

Implementing a Flexible Visitation Policy for Head-Injured Patients

The Scenario

The sign at the entrance to the Neuroscience Intensive Care Unit (NSICU) spells out the visitation policy specific to that unit. It reads that all visitors must call before entering, and that visits are limited to two immediate family members at a time, for a ten minute time period. This can be repeated every two hours, and only during the specified hours of 10AM to 10PM, except during the hours of shift changes.

The distraught family members of the head-injured victim arrive at the closed doors to the NSICU. They read the sign outlining the visitation policy, but are unable to fully understand every word the sign says due to the emotionally-charged moment. They call before entering, and are allowed to their loved one's bedside. The victim's nurse meets them, briefly explains the latest events and the plan of care, and goes over the policies of the unit. The family is soon asked to leave the bedside as the neurosurgeon and the nurse need to further stabilize the patient. Since they do not know what else to do and just want to be nearby in case anything happens, either good or bad, the family decides to stay in the waiting room.

As the evening passes, the head-injured patient's intracranial pressure (ICP) remains unstable and the patient's Glasgow Coma Scale score (GCS) remains less than an 8, so the patient is managed under the traumatic brain injury (TBI) protocol. Stimuli to the patient is decreased by dimming the lights, decreasing noise, and restricting visitors. The patient's family calls and again requests to visit. The family is allowed into the room. However, in an effort to avoid any type of stimulation that might increase the patient's ICP, they are not allowed to talk to the patient or touch the patient. After a ten minute visit, the family is asked to leave, even though the patient showed no untoward effects to the visit.

As the clock hits 10PM, the security guard checks on the waiting room and proceeds to lock the waiting room doors. The family asks what is happening, and the guard explains that it

is the hospital's policy, and that it is time to leave. The family calls their loved one's nurse and asks if one of them can spend the night at the patient's bedside. Even promising to stay out of the way does not persuade the nurse to allow the overnight stay. Furthermore, it is hospital policy to not allow overnight guests in the critical care units. The patient's family reluctantly goes home, frustrated and confused as to why they are unable to be with their loved one in this great time of need.

The problem with the visitation policy is brought to the attention of the NSICU Clinical Nurse Specialist (CNS) in daily rounds. It is noticeable that some nurses are allowing certain families to stay longer at the patients' bedsides, and that some of the nursing and medical staff are not appreciative of the increased family presence.

The Problem

The inconsistencies in enforcing the current restrictive visitation policy in the NSICU has caused frustration among the staff and family members of head-injured patients. Thus, whether a restrictive visitation policy is appropriate for the TBI patient population and their families needs to be addressed.

Most important in this patient population is maintaining a decreased ICP. The neurosurgeons are open to change as long as there are no deleterious physiologic effects on the patients. The nursing staff are mixed in their approval of the issue, as some feel that increased family presence will be harmful to a TBI patient. Nursing management is supportive of any change that will improve patient and staff satisfaction, as long as there is minimal fiscal impact. Thus, in collaboration with the neurosurgeons, the NSICU nursing staff and management, the NSICU CNS will explore alternative visitation policies for the unit, and implement a new visitation policy that will better satisfy the needs of the patients and their families, while preserving the concerns of the hospital staff and management.

Significance of the Problem

This scenario of frustrated families and nurses with the restrictive visitation policies of critical care units occurs every day. This scenario is a frequent one, considering that more than 400,000 patients with head injuries are admitted to hospitals each year in the United States (Thelan, Urden, Lough, & Stacy, 1998). Fifty-two thousand people die each year of TBI (Fowler, 1997). Approximately 10% to 15% of TBI patients have elevated ICP, and 84% to 100% of these patients die (Miller et al., 1977). In addition to this loss of life, the costs to society were estimated at \$37.8 billion in 1985 in terms of lifelong disability of TBI patients (Littlejohns & Bader, 2001).

Neurosurgeons and nurses are fearful that less-restrictive visitation will have adverse effects on head-injured patients. In a classic article, Lundberg (1960) proposed that local or general cerebral vasodilatations can be caused by alterations in cerebral functional activity, such as arousal, mental stress, or emotional reaction. This means that the ICP of head-injured patients can rise with a variety of stimuli, and thus any introduction of this stimuli should be avoided. Likewise, auditory stimulation may cause an increase in ICP through increasing cerebral blood flow (Schinner et al., 1995). Furthermore, uncontrolled elevations in ICP will cause impaired cerebral circulation and shifts in brain mass, which will ultimately compromise neurological and life functions (Mauss & Mitchell, 1976).

Nevertheless, it is well-recognized that caring for the patient's family is another way of caring for the patient (Stannard, 2000). The American Association of Critical Care Nurses (AACN) has defined the patient and their family as a unit (Titler, 1997). Meeting the needs of the patient's family during the acute phase of injury can enhance patient recovery and family adaptive coping (Bernstein, 1990). In a study by Roland et al. (2001), families indicated that one of their main needs was to be physically near the patient to enhance emotional support, with data showing that 80% of families desired more open visitation policies. This same study also found that 82% of the staff believed that visitors were beneficial to the patient.

It has not been well-documented whether family visitation is directly related to patient outcomes. However, one of the main reasons for considering a more open visitation policy is to aid the family. If family needs are met, stress can be reduced. If the family is not allowed to visit, or only to visit for short periods of time, they may not get adequate information and attention they need to start the coping process, let alone fully comprehend the medical reasoning behind the restrictive visitation (Elliott & Smith, 1985). Further disruption of the family system can occur because the comatose patient is also unresponsive. Considering the potential long-term physical and emotional effects a head injury can bring to a family unit, the coping and understanding of the situation should be allowed as soon as possible. Recognition of the needs of the patients and their families and appropriate interventions may improve their short- and long-term suffering (Fowler, 1997). If the family visit does not harm the patient, then such an intervention should not be so limited in the patient's greatest time of need.

The Setting

The scenario is set in a 12-bed NSICU in a Level II Trauma Center. There are four beds in an open bay, directly in front of the nurses station; the other eight beds are private rooms.

The Environment

The private rooms are typically utilized for head-injured patients that are being managed under the TBI protocol. According to the AACN, the protocol for the management of a TBI patient includes the reduction of external stimuli (Coburn, 1992). This reduction in external stimuli can be accomplished by providing a private room, dimming lights, spacing out nursing care, and restricting visitation. The reason for decreasing environmental stimulation in the TBI patient is to minimize the arousal and awareness of the comatose patient, and agitation in the conscious head-injured patient, so that brain injury will not be exacerbated during the critical stages of the illness.

The rooms in the unit are not very spacious. Critical care units have been set up to allow

nurses to provide physiological care (Titler, 1997). By the time a ventilator, a few intravenous (IV) fluid poles, and supplies are in the room, there is limited space to move around the bed. Thus, family members can be considered to get “in the way” and make it difficult to care for the patient.

Being a trauma center, the clientele of the hospital is of varied races, cultures, and socio-economic status. In particular, some families are very close-knit and become distraught in knowing that they cannot be at the patient’s bedside. Other families are fragmented by divorce or past conflicts, so discretion has to be given as to who is significant in the patient’s life. Some families have cultural practices that can be considered “disruptive” and inappropriate to the staff. Therefore, this environment includes a wide range of family backgrounds, relationships, and practices.

Roles and Relationships

The nursing staff of the NSICU are varied in their ages, years of nursing experience, and backgrounds. About 50% of the 60 staff nurses have a Bachelors of Science in Nursing (BSN); about 25% have less than five years nursing experience. Some nurses have difficulty incorporating families into their care routine. Novice nurses may have difficulty juggling their time to include families, as they are gaining competence in assessment and skills (Brinker, 2001). Both experienced and novice nurses alike have described feeling like they are being “scrutinized” by family members that stay at the bedside, and prefer restrictive visitation so they can focus on the needs of the patient (Titler, Bombei, & Schutte, 1995). Nevertheless, some of the staff nurses are lenient with the unit’s visitation policy, depending on the patient’s status and the family’s behavior.

The nursing management of the NSICU consists of clinical coordinators, a nurse manager, and the director of nursing. There are four clinical coordinators, each with at least 10 years of critical care experience. Two clinical coordinators have a BSN; the other two have an

Associate Degree in Nursing (ADN). The nurse manager has a Masters of Science in Nursing (MSN), and has been the manager of the unit for over 15 years. The director of nursing also has a MSN, but minimal experience as a bedside nurse. The nursing management of the NSICU is aware of the frustration felt by their staff and the patients' families concerning the visitation policy.

There are three neurosurgeons that attend to the hospital's head-injured patients. Two have been on staff for over five years, and have been practicing for at least 15 years. One of the neurosurgeons has just joined the physician group in the last year, and has been practicing for over five years.

The NSICU CNS in this environment is a masters-prepared nurse, with five years of experience as a critical care nurse. The role encompasses all classic dimensions of the CNS role: expert clinician, consultant, change agent, educator, and researcher (Sparacino, 2000). The NSICU CNS has gained the acceptance by the nursing staff, management, and the neurosurgeons by making effective changes to the policies and procedures of the unit on previous occasions.

An NSICU interdisciplinary team meets once a month to address any current issues. The team is comprised of one NSICU staff nurse from each shift, the NSICU nurse manager, one of the NSICU clinical coordinators, one of the neurosurgeons, and the NSICU CNS.

Literature Review

Criteria for Selection of Articles

To explore alternative visitation policies for an NSICU, a search of the Medline database system for articles on the topic in English from the period 1990-2001 was initiated. Few research citations were found under the medical subject headings (MeSH) of head injury, comatose, traumatic brain injury, family visitation, family coping, nursing, and critical care. Therefore, the MeSH search was expanded to the period 1980-2001, and more citations were

found. Reference lists of retrieved articles were also examined for additional citations. Nursing and medical journals were reviewed, as well as chapters from textbooks on critical care nursing.

There is extensive nursing literature on how visitation policies affect the families of critically ill patients. However, there has been limited research on how family visitation affects critically ill patients. For the head-injured patient population, the primary way to monitor the effects of visitation on the unconscious TBI patient is through changes in physiologic parameters, particularly the ICP, cerebral perfusion pressure (CPP), heart rate and blood pressure. Furthermore, monitoring the effects of visitation on the conscious TBI patient is through the same physiologic parameters and also changes in behavior, such as restlessness and agitation. The use of particular therapies in this patient population is based on the assumption that the therapies can control the refractory elevation of ICP, and that absolute ICP control improves the patient's ultimate outcome (Littlejohns & Bader, 2001). For these reasons, the patients' ICP was chosen by the author as the dependent variable in this analysis of whether a more flexible visitation policy is effective and not harmful in the head-injured patient population. Thus, an exhaustive review of the studies that had ICP as a dependent variable was done.

The five articles selected for the research critique were the only ones that had ICP as one of the dependent variables, and some facet of visitation as the independent variable. A family visit/interaction was defined as presence at the bedside, verbal interaction, and/or physical touch. The studies selected each look at one of the facets of a family visit, and present their findings on how this facet affects the patients' ICP. Each study was reviewed for its sampling method, sample size and demographics, procedure, instruments, and results. The author's goal is to present the findings of the available research and compile a general conclusion on the association between a family visit on their loved one's ICP. This conclusion will then be used to decide whether a flexible visitation policy in the NSICU should be considered.

Historical Perspective

Restrictive visitation policies have their roots in tradition or based on institutional need (Krapohl, 1995). During the 1960s, when intensive care units (ICU) were first created, the U.S. Public Health Service recommended that visiting in these units be restricted to immediate family members for short periods of time (Titler, 1997). This restriction was initially instituted to prevent outside bacterial exposure to critically ill patients. Furthermore, restrictive visitation policies were instituted because it was assumed that family visitation increased patients' stress (Simon, Phillips, Badalamenti, Ohlert, & Krumberger, 1997).

Current Perspective

Current support for such policies center around the belief that restrictive visitation is best for the patient by protecting the patient from adverse physiological effects, promoting patient's rest, and decreasing noise (Krapohl, 1995; Simon et al., 1997). Research to date has shown that restrictive visitation policies are more a product of tradition and convenience than research-based. Studies have found that restricted-visiting practices may not have the beneficial effects traditionally thought. Brown (1976) found that a family member visiting every hour for a period of ten minutes created a stressful effect on the blood pressure and heart rate of cardiac patients in a Coronary Care Unit (CCU). Some studies have described no apparent differences between open-visiting versus restricted-visiting practices. Fuller & Foster (1982) found that visits of 15 minutes or longer are no more stressful than are shorter five to ten minutes visits, and that family interaction with the patient was no more or less stress-provoking than nurse interaction.

Based on clinical studies, the AACN recommends that hemodynamic responses of patients to visitation should be assessed after the first 10-15 minutes of the visit. Increases in heart rate and blood pressure usually occur initially and then decline (Titler, 1997). These initial increases may be seen in a patient's vital signs due to the "excitement" at the start of the family visit. But, vital signs return to normal, or even decrease, after this initial phase. A family visit limited to

only 10 minutes does not take into account the hemodynamic decline. Therefore, it is considered that a visit longer than 15 minutes could be beneficial to the patient.

Although research is limited, no studies to date have shown that family visits to the NSICU have unfavorable effects on the TBI patient. Hepworth, Hendrickson, & Lopez (1994) and Stannard (2000) have concluded that various studies have shown no physiologic reason to limit or exclude family visitation, due to clinically significant decreases in the ICP of neurologic patients during family presence. Furthermore, a classic study by Mitchell and Mauss (1978) showed that touch may help to decrease or stabilize ICP, but also found that conversation about the patient's condition should be minimized at the bedside. Pollack and Goldstein (1981) and Mitchell, Hagermann-Little, Johnson, VanInwegen-Scott, & Tyler (1985) also demonstrated that gentle tactile and/or auditory stimulation consistently reduced ICP. Furthermore, Hendrickson (1987) hypothesized that decreased ICP could reflect the increased restfulness a patient might feel with the presence of family. Nevertheless, the debate continues on whether a comatose patient with head injury can perceive auditory stimulation (Sisson, 1990).

Nurses' Perspective

Data from other studies reveal that nurses perceive open visiting hours have a beneficial effect on both the patient and the patient's family (Simon et al., 1997). Nurses have been identified as being most helpful to facilitate family coping and are in a unique position to incorporate the family into plans of care (Koller, 1991). With the nurse as the patient advocate, the nurse will determine the needs of each family and what is important to them, and also the patient if possible, and through either a verbal or written contract, will respect the wishes of the family while preserving the duties of the professionals involved in the patient's care. Granted, there is a heightened professional responsibility that goes along with unrestricted visitation, especially when the patient's physical or emotional needs take precedence over family time (Daniels, 1996). However, with such communication and cooperation, all parties involved will have the

opportunity to maintain some sense of control.

Theory Base

Two theoretical perspectives provide the basis for this discussion: the Monro-Kellie hypothesis and family theory. Crisis theory, and how it relates to family theory, will also be discussed.

The Monro-Kellie hypothesis. The physiological theory that explains the process of increased ICP was proposed by Monro and Kellie nearly 200 years ago. The Monro-Kellie hypothesis stated that the total intracranial volume must remain constant within the rigid skull for ICP to be maintained at a non-pathological level. As explained by Hickman (1998) and Snyder (1983), intracranial volume is comprised of three components: 80% brain tissue, 10% cerebrospinal fluid, and 10% blood. Any increase in volume of any one of these three components without a compensatory reduction in one or both of the other two will result in increased ICP.

ICP is a constantly fluctuating phenomenon, which has a normal range of 0-15mmHg (Hickman, 1998; Mauss & Mitchell, 1976). Transient increases in ICP are benign, but sustained increases in ICP can be life-threatening. Increased ICP is detrimental because it decreases cerebral perfusion, and brain tissue is extremely sensitive to decreases in oxygen and glucose. Furthermore, cerebral ischemia leads to death of brain tissue.

Principles of family theory. When a serious diagnosis necessitates a patient's admission to a critical care unit, not only is the patient under a great deal of stress, but also the patient's family. This occurs because a reciprocal relationship exists between a patient and his/her family (Stannard, 2000; Williams, 1974). Family systems theory explains this relationship (Bernstein, 1990; Koller, 1991). An important feature of the family is the emotional dependence they have on one another. When one person leaves the family system, each member of the system is affected. Therefore, when one member of the family is hospitalized, each family member

experiences stress.

Illness and hospitalization trigger a potential crisis for patients and their families. The feelings of helplessness and loss of control in the hospital environment can cause a situational crisis within the family system. To assist in dealing with this stress, families have inherent strengths in cohesion and flexibility (McClowery, 1992). The resolution of the crisis depends on the strength of the family relationships before hospitalization, and the support received during the crisis (Williams, 1974). Furthermore, the resolution of the crisis also depends on the accommodation of the perceived needs and cultural responses of families by health care professionals (Bernstein, 1990).

Visitation allows families to express this cohesion to the ill member, even if the patient is unaware of their presence. Likewise, families can be flexible in how and when they get their own needs met, as long as the needs are acknowledged.

Research Critique of Selected Articles

There is a lack of current literature regarding the effect of family visitation on the ICP of head-injured patients. The studies presented will range from the late 1980s through the late 1990s. It is not clear why there is not an extensive research base on the issue.

All the studies to be critiqued used the patient as his/her own control. This method of study design was useful in this difficult patient population, and accommodated smaller sample sizes. Since there are a variety of types of head injury (contusions, diffuse axonal injury, subarachnoid hemorrhage [SAH], subdural hemorrhage [SDH]), this within-subject design allowed different types of head injuries to be studied simultaneously. The results could then be presented individually and as a group, comparing physiologic parameters before and after the intervention. Each patient as his/her own control was effective because the results reflect the individual patient's response with and without the intervention.

Another observation was that only one of the studies critiqued report the dates of the data

collection period. The lack of this information made it difficult to determine if the small sample sizes were due to short time frames allocated to do the study (possibly reflective of funding), or that not enough patients fit the inclusion/exclusion criteria and were admitted to each study's single location. The lack of dates or samples from single locations were not weaknesses. However, the small sample sizes were what negatively affected the generalizability of each study's results.

In a classic study conducted by Hendrickson (1987), the association between family visits and fluctuations in ICP of head-injured patients was investigated. This study used a one-group, interrupted time series design to collect data on 24 patients that met the inclusion criteria: (a) patients who needed ICP monitoring who had family visiting, (b) 14 years of age or older, and (c) who were without a shunt or preexisting adult hydrocephalus. No exclusion criteria were given.

Starting at admission, the patients' ICP readings were recorded every 15 minutes around the clock. Confounding variables and any procedures known to influence ICP, like suctioning, medications, and CSF drainage, were recorded. After consent was obtained, additional readings were taken every five minutes while the family was present at the bedside. Per unit policy, four 20-minute visits per 24-hour period were allowed. It would have enhanced a reader's knowledge of the visit for the researcher to note which family member(s) were the visitors, and whether the visit consisted of touching or speaking to the patient. Acknowledging the type of interaction would have strengthened the validity of the data collected.

Length of ICP monitoring varied for each patient, so data collection ranged from two to 19 days. Data were collected for a time period of 12 months, generating over 10,000 raw data points. Reliability of measurements was increased by the number of raw data points collected. However, the reliability of the instrument and the data collected was threatened by data being collected by the patients' nurses. Interrater reliability was erroneously not evaluated "given the

experience and familiarity of the nurses recording ICP values” (p. 16).

The generalizability of the study was threatened by the small sample size. Likewise, the researcher did not report what type of sampling technique was used. Furthermore, the researcher did not report the patients’ type of head injury. It is thus challenging to determine to what population to generalize the results.

The researcher stated that the data were analyzed by a time series analysis program. No mention was made of which specific statistical tests were used, so it is difficult to know if the results were valid. In addition, the study’s tables were unclear and difficult to understand, so limited information could be extrapolated from them.

The p-value used to determine statistical significance was erroneously not reported. But, the researcher reported that in seven cases, families had a significant positive effect on ICP, with decreases in ICP ranging from 1.41 mmHg to 4.24 mmHg. In eleven cases, families had a nonsignificant positive effect on ICP, with decreases in ICP ranging from 1.57 mmHg to .03 mmHg. In six cases, families had a statistically nonsignificant negative effect on ICP, with increases in ICP ranging from .03 mmHg to .90 mmHg. It can be questioned whether these results were a reflection of the natural variability of ICP.

Hendrickson believed that the findings of this study would lay the foundation for the body of knowledge regarding the effects of family visitation on the ICP of head-injured patients. The researcher recognized some of the study’s weaknesses and limitations, and proposed further research that would expand and refine the study’s design and procedures. Considering that this study was reported in 1987, Hendrickson’s findings provided such a foundation.

In another classic study performed by Prins (1989), two questions were explored: (1) the first was whether a family visit in general affected a patient’s ICP; (2) the second was more specific in asking whether the quality of the family visit affected ICP. The researcher used a descriptive, one-group repeated measures design.

From a single metropolitan facility in the Southwest, a small convenience sample of 15 patients was selected. No inclusion or exclusion criteria were provided, but the researcher did give a list of the patients' diagnoses: SAH, tumor, intracerebellar hematoma, intraventricular hemorrhage with cerebral edema, arteriovenous malformation (AVM), and pseudotumor cerebri. Generalizability was threatened by these weak sampling techniques.

The data were collected for a total of 47 patient-family interactions. All patients were in the supine position with the head of the bed at 30 degrees. No patient received suctioning prior to the visit. Within five minutes prior to the family visit, an ICP reading was obtained. During this time, no one was allowed in the room and no nursing interventions were performed. Then, during a 10-minute visiting period, ICP readings were recorded every two minutes. An ICP reading was again obtained within five minutes after the visit, under the same conditions as before the visit. The study methods in itself were appropriate and well-outlined. ICP instruments were recalibrated before each patient observation period, thereby increasing instrument validity. However, confounding variables, such as medications, were recorded, but were not controlled. This adversely affected the internal validity of the study, since the administration of certain medications (i.e. muscle relaxants/paralytics, sedatives, mannitol) can influence ICP fluctuations and/or patient response.

To evaluate the qualitative aspects of the family visit, the Patient Family Interaction Scale (PFIS) was developed. The PFIS correlated scores for the family behaviors, like touching, verbal tone, volume and content, and bedside proximity. The possible range of scores was 4-19. A "supportive" score of 4 would indicate that the family touched the patient gently and stayed close to the bedside, and that the conversation was softly-spoken and positive in nature. The content validity of the PFIS was effectively "ensured by literature review and by content evaluation by two neuroscience specialists" (p. 286). Likewise, it was reassuring that the PFIS was administered by the same nurse researcher, to ensure the reliability in administration of the

instrument.

The findings of the study showed no significant differences among means of previsit ICP, during-visit ICP, and “postvisit” ICP ($F=2.60$, $p=.086$). The study appropriately used repeated measures ANOVA to test for differences among the means. Furthermore, no significant correlation was found between PFIS scores and the ICP during the visit ($r=-.2191$, $p=.069$). The PFIS data, scored on a numerical interval scale, was also appropriately related to ICP measurements by Pearson’s correlation.

This study found that there were no differences between a patient’s ICP with or without family at the bedside. Furthermore, the “quality” of family visits were not associated with increases in intracranial pressure. The researcher noted that the failure to find significant differences may have been due to the small sample size, a Type II error. The study therefore has limited contribution to the knowledge base. However, the researcher presented two interesting points. The patients in the study had relatively normal ICP readings (0-19mmHg). For patients with intracranial hypertension, sensitivity to stimulation by family visits may be more pronounced. Furthermore, patients in deeper comas (those with lower GCS scores) may not respond to a family visit in the same way as patients in lighter comas. These two points provide further questions for future research, but at the same time complicate any association, or lack thereof, between family visits and a patient’s ICP.

In another classic article reported by Johnson, Omery, & Nikas (1989), the purpose of the study was to examine the effects of emotionally referenced conversations on ICP. This study did not directly deal with family visits, but employed as one of its two interventions the type of conversation that most families share. The researchers hypothesized that “(1) there would be a statistically significant difference between the ICP measurements at baseline and the ICP measurements during any conversation; and (2)... between the ICP measurements recorded during type I conversation and ... type II conversation” (p.59). The non-directional hypotheses

could be attributed to the effects of emotionally referenced conversations on ICP had been purely anecdotal up to that point in time.

This study used a one-group time series design to collect data on eight patients who were present in the ICU that met their very specific inclusion criteria. No exclusion criteria were given, but the inclusion criteria were a GCS of 10 or less, an ICP monitor in place, no prior formal health science education, no hearing dysfunction, ability to understand English, and 18 years of age or older. The convenience sample was obtained from two university medical centers; nevertheless, generalizability was weakened by the study's small sample size.

A 15-minute "preconversation" rest period was provided before starting the data collection. Then, a 3-minute baseline data collection period began, measuring ICP at 15-second intervals. The patient was then presented with either type I or type II conversation by two nurses, who had no physical contact with the bed, patient, or equipment. Type I conversation simulated a nursing change of shift report, and type II conversation simulated a casual (family) interaction, discussing topics such as childcare, preschool, or carpooling. ICP continued to be recorded at 15-second intervals. After the 3-minute conversation, three minutes of "postconversation" baseline data were collected. The patient was then allowed a 15-minute rest period. The exact protocol was then repeated for the presentation of the second conversation type. The procedure was systematically controlled, with the conversation types alternated sequentially from one patient to the next. Alternating the conversations in this way helped ensure the results were not due to the order of the presentation. However, the researchers should have repeated the protocol on the patients, since test-retest consistency would have strengthened the reliability of the data .

The researchers identified the diagnosis of the sample of patients, but did not specifically address confounding variables, such as medications and procedures. The uniformity of patient positioning with the head of the bed at 30 degrees and head and neck alignment during data

collection was valuable information to have in interpreting the results.

The researchers attempted to assure and maintain the validity and reliability of their instruments. Regular calibration of the ICP instrument was addressed, as well as testing and retesting of interrater reliability for collecting demographic data (100% reliability was achieved). A single investigator recorded the ICP, ensuring internal consistency and reliability of the results. The two conversation types were reviewed by three neuroscience nurse experts for validity and “sensitivity” of content. However, it was not mentioned if the same two nurses presented the conversations to each and every patient, subsequently weakening the reliability of the two conversation types with a lack of consistency.

Repeated measures ANOVA was appropriately used to test for differences in the means of ICP measurements before, during, and after the two conversation types. T-tests were also used; for example, as presented in one of the study’s charts, a t-test was used to compare the minimum ICP mean scores before and during the type II conversation. It is not clear why the t-test was used. The only significant result was found when the average minimum mean of ICP recorded during the baseline time period was compared to ICP recorded during the type II (casual) conversation ($t= 2.31, p= .05$). This means that there was a significant decrease in the ICP during the conversation that was not related to the patient’s condition. Therefore, the findings of the study did not support either of the hypotheses.

Considering that there were only eight patients in this study, there might have not been enough power to identify differences, even if they existed. Nevertheless, the authors brought up some interesting points that build on those presented by Prins (1989). Patients with a GCS greater than 6 had significant elevations and decreases in ICP. This can be interpreted as patients who have higher GCS scores may be able to interpret verbal language better, and thus their ICP could be more easily affected. This idea can be interpreted to mean that patient responses to conversation, or even visitation, should be based on GCS and individual patient

responses, although there has not been enough data to support this idea.

Treolar, Nalli, Guin, & Gary (1991) expanded on the purpose of previous studies and investigated the effects of familiar and unfamiliar voice stimulation on the ICP of head-injured patients. The researchers mentioned that they used a quasi-experimental repeated measures design to answer their research question : “Will there be any change in ICP of head-injured patients during or after verbal stimulation by tape recorded messages delivered by a familiar voice compared to an unfamiliar voice?” (p. 297). However, it can be argued that this was a descriptive study, with a one-group repeated measures design. Its design was the same as the studies previously presented.

Generalizability was negatively affected by the small convenience sample of 12 patients, from only one setting in the southeastern United States. The sample was selected using the following specific inclusion criteria: English-speaking; an ICP monitor in place; no history of hearing disorder, hydrocephalus, or shunt placement; $ICP < 40$ torr; $GCS > 3$; age between 16 and 75 years.

After a patient met the selection criteria, the closest relative, whose voice would be easily recognizable by the patient was contacted to tape the standardized message. The message consisted of general statements that were designed to “promote comfort” in the patient and lasted approximately 75 seconds. One of the researchers also recorded the same message, identifying herself as a nurse. Before playing either of the messages, the patient was left undisturbed for a 10-minute baseline observation period. The ICP for the last 60 seconds of this period was recorded as the baseline ICP. Then, the taped familial message was played, and ICP was recorded at 5-second intervals for one minute followed by measurements at 90, 120, 180, and 300 seconds. The patient then rested for 30 minutes. The same protocol was then followed using the taped unfamiliar voice message. Confounding variables like medications and ventilator settings were recorded, but were not controlled. However, the researchers were not

very clear on whether the familiar voice was always played first, which could affect the internal validity of the results. The researchers should have alternated the sequence on each patient.

ICP and cassette tape recorder instruments were specifically described, with their calibration methods explained, ensuring validity and reliability of these instruments. Likewise, only one researcher recorded the ICP measurements, further assuring reliability of the measurement. However, no mention was made of consultation with experts on the content validity of the taped message. When an instrument's validity is not assessed, the validity of the study's findings is subsequently questionable. Likewise, it appears that the protocol was only done once, thereby threatening the stability of the data by lack of test-retest consistency.

The researchers stated that they used "matched sample t-tests" to compare the mean ICP measurements during the baseline period, familiar voice treatment time period, and the unfamiliar voice treatment period. The specific test used cannot be known based on this description. Repeated measures ANOVA would have been appropriate to compare the means between the time periods. Since the statistical methods were unclear, it is difficult to interpret the findings. Nevertheless, the researchers concluded that there were no significant differences ($p=.05$) between the means from the different time periods. However, it is possible that the voice recordings were too short to provoke an ICP response in the patients.

The latest study to examine the effects of familial voice on head-injured patients was by Walker, Eakes, and Siebelink (1998). This study appeared to build on the design and procedures of Treolar et al. (1991). The researchers hypothesized the following: "1) the introduction of a taped familial voice would affect ICP, blood pressure, respiratory rate, mean arterial pressure, oxygen saturation level, and level of restlessness in comatose head-injured patients; 2) the effects of the taped familial voice would be significantly greater during the playing of the tape than five minutes after the taped message; 3) the cumulative effects of the taped familial voice interventions (final time series measure) would be significantly greater than the

initial effects (initial time series measures)” (p. 42). The researchers used a descriptive, one-group repeated measures design on their small convenience sample of 10 patients from two ICUs in a rural Level I trauma center. The inclusion criteria were specific: unresponsiveness to verbal stimuli, GCS<10, ICP<20 torr, English-speaking, and no history of hearing disorder.

The procedure for the study started with a period of baseline data collection of all the dependent variables (ICP, vital signs, level of restlessness). The researchers did not state how often these “repeated measures” were recorded, nor for how long this period lasted. Within 30 minutes of obtaining the baseline data, the study protocol was implemented. Five minutes after collecting baseline data, the nurse played the taped message of the close relative’s voice next to the patient’s ear. This message was provided by the researchers, and lasted approximately 60 seconds; the message was electronically repeated three times, for a total time of approximately 3 minutes. While the tape played, continuous measures of the dependent variables were recorded. Five minutes after the tape concluded, the dependent variables were again recorded. The study protocol was repeated four times per patient, at 6-hour intervals.

The validity and reliability of the instruments that measured the dependent variables could not be determined since the researchers did not include such information. Furthermore, the patients’ primary nurse served as the data collector and also introduced the taped message; the issues of inter- and intraobserver consistency were never addressed. Likewise, it was not apparent if the predetermined script provided by the researchers was tested for content validity. However, the researchers did appropriately account for test-retest consistency and data reliability by repeating the study protocol on each patient.

Patient diagnosis and GCS scores were not provided by the researchers, so it was unknown whether comparisons between the patients were considered. Patient medications and the times of the last family visits were documented, but were not controlled. It was noted that four of the 10 patients had received sedating or pain medications within an hour of the implementation of

the study protocol, which could threaten the internal validity of the data.

The means of the physiologic variables during each of the time periods for each of the patients were inappropriately compared using paired t-tests. Repeated measures ANOVA would have been the correct statistical test. The findings revealed that there were no statistically significant differences ($p=.05$) between the means of the physiologic variables at any of the data collection points (i.e., before, during, and after playing the tape). Thus, none of the research hypotheses were supported. The study demonstrated no adverse effects of taped familial voices on the physiologic variables. However, it was interesting to note that none of the tables or discussion presented the results of ICP measurements, which was the first variable listed in one of the hypotheses.

Considering the study's weaknesses with internal and external validity and reliability, and its lack of attention to detail, its contribution to the knowledge base should be considered cautiously. However, it does build on what previous studies have reported about the lack of difference between a patient's ICP with or without family at the bedside.

Analysis of the research. In conclusion, one might find it difficult to change practice based on the weak results and conclusions of the reviewed research studies. This weakness is due primarily to the equivocal results of the studies and their lack of generalizability. Nevertheless, no research to date has presented any adverse effects of visitation on a patient's ICP. Therefore, the conclusions of the reviewed studies could be cautiously considered.

Intervention

As the literature indicates that family visitation does not result in increased ICP, the NSICU CNS decides to recommend more flexible visitation. No articles to date have presented an updated or specific visitation policy for head-injured patients. However, there have been numerous articles that discuss the implementation of less restrictive visitation policies in critical care units. One of the alternatives is an open visitation policy that allows visitors to the bedside

24 hours a day. Simpson et al. (1996) successfully implemented a more liberalized visitation policy that allowed visitors 24 hours per day, with up to four visitors at a time. Only family or significant others were allowed from 8PM to 8AM. Giuliano et al. (2000) also presented the success of implementing a visitation policy that had unrestricted visiting 24 hours per day, with restrictions only during the two times of the hour-long change of shift report. There were no restrictions on number of visitors or who could visit. In both studies, the nursing staff was given the authority to ask visitors to leave if the patient needed rest or during unit emergencies.

Another alternative is a visitation policy that allows unrestricted visiting between specific time periods. Roland et al. (2001) successfully implemented a more liberalized visitation policy that permitted open visitation between 10AM to 1PM and 5PM to 8PM, with the unit closed from 1PM to 5PM. Likewise, the nursing staff was given the authority to ask visitors to leave to promote the patients' well-being or for unit emergencies.

The NSICU CNS, having reviewed the literature on the effects of visitation on ICP and on approaches others have used, makes the following recommendations:

- (a) if it is determined that family at the bedside does not adversely affect the patient's ICP, liberal visitation should be allowed and encouraged;
- (b) the flexible visitation policy would consist of allowing visitors access to patients 24-hours a day, but curtailing visits at specific times or situations suggested by the staff nurses;
- (c) since these are TBI patients, only immediate family members or significant others will be allowed;
- (d) visitors will be limited to no more than two at a time.

The new visitation policy will prevent some of the frustration felt by the staff and the patients' families, and will relieve some of the stress of the environment. The desired primary outcomes will be decreases in a TBI patient's ICP, along with an improvement in family satisfaction. The secondary outcome will be increased NSICU staff nurse, neurosurgeon, and NSICU administration satisfaction.

In this era of cost-containment and an increase in public knowledge, traditional healthcare practices are being challenged. Likewise, the increased competition for health care dollars is forcing hospitals to focus on the needs of the “customer” (Messner, 1996). One way to accommodate the patient and their family’s needs in the visitation debate is to consider a less-restrictive visitation policy in the critical care units. Visitation is not a privilege, but a necessary component of patient and family well-being (Brinker, 2001). A blanket visitation policy may not meet the unique needs and diversity among patient populations (Cleveland, 1994; Krapohl, 1995). Research has shown that liberalized visiting has the most positive effect on families, with a reduction in anxiety and an increase in satisfaction, whereas the effects on patients and nurses were not different than those of restricted visiting (Simpson et al., 1996).

Implementation

When challenging the restrictive visitation policies in the NSICU, the approach will need to be evidence-based. The NSICU CNS will follow the research utilization approach presented by Polit & Hungler (1999). After identifying the problem with the restrictive visitation policy, the NSICU CNS will begin by reviewing the relevant research articles and assessing its scientific merit. Also, a survey of other facilities that care for head-injured patients will be done to determine what type of visitation policies are currently in practice. The NSICU CNS will compile the recommendations and present them to the NSICU interdisciplinary team.

The other critical step is to also gain the approval and support of management and the neurosurgeons. Management support authorizes the proposed change, as well as broadens the nurses’ base of power and expertise (Roland et al., 2001). The neurosurgeons’ involvement in the development and implementation of care protocols is imperative to providing a team approach in the management of head-injured patients (Littlejohns & Bader, 2001).

If the recommendations are approved, the interdisciplinary team will then do an implementation assessment. The team will discuss the research and identify myths, and then

collaborate to develop questionnaires for distribution to the patients' families and staff nurses. The following will be the main points of the questionnaires: (a) level of satisfaction with current visitation; (b) preference for visiting hours, lengths of visits, allowed visitors, and number of visitors. The involvement of the staff nurses and recognition of their opinions is key to gaining their support. The data from the questionnaires will be compiled, analyzed, and then presented to the interdisciplinary team. The results will form the basis for the areas of the greatest education needs.

In addressing the inconsistencies in the enforcement of the visitation policy and designing the appropriate intervention, the staff nurses will be the ones who are the key players. Since the chief problem will be changing the unit's culture and challenging some of the staff nurses' attitudes and values, staff education will be the main focus of the implementation stage (Giuliano et al., 2000; Roland et al., 2001). The staff nurses will be provided information and management support in understanding the importance of effective family coping during critical illness and how to effectively change to a more flexible visitation policy in the NSICU. Staff education will occur over a two month period. During this time, posters will be used to contrast the common misconceptions about visitation with the current facts from the literature. Furthermore, multiple inservices will be presented to all shifts summarizing the literature on visitation. During these inservices, staff involvement and input will be emphasized, since involvement decreases some of the stress that occurs with change.

The details of the new policy will be sent to the nursing staff, nursing management, the neurosurgeons, and all other applicable departments. New signs will be posted on the entrance to the unit. The information sheet in the admission packet will be updated.

During the 30-day pilot of the new visitation policy, continuous ICP monitoring and evaluation of the head-injured patients will be performed. Data on the patients' ICP will be collected on flowsheets. The design of the flowsheets will be simple and objective, and only to

be used when family is at the bedside. The main categories for the columns will be date and time of decrease in ICP or sustained ICP elevation, who is at the patient's bedside and what family behavior is occurring. Visits will not be dependent on pathology or diagnoses, but will be permitted as long as the patient's ICP does not increase. If a patient's ICP reacts negatively to the family visit, the family will be asked to leave. Visits at a later time may be permitted if the patient's ICP can tolerate it.

Health care professionals should adjust their actions to accommodate the perceived needs and cultural and typical behaviors of families (Bernstein, 1990). Likewise, monitoring of the patient's physiologic parameters and/or behavior during family visits is of the utmost importance. First, it needs to be determined which family members should be allowed visitation. Simply because the visitor is a parent, sibling or a spouse of a TBI patient, does not guarantee admittance to the bedside. The presence of the particular family member may cause increased stress and agitation to the patient, and such visits need to be limited. Furthermore, it needs to be determined in the cases where patients have no close blood relatives, which friends have strong ties to the injured and be allowed visitation rights. Second, the family should be reminded that it is believed that an unresponsive patient's sense of hearing remains intact, and therefore should be talked to in a soothing and encouraging manner, while avoiding unnecessary noise and stimulation (Marshall, Sadler, & Marshall, 1981). Elevations in ICP occur when conversation about the patient's condition are done at the bedside (Farley, 1990).

The NSICU CNS will round on the patients two hours per day to directly assess the results and participate in the implementation of the new policy. The NSICU CNS will need to model the behavior in clinical situations, and serve as a mentor to the staff, since nurses receive little formal education or experience about facilitating interaction between patients and their families (Titler, 1997). Such mentoring will include communication strategies with families and other staff members and modeling ways to include family in the patient's care. Many nurses feel

uncomfortable performing procedures in front of families, either because of their skill level or comfort level. Furthermore, the staff nurses will need the opportunity to clarify their values regarding the inclusion of family in a patient's care. Therefore, continuous encouragement and support towards the staff nurses will be implemented on a regular basis, and the NSICU CNS will serve as the liaison when disagreements on visitation result between nurse, neurosurgeon, and/or family.

The interdisciplinary team will meet weekly during the pilot study period. The team will review concerns and receive feedback from all parties involved.

Evaluation

Thirty days following the implementation of the pilot visitation policy, the NSICU CNS will first review the effects of the new visitation policy on the patients' ICP. These data on the effect of the family visit on the patients' ICP will be compared and analyzed for trends.

Secondly, the NSICU CNS will distribute questionnaires to families, the nursing staff, the neurosurgeons, and management. The questionnaires will be developed to measure family satisfaction and staff satisfaction with the new visitation policy.

Family satisfaction will be collected through an adaptation to the family perspective of the Picker/Commonwealth Hospital Satisfaction Survey (Maciejewski, Kawiecki, & Rockwood, 1997; Urden, 1999). The conceptual areas to be addressed will be the family's description of the visitation policy, satisfaction with the policy, and beliefs and attitudes about the policy.

Nurse, neurosurgeon, and management satisfaction will be collected through a written survey developed to measure the attitudes and perceptions about the new visitation policy, similar to the Staff Attitude Survey developed by Clement in 1984 (as cited in Cleveland, 1994). The conceptual areas to be addressed will be a description of the new visitation policy, satisfaction with the new policy, beliefs about the new policy, and attitudes about the former and new policy. A brief demographic section on type of shift, years in critical care, and highest degree

will also be included in the staff nurse questionnaire.

Content of the questionnaires will be derived from the literature about visiting policies. Revisions of the instruments will be performed with advanced practice nurses with expertise in family interventions to establish content validity. Participation will be voluntary and confidential.

The data from the questionnaires will be analyzed by statistical software. The results will be presented first to the NSICU interdisciplinary team and then to all parties involved, and will likewise be posted in the break room. The NSICU CNS will use the feedback from the questionnaires to address the problem areas with the new visitation policy. The new policy will be re-evaluated for patient intolerance of the increased family presence. Nevertheless, it will be expected that not all parties involved would be content with the change. However, continuous communication, feedback, and support between the NSICU CNS, the staff nurses, the neurosurgeons and management will ensure the continuation of the flexible visitation policy.

There is an urgent need for continued research on the relationship between a patient's ICP and a family visit. Follow-up research on this issue should primarily address the inability of previous studies to be able to effectively generalize results to the general population. Future research should include random sampling to groups, which would help to prove whether a true link of causation exists between family visitation and ICP. Larger sample sizes would further increase the generalizability of the findings. Larger samples, with subjects from multiple centers, would at the same time improve the diversity of the samples. Likewise, the precision and accuracy of data collection and measurement should be addressed with closer attention to detail and replication of study protocols within each study. Likewise, it would be interesting to see a study on the comparison of long-term outcomes of TBI patients who were exposed to either restrictive or liberal familial visitation.

According to Littlejohns & Bader (2001), evaluating patient responses to interventions, documenting the findings, and critically planning the introduction of the research are the main

points to address in the appropriate care of head-injured patients. To address the problem with the visitation policy of the NSICU, the NSICU CNS recognizes the staff nurses' and the families' needs, and evaluates the patients' responses to these needs. This recognition of the problem will promote, improve, and restore satisfaction of the families that have a loved one with a head injury, and those staff nurses that courageously care for such patients.

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