended every meeting.

Zemke and Kramlinger (1982) suggest that 2 to 2 1/2 hour meetings are an appropriate length of time for good functioning of the focus group. Because a purpose of this focus group was to provide regular and ongoing feedback to

the members as the study progresses, it was decided that weekly meetings would be the desired frequency. In addition, weekly meetings would enable the negotiating and problem solving to occur that would be necessary given the probable occurrence of staff scheduling changes and shifts in patient acuity which impact nursing care. It was not possible on a weekly basis to have such lengthy meetings, given the work and home responsibilities of EOI nurses. Rather than reduce the frequency of meetings, it was necessary to restrict them to one hour. Termination of the meetings on time was important to demonstrate a valuing of the EOI nurses' time, especially for those who needed to return to the unit and resume their work activities.

Krueger (1988) recommends sending personalized invitations two weeks before the group meeting to members with the date, time and location, followed up with a phone call one or two days before the meeting. This protocol was not followed because the investigator saw each EOI nurse on a daily basis, and the nurses verified dates and times of the meetings. The conference room at the hospital had the environmental characteristics which supported focus group function: comfortable chairs, lighting and ventilation; a small table to promote verbal interchange and tape recording; and snacks were made available (Basch, 1987; Zemke & Kramlinger, 1982).

Conduct of the group meetings. For the first group meeting, the group leader began by reviewing the purpose of the study and focus of the meeting. After all questions about the study were answered, then the leader explained

the need for recording the session and asked permission to turn on the tape recorder. The group members were asked to identify themselves to provide the transcriptionist with a way of identifying participant's voices (Zemke & Kramlinger, 1982).

Subsequent meetings followed the format, in a review fashion, of presenting the purpose of the focus group meeting, answering questions, and asking permission to turn on the tape recorder. General guidelines for the researcher in conducting focus group meetings included: asking questions which focus on the critical areas and flow logically; move from general to specific so that members understand the context of the question; use open-ended questions to avoid prematurely limiting responses; be nonjudgmental with responses; avoid "why" questions which often elicit premature or defensive responses; use "think back" questions to help responders frame their comments in the context of the clinical situation; clarify information with probing questions and pauses, which enable other members to gather their thoughts; and conclude the meeting by summarizing the discussion, thanking the participants, and by asking if any information is missing after turning off the tape recorder (Krueger, 1988). Prior to each meeting, the researcher reviewed Krueger's checklist for focus group interviews, which summarizes the section on running the group, to reinforce the approach. This included the development of an outline and list of open-ended questions to guide the meeting. The content of the meetings was selected from the

investigator's observations of activities on the unit, information obtained anecdotally from the EOI nurses and research assistants, and review of the EOI Reports.

Implementation of the EOI Protocol

The plan for implementation of the EOI protocol was designed with consideration of some of the factors which influence the adoption of an innovation. The plan for implementation included an educational program, support activities, and communication with the organization.

Educational Program

The educational program consisted of a one day workshop led by the researcher and attended by the EOI nurses prior to implementation of the EOI on the nursing unit. Attendance at the workshop was a requirement for the EOI nurses. The decision to have a one-day workshop instead of a series of shorter classes, was based on the recommendation of the nurse manager. A one-day event would be easier for staff to attend, given their home responsibilities. The date of the workshop was selected by the nurse manager and associates, based on staffing resources and the desire to implement this study before a major project began, whose date for implementation was already established. This moved up the investigator's timeline for the study, but the associated time demands were seen as less problematic than the potential loss of nursing staff's ability to focus on the EOI if the other project began. The

workshop was held in a hospital conference room because of its positive characteristics, as previously described, and proximity to vacant patient rooms for practice opportunities. The hospital's nursing research committee recommended that the nurses be paid for their attendance at the workshop, and the committee was successful in obtaining scholarships from nursing service and senior health services.

Part 1. The purpose of the first part of the workshop was to begin development of the identity of the EOI nurses as project staff; namely, as a group who have joined together to address, through a research study, a significant problem for their unit and hospital. In order to accomplish this, the following topics were addressed: introduction, problem identification and significance, and study overview.

Introduction. It was recognized that the motivating factors for the EOI nurses' participation in the study and their educational backgrounds, specifically with regard to gerontological nursing and confusion, might be markedly different. Access to this information was important so that the researcher could present the educational content in a manner that best matched the values and interests of the participants, and uses the language of the practitioners (Rogers, 1983; Rothman, 1974). This also provided an opportunity for the nurses and researcher to begin to get to know each other. Participants were asked to introduce themselves by their preferred name, talk about why they volunteered for the study, describe their educational background, length of hospital

experience, and involvement with care of older patients. This information was used by the investigator to describe the nurse participant sample.

Problem identification and significance. The identification of confusion as a significant problem in elderly patients is through its importance to the nurse, nursing service and the hospital. An innovation is more likely to be adopted if the present situation and solutions are seen as problematic by the participants. A nurse who did not see confusion as an important problem would probably not be a good candidate for participation in the study unless she was very interested in the research process, or was an opinion leader whose skepticism could be positively mobilized. If the opinion leader was committed to participating and following the EOI protocols, then her resistance could serve as a source of important critique about the EOI, and provide information about the social factors which would need further consideration for hospital implementation of the innovation (Lawrence, 1969). The researcher built on the information obtained from nurses during the introductions as she discussed in general the significance of confusion to patients, nurses, and hospitals.

Two other individuals spoke briefly with the group as a means of demonstrating administrative valuing of the project and its place within a course of research at the study hospital, as well as to express appreciation for the participation of the nurses. The gerontological clinical nurse specialist talked about the significance of confusion to the study institution by reviewing the work of the Delirium Task Force and findings of the Siemsen study. The associate

director of nursing addressed the group about the importance of research to nursing service. The nurse manager of the study unit had previously shared her views about the need for the study with all staff during the recruitment activities on the unit. These individuals all had important functions with regard to the conduct of the study and the potential, future development and testing of the innovation. By involving them on an ongoing basis with the study, the likelihood of their interest and support was increased.

Study overview. The study overview was provided by the researcher primarily to help the EOI nurses understand the purpose of the study and critical role of the EOI nurses. The nature of a pilot study and need for systematic testing and critique was presented to help foster nurses' acceptance of the evaluation methods.

A project manual was introduced during the educational program to explain the research study, and to serve as a reference for the EOI nurses throughout the study. Its contents included: identification of the research project staff by position, position description, names and phone numbers; patient selection - criteria, and how the nurse would know who was in the study; EOI - listing of interventions by category with rationale, and identification of the frequency of implementation; evaluative methods - EOI Report, tape recorder, and group meetings; and special situations - adverse consequences noted with patients, family members who have questions about the study, questions by other nursing staff, medical or hospital staff member concerns,

and nursing students.

The role and functions of the EOI nurse and the associated time commitment was discussed in depth. It was important for the EOI nurses to be clear as to their willingness and ability to provide the time and effort involved in testing the interventions. The nurses were asked to use the lunch break to make their final decision regarding participation, signified by returning to the conference room and signing the consent form. Should a nurse decide to not participate, it was thought that the lunch break would give her an opportunity to leave without any undue attention.

Part 2. The second section examined the nature of confusion, with emphasis on the environmental and interactional factors that were the focus of the environmental optimization interventions. Although the presentation followed the study framework developed from the literature review, some different terms more familiar to nurses were used. The presentation drew on the Siemsen study to provide meaningful examples of the person, environmental and interactional factors as well as to show how this pilot project fit within a program of research to develop a delirium protocol for the hospital. The nurses were asked to describe current practice on the study unit with elderly patients who were at risk for, or had developed confusion. This activity was done to obtain some baseline comparative data about usual nursing care on the unit prior to implementation of the EOI, and before the nurses were sensitized by the workshop content about interventions. To increase the

involvement of the EOI nurses and demonstrate valuing of their expertise, a discussion format was used within the following, general outline:

I. The Nature of Confusion

A. Definition

B. As Maladaptive Behavior

C. Symptoms

D. Current practice on the study unit

II. Etiologies of Confusion

A. The high-risk, elderly patient

1. physiologic factors

2. organic factors

3. psychological factors

B. Confusion as an iatrogenic illness in the hospital environment

1. definition

2. sensory alteration

3. activity-rest pattern disruption

4. interpersonal isolation

III. The focus of this study

A. Significance of confusion

B. Focus on iatrogenics and the hospital environment

Part 3. The third part of the workshop focused on specific nursing activities for each category of the EOI intervention. The categories of focused

assessment and meeting immediate personal needs, helping clients to organize their environment, providing meaningful sensory input, and maximizing independence in activities of daily living were defined.

The rationale for the inclusion of the categories was discussed along with key principles associated with their successful implementation. Group discussion was focused on reviewing specific interventions for each category. The EOI nurses reviewed the EOI Report and noted which interventions were commonly used on the nursing unit with elderly patients who are confused or at risk for becoming confused. This activity had two purposes: to provide the EOI nurses with a list of their expected activities; and to gather an impression as to how much change in practice would be involved, for the benefit of the nurses and investigator. A group approach was used to begin the development of the nurses as members of the EOI group, and to reduce the risk of any individual nurse feeling threatened by disclosing her practice. A group versus individual review of the EOI is likely to be more limited in terms of the breadth of data provided, since it gave more of a consensus of opinions that participants felt comfortable in sharing rather than the perspectives of each participant.

The goal of the researcher was to maximize the involvement of the nurses in the refinement of the intervention list to increase their feeling of ownership of the innovation, while not sacrificing important nursing activities. The researcher and nurses prioritized the actions based on their feasibility and relative benefit to the patient. Thus, as expected, some of the interventions

were modified or deleted. Greeting the patient at the emergency room or admitting office is an example of an intervention that was deleted because its relative and questionable benefit (as discussed earlier), was far less than the cost in terms of EOI nurse time.

Part 4. Part 4 of the educational program was practice oriented, using role playing and scenarios to provide practical, concrete examples to the practitioner's world (Rothman, 1974). The investigator and gerontological clinical nurse specialist took turns assuming the roles of the EOI nurse and an elderly patient with sensory, mobility, and cognitive impairments in situations appropriate to each category of the EOI. The EOI nurses observed and critiqued the exercise. The experience was discussed in terms of the sensations experienced by the "patient", ineffective actions by the "nurse", and recommended interventions (the EOI for the category). These exercises gave the EOI nurses a chance to "see" some of the interventions, and provided a relaxed forum for discussing anticipated problems with the EOI. The events surrounding patient admission were of much concern to the nurses, and the ensuing discussion resulted in several changes in the EOI. It was originally hoped that the EOI nurses would have opportunities to practice with the EOI, as the nurse or patient. Time constraints prevented this from happening, and the nurses and investigator recognized the increased importance of the practice week.

During the last part of the workshop, the procedures for selecting

patients for the study, obtaining consent, and notifying the researcher, nurse manager, and EOI nurses were reviewed. Discussions were held about potential problems/obstacles that the EOI nurses might encounter with hospital staff, families, participating and non-study patients. The EOI nurses were introduced to the use of the EOI Report, tape recording of logs, and notification/flagging system about patients in the study. The date and time of the first focus meeting, to be held during the practice week, was arranged. The EOI nurses requested that the investigator speak with the charge nurse to have them assigned to confused, elderly patients so that they could practice with the EOI. Scheduling was also discussed to determine when the investigator could spend time with each nurse on the unit during the practice week.

Support Activities

The purpose of the support activities were to help the EOI nurses transfer and maintain the study behaviors from the classroom to the clinical unit. These activities included the practice week, environmental cues and the focus group.

Practice Week. Following the workshop, the EOI nurses implemented the EOI with at least two patients as part of their regular patient care assignment. They each were asked to complete one EOI Report to become familiar with the process. Unfortunately, the tape recorder was not working during this time for practice opportunities. At the end of the practice week, the research assistants were oriented to the nursing unit and practiced with the

evaluation instruments, as part of their training program. Thus, the practice application provided the opportunity for the EOI nurses and all hospital staff to begin to become accustomed to the presence of the research assistants on the unit.

Because of time limitations for the EOI nurses to practice the interventions during the educational program, the researcher spent more time than initially planned on the nursing unit with the nurses. She spent parts of at least two shifts with each EOI nurse during the practice week and first week of implementation. The researcher reinforced the use of the EOI and was available to confer with the EOI nurses as problems and questions arose. The EOI nurses were very concerned that they were "doing it right", and much of the investigator's efforts were directed at conveying her interest in learning more about their workday, versus evaluation of their performance. The major problem identified during the practice week was the nurses' misperception that the EOI were only to be implemented with confused patients. The need to use the EOI preventively was reinforced. Emphasis was given to the fact (presented initially during the educational program) that many confused patients were silently confused, and that to wait for the classical symptoms was a serious delay in successful implementation.

Time on the unit also provided the researcher with the opportunity to finalize procedures associated with implementation of the study. These included how to: ensure continuity of EOI nurse care (the assignment sheet),

prevent loss of the clocks and tape recorder (surveillance by the EOI nurses and use of the locked, narcotic drawer), and keep the EOI nurses informed of the most current EOI revisions (updated Table 2). Most importantly, this time gave the investigator and the EOI nurses a chance to get to know each other, and to begin to develop informal patterns of communication, which provided important anecdotal information throughout the study.

The first focus group meeting was held during the practice application period. It was expected that there would be many problems associated with the beginning of the study for the group to address. This was not the case, and the meeting was spent reinforcing the need to implement the EOI preventively with elderly patients, and reviewing the procedures and environmental cues associated with the study.

Environmental Cues. Part of a file drawer in the unit's medication room was made available to the project, and labeled EOI Nursing Study. Project materials were placed in the file for their use by the EOI nurses and all interested staff. The materials included: the unit's project manual, current copy of Table 3, Nursing Assessment in Progress signs, and a section for return of completed EOI Reports. The EOI nurses, research assistants, nurse manager, and associates were all oriented to the location and contents of the file.

After obtaining consent from the patient and/or family, the researcher flagged the patient's chart, medication record and kardex with the label, "EOI research study participant". Flagging was done to remind the EOI nurses,

nurse manager and associates about the study as well as to generate curiosity by other staff. Questions by staff could serve to: reinforce the use of the EOI by project nurses and make them feel special as they explain their activities to others; and stimulate early innovation activities of the unit with recognition of the need for change and interest in the interventions.

The following props were placed by the investigator after patient consent was obtained: the clock and calendar in the patient's room, and the "Study in Progress Please Do Not Move Furniture" sign outside the room. Although these props were used as part of the EOI, their presence reminded the EOI nurses and staff that the patient was a subject in the study. These props served as important validation for the EOI nurses and research assistants that a patient had formally been admitted to the study.

Throughout the study, the researcher spent time on the nursing unit. Her presence served as a reminder to the EOI nurses and staff about the study. This was also done so that the researcher could demonstrate a valuing of all project staff and the study by showing an interest in what they were doing, as well as to be available to assist with problem solving and reinforce the interventions. Midway through the study, the investigator sent personal notes to each EOI nurse. This was done to express appreciation for their efforts, as well as to provide a reminder about continuation of their EOI nurse role. The researcher's presence did become an intervening variable, in that one cannot determine if the EOI were used by the EOI nurses because of the

implementation program and their merit, or because the researcher's presence reminded and/or intimidated staff. However, the researcher's activities are viewed as similar to the actions of a nurse clinician assisting staff with the implementation of a new intervention. Thus, the researcher's presence is being viewed as a part of the implementation program, and standard practice for staff development activities.

By becoming familiar to the staff, the investigator was able to develop relaxed patterns of interaction with the nurse manager, associates, unit secretaries, and staff. This was very advantageous to the study as the unit secretaries were important gatekeepers regarding information about pending admissions. A staff nurse felt comfortable enough to approach the investigator about a problem with the Schedule of Daily Events intervention, and a solution was developed before there were any significant ramifications. The EOI nurse had recorded on the card that the patient would wash her face before breakfast. The patient, who was cognitively impaired, interpreted this as meaning she would have a complete bath before breakfast, which was not possible for the staff nurse to accomplish. The nurse felt badly that she could not follow the program, but also encouraged the study to not "box" nurses in to patient schedules that were not always possible to implement. This provided an excellent opportunity to explain the purpose of the intervention to the nurse, as well as to provide an example to the EOI nurses during the focus group meeting, as to the importance of clear, simple statements with confused, elderly

patients. On several other occasions, nurses on the unit approached the investigator recommending patients for the study.

Focus Group. As discussed in the section, "validation of the independent variable", one of the purposes of the focus group was to provide regular, ongoing feedback to the project staff. The weekly meetings served to reinforce positively their efforts and the implementation of the EOI. By sharing patient experiences with each other, the nurses were able to see the advantages and disadvantages of interventions which were not apparent because of the needs or experiences with their particular patient assignment. Training was ongoing as the focus group provided a forum for continual critique and refinement of the nurse's practice with the EOI.

Communication with the Organization

Several strategies were used to communicate with different levels of the organization during the planning and implementation phases of the study. Administrative personnel were kept informed about the study and the involvement of the unit's staff for two purposes: so that they could provide positive reinforcement for the nurses' activities, and to increase the likelihood for future adoption of the innovation by recognizing administrative involvement and providing them with information on an ongoing basis. These activities included: a column about the study and its participants in the nursing newsletter; thank-you letters with a study update sent to the head of senior health services and the associate nurse director in charge of the education

fund; notes to the assistant director of nursing and head of senior health services acknowledging the important roles fulfilled by the nurse manager, associates, and the clinical nurse specialist; at the completion of the study, a letter was sent to the director of nursing reviewing the study and involvement of the nursing research committee and unit's nursing staff; and individual letters about each EOI nurses' participation in the research project were given to the nurse associates, for each EOI nurse's personnel file to be used as part of their regular staff evaluation process.

Contact was made with hospital staff who were involved with the study on the unit level. The investigator used the channels of communication recommended as effective and customary by the nurse manager and clinical nurse specialist. Letters were written and cosigned by the nurse manager to inform housekeeping and transportation managers about the study. In addition, the investigator spoke informally with staff from these and other services as she noted them to be observing the "Study in Progress" signs on the patients' rooms. Not unexpectedly, several of the staff had not been informed by their managers about the study. The clinical nurse specialist introduced the investigator to the chief of internal medicine, and described the study as part of the hospital and nursing's investigation of the problem of confusion. This association of the investigator with the hospital and a study which had already been successfully completed, helped to promote its acceptance to the medical staff. We believed it to be important to inform the residents about the study,

because of their involvement in the care of patients. Arrangements were made for a brief presentation at morning report, which was the usual means of sharing information with them. Several interesting and supportive comments and questions were asked by the residents about both of the studies. The nurse associate introduced the investigator to the discharge planning committee and discussed the study. This was considered important because of the potential contact of the social workers and discharge coordinator with patients' families who might have questions about the study. It was very pleasing to hear the nurse associate describe the study as the unit's study, which conveyed a sense of ownership and acceptance of the innovation.

The investigator wanted to promote and maintain the ownership of the innovation by the nursing staff. Informal meetings were individually held with the day and evening nurse associates and nurse manager at least weekly. They were always invited to discuss any problems or questions about the study. Because of her presence on the unit, the researcher had a lot of contact with individual nursing staff. Hanging around the break room at mealtime and change of shift provided the opportunity for many exchanges. In addition, an EOI Report Update was developed and distributed weekly on the nursing unit, so that all staff (especially those working nights) could be kept involved with the study. An additional objective of the report was to keep the study visible. The EOI Report was chosen in lieu of presentations at staff inservices, because I observed that for many staff these programs were seen as interferences with

their workday (they occurred during change of shift). The report thanked staff for their specific activities (EOI nurses, unit secretaries, nurses and aides), and provided information about how many patients had completed the study and the EOI. At the end of the study, a party was given for the unit staff as a means of thanking them and clearly marking the end of the study. It was important that the study be viewed as a completed project, and not an activity whose implementation erodes with the passage of time, as so often occurs with the introduction of new care activities.

Dissemination of information throughout the hospital about the study findings will occur in several ways, based on the organization of the medical and nursing departments, and formal and informal communication systems. A formal presentation of the Siemsen and Miller studies will be given at Medical Report, since it is an effective method for communicating with the majority of medical physicians who are involved with elderly patients and the study unit. During the initial proposal review, the Nursing Research Committee requested that a presentation be done for them at the completion of the study. This mechanism also serves to promote the upward flow of the information, since an associate director of nursing is a member of the committee. Because of the design of the study as a potentially, unit based innovation, dissemination of the information to the study unit staff will be done via the usual mechanisms recommended by the nurse manager. Based on the nurse manager's recommendation, the usual change of shift inservices will be used to present

the study findings to the staff on the unit. The investigator will discuss the study findings with the nurse manager and associates at their regular meeting. From this discussion, a decision will be made by the group regarding the best method to share the information with other nursing units and nursing administration. The nurse manager has expressed her interest in presenting the information in a way that can be supportive of gaining resources for the nursing unit.

There are potential weaknesses in using the dissemination methods recommended by the nurse manager. It is possible that the nurse manager and associates could block the transfer of information to nursing administration and other nursing units, if they do not interpret the findings as positive for their unit or see the potential for positive change. The presentations to the medical staff and Nursing Research committee can serve to minimize this potential problem. The negative aspects of the change of shift inservices have been previously discussed. The investigator has negotiated with the nurse manager to invite the EOI nurses to the dissertation defense. The EOI nurses have been invited to acknowledge their importance, as well as to provide them with information which they could choose to disseminate informally on the nursing unit, thereby bypassing the potential inservice problem. To prevent any possible misinterpretation, it was made clear to the nurse manager that if the EOI nurses chose to attend they would have information before it was formally presented to the nursing staff. The nurse manager supported the idea, and

requested that invitations be extended to herself and the nurse associates as well.

Strengths and Limitations of the Design

Strengths of this study included its design for the clinical setting and testing with the populations of interest, namely acutely ill, elderly patients, their families and friends, and staff nurses caring for them. The study took advantage of a positive climate for change within the hospital. Members of hospital and nursing administration, along with some key nursing staff, had identified confusion among elderly patients as a major problem which required changes in nursing practice. The Siemsen study further increased the awareness of hospital personnel to the significance of the problem of confusion and importance of nursing research.

The cooperation of the nursing and medical staff was fostered by their positive experiences with the Siemsen study. For example, the nurse manager and associates reported that they had never been involved with a research study before, and found the Siemsen study no trouble at all. They stated that this was a major reason why they were willing to participate in another study. My association with the Siemsen study, through which the staff was able to at least become acquainted with me, was also identified as a positive force in the unit's agreement. An unanticipated result with the Siemsen study was the identification of several patients who were in respiratory distress, as reflected in

low pulse oximetry readings with the Neecham. This information was immediately communicated to the patient's nurse by the research assistant, and resulted in prompt interventions. In addition, the data supported the unit's goal to obtain a pulse oximeter.

The design of the study was strengthened by the experiences of the Siemsen research staff. The procedure for identifying patients' ages with pending admissions was developed by Siemsen with the unit secretaries, and continued in this study. As will be discussed in the procedures section, the training program for the research assistants was revised, based on our experiences. Although Siemsen had informed the attending physicians about her planned study, she recognized that the residents had not been included. This oversight was addressed in the intervention study. Thus, several potential problems were avoided.

The design enabled the pilot testing of the interventions by interested nurses involved with patient care in their work environment. Balancing the time necessary to learn the EOI versus the constraints of limited staff time and resources was a strength of the study which increased the likelihood of implementation of the innovation on a hospital wide basis. The support activities reinforced transfer of the knowledge from the classroom into practice and maintenance of an environment supportive of the innovation.

The weaknesses of this pilot study design are in the patient and nurse samples, limited training program, and use of multiple interventions. The small

patient sample in the Siemsen and Miller studies limits the ability to compare confusion trajectories or to generalize at all to hospitalized, elderly patients. By using staff who volunteered to participate, the sample was skewed to those nurses who cared about elderly patients, are well educated, had much work experience, and/or were interested in research. It cannot be assumed that these nurses represent the general staff nurse. This study assumed that nurses could implement multiple and complex interventions with patients after a relatively short training program which focused on principles and rationale for care. There was a strong likelihood that the effectiveness of the EOI were diminished because the EOI nurses did not implement them correctly or consistently, a weakness of the Nagley (1986) and Williams et al. studies (1985).

CHAPTER IV

MEASURES

The instruments in this study were used to pilot the plan for evaluation of the EOI. The plan for evaluation included the following components: measures of usual nursing practice and the incidence of confusion among elderly patients; monitoring the delivery of the EOI with the development of an observational measure and analysis of reports from the nursing staff; analyzing the positive and negative consequences for patients, families and friends, with particular attention to patient confusion; and satisfaction and comfort with nursing care, especially with regard to the EOI. Table 4 presents the measurement strategy associated with each of these components, the number of items involved, and the timing of administration of the instruments. Copies of the instruments can be found in Appendix C.

Measures of Usual Nursing Practice

Observation Checklist for Selected EOI

The Observation Checklist for Selected EOI was developed and pilot tested as part of this study. The observation checklist was intended to establish a baseline of EOIs that were being utilized by the nursing staff prior to the start of this study. The observation checklist is a compilation of those EOI whose implementation can be inferred without observing EOI nurse-patient interaction. They include physical props with the patient and in the patient's

Table 4

Measurement Strategy Associated with Components of the Plan for Evaluation of the EOI Protocol

Component	Measurement Strategy	Methods & Data Collector*			# Items	Time of Administration			Sample Group
		Obsrv	Self Rprt	Interv		Admit	AM/ PM Daily	Other	
Measures of:									
Usual nursing practice	Interview nurse manager, associates, and EOI nurses			X R				Prior to implementation of the EOI protocol	Nurse manager, associates, and EOI nurses
	Observation checklist for selected EOI	X RA			26			Prior to implementation of the EOI protocol	N=8 comparison sample-Siemsen
	EOI report with assistant and head nurse and EOI nurses			X R	69			Prior to implementation of the EOI protocol	Nurse manager, associates, and EOI nurses
Incidence of confusion	Neecham	X RA			9			Prior to implementation of the EOI protocol	N=17 Siemsen comparison
	Self-perceived Mental Clarity		X RA		3			Prior to implementation of the EOI protocol	N=17 Siemsen comparison

* R - Researcher
RA - Research Assistant
EOI - EOI Nurse

Table 4 (continued)

Measurement Strategy Associated with Components of the Plan for Evaluation of the EOI Protocol

Component	Measurement Strategy	Methods & Data Collector *			# Items	Time of Administration			Sample Group
		Obsrv	Self Rprt	Interv		Admit	AM/ PM Daily	Other	
Monitoring the delivery of the EOI with the development of an observational measure	Observation Checklist for selected EOI	X RA			26		X		N=13 elderly pts.
Analysis of reports from the nursing staff	EOI Report		X EOI		14-20			1 per EOI nurse minimum daily. Each pt. has 1 report/log per day	All EOI nurses and 13 elderly pts.
	Log		X EOI					1 per EOI nurse minimum daily. Each pt. has 1 report/log per day	All EOI nurses and 13 elderly pts.

* R - Researcher
RA - Research Assistant
EOI - EOI Nurse

Table 4 (continued)

Measurement Strategy Associated with Components of the Plan for Evaluation of the EOI Protocol

Component	Measurement Strategy	Methods & Data Collector *			# Items	Time of Administration			Sample Group
		Obsrv	Self Rprt	Interv		Admit	AM/ PM Daily	Other	
Analysis of reports from the nursing staff (continued)	Focus Groups			X R				Weekly	EOI nurses
Analyzing the positive and negative consequences for patients	Neecham	X RA			9	X R	X RA		N=13 elderly pts.
	Self-perceived Mental Clarity		X RA		3		X RA		N=13 elderly pts.
	Focus Group			X R					EOI nurses

* R - Researcher
RA - Research Assistant
EOI - EOI Nurse

Table 4 (continued)

Measurement Strategy Associated with Components of the Plan for Evaluation of the EOI Protocol

Component	Measurement Strategy	Methods & Data Collector*			# Items	Time of Administration			Sample Group
		Obsrv	Self Rprt	Interv		Admit	AM/ PM Daily	Other	
Preliminary development of measures of patient and family acceptability of the EOI	Patient Satisfaction and Comfort with the EOI			X R				Once following 4th shift of EOI care	N=7 elderly pts.
	Family/Friend Satisfaction and Comfort with the EOI			X R				Once following 4th shift of EOI care	N=5 family members/friends

* R - Researcher
RA - Research Assistant
EOI - EOI Nurse

room, and hospital records which should be present if the EOI are being implemented by the EOI nurse. The research assistants completed the observation checklist twice daily, during the morning and late afternoon/evening, throughout the subject's hospitalization.

Originally, the plan was to use an augmented comparison sample from the Siemsen study to provide the data about usual nursing practice. Four subjects were to be randomly selected from each of the three groups, representing different levels of confusion. This sampling plan was important because of the potential differences in the amount of props implemented by nurses depending on their assessment of the patient's confusion and need for the interventions, and familiarity with the elderly person over his hospitalization. The sample was to include a total of 12 subjects with whom the observation checklist had been used twice daily throughout hospitalization. However, as discussed in the Methods section, the Siemsen sample was skewed to elderly patients who were admitted to the study unit without confusion and the sample size reduced when only first day study admissions (with the exception of one subject) were considered. As a result, the data from all subjects in the comparison sample, for whom the Observation Checklist was completed over the course of hospitalization, are included (n=8).

Content validity of the checklist was examined by having the dissertation committee review the instrument for the accuracy and thoroughness of its representation of the EOI. Subsequently, three members of the Siemsen team

critiqued the checklist for its: clarity of terms, organization, and ease of use on the hospital unit. Following the initial critique, feedback was obtained on an ongoing basis from members of the team as they used the Observation Checklist, using a comment sheet. This provided information about needed revisions based on situations that arose with patients and their environment. For example, the item, "room lighting appropriate", was deleted after observations were shared about patients who had roommates occupying the window bed. Even if all the room lights were turned on by the nurse, if the roommate's curtain was pulled, the lighting was still inadequate. The item was deleted since it was impossible for the nurse to successfully implement the prop in such situations.

Following initial revisions in the observation checklist based on feedback from the Siemsen team, interrater reliability was examined between the investigator and a member of the Siemsen team in patient situations prior to data collection.

EOI Report

The EOI Report was developed and pilot tested as a measure of usual nursing practice, and to monitor the delivery of the EOI. The EOI Report is a listing, by category, of the specific interventions to be used by the EOI nurses. It was used to determine the use of nursing interventions, common to the EOI, prior to implementation of the EOI protocol. The EOI report is only a partial

measure of usual nursing practice, since it does not include or describe all activities with which the nurse is involved.

The EOI Report was completed by the nurse manager and associates prior to implementation of the EOI protocol, and by the EOI nurses during the early part of the educational program. For the comparison period of usual nursing practice, the reference was to the practice of nurses on the study unit. The report includes the following response choices by the nurse to evaluate the use of the intervention: usually done, sometimes done, rarely done, or not done. The EOI Report as a measure of usual nursing practice is limited because it measures only perceptions of the nursing care rendered by fellow staff members.

The dissertation committee was asked to review the EOI report for its content validity in reflecting the EOI, and construction for obtaining reliable information from EOI nurses. Subsequently, two members of the Siemsen team reviewed the instrument for the clarity of terms, organization, and ease of administration.

Neecham Confusion Scale

The Neecham Confusion Scale is an observational instrument for use by nurses in detecting the presence and severity of confusion with older adults. The Neecham scale was developed to measure disturbances in information processing, acute confusional states and delirium in hospitalized, elderly

patients in a rapid and nonobtrusive manner (Neelon, Champagne, & McConnell, 1990). As discussed earlier, these concepts are consistent with confusion. The Neecham instrument has a strong, positive correlation with the Folstein Mini Mental Status Examination (.81), a tool widely used to detect alterations in mental function with older adults, but is considered more sensitive than the Folstein to impending confusion (Champagne, Neelon, McConnell, & Funk, 1987). The Neecham scale has been tested with over 1000 observations of elderly subjects in hospital and nursing home settings (Neelon, personal communication, January 1990). Although not initially developed for use with patients who have an underlying dementia, it has subsequently been successfully used with such individuals (Neelon, personal communication, January 1990).

The Neecham tool involves observation and the physiological measurement of vital signs, oxygen saturation (via non-invasive pulse oximetry), and urinary continence. It has nine items divided into the three subscales of: responsiveness, performance and physiological control (Neelon et al., 1990). It was designed to be scored by the nurse at the bedside during routine nursing care activities (Neelon et al.). Because the instrument places a minimal response burden on the elderly patient, it can be readministered frequently to detect changes in the patient's condition (Neelon, Champagne & McConnell). The reported interrater reliability is .96, with a test-retest reliability of .98 in stable, elderly subjects. A Cronbach's alpha of .85 indicated a high internal

consistency in the Neecham when it was used with 21 hospitalized, elderly patients and 14 nursing home residents (Champagne et al., 1987). The Neecham was reported to be highly correlated (.81) with the Folstein Mini Mental Status Exam (Champagne et al.).

In order to detect the diurnal fluctuations in confusion that occur among elderly persons, the Neecham instrument was administered by the research assistants during the morning and again in the late afternoon or evening throughout the patient's hospitalization.

Self-Perceived Mental Clarity

Three questions were asked of the patient about his self-perceived mental clarity. These questions were included because of the influence of perception on behavior in Lawton's model. It was recognized that older patients may be quite protective of revealing problems with mental functioning. However, in their development of a confusion questionnaire, Reilly et al. (1989) found that elderly patients reported a far greater frequency of perceptual disturbances than noted by professional staff. There is the need to phrase the questions in a manner which will not cause the elderly person more distress. Williams et al. (1979) found that elderly patients did respond to the question, "Do you feel mentally clear today?" Neelon (1991) also used self-report of confusion and disturbing dream questions to measure confusion with the Neecham. She found that elderly patients usually didn't volunteer information about confusion, but if they did report disturbances in mental clarity, it was a

significant problem. Seventy-one percent of those subjects who responded affirmatively to having confusion or troubling dreams had low Neecham levels. However, self-reports were not sensitive measures in that 60% of those elderly patients with low Neecham scores denied confusion (Neelon). The self-perception question regarding the presence of confusion in this dissertation is similar to that used by Williams' and Neelon, and uses some of the descriptive phrases from Williams' subjects for clarification. Self-perceived mental clarity questions were asked by the research assistants following each administration of the Neecham, to prevent them from being sensitized to the patient's condition before the observation activities.

Monitoring the Delivery of the EOI

Development of an Observational Measure

The development of the Observation Checklist for Selected EOI has been discussed in the Measures section of usual nursing practice. To monitor the delivery of the EOI, the research assistants completed the observation checklist with each administration of the Neecham and Self-Perceived Mental Status instruments throughout the patient's hospitalization.

As part of the training program for research assistants in the EOI study, interrater reliability was examined using the same criteria as previously described. Items which were problematic for the research assistants during the Siemsen study were given special emphasis for clarification. Following a review

of the purpose of the instrument and the items, the research assistants practiced use of the observation checklist with two patients. Interrater reliability was examined between research assistants to evaluate the effectiveness of the training program and their preparation prior to data collection. Interrater reliability among the four research assistants over time was determined at the end of the second week of the study to analyze the effects of practice and study history.

Analysis of Reports from the Nursing Staff

The EOI Report was used as a measure of the EOI nurses' evaluation of their use of the EOI and perceptions about factors which promoted or inhibited implementation. The purpose of this instrument was to gather useful information in a manner which was not excessively time or energy demanding on EOI nurses, and thereby maximize its potential usefulness to clinical practice.

The nurse was asked to use the following four point scale to describe the frequency of use of each intervention with the assigned patient that shift: usually done, sometimes done, rarely done, and not done. The nurse was asked to summarize why she believed certain interventions were not relevant to a patient. The assessment of patient's needs and relevance of certain nursing activities are consistent with implementation of the focused assessment category of the EOI. In addition, requiring that the EOI nurse explain why an

intervention was not relevant, would limit the response set of choosing a less demanding answer. For each intervention, the EOI nurse was asked to identify those work and patient factors that promoted or inhibited implementation of the interventions.

Analyze the Positive and Negative Consequences For Patients, Family and Friends

The presence and severity of confusion was the primary outcome measure of the consequences for patients associated with the EOI. Confusion was measured with the administration by research assistants of the Neecham and Self-Perceived Mental Clarity instruments to the elderly subjects in the morning and late afternoon/evening, throughout the elderly patient's hospitalization.

It was expected that there might be additional positive and negative consequences for patients, families or friends, not related to patient confusion. Focus group discussions provided this information from the perspective of staff's evaluation of the impact of the study on patients, their families and friends.

In addition, the patient and family member or friend were viewed as major, potential sources of information about consequences associated with the EOI. Their perceptions would have a broad frame of reference, not limited to the time period of hospitalization, about the individual and his behavior. The

plan was to ask patients, family members and friends to evaluate the effectiveness of the EOI in terms of their helpfulness and comfort to the patient and family member or friend. Many of the EOI were linked to how the nurse presented herself. Thus, the evaluations of patients, family members or friends about the EOI would have been blended with their perceptions about the EOI nurses.

It was anticipated that measurement of outcomes associated with the EOI from the perspective of patients, families and friends would be difficult for several reasons. Recuperation following acute illness no longer occurs during the hospitalization period. Although we recognize that this means elderly patients are more acutely ill and have shorter hospital stays, it was unclear prior to implementation of the study how the involvement of families and friends might be affected. If the patient is hospitalized for a short period, visitation might be limited by the family member or friend's ability and access to immediate transportation. Once transportation can be organized, the family member or friend may need to turn their attention to preparing for the rapidly approaching, hospital discharge, versus frequent visitation.

The very characteristics which make subjects good candidates for the development of confusion place them in a highly vulnerable position for being negatively stressed by interviews and questionnaires. Similarly, the elderly wife who is worried about her hospitalized husband who can't remember that his hip is broken, may be most reluctant to disclose negative comments about his

nursing care, if she herself has the reserves to concentrate on such a task. To wait to interview the patient close to discharge would reduce these possibilities, but then the effect of history, forgetfulness, and general positivism that results with recovery would be serious threats to internal validity. The interviewer stopped the focused questions with two cognitively impaired patients and two wives of patients who were unable to answer the questions and seemed taxed by their efforts to respond.

The accuracy of information about the EOI and nursing care is also at risk with this study population and their families. The reliability of a confused patient's response to other than a short, clear statement would be questionable. One must also question how elderly people can critically evaluate nursing care when it is only fairly recently that the public has begun to know and demand quality care in hospitals.

As part of this study, preliminary work was to be done on the development of a measure of patient and family/friend satisfaction and comfort with nursing care, particularly with regard to the EOI. An open-ended, guided interview was conducted with patients, family members or friends to obtain feedback about the EOI and nursing care as well as to learn a helpful approach to gather this information. The interview was to go from general questions about the hospitalization experience and nursing actions that were most and least helpful, to requests for information about specific EOI. However, with the exception of four patients and one family members, subjects were unable to

critically evaluate their nursing care in any depth. The duration of the interviews and depth of pursuit of specific information about the EOI was guided by the informants. The interview guide is located in Appendix C.

The investigator initially planned to interview the patient and family member or friend individually, once after the sixth shift of EOI nursing care and before hospital discharge. The timing was based upon the need the provide informants with adequate time to receive the EOI, and for some stability to return following the acute illness, while maintaining the currency of the hospital experience. It quickly became apparent that, with the short length of subjects' hospitalization, interviews would need to be conducted earlier, and contacts for interviews were initiated after the fourth shift of EOI nursing care. Patients who stayed longer and their families were recontacted to gather further information.

Procedures for Recruitment of Subjects

Patients

Informing Physicians

Three weeks prior to initiation of the study, a letter was sent to physicians who cared for patients on the study unit, using the same procedure as in the Siemsen study. This letter explained the study and how to contact the researcher with any questions or concerns about the study and patient participation. A two week response period was provided to give physicians adequate time to consider the study. None of the physicians contacted the

investigator or unit regarding the study. The approach used to inform the residents was discussed in the Methods section.

Identifying Potential Subjects

The researcher or research assistant obtained consent from patients who meet the selection criteria and were assigned to the EOI nurse during the admission period or with the first data collection period following admission. Thus, the patients received the EOI associated with the admission process and initial administration of the confusion instruments, prior to giving consent. This decision was based on several patient and study factors. In order for consent to be obtained prior to beginning the EOI, the investigator would have to meet with the patient and family in the admitting or emergency room areas. Given the acuity of their health conditions and stress surrounding the need to be hospitalized, such timing was not viewed as supportive of the patient or family. In addition, the limited feasibility of meeting potential subjects and family members before they came to the nursing unit was recognized. Such an approach would likely result in the loss of several potential subjects if the admission EOI were not implemented until after consent was obtained. The EOI associated with the admission process were seen as supportive activities which augment usual nursing practice, and did not carry any potential adverse effects. Thus, it was not seen as placing patients at a disadvantage to implement the study prior to obtaining consent. The EOI nurse was informed of any patient within her assignment who refused to participate in the study, so

that she could stop implementation of the EOI. A copy of the patient consent forms, completed by the patient or family member, is located in Appendix A.

Obtaining Consent

When the patient has the capacity to decide. The investigator and research assistants used the following procedure, similar to the process followed in the Siemsen study, to obtain consent from patients:

1. Introduce yourself as a nurse involved in a nursing research study at the hospital.

2. Request permission from the patient to speak with him for 5-10 minutes about the study.

3. Explain that this is a nursing study to assist nurses to provide better care at the hospital. Then, review with the patient the content of the consent form. Speak slowly, in a slightly louder volume and enunciate clearly, providing the patient with time to process the information.

4. Ask the patient if he has any questions, and respond to them.

5. Request that the patient please explain the study to you, as a way of finding out if the researcher has explained it adequately. This is done to find out in a non-threatening manner if the patient has been able to understand the information and make a competent decision.

6. The patient is then to be asked if he would like to participate in the study. If the patient declines, then he is thanked for his time. The consent form is marked refused and any explanatory comments that the patient

volunteers are noted. A line is drawn through the patient's name in the subject log book, and consent column is marked R, to avoid recontacting the patient.

7. If the patient agrees to participate in the study and has adequately explained the study to the researcher (research assistant), then proceed with the signing of the consent form. Review with the patient that his signature indicates that he has read the material and agrees to participate. If the patient is unable to sign his name, then have the patient's nurse, associate, or nurse manager witness his verbal consent or mark on the consent form.

When there is reason to doubt the patient's capacity to decide. If the researcher (research assistant) questions the patient's comprehension of what he may experience by virtue of being in the study, or his ability to not participate or withdraw at any time without affecting his care, then the following actions are taken:

8. The researcher (research assistant) tells the patient that she would like another nurse to be present in the room while she explains the study again. This can be presented as the researcher wanting to make sure that she has explained the study in a thorough manner. The patient's nurse, associate or nurse manager is requested to witness the researcher's explanation of the study and the patient's return explanation. If the witness believes that the patient has made a knowledgeable decision about participation, then the signing of the consent form activities (#8) continues. A witness is not requested to be present if the patient initially declines to participate in the study regardless of

his comprehension, to avoid any patient perceptions of being pressured to agree.

9. If the researcher (research assistant) or nurse do not believe the patient can give a knowledgeable consent, then family consent is sought. The patient is thanked for his approval and informed that the researcher would like to also talk with his family about the study. The patient is asked for the name of the family member that he would like contacted. The approval of family members was sought for three patients. Two patients requested that their family members be involved in the decision. Family consent was also obtained for one elderly patient who was unable to explain the study to the investigator.

10. The researcher will talk with the unit's social worker about the consent process, and verify the name and phone number of the responsible family member. If phone contact is necessary, the researcher will get verbal consent from the family member, and inquire when the person will be visiting the patient so written consent can be obtained. The researcher will work with the social worker and patient to resolve any discrepancies to facilitate obtaining written family consent. This step was not necessary during the course of the study.

11. Research staff were kept informed of the patient's consent status in the subject log book. This included information about the date of contact, receipt of the signed consent form, need for follow up, and refusals.

Follow-up Procedures

12. The EOI nurse was kept informed as to the patient's consent status by the investigator. As discussed in the Methods section, the presence of the clock, calendar, and sign verified for the nurse that the patient had consented to be in the study.

13. The investigator prepared assignments for the research assistants prior to each data collection period, keeping them current with the consent status. The name and room number of the patient was written on a stick-note pad and attached to the data collection instruments. In this manner, the patient's name was not listed on any document that had his identification number. After administering the instruments, the research assistant wrote the subject's vital signs on the note pad, and gave the pad to the patient's nurse. This provided the nurse with information she could use in the patient's care as well as providing another means of ensuring subject confidentiality, since the pad had the only reference to the subject by name.

Family and Friends

Family members and friends of patients were to be involved in this study in the following ways: by receiving interventions from the EOI nurse (see Table 2) to increase their comfort while the patient is hospitalized; the EOI nurse was to offer suggestions as to how they could support the patient's recovery; and a selected family member or friend was to be asked to participate in an interview

to help evaluate the nursing care with special regard to the EOI.

Identifying Potential Subjects

Family/friend participants were defined as all individuals who identified themselves as relatives or friends of the patient and who were present on the nursing unit, making them readily accessible to the EOI nurses. Although their presence indicated some type of involvement with patients, it was not assumed that this convenience sample represented patients' total families or important people to the patients.

In order to identify a friend or family member to assist in the evaluation of nursing care, a list was compiled for each patient subject of the friends and family members who had visited. This information was obtained from the Observation Checklist of Selected EOI (completed by the research assistant) and the EOI reports (completed by the EOI nurses). The EOI nurses were asked to review the list, following the fourth shift of EOI nursing care, and identify the family member or friend who had been most involved with the patient during his hospitalization. There was no difficulty obtaining consensus among these methods to identify the patient's family member or friend, since for those who had visitors, it tended to be the same individual.

Obtaining Consent

It was deemed unnecessary to obtain consent for the interventions used by the EOI nurse to increase the comfort of family members and friends, since the nurse's actions were consistent with nursing practice at the study hospital.

Most of the suggestions offered by the EOI nurse to family members and friends to assist the patient were also considered part of standard nursing care, particularly with regard to the elderly patient. It was the consistency with which the interventions were to be offered, and importance placed on keeping family or friends involved and informed that may have been different from what occurs on a daily basis in a hospital setting. Certain interventions, such as asking the family member or friend to leave a letter or asking if the nurse can use phone calls to help the patient when he may be anxious, were novel. However, since family members and friends were given the choice to adopt or not adopt the interventions, it was also decided that formal consent was not necessary for this aspect of the study. However, consent was obtained from the family member or friend who was asked to participate in the interview to evaluate nursing care and the EOI. A copy of the family consent form is in Appendix A.

The procedure was as follows:

1. The researcher asked the EOI nurse when the identified family member or friend usually visited. The researcher made herself available on the nursing unit at those times.

2. If the potential subject was on the nursing unit when the researcher was present, the researcher identified herself as associated with the study. This occurred with all the potential family/friend subjects, for patients who received four shifts of EOI nursing care. The researcher requested permission to speak with the family member or friend away from the patient's room. The

family members of all but one subject asked that we meet in the patient's room, during their visitation. The researcher sought to speak with the potential subject privately so that he would not experience any intentional or unintentional pressure to participate from the actual patient, other patients or staff who might be present in the room. The researcher did not initiate contact with family members or friends if there was a staff member in the room.

3. The study was explained to the family member or friend, reviewing the information on the consent form.

4. If the family member or friend was interested in participating, then they negotiated a date, time and place for the interview (hospital, phone, or home) with emphasis given to the subject's convenience and wish to not intrude on their visitation. In all cases, subjects requested that the interview be conducted at the time of contact.

Follow-up Procedures

5. Further family or friend contacts were not to be initiated if the individual declined to participate, but this situation did not occur.

Nurses

Identifying Potential Subjects

The researcher met with the nurse manager and associates, as part of the Siemsen team, to share information about the Siemsen delirium study. At this time, an initial overview was given of the EOI protocol study in relation to

the work of the Delirium Task Force's goal to develop a protocol and the study unit's concerns about elderly patients. The researcher set up an appointment to talk further with the nurse manager and associates about the study. At this meeting, the researcher reviewed the purpose of the study, design and time frame. Particular time was spent examining the need for consistency and coordination of the EOI nurse assignments for 4-6 weeks. The nurse manager and associates were asked to identify nurses, who provided direct patient care, that they thought were the: informal staff leaders, most interested in care of elderly patients, or most likely to want to participate in a research study. The nurse manager and associates were asked to recommend the most effective way to contact these individuals, and communicate the study to the entire nursing staff.

Based on their recommendations, an initial, general contact was made with the nursing staff on the unit, by providing inservices at change of shifts on three different days. In this manner, it was hoped to have direct contact with the majority of nurses. During the inservices, the investigator provided an overview of the study within the context of building on the Siemsen study, and the problem of confusion with elderly patients which had been identified by the unit. In this manner, she hoped to present the innovation as one which had already been identified as needed by the unit and, to reduce the threat sometimes associated with research, by linking it to a completed project which had not seemed to have any negative impact on the nursing staff. The

investigator identified the role and time commitment of the EOI nurses, but did not describe the interventions specifically to limit any potential influence on usual practice.

Staff who were interested in volunteering for the study were asked to speak with their associates and sign up on the form left in the conference/break room. This was presented as being important because of the need to balance requests to volunteer with staffing issues. In addition, the associates believed that they could discourage participation from volunteers who did not meet the criteria for being staff leaders, by using the issues of scheduling and staffing, thereby avoiding creating negative feelings. Notes were left in all of the nursing staff's mail boxes and posted in the conference/break room which conveyed much of the same information as the presentation, along with the investigator's name and phone number. The notes were used to: act as a later reminder to staff, encourage staff to contact the investigator if they had any questions, and provide information to those nurses who missed the meetings. A response deadline was chosen based on the nurse manager and associates' recommendations as to the turnaround time needed to adjust schedules for the educational program and implementation of the study.

Four nurses volunteered for the study with the initial activities. The investigator met with the nurse manager and associates to discuss the volunteers in terms of their being staff leaders and feasibility of releasing them from assignments to attend the educational program. On both counts, there

was success with the volunteers. However, one of the volunteers only worked 2-3 days a week and was also heavily involved in other activities. Her nurse associate believed that the nurse would withdraw from volunteering if she knew there were adequate numbers of nurses for the study. I met with the nurse who was relieved to know the study could go forward if she did not volunteer.

With this group of three volunteers, the nurse associates identified four other nurses who met the study criteria. An examination of their work schedules indicated that EOI nurse coverage could be provided if three of the four volunteered. I sent personal notes to each of the nurses, relating that they had been identified as leaders on their unit who were noted for their care of elderly patients, and asking them to sign up if they were interested in participating in the study. As before, they were informed that the final decision about nurses participating in the study would be based on staffing and scheduling patterns. All of the nurses who were contacted did volunteer for the study. During the educational program, one of the volunteers remarked that the note had helped her through a particularly difficult week, and that the note was the major reason why she entered the study. Staffing coverage was not satisfactory with one of the volunteers. Again, a personal note was sent thanking her for her involvement and explaining the coverage issue. The investigator made attempts throughout the study to keep the two volunteers who were not EOI nurses informed.

Obtaining Consent

The consent form was placed in the nurse's project manual and reviewed during the early portion of the educational program. As described in the study overview, the nurses were given time to privately make their decision about participation and to sign the consent form. The nurses were given copies of the consent form for their reference. The consent form is located in Appendix A.

Procedure for Recruitment and Training of the Research Assistants

The Neecham instrument was developed for use by registered nurses. Thus, for both the Siemsen and Miller studies, only registered nurses were considered for the research assistant positions.

Siemsen Study

To participate in the study, nurses could not be staff on the study unit. Lack of funding resources stimulated the following activities to recruit volunteer research assistants: notices were posted in the hospital newsletter, direct contact was made by the medical-surgical clinical nurse specialist with nurses who could better meet certification criteria if they participated in research, a reading and conference course was developed to attract graduate nursing students, and nursing service approval was obtained for the use of nurses on modified work assignment because of injury. The researchers assumed four of the five research assistant positions because of the inadequate response to

these activities. One nurse, on leave from her position in day surgery, volunteered as a research assistant.

A training manual was developed which described the: purpose of the study; roles and responsibilities of research staff; nursing unit, general guidelines for conduct on the unit; guidelines for conduct with the study; outline of research assistant activities; and procedures for obtaining patient consent, using the Neecham and administering the self-perceived mental clarity questions, and completing the demographic information form. The manual was used during the training program and served as a reference for the research assistants throughout the study.

The training for the research assistants involved a seven hour program, divided over two days, of classroom and unit activities. During the first four hours, the study, its measures, and procedures were discussed. Two videos were then shown of elderly residents as the Neecham was administered by a member of the Siemsen team. The research assistants used the Neecham as they watched the taped resident scenarios. This provided practice opportunities, the forum for discussion of how to score residents on the Neecham, and an initial check of interrater reliability. The videos were beneficial for a beginning introduction to the instrument and procedure for data collection. However, the quality of the filming made it difficult to ascertain some of the residents' vocalizations and movements that discriminated between scores on certain items. Following the viewing and review of scoring, the

research assistants were oriented to the study unit. The researcher demonstrated the use of the Neecham and data collection procedures with an elderly patient on the unit. The research assistants used the Neecham and this provided the basis for the interrater reliability check prior to initiation of the study.

The members of the research team were not satisfied with their level of comfort in using the Neecham or the level of interrater reliability which had been obtained. This led to the decision to have a three-hour practice and discussion session. During this session, each research assistant assumed the primary interviewer role with a patient on the study unit, with the other research staff observing and using the Neecham. Discussions followed in the classroom about use of the Neecham and data collection procedures, with calculation of the group's percentage agreement. Data collection was initiated following satisfactory results with this session.

Training of the research assistants in the use of the Observation Checklist occurred later in the study. The instrument was presented and reviewed in a group meeting. A comment sheet was used by the research assistants to note their questions and recommendations about the measure, during the data collection periods. The testing for interrater reliability is discussed in the Results section.

Miller Study

Research assistants were obtained by using the School of Nursing's

usual methods for recruitment of graduate nursing research assistants and RN students. In addition, one nurse was recruited who had expressed an earlier interest in participating in the Siemsen study as a means of maintaining her RN licensure. The research assistants in the Miller study included three graduate nursing students, one of whom also worked at the study hospital, the nurse, and one of the Siemsen investigators (not Miller) who collected data on two occasions.

The training manual, developed for the Siemsen study, was reviewed for its clarity and thoroughness by faculty and doctoral students involved in a course which examined issues in gerontological nursing research. The manual was revised, based on their suggestions, and expanded to include data collection procedures associated with demographic information and the Observation Checklist. Additional guidelines were provided for the research assistants to help guide them in situations which had been encountered during the Siemsen study. This included such things as: the need to encourage the patient to take deep breaths and then to repeat low oximetry readings prior to informing the patient's primary nurse (the initial reading was used for the Neecham score); and to use 15 minutes as the longest length of time that an interview could be interrupted and then resumed as part of the same data collection period.

The training program for the research assistants (RA's) was modified based on the Siemsen experiences with the program and later interrater

reliability checks, and need to make the program as economically efficient as possible. The RA's were instructed to read the training manual and familiarize themselves with the study prior to coming to the training program. This was done to reduce the length of the training program, and make the discussion of the study as relevant as possible to the RA's needs and questions. The videos were not used because of the time needed to explain the situations secondary to the limitations previously described.

The major emphasis of the training program shifted because of three factors. During Siemsen's later check for interrater reliability, there were important differences between the RA's in the scoring of subjects who exhibited the behaviors associated with confusion. Those RA's differed in how they rated patients whose behaviors varied over the course of the observation period. It was noted that their initial, practice sessions used subjects who had few behaviors which would give them a low Neecham score. Thus, it became critical that the practice session for the RA's in the Miller study use patients who exhibited the behaviors encompassed with the Neecham. In addition, two items on the Neecham (Appearance-Hygiene and Performance-Motor) were particularly problematic. Newman (1991), one of the members of the Siemsen team, discussed these problems with Neelon, the developer of the instrument. Miller's training program increased its emphasis on the two items and instructed the RA's to score the subject based on his lowest level of behaviors during the observation period.

The third factor influencing the training program was the lack of experience of the RAs with data collection, in contrast to the majority of those in the Siemsen study. The RAs were anxious about their ability to perform their role. To help them recognize their capabilities, which would then enable them to focus on the measures, the investigator decided to get them on the nursing unit early, in a practice situation with a confused patient. Following this experience, we returned to the classroom and focused on the individual Neecham items. Time constraints did not permit another practice period prior to the initiation of data collection. Given this limitation and the anxiety of the RAs, the investigator decided to work with them individually with their first data collection period. The investigator met with the RA and answered her questions. The investigator observed a subject immediately prior to the research assistant, who then proceeded with data collection. Although there was the risk that the patient's behavior could change, and make comparisons between the raters invalid, all of the RA's verbalized their wish to "try it on their own". The investigator knew the subjects and was able to choose the practice situation based on the stability of the patient's behaviors and ability of the patient to understand the purpose of repeating the interview. The RA then met with the investigator to discuss the scoring, for another interrater reliability check, before the RA proceeded with the completion of her assignment. There was a noticeable relaxation of the RA's following the successful completion of their first interview.

CHAPTER V

RESULTS

The plan for evaluation of the EOI included the development of several instruments, which provided both qualitative and quantitative data, and the examination of qualitative data obtained from interviews and focus group discussions. Analysis of the information obtained in this pilot study was primarily descriptive in nature given the sample size, type of data, and early stages of instrument development.

Instrument Development and Testing

Observational Tools

Observation Checklist for Selected EOI

The development of the Observation Checklist was associated with the second aim of the study, to pilot a plan for evaluation of the EOI protocol. The checklist is used as a comparison measure of usual nursing practice and to monitor the delivery of the EOI.

Content validity. The content validity of the observation checklist was estimated by an average congruency percentage. The four members of the dissertation committee were asked to independently rate each item of the checklist for its congruence with the domain of physical props associated with the EOI. The proportion of items rated by each member as congruent was calculated and converted to a percentage, which was then averaged over all

raters (Waltz, Strickland & Lenz, 1984). The average congruency percentage was also calculated for each item. Those items with less than 75% congruence were to be deleted.

The independent reviews by the four members of the dissertation committee indicated a 100% average congruency percentage for the observation checklist overall and for each item. Three items were added to the checklist, as props associated with the EOI, based on the reviewer's recommendations: hearing aid and glasses in use or accessible to patient, family/friend phone number and times of access recorded on Kardex, and door closed. Two of the reviewers noted that, although props associated with documentation activities were valid representatives of the EOI, the EOI nurse's updating of records so that they were relevant to the patient's care needs was not measured.

Three members of the Siemsen team made several recommendations for additions to the EOI and Observation Checklist as they pilot tested the instrument. These additions were consistent with the categories of the EOI and were incorporated. They included: callight within reach and visual field of patient, window ledge free of medical supplies, bedside table within visual field and reach of patient, overbed table within visual field and reach of patient, phone within reach and visual field of patient, and window blinds open during daylight hours. The two props associated with the window ledge and blinds were coded as not applicable if the patient was not in a bed by the window.

Reliability. The Observation Checklist was pilot tested by three members of the Siemsen team. They critiqued the instrument for its organization (layout of items, readability) and reviewed each item for clarity and feasibility (phenomena can be observed) (Waltz et al., 1984). Two major changes in the format of the Observation Checklist occurred based on recommendations of the Siemsen team. The undecided response category was removed because the group believed that the props were readily determined to be present, absent, or not applicable. A problem noted by the dissertation committee and data collectors was the redundancy which occurred with some props (ie: jewelry, bathrobe) being listed under the "with patient" and "patient's room" categories. The Observation Checklist was revised to include two headings - patient's room and patient record. Individual items were adjusted accordingly. For example, jewelry became, jewelry - on stand, overbed table, or with patient. The props, patient's bathrobe and slippers, were revised to be personal bathrobe and personal slippers. This was done to clarify that hospital issued items were not the desired props.

Interrater reliability. Interrater reliability for the Observation Checklist was determined using percentage agreement. This was deemed appropriate since a review of the items indicated that they all had an equal likelihood of being present during an observation. Concern for frequency of occurrence exists because of the inflation of percentage agreement which occurs because of higher chance agreement with the more frequently occurring items (Topf, 1986).

Ten paired observations were done with the same two raters to determine interrater reliability during the Siemsen study. Of these ten, only four reviews were done of the props associated with the patient record, because there was 100% agreement on all items, and the records were not always readily available. This was a mistake, because if more observations had been done, then the problem with the religious preference item may have become apparent. Three props were excluded from the calculations, because they would only have been present if the EOI study was occurring, and would artificially inflate the percentage agreement. The overall percentage agreement was 95%. Of the 29 items, 20 had 100% agreement and six were at 90%. The three items that were problematic, and the decided course of action are as follows: room lighting appropriate to time of day (70%) - item deleted as discussed in the Measures section; encroachment (80%) - increase focus during RA training of positive and negative examples of encroachment; and, window blinds open during daylight hours (20%) - clarify during RA training that the blinds must be raised to be considered open.

Prior to initiation of data collection with the Miller study, interrater reliability with the Observation Checklist was determined with five raters (including the investigator) rating one subject. There was 100% agreement for every item except encroachment. With discussion that encroachment included auditory as well as physical intrusion, there was full agreement. An additional interrater agreement check was done between the investigator individually with

each RA for one patient at the beginning of the RA's first data collection period. The overall agreements, for each pair, were as follows: 92%, 94%, 100%, 100%. Following each observation, the investigator and research assistant discussed all discrepancies with the checklist that occurred with that and other rater pairs.

During the data collection period, interrater reliability was reassessed with three research assistants (the fourth was ill) rating the same two subject situations. One item of the Observation Checklist, card alert outside room, was deleted from the calculation of overall and item percentage agreement because the investigator believed that the prop was so obvious that it would artificially inflate the agreement scores. The raters all agreed on every item 94.5% of the time. There were six items, of the 35, in which one rater disagreed in one situation. Discussions with the RA's about the items at this interrater session led to the discovery of two items on the Observation Checklist that were problematic in terms of rater scoring. Although there was high agreement during the interrater session, the raters were not consistent in how they had scored: family/friend phone number and religious preferences items. With the phone item, some raters had scored the prop as present when the times of access were not recorded. The same problem occurred with religious preference, where the identification of a religion on the kardex was sometimes scored as the prop being present without the patient's preference described. These items were deleted from analysis of usual nursing practice and validation

of the independent variable.

As another indicator of interrater reliability, the investigator reviewed the percentage utilization that was recorded for the patient record components of the Observation Checklist (those related to the kardex, careplan, and admission assessment). Because there would be little, if any reason, for nurses to change most of the information, the investigator reasoned that the percentage utilization of these props should remain the same or increase over the length of the patient's hospitalization. An increase would occur as nurses learned more about the patient, or had the opportunity to make notations. Graphs of the percentage utilization for subjects in the experimental group indicated that, overall, there was consistency in the raters' observation of these props, with a linear increase in utilization over the length of stay. Fluctuations did occur among observation periods, but that would be expected given the variability in RA access to the three documents associated with the patient record.

Neecham

The Neecham instrument was used in the dissertation as part of the piloting of a plan for evaluation of the EOI protocol. It provided a comparison measure of the incidence of confusion in the control condition, and was also used in the analysis of the positive and negative consequences associated with the EOI.

Validity. The predictive validity of the Neecham instrument was examined by Newman in conjunction with the Siemsen study, and her analysis

was assumed to be relevant for this study, since the setting was the same and patient populations similar. The sensitivity and specificity of the Neecham was analyzed in comparison to the Folstein for predictive validity (Newman, 1991).

Newman (1991) had 56 ratings on 21 subjects, for both the Neecham and Folstein's MMSE, to determine the predictive validity of the Neecham. Levels I and II of the Neecham were combined, with a cutoff value of 24 or less defining the presence of confusion. Using Folstein's MMSE as the reference criterion, the validity of the Neecham was as follows: sensitivity = 30%; specificity = 92%; predictive value of a positive test = 81%; and predictive value of a negative test = 53% (Newman). This contrasts with a reported sensitivity of .95 and specificity of .78 using an undesignated reference criteria (Neelon et al., 1989). Eight subjects, or 30% of the Siemsen sample, were unable to tolerate or respond to the MMSE because of their fatigue, acuity, visual or motor impairments (Newman). In contrast, the Neecham was administered and completed with all subjects.

Interrater reliability. Interrater reliability with the Neecham instrument, consisting of ordinal (assumed interval) and interval data was estimated using the Pearson product moment correlation (r). This provided a quantitative measure of the linear relationship between the sets of scores obtained by two raters observing the patient at the same time (Waltz et al., 1984). It was important to check interrater reliability with patients representing a range of scores on the Neecham to reduce the likelihood of restriction of range in the

data, which can decrease the value of r (Waltz et al.).

As part of the Siemsen study, Newman, one of the co-investigators, examined interrater reliability between and across research assistants. Thirty paired observations were done by two raters over a 3 week period. The Pearson's r for the total score was .97 (Newman, 1991). It must be noted that three of the nine items, oxygen saturation stability (r = 1.OO), urinary continence control (r = 1.00), and vital function stability (r = .91), did not involve the observation of subjects' behaviors, but rather the recording of physiological responses and presence of supportive devices. This could artificially inflate the overall correlation. Interitem correlations for all but one item ranged from r = .78 to r = 1.00 (Newman). One item, performance - appearance, hygiene, was particularly problematic (r = .62), and resulted in revisions in the training program as discussed in the Procedures section.

The percentage agreement across research assistants was calculated by Newman at the end of the RA training program and midway through data collection of the Siemsen study. Six raters agreed on 75% of the Neecham items (Newman, 1991), including vital signs and oxygenation measures which were shared data, with one point disagreement by raters on three items. Using four subjects midway through the study, there was an average interrater correlation of .99 among five raters for the total Neecham scores (Newman). There were important scoring discrepancies for the two patients who exhibited many of the behaviors of confusion on the items of: performance - motor, and

performance - appearance-hygiene. Newman contacted the developer of the Neecham and discussed these problems. Based on this feedback, revisions were made in the RA training program for the Miller study, as discussed in the Procedures section.

During the training program for the Miller study, one patient who exhibited the behaviors associated with confusion, was selected for a check of interrater reliability. If calculated for all items, the overall percentage agreement was 88%. This decreased to 83.6% if the vital sign items that involved the sharing of data were excluded. Two of the four raters agreed on the total Neecham score for the patient, with the scores of the other raters falling within the same level of confusion. Of most concern, was the number of items in which there was disagreement. Table 5 shows the number of items of the Neecham with which raters disagreed prior to data collection and during Week 2 of the study.

As with the paired correlation result of the Neecham, the same concern remains about the level of percentage agreement obtained between raters because of the influence of items that did not involve behavioral observation. Those items of the Neecham consistently had high percentage agreement ratings. The percentage disagreement on the Neecham prior to initiation of data collection was higher than that recommended by Stewart as acceptable for both the one and two point differences in scoring (20% and 10% respectively). The problem was primarily associated with one rater who was an actively

Table 5

Neecham - Items and Agreement Among Raters

Items	Before Data Collection	Week 2
# Items complete agreement	4	5
# Items disagree 1 point	5	6
# Items disagree 2 points	2	0

Total # Items = 11

practicing rehabilitation nurse. As recognized by this research assistant, she would seek to diagnose the behavior and choose a category based on its clinical significance, instead of choosing the description of what she observed.

Interrater reliability was checked with each research assistant's first data collection period, as described in the Procedures section. For three of the pairs of raters, there was 90% overall agreement, with a disagreement by a point on one item. In two of these cases, the difficulty was with the performance-motor item, which had been problematic for the Siemsen research team. There was 100% agreement with the fourth pair.

Despite the increased attention given to the two items that had been problematic for Siemsen, the same difficulties arose with the interrater reliability check during the second week of data collection in the Miller study. Using three patients, each rated by three of the research assistants, the overall percentage agreement was 90%. In only two of the nine ratings, was there agreement of the total Neecham score between two RAs. However, there was 100% agreement among the raters for the level of confusion for the three subjects. The performance-motor and performance-appearance-hygiene items each had three of the raters disagreeing by one point on one occasion. As shown in Table 5, there was improvement among the raters in the number of items with total agreement and reduced number of items with two point disagreement. However, the majority of items on the Neecham still had raters disagreeing by 1 point.

Interviews

EOI Report

Content validity. The content validity of the EOI Report was analyzed using the same method as with the Observation Checklist. Independent reviews of the EOI Report by the four members of the dissertation committee indicated that the average congruency percentage was 100%. One EOI, reinforcing family/friend continuing usual patterns of interaction, was identified by the committee as missing from the EOI Report, and this oversight was corrected.

Reliability. The majority of modifications in the instrument occurred prior to the practice period of the EOI nurses, based on the recommendations of the dissertation committee and two members of the Siemsen team. Two wording changes occurred in the instruction section of the EOI Report, based on the recommendation of a reviewer.

The focus groups provided qualitative data on a weekly basis as to the difficulty in using the EOI Report. The initial plan was to categorize and analyze comments about the instrument as to the: instrument form (category of intervention), organization, clarity of items, feasibility and time for completion. However, the only recommended changes in the EOI Report made by the EOI nurses occurred during the first focus group meeting. The nurses asked that two items be added to the list of work and patient factors because the situations arose frequently: "patient had no personal belongings", and "family/friends did

not visit".

The EOI nurses sought clarification about the use of the EOI Reports at two of the early focus group meetings. The investigator reviewed with them the need to complete the report for the specific patient identified on the form, and emphasized the benefit of anecdotal comments. No changes were necessary in the reports. Despite reviewing the item "name of family member present" at the focus group meetings, the investigator found that the great majority of forms did not have the item completed. However, the low response rate was consistent with the number of times that the research assistants recorded on the Observation Checklist that family members were not present. The family member item on the EOI Report was located at the top of the document, along with information that was completed by the investigator before the form was given to the nurse. It is very possible, that the nurses could have skipped over this section and focused on the body of the form. The 100% completion of all remaining items on the reports by the EOI nurses and wealth of anecdotal comments was a reflection of the clarity of the EOI Reports and the commitment of the EOI nurses to the study.

Self-Perceived Mental Clarity

This measure was developed as part of the study aim's plan for evaluation of the EOI protocol in the analysis of positive and negative consequences for patients, with particular attention to confusion. Percentage agreement was calculated between raters prior to initiation of data collection

with the Miller study, and during the second week of the study. Five raters agreed on the three items with an interview of one patient. There was 92.6% agreement when three raters evaluated the same three patients during the second week of the study.

Two of the three items, the self-reports of confusion and disturbing dreams were analyzed for their sensitivity, specificity, predictive value, and clinical usefulness in comparison with the Neecham. The third item which asked the elderly subject to rate his mental clarity compared to the previous assessment period was not included. This decision was made because of the response set which seemed to occur, with subjects responding that they were either better or the same. Sensitivity and specificity of the two self-perceived items were calculated based on data from all subjects in the experimental group. The Neecham levels I or II were used as the reference criteria for the presence of confusion. The sensitivity of the self-report of confusion question in discriminating between confused and non-confused patients was 58.8%, and that of the report of troubling dreams, 70%. There were 7 occasions when subjects were unable to answer the self report of confusion question. If it is assumed that the individuals who were not able to answer were limited because of altered mental status, then the sensitivity was increased to 70.8%. This assumption was used by Neelon (1991) with her questions of self-perceived mental clarity. The same assumption with the dream question resulted in a sensitivity of 80% (5 occasions when subjects were unable to respond). The

specificity, or ability of the questions to identify the absence of confusion, were 42% and 39.3% respectively. The predictive value of a positive test, when the self-perceived questions correctly identified confusion when it was present, was 25% for the confusion question, and 15.9% for disturbing dreams (not including those who were unable to respond).

Measures of Usual Nursing Practice

The following types of data comprised the measures of nursing practice prior to implementation of the EOI protocol: descriptive data from interviews with the nurse manager, associates, and EOI nurses, quantitative data from the EOI Report completed by the same sources, and quantitative data from the Observation Checklist of Selected EOI. Data about usual nursing practice were used to promote the likelihood of adoption of the EOI by the EOI nurses and acceptance of the EOI protocol by the nurse manager and associates. Measures of usual nursing practice provided the comparison data from the control condition, used to pilot the plan for evaluation of the EOI protocol.

Interviews

The interviews were used to generate a list of interventions which were reported as usually done by nurses on the study unit with elderly patients who are, or are at risk for becoming, confused. The interviews were conducted prior to having the informants review the EOI report to avoid sensitizing them to possible interventions. The validity of the information was limited by its being

reports of perceptions of the nurses who may have been more or less critical of the care rendered by their colleagues. Although interviews of the nurse manager and associates were conducted individually to limit response sets, the data from the EOI nurses came from a group interview, with the associated advantages and disadvantages noted in the Measures section.

The investigator initially coded the responses by listing the identified interventions. These were then reviewed for the identification of any common themes among interventions, and coded accordingly. A gerontological clinical nurse specialist associated with the study facility independently critiqued the categorization for its accuracy with regard to the data.

There was one major theme identified by all of the informants regarding usual nursing care for elderly patients who were confused or identified as being at risk for the development of confusion: the risk for falls. A hospital-wide fall study, which resulted in the implementation of a fall protocol, had occurred within the previous year. The majority of interventions were related to this problem and the fall protocol, and can be categorized as surveillance activities. Some of the informants identified additional interventions that were used less frequently for confused, elderly patients. They were categorized by the investigator, and validated by the gerontological clinical nurse specialist, as: control of activity and rest, provide meaningful interpersonal stimuli, protect from excessive stimuli, and reorient. The interventions were linked with the following two points: they were only implemented if patients stayed long enough, and did

not occur on a routine basis because the patients were in and out so quickly; and, there was an expectation that elderly patients would get confused. Table 6 lists the interventions identified by the nurse manager, associates and EOI nurses as usual nursing practice.

The listing of the interventions and their frequency of response was compared to the EOI Report, to identify those EOI activities which were already considered a part of usual nursing practice with confused patients on the study unit. Two of the interventions identified as part of usual nursing practice, the use of the phone and consistency of staff assignment, were the same as the EOI. Four additional interventions were closely related to the EOI, differing only in their specification. These were: reorient frequently, use a calendar, reduce stimuli, and give them time to rest between activities.

EOI Report

Because of their small number, the reports were combined and given equal weight. Thus, the responses of the nurse manager and two associates were considered to be as important as the responses of the six EOI nurses. This made sense given that the nurse managers had the responsibility for overseeing the care given by all staff, whereas individual staff nurses were primarily responsible for their own practice.

The EOI nurses' recounting of usual nursing practice was consistent in its direction with that of the nurse manager and associates, but the EOI nurses

Table 6

Usual Nursing Practice
Interviews

Concepts of Care: Interventions with Elderly Patients to Prevent or Reduce Confusion
Prevention of Falls - Surveillance
Evaluate risk upon admission.
Implement care plan.
Four side rails up standard.
If patient shows signs of being unsafe, then implement the following, go with least restrictive: ambularm (hard to hear, so not relied on by itself), bed alarm, posey jacket.
Put in room close to nurse's station so can watch.
Place them in geri-chair close to the desk.
If there are two confused patients, the put them in the same room with different staff to increase the amount of traffic and supervision.
On unit basis, track the number of confused patients, part of Medicus, and information passed on shift to shift.
Control of Activity and Rest
Involve the patient in activities to keep him busy - unit secretary talks with them, gives them a magazine.
Give them time to rest between activities.
Provide Meaningful Interpersonal Stimuli
If by the desk, then the patient can talk to the visitors and doctors as they come by.
Put confused patients together if they calm each other.
Consistency of staff assignment (routine with all patients on unit).
Keep telephone accessible and help patient - often hard for them to remember phone numbers.

Table 6 (Continued)

Usual Nursing Practice
Interviews

Concepts of Care: Interventions with Elderly Patients to Prevent or Reduce Confusion
Protect From Excessive Stimuli
Have the patient close to the desk but not at it, because there is too much stimuli.
Keep confused patients apart if they are noisy and get each other upset.
Have the confused patient in a private room - quieter, and can reduce the stimuli. This is sometimes difficult because the private rooms are reserved for the younger, immunocompromised patients.
Reduce stimuli - try not to overwhelm the patient.
Reorient
Reorient frequently.
Use a calendar.

differed in that they infrequently chose the usually done responses. The EOI nurses identified the assessment period as particularly problematic because of the numerous interruptions that occurred and interfered with their ability to welcome and orient the patient to the setting. The EOI nurses added a qualifier to the interventions related to family members and friends. From their perspective, those interventions were used if the family members or friends were actively involved in the patient's care, and took the initiative in requesting the interventions. For example, if a family member told the nurse that she wanted to be called if the patient became anxious, then the nurse would be more likely to record the phone number and times of preferred access.

A table was used to describe usual nursing practice with confused, elderly patients during the baseline period (Table 7). This table listed the most commonly used interventions by category, judged to be those interventions that were most frequently identified on all reports as being usually or sometimes done. A second column noted those interventions which were identified as infrequently done (rarely or not done categories).

Observation Checklist of Selected EOI

It was not possible to use the Observation Checklist in the assessment of usual nursing practice during all of the control condition. Data collection in

Table 7

Usual Nursing Practice
EOI Report

Category of EOI Interventions	Commonly Used	Infrequently Used
Assessment & Making Environment Familiar		
assess unmet internal needs & external concerns	x	
assess mental status q2h & q interaction	x	
offer toileting assist	x	
assist with position shifts	x	
verbally clarify unmet needs	x	
medical supplies...minimally intrusive to patients	x	
record/update careplan...problems communicating	x	
inform patient & family risk loss personal possessions	x	
verify with patient that call light within reach	x	
encourage patient & family to bring in personal possessions		x
Orientation Skills		
large dial clock within patient's field of vision		x
current schedule of daily events card		x
Staff Contact		
reintroduce staff by name, position	x	
acknowledge patient feelings	x	
focus on patient needs	x	
speak slowly & clearly in lower pitched voice	x	

Table 7 (Continued)

Usual Nursing Practice
EOI Report

Category of EOI Interventions	Commonly Used	Infrequently Used
Family/Friend Involvement		
ask family/friend if they have any questions	x	
encourage family/friend to stay	x	
express appreciation for family being available	x	
explain family/friend importance to patient recovery	x	
observe patient symptoms of distress with family visits	x	
support family/friend need for rest	x	
obtain phone #'s and times of access	x	
request family/friend to leave handwritten letter		x
read letters to patient when patient bored or anxious		x
Sensory Input		
hearing aid/eyeglasses in use/accessible	x	
window blinds raised in am	x	
pm care instructions on kardex	x	
with all care activities, the nurse proceeds slowly	x	
assess usual time, amount tv, radio		x
provide interventions using above info.		x
determine patient's habits ADL		x

Category of EOI Interventions	Commonly Used	Infrequently Used
Welcoming & Orienting		
nurse identifies self & purpose	x	
during transit, orient patient to hospital		x
orientation card		x

the Siemsen study began while the instrument was still being developed. However, there were data from the Observation Checklist for some subjects in the Siemsen study who were selected to be in the comparison group for confusion. These referred to two patients admitted at Level I confusion, and four patients at Level III. In order to include Observation Checklist data for comparison group patients with Level II confusion, one patient was added for this analysis who was admitted to the study at Level II confusion on day 2 and a patient with a borderline Level III score on day 3 was added. A review of all subjects in the Siemsen study over their length of hospitalization for the inclusion of data regarding the Observation Checklist indicated that no additional information was available. The nursing care rendered to eight patients, as measured by the Observation Checklist, was the final sample for the control condition of usual nursing practice.

A percent utilization (#times intervention present/# observations X 100) was calculated for each item on the observation checklist. Those interventions that had the highest and lowest percentages of being present were to have been compared to their relative rank on the EOI Report tables, with calculation of Spearman rank-order correlation, as a measure of convergent validity (Waltz et al., 1984). This was based on the assumption that both instruments were measuring usual nursing care with regard to elderly patients who are confused or at risk of becoming confused.

A concern had been that the perception of usual nursing care, as measured by the EOI Report with the EOI nurses, nurse manager, and associates might be a different construct than the actual care provided. This was indeed the situation. The very low percentage of utilization of interventions (19.3%) as measured by the Observation Checklist and very high reported use of the interventions with the EOI Reports led the investigator to choose a descriptive presentation of the data. A section of Table 8, lists those EOI that were most frequently used as part of usual nursing care, as measured by the Observation Checklist.

Monitoring the Delivery of the EOI

The Observation Checklist of Selected EOI, EOI Report, Nurse's Logs, focus group discussions, research assistants' comments, and the investigator's log were used to monitor the delivery of the EOI. These activities related to the study aim, plan for evaluation of the EOI protocol study. The results were used to evaluate the effectiveness of the plan for implementation, and to generate suggestions as to necessary revisions in the EOI and protocol to increase the feasibility and acceptability of the interventions.

Observation Checklist of Selected EOI

Descriptive statistics were used to analyze the presence of the props, as measured by the Observation Checklist. Table 8 displays the rank order of the props, associated with the EOI, that were most often seen by the RA's during

Table 8

Most Frequently Used Props Associated with the EOI

Observation Checklist		
	Percent Utilization	
Props	EOI Nurses*	Usual Nursing Practice**
clock within field of vision from bed	95	
calendars -date marked, within visual field from bed	85	
overbed table free of medical supplies/equipment	74	82
orientation card	80	
overbed table within visual field and reach of patient	77	
window ledge free of medical supplies/equipment	68	
call light within visual field and reach of patient	68	
toilet articles on bedside stand or overbed table		49
bedside stand free of medical supplies/equipment		36
overbed table within visual field and reach of patient		36
communication or sensory problems noted on admission assessment, kardex, or careplan		36
jewelry and religious items on stand, overbed table, or with patient		27

* # observations = 72
** # observations = 33

the Siemsen (control condition) and Miller (experimental condition) studies.

The overall percentage of utilization of the props noted with the Observation Checklist during the implementation of the EOI protocol was 48.2%. Table 9 presents those props which had the lowest percentages of utilization during the Miller study. Props which involved nursing documentation on the patient's kardex, admission assessment, or careplan were implemented the least by the EOI nurses.

The percent of utilization was compared by shift and weeks in the study to examine adherence to the protocol over time. A review of the use of the props, by percentage of utilization, indicated that there were no clinical nor significant differences in the EOI nurses' use of the interventions by patients': levels of confusion, day in the hospital, and whether they were receiving care during the early or late parts of the study. As measured by the Observation Checklist, there were no consistent differences between the day and evening shift EOI nurses in implementation of the EOI.

The use of the props associated with the EOI was significantly higher ($p=.0001$) during the Miller study, as compared to usual practice with the control condition. The props were noted to be present 20% of the time in the control condition, whereas they were observed 52% of the time with patients in the experimental group. Table 10 compares the use of the props between the groups overall, and for the components of props found with the patient or in the patient's chart.

Table 9

Least Frequently Used Props Associated with the EOI
Monitoring the Delivery of the EOI

Observation Checklist	
Percent Utilization *	Props
17	door closed
16	usual habits noted on kardex
15	hand written letters from family/friends
12	radio, music, tv under misc. on kardex
7	pm care instructions on kardex or careplan
5	nursing dx. of diversional deficit noted on careplan

* # observations = 72

Table 10

Comparison of Groups in Use of Props Associated with the EOI

Observation Checklist Components		Control Group	Experimental Group		
chart props	n	8	13	t	-2.22
	$\bar{x}$	.145	.301	df	19
	S.D.	.183	.138	p	.0386
props with patients	n	8	13	t	-8.10
	$\bar{x}$	.223	.605	df	19
	S.D.	.089	.113	p	.0001
checklist total	n	8	13	t	-7.65
	$\bar{x}$	.200	.523	df	19
	S.D.	.084	.099	p	.0001

EOI Report

The interventions were rank ordered as to their use by the EOI nurses. Percentages were calculated as to which categories of interventions had the highest and lowest rates of utilization. On a weekly basis, the EOI reports for all nurses were summarized. Interventions from each category that had the lowest and highest rates of utilization were discussed at the focus group meetings, using the identified facilitating and constraining forces to initially guide the examination of necessary revisions.

There were 35 EOI Reports completed by the EOI nurses, with 15 forms completed on the day shifts, and 20 on the evening shifts. The evening EOI nurses completed more forms because they all worked fulltime. With the exception of the one evening nurse who worked with fewer of the patient subjects, the nurses from each shift completed similar numbers of Reports. As described in the Methods section, different forms of the EOI Report were distributed to the nurses based on several factors. Forms C and E, which included the EOI associated with admission, were distributed five times each, when the EOI nurse was expected to be involved in an admission. As expected, this was lower than the number of forms A (n=9) and B (n=11) that related to EOI that could be implemented with all patient assignments. Form D, which included the EOI associated with family members and friends, was also distributed only five times, when the investigator knew that a patient had visitors.

Tables 11 and 12 present the rank order of interventions that had the highest and lowest rates of utilization, as reported by the EOI nurses. An average of 2.75 was used as the cut-off for the most commonly used interventions, because a response choice of 3 indicated that the intervention was usually done. For the least commonly used interventions, an average of 1.5 was used. A response selection of 1 by the nurse would indicate that she rarely used the intervention with the identified subject. Because of the different number of forms of the EOI Report that were distributed, there was variation in the number of times an intervention would have been presented for evaluation of its utilization by the EOI nurse.

The categories with the highest reported rates of utilization were the focused assessment and meeting immediate personal needs and the orientation/welcoming activities. The lowest rate of utilization occurred with the EOI involving the patient's family members and friends. This can be explained, in part, by the limited opportunity the nurse had to interact with these individuals. While the family was noted as being present on three of the 34 (9%) EOI Reports that were completed, it is possible that the EOI nurses overlooked this item on the report. However, the family present finding is consistent with the low incidence (21%) found by the research assistants, as they used the Observation Checklist. Of concern with the low reported rate of utilization is that the family/friend form of the EOI Report was only given to the EOI nurses who were caring for patients that the investigator knew had had

Table 11

EOI Report - Highest Rates of Utilization
Monitoring the Delivery of the EOI

Mean ($\bar{X}$)	Rank Order of EOI with Highest Rates of Utilization
3.0	hearing aid/eyeglasses in use/accessible to patient
	medical supplies & technological support devices accessible to staff but minimally intrusive to patient's space
	personal toilet articles on overbed table or bedside stand
	books, cards, & pictures where can be seen by patient
	jewelry & religious items with patient or where can be seen by patient
	verify with patient that call light within reach & visual field of patient
	warmly greet patient at eye level with handshake
	reintroduce staff by name, position, & purpose with each interaction
	orientation card
2.9	room lighting appropriate to time of day & activity
	calendar within patient's field of vision & marked daily
	current schedule of daily events card
	verify patient comprehension
	large dial clock within patient's field of vision
	speak slowly & clearly in lower pitched voice
	focus on patient's needs
2.8	window blinds raised in am (if no glare), closed in evening (if window bed
	incorporate patient's habits into daily care

Table 12

EOI Report - Lowest Rates of Utilization
Monitoring the Delivery of the EOI

Mean ($\bar{X}$)	Rank Order of EOI with Lowest Rates of Utilization
1.5	patient's preferred name recorded on kardex
	record nursing dx. sensory alt...
	express appreciation for family being available to patient
	ask patient experiences with hospitals
1.0	record/update...patient has problems communicating needs
	instruct unit secretary to limit interruptions - admission
	orient family/friend about hospital and services family can use
	sit down with patient
.5	obtain phone numbers & times of access for important friends/ family - record on kardex
	prophylactic administer analgesics
	record information about hearing aids & glasses on kardex & careplan
0	ask family/friend if they have any questions/concerns
	show by example & explanation use of touch
	phone family/friends for patient to help orient & calm patient
	request family/friends to leave handwritten letter at bedside
	read letters to patient when patient bored or anxious & family/ friend not available
	inform risk of loss of personal possessions
	pm care instruction on kardex & careplan

family visitors. Four of the patients had family members visit on a regular basis, and two had consistent visitors over the weekend. Thus, it is likely that the low rate of implementation of the EOI with family members was due to additional factors beyond families or friends being present on the unit. Two nurses recorded on the EOI Report that they had forgotten to implement the EOI associated with the family.

Although not a category of the EOI, all interventions which involved documentation on the patient's kardex, careplan, or admission assessment were in the lowest rate of utilization category. This is consistent with the data from the Observation Checklist, as previously described.

Nurse's Logs and Focus Group Discussions

The data obtained from these two methods of data collection were combined because qualitative analysis was used with both to monitor the delivery of the EOI and to pilot the evaluation of the EOI. Taped recordings of the logs and discussions were transcribed verbatim on an ongoing basis, since modifications of the EOI protocol occurred based on the qualitative information obtained. The transcripts were reviewed to generate codes which represented key ideas or words, phrases, and sentiments (Basch, 1987; Kingry et al., 1990). The pieces of information were placed in the initial categories of key ideas and examined for their fit and consistency. The contents of each category were searched for subtopics and the selection of the quotes or phrases that best expressed the key idea (Kingry et al.; Zemke & Kramlinger, 1982). The

categories with a summary of some key quotes and phrases were brought back to the focus group for critique of their accuracy in relaying the thoughts and feelings of the group, and to guide further discussion. Those categories that were least developed were presented for the group to evaluate their importance to the EOI and project. When they were seen as important, then this stimulated further exploration by the focus group. Summaries from the EOI report were presented to the focus group as common concepts arose for validation.

The focus group discussions shifted from an early concentration on the procedures with the study, and particularly the need to implement the EOI preventively, to a focus on the factors which inhibited implementation of the interventions. The need to implement the EOI preventively arose from the intent of the EOI and criteria used by the nurses to assess confusion. The first patients admitted to the study did not exhibit confusion, as measured by the Neecham and the EOI nurses' criteria. Some of the nurses thought they were expected to wait to implement the EOI with patients who were confused. This was clarified during two focus group meetings and with the investigator's contact with the nurses on the unit. As discussed later with the investigator's log, the EOI nurses were consistent in using the patient's level of alertness and orientation as the sole criteria for determining confusion. Thus, it became critical to emphasize the preventive implementation of the EOI to reduce the likelihood of the nurses failing to use the EOI with confused patients who did not exhibit those defining characteristics.

The factors which promoted the use of the EOI were: their ease of use and ability to be incorporated with other care activities; compatibility with the EOI nurses' view of desired nursing practice; and the effectiveness of the EOI particularly with patients who were marginally confused. The EOI nurses did not believe that the EOI took much more additional time, beyond the overall need to slow down when with the patient. They were able to do the other nursing activities with the patient while using the EOI. The nurses reported that the EOI validated what they believed should be done with elderly patients, and the study legitimized and placed value on these activities. Anecdotally, during focus group meetings and in the logs, the nurses related episodes when using the props and a slow approach helped with patients who were beginning to become uncertain as to their whereabouts and restless.

The EOI which were identified as being particularly effective with patients included: slowing down when with the patient; respecting the patient's routine; keeping the patient's personal items out where the patient could see them; and having the clock, calendar, schedule of events card, and orientation card accessible to the patient. The nurses related several episodes when patients reviewed the information on the cards by themselves, with the nurse, or with roommates. The patient's personal items served as a positive prop for the nurses. The nurses reported that seeing the patient's bathrobe, sweater, or personal toilet items helped them to view the patient as a person, which then reinforced their use of the other EOI.

The factors which inhibited implementation of the EOI were identified by the nurses as the same factors which interfered with their ability to provide patient care. The majority of the focus group meetings was spent discussing these factors, partially because it was difficult for the nurses to move unassisted beyond their emotions to an identification of the factors. The emotional theme which characterized their feelings was identified by an EOI nurse at the final meeting who said, " We sound like battered women - feeling helpless but not getting out of a bad situation". The factors were: lack of control of the admission and discharge process, reduced support services, and frequent interruptions.

Nurses did not believe that they had control of: access to the new admission, when patients came to the unit, or the determination of patient discharge. On some occasions, the nurses would receive a report about the new admission, which they found very beneficial in helping them to plan care and the environment. However, even with a report, the timing of when the patient would physically arrive on the unit was very unpredictable (except that it usually came at a "bad time"). The nurses spent a lot of time trying to coordinate necessary services, such as medications, at both admission and discharge. Discharge orders were written with little if any advance notice, leaving the nurse, patient, and family trying to make arrangements in a rushed situation. The problem of arranging for medications with discharge is being resolved. The information provided by the nurses about access to new

admissions validates what the investigator observed (see investigator log). The EOI nurses were troubled by the lack of rest that patients received because of the number of people in and out of the patient rooms. This problem was particularly serious during the admission period.

"Running around" because of interruptions was a theme expressed by the EOI nurses as characterizing many bad shifts. Interruptions were viewed as a problem for both the nurses and patients. One nurse thought that she may have contributed to a patient's confusion because of the number of times that she was in and out of his room due to interruptions. The nurses did not have a schedule of diagnostic tests for patients on their unit. Thus, it was not uncommon for them to be interrupted in their work with one patient to have to go assist transportation with preparing a patient to go to x-ray. Interruptions were seen as a problem which was going to become even more severe because of cutbacks in support services. If the nurses wanted more nursing assistants for support services, then they expected that there would be an associated cut in the professional staffing level. Additional examples of cutbacks which would increase interruptions were: loss of unit based pharmacists; the nurses having to begin going to the laboratory to get blood; and the IV start team was being discontinued. One nurse summarized the impact of these inhibiting factors on the nurses and patients, as follows: "We'll quit. They'll get even less care. We're walking backwards out the door. Patients are trying to talk to us and we keep walking backwards to try to get

out".

The only factor which inhibited implementation of the EOI that did not relate to current nursing situations was the nurse forgetting to implement some of the EOI. This factor was most important with the EOI involving the patient's family members and friends. With the other EOI, forgetting as a factor inhibiting implementation occurred occasionally and was concentrated in the early part of the study. One nurse related that, now that the study was over she was used to the interventions and found it easy to remember them because they were part of her regular, patient routine.

Research Assistants' Comments and Investigator's Log

Individually, the research assistants all made comments about the rapid pace of the unit. They reported feelings of wanting to stay away because the nurses and nurse's station seemed so busy. Comments that "It's crazy up there" were not infrequent, nor were they limited to the early part of the study. The research assistants also were sensitive to the number of interruptions that patients experienced. They expressed wonderment that patients could ever get any rest on the study unit. These comments validated the feelings of the investigator.

Three additional themes were evident from the investigator's log, which related to events surrounding patient admission, nursing assessment, and nurses' knowledge about their patients. To the investigator, the admission of a patient to the study unit was chaotic for the nurse and filled with disruptions for

the patient. The nurse frequently did not know when a patient was coming to the unit beyond the broad parameters of the afternoon or evening. The criteria for when the patient was admitted was based on the bed being "ready". The investigator noted that all of the EOI nurses spent much time, as well as physical and emotional energy, walking the halls, trying to gain access to the patient (who had numerous health care providers doing assessments and diagnostic tests), gathering supplies, obtaining necessary changes in orders, and conferring with dietary and pharmacy about necessary therapeutics. On the average, it seemed like there was a two hour period that followed admission before activity slowed around the patient. The nurse associate and EOI nurses recommended that, if the investigator wanted to talk to a newly admitted patient, that she should do it as soon as the patient came to the unit, or the patient would not be accessible. This was indeed the situation.

The nurses' ability to accurately assess the mental status of elderly patients was quite limited. On several occasions, EOI nurses and other staff reported patients as being not-confused, or alert and oriented, when the investigator knew the patient was having difficulties, as measured by the Neecham or self-report. Nurses generally identified patients as confused and recommended them for the study if they were disoriented, tried to get out of bed, or pulled on tubes.

On several occasions, the investigator was surprised to find that changes in patients' conditions or knowledge about the patient had not been

communicated to nurses on different shifts, via written or verbal means. For example, the staff did not know about the following different patient situations: a patient being the primary caregiver for a seriously impaired spouse, another patient physically assaulting staff, discharge plans, and the need to use the doppler to obtain vital signs on a patient with poor perfusion. Nurses were in the situation of having to learn, on their own, about their patient assignment, with the beginning of each workday.

Analysis of Consequences

The analysis of consequences associated with the EOI protocol is part of the plan for evaluation study aim. The positive and negative consequences for patients, with particular attention to patient confusion, and patient and family/friend satisfaction and comfort with the nursing care provided the data upon which decisions were made about necessary revisions. Information obtained about negative consequences experienced by the EOI nurses, associated with the EOI protocol, was used to guide refinements to increase the feasibility and acceptability of the interventions.

Confusion

In reviewing the results pertaining to analysis of consequences, it must be emphasized that comparisons between the control and experimental conditions are very limited because of the differences in the patient sample composition related to the admission levels of confusion.

The control and experimental groups were combined to examine the phenomena of confusion. Table 13 presents the fluctuations in levels of confusion, which occurred within a calendar day, across the days of hospitalization for patients in the combined Siemsen and Miller samples. A comparison of days 1 through 5, shows the marked increase in changes which occurred on day 2, with a reduction and stabilization (across the sample) through day 5. There are two points which need to be emphasized when reviewing these data. First, a change in the level of confusion can be an improvement or deterioration. The small number of patients for whom Neecham assessments were done on day 1 could bias the results for that day (another example is what occurs on days 7 and 8). It was the number of patients whose level of confusion changed on day 2 which led the investigator to become concerned about including subjects from the Siemsen study who were admitted to the study on other than the first day in the comparison group. As discussed in the Sample section, Siemsen may have avoided screening those who were most acutely ill (and more likely of having confusion associated with physiological instability) on day 1. This could partially account for the difference in the amount of fluctuations in mental status between days 1 and 2.

Because of the investigator's interest in the confusion trajectory, an analysis of stability was done. Stability was defined as the maintenance of the same level of confusion during a day for which there were two assessments completed. The number and percentage of patients with stability was examined

Table 13

Fluctuations in Levels of Confusion Within a Day

Sample	Days of Hospitalization							
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8
Number of patients who have change in level	0 1*	11	7	6	3	2	2	2
Total number of patients in study with a.m. and p.m. assessment	8 9*	24	20	17	10	9	3	5
Percent of patients with change in level	0 11.1*	45.8	35.0	35.3	30.0	22.2	66.6	40.0

* If include the 1 subject judged by investigator in experimental study to be at different level.

in relation to the admitting level of confusion (Table 14). Patients admitted with early/mild confusion (level II) were far less stable than those admitted with no confusion.

The scores on the Neecham were plotted for each patient over their length of hospitalization to describe the confusion trajectory. As shown in Figure 2, four patients showed episodes of a marked drop in mental status occurring with patients. Two of these patients were admitted with no confusion into the Siemsen study, and two were in Miller's study, being admitted with early/mild confusion. Anecdotal information was available from the research assistants about the increased confusion that occurred with these subjects. Subject 56 had received a large dose of a tranquilizer in preparation for a diagnostic test because she had been combative in x-ray the previous day. One subject (id 58), had episodic, febrile episodes and is a good example of confusion associated with physiologic instability (Neelon, 1991). Another example of this confusion etiology is found with subjects 8 and 9 from the control group. These patients both developed severe respiratory distress, first detected by the research assistants.

Within each of the three levels of confusion, Neecham scores of subjects in the Miller study were compared with scores of subjects from the Siemsen study. This enabled the data to be examined for different confusion trajectories associated with receipt of the EOI by level of confusion on a group and individual basis. A repeated measures ANOVA was to have been used as

Table 14

Stability by Admitting Levels of Confusion Over Hospitalization

Admitting Level of Confusion (NEECHAM)	Number of patients whose level changed	Number of patients in level
Level I (severe)	2	3
Level II (mild/early)	9	10
Level III (none)	6	16

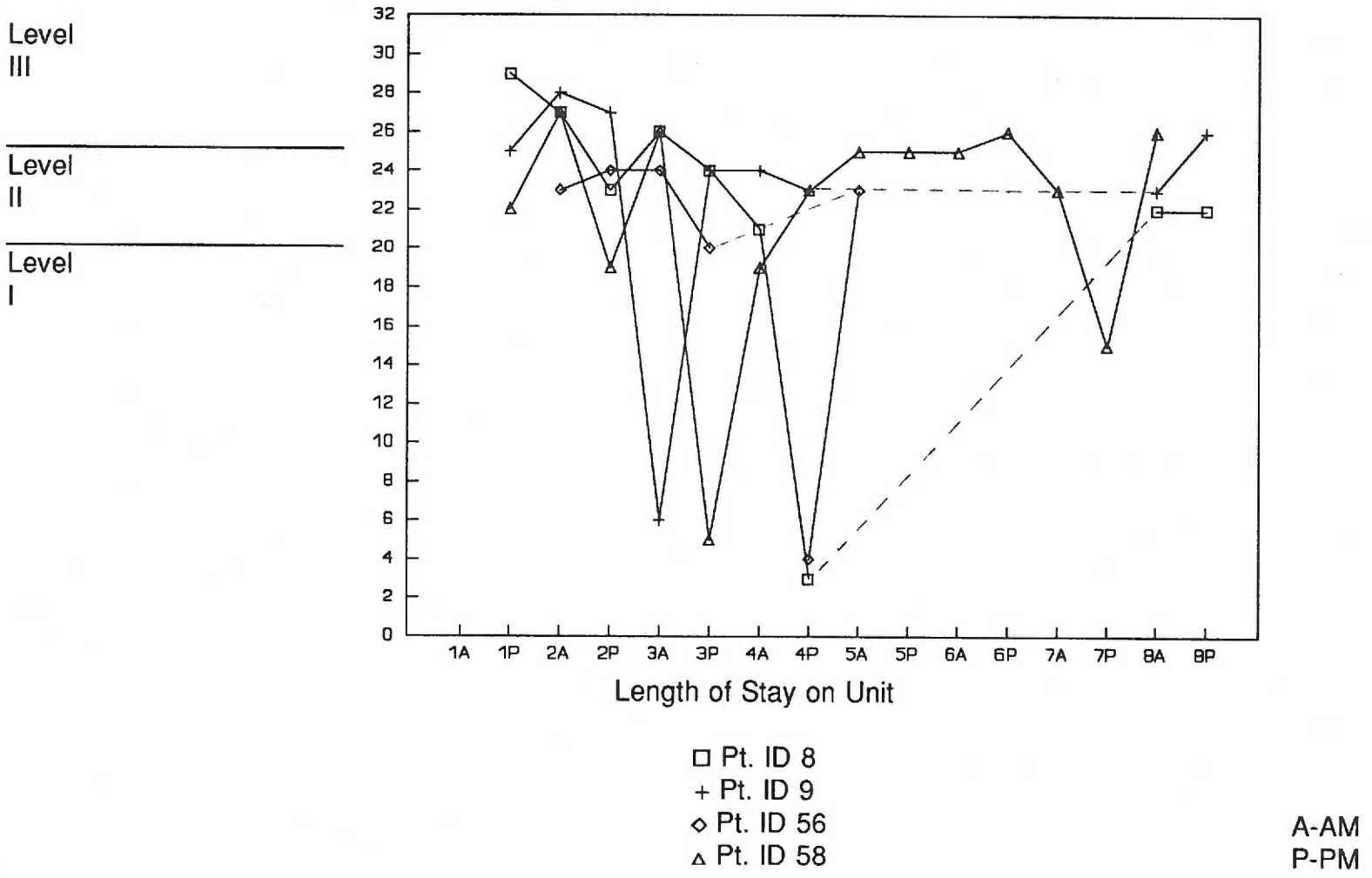

Figure 2. Trajectory of confusion for patients who showed marked drop in mental status.

a summary statistic to determine if any differences between group means and levels of confusion within groups up to seven days were significant. ANOVA is quite robust with regard to violation of the assumptions of normal distribution of the dependent variable and homogeneity of variance, which was fairly likely given the small sample size (Munro, Visintainer & Page, 1986). However, the small number of subjects within levels of confusion and widely different composition of the control and experimental groups within each level, made the analysis inappropriate.

The following graphs (Figures 3-6) represent sample confusion trajectories for patients. Because of the small number of subjects admitted at level I confusion, the control and experimental groups were combined, and comparisons were not made. Note in Figure 3 the variability in Neecham scores for both subjects admitted with severe confusion who had more than two assessments done. The average standard deviation (sd) for the Neecham scores of the three patients in level I was 2.9. As shown in Figure 4, there is a marked increased variability noted of patients' scores admitted with level II confusion, particularly when viewed in comparison with level III admissions (Figures 5 & 6). The average standard deviation of level II subjects was 2.6, with individual sd's ranging from .5 to 7.13. Scores showed limited spread, which were in the direction of improvement, for level III, experimental subjects (Figure 5). It is emphasized that the clinical and statistical meaning of improvement or deterioration within a level is not known. Some of those

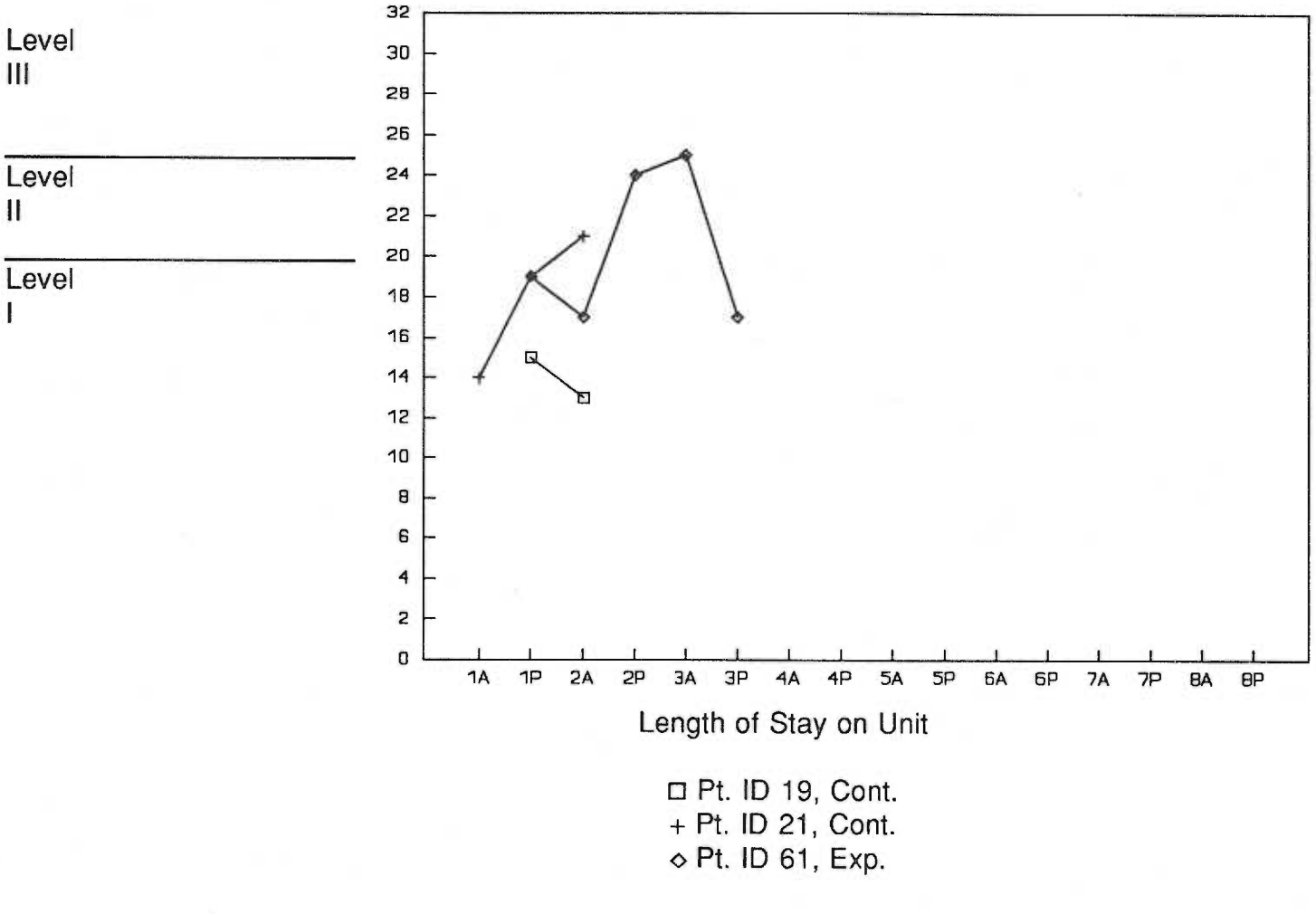

Figure 3. Subjects admitted at Level I confusion.

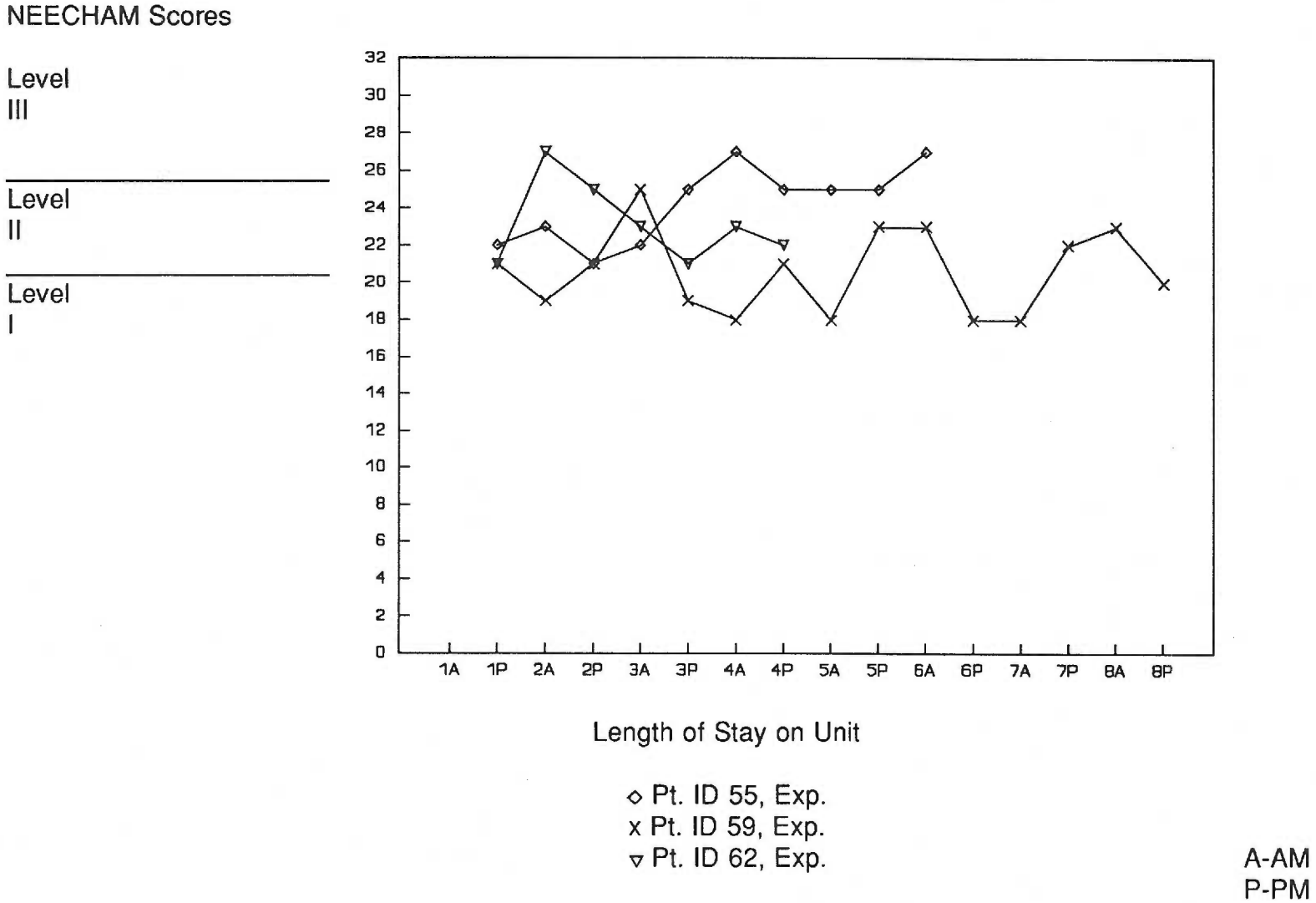

Figure 4. Trajectory of confusion for patients admitted at Level II confusion.

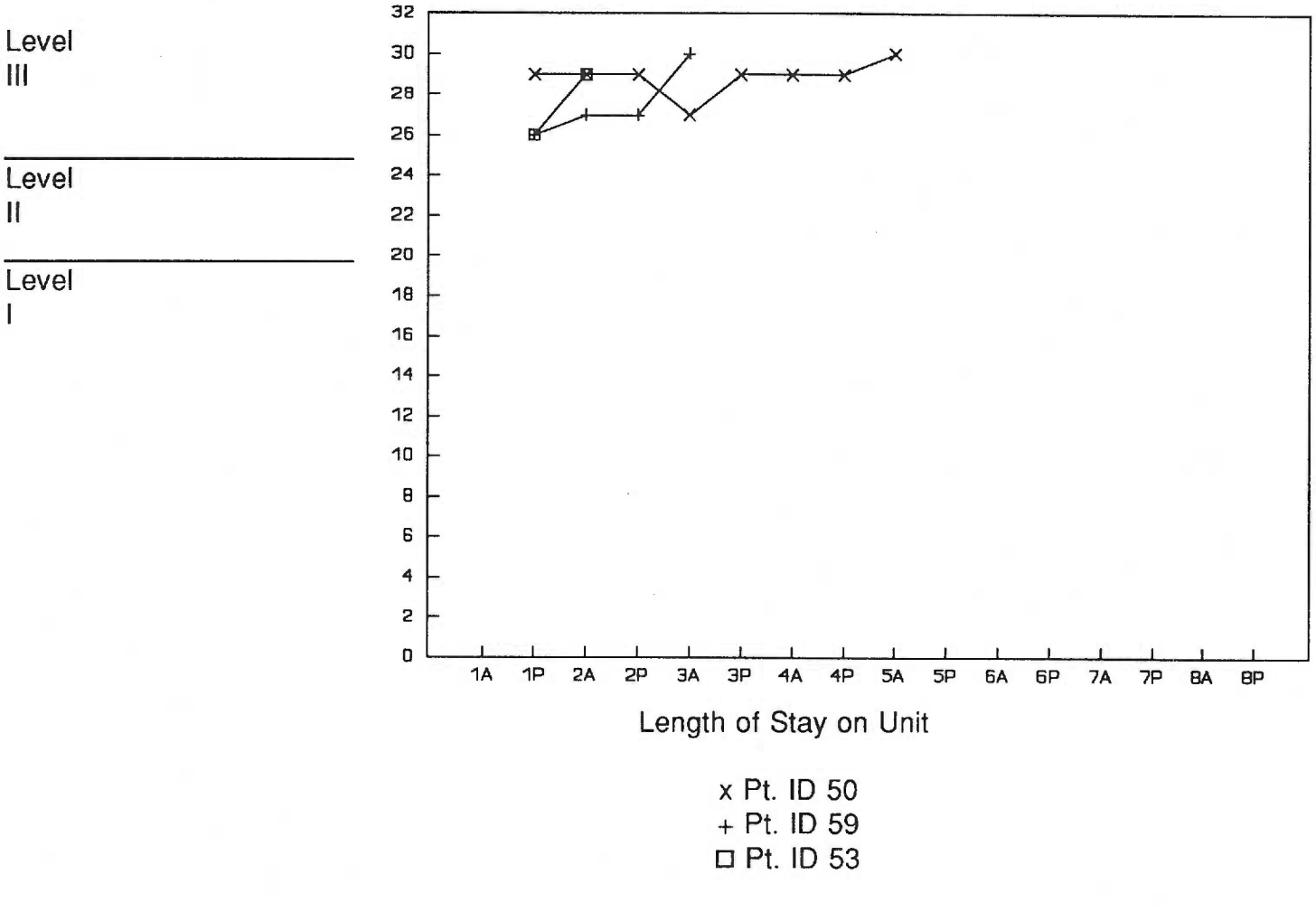

Figure 5. Trajectory of confusion for experimental group admitted at Level III.

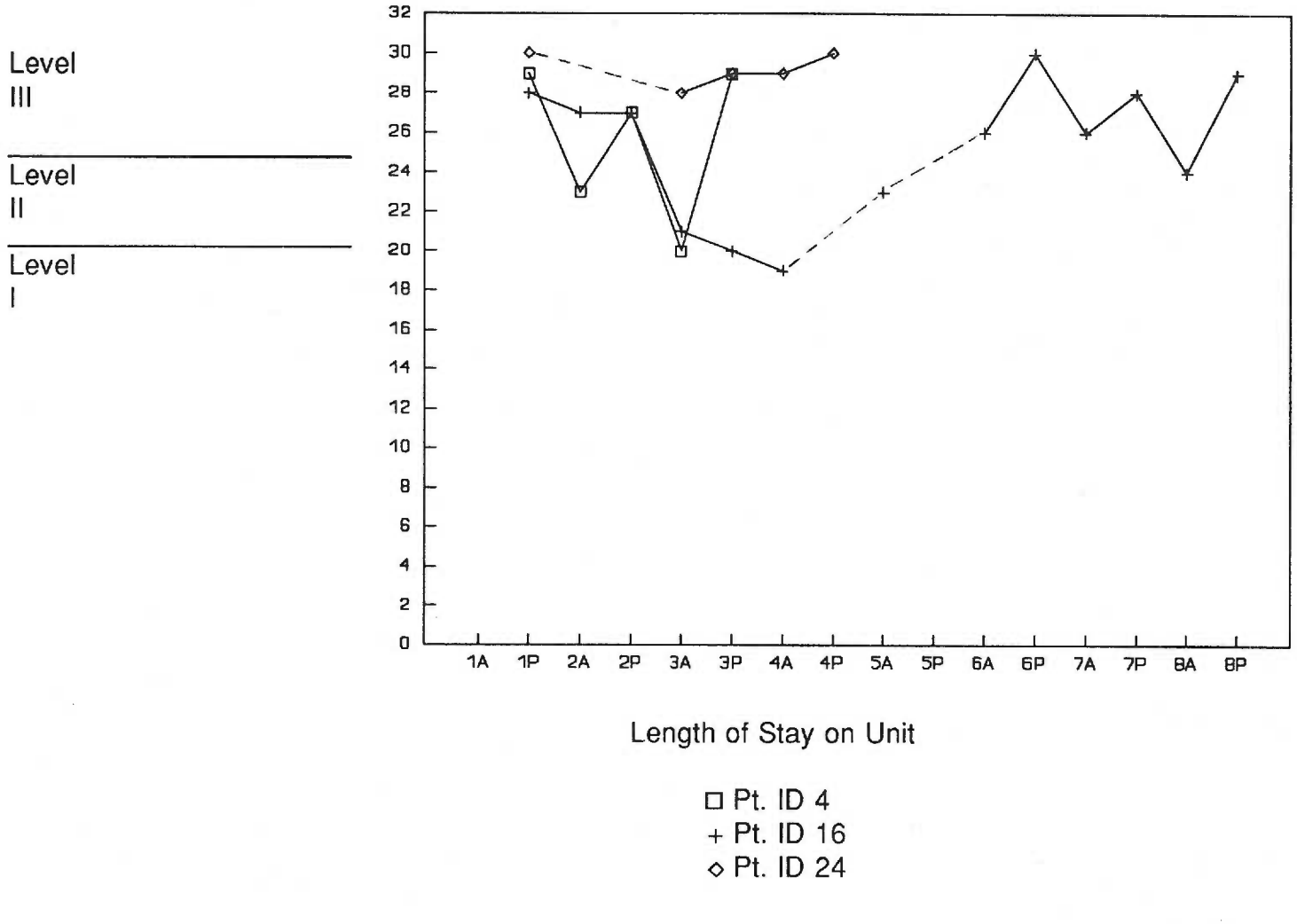

Figure 6. Trajectory of confusion for control group admitted at Level III.

admitted without confusion in the control group (Figure 6) did show some episodes of deterioration and/or variability in their confusion scores. The average standard deviation for level III subjects in the control group was 2.24, with a spread of individual sd's of .47-7.12. One would expect, with regression toward the mean, that those at the upper range of function would shift toward lower scores. It may have been that this was not evident with the Level III, experimental group because of its small sample size.

Frequencies were used to compare the experimental and control groups on the percentage of subjects who were discharged at a lower, higher, or same level of mental function from admission, and those who had no changes in their levels throughout their length of hospitalization. While it must be read with caution given the recognized limitations in sample size and composition, the changes in levels of confusion over hospitalization of the control and experimental group are presented in Table 15. By discharge, approximately 75% of the patients in both groups were at the same level of confusion as when they were admitted to the study. 8.3% of those in the experimental group and 17.6% of control group subjects left the hospital more confused than they were at admission. One patient in the control and two of those in the experimental group improved in their level of mental clarity from admission.

To further examine if there was a relationship between the use of the EOI and patient confusion, additional graphs were to have been used. They would have compared the groups of patients whose Neecham levels either

Table 15

Changes in Levels of Confusion Over Hospitalization

Change in levels (NEECHAM) from admission	Control		Experimental	
	n	%	n	%
Discharge lower level	3	17.6	1	8.3
Discharge same level	13	76.5	9	75.3
No change during hospitalization	8	47.1	4	33.3
Discharge higher level	1	5.9	2	16.7

improved or deteriorated from admission by the percent of utilization of the EOI as measured by the EOI Reports and Observation Checklist, plotted together with their associated Neecham scores. A graph was going to be used to examine the presence and configuration of the relationship to guide the appropriate choice of a correlational measure. It was proposed that the more the interventions were implemented, the greater would be the likelihood that patients would have received their intended benefits. However, it was also recognized that a curvilinear relationship could have existed, for nurses may have used the selected EOI the most with patients that were seriously confused. The small number of subjects (n=3) in the experimental group whose levels of confusion changed made this analysis inappropriate.

Encroachment

Encroachment included the sounds, smells, and use of space that came from the roommate's side of the room and extended into the subject's area. A weakness of this measure is that it does not discriminate between positive and negative encroachment. This approach was selected because only the subject would be able to interpret the meaning of the stimuli to himself. Thus, a roommate calling a friendly greeting to the subject would be scored the same as the roommate having the volume of the television turned up high. Information about patients' roommates is provided in the analysis of consequences section because of its potential impact on patient confusion and the ability of the EOI nurse to implement the interventions. Of the 27 times that

a roommate was noted to be present on the Observation Checklist, the research assistants recorded that encroachment occurred 70.4% of the time.

Family and Friend Interviews

The comments of patients, family members and friends regarding the nursing care were reviewed in the same manner as the logs and focus group discussions. The information was analyzed regarding: overall satisfaction and comfort with nursing care, the generation of categories about recommended nursing actions, and strategies to obtain feedback from patients, family members, and friends. The data were examined for similarities and differences between information obtained from patient and family/friend groups.

The family and friend interviews were very limited in the depth and scope of information obtained. Those patients and family members who were markedly, cognitively impaired (two patients and two family members) had difficulty providing any information about the nursing care. Other individuals, who were moderately impaired, were noted to use cognitive, protective behaviors. For example, they would respond to questions with remarks such as "I couldn't really say". In addition, of the twelve interviews which were conducted, only five individuals (one family member and four patients) were able to provide information about the nursing care that went beyond physical care. The family member of one patient was the only one able to critique the EOI nursing care. The informant did not identify anything that the EOI nurses did as part of the study that was different from other nurses. None of the

family members or patients interviewed were able to make any further suggestions about what they wished the nurses would do more or less of, beyond their direct comments.

The themes identified by patients and family members were: the nurse not coming back, the nurse keeping the patient clean and comfortable in a kind and gentle manner, administering medications and treatments as ordered by the physician, and the nurse getting to know the patient. The major theme expressed by nearly all patients and family members was the nurse not coming back. Much emotion was voiced by patients associated with their reports of the nurse leaving the room, and not coming back when she said she would. They reported "being left half done" and "having to wait when you need help". The family members expressed less emotion with this issue and provided examples of the callight being on for a long period of time. Commonly, patients and family members would preface their remarks with a comment such as, "I know the nurses are very busy, but..." One patient thought that if the nurses were better organized, they would not have to keep leaving the patient's room so frequently.

The provision of physical care involved keeping the patient clean and turned so the person could be comfortable. Two patients expressed appreciation for the nurses that were "kind and gentle" as they rendered physical care. All of the informants identified physical care as important, but they could not give any additional examples of what things they would either

like, or not like, the nurse to do. Generally, patients and family members were pleased with the physical care provided, and the administration of medications and treatments, such as the monitoring of blood glucose and blood pressure.

The last theme involved the nurse getting to know, or engaging with, the patient. One patient expressed a strong appreciation for the EOI nurses. She also acknowledged how busy they were, and found it very important that they spent a little time with her not associated with giving medications or treatments. She went on to talk about how important it was for her to know the nurses as people, as well as for them to know her. Humor was cited as a positive action by the nurse. Two other patients indicated displeasure with the staff because the nurses didn't acknowledge and include the patient in his care. These informants felt that their suggestions were dismissed by the nurses, who, "...hurried and did it their way anyhow".

The family members of a patient, who was markedly cognitively impaired, were pleased with their implementation of certain EOI. This family had initially refused to give consent, because they were concerned that the patient would be further taxed by the study. They were actively involved in helping the patient and spouse continue to live in the community. The family responded positively and quickly to the suggestions of leaving the handwritten note and bringing in the person's bathrobe, slippers, favorite pictures, and animal figurine from home. They stated that it made them feel good to be able to do something that they felt helped their grandmother. The family members felt that

she was calm and doing well in the hospital, contrary to their concerns that she would become more confused.

Negative Consequences Associated with the EOI

The EOI nurses could not identify any negative consequences for patients associated with the EOI. However, the investigator did identify negative outcomes with two patients that could be associated with the EOI. One subject, admitted with early/mild confusion, told the investigator that she had had an earlier episode of paranoid behavior associated with drug toxicity. One night, early during the course of her hospitalization, she reported hearing staff say that she only had a little time to live. The patient then associated the clock prop and calendar with them being placed in the room so that she could count off her last hours. The patient became very upset, and the night nurse removed the props. The next day, the patient discussed the events with the EOI nurse, and based on their decision, the patient was re-entered into the study. However, data collection was discontinued several days later, when she became concerned that we thought she might be going crazy, and that was why we were coming in to see her twice a day. It was interesting to note that the corresponding Neecham assessment showed a decreased oxygen saturation of 88% and increased confusion. The patient was discharged the next morning.

Another subject was screened by the investigator as having early/mild confusion when he was admitted to the unit by neighbors because of recent

falls and self-neglect. Shortly after admission, the physician noted him to be confused. The evening EOI nurse noted him to be cooperative, but restless and unsure of where he was. Twice, the nurse successfully redirected him as he tried to leave the hospital to find his wife. The EOI nurse implemented many of the interventions with him, helping to orient him to the facility and events leading to his hospitalization, as well as focusing on his hobbies and interest in music. His evening NAMF score improved to a level III. The night nurse reported that he was appropriate in his behavior. At 0630, Mr. M. could not be found in the hospital. He had navigated four floors in the facility, called a cab, and returned home. One wonders if the EOI nurse may have helped him to regain his orientation and gather the mental resources necessary to successfully leave the hospital.

The nurses identified one negative consequence for them as a result of being involved with the study. The nurses felt frustrated when they could not implement the EOI with patients, as part of their regular workday.

Positive Consequences Associated with the EOI

The daughter of Mr. D. returned to the study unit to ask the investigator if the research assistants could continue to visit him on the telemetry unit. She also requested the use of the clock and calendar. Mr. D. had widely fluctuating levels of mental function, and the daughter believed that having to interact with the RA's challenged him to remain engaged with the environment. She related a feeling of satisfaction that she could do something to help her father. The

requests were respected for the remainder of the study.

The EOI nurses reported personal benefits for participation in the study. Two nurses related that being in the study made them feel better because it gave them something new to do to break up the "same daily grind". The study was reported to have "given me a fresher outlook so I feel better about myself and what I'm doing". Another shared positive feelings about being able to help a doctoral student. As summarized by one nurse, the study gave the nurses the opportunity to bond with the patient. "We miss the bonding. We finally got the chance to bond with the patient...They became individuals - they weren't just patients anymore - they were people."

The EOI nurses reported that they thought the interventions helped the patients in ways not directly associated with confusion. As summarized by one nurse, "I think they (the EOI) made the patients feel like they were people - that they were important".

A positive consequence of the study was the beginning diffusion of the innovation to other nurses on the unit. The EOI nurses reported that other nurses were starting to use some of the EOI, such as: introducing themselves, bringing out the patients' personal possessions, recording the patient's preferred name on the Kardex, using the clocks (they were given to the unit at the completion of the study), and spending more time with the elderly patients.

CHAPTER VI

DISCUSSION

The results of this pilot study are discussed in terms of the guidelines, presented in the Conceptual Framework section, for the design of an innovation to maximize its potential for utilization. These guidelines provide the basis for evaluation of the study aims which pilot plans for implementation and evaluation of the EOI protocol. Recommended revisions in the EOI, implementation plan, and program for evaluation are included at the end of each section. The following components of the EOI protocol comprise the innovation: selection and training of nurses, selection of patients, working with staff to promote the likelihood of adoption, and implementation of the EOI by nursing staff with patients.

Characteristics of the Innovation

Relative Advantage

The decision of the nurse manager and associates to have their unit involved in the study was influenced by their perceptions of the potential gains which might occur if the EOI were effective. The nurse manager, associates, and EOI nurses were not pleased with the current level of care provided to elderly patients, and especially those who were confused. Although they did not know about the specific EOI, they assumed there would be a positive gain from the implementation of the EOI. From the positive manner in which the

nurse manager and associates identified their unit with the study when talking with other disciplines and nursing units, there may also have been some perceived improvement in status which occurred by virtue of their association with the innovation.

Participation in the study was initially not viewed by the investigator as having much potential advantage for the EOI nurses. The change of the educational program to a full-day workshop instead of a series of classes, did foster the positive perception of the study by the EOI nurses since they were released from the usual workday. Improvements in status may have occurred for the EOI nurses during the implementation phase, as they did report that other nurses and hospital staff sought them out to inquire about the study or make recommendations for patient selection.

The EOI nurses reported gains for themselves and for the study patients by virtue of participation in the study. The study legitimized and valued their nursing practice with elderly, confused patients. The use of the focus group was particularly effective in recognizing their status as knowledgeable nursing professionals. The EOI nurses believed that the EOI helped patients both in terms of reducing confusion and conveying a sense of valuing of the elderly individual.

The EOI interventions were also effective in helping the two families feel positive about their involvement with the patient's recovery. However, the relative advantage of these interventions was limited for the EOI nurses

because of the small number of families who benefitted from them.

A concern with this pilot study is that the EOI could be interpreted as having had no relative advantage in terms of reduced levels of confusion. As with the Williams study (1985), if one only looked at the discharge level of confusion, about the same percentage of patients in the experimental and control conditions left at their same levels as the admission Neecham levels. Because of the limited understanding of confusion and the variability of its trajectories, it is important to examine outcomes over the length of the patient's hospitalization, at discharge, and during convalescence.

Compatibility

The EOI protocol was compatible with the values of the study unit. Although the unit had limited but successful experiences with research, the nurses were accustomed to being introduced to new products and procedures. The protocol was consistent with the values of the EOI nurses who enjoyed learning and the stimulation of new activities.

The EOI, with the exception of those interventions involving the family and friends of the patient and documentation, were very compatible with the EOI nurses' values and practice. The interventions were actions that they believed were important with elderly patients who were confused, or at risk for developing confusion. The reported ease of using the interventions as part of the nurse's usual care activities and limited time demands of the EOI were

important factors which reflected the compatibility of the EOI with existing practice. Although very few changes occurred with the EOI, the involvement of the EOI nurses in the refinement of the EOI during the educational program and focus group meetings is credited with helping to further improve the acceptability of the innovation.

With the review of the EOI Reports for describing usual nursing practice, the EOI nurses reported that interventions involving the patients' families and friends were not usually done unless the family took the initiative in contacting the nurse. Time was spent during the educational program reviewing and emphasizing family involvement because it was different from the EOI nurses' usual practice. In monitoring the delivery of the EOI, the nurses recorded on the EOI Reports their low rate of utilization of the family/friend interventions, and shared that they had forgotten these interventions. However, with the limited number of the associated family/friend forms of the EOI Report that were distributed, the problem was not detected for focus group discussion until late in the study. The limited presence of family members on the nursing unit and their lack of knowledge regarding what they could expect or request of nurses combined with the low compatibility of these EOI to result in their low utilization.

If the EOI protocol were to be continued on the study unit or disseminated to other units of the hospital, it would be important to first discuss with the associated units and nurses their values about patients' family members and friends. It is not known whether the low compatibility of the

family/friend interventions with the usual practice on the unit and that of the EOI nurses was because of different values or beliefs about the family, or other factors which prevented these values from being translated into practice.

The findings from the Observation Checklist for Selected EOI were validated by the nurses' EOI Reports in the low rate of utilization of EOI which required documentation on the patient's admission assessment, kardex, or careplan. During the final focus group meeting, when this finding was discussed with the nurses, they acknowledged that charting was a low priority activity. The EOI nurses did value the importance of recording information to promote continuity of care, both for the EOI and other patient care needs. However, documentation was of lesser value for the nurses than their trying to address the direct care needs of patients. Thus, the low rate of implementation of the EOI documentation activities was compatible with their usual practice and values.

The goal of achieving high levels of complete and accurate documentation on patient records with limited time demands on the nursing staff is one shared by the study hospital and other facilities, secondary to the expense of nursing time and documentation requirements of accrediting agencies. Unfortunately, this hospital had just finished revision of its nursing care plan before the study was completed, which prevents the inclusion of recommendations for documentation of the EOI. The comments of the nurses and the investigator's observations about the loss of information about patients'

needs, and associated negative impact on the nurses' ability to efficiently provide care, have important implications for the nursing service of this and other hospitals. It is strongly recommended that nursing services continue to closely examine documentation systems for designs that permit the rapid retrieval and updating of information that is necessary and useful for patients' nursing care needs.

Complexity

The EOI protocol was very complex in terms of the number of unit, nurse, patient, and family/friend factors which needed to be considered by the investigator for implementation and evaluation. However, the EOI protocol did not seem to be difficult for the nurse manager, associates, or EOI nurses to understand. They were clear about the patient and nurse selection criteria which were met in full, and the procedures for implementation and evaluation of the EOI. The investigator attributes the participants' understanding of the protocol to the implementation strategies which involved the presentation and reinforcement of components of the protocol over time and in several different formats.

The EOI nurses were able to describe the interventions that they used, and evaluated them completely on the EOI Reports. However, it must be emphasized that, except for the props associated with the EOI which were measured with the Observation Checklist, it is not known how fully or correctly the EOI nurses implemented the interventions. For example, the nurses

reported that they did assess the patient's mental status on a regular basis. Yet, despite the presentation of confusion symptoms and method of assessment in the educational program, the EOI nurses continued to rely on orientation and alertness as their major assessment criteria in the early part of the study. Assessment of confusion is an example of an EOI which was more complex than anticipated by the investigator or EOI nurses. One can safely assume that this occurred with other interventions as well.

The investigator's accessibility to the EOI nurses on the study unit, Nurse's Logs, and focus group meetings were effective strategies for helping to reduce the complexity of the EOI. With the assessment intervention, the investigator was able to use patient situations to provide examples of confusion symptoms that illustrated the desired assessment activities. Individually with nurses on the unit and in focus group meetings, the investigator would use the language and experiences related by the EOI nurses to reinforce and restate the EOI.

Trialability

The presentation of the innovation as a trial, pilot study was a very effective strategy in reducing its potential threat to members of the study unit. The relatively short implementation period of the study also supported the staff's perception of the protocol's reversibility.

In terms of the large number of interventions involved in the EOI, the

study did not do limited testing of the innovation. This repeated the weaknesses of the Williams et al. (1985) and Nagley (1986) studies. If fewer interventions had been selected for study, such as one category of the EOI, then the EOI nurses may have been better able to fully implement and evaluate them, thereby increasing the treatment effect. However, there may have been the corresponding cost of decreased compatibility or observability.

Observability

Some of the props associated with the EOI had a very beneficial effect by increasing the visibility of the study and remind staff that a particular patient received the EOI. The sign outside the room not to move the patient's furniture generated curiosity by the unit staff and other health care providers. The presence of the clock and calendar in the patient's room and notations on the patient's records reminded the EOI nurses and nursing staff about the study. The EOI Update Reports were received positively by the nursing staff, who expressed appreciation for being kept informed about the study. The EOI Nurse Assignment Sheet was effective in visually reminding the nurse associates on a shift by shift basis, of the need to coordinate the EOI nurses' assignments. The patient's personal belongings served as a very positive prop to reinforce the EOI nurses use of the interventions.

The props were of importance because of the limited observability of the effectiveness of the innovation with patients. The number of staff who had

contact with the small number of study patients was limited. Since the purpose of the innovation was to prevent and reduce confusion, it would be less observable the more effective it was, until large enough numbers of patients were affected to change staff's perceptions of elderly patients. Indeed it may be that the interventions are beneficial with those patients where the observability of effectiveness would be the least, namely, those patients who are admitted with no confusion. The EOI nurses did report that they observed patient improvement with the EOI, particularly with those patients who were borderline in cognitive function. However, the natural desire to see the benefits of one's actions may have influenced this finding. It is interesting that the interventions which were noticeable, physical props (clock, calendar, schedule of events and orientation cards, and the patient's personal belongings) were all identified by the EOI nurses as effective interventions.

Characteristics of the Adopters

The EOI nurses were a very atypical sample of nurses which must be remembered when considering all aspects of this study. Their strong educational background, gerontological nursing interests, longevity on the nursing unit, and investment in the study indicate that they were interested in new activities. It is likely, based on these characteristics, that they were early adopters. A weakness of this study was its reliance on the nurse manager and associates to identify the opinion leaders on the unit. It is not known how the

EOI nurses were viewed by their coworkers. A more reliable strategy for identifying the leaders would have been to ask nursing staff members who they went to when they had a question or concern about nursing care.

Pilot Testing

Pilot testing is necessary to determine whether an innovation can work under real conditions. Problems were identified with the patient and family samples and nursing unit which inhibited implementation of the EOI. Most of these problems have implications which are relevant to nursing practice and research with elderly persons in the hospital and long term care settings.

Patient and Family Samples

This study was severely limited in the ability to draw any conclusions about the effectiveness of the EOI because of the lack of control of the sample which served as the control condition. The groups were markedly different with regard to their level of confusion upon admission to the study unit. Although partly due to chance, the difference between the groups is also explained by examination of when patients were admitted to the studies, and the need for Siemsen to obtain consent for the admission Neecham assessment. Siemsen deferred discussing the study and obtaining consent from some of the most acutely ill patients. Subjects also were not admitted to the study on the weekend because of limited RA resources. An additional explanation for the differences in the samples is that Siemsen would contact those patients who

were most likely to be capable of giving consent, when several possible subjects were available, to avoid the delays involved in getting family consent. Because the Siemsen study demonstrated that the Neecham assessment was not demanding on patients and was consistent with nursing practice, the Miller study did not need to obtain consent prior to administering the instrument. Thus, she could do the screening assessment when the patient came to the unit, regardless of his acuity. Given the acuity and frailty of elderly patients in hospitals, and marked fluctuations in mental status that occur early in hospitalization, it is most important that groups be comparable regarding when their admission confusion level is determined.

It would have been possible for the investigator to conduct the study with the simultaneous use of a control and experimental group on two different, nursing units with less risk than expected of possible contamination. Most of the nurses chose to remain on the nursing unit during their mealtime, and therefore had no contact with nurses from other general, nursing units during the workday. However, differences in patient and nurse characteristics on the units in the study hospital would have created other additional comparison difficulties.

Both Siemsen and Miller had episodes of families being reluctant or refusing to give consent for those patients who were cognitively impaired. The families were protective of these elderly persons and tried to prevent them from being overwhelmed by more contacts with strangers and interviews than were

necessary by virtue of being in the hospital. The families were correct in recognizing the sensitivity of impaired, older adults to the environment. But, this then creates a dilemma by limiting study of the group of patients who have the most difficulty in the hospital, and who could potentially receive the greatest benefit from studies of effective nursing interventions regarding confusion.

The limited presence of patients' family members and friends on the nursing unit has important implications for the patients, nurses, and family members. In terms of the pilot study, it severely limited the ability to implement and evaluate the associated EOI and family satisfaction with nursing care. If individuals important to the elderly person are not accessible to him, then, using Lawton's framework, secondary incompetence will be increased. This would be especially difficult for the frail, older adult whose other competencies are limited (ie: biological health or cognitive). If family members or friends are not available on the unit, then the nurse must assume an even greater communication function in explaining the treatment regime to them and coordinating discharge planning. Family members and friends, denied the exposure to interventions that they can use to help the patient, may experience more difficulties in working through the illness experience for themselves.

It would be interesting to examine if there are trends in hospital visitation by family members and friends of elderly patients, in relation to the decreased length of hospitalization and increased age of patients. It is also recommended that different methods be investigated by nursing administration to help family

members and friends maintain contact and involvement with the patient. With the movement toward case management, it would be compatible with the primary nurse's role (if sufficient resources were provided) to develop and maintain a relationship with the patient's family and friends, perhaps by using telephone communication to implement the associated EOI.

Environmental Factors Inhibiting Implementation

The factors which inhibited implementation of the EOI were the same factors which interfered with patient care, the development of the nurse-patient relationship, and the patient's ability to get rest. Frequent interruptions and running around were a major impediment to the nurse's ability to focus her attention and contact with an individual. This also contributed to the patient feeling that his needs were not being met and that the nurse didn't come back. These inhibiting factors were of such magnitude that even this group of highly educated, experienced, and involved EOI nurses were only able to implement the EOI about half of the time, based on the findings of the Observation Checklist and EOI Reports.

Interruptions have always been characteristic of nursing care in hospitals. Being responsible for the care and management of several patients and emergencies make it impossible for the nurse to always be able to stay with a patient until care has been rendered and his needs met. However in the past, there would be catch-up times, so that over the course of the hospitalization the

patient would have time with his nurse. This time provided the patient and the nurse with the opportunity to get to know each other, for the patient to develop trust (since he had experiences when the nurse did come back), for them to bond, and for the nurse to be able to see the subtle benefits of her interventions because she knew the patient. With the shortened hospital stays, those catch up times are far more infrequent. Thus, the significance of each nurse contact with the patient increases for both of them. Perhaps that explains why, from the EOI nurses' perspectives, slowing down and respecting the patient's routine, were effective interventions for the patient. The patient's personal belongings may have helped the nurses focus on the patient as an individual and begin the bonding process, from which the nurse can obtain positive rewards for her nursing care activities.

In order to maximize the quality of each nurse-patient contact, it is necessary to examine the nature of the interruptions. With the shortened length of hospitalization, the nurses and unit are experiencing a greater frequency of admissions and discharges, which increases the significance of them in terms of impact on the nurse, interruptions, and need for change.

It is recommended that the study hospital reexamine and critique its philosophy of care and procedures surrounding admission so that admission to the unit be based on the availability of the patient's needed services instead of the availability of an empty and clean bed. Of course, it is recognized that when the emergency room and critical care units are at full capacity, patients

must be moved as soon as possible. However, during the course of this study, that was not usually the case. It is recommended that the patient not be transferred to the unit until: the diagnostic tests which are necessary for development of the initial medical treatment plan have been conducted, medications are in the drug cassette, respiratory therapy has the necessary equipment and supplies in the patient's room, IV pumps and tubing are in the room, and the patient's next meal is verified by dietetic services as being available. In order for this to be accomplished, it would be necessary for the medical service of the unit to go to the patient (in an admission processing area, emergency room, or critical care unit) instead of the patient coming to the physician for the admission history and physical. The "admission nurse" could be more efficiently utilized in an admission processing area instead of having to travel through the hospital. Given the implementation of the computer based system, it would not be difficult to develop a staging system for keeping the health disciplines and nursing unit informed of the patient's status as he progresses through the admission period (ie: entered emergency room, orders written, diagnostic tests in progress). This would give the nursing unit and therapeutic services the opportunity to better plan their service utilization. The unscheduled waiting time, and associated expense, involved in trying to have access to patients would be reduced for all services. With the exception of verifying orders, there is no need for professional nursing time to be involved with the organization of services and supplies. Once these support services

are in place, then the patient can come to the unit where he can receive care and begin development of a relationship with his nurse who will have more opportunity to focus her time with him.

Two other sources of interruptions which can be reduced involve non-emergency, diagnostic tests and the discharge process. It is the investigator's impression that, in the hurry of all services to do their work quicker with the patient so that discharge will occur sooner, inefficiency has increased. It was not uncommon for the investigator and RAs to note transportation services and the associated therapy waiting because the patient was not ready, since the nurse had no advance notice of when the patient was to leave. Similarly, patients were observed to require unnecessary transfer activities, since no sooner had they gotten back to bed, then they were to go off the unit again. This study hospital did schedule rehabilitation therapies. It is recommended that the scheduling system be expanded to include: nursing, medical rounds, x-ray, laboratory, and EKG services.

When developing the scheduling system, consideration should be given to patient rest periods. Although it would be ideal if rest periods could be scheduled according to the individual patient's preferences, at a minimum room geography should be considered. Thus, the nurse responsible for patients in a group of rooms would have some spread in the timing of patient care requirements. Patients and family members would benefit from these periods of limited interruptions. It does not seem that this would negatively effect the

work or efficiency of other health discipline. The respect of the patient's rest periods and schedule by all health care workers would certainly reduce the encroachment on the patient's space. As suggested with Lawton's framework and Hilton (1985), the effect of sound may be most detrimental for patients who are the most compromised with decreased competencies. By changing the distribution of interruptions by health care providers entering the room, the recovery of the patient and roommate may be promoted, and confusion reduced. It is recommended that acute care hospitals look to rehabilitation facilities which have a history of successful implementation of such scheduling systems.

The use of nursing assistants also needs to be re-examined. It seems that, if nursing assistants were viewed as assistants to the nurse instead of patient care providers, then many interruptions could be avoided and patient safety and comfort increased. It is positive to note that one of the EOI nurses has been involved with a new program which looks at the nurse and nursing assistant as a cooperative dyad. At the beginning of the shift the nurse could review with the nursing assistant the schedules of her assigned patients, and admission and discharge statuses so that they could develop a plan for their workday. The nursing assistant would be responsible for screening interruptions for the nurse. Thus, she would: take phone messages to the nurse, verify readiness of services for patient admissions and discharges, have all needed supplies in the patient's room, make unoccupied beds, provide fluids

and nourishments, and assist the nurse with patient transfer and turning activities. Most importantly, the nursing assistant would make frequent rounds to check on patient comfort and safety, and answer the patient's callight. The purpose of these activities is to increase the opportunity of the nurse to engage with a patient, without the concern of what may be occurring during her absence with her other patients. It can be expected that this would also serve to increase the patient's trust that his needs would be met and decrease the occurrence of falls related to unmet needs.

It is also recommended that discharges be scheduled at least eight hours in advance. There were several occasions when patients, family members, nurses, social workers, and dietitians did not know that patients were being discharged within hours. This was disruptive for all involved and created needless frustration and the expenditure of physical and emotional energies. Again, the cost of professionals' time, wasted meals and supplies, and duplicative efforts may more than compensate for the possible expenses of the bed remaining occupied for a few more hours.

Evaluation

Several measures were developed and tested as part of this pilot study. They were evaluated in terms of their usefulness for the evaluation of the EOI protocol.

Confusion Measures

The measures of confusion have important implications for clinical practice. The nurses on the study unit did not assess confusion well. The fluctuations in mental status that occurred with elderly patients, and its development in patients without confusion upon admission makes the adoption of a nursing assessment measure by the unit of major importance.

The Neecham is an instrument which does not impose a response burden on the patient, and is not time consuming to administer, as it can be incorporated into usual nursing activities. The temptation is to recommend its adoption for use in practice. However, questions remain about its reliability for the items involving behavioral observation, and sensitivity (based on Newman's work). The overall reliability of the instrument for determining a level of confusion is very good. If these levels have clinical relevance to nurses, then the achieved interrater reliability would be satisfactory to proceed with the next step. It is recommended that clinical trials then be implemented to determine what type and degree of training is necessary for nurses in the clinical setting to use the Neecham. Certainly the length of the training program developed for the RAs would be inappropriate for nurses and much of it might be unnecessary. That the RAs scored patients differently as they became experienced with the instrument and when they knew the patient is most relevant to use of the Neecham by staff nurses.

It is recommended that the two questions related to the patient's self-

perception of confusion and disturbing dreams be implemented in nursing practice. They were not distressing to patients when asked with the associated prompts, nor time-consuming, and had high interrater agreement. Although they are limited in their sensitivity, the self-perception questions provide more information about confusion than the current assessment practices of the nurses on the study unit. In addition, these questions would at least sensitize the nurses to the potential problem of confusion with elderly patients.

The study hospital is currently in the process of revising their admission nursing assessment form and sought recommendations from Siemsen. Based on the findings of the Miller and Siemsen studies, the following changes have been recommended in the admission assessment: delete statements of "alert" and "oriented", administer the Folstein MMSE, and include the self-perception of confusion and disturbing dream questions. If incorporated, these changes would improve the admission assessment of confusion until the recommended clinical testing of the Neecham can occur, and perhaps increase the sensitivity of nurses to confusion among elderly patients. Periodic staff development activities would be necessary to maintain the innovation of screening for confusion throughout the patient's length of hospitalization, and to refine it when predictive factors are further identified.

Measures of Practice

The Observation Checklist for Selected EOI, Nurse's Logs, EOI Reports,

investigator log, RA comments, and focus groups were the methods used to measure usual nursing practice and to monitor the delivery of the EOI. The Nurse's Logs, focus groups, and comments of the investigator and RAs have been discussed as being very effective sources of information. Triangulation, with the use of several measures, validated findings regarding the presence of family members, effectiveness of the EOI, use of the EOI by the nurses, and identification of factors promoting and inhibiting implementation of the EOI.

The use of the small tape recorders by the nurses provided similar, valuable information to that obtained with the investigator's informal contacts with the nurses on the unit. When the investigator cannot be available on a regular basis to staff, the use of the tape recorder is recommended as a good substitute. A backup recorder should be available since equipment malfunction is likely to occur, given the rapid movements and activity of nurses.

The checklist was reliable and not time consuming, as reported by the research assistants. It was a valid indicator of the props associated with selected EOI. It is recommended that the checklist items regarding family phone contact and religious preferences each be made into two items. For example, phone would become: name and phone number of family member to be contacted, and times when family member wishes to be contacted. The high rate and thoroughness of completion of the EOI Reports, reflects the reliability of the measure and ease of use for the EOI nurses. The validity of the reports is supported by the congruence of its findings regarding

interventions that were most and least frequently implemented, and the associated promoting and inhibiting factors with the information obtained from the Observation Checklist, logs, focus group meetings, and observations of the investigator and RA's. It is recommended that the family present item should be divided into: family present or absent, and name of family member present. These items should be placed immediately above the list of EOI to reduce the likelihood that they would be overlooked by the nurse.

Patient and Family Interviews

For the most part, the interviews were unsuccessful in generating information that critiqued nursing care or the EOI in any depth. This occurred for the following reasons: the short length of hospitalization limited the accessibility of family members and exposure of patients and families to nursing care and the EOI; the frailty of informants made it difficult for them to critically evaluate events that occurred during a stressful period; and the patients and family members were uninformed consumers of nursing care.

Patients and family members were very willing to participate in an interview regarding the nursing care, and seemed to appreciate that their input was considered valuable. On that basis, it is recommended that the examination of how best to gather information from elderly patients and their family members about nursing care be pursued.

Information was more readily obtained when the investigator used

guiding questions that were more concrete. For example, responses were very limited to the introductory question asking patients how things went for them during the hospitalization. The following questions obtained more responses, such as, "What things did the nurse do that you liked?" and "What did the nurse do that you would not like done to your wife if she was sick?" The investigator thought that perhaps informants would provide more information if they did not think their comments would be interpreted as critical of the nurses or hospital. Some interviews used the question, "What things would you recommend that we emphasize when teaching our student nurses?" It didn't seem like this approach generated any increased depth or scope of responses.

It is recommended that interviews with elderly individuals be conducted with short, frequent contacts during the hospital stay. Particularly for those people who are cognitively impaired, the immediacy of a nursing activity to the request for evaluation by the interviewer, will lessen the demands of the interview on them. The interviewer can then refer to the event which can be recalled by the elderly person, and guide them through the evaluation.

The nursing profession and the nursing services of hospitals can assume an important role in helping consumers learn what they can and should expect of nurses. The provision of articles about nursing in newspapers and magazines by the local and national nursing associations would provide information to consumers at times when they are not experiencing the stress of hospitalization. Nursing services could place information about nursing care in

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the lobbies of clinics and medical office buildings. The expense of this activity would be absorbed via its usefulness as a marketing strategy and by the increased amount of information subsequently obtained from patients following hospitalization, as part of quality assurance activities.

Summary

The sampling plan for patients was the major impediment to the successful piloting of the plans for implementation and evaluation of the EOI protocol. The small sample sizes of the experimental and control groups, and differences in the admitting levels of confusion made comparisons difficult for examination of the effectiveness of the EOI in reducing or preventing confusion. There was marked variability in the confusion trajectories for patients, particularly early in their hospital stay, which increases the importance of systematic, accurate and periodic assessment of confusion by staff nurses.

The plan for implementation of the EOI was effective. The presentation of information about components of the innovation frequently and in a variety of formats was effective in reducing the complexity of the innovation for the nurse manager, associates, and EOI nurses. Although an atypical sample of nurses, the EOI nurses were successfully able to implement the EOI, with reported benefits for the patients and nurses. There were major inhibitors to successful implementation of the EOI that made it difficult for the nurse to have periods of uninterrupted contact with the patient. This disrupted the development of the

nurse-patient relationship which made it difficult for the patient to trust the nurse and for the nurse to bond with the patient.

Several measures were developed and tested as part of the plan for evaluation. The Neecham, Observation Checklist for Selected EOI, self-perception of confusion and disturbing dreams questions, and EOI Reports were reliable and had important clinical utility. The focus group was an effective mechanism for the ongoing refinement, reinforcement, and evaluation of the EOI. Elderly patients and family members are interested in being involved in the evaluation of nursing care. Frequent, short contacts with informants, using questions that focus on recent care activities may be an effective approach to obtain information from this group. Education of older adults as consumers about nursing care may help this population to further contribute to the evaluation of nursing services.

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APPENDIX A

Training Programs & Consent Forms

Interview Guide for Focus Groups

I. Introductions (for identification of voices with transcription).

II. Purpose of focus group.

III. Provide positive feedback to group for group's efforts during week.

IV. Present topics of group meeting. Ask for additions of issues for discussion. Then, group format to prioritize discussion and develop time limits.

A. Problems with patients

1. those patients in study

2. problems of patients who are not in study that nurses associate with the study.

B. Responses of 4C nursing staff, other staff and physicians to study.

C. Patient's families issues

D. Specific EOI - review by category

1. effectiveness

2. necessary modifications

3. patient responses and associated patient characteristics

4. those EOI which are being implemented - examine facilitating and constraining forces.

5. those EOI which are not being implemented - examine facilitating and constraining forces.

V. Summarize group decisions and actions for the week.

VI. Establish time and place for next meeting.

GOOD SAMARITAN HOSPITAL & MEDICAL CENTER

Consent Form for Patients

TITLE Nursing Activities and the Hospital Experience for Older Adults

PRINCIPAL INVESTIGATOR Judy Miller, RN, MSN, doctoral candidate, Oregon Health Sciences University.

I have been asked to be involved in a research study to assist the nurses to provide better care at Good Samaritan Hospital.

During the study, nurses will continue to provide the usual nursing care expected at Good Samaritan Hospital. In addition, some of the nurses will work with me and my family using skills they have learned in special classes to try to improve my hospital experience. A research assistant, who is also a nurse, will visit me 10-20 minutes, twice a day throughout my stay in the hospital. She will check my blood pressure and pulse, and vital functioning. The research assistant will talk with me about how I am doing and what I think of the nursing care I am receiving. A family member or friend who has visited me in the hospital will also be

interviewed for their thoughts about the nursing care.

The potential benefit of my participating in the study is that I may find the nursing care more helpful to my recovery. By serving as a subject, I may help other patients to receive better nursing care in the future. Although care will be taken not to inconvenience me, I understand that the interviews by the research assistant will take some of my time and may tire me.

There are no costs to me for participating in the study. Neither my name nor identity will be used for publication or publicity purposes. I understand that I am free to refuse to participate or to withdraw from participation in this study at any time. Should I choose to do so, it will in no way affect my relationship with, or treatment at Good Samaritan Hospital and Medical Center.

It is not the policy of Good Samaritan Hospital & Medical Center, or any other agency funding the research project in which I am participating, to compensate or provide medical treatment in the event the research

results in physical injury. Should I suffer any injury from the research project, compensation will be available only if I established that the injury occurred through the fault of Good Samaritan Hospital, its officers or employees or my physician. Further information regarding this policy may be obtained from the Office of Research Administration at 229-7218.

I am free to contact Judy Miller at any time that I have questions about the study. She can be reached at 494-7877 during the day, or at 244-5875 during the early evening. My signature below indicates that I have read the above and agree to participate in this study.

_____ _____

Patient or Responsible Party Date

_____ _____

Witness Date

GOOD SAMARITAN HOSPITAL & MEDICAL CENTER

Consent Form for Family Members and Friends of the Patient

TITLE Nursing Activities and the Hospital Experience for Older Adults

PRINCIPAL INVESTIGATOR Judy Miller, RN, MSN, doctoral candidate, Oregon Health Sciences University.

Some of the nurses caring for my family member or friend have participated in a nursing study which examines ways of providing care to patients. As part of this study, it is important to evaluate what the nurses did in caring for the patient that family members and friends found to be helpful. Similarly, this study hopes to learn about nursing activities that were either not done, or found to be not helpful. Such information may help other patients and families to receive better nursing care in the future.

I am being asked to share my impressions about the nursing care that I observed while my family member or friend was hospitalized. This will involve a 30-45 minute interview, arranged at a convenient time and place

for me before my family member or friend is discharged. Any information that I provide will be kept confidential, as part of the research study. Unless I request it, information that I give will not be shared with the nursing staff or hospital administration.

There are no costs to me for participating in the study. Neither my name nor identity will be used for publication or publicity purposes. I understand that I am free to refuse to participate or to withdraw from participation in this study at any time. Should I choose to withdraw it will in no way affect my relationship, or that of my family member or friend, with Good Samaritan Hospital and Medical Center.

It is not the policy of Good Samaritan Hospital & Medical Center, or any other agency funding the research project in which I am participating, to compensate or provide medical treatment in the event the research results in physical injury. Should I suffer any injury from the research project, compensation will be available only if I established that the injury occurred through the fault of Good Samaritan Hospital, its officers or employees or my physician. Further information regarding this policy may

be obtained from the Office of Research Administration at 229-7218.

I am free to contact Judy Miller at any time that I have questions about the study. She can be reached at 494-7877 during the day, or at 244-5875 during the early evening. My signature below indicates that I have read the above and agree to participate in this study.

_____ _____

Family member or friend Date

_____ _____

Witness Date

GOOD SAMARITAN HOSPITAL & MEDICAL CENTER

Consent Form for Nurses

TITLE Nursing Activities and the Hospital Experience for Older Adults

PRINCIPAL INVESTIGATOR Judy Miller, RN, MSN, doctoral candidate, Oregon Health Sciences University

I am being asked to participate in a nursing research study to evaluate the Environmental Optimization Interventions (EOI) and the protocol for implementation. The EOI and the protocol are being evaluated for their usefulness in working with elderly, hospitalized patients to reduce confusion, and feasibility for use by nursing staff.

Potential benefits to my participation may include my learning new interventions for use with elderly patients which may increase my effectiveness and professional satisfaction, and an opportunity to be actively involved in nursing research. My involvement in this study may help to improve nursing care of elderly patients in this and other hospitals in the future. Potential risks with my participation in the study are associated with the time involved in meeting the study requirements, and possible frustration as I attempt to implement the EOI while maintaining my other patient care responsibilities.

My participation in the study will involve the following: attendance and participation in six classes and practice sessions to learn about the study and the EOI; implementation of the EOI with selected elderly patients for a 4-6 week time period; attendance and participation in weekly meetings to discuss and evaluate the EOI; completion of the EOI report at least 2-5 workdays; and, using the portable tape recorder during the workday to enter my thoughts about the EOI at least 1-5 workdays for 4-6 weeks.

I understand that I am free to refuse to participate or to withdraw from participation in this study at any time. Should I choose to do so, it will in no way affect my relationship with Good Samaritan Hospital and Medical Center. Any information that I provide will be kept confidential, as part of the research study.

The costs to my participation are my time for attending the weekly meetings. Neither my name nor identity will be used for publication or publicity purposes. It is not the policy of Good Samaritan Hospital & Medical Center, or any other agency funding the research project in which I am participating, to compensate or provide medical treatment in the event the research results in physical injury. Should I suffer any injury from the research project, compensation will be available only if I established that the injury occurred through the fault of Good Samaritan Hospital, its officers or employees or my physician. Further information regarding this policy may be obtained from the Office of Research Administration at 229-7218.

I am free to contact Judy Miller at any time that I have questions about the study. She can be reached at 494-7877 during the day, or at 244-5875 during the early evening. My signature below indicates that I have read the above and agree to participate in this study.

_____ _____

Signature of Nurse Date

_____ _____

Witness Date

APPENDIX B

Props

HOSPITAL STAFF - STUDY IN PROGRESS

Please do not rearrange the furniture, supplies, or patient's belongings. Contact

_____, RN,

for further information.

ORIENTATION CARD

Welcome to Good Samaritan Hospital. You were admitted to the hospital

on _____, _____.
(day) (date)

Your room is number _____ on the _____.
(name of unit)

Your phone number is _____.

Some of the nurses who will be working with you are:

during the day, _____

during the evening, _____

during the night, _____

Your doctors are _____

_____

Other members of the health team who are here to help you are:

_____
(name and position)

_____

Phone calls:

Local phone calls, dial _____ and then the phone number of the person you are trying to reach.

Phone calls outside the Portland area, first dial _____ and follow instructions with use of the calling card.

Your nurse is glad to help you with phone calls.

INSTRUCTIONS FOR EOI NURSES

1. Please complete this card for your patient in dark, clear print. The following types of information are to be included:

   meal times and snacks (i.e., 7:30 - 8:30 breakfast)
   physician rounds
   therapy sessions
   baths
   vital signs
   ambulation and/or chair periods
   medications and treatments
   family visits
   rest periods

2. Update this card as necessary to be accurate with the patient's hospital routine.

3. The Schedule of Events Card is to be kept at bedside in an area accessible and within the visual field of the patient.

SCHEDULE OF EVENTS CARD

Early Morning: _____

_____

_____

Mid-Late Morning: _____

_____

_____

Early Afternoon: _____

_____

_____

Mid-Late Afternoon: _____

_____

_____

Early Evening: _____

_____

_____

Late Evening: _____

_____

_____

Night: _____

_____

_____

Sample Letters for Family and Friends

Tuesday, February 12, 1991

Dear Mom,

It was nice to be able to visit with you today at the hospital. I know that you will continue to improve with the diabetes under control. Can't wait to see you home again!

I'll stop by at your apartment and water the plants. Will see you again Friday evening, after I get off work. Please take care and try to rest.

Love,

Saturday, February 16, 1991

Dear Ralph,

That was a pretty good golf tournament we watched together on the television today. Too bad there were the interruptions, but that comes with being in the hospital!

I'll get back to see you during the week, whenever I can arrange transportation. You know that I'm thinking about you. I'll call the nurses to find out how you are doing.

Your pal,

Monday, March 4,1991

Dear Sam,

It's hard going home to an empty house after my visit, but I know that you are in good hands in the hospital. I'm sure looking forward to the day when you can come home.

Everything's fine at the house and the neighbors have been wonderful. I'll be back to see you first thing in the morning.

Love,

APPENDIX C

Instruments

EOI STUDY
DEMOGRAPHIC INFORMATION

INSTRUCTIONS: This form is to be completed using information from the patient's medical record, one to two days following admission to provide adequate time for the information to be recorded in the chart. Review the Nursing Admission Assessment Sheet (in chart, or copy in blue books) first since it has the majority of the information, followed by the Face Sheet (chart) & careplan.

PATIENT ID _____
DATE OF HOSPITAL ADMISSION _____
AGE _____
SEX M_ F_
MARITAL STATUS _MARRIED _WIDOWED _DIVORCED _SINGLE
ADMITTED FROM _OWN HOME _OTHERS HOME _FOSTER HOME
_RETIREMENT HOME _ASSISTIVE LIVING _NURSING HOME
_OTHER HOSPITAL _CCC _SURGERY _____OTHER
SUPPORT SYSTEM/LIVES WITH _ALONE _FRIEND _RELATIVE,NOT SPOUSE
_SPOUSE _PAID CAREGIVER
PRIMARY MEDICAL DIAGNOSES (list) _____
_____
_____
SECONDARY MEDICAL DIAGNOSES (list) _____
_____
_____

VISUAL IMPAIRMENTS
3. no impairment
2. mild impairment, glasses with patient
1. moderate impairment, glasses not with patient
0. severe visual impairment, blind
-8. information not available from record

HEARING IMPAIRMENTS
3. not hearing impaired
2. slightly hard of hearing/ hearing aid with patient
1. hard of hearing/uses hearing aid but not with patient
0. severe hearing impairment, deaf
-8. information not available from record

MOBILITY IMPAIRMENT
4. independent with ambulation without aids (cane, walker, wheelchair)
3. independent with ambulation using aids/standby assistance
2. needs assistance of one for transfers or ambulation
1. needs assistance of two for transfers or ambulation
-8. information not available from record

FUNCTIONAL LEVEL

2. independent in at least 4 ADL
1. requires assistance in at least 4 ADL
0. dependent in at least 4 ADL

RISK FOR INJURY (from careplan-nursing dx identified) Yes _ No _

RA COLLECTING DATA _____

OBSERVATION CHECKLIST FOR SELECTED EOI

Pt. id:_____ Code #:_____
RA initials:_____
Date:_____ Time (military):_____

EOI nurse assigned to pt. during observation: yes ___ no ___
Family present during observation: yes ___ no ___
Family member's name:_____
Roommate: yes ___ no ___
Evidence of roommate encroachment on patients personal space
(i.e. roommate has TV on) yes ___ no ___
If yes, describe _____

Observer cue: Observe the patient and his room. Please do not disturb the patient by asking questions or opening drawers/cabinets in his room. For the patient record category, review the Kardex, admission assessment and problem list. Check whether the props are present (Yes), absent (No), unable to observe (U).

PROPS	YES	NO	U
PATIENT'S ROOM door closed			
card alert outside room not to move props			
please keep door closed sign			
room lighting appropriate to time of day			
clock within field of vision from bed			
calendar-date marked, within visual field from bed			
overbed table free of medical supplies/equipment			
bedside stand free of medical supplies/equipment			
window ledge free of medical supplies/equipment *			
overbed table within visual field & reach of patient			
bedside table within visual field & reach of patient			
call light within visual field & reach of patient			

* Code NA if patient's bed by door

PROPS	YES	NO	U
PATIENT'S ROOM (cont) window blinds open during daylight hours*			
orientation card			
current schedule of daily events card			
patient's personal bathrobe draped over foot of bed or chair or with patient			
patient's personal slippers or shoes at bedside or with patient			
hearing aid or glasses with patient, or within reach and visual field			
phone within reach & visual field of patient			
books, cards and pictures within visual field from bed			
toilet articles on bedside stand or overbed table			
jewelry & religious items on stand, overbed table, or with patient			
handwritten letters from family/friends			
PATIENT RECORD communication or sensory problems noted on admission assessment, kardex, or careplan			
nursing dx. of diversional deficit noted on careplan			
preferred name noted on kardex by addressograph			
radio, music, tv preferences under misc. on kardex			
religious preferences under same category on kardex			
pm care instructions on kardex or careplan			
use of glasses/hearing aids under vs/neuro on kardex or careplan			
usual habits re: time, freq., method noted on kardex under bath, oral activity, feed or bowel/bladder, or careplan			
family/friend phone number and times of access recorded on kardex			

* Code NA if patient's bed by door

COMMENTS:_____

1. Patient I.D. ____
2. Date __/__/__ mo day yr
3. Start time ___ (military)
4. RA # __
5. (Code #) _____

NURSING ASSESSMENT OF MENTAL FUNCTIONING (NAMF)

AS YOU ENTER THE ROOM, TAKE THE FIRST 30 SECONDS TO OBSERVE THE PATIENT.

Cue: "Hello, I am (name), and I've come to check how you are doing." (Avoid the use of orienting cues, such as "Good Morning".)

6. **Mobility Restrictors:** devices in use that are required for treatment of the underlying medical disorder but so restrict the patient's mobility (circle all that apply. Enter the number circled.) **IV lines if tubing connected; 02 mask, or cannula; Foley or condom catheter; N/G tube; chest tubes; inhalation treatments; gastrostomy tube; drainage tubes (if connected to bedside drainage); pillow or heating pad under leg; other (describe)** ___ 6

_____
_____
_____

7. **Restraints:** devices that restrict a patient's mobility not directly related to a medical disorder. (Circle all that apply. Enter the number circled). ___ 7
Wrist; mitten; chest or vest; waist; wheelchair (W/C) locked or geri-chair braced against a wall; commode or W/C or geri-chair with an overbed table in front; four bedrails up; other (describe)

_____
_____

NEECHAM CONFUSION SCALE

ENGAGE PATIENT IN CONVERSATION. IF PATIENT DOES NOT RESPOND READILY, KEEP CONVERSATION GOING TO ELICIT RESPONSE. RECORD THE LOWEST LEVEL OF PATIENT FUNCTION.

Points (Circle point level)

Processing--neurosensory: (Attention-Alertness-Recognition) ___ 8

4 **Full attentiveness/alertness:** responds immediately and appropriately to calling of name or touch--eyes, head turn; fully aware of surroundings, attends to environmental events appropriately.

3 **Short or hyper attention/alertness:** either shortened attention to calling, touch or environmental events, or hyper alert, over-attentive to cues/objects in environment.

2 **Attention/alertness inconsistent or inappropriate:** slow in responding, repeated calling or touch required to elicit/maintain eye contact/attention; able to recognize objects/stimuli, though may drop into sleep between stimuli.

1 **Attention/alertness disturbed:** eyes open to sound or touch; may appear fearful, unable to attend/recognize contact, or may show withdrawal/combative behavior.

0 **Arousal/responsiveness depressed:** eyes may/may not open; only minimal arousal possible with repeated stimuli; unable to recognize contact.

Processing--motor: (Recognition-Interpretation-Action)

9

5 **Able to follow a complex command:** "Turn on nurse's call light". (Must search for object, recognize object, perform command.)

4 **Slowed complex command responds:** requires prompting or repeated directions to follow/complete a complex command. Performs complex command in "slow"/over attending manner.

3 **Able to follow a simple command:** "Lift your hand or foot Mr....." (Only use 1 object.)

2 **Unable to follow direct command:** follows command prompt by touch or visual cue--drinks from glass placed near mouth. Responds with calming affect to nursing contact and reassurance or hand holding.

1 **Unable to follow visually guided command:** responds with dazed or frightened facial features, and/or withdrawal-resistive response to stimuli, hyper/hypoactive behavior; does not respond to nurse gripping hand lightly.

0 **Hypoactive, lethargic:** minimal motor/responses to environmental stimuli.

PROCESSING--VERBAL: (Orientation, short-term memory, though/speech content).

10

DETERMINE PATIENT'S GENERAL SENSE OF TIME THROUGH CONVERSATION, DO NOT ASK TIME, PLACE, PERSON QUESTIONS SPECIFICALLY.

5 **Oriented to time, place, and person**: thought processes, content of conversation or questions appropriate. Short-term memory intact.

4 **Oriented to person and place:** mild memory/recall disturbance, content and response to questions generally appropriate; may be repetitive, requires prompting to continue contact. Generally cooperates with requests.

3 **Orientation inconsistent:** oriented to self, recognizes family but time and place orientation fluctuates. Uses visual cues to orient. Thought/memory disturbance common, may have hallucinations or illusions. Passive cooperation with requests (cooperative cognitive protecting behaviors).

2 **Disoriented and memory/recall disturbed:** oriented to self, recognizes family. May question actions of nurse or refuse requests, procedures (resistive cognitive protection behaviors). Conversation content/thought disturbed. Illusions and/or hallucinations common.

1 **Disoriented, disturbed recognition:** Inconsistently recognizes familiar people, family, objects. Inappropriate speech/sounds.

0 **Processing of stimuli depressed:** minimal response to verbal stimuli.

PERFORMANCE--APPEARANCE/HYGIENE: ___ 11

2 **Controls posture, maintains appearance, hygiene:** appropriately gowned or dressed, personally tidy, clean. Posture in bed/chair normal. (Head in neutral position, positioned in alignment up in bed.)

1 **Either posture or appearance disturbed:** some disarray of clothing/bed or personal appearance, or some loss of control of posture, position. (Unshaven, hair uncombed, food particles around mouth.)

0 **Both posture and appearance abnormal:** disarrayed, poor hygiene, unable to maintain posture in bed. (when pillow removed limb falls; hand or foot hanging off bed; shoulders or neck flexed; patient has slid down in bed.)

PERFORMANCE--MOTOR: ___ 12

4 **Normal motor behavior:** appropriate movement, coordination and activity, able to rest quietly in bed. Normal hand movement.

3 **Motor behavior slowed or hyperactive:** overly quiet or little spontaneous movement (hands/arms across chest or at sides) or hyperactive (up/down, "jumpy"). May show hand tremor.

2 **Motor movement disturbed:** restless or quick movements. Hand movements appear abnormal--picking at bed objects or bed covers, etc. May require assistance with purposeful movements.

1 **Inappropriate, disruptive movements:** pulling at tubes, trying to climb over rails, frequent purposeless actions.

0 **Motor movement depressed:** limited movement unless stimulated; resistive movements.

PERFORMANCE--VERBAL: ___ 13

4 **Initiates speech appropriately:** able to converse, can initiate and maintain conversation. Normal speech for diagnostic condition, normal tone.

3 **Limited speech initiation:** responses to verbal stimuli are brief and uncomplex. Speech clear for diagnostic condition, tone may be abnormal, rate may be slow.

2 **Inappropriate speech:** may talk to self or not make sense. Speech not clear for diagnostic condition.

1 **Speech/Sound disturbed:** altered sound/tone. Mumbles, yells, swears or is inappropriately silent.

0 **Abnormal sounds:** groaning or other disturbed sounds. No clear speech.

LEVEL OF INTEGRATIVE PHYSIOLOGICAL CONTROL:

Recorded Values:	Normals:	
Temperature (Add 1 degree if taken axillary)	(36-37o)	___ 14
Systolic BP	(100-160)	___ 15
Diastolic BP	(50-90)	___ 16
Pulse	(60-100)	___ 17
Irreg Pulse (don't count infrequent PC's) 1=yes 2=no		___ 18
Respirations (count for one minute)	(14-22)	___ 19
Periods of apnea/hypopnea present: 1=yes 2=no (Resp < 10)		___ 20
Longest # of seconds present between breaths: (code 88 if not applicable)		___ 21
O2 Sat range during apnea/hypopnea cycle: FROM: (code 88 if not applicable)		From: __.__ 22
		To: __.__ 23
O2 Sat (≥93) (Code 11.1 if oximeter alarms low perfusion) Patient position_____.		__.__ 24
Receiving O2: 1=yes 2=no		___ 25
Oxygen on now: 1=yes 2=no		___ 26

VITAL FUNCTION STABILITY: ___ 27

2 BP, P, TEMP, RESPIRATION within normal range with regular pulse

1 Any of above in abnormal range (count SBP, and/or DBP as one; count apnea/hypopnea and increase/decrease in resp. as one)

0 Two or more in abnormal range

OXYGEN SATURATION STABILITY: ___ 28

2 O2 sat in normal range

1 O2 sat 90 to 92 or is receiving oxygen

0 O2 sat below 90

URINARY CONTINENCE CONTROL: ___ 29
(If can't obtain data from observation, review nurses notes up to previous observation period)

2 Maintains bladder control

1 Incontinent of urine in last 24 hours or has condom cath

0 Incontinent now or has indwelling or intermittent catheter or is anuric.

NOTES:

DO NOT WRITE IN THIS BOX

TOTAL LEVEL 1 (0-14 POINTS)	___ 30
TOTAL LEVEL 2 (0-10 POINTS)	___ 31
TOTAL LEVEL 3 (0-6 POINTS)	___ 32
TOTAL NEECHAM (0-30)	___ 33

SELF-PERCEIVED MENTAL CLARITY:

Cue: "It is quite common for patients to have some temporary problems with their ability to think clearly while in the hospital". The medications, treatments and disturbances with sleep often make patients feel a little fuzzy or unclear.

34 Since this morning (yesterday afternoon), have you had any experiences of confusion? ___ 34

Yes = 0 No = 1 Unable to Respond = 8

(If yes to 34) What was that like for you? (Focus on symptoms that were troublesome for the patient)_____

_____

_____

35 How would you rate your clearness of thought right now compared to this morning (this afternoon)? ___ 35

Better=3 About the same=2 Worse=1 Unable to Respond=8

36 Last night or during the day have you had any disturbing dreams that troubled you? ___ 36

Yes=0 No=1 Unable to Respond=8

Please describe what that was like for you.

_____

_____

_____

_____

PART II: (complete with NEECHAM SCALE but do not add to score)

37 Level of Self Report:

A. REPORT OF CONFUSION: (mixed up feelings, etc.) ___ 37

3=Does not report feelings of confusion
2=Reports some feelings of confusion
1=Reports high level of confusion
0=No response
8=Unable to respond
If other than no confusion, would you describe how you feel?

38 B. REPORTS DISTURBED DREAMS IN WHICH THE DREAM SEEMED REAL OR CAUSED AWAKENING: ___ 38

1=no
0=yes
8=Unable to respond

39 Presence of DMS-III criteria:
(code if present) 1=Yes, 0=no 8=Unable to evaluate

I. Clouding of consciousness:
(reduced clarity of awareness of the environment)
with reduced capacity to shift, focus and sustain attention to
environmental stimuli? ___ 39

II. Any of the following present?

A. Perceptual disturbance?
(misinterpretations, illusions or hallucinations) ___ 40

B. Speech that is at times incoherent? ___ 41

C. Disturbance of sleep-wakefulness cycle, with insomnia or daytime drowsiness?
(Not frequent awakenings 2 deg hospital noise.) ___ 42

D. Increased or decreased psychomotor activity? ___ 43

III. Disorientation and memory impairment ___ 44

RETROSPECTIVE AUDIT - DO NOT COMPLETE

IV. Change in behavior or mentation developed over a short period of time (hours to days), symptoms fluctuate over the course of a day? ___ 45

V. Evidence from history, physical exam, or laboratory tests of a specific organic factor judged to be etiologically related to the disturbance. ___ 46

48 **Completion:**
Patient refused = 1
NOT tolerated = 2
Interrupted = 3
Completed-all = 4

Time Fin.
Military ___ 47

___ 48

Comments_____

INTERVIEW GUIDE

PATIENT, FAMILY AND FRIEND EVALUATION OF THE EOI

Interviewer's initials:_____ Date:_____

Patient's ID #:_____ Date admitted to hospital:_____

Informant's initials:_____ Relationship to patient:_____

Time interview began:_____ Time interview completed:_____

Instructions to the interviewer: Before approaching the informant, verify that consent has been obtained by checking the subject log book. Arrange to conduct the interview in a room where privacy and comfortable seating can be provided. Introduce yourself by name, and as a nurse associated with the nursing research study. Before beginning the interview, ask if the informant is comfortable. Let the person know that you will be taking notes so that you don't lose any of the information.

When conducting the interview, speak in a clear voice with a slightly slower rate of speech. Provide the informant with time to respond. Convey an unhurried and interested attitude. Seek verification and elaboration of responses.

When the interview seems to be ending, ask the informant what other information he/she would like to add. Inquire if there are any questions that the informant would like to ask you. Close the interview by thanking the informant for his/her help in the study.

Some of the nurses on this unit have participated in a nursing study which examines ways of providing care to patients. Although all of the nurses involved in the study are evaluating their care, we view the patients and their families and friends, as sources of very important information about nursing care. As part of this study, we want to find out what the nurses did that were helpful to patients, their family members and friends. We hope to learn what nursing activities were not done that you would recommend as possibly helpful to patients, families and friends in the future. And lastly, we also need to learn from you what nurses did that were not helpful.

First, I'll start with some general questions.

(Patient) Please tell me about how things went for you in the hospital?

(Family/Friend) Please tell me about how things went for your (insert name of patient or relationship) in the hospital?

What was it like for you while (insert as above) was in the hospital?

(Patient) What did you think about the nursing care that you received?

(Family/Friend) What did you think about the nursing care that (insert name of patient or relationship) received in the hospital?

(Patient) How were your family and friends treated by the nurses?

(Family/Friend) How were you treated by the nurses?

Please tell me about the things that nurses did that you liked and were helpful (to patient and to family member or friend).

Please tell me about the things that nurses did that you didn't like or find helpful (to patient and to family member or friend).

What things do you wish the nurse would have done that you think would have been helpful to patients, family members or friends?

Instructions to the interviewer: Prepare to review the EOI report with the informant. Begin with any category that seems most important to the informant based on the information already obtained. Be prepared to shift categories as guided by the informant's comments or fatigue. In using the EOI report, note in the same column as the associated frequency how helpful the nursing activity was to the patient or family member/friend. Code as follows: ++ very helpful, + somewhat helpful, N - didn't make much of a difference in hospitalization/recovery, - not helpful.

Now, I'd like to ask you some questions about specific nursing activities. For each action that I read, please tell me if it was done by the nurses. If it was done, I'll then ask you how helpful it was to you, your family member or friend.

REVIEW EOI REPORTS

Revised 1/19/91

EOI Nurse ID #_____ Code #_____
Date _____ PT ID #_____
Name of family member present _____

EOI REPORT
FORM A

This instrument is being used to help evaluate specific interventions of the EOI protocol for their use in practice. The ID # is only used to ensure that EOI nurses receive the correct number of reports. Your name will not be associated with the EOI report.

Please review the list of interventions in terms of what you did in working with the patient, _____ (insert name of assigned study patient), today. For each intervention, first check how frequently you used the intervention with the patient today, compared to what you believe you should have, based on the EOI protocol and classes. Then place the numbers of the work and patient factors that helped or hindered in the use of each specific intervention. Should you find that an intervention was not relevant in the care of the patient today, check the not relevant (NR) category and explain why it was not relevant.

Thank you very much for taking the time to provide this important information.

WORK & PATIENT FACTORS
1. The patient had too many other treatments and meds. 2. This patient seemed to do better when I used it. 3. I could use the intervention while I did other things. 4. No other staff seem to care if I use the intervention. 5. The intervention was easy to use. 6. The intervention took too much time compared to its benefit. 7. It didn't work with this patient before. 8. The patient was too sick to benefit from the intervention. 9. Other patients demanded more of my attention. 10. I forgot. 11. Patient had no personal belongings. 12. Family/friends did not visit.

INTERVENTION	NOT DONE	RARELY DONE	SOMETIMES DONE	USUALLY DONE	NR
SENSORY INPUT assess usual time, amount & type of tv, radio, music, & religious services enjoyed by pt.					
provide interventions using above information					

WORK & PATIENT FACTORS
1. The patient had too many other treatments and meds. 2. This patient seemed to do better when I used it. 3. I could use the intervention while I did other things. 4. No other staff seem to care if I use the intervention. 5. The intervention was easy to use. 6. The intervention took too much time compared to its benefit. 7. It didn't work with this patient before. 8. The patient was too sick to benefit from the intervention. 9. Other patients demanded more of my attention. 10. I forgot. 11. Patient had no personal belongings. 12. Family/friends did not visit.

INTERVENTION	NOT DONE	RARELY DONE	SOMETIMES DONE	USUALLY DONE	NR
SENSORY INPUT (cont) record and modify PRN interventions on kardex under religious need & misc., and careplan (if Dx)					
record nsg. dx., sensory alt., &/or modify PRN divers. deficit on kardex & careplan (if Dx)					
hearing aid/eyeglasses in use/accessible to pt.					
keep door closed to pt. room when with patient					
nse. moves self & equipment slowly & quietly when with pt.					
room lighting appropriate to time of day, activity, & patient preference					
window blinds raised in am (if no glare), closed in evening (if window bed)					

WORK & PATIENT FACTORS
1. The patient had too many other treatments and meds. 2. This patient seemed to do better when I used it. 3. I could use the intervention while I did other things. 4. No other staff seem to care if I use the intervention. 5. The intervention was easy to use. 6. The intervention took too much time compared to its benefit. 7. It didn't work with this patient before. 8. The patient was too sick to benefit from the intervention. 9. Other patients demanded more of my attention. 10. I forgot. 11. Patient had no personal belongings. 12. Family/friends did not visit.

INTERVENTION	NOT DONE	RARELY DONE	SOMETIMES DONE	USUALLY DONE	NR
SENSORY INPUT (cont) PM care instruction on kardex & careplan (if Dx), & modified PRN					
record info about hearing aids (setting, ear, freq battery chg., when used) & glasses (when worn) on kardex & careplan (if Dx)					
MAXIMIZE INDEPENDENCE IN ADL determine pt's habits re: timing, frequency, & method of bathing, oral care, activity & rest periods, meals & snacks, & toileting					
note above on kardex under bath, oral care, activity, feed, & bowel & bladder care. Note on careplan (if Dx). Modify PRN					

WORK & PATIENT FACTORS
1. The patient had too many other treatments and meds. 2. This patient seemed to do better when I used it. 3. I could use the intervention while I did other things. 4. No other staff seem to care if I use the intervention. 5. The intervention was easy to use. 6. The intervention took too much time compared to its benefit. 7. It didn't work with this patient before. 8. The patient was too sick to benefit from the intervention. 9. Other patients demanded more of my attention. 10. I forgot. 11. Patient had no personal belongings. 12. Family/friends did not visit.

INTERVENTION	NOT DONE	RARELY DONE	SOMETIMES DONE	USUALLY DONE	NR
MAXIMIZE INDEPENDENCE IN ADL (cont) incorporate patient's habits into daily care, i.e.: bath in pm, warm milk before bed, ambulate in am					
with all care activities, the nurse proceeds slowly, gives pt. time & encourages him to participate as much as possible					

Revised 1/19/91

EOI Nurse ID #_____ Code #_____
Date _____ PT ID #_____
Name of family member present _____

EOI REPORT
FORM B

This instrument is being used to help evaluate specific interventions of the EOI protocol for their use in practice. The ID # is only used to ensure that EOI nurses receive the correct number of reports. Your name will not be associated with the EOI report.

Please review the list of interventions in terms of what you did in working with the patient, _____ (insert name of assigned study patient), today. For each intervention, first check how frequently you used the intervention with the patient today, compared to what you believe you should have, based on the EOI protocol and classes. Then place the numbers of the work and patient factors that helped or hindered in the use of each specific intervention. Should you find that an intervention was not relevant in the care of the patient today, check the not relevant (NR) category and explain why it was not relevant.

Thank you very much for taking the time to provide this important information.

WORK & PATIENT FACTORS
1. The patient had too many other treatment and meds.
2. This patient seemed to do better when I used it.
3. I could use the intervention while I did other things.
4. No other staff seem to care if I use the intervention.
5. The intervention was easy to use.
6. The intervention took too much time compared to its benefit.
7. It didn't work with this patient before.
8. The patient was too sick to benefit from the intervention.
9. Other patients demanded more of my attention.
10. I forgot.
11. Patient had no personal belongings.
12. Family/friends did not visit.

INTERVENTION	NOT DONE	RARELY DONE	SOMETIMES DONE	USUALLY DONE	NR
ASSESSMENT & MAKING ENVIRONMENT FAMILIAR assess unmet internal needs and external concerns q2h & q interaction					

WORK & PATIENT FACTORS
1. The patient had too many other treatment and meds. 2. This patient seemed to do better when I used it. 3. I could use the intervention while I did other things. 4. No other staff seem to care if I use the intervention. 5. The intervention was easy to use. 6. The intervention took too much time compared to its benefit. 7. It didn't work with this patient before. 8. The patient was too sick to benefit from the intervention. 9. Other patients demanded more of my attention. 10. I forgot. 11. Patient had no personal belongings. 12. Family /friends did not visit.

INTERVENTION	NOT DONE	RARELY DONE	SOMETIMES DONE	USUALLY DONE	NR
ASSESSMENT & MAKING ENVIRONMENT FAMILIAR (cont) assess mental status 2 & q interaction					
prophylactic adminstr. analgesics					
offer toileting assist					
assist with position shifts					
verbally clarify unmet needs					
medical supplies & technological support devices accessible to staff but minimally intrusive to pts. space					
overbed table, bedside stand & window ledge free of equipment & supplies					

WORK & PATIENT FACTORS
1. The patient had too many other treatment and meds. 2. This patient seemed to do better when I used it. 3. I could use the intervention while I did other things. 4. No other staff seem to care if I use the intervention. 5. The intervention was easy to use. 6. The intervention took too much time compared to its benefit. 7. It didn't work with this patient before. 8. The patient was too sick to benefit from the intervention. 9. Other patients demanded more of my attention. 10. I forgot. 11. Patient had no personal belongings. 12. Family/friends did not visit.

INTERVENTION	NOT DONE	RARELY DONE	SOMETIMES DONE	USUALLY DONE	NR
ASSESSMENT & MAKING ENVIRONMENT FAMILIAR (cont) record/update on careplan, kardex & change shift report areas pt. has problems communicating needs					
pt's own bathrobe draped over foot of bed/chair where can be seen or with patient					
personal toilet articles on overbed table or bedside stand					
books, cards, & pictures where can be seen by patient					
jewelry & religious items with pt. or where can be seen by patient					
ask pt. about placement of personal items in room at least 1x					

WORK & PATIENT FACTORS
1. The patient had too many other treatment and meds. 2. This patient seemed to do better when I used it. 3. I could use the intervention while I did other things. 4. No other staff seem to care if I use the intervention. 5. The intervention was easy to use. 6. The intervention took too much time compared to its benefit. 7. It didn't work with this patient before. 8. The patient was too sick to benefit from the intervention. 9. Other patients demanded more of my attention. 10. I forgot. 11. Patient had no personal belongings. 12. Family/friends did not visit.

INTERVENTION	NOT DONE	RARELY DONE	SOMETIMES DONE	USUALLY DONE	NR
ASSESSMENT & MAKING ENVIRONMENT FAMILIAR (cont) encourage pt. & family to bring in personal possessions - tell benefit					
inform pt. & family risk of loss of personal possessions					
discuss pt's personal possessions with pt. at least 1x/shift					
pt's own slippers/shoes at foot of bed/chair where can be seen or with patient					
card alert outside room not to move furniture, supplies & belongings					
conduct tour of room - identify & explain all physical props, equip. & medical devices & auditory events - repeat at least 1x for AM/aft/PM					

WORK & PATIENT FACTORS
1. The patient had too many other treatment and meds. 2. This patient seemed to do better when I used it. 3. I could use the intervention while I did other things. 4. No other staff seem to care if I use the intervention. 5. The intervention was easy to use. 6. The intervention took too much time compared to its benefit. 7. It didn't work with this patient before. 8. The patient was too sick to benefit from the intervention. 9. Other patients demanded more of my attention. 10. I forgot. 11. Patient had no personal belongings. 12. Family/friends did not visit.

INTERVENTION	NOT DONE	RARELY DONE	SOMETIMES DONE	USUALLY DONE	NR
ASSESSMENT & MAKING ENVIRONMENT FAMILIAR (cont) assess and repeat tour of room with each room change, new equipment, or pt. puzzled					
verify with pt. that call light within reach & visual field of patient					

Revised 1/19/91

EOI Nurse ID #_____ Code #_____
Date _____ PT ID #_____
Name of family member present _____

EOI REPORT
FORM C

This instrument is being used to help evaluate specific interventions of the EOI protocol for their use in practice. The ID # is only used to ensure that EOI nurses receive the correct number of reports. Your name will not be associated with the EOI report.

Please review the list of interventions in terms of what you did in working with the patient, _____ (insert name of assigned study patient), today. For each intervention, first check how frequently you used the intervention with the patient today, compared to what you believe you should have, based on the EOI protocol and classes. Then place the numbers of the work and patient factors that helped or hindered in the use of each specific intervention. Should you find that an intervention was not relevant in the care of the patient today, check the not relevant (NR) category and explain why it was not relevant.

Thank you very much for taking the time to provide this important information.

WORK & PATIENT FACTORS
1. The patient had too many other treatment and meds.
2. This patient seemed to do better when I used it.
3. I could use the intervention while I did other things.
4. No other staff seem to care if I use the intervention.
5. The intervention was easy to use.
6. The intervention took too much time compared to its benefit.
7. It didn't work with this patient before.
8. The patient was too sick to benefit from the intervention.
9. Other patients demanded more of my attention.
10. I forgot.
11. Patient had no personal belongings.
12. Family/friends did not visit.

INTERVENTION	NOT DONE	RARELY DONE	SOMETIMES DONE	USUALLY DONE	NR
ASSESSMENT & WELCOMING ACTIVITIES instruct unit secretary to limit interruptions during admission process & put messages in nurses order box					

WORK & PATIENT FACTORS
1. The patient had too many other treatment and meds. 2. This patient seemed to do better when I used it. 3. I could use the intervention while I did other things. 4. No other staff seem to care if I use the intervention. 5. The intervention was easy to use. 6. The intervention took too much time compared to its benefit. 7. It didn't work with this patient before. 8. The patient was too sick to benefit from the intervention. 9. Other patients demanded more of my attention. 10. I forgot. 11. Patient had no personal belongings. 12. Family/friends did not visit.

INTERVENTION	NOT DONE	RARELY DONE	SOMETIMES DONE	USUALLY DONE	NR
ASSESSMENT & WELCOMING ACTIVITIES (cont) post "Nsg. Assessment in Process" sign during admission process					
assess unmet internal needs and external concerns q2h & q interaction					
assess mental status q2h & q interaction					
prophylactic adminstr. analgesics					
offer toileting assist					
assist with position shifts					
verbally clarify unmet needs					
record/update on careplan, kardex & change shift report areas pt. has problems communicating needs					

WORK & PATIENT FACTORS
1. The patient had too many other treatment and meds. 2. This patient seemed to do better when I used it. 3. I could use the intervention while I did other things. 4. No other staff seem to care if I use the intervention. 5. The intervention was easy to use. 6. The intervention took too much time compared to its benefit. 7. It didn't work with this patient before. 8. The patient was too sick to benefit from the intervention. 9. Other patients demanded more of my attention. 10. I forgot. 11. Patient had no personal belongings. 12. Family/friends did not visit.

INTERVENTION	NOT DONE	RARELY DONE	SOMETIMES DONE	USUALLY DONE	NR
ASSESSMENT & WELCOMING ACTIVITIES (cont) warmly greet pt. at eye level with handshake, touch on shoulder or hand					
nurse identifies self purpose					
pt's preferred name recorded on kardex					
ORIENTING THE PATIENT TO THE FACILITY/ROOM greet pt. at pt's room					
ask pt. experiences with Good Sam/hospitals					
during transit, orient pt. to hospital & neighborhood					
in room, open blinds & comment on general location					
orientation card					

Revised 1/19/91

EOI Nurse ID #_____ Code #_____
Date _____ PT ID #_____
Name of family member present _____

EOI REPORT
FORM D

This instrument is being used to help evaluate specific interventions of the EOI protocol for their use in practice. The ID # is only used to ensure that EOI nurses receive the correct number of reports. Your name will not be associated with the EOI report.

Please review the list of interventions in terms of what you did in working with the patient, _____ (insert name of assigned study patient), today. For each intervention, first check how frequently you used the intervention with the patient today, compared to what you believe you should have, based on the EOI protocol and classes. Then place the numbers of the work and patient factors that helped or hindered in the use of each specific intervention. Should you find that an intervention was not relevant in the care of the patient today, check the not relevant (NR) category and explain why it was not relevant.

Thank you very much for taking the time to provide this important information.

WORK & PATIENT FACTORS
1. The patient had too many other treatment and meds.
2. This patient seemed to do better when I used it.
3. I could use the intervention while I did other things.
4. No other staff seem to care if I use the intervention.
5. The intervention was easy to use.
6. The intervention took too much time compared to its benefit.
7. It didn't work with this patient before.
8. The patient was too sick to benefit from the intervention.
9. Other patients demanded more of my attention.
10. I forgot.
11. Patient had no personal belongings.
12. Family/friends did not visit.

INTERVENTION	NOT DONE	RARELY DONE	SOMETIMES DONE	USUALLY DONE	NR
FAMILY/FRIEND/IN-VOLVEMENT orient family/friend about hospital and services family can use to include parking, chapel, meal tray and cafeteria, recliner chair					

WORK & PATIENT FACTORS
1. The patient had too many other treatment and meds. 2. This patient seemed to do better when I used it. 3. I could use the intervention while I did other things. 4. No other staff seem to care if I use the intervention. 5. The intervention was easy to use. 6. The intervention took too much time compared to its benefit. 7. It didn't work with this patient before. 8. The patient was too sick to benefit from the intervention. 9. Other patients demanded more of my attention. 10. I forgot. 11. Patient had no personal belongings. 12. Family/friends did not visit.

INTERVENTION	NOT DONE	RARELY DONE	SOMETIMES DONE	USUALLY DONE	NR
FAMILY/FRIEND/IN-VOLVEMENT (cont) escort, security, &/or wheelchair; wheelchair made available to family					
ask family/friend if they have any questions/ concerns					
encourage family/friend to stay					
express appreciation for family being available to patient					
explain family/friend importance to pt. recovery					
show by example & explanation use of touch, orienting information & reminiscence to help pt.					
observe patient symptoms of distress with family visits					
support family/friend need for rest					

WORK & PATIENT FACTORS
1. The patient had too many other treatment and meds. 2. This patient seemed to do better when I used it. 3. I could use the intervention while I did other things. 4. No other staff seem to care if I use the intervention. 5. The intervention was easy to use. 6. The intervention took too much time compared to its benefit. 7. It didn't work with this patient before. 8. The patient was too sick to benefit from the intervention. 9. Other patients demanded more of my attention. 10. I forgot. 11. Patient had no personal belongings. 12. Family/friends did not visit.

INTERVENTION	NOT DONE	RARELY DONE	SOMETIMES DONE	USUALLY DONE	NR
FAMILY/FRIEND/IN-VOLVEMENT (cont) offer to call family/friend on reg. basis					
obtain phone #'s & times of access for important friends/family - record on kardex					
phone family/friends for pt. to help orient & calm pt.					
request family/friends to leave handwritten letter at bedside					
read letters to pt. when pt. bored or anxious & family/friend NA					
reinforce family/friend continuing usual pattern of interaction					

Revised 1/25/91

EOI Nurse ID #_____ Code #_____
Date _____ PT ID #_____
Name of family member present _____

EOI REPORT
FORM E

This instrument is being used to help evaluate specific interventions of the EOI protocol for their use in practice. The ID # is only used to ensure that EOI nurses receive the correct number of reports. Your name will not be associated with the EOI report.

Please review the list of interventions in terms of what you did in working with the patient, _____ (insert name of assigned study patient), today. For each intervention, first check how frequently you used the intervention with the patient today, compared to what you believe you should have, based on the EOI protocol and classes. Then place the numbers of the work and patient factors that helped or hindered in the use of each specific intervention. Should you find that an intervention was not relevant in the care of the patient today, check the not relevant (NR) category and explain why it was not relevant.

Thank you very much for taking the time to provide this important information.

WORK & PATIENT FACTORS
1. The patient had too many other treatment and meds. 2. This patient seemed to do better when I used it. 3. I could use the intervention while I did other things. 4. No other staff seem to care if I use the intervention. 5. The intervention was easy to use. 6. The intervention took too much time compared to its benefit. 7. It didn't work with this patient before. 8. The patient was too sick to benefit from the intervention. 9. Other patients demanded more of my attention. 10. I forgot. 11. Patient had no personal belongings. 12. Family/friends did not visit.

INTERVENTION	NOT DONE	RARELY DONE	SOMETIMES DONE	USUALLY DONE	NR
ASSESSMENT & ORIENTATION SKILLS Assesses unmet internal needs and external concerns q2h and q interaction					

WORK & PATIENT FACTORS
1. The patient had too many other treatment and meds. 2. This patient seemed to do better when I used it. 3. I could use the intervention while I did other things. 4. No other staff seem to care if I use the intervention. 5. The intervention was easy to use. 6. The intervention took too much time compared to its benefit. 7. It didn't work with this patient before. 8. The patient was too sick to benefit from the intervention. 9. Other patients demanded more of my attention. 10. I forgot. 11. Patient had no personal belongings. 12. Family/friends did not visit.

INTERVENTION	NOT DONE	RARELY DONE	SOMETIMES DONE	USUALLY DONE	NR
ASSESSMENT & ORIENTATION SKILLS (cont) Assess mental status q2h and q interaction					
prophylactic adminstr. analgesics					
offer toileting assist					
assist with position shifts					
verbally clarify unmet needs					
record/update on careplan, kardex & change shift report areas pt. has problems communicating needs					
identify environmental cues to foster awareness of relative time and place					
large dial clock within pt's field of vision					
calendar within pt's field of view & marked daily					
current schedule of daily events card					

WORK & PATIENT FACTORS
1. The patient had too many other treatment and meds. 2. This patient seemed to do better when I used it. 3. I could use the intervention while I did other things. 4. No other staff seem to care if I use the intervention. 5. The intervention was easy to use. 6. The intervention took too much time compared to its benefit. 7. It didn't work with this patient before. 8. The patient was too sick to benefit from the intervention. 9. Other patients demanded more of my attention. 10. I forgot. 11. Patient had no personal belongings. 12. Family/friends did not visit.

INTERVENTION	NOT DONE	RARELY DONE	SOMETIMES DONE	USUALLY DONE	NR
STAFF CONTACT reintroduce staff by name, position & purpose with each interaction					
acknowledge patient feelings					
focus on pt. needs					
speak slowly & clearly in lower pitched voice					
use short, direct, single activity statements					
verify pt. comprehension					
act unhurried & calm with pt.					
nurse sits at bedside when talking with patient					
maintain eye contact with commuc.					

Revised 1/25/91

EOI Nurse ID #_____ Code #_____
Date _____ PT ID #_____
Name of family member present _____

EOI REPORT
FORM E

This instrument is being used to help evaluate specific interventions of the EOI protocol for their use in practice. The ID # is only used to ensure that EOI nurses receive the correct number of reports. Your name will not be associated with the EOI report.

Please review the list of interventions in terms of what you did in working with the patient, _____ (insert name of assigned study patient), today. For each intervention, first check how frequently you used the intervention with the patient today, compared to what you believe you should have, based on the EOI protocol and classes. Then place the numbers of the work and patient factors that helped or hindered in the use of each specific intervention. Should you find that an intervention was not relevant in the care of the patient today, check the not relevant (NR) category and explain why it was not relevant.

Thank you very much for taking the time to provide this important information.

WORK & PATIENT FACTORS
1. The patient had too many other treatment and meds.
2. This patient seemed to do better when I used it.
3. I could use the intervention while I did other things.
4. No other staff seem to care if I use the intervention.
5. The intervention was easy to use.
6. The intervention took too much time compared to its benefit.
7. It didn't work with this patient before.
8. The patient was too sick to benefit from the intervention.
9. Other patients demanded more of my attention.
10. I forgot.
11. Patient had no personal belongings.
12. Family/friends did not visit.

INTERVENTION	NOT DONE	RARELY DONE	SOMETIMES DONE	USUALLY DONE	NR
ASSESSMENT & ORIENTATION SKILLS Assesses unmet internal needs and external concerns q2h and q interaction					

WORK & PATIENT FACTORS
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INTERVENTION	NOT DONE	RARELY DONE	SOMETIMES DONE	USUALLY DONE	NR
ASSESSMENT & ORIENTATION SKILLS (cont) Assess mental status q2h and q interaction					
prophylactic adminstr. analgesics					
offer toileting assist					
assist with position shifts					
verbally clarify unmet needs					
record/update on careplan, kardex & change shift report areas pt. has problems communicating needs					
identify environmental cues to foster awareness of relative time and place					
large dial clock within pt's field of vision					
calendar within pt's field of view & marked daily					
current schedule of daily events card					

WORK & PATIENT FACTORS
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INTERVENTION	NOT DONE	RARELY DONE	SOMETIMES DONE	USUALLY DONE	NR
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focus on pt. needs					
speak slowly & clearly in lower pitched voice					
use short, direct, single activity statements					
verify pt. comprehension					
act unhurried & calm with pt.					
nurse sits at bedside when talking with patient					
maintain eye contact with commuc.					

ABSTRACT

Title: A Clinical Study to Pilot Test the Environmental Optimization Interventions Protocol

Author: Judy Miller

Approved: _____
Advisor

The purpose of this study, was to pilot test the environmental optimization interventions (EOI) and innovation strategies. The EOI were designed for use by staff nurses to reduce confusion with hospitalized, elderly patients. The EOI were evaluated in terms of their feasibility for implementation and acceptability to patients, families and friends, and nursing staff.

There were four categories of the environmental optimization intervention implemented by six staff nurses as part of their regular patient assignment. These categories were: focused assessment and meeting immediate personal needs; helping clients to organize their environment; providing meaningful sensory input; and maintaining independence in activities of daily living. The plan for implementation of the EOI protocol included an educational program; support activities to help the nurses transfer and maintain the study behaviors; and communication with the organization.

The EOI were tested with a convenience sample of 13, elderly patients representing different levels of confusion, admitted to an acute care, medical unit. A previous study provided data for the control condition. Repeated

measures of confusion, using the Neecham instrument and self-perception questions of confusion, were taken twice daily throughout the patient's hospitalization. The delivery of the EOI was monitored with the Observation Checklist for Selected EOI, EOI Reports, Nurse's Logs, and focus group meetings.

The small samples and differences in the admitting levels of confusion made comparisons between the groups difficult for examination of the effectiveness of the EOI. There was marked variability in the confusion trajectories for patients, particularly early in their hospital stay, which increases the importance of systematic, accurate, and periodic assessments of confusion by staff nurses. Although an atypical sample of nurses, the EOI nurses were successfully able to implement the EOI, with reported benefits for the patients and nurses. Frequent interruptions disrupted the development of the nurse-patient relationship.

The measures were reliable and had important clinical utility. The focus group was an effective mechanism for the ongoing evaluation of the EOI. Elderly patients and family members were interested in being involved in the evaluation of nursing care but different approaches are necessary.