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Factors affecting the process of clinical decision-making in pediatric pain management by Emergency Department nurses

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Factors Affecting the Process of Clinical Decision-Making in Pediatric Pain Management by Emergency Department Nurses

by

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Dedication

This dissertation is dedicated first to the many infants and children I have encountered at triage in the Emergency Department who made me aware of their needs for pain relief and compassion. Secondly, for my daughter Lindsay who has been my primary support throughout this endeavor; my family for supporting me, feeding me, and serving as my stress-buster team when needed. And finally, but certainly not last, to my late father, Pasquale, who instilled in me a principled approach to life, and whatever challenges I may face along the way.

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ABSTRACT

The purpose of this mixed methods study was to describe the cognitive processes/knowledge sources used by Emergency Department (ED) nurses in decision-making activities regarding triage and pediatric pain assessment and management. Deficiencies persist in ED pediatric pain assessment, and management methods or approaches that might help resolve these deficiencies have not been identified previously. Methodology triangulation with sequential use of qualitative- quantitative methods provided a rich description of knowledge sources and cognitive processes used by ED nurses relative to pediatric pain assessment decisions. Based on qualitative results, a set of vignettes was developed to assess ED nurses. Data analysis using ordinal logistic regression with a cumulative logit model identified patient and nurse variables which influence triage acuity decisions.

Five common themes emerged from the qualitative data; 1) Age of the child is important, 2) Behavior can tell a lot, 3) Really looking at the patient, 4) Things that help make decisions, and 5) Things that hinder decisions. Ordinal logistic regression analysis of the quantitative data identified predictor variables of infants compared to school-age children, Hispanic ethnicity, moderate number of years of ED experience (11 -20 years) and years of education that were associated with higher triage levels .The implications of

this new knowledge include changes in ED triage nurse practice towards pain assessment, and increased awareness of the need for education in use of pain assessment tools. Additional implications include education related to pain management practices by ED physicians and pain medication protocols at triage. This information may enhance triage and care of the pediatric patient experiencing pain, expand the knowledge base of emergency nursing, identify areas in which to implement changes, assist in improving care provided to children experiencing pain, and provide direction for future education, training, and research.

Chapter 1

Introduction

A complaint of pain has been cited as a frequent presenting symptom to the Emergency Department (ED), for both adult and pediatric populations (Cordell, Keene, Giles, Jones, J. B., Jones, J.H., & Brizedine, 2002; Tanabe, & Buschmann, 1999; Drendel, Brousseau, & Gorelick, 2006). Cordell and colleagues, (2002) reported pain as chief complaint in more than half of 1,600 medical records reviewed from a one-week period. Retrospective reviews of data from the National Hospital Ambulatory Medical Care Survey identified disparities in pain assessment documentation, particularly in children. A review of more than 24,000 ED visits found pain documentation in only 44.5% of cases (James, Bourgeois & Shannon, 2005; Drendel et al., 2006). Despite knowledge of the need for prompt and accurate triage of children experiencing acute pain, clinical evidence of ongoing disparity in assessment and documentation of pediatric pain has been reported (Drendel, et al., 2006; Johnston, Bournaki, Gagnon, Pepler & Bourgalt, 2005).

The assessment and ED response to pain in infants and young pediatric patients has presented challenges. Children and adolescents up to the age of 18 are treated in the Pediatric Emergency Department of many hospitals. Pediatric pain assessment scales have been available for a number of years, however there have also been discrepancies in published reports regarding the age at which these scales provide a valid measure (Bulloch & Tenenbein, 2002; Kelly, Powell, & Williams, 2002). The age range used to

define a pediatric patient has varied according to the information source. American Heart Association guidelines for Pediatric Advanced Life Support and Basic Life Support recommended that health care providers use the age range for children beginning at 1 year old, and up to the beginning of puberty (AHA, 2005); however this range pertains to physiologic parameters more than pain assessment. This wide variation in age, size, and developmental levels has added to the complexity of pediatric pain management. Consequently, healthcare providers must have a broad knowledge base of assessment, age appropriate pain assessment scales, pain management interventions, and medication dosage ranges.

Published literature indicated an enhanced clinical knowledge base concerning pediatric pain management. A variety of validated pediatric pain assessment tools have been made available for use in the ED and other settings. Moreover, nationally recognized pain assessment standards of practice have been put forth. Despite these positive changes, documented inadequacy of pediatric pain management in the ED setting has continued as a major clinical issue (Drendel, et al., 2006). In view of these trends, research to evaluate the efficacy of alternative or creative approaches aimed at improving these practices has been lacking. Additional research was indicated in order to further explicate clinical decision-making, and guide changes in practice toward pediatric pain assessment and management by the ED triage nurse.

A number of factors may have compounded problems with accurate and timely pediatric pain assessment and triage decision making. Emergency Departments have served as a "safety net" for health care for many underserved groups, and particularly uninsured children during recent years (IOM, 2006). Unintended effects of the

Emergency Medical Treatment and Active Labor Act (EMTALA), as well as other health care system-wide problems have contributed to ED over-crowding and extensive waiting times for treatment (Hostetler, et al., 2007). A review of the 2001 National Hospital Ambulatory Medical Care Survey found that ED visits increased by 20% between 1992 and 2001, which reflected approximately 22 million visits per year for children 15 years and younger (James, Bourgeois & Shannon, 2005). The Healthy People 2010 public health initiative included the goal of eliminating racial and ethnic health disparities (US DHHS, 2000). Therefore, considering the impact of these factors on the treatment of children in the ED, it became imperative to gain a better understanding of clinical decisions regarding pediatric pain assessment and management.

Purpose

The primary purpose of this mixed methods study was to describe the cognitive processes/knowledge sources used by Emergency Department (ED) nurses in decision-making regarding triage and pediatric pain assessment and management. The secondary purpose was to clarify and describe external and internal factors influencing triage decisions and pain interventions. This study consisted of two phases, including both qualitative and quantitative methods approaches. In Phase I, a qualitative method was used to describe triage decision-making. In Phase II, a quantitative component, used a triage vignette survey, designed to further verify the processes and factors identified from Phase I (Morse & Richards, 2002).

Research Questions

Research questions addressed in the first phase of this study were:

1. What are the cognitive processes/knowledge sources used by ED nurses in decision-making regarding pain assessment of pediatric patients?

2. What internal factors influence ED nurses' cognitive processes and clinical decisions in pediatric pain assessment?

3. What external factors influence ED nurses' cognitive processes and clinical decisions in pediatric pain assessment?

Research questions for the second phase of the study addressed whether differences in triage level assigned for a given vignette could be predicted by nurse variables (education, years of experience) or patient variables (age, ethnicity, gender, or behavior). The following research questions pertained to Phase Two:

1. What are the differences in triage level assigned for a given vignette, based on nurse variables of: educational background, or years of experience (grouped continuous variable)?

2. What are the differences in triage level assigned for a given vignette based on patient variables of: age (two categories), ethnicity (three categories), gender (two categories), or behavior (two categories)?

The qualitative portion of the study will clarify and describe decision-making processes and factors that influenced those decisions, as described by the triage nurses. Interviews which explored the lived experience of triage nurses that were recorded, transcribed, and analyzed, provided information about patterns, processes, themes and insight into the contextual world of the ED triage nurse. The second phase of the study

used patterns and themes that emerged, along with variables that were identified from the literature, to describe commonalities or differences in triage nurse decision-making through their responses to a series of triage vignette exercises. The qualitative portion allowed for describing a phenomenon, while the secondary quantitative portion of the study allowed for assessing the distribution, strength and direction of any commonalities or differences in the phenomenon, which is triage decision-making concerning pediatric pain assessment (Morse & Richards, 2002).

There were no published reports of research using a mixed methodology approach in studying this phenomenon. The future research trajectory of this work would be to develop and test an instrument that could facilitate nursing education and knowledge of triage assessment of pediatric pain. However, this was not the focus of the present project.

Significance

The significance of this study pertained to the enhancement of care of the pediatric patient experiencing pain in the ED, through application of the knowledge gained from the research findings. The methods used were intended to provide a contextual, rich description of triage clinical decision-making processes, and factors that may have influenced those decisions. There was little published research regarding the nature and processes of clinical decision-making and knowledge sources used by ED triage nurses in pediatric pain assessment and management (Crellin & Johnston, 2002; Drendel, et al., 2006; Johnston, et al., 2005). A triangulated design method which used sequential qualitative inquiry, followed by quantitative analysis of data, served to capture and validate phenomena from the lived experiences of ED triage nurses (Polit & Beck,

2004). The qualitative approach provided data for development of triage vignettes, which were analyzed via quantitative methods. This process of first describing phenomena followed by determining distribution of those phenomena had potential for enhancing the validity of findings (Morse & Roberts, 2002; Polit & Beck, 2004).

Clinical experience has been recognized as a requisite for expertise in the challenging role of ED triage nurse. Triage in the ED has become a process of quickly determining the priority of care for patients upon arrival, so that each patient can receive appropriate resources in a timely manner. Triage has become the point of entry to ED care, and the medical screening exam process. Algorithms have provided principles-based guidance for this decision-making process. Through a set of steps, or "decision tree" the triage nurse can determine the correct priority level for the patient, assuming that the patient's chief complaint on arrival allowed for the correct choice of algorithm pathway by the nurse (Gerdtz & Bucknall, 1999). Real-life situations may challenge propositions or principles-based expectations (Benner, 1984), such as triage algorithms, necessitating quick thinking on the part of the triage nurse.

Recent recommendations have suggested use of a five-level triage scale; however, there were no published validation studies with pediatric patients (Fernandes, Tanabe, Gilboy, Johnson, McNair, Rosenau, et al., 2005). An important clinical question was whether the expert nurse has made use of or followed these algorithms in the same sense as a novice, or less experienced nurse. The triage nurse has traditionally been a nurse with years of experience. Current nursing shortages and busier emergency departments across the US, have led to situations in which nurses with less experience in triage decision-making have found themselves challenged to perform these duties, putting them

at risk for making inappropriate decisions. Thus, research of this nature was necessary and justified for describing the triage decision-making process and factors that may have influenced those decisions.

Conceptual Framework

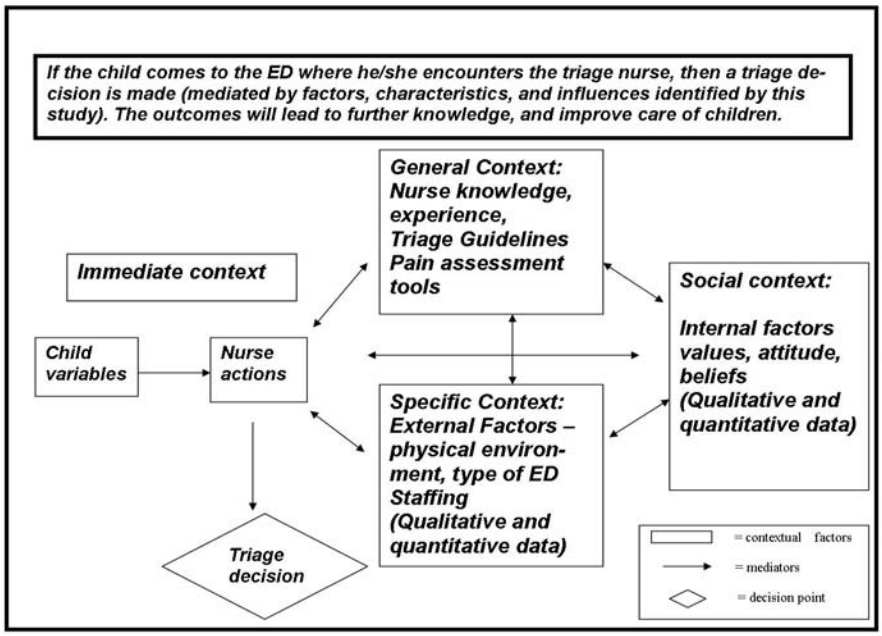
A conceptual framework provided a frame of reference that guided how the researcher organized or viewed these phenomena. The philosophical underpinnings, research traditions and assumptions of this conceptual framework provided structure, context and linkages within the research methods used in this study (Fawcett, 1999; Polit & Beck, 2004). The phenomenon of interest was gaining an understanding of the lived experience of the triage nurse through interpretation of descriptions of processes, experiences and meanings. Interpretive phenomenology from a hermeneutic tradition guided explicating the meaning embedded in the common experiences of triage nurses' decision making. The *lifeworld* reality of the decision making experience of the triage nurse has been influenced by what is experienced on a daily basis (Lopez &Willis, 2004). This approach allowed for describing the meaning of *being-in-the-world,* and how these meanings influenced choices made by nurses (Lopez & Willis, 2004, p.729). Benner (1984) described using an interpretive approach for describing the meaning of nursing clinical knowledge within the context of where it is found.

The subjective world of the triage nurse was conceptualized as embedded in layers of context which influence triage decisions. To understand and grasp some meaning and understanding of this phenomenon, the researcher was aided by previous knowledge of the context in which the phenomena occurs. Hinds, Chaves and Cypess (1992), provided a framework which they conceptualize as "four nested interactive

layers" distinguished from each other by the extent of shared meanings, time focus, and speed of change (p. 65). In this framework the phenomenon of interest; triage decision-making regarding pediatric patients complaining of pain, was embedded within the layers of context. These layers included: 1) the immediate context; 2) specific context; immediate past or environmental factors; 3) a general context, or general frame of reference; and 4) a broader, socially constructed metacontext. Patel, Gutnik, Karlin, and Pusic (2008), developed a conceptual model of pediatric triage decision-making that included the influence of patient factors, nurse factors, guidelines and contextual factors on triage outcomes. These two models contributed to the formulation of the logic model for this study. The logic model (Figure 1) provided a visual representation of this framework and guided descriptive research regarding the relationship between variables for this study (Evans, 1992).

The logic model is explained here (Figure 1). A graphic display of the layers of context provided a conceptualization of the components in the logic model for this study, and a frame of reference for better understanding and interpreting the qualitative data generated from triage nurse experiences. Viewing the logic model from left to right depicts the contextual layers described here.

Figure 1: Logic model for triage decision-making and pediatric pain assessment



The immediate context included the input variables of the child who comes to the ED, and the specific actions taken by the triage nurse. Child variables comprised age, gender, ethnicity, behavior, symptoms, appearance, and the interaction of parental behavior. Any of these variables were possible presenting factor inputs in the triage decision process. Child variables such as age, gender or behavior may have influenced or mediated actions by the nurse. The nurse's action, or triage decision was mediated or influenced by a number of factors that were viewed as components of the contextual layers of the conceptual model. These contextual layers may be thought of as expanding, or encompassing more factors that influenced the triage decision-making process. The specific context included a number of mediators that may influence triage decision-making including the physical setting such as the type of ED (general versus pediatric only), the population, and the volume of patient visits to the ED. Also included in this

layer are the staffing patterns of the triage area, and the availability of pediatric specific equipment, assessment tools and technology. The general context consisted of a unique system of knowing; the knowledge base of the nurse, education, years of experience, rules or guidelines for conducting the triage process such as triage algorithms, or statutes such as the Emergency Medical Treatment and Active Labor Act (42 USC 1395dd). The broader socially constructed context included nurse characteristics (internal factors) that may mediate or influence triage decision making including values, attitudes, emotions, traditions, and the nurse's philosophy towards the hospital or work environment.

There are a number of factors which may have influenced triage decision-making process with the pediatric patient experiencing pain. A number of these factors have been conceptualized by the researcher; however data from the qualitative phase of this study ultimately determined the variables that were included in the second phase of the study. The logic model served to provide a visual representation of the interactive layers of context in which the triage nurse makes decisions regarding the child who presents to the ED with a complaint of pain.

The outcomes of this study were the commonalties and differences in triage decision making that emerged from analysis of data from the study, and can be used to enhance triage and care of the pediatric patient experiencing pain. The variables and data that are interpreted as contributing to appropriate decisions and treatment may facilitate future evidence based research and education. Areas for future research included the accuracy, timeliness, safety and effectiveness of assessment, diagnosis, treatment and follow up care for the pediatric patient who comes to the ED experiencing pain.

Assumptions

1. Knowledge of the ED triage nurse experience on the part of the researcher, used with bracketing when appropriate, provides a meaningful guide to inquiry.

2. Descriptions of triage process decision-making derived from an interpretive approach blended the outcome of meanings articulated from the informants and interpreted by the researcher (Lopez & Willis, 2004).

Definition of Terms

Algorithm - A decision making tool used in triage, based on a decision-tree or diagram approach that provides step by step directions or structure in order to standardize decisions.

Clinical decision making - the outcome of cognitive processes; information processing, step-by-step conscious thinking, use of cues, patterns, previous experience, and practical rules or protocols to choose a course of action for a given set of circumstances or patient symptoms.

Cognitive process - the thought model used by nurses to analyze and process information, which uses a blend of analytic and intuitive thinking. Nurses' ways of knowing (Berragan, 1998; Carper, 1978); empirical, ethical, esthetic and personal could be used to describe these processes.

Intuition – Knowing or sensing without the use of specific processes, and insight gained from using this source of knowing.

Pain - an unpleasant sensory and emotional experience that arises from actual or potential tissue damage and elicits various physiological and/or psychological responses.

Pediatric patient – a child beginning at 1 year old, and up to the beginning of puberty.

Triage - a process of quickly determining the priority of care for patients as they arrive, so that each patient receives appropriate resources in a timely manner.

Triage vignette - A short descriptive literary sketch or written case scenario designed to include specific clinical information which requires a decision as to a triage score for the patient described in the vignette.

Triangulation - method of using multiple research approaches in the same study to answer research questions. Triangulation may be through either data collection, investigator, method or theoretical approaches (Speziale & Carpenter, 2007)

Chapter 2

Background and Literature Review

The review of literature included a synthesis of literature regarding research articles in the domain of Emergency Department (ED) decision making, and assessment and management of acute pain in children. A literature search which utilized databases such as CINAHL, Ovid, PubMed, ERIC, and an ancestral search of references from pertinent studies produced numerous studies, including both qualitative and quantitative methods, which explored clinical decision-making in various settings; however published studies that described ED triage decisions with pediatric pain were lacking. Several themes were the most prevalent in the published literature and are elucidated as follows; satisfaction and attitudes of patients and parents, pain symptom assessment, pain assessment correlation between patient and others, ethnic disparity, triage assessment, and nursing interventions. Limited research involving triage decision-making processes had been published; however no published research was located which addressed sources of knowledge ED nurses use, triage clinical decisions, or the lived experience of the pediatric ED triage nurse in respect to pediatric pain.

The logic model guided the literature review. Relevant themes included in this review of literature include discrepancies in pain ratings between parents and healthcare practitioners, cultural factors, problems with pediatric ED care, the role of the triage nurse, and clinical decision-making in the ED.

Practitioners, Parents, and Discrepancies

Differences in ED nurse and physician triage decisions for pediatric patients, (Maldonado & Avner, 2004; Bergeron, Gouin, Bailey & Patel, 2002), and differences in pain ratings between nurses and parents (Singer, Gulla, & Thode, 2002), provided evidence that health care practitioners, as well as parents, may underestimate pain in both adults and children in the ED setting (Johnston, Bournaki, Gagnon, Pepler & Bourgalt, 2005). Kelly, Powell and Williams (2002), reported a tendency for parents to underestimate their child's pain when using a visual analog scale. A study from Australia that compared pain scale ratings between nurses, parents and children with either the Wong-Baker Faces pain scale or a linear numeric rating scale also found significant differences in pain scores, in that nurses reported pain scores lower than parents or the children themselves (Rajasagaram, Taylor, Braitberg, Pearsell, & Capp, 2009). Despite availability of validated pain assessment tools, and ED policies guiding pain management, discrepancies were still reported.

Comparisons of ED pain management by a survey of pain management policies and actual ED chart reviews demonstrated discrepancies in pain management practices with adults and children (Probst, Lyons, Leonard, & Esposito, 2005). There were clinical accounts of discrepancies in adult pain management (Todd, 2001; Tamayo-Sarver, Hinze, Cydulka, & Baker, 2003; Puntillo, Neighbor, O'Neil, & Nixon, 2003), and pediatric pain management in the ED, (Petrack, Norman, & Kriwinsky, 1997; Drendel, Brousseau & Gorelick, 2006) which require further explication. There was also evidence that children received less pain-relieving medication when compared to adults with similar injuries (Petrack, et al., 1997). Despite implementation of education and mandatory pain scoring

at triage, a retrospective comparison of pain score documentation and administration of analgesia for children with long bone fractures and burns found 97% compliance with documentation, but only 66% of those patients received analgesia, and only 10% received opiates for their pain (Jadav, Lloyd, McLauchlan, & Hayes, 2009). Documentation of pediatric pain on the part of both ED nurses and physicians has been deficient despite specific requirements regarding pain assessment. Incorporation of a pediatric pain assessment scale into the emergency medical records form, as an intervention with ED physicians, resulted in a modest improvement in documentation of pain with pediatric patients; however no change in analgesic administration was reported (Kaplan, Sison, & Platt, 2008). In one patient satisfaction survey of both parents, and their children who had been ED patients, resolution of pain was a more significant indicator of satisfaction for the children than for the parents (Magaret, Clark, Warden, Magnusson, & Hedges, 2002)

Cultural Factors

Cultural and ethnic differences in pain expression and behaviors add another layer of complexity for the triage nurse. Lack of knowledge of cultural/ethnic differences in child behavior and pain expression can affect the ability to recognize and assess a child with a potentially emergent condition. Accurate triage assessment allows for recognition of those children who present with painful problems or subtle, but potentially life threatening problems. The triage nurse's own cultural or ethnic beliefs may influence the determination of pain in others. One study which compared ED waiting time identified that a greater number of Hispanic children were assigned triage categories resulting in wait times longer than 2 hours, as compared to triage categories assigned to white or

black children (James, et al., 2004). However, the study did not include a comparison of discharge diagnosis, or determination of the accuracy of the triage levels assigned. Verifying that the triage nurse made accurate triage level assignments would help determine if other factors influenced the wait times. Other studies have shown disparities in analgesic use for racial or ethnic minority patients in the ED (Todd, Samaroo, & Hoffman, 1993; Todd, 2001).

Problems with Pediatric Emergency Care

Authors of *The Future of Emergency Care,* (IOM, 2006) reported a number of problems with pediatric emergency care, including uneven distribution of resources. Emergency Departments serve as a "safety net" for health care for many underserved groups, especially children of minority ethnic and cultural groups (Trzeciak & Rivers, 2003). The ED crisis has impacted access to care for everyone. Shortages of both ED nurses and physicians have further exacerbated the problem (IOM, 2006; Kellerman, 2006). The IOM reported that approximately 27% of all Emergency Department (ED) visits are for infants and children, but only about 6% of EDs in the United States are adequately equipped for pediatrics. Johnson and Rimsza (2004) found that children who had access to pediatric care used the ED less, whether they had insurance or not. Access to a regular source of care resulted in fewer visits to the ED.

Public health care policy such as the Emergency Medical Treatment and Active Labor Act (EMTALA, 42 U.S.C. 1395dd) which mandated care regardless of the ability to pay, have paradoxically resulted in threats to the last remaining "safety net" in the U.S. healthcare system, specifically emergency care access. Since implementation of EMTALA, Emergency department use increased from 85 to 110 million visits yearly,

while 550 hospitals and 1,100 emergency departments closed, either due to financial difficulties, or through administrative decisions to terminate emergency services at specific hospitals (Bitterman, 2002). Unintended effects of this legislation include decreased access to care and ED overcrowding (ENA, 2006; Hostetler, et al., 2007).

The problem of overcrowding in the ED and the resulting impact on pediatric care was reported as another concern, in part because children visit the ED more than any age group except those over 65 (IOM, 2006; Hostetler et al., 2007). Prompt and accurate triage of children who come to the ED from injury or illness has been recommended to lessen morbidity, prevent deterioration, and improve outcomes. Triage nurses faced with multiple newly arrived patients must adapt methods of rapid, accurate assessment in the face of overcrowded waiting rooms. Multiple factors may influence this process including the nurse's previous experience, physical processes such as overcrowding, cultural/ethnic differences, healthcare policy, and nurse's educational preparation. All of these factors were noted to affect the decision-making capabilities of the triage nurse (ENA, 2006). In response to increased attention to the state of emergency care in this country, a number of recommendations for improvement emerged recently (IOM, 2006; ENA, 2006) including system-wide changes to facilitate prompt access to treatment, and to improve resources and services for pediatric patients. There were a number of system-wide problems in need of change in regards to pediatric emergency care, however simpler interventions, both non-pharmacologic and pharmacologic have been recommended to help alleviate pain, particularly that which has been associated with procedures in the ED. Ramponi (2009) discussed pain relieving interventions pediatric ED nurses might consider, such as anticipation and preparation of the child for painful procedures that may

be experienced, use of simple explanations, allowing parents to remain present during procedures, distraction, and positioning, in addition to multidisciplinary education for all ED healthcare providers to facilitate reducing pain for pediatric patients.

Role of the Triage Nurse

The triage nurse assesses each patient and assigns a triage category based on the perceived urgency of the presenting complaint, and has responsibility for recognizing urgent conditions and initiating further treatment in the ED. The triage nurse functions as the gatekeeper in some respects in the ED setting, and ideally should be an experienced nurse, able to communicate well, recognize ethnic/cultural expressions of illness and pain and initiate care for acutely ill or injured patients. Recent efforts to standardize, or provide for some consistency in the triage process have resulted in development of several different triage acuity guidelines or algorithms in Australia, Great Britain, Canada, and the United States (Atack, Rankin, & Then, 2005; Scoble, 2004; Worster, Sardo, Eva, Fernandes, & Upadhye, 2007). The Emergency Nurses Association (ENA) and American College of Emergency Physicians (ACEP) worked on a joint task force toward implementation of a standardized five-level triage acuity system, in order to facilitate a uniform method of assigning triage acuity (Fernandes, et al., 2005). The Emergency Severity Index (ESI), 5- level triage system resulted from the work of this task force and has been refined, modified and validated; however the system has had limited reliability or validity evaluation with pediatric patients. The ESI version 4(ESI v.4) has been listed on the Agency for Healthcare Research and Quality (AHQR) website within the Tools and Resources for Measuring Healthcare Quality section (AHQR publication #05-0046-2), (Gilboy, Tanabe, Rosenau, & Eitel, 2005). An annotated

bibliography compiled by members of the ESI triage study team provided summary information from 33 literature sources related to pediatric triage. There were no reports that specifically addressed pediatric pain in the ED (Pediatric ESI Triage Study Team, 2006).

The lack of pediatric validation for the ESI has been addressed through recent reports of moderate reliability, yet with inconsistencies at the high and low ends of the 5-level scale, from a multi-site study which included measurement of interrater reliability with case scenarios and actual patient triage reports (Travers, Waller, Katznelson & Agans, 2009). Reliability of the ESI v.4 with pediatric patients was assessed by determination of interrater reliability and level of agreement between experienced pediatric ED physicians and triage nurses using training materials and patient scenarios which found 83% agreement between these experienced ED healthcare providers (Durani, Brecher, Walmsley,Attia, & Loiselle, 2009). While these approaches were intended to improve, or facilitate the decision-making processes for triage nurses, some authors suggested an algorithm approach could place restrictions on the nurse, possibly cause delays secondary to inexperience with detailed algorithms, or hinder decision-making abilities or growth of the triage nurse towards a more expert level of functioning (Gerdtz & Bucknall, 1999).

Clinical Decision Making

Decision-making theories and cognitive processes have been studied for a number of years in healthcare and the social sciences; however decision-making specific to ED triage has only recently been the subject of research, in part due to the more significant role ED care has taken in healthcare services. Gaining a better understanding of the

processes and knowledge sources used by triage nurses can contribute to improved patient outcomes and development of education and training resources for new triage nurses. A brief summary of decision-making models suggested that methods used by triage nurses may include pattern recognition, hypothetico-deductive reasoning, and intuition, in addition to experience (Evans, 2005). Benner's (1984) early work describing knowledge sources of practical knowledge and theoretical knowledge which contrast "know-how" and "know-that" are still relevant today (pg. 2). Practical knowledge or "know-how" develops from clinical experience, while theoretical knowledge, or "know-that", is derived from textbook or sources more elusive to describe. Use of both knowledge sources, refinement of knowledge and learning from experience lead to clinical expertise.

Another explanation of knowledge sources applied to ED nurses described declarative knowledge from the domain of emergency nursing, (textbook knowledge), and procedural knowledge derived from practical expertise and skills. These two knowledge sources contribute to decision-making skills as well as being important resources for novice triage nurse training techniques such as simulation (Cioffi, 1999).

The triage nurse may frequently be physically separated from the main ED treatment area, must keep track of patients waiting to be seen and make contact with each new patient who arrives at the triage area. All of these factors contribute to the complexity of decision-making and create a degree of uncertainty for the triage nurse. Tools that are employed include triage guidelines or scales which specify the urgency of care needed, triage algorithms, which are decision-making guidelines, and use of heuristics or mental "rules of thumb" the triage nurse acquires with experience (Gerdtz &

Bucknall, 1999, p. 55). Cone and Murray (2002) used qualitative methods to describe aspects of triage decision-making important to ED nurses, who included quick decision-making, critical thinking, and behavioral characteristics such as working well under pressure, experience, intuition, assessment skills, communication, dependability and being able to make decisions independently.

Several international studies that evaluated ED nurse triage decision-making identified variables that affect the process, such as nurse characteristics and triage training methods (Atack, et al., 2005; Goransson, Ehrenberg, Marklund & Ehnfas, 2005). One observational study of Australian ED triage nurse decision-making in the natural environment (Gerdtz & Bucknall, 2001) provided a detailed description of data nurses gathered during triage of adult patients, and factors that influenced the amount of time spent with each patient. Another study which made use of observation methods and interviews with Canadian pediatric triage nurses found differences in use of, and interpretation of triage guidelines based on the nurse's years of experience, and identified factors that impact decision-making in triage (Patel, Gutnik, Karlin, & Pusic, 2008). Research such as this is lacking in the U.S. nursing literature, especially so with pediatric patients. While the cognitive processes used by nurses may be much the same in other countries, there are differences in factors such as the nurse's scope of practice, and federal legislation such as the EMTALA rules in the United States.

Several studies and literature syntheses which described clinical decision-making and cognitive processes with pediatric pain management in settings other than the ED provide some insight into processes used in general by pediatric nurses (Estabrooks, et al., 2005; Van Hulle, Vincent, & Denyes, 2004). However; emergency department

patients may require different approaches to pain management relative to the factors which have been discussed in this review of literature.

Summary

Numerous published research or literature syntheses regarding pediatric pain assessment and management were located. However, due to the unique nature of the specialty of emergency nursing (ENA, 1999), findings from other clinical settings are not necessarily applicable to the ED setting. Fundamental questions persist about why deficiencies still exist in ED pediatric pain management. Methods or new approaches that might help resolve these deficiencies remain unclear.

Limited research in the area of triage decision-making and pediatric pain revealed findings which demonstrated discrepancies in pain assessment, deficiencies in documentation and multiple factors that impact the pediatric ED setting. Concerns with the current state of emergency services in the United States and the impact on both ED staff and patients were cited often.

The study of ED nurse triage decision-making with pediatric pain from a phenomenological perspective used in this study has further explicated the lived experience of the triage nurse, added to the knowledge base of emergency nursing, identified possible areas to implement changes, and provided direction for future education, training, and research. Information gained from this proposed study helps to address this research gap, and enhance the knowledge base of emergency nurses.

Chapter 3

Methods Phase I

The design for this study consisted of a mixed methods approach that included a Phase I qualitative descriptive component, and a Phase II quantitative component consisting of a triage vignette exercise. Phase I comprised the qualitative component of the study. Phase II of this study which involved a quantitative analysis of responses to triage vignettes, is described in Chapter 5. This chapter presents methods used in Phase I. First the setting and sample are described, followed by the instruments used, procedures and data analysis methods.

Sample and Setting

A purposeful sample of experienced triage nurses who work in one of several different ED settings were recruited for interviews. Recruitment continued until when achievement of data saturation, when evidence of recurring content or themes emerged. Thirteen informants were interviewed. Participants who were considered best able to provide optimal data to facilitate addressing the research questions included nurses who had experienced the phenomenon being studied, and who were able to respond to questions concerning the phenomenon. ED triage nurses had experience with the study topic contributed meaningful data, in this case experience with pediatric patients experiencing pain (Polit & Beck, 2004). Snowball sampling was used, which allowed

volunteer informants to refer others interested in participating (Speziale & Carpenter, 2007).

The settings included Emergency Departments from within a four-hospital system, and a large metropolitan Level One Trauma Center Pediatric ED. This approach allowed for recruitment from a diverse sample of ED nurses in terms of gender, age, education, ethnicity, and years of experience. The setting for the interviews was a conference room, or designated private area in each clinical setting to allow audio recording of the interview and protection of confidentiality for the informants.

Inclusion and exclusion criteria

Inclusion criteria included registered nurses who worked more than 16 hours per week in an ED, and who had more than 6 months experience functioning as the triage nurse in a dedicated triage area separate from the main ED. These informants had completed some orientation to the triage area, or attended a triage course. Informants were limited to nurses able to read, write, and speak English.

Exclusion criteria included registered nurses, who work in the ED, but lacked experience in the role of triage nurse, i.e., had less than 6 months experience as the assigned triage nurse. Any nurse who declined to have the interview audio recorded was not eligible to participate.

Instruments

All informants were asked to complete a brief demographic survey (Appendix A) including age, sex, and years of ED experience, type of education, certifications, and whether they had children themselves. Individual semi-structured interviews with informants were utilized to explore the lived experience of the triage nurse, decision-

making processes used, the meaning of the experience for each informant, and any internal or external factors that influence the process. The interview questions (Appendix B) were piloted with a small sample of nurses to assess the credibility and dependability of the questions (Morse & Roberts, 2002). Interview questions were not changed.

Interview guiding questions derived from the logic model and literature review included the following:

1) Tell me about a situation in which you felt very good about your triage decision for a pediatric patient in pain.
2) Tell me about a situation in which you did NOT feel good about your triage decision of a pediatric patient in pain.
3) What things help you make decisions about pediatric pain?
4) What things hinder your ability to make decisions about pediatric pain?
5) What else can you share with me about pediatric ED nursing and pain management of children?

Reliability and Validity in Qualitative Research

The constructs of reliability and validity used with quantitative methods were not applied in the same manner with the qualitative methods used in Phase I of this study. Rigor of qualitative methods as a means of demonstrating reliability and validity has traditionally required evidence of credibility, confirmability, transferability, and dependability of the study (Burns, 1988; Polit & Beck, 2004; Speziale & Carpenter, 2007; Whittemore, Chase & Mandle, 2001). More contemporary approaches which view more overarching efforts of demonstrating validity are described here. Whittemore, et al., (2001) suggested a synthesis of techniques that consisted of primary and secondary

validity criteria. Primary criteria consisted of credibility, authenticity, criticality and integrity, while secondary criteria consist of explicitness, vividness, creativity, thoroughness, congruence and sensitivity. These criteria represented standards to uphold, while the qualitative methods employed represented techniques to diminish threats to validity of the study (Whittemore et al., 2001). Credibility and authenticity were supported by a conscious effort to represent the experience and context of the informants in an accurate and believable manner. In addition, authenticity was demonstrated by a trustworthy representation of the lived experiences and perceptions of the informants, with appreciation for the emic perspective of the nurses who participated. Criticality and integrity were demonstrated by use of a systematic research design, methods to substantiate findings, clear articulation and awareness or concern for potential research bias.

Secondary validity criteria of explicitness and thoroughness included careful consideration and description of the study design, sampling, data collection methods, creating memos and journal notes, verifying meanings with informants, providing an audit trail, use of bracketing and development of themes derived from data analysis to answer the research questions posed. These actions related to auditability of the research. Engagement with informants and inclusion of rich descriptions of the triage nurse experience were intended to eventually allow readers to conceptualize the experience relate to vividness. Creativity was shown through the methodology triangulation approach used in the study. Congruence related to adequate linkages between research questions, methods and analysis, as well as to the practice setting. And finally, sensitivity of the study related to concern and respect for the informants and the context of the role

of the triage nurse in making decisions and providing care for the youngest patients who come to the ED.

Procedures

Human Rights Protection

The proposal was submitted for approval to the Institutional Review Boards of BayCare Pasco-Pinellas Healthcare System, (Morton Plant Mease Health Care System letter of support, Appendix C) the University of South Florida and the Tampa General Hospital Office of Clinical Research (Tampa General Hospital letter of support, Appendix D). Once approval was granted, the recruitment process commenced. Each potential informant was provided an informed consent packet (Appendix E, Appendix F)that included an information letter fully describing the study contact information for the investigator, a reminder that no obligation to participate existed, and assurance that the informant could withdraw at any time from the study (Appendix G). There were no known risks involved. The investigator informed participants of all measures to maintain confidentiality of information.

The first phase of this study was a qualitative descriptive exploration of the lived experience of the ED triage nurse decision-making process, guided by a hermeneutic phenomenology perspective. This method was intended to facilitate explication of the thoughts, perceptions and factors that influence decisions and actions taken with pediatric patients who come to the ED with painful conditions.

Following IRB approval from the University of South Florida, and from the proposed study sites, ED nurses were recruited to participate in the study. Flyers were posted in the ED staff lounges of the respective sites (Appendix H). The investigator

contacted volunteers who met the inclusion criteria in order to schedule a convenient meeting time to explain the study, to obtain informed consent, and to conduct the interviews, which were conducted in a private meeting room at the clinical site of the informant, generally during early morning hours at the beginning of a shift. The interviews generally lasted less than one hour. A brief demographic survey tool was completed by each informant in order to provide nurse variables that would be included in the analysis. The interviews were audio recorded by the investigator and field notes were written at the time of the interviews or immediately afterwards.

Data Management and Analysis

This section describes the qualitative data analysis for Phase I of this study. Demographic data from the informants was analyzed using descriptive statistical methods first. For Phase I of this study, the research questions that were analyzed included: (1) what are the cognitive processes/knowledge sources used by ED nurses in decision-making regarding pain assessment of pediatric patients, (2) what internal factors influence ED nurses' cognitive processes and clinical decisions in pediatric pain assessment, and (3) what external factors influence ED nurses' cognitive processes and clinical decisions in pediatric pain assessment.

Willingness of the informants to participate was verbally reaffirmed at the time of the interviews. Demographic data was obtained before beginning the interviews. Individual interviews with informants were audio recorded and kept on a digital recorder until transcribed and stored on a password protected computer by the investigator. Once transcription and reviewing was completed, then recordings were erased. Data analysis began as the first interviews began. Sampling and interviews continued until data

saturation was achieved (Speziale & Carpenter, 2007). Data saturation was reached after 13 interviews. All names and identifying information was removed to protect confidentiality of informants.

A qualitative descriptive approach, from the perspective of interpretive phenomenology, was used to describe triage decision-making in order to elicit a more holistic, rich description of the meaning of nurses' intentions, thoughts, and actions. Constant comparison and analysis of the text of each informant's interviews, followed by coding and reflective reviewing of journal notes allowed for identification of shared meanings. Following Benner's (1984) approach, reflective analysis of descriptions of the triage decision-making process facilitated identification and description of domains and competencies of the triage nurse.

The factors and meanings derived from this qualitative process were incorporated into a series of triage vignettes which were used in Phase II of this study. Methodology triangulation with a two-phase design allowed for a first phase qualitative exploration of the lived experience of the ED triage nurse decision-making process, followed by a second quantitative component of decision-making verification, using a triage vignette exercise which allowed for describing relationships, commonalities and differences in triage decision-making process variables as well as direction and strength of those relationships.

Chapter 4

Phase I Results

This chapter addresses the data and results of Phase I of this research, including a description of the development and piloting of the interview guiding questions, a summary report of the demographic characteristics of the participants and the analysis and interpretation of 13 interviews conducted with ED nurses. The influence of Phase I results on the development of Phase II of this study are addressed as well. These interviews were conducted to obtain data relative to the first three research questions, that of describing the cognitive processes/knowledge sources used by ED nurses in decision-making regarding pain assessment of pediatric patients, as well as describing the internal and external factors that influence ED nurses' cognitive processes and clinical decisions in pediatric pain assessment. The data analysis in Phase I was structured relative to the first three research questions and the conceptual framework of the study. Information provided insight and understanding about the thinking processes the triage nurses used in making decisions with pediatric patients who come to the ED with painful conditions or injuries. Additional responses from the interviews provided insight towards factors that might influence the decision-making process.

Interview guiding questions (Appendix B) derived from the literature review and the study logic model, were piloted with four nurses with extensive ED experience. The nurses were asked to consider whether the questions were pertinent and suitable to elicit

responses from ED nurses about their experiences with triage decision-making for children experiencing pain. Each nurse was asked to think as if she were actually being interviewed, and to consider whether or not the questions posed were understandable and pertinent to elicit responses from nurses who participate in the study. The nurses were in agreement that the proposed questions were pertinent and suitable for eliciting the experience of participants. All the original questions were retained for the interview guide, which was used for semi-structured interviews with ED nurses. Piloting the interview guiding questions in this manner contributed to the dependability and credibility of the interview format (Morse & Roberts, 2002). This process also contributed to the validity of qualitative data, as demonstrated by the criteria of credibility and authenticity, or the usefulness (trustworthiness) of the interview guiding questions to elicit responses that reflect the experience of the participants (Whittemore, Chase & Mandle, 2001).

Once IRB approval was obtained, telephone or e-mail contact with participating ED nurse managers was established to make them aware of the study, to provide a copy of the recruitment flyer and to verify the contact person who should be contacted for follow-up and to arrange ED visits. In all instances, the researcher was referred to the ED nurse educator as the contact person. Recruitment flyers were posted in the ED staff break room. The ED nurse educators volunteered to send e-mail notices to the staff as well. Participants were also recruited by visiting the ED and being available during early morning hours when the ED generally tends to be less busy.

Demographic Data

A demographic profile of the interview participants provided a summary of the age, gender, ethnicity, education, years of ED experience, and advanced certification (Table 1) of the nurses who participated in this study. Demographics of the participants contributed to the frame of reference and general contextual layer of the subjective world of the triage nurse described in the conceptual model for this study (Figure 1). The general contextual layer of the model encompassed the knowledge base of the nurse, education, and years of experience, that may mediate triage decision- making. This contextual layer included general rules and triage guidelines that may mediate the triage process as well. Following the demographic summary the researcher described the interview and data collection process.

The nurses who agreed to participate in the interviews worked in either the ED triage area that covers both adult and pediatric patients or in the pediatric ED patient care area specifically. The nurse informants ranged in age from 26 to 48 years (table 1). Informants were predominantly females and all were White (84.6%). No participants were from different ethnic backgrounds, (i.e. all non-Hispanic white), as had been anticipated. Educational preparation in nursing included Associate Degree in Nursing (ADN), Bachelor's Degree in Nursing (BSN) and Diploma School graduates. Years of ED nursing experience ranged from 2 to 29 years (mean 9.5 years). All informants reported advanced certification such as Advanced Cardiac Life Support Provider or Pediatric Advanced Life Support Provider; however these courses are typically required of all ED nurses. The informants held a mean of 6 advanced certifications.

Table 1. Phase I Participant Demographics

Variable		*freq.*	*(%)*	*Mean*	*Range*
Age				40	26 to 48 years
Gender					
	Female	11	(84.6)		
	Male	2	(15.4)		
Ethnicity					
	White	13	(100)		
Education					
	ADN	7	(53.8)		
	BSN	4	(30.8)		
	Diploma	2	(15.4)		
Years of Experience				9.5 years	2 to 29 years
(grouped)	1-10 yrs	7	(58.3)		
	11-20 yrs	4	(33.3)		
	21-30 yrs	1	(8.3)		
Adv. Certifications held				6	

N = 13

Data Collection Process

Each of the 13 interviews lasted approximately 30 minutes and was conducted in a quiet room adjacent to the ED. Each nurse informant was provided the informed consent form to review and sign as well as the demographic data form to complete (Appendix A). As the interview began the informant was asked to verify consent to participate. Each one seemed eager to participate, although one nurse stated her reason

for participating was “peer pressure”. She was offered the opportunity to withdraw if she really did not want to participate; however she agreed to. Two nurses were former students of the investigator who stated they wanted to “help out”.

The interviews were conducted using the semi-structured interview guide (Appendix B) previously developed, and were audio-taped for transcription and analysis. Interviews were adapted to follow the participant’s responses or additional comments. Brief anecdotal or field notes were written by the investigator during each interview for later reflection and analysis along with the interview transcriptions. Preliminary interpretation of responses from participants began as the interviews were conducted, and were facilitated by asking for clarification of responses and further discussion. The researcher also reflected upon the interaction with each participant, both during the interviews and afterwards. The researcher consciously sought to bracket thoughts and feelings, in order to avoid influencing responses. Self-awareness by the researcher of previous triage experience contributed towards a shared understanding of the processes involved in triage decision-making with children who come to the ED with a painful problem.

Observation of the physical settings of the ED and triage area after completion of each interview provided the researcher some understanding of the environment in which the triage nurses worked, represented by the specific contextual layer of the study conceptual model. All of the interviews were conducted during the early morning hours, when the ED generally tends to be less busy. This quiet time allowed for observation of the pediatric ED, the main triage area and the ED entrance, initial sign-in area for arriving patients and the waiting room. The previous triage experience of the researcher facilitated

an understanding of the typical flow of patients from arrival to the ED, triage and placement of patients in treatment rooms.

Data Analysis Process

Analysis of the data utilized a descriptive qualitative approach with a perspective guided by phenomenology and by comparison to the logic model.. The following process of analysis was followed in order to elucidate the emic view of the triage nurse's experience with children who come to the ED with a painful condition:

1. Each recorded interview was transcribed verbatim by the investigator and saved on a password protected computer and read in entirety to begin the process of interpreting experiences of the triage nurses.
2. Field notes were written during, or immediately after the interviews were conducted. Interview transcripts and field notes were numbered sequentially for later comparison.
3. Interview transcriptions were saved as primary documents in the Atlas.ti program. Each primary document was reviewed and relevant or interesting comments were highlighted.
4. As additional interviews were conducted, additional field notes were made when common ideas or comments were made by the nurses. Each subsequent interview was compared for the same or similar comments.
5. As repetitive key words or phrases were identified, the investigator began assigning preliminary codes. Short passages related to key ideas were identified and saved as quotes. Memos were written that described the investigator's thoughts about these passages. The Atlas.ti program used a

system of relating memos, quotes and primary documents for comparison and further interpretation.

6. Emerging themes began to unfold and were given tentative names. The frequency of each code within the accumulated interviews was counted to verify the significance of each theme.
7. The emerging themes were compared to the conceptual model which guided this study. The themes mapped to the contextual layers of the conceptual model.
8. The experiences, descriptions and thoughts across informants were integrated and synthesized into a descriptive structure of the lived experience of the triage nurse who makes decisions for children experiencing pain.

The patterns, themes and context that emerged from data analysis were compared to the Phase I research questions and the conceptual model for the study to assess for congruence or differences. The theoretical contextual layers of the logic model did provide a good fit for the themes that emerged. The data was also analyzed for any potential new variables that should be included in the Phase II triage survey development.

Themes

Five major themes which emerged from the data analysis (Table 2) are discussed in this section, and in the Chapter 7 discussion and results section. Themes were coded as follows: 1) Age of the child is important, 2) Behavior can tell a lot, 3) Really looking at

the patient, 4) Things that help make decisions, and 5) Things that hinder decisions. Each theme is discussed in this section.

Table 2: Major Themes that Emerged from Data Analysis

Themes	*Times coded*
Age of the child is important	17
Behavior can tell a lot	25
Really looking at the patient.	18
Things that help make decisions	17
Things that hinder decisions	33

Age of the child is important

The age of the child was frequently mentioned as an important factor in assessing pain and making triage decisions, especially for infants and with a non- English speaking family. The age range of patients seen in a Pediatric ED may range from infancy to 21 years. Infants and young children make pain assessment and triage more challenging for the triage nurse due to limited verbal skills however, school age and older children are able to rate their pain with several different validated pain scales. Several informants mentioned how challenging it can be to assess pain in infants. Eliciting the chief complaint from the parents, gathering additional assessment data, noting physiologic signs, and assessing the interaction between the infant and parents all emerged as important indicators. Two nurses mentioned using the Faces, Legs, Activity, Cry, and Consolability Pain Scale (FLACC) which has been validated for use with infant pain

assessment. Several others mentioned observations which are components of the FLACC scale without actually naming it. The challenge of assessing pain in infants was described by the comments of one informant:

> "Asking parents what their baseline is - what has changed; whether they are crying or withdrawn. How much attention they pay to you, depending on their age - whether they are playful or just sitting there; whether they are consolable or hysterical. A lot depends on their ages".

Another informant expressed these same concerns:

> "…it's difficult to differentiate pain with babies. I try to incorporate what the mother says about how the baby is different than the norm; if the crying is different. Try to generate that it could be from pain, according to how the baby hasn't been eating, acting irritable, so I try to prioritize whether that patient may need to go back before some others".

Informants expressed concerns about assessing pain with young children which appeared to be related to inexperience with using some pain scales or in judging the child's ability to understand the pain scale. This corresponds to published literature indicating the youngest age at which children can comprehend and use pain scales. Children as young as 5 years have been documented as being able to use the Faces pain scale with simple explanations (Bulloch & Tenenbein, 2002). One informant explained how it might be necessary to improvise pain assessment:

> "Depends on their age; their understanding. We have the Faces (pain scale), or we kind of gauge what level they are at. Asking them if a "little

> owie or big owie", or whatever, can give you an idea of how much pain they are having. Sometimes if they don't understand the Faces scale you have to ad hoc"

Informants described observations they would employ in determining pain in infants and young children, and problems that may be encountered, such as communication with parents or the child. Informants most often referred to the "smiley face" scale which is posted in every treatment room, or using a numeric rating scale of 0 to 10. The younger the child, the more difficult assessing pain becomes, and greater the need for more assessment data, visual cues and information from the parents. Several nurses expressed concerns about the efficiency of the triage system when the ED becomes busy and pediatric patients have to wait to be seen. Concern was expressed about the accuracy of triage decisions, and the difficulties in keeping track of, and re-assessing patients who are in the waiting room.

Behavior can tell a lot

Behavior of the child, behavior of the parents, and observation of interactions with the child and parent were factors mentioned that provide insight relative to pain assessment. Nurses expressed a range of attitudes toward their perceptions of parents. Some parents were seen as helpful and as providing useful information about the child's problem. Other parents were described as being too emotional, over-reacting, or not able to provide helpful information. Previous studies have provided evidence of discrepancies in pediatric pain level determination between parents, nurses and physicians, as well as differences in ED triage categories assigned to pediatric patients by nurses and physicians

(Maldonado & Avner, 2004; Singer et al., 2002). Other nurses expressed reliance on the information from parents, particularly in reporting differences in infant behavior.

The concept of the child or infant being "inconsolable" was mentioned by the participants several times, in the context of observing behavior indicative of pain. One nurse said the following:

> "...related to orthopedic type injuries. They are so painful and they're so unable to describe the pain, but you know that it hurts because they are crying so much and they are inconsolable. My point is - if the pedi patient is inconsolable even by the parents within a short period of time, then something is really wrong."

An infant or child's behavior that is reported as being unusual by the parent, or observations of behavior such as wincing, crying or protecting a body part from being touched or examined were indicators of pain. Behavioral indicators of pain or visual cues included obvious behaviors associated with pain:

> "…facial grimace, crying, when you do their initial vital signs, their vital signs can be elevated like their pulse or respiratory rate. These are factors that indicate that there is definitely pain or discomfort"

Informants were also concerned with the school age child who seemed very stoic and attempted to remain quiet. Several informants suggested that the very quiet child could actually be tense or fearful and concerned about what painful procedures they might have to endure. Fear of the need for an injection was mentioned as a source of the tense, quiet child's behavior. Some nurses expressed concern about missing visual cues with the

quiet, stoic child and thereby delay treating a painful condition such as a non-displaced fracture:

> "Children are afraid that if they admit they are in pain because they are afraid something bad will happen to them. So you have to; 1) listen to their parents to understand how the child expresses pain".

Another example of the quiet, stoic child included the following statement:

> "Based on his behavior I could tell he was in pain, just being stoic about, even at that age. So even though he didn't have an obvious deformity I followed through to the pedi ED advocating for a hep lock to be started and to give him some pain medication despite the fact that we had not done the x-ray yet because it was just so obvious there was a lot of tension in the child. It turns out he did have a fracture of the arm".The behavior of a child or infant experiencing pain was mentioned frequently as an important indicator, but informants frequently correlated recognizing behavior with their own years of experience.

Really looking at the patient

Looking at the child or infant, in the context of gathering assessment data and attention to detail, was mentioned frequently as a component of the decision-making process. Using good assessment skills, and focusing on the appearance of the infant or child and connecting this data with the verbal information provided was another important aspect of pain assessment.

> "Eyeballing the patient is, of course, the first concern, so your first encounter with the patient you can kind of tell, just by looking at them if

they are in any acute distress, just by looking at them, and that comes from years of experience".

Informants indicated that looking at the patient encompassed more than just observing behavior, although the two themes are linked. Other important indicators of pain included visual cues and physiologic data such as respiratory rate, body positioning and skin color. As previously noted, observing the interaction between the patient and parents was cited as an important indicator. Another nurse explained this in her comment:

> "Learn to assess a patient without speaking to them. When you walk into the room you look, observe, you see, you watch and then as the patient is speaking or the family is talking you try to put the two together. Don't make a judgment, because you will be wrong one day, and that will bite you in the butt one day. But get really in tune with looking, touching, and observing without being judgmental".

Things that help make decisions

Parents who were informative and knowledgeable about their child's normal behavior were viewed as decision-making helpers. This comment was an example of expectations of parents;

> "...the parents should be reliable. You need to listen to them, if they say this is not normal for the child."

Interestingly, parents were also frequently described as a hindrance to decision-making. Another experienced triage nurse stated that nurses must be cautious in listening to the parents, and instead rely on the nurse's own experience.

The most often mentioned helping factor was the amount of experience of each individual nurse in terms of assessing the patient, asking appropriate questions, making decisions and initiating treatment. As this nurse stated:

> "I've had enough experience in my background to know that not all pain presents the same way. That people react to pain differently, even children react to pain differently - varies greatly from hysteria to stoicism, like that one child. A lot of that is just based on years of experience".

Other factors mentioned as helping in clinical decision-making were good communication between staff in different areas of the ED. The entrance to one ED, as well as the waiting room, triage area and treatment areas were physically separated. To facilitate patient flow, the entrance area was staffed with an experienced paramedic or licensed practical nurse, who serves as the "meeter-greeter," who greets the patient (which in reality equates to a cursory check for life threatening problems), who then communicated verbally or via computerized systems with the triage nurse or the Pediatric ED charge nurse as to the patient's arrival and chief complaint. This system was discussed as being helpful when everything is going well, but as a hindrance when the ED is very busy or communication was interrupted.

Only one of the informants interviewed mentioned triage algorithms, or any sort of guidelines followed. An ED policy repeated by several informants was that pediatric patients were taken directly to a treatment room on arrival and a triage level was assigned at the bedside. Years of experience was frequently mentioned in that it helped with recognition of signs, symptoms and indicators of pain. One younger informant did mention training which was helpful:

"…the training we have, the certifications like ENPC, PALS, the pediatric focused training helped to kind of reinforce the concepts"

Things that hinder decisions

Hindrances to decision-making concerning the pediatric patient experiencing pain included language barriers, and a crowded, busy, noisy environment in the ED. Physicians were mentioned often as a hindrance; however this seemed to be related to not giving orders for pain medication when the nurse felt a patient needed medication, not in the process of assigning a triage level. Lack of appropriate analgesia for pediatric patients by physicians has been reported in previous studies (Petrack, et al., 1997; Jadav, 2009). One informant mentioned that a hindrance to initiating treatment for pain may occur when nurses differ in assessment of pain, or when the patient situation changed as the patient was transferred from the triage area to a treatment room:

"Sometime it is difficult if you assess or triage the patient and then you try to give report to the nurse who is going to take care of the patient, and you have a "meeting of the minds". Because kids can be very distraught at one point and then be quiet. I think a lot of times the nurse assumes that if the baby is not crying that they are good, and that is so not so".

Summary

Variables of interest for this study and a conceptual model were developed from the literature review and general experience of the researcher. The interviews in Phase I o explored the perceptions and lived experience of ED triage nurses who interact with, make decisions about, and initiate treatment for pediatric patients who experience painful conditions or injuries. Research questions for Phase I obtained information about sources

of knowledge ED triage nurses use in making decisions about pediatric patients experiencing pain and any factors that might influence those decisions. The data analyzed from the interviews assisted the researcher in the choice of factors included in a series of triage vignettes depicting pediatric patients brought to the ED with painful conditions. These vignettes were used in Phase II of this study. The basic question of interest was: How does the ED triage nurse assess pain with the very young pediatric patient, and what actions are taken?

The themes indentified from the data analysis corresponded to the conceptual model for the study and the first three research questions (Table 3). The everyday world of the triage nurse appeared to be embedded within contextual layers of an immediate context including the child or infant who comes to the ED experiencing pain and the actions of the triage nurse in response to the patient and/or parents. Themes that related to this contextual layer included the age of the child and behaviors of the child. The next contextual layer was described as the specific context, or immediate past, and current environment (Hinds, Chaves & Cypess, 1992). Included in this contextual layer are the physical setting of the ED, the population of patients, volume of patients waiting, and the staffing of the triage. This level is represented by the themes of *things that hinder* or *things that help* make triage decisions. The third layer represented the general context, represented by a general frame of reference, or nurses' ways of knowing, their education, experience, and rules or heuristics they use in decision-making. Finally the fourth layer, or Metacontext, was described as a socially constructed layer represented by internal factors, nurses' attitudes, values and beliefs, which also relate to triage nurse perceptions of things that hinder or help triage decision-making.

Emergency department pain assessment and management of the very youngest patients continues to be an elusive and problematic area (Drendel, et al., 2006). For this study, the data from Phase I was used to develop triage vignettes depicting pediatric patients with painful conditions for Phase II of the study. The dependent variable for the vignettes was the triage level assigned to each vignette and was intended to serve as a reflection or proxy for recognition of the degree of pain each patient in the vignette might be experiencing. The initial child and nurse variables conceptualized by the researcher were validated as important mediators to be incorporated into the triage vignettes.

While the ED nurses who were interviewed were able to describe the behaviors they considered indicators of pain in children and infants, particularly the concept of the infant being inconsolable, most of the nurses did not name pediatric pain scales others than the "faces scale" and the "numbers scale". This observation led to the decision to include in the Phase II triage vignettes, a question regarding which pain scale would be appropriate to use for pain assessment for the child or infant described in the vignette.

Analysis of the Phase I data supported inclusion of the child and nurse variables from the literature review and the logic model (Figure 1), children's age, ethnicity, gender and behavior, and nurse's education and years of ED work experience. Five predominant themes were identified in the qualitative data analysis and were found to be congruent with the conceptual model of the study.

These variables were used to construct 24 triage vignettes described in Chapter 5. An additional question with each vignette asks what pain scale or method would have been used to assess pain for the patient in each vignette. The results of Phase II are discussed in Chapter 6.

Figure 2: Comparison of Conceptual Model to Triage Decision-making Factors

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Conceptual model: Immediate context
(child variables - nurse actions)
Theme: Age of the child is important
Behavior can tell a lot

Conceptual model: Specific context
(External factors; physical setting, ED environment, volume of patients)
Theme: Things that help make decisions
Things that hinder decisions

Conceptual model: General context
(Nurse knowledge, years of experience, education)
Theme: Really looking at the patient

Conceptual model: Metacontext
(Internal factors; Attitudes, values of the nurse)
Theme: Things that help make decisions
Things that hinder decisions

Chapter 5

Methods Phase II

This chapter presents methods used in Phase II of this study. The setting and sample are described, followed by a description of the instrument development, evaluation of validity and reliability, the procedure for data collection and the data management and analysis. The second phase of the study used a quantitatively measured triage vignette exercise designed to further clarify and validate the factors and meanings identified in the first phase. A series of triage vignettes were developed to incorporate variables from the logic model and those derived from the qualitative analysis in Phase I. Research questions in Phase II addressed whether a triage level for a given vignette can be predicted by child variables of age, gender, ethnicity or behavior, or by nurse variables of education or years of experience. Statistical methods to determine the most parsimonious set of predictor variables are discussed.

Sample and Setting

The quantitative component of the study, utilized a convenience sample (N= 384) recruited from a population of ED nurses who responded to an announcement e-mailed to members of the Emergency Nurses' Association (ENA). The study was originally designed with a sample size of 384 subjects in order to detect modest to large effects for factors associated with triage level ratings. However, this initial calculation did not take into account the repeated measures design whereby the 118 subjects with full data rated

each of 24 vignettes. Thus, in actuality, there were 2,832 observations (118 x 24) included in the logistic regression analysis. Conservatively considering a binary outcome variable framework (rather than ordinal level which affords greater power) and binary predictor, within-subject correlation of 0.50, and 2-sided type I error rate of 0.005, the final sample analyzed provided 80% power to detect modest-to-large odds ratios of 1.78 and 1.62 assuming a predictor of interest with proportions of "high" triage ratings of 0.4 or 0.5, respectively.

The sampling procedure followed the process recommended by Schaefer and Dillman (1998), which consisted of a pre-letter notice (Appendix I) e-mailed to individual ED nurses. This was followed by an e-mail 2 to 3 days later with a link to the survey and the consent form for an Internet-based survey (Appendix J). A reminder e-mail was sent 3 to 5 days later. Finally, a replacement link to the survey and a thank you e-mail was followed in 3 to 5 days to any ED nurses who had not responded. The use of multiple e-mail contacts, personalized to each potential participant, reassurances of confidentiality and a convenient survey format were all methods recommended to enhance the response rate.

Inclusion and Exclusion criteria

Inclusion criteria included ED nurses who had at least 6 months experience as the assigned triage nurse and experience with pediatric triage. These participants had all completed some orientation to the triage area or had attended a triage course. Informants were limited to nurses able to read, write, and speak English and those who had the ability to access the internet-based survey.

Exclusion criteria included ED nurses who lacked experience in the role of triage nurse, had less than 6 months experience as the assigned triage nurse, or lacked experience with triage of the pediatric patient.

Instrument: Pediatric Triage Pain Assessment Scale

A series of 24 vignettes were created for this study, incorporating factors identified from the literature review and the qualitative data analysis. Each of the 24 vignettes included variables derived from factors identified from the Phase I data analysis, randomly positioned in each vignette (i.e. age of child, gender, ethnicity, behavior), which depicted an infant or child with a painful condition or injury who had just arrived at triage. Each vignette was scored by assigning a triage level ranked from (1) emergent, to (5) non-urgent. The ranked score, or triage level for each vignette indicated the degree of urgency for initiating evaluation and treatment. A second question following each vignette asked the participant to choose a pain assessment method or instrument that might be used for that patient. A space for additional comments was included at the end of the survey. A short demographic form was included in the survey so that nurse characteristics of years of experience and education could be incorporated in the data analysis.

Reliability and validity

The reliability of the triage vignette survey was estimated by measuring the stability and equivalence of the instrument (Polit & Beck, 2004). Stability was measured using a test-retest procedure to calculate a reliability coefficient. A sample of six ED nurses were recruited to complete the triage vignette survey and to repeat it in two weeks. A Pearson reliability coefficient was calculated between the two sets of scores. The ideal

coefficient should be greater than .70. Equivalence can be assessed by examining the interrater reliability of responses to each item on the survey.

The validity of the survey was estimated by assessing the content validity and a content validity index (CVI). A panel of five ED nurse experts was recruited to review the triage vignette survey. Four of the nurses completed and returned the CVI which rated each vignette based on the following two questions: 1). the relevance of information in each vignette, and 2). the adequacy of information in each vignette.

1. Is this question relevant to measuring some aspect of triage clinical decision-making and pediatric pain assessment? Please rate this vignette on a 4-point scale from not relevant (1) to very relevant (4).
2. Is there sufficient information in this vignette to make a triage decision? Please rate this vignette rating it from not sufficient (1) to very sufficient (4), (Appendix K).

The proportions of vignettes rated with a score of 3 or 4 were calculated for each question. These two scores represented the CVI for content relevance and adequacy of information respectively (Polit & Beck, 2004).

Procedures

An Internet notice which consisted of a brief explanation and brief description of the survey, components of informed consent, assurances of confidentiality, directions for completing the survey, and a link to the survey website was sent to ENA members. Return of a completed survey and demographic form via the Checkbox 4.6® program, a web-based data management system maintained by the University of South Florida, served as consent to participate. Use of a four-phase sampling procedure, which included

an e- mailed pre-notice, the notice with link to the survey, a reminder e-mail, and a final e-mail reminder and thank you optimized responses.

The Phase II component of the study consisted of a convenience sample of ED nurses who were asked to respond to a series of vignettes which asked for a triage level assignment based on the 5-level triage system recommended by ENA and ACEP (Fernandes, et al., 2005). The vignettes were constructed using factors from the literature review and those that emerged from analysis of the qualitative data. The responses to vignettes enabled the investigator to further explore the significance of those factors. The quantitative phase of the study allowed for describing the distribution, commonalities and differences in responses as well as the strength or direction of any patterns or relationship in responses. At the end of the survey a comment box was included as an option for the participant to write in additional comments and thus further validate the outcomes of the data from Phase I of this study. Also, this opportunity for personal input provided an opportunity to identify additional factors not previously identified. Any comments listed were analyzed using quantitative methods for content, frequency, and similarity.

Data Management and Analysis

The first step of data management was to analyze the reliability and validity data for the triage vignette survey prior to uploading the survey to the internet website so that any necessary revisions could be made. Responses from the expert panel of reviewers were entered into a database for analysis of responses and calculation of a CVI. Descriptive statistics for each item and summary statistics across items were calculated for interrater agreement, as well as a CVI (Polit & Beck, 2004). This data analysis provided a basis for the content validity of the survey.

Following the validity and reliability evaluation of the scale the final format was entered into the Checkbox 4.6® program system, and the four-step e-mail process initiated. Responses from returned, completed surveys were entered into a database for analysis with SPSS 17.0 Graduate Pack (SPSS Inc., Chicago, IL) and/or SAS 9.1.3 (SAS Institute Inc., Cary, NC) software programs. Demographic data from surveys were analyzed using descriptive statistical methods. Any additional comments written by participants in reference to the vignettes were analyzed using descriptive methods as well. The data set was examined for measures of central tendency, dispersion and distribution.

Two research questions pertained to Phase II; (a) what were the differences in triage level assigned for a given vignette based on nurse variables, and (b) what were the differences in triage level assigned for a given vignette based on patient variables? The set of variables that had been proposed for the research questions were retained in the final scale. The nurse variables and child variables previously stated in this research proposal remained as stated, so that all the variables or predictors were incorporated to create a 2X2X3X2X5 contingency table with one continuous variable design (Table 3). Analysis of the triage vignette responses and demographic variables with SPSS and/or SAS statistics programs, with ordinal logistic regression and cumulative logit model data methods allowed for analysis of the direction, and strength of relationships between the categorical and continuous predictor variables and an ordinal, categorical dependent variable (i.e. five triage levels).

Table 3. Cumulative Logit Model Contingency Table: Child and Nurse Variables

Child Variables:					
Age					
	Infant			School –age	
Gender					
Male	Female			Male	Female
Ethnicity					
Black	White	Hispanic		Black White	Hispanic
Behavior					
Crying	Quiet			Crying	Quiet
Nurse Variables					
Education					
ADN	Diploma	BSN		MSN	Other
Years of ED experience					
Grouped Continuous Variable (1-10 yrs, 11-20 yrs, 21-30 yrs, 31-41 yrs)					
Triage Level (Dependent Variable)					
1- Immediate	2- Emergent	3-Urgent	4-Semi-urgent		5-Non-urgent

Note: ADN = Associate Degree in Nursing, BSN= Bachelor's Degree in Nursing, MSN =Master's Degree in Nursing, Other =Doctoral Degree or other.

Thus, adjusted odds ratios could be estimated for various predictors of interest by use of ordinal logistic regression methods. The effective sample size of 118 participants with full data provided 80% power to detect a significant increasing trend (2-sided type I error rate of 0.05) in outcome for a binary predictor such as age, gender, or child behavior, and average outcome proportion of 0.20 (e.g. prevalence rates of 0.10, 0.15,

0.20, 0.25, 0.30 across all 5 levels of the dependent variable). The 118 participants with full data for all 24 vignettes provided adequate power to detect modest differences in levels of the dependent variables for various predictors of interest.

Summary

In summary, the study consisted of two phases; quantitative semi-structured interviews with experienced ED triage nurses who described the experience of triaging pediatric patients who come to the ED experiencing pain and secondly, a quantitatively measured triage vignette exercise, designed to further clarify and validate the factors and meanings identified in the first phase. For Phase II of this study the Pediatric Triage Pain Assessment Scale was developed, validity and reliability was evaluated and the survey was uploaded to the Checkbox 4.6® program internet site. A four-step process for soliciting participants was implemented. Data analysis and results are discussed in Chapter 6.

Chapter 6

Phase Two Results

This chapter addresses the data and results of Phase II of this research, including a description of the development of the vignettes, estimates of validity and reliability of the triage vignettes, and development and testing the survey for the Internet environment. This phase of the study was conducted to obtain data relative to the last two research questions; the first question asked whether there are differences in triage level assigned for a given vignette, based on nurse variables of: educational background, (four levels) or years of experience (continuous variable). The second research question asked whether there were differences in triage level assigned for a given vignette based on patient variables of: age (two categories), ethnicity (three categories), gender (two categories), or behavior (two categories). The purpose of these two research questions was to describe commonalities and differences in triage decision-making processes through analysis of responses to a series of triage vignettes. A summary report of the demographic characteristics of the participants, data analysis of the triage vignette responses and descriptive analysis of the pain assessment method is included as well.

Content Validity Index

Twenty four triage vignettes were created based on information from the literature review, the Phase I data results and previous ED nurse experience of the researcher. An estimate of the content validity was the next step in the process. The vignettes were typed in a table format with columns (Appendix K) to allow for the reviewers to rate the vignettes on a 4-point scale for the two following questions:

1. Is this question relevant to measuring some aspect of triage clinical decision-making and pediatric pain assessment?
2. Is there sufficient information in this vignette to make a triage decision?

Four of the five ED nurse experts who were requested to participate completed and returned the survey so that a CVI could be calculated, based on the number of vignettes rated with a score of 3 or 4 for each of the two questions. Responses to the first question concerning relevance of the question resulted in a CVI of 0.92. Responses to the second question concerning sufficiency of information resulted in a CVI of 0.46, which was lower than anticipated.

Two of the reviewers contacted the researcher to express concerns that many of the vignettes did not provide sufficient information to make a triage decision. This problem reflected one of the issues related to the triage decision-making process; the amount and quality of data needed to assign an appropriate triage category while working in a fast-paced, crowded ED. The original intent with development of the vignettes was to provide enough information to facilitate participant responses, without including extraneous information that could make analysis of responses difficult. After reviewing

responses from the reviewers, the researcher revised the vignettes to include addition contextual detail in each vignette. The details, such as a brief statement about the mechanism of injury were randomly repeated in subsequent vignettes. A group of injuries representing painful conditions (obvious fracture, bruising, head injury, abdominal-thoracic pain, lacerations and burns) were also randomly repeated in the vignettes. These additional details added to the vignettes were incorporated such that the original child predictor variables were preserved and each vignette was enhanced to more closely represent a real-life situation. The final vignettes used in the study included a minimum amount of contextual detail in addition to the original child predictor variables of age, gender, ethnicity and behavior. The additional details added to the vignettes were derived from contextual details that emerged from the Phase I interviews, and from the previous triage experience of the researcher.

To supplement the triage vignette scale and gain some additional information from participants relative to pediatric pain assessment, each vignette was followed by a question which asked the survey participant to indicate which pain assessment technique or tool would have been used with that vignette. Answer choices included; observations, FLACC scale, Faces pain scale, numeric rating scale, ask the parent, and other. The final survey consisted of a short series of demographic questions, 24 vignettes, and 24 pain assessment questions. The researcher was concerned about the participant response burden if the survey was perceived to be too long. None of the content validity reviewers commented on the length of the survey.

Reliability

Once the triage vignettes were finalized the content validity process was not repeated. The researcher expected the CVI for the question concerned with sufficiency of information to remain low to moderate; however for the purposes of this study it was necessary to limit the contextual information in each vignette. The next step in the process involved creating the survey on the internet and then estimating the reliability of the survey by evaluation in the same presentation which would be viewed by participants on the Survey website. Creating a visually appealing survey that was accessible and easy to follow was an important aspect relevant to influence on response rates (Dillman & Bowker, 2001). The Checkbox 4.6® program was used, which allowed creation of the survey with an appealing blue background and easy to read text and font. The demographic questions appeared on the first page, followed by directions for responding to the vignettes. The actual vignettes and pain assessment questions followed. Several page breaks were inserted to create a visual and mental "pause" for the participant as he or she progressed through the survey. The page breaks were required for the Checkbox 4.6® program to progress correctly, and were thought to help ease any participant fatigue.

Reliability of the triage vignette survey was estimated by assessing the stability of the instrument with a test – retest procedure to calculate a reliability coefficient. A sample of six ED nurses were recruited to complete the survey and to repeat the survey again in one week. Due to technical problems with the Checkbox 4.6® program survey site program, the test – retest procedure had to be repeated. The final sample resulted in completed sets of test and retest data from three participants. The Pearson reliability

coefficient for the two sets of scores was 0.90, a very good indication of the stability of the instrument; however, this was an extremely small pilot sample (Polit and Beck, 2004). The test – retest reviewers did not express any concerns about the survey length or amount of time required. The summary data from the Checkbox 4.6® program program indicated the length of time for completion of the survey was approximately 20 minutes. A measure of internal consistency was also calculated using Cronbach's alpha. The resultant score was 0.95, which is also a good indicator of the instrument's reliability. This preparation and testing of the survey provided some assurance of a reliable instrument so that Phase II data collection could begin.

Data Collection Process

E-mail addresses to invite participants were obtained from a list of ENA members. A pre-notice e-mail was sent to each potential participant (Appendix I) to explain the study and to alert each person that a subsequent e-mail with a link to the actual survey would be sent in several days. This pre-notice e-mail also provided an opportunity to verify whether each e-mail address was still active and correct. Approximately 25 nurses responded to the pre-notice e-mail to indicate interest in participating.

A second e-mail invitation which included the Phase II informed consent document (Appendix J) and a direct link to the survey was sent directly from the Checkbox 4.6® program. A total of 686 e-mail invitations to participate were sent over a four to five day period. By coincidence, the 2009 ENA national conference was occurring during the same time frame, so a number of nurses from the e-mail address list were attending the conference. Several of them actually sent an e-mail while attending the

general assembly proceedings, with offers to participate when the conference was over. One person sent an e-mail to say that several ENA state council members had submitted a motion to discuss and adopt a position statement concerning ED pediatric pain management. This incident reflects the importance of the purpose of this study.

A reminder e-mail invitation and a thank you note were sent several days later, which generated additional survey responses. Over a three week period, 170 participants accessed the survey; however 33 of them did not enter any responses. These empty responses were deleted. The remaining 137 surveys were recorded, which represented a 20% response rate. There were 18 incomplete surveys missing at least half of the vignettes, which were retained in the final response set. The final sample size consisted of 137 surveys. Reasons for the incomplete surveys include possible Internet system failures, participant fatigue or unknown reasons. Forty three participants wrote in comments with the survey; 13 of the comments indicated they felt there was not enough information in the triage vignettes to make a triage decision. The demographic data for completed surveys was compared to the incomplete surveys to determine if there were any differences, such as years of experience. The Checkbox 4.6® program was set to only allow one response per person, so if the Internet connection was lost for any reason, that person could not complete the survey.

The internet-based survey was accessible for approximately four weeks to allow time for ED nurses who had been sent an e-mail invitation an opportunity to respond. When responses fell to zero for several days and following a second e-mail reminder, the completed surveys were downloaded into a password protected computer for analysis using the SPSS 17.0 Graduate Package software program and/or SAS software program.

All responses returned to the Checkbox 4.6® program system were anonymous, which provided confidentiality for the participants.

Demographic Data

Demographic data for Phase II participants followed the same guide as that for Phase I. Participants were asked to provide their age, gender, ethnicity, education, years of ED experience, and advanced certification (Table 4). The participants ranged in age from 26 to 72 years. They were predominantly White females with a mean of 20 years of ED nursing experience. More than half reported either a BSN (30%) or MSN (34%) education degree. A larger proportion of ADN participants (79%) reported less than 20 years ED work experience, however BSN and MSN participants (46% and 60% respectively) reported greater than 20 years of ED work experience. Eighty percent of the participants held at least five advanced certificates such as Advanced Life Support Provider, which are frequently required to work in the ED. Certification in Emergency Nursing (CEN) was reported by 77% of participants. This sample was obtained from an e-mail address list of ED nurses who had attended the Emergency Nurses' Association National Scientific Assembly, and were members of their respective state delegation to the assembly.

Table 4. Phase II Participant Demographics

Variable	*Mean*	*Freq.*	(%)
Age			
Range 26 – 72 years	50 years	137	(100%)
Variable	*Mean*	*Freq.*	(%)
Gender			
Female		121	(89%)
Male		15	(11%)
Ethnicity			
White		128	(93%)
Black		0	0
Hispanic		2	(1.5%)
Asian		3	(2%)
Other		2	(1.5%)
Education			
ADN		23	(17%)
Diploma		12	(9%)
BSN		41	(30%)
MSN		47	(34%)
Other		13	(9.5%)

Table 4. Phase II Participant Demographics continued

Variable		*Mean*	*Freq.*	(%)
Years of Experience				
(grouped)	1-10 yrs		28	(21%)
	11-20 yrs	50 years	41	(30%)
	21-30 yrs		45	(33%)
	31-41 yrs		22	(16%)
Advanced Certification				
	CEN			
	ACLS		106	(77%)
	TNCC		126	(92%)
	ENPC		109	(80%)
	PALS		89	(65%)
	Other		96	(70%)
N=137			50	(37%)

Data Analysis Process

Triage vignettes

The data were analyzed with descriptive statistical methods to assess for independence of responses, normality of the distribution and homogeneity of variance by assessment of frequencies, overall mean and mode for categorical variables, standard deviation, variance, skewness and kurtosis. Graphical representations using stem and leaf

plots, box and whisker plots and histograms were also assessed to observe the distribution of scores of variables. The additional survey comments added by participants were analyzed for content and are discussed below.

Responses to the triage vignettes (dependent variable) provided categorical ordinal ranked data which were analyzed for frequency, distribution, measures of dispersion and central tendency, skewness and kurtosis. A 5-level triage response model had been created based on recent recommendations in the literature by ACEP and the ENA (Fernandes, et al., 2005); however the distribution of responses to the triage vignettes resulted in a skewed distribution and a large number of cross tabulation cells with zero responses. To address this problem, the low and high endpoint triage levels (1= immediate, and 5= non-urgent) were re-coded into the next adjacent level so the data could be analyzed with three triage levels (level 2 = emergent, level 3 = urgent, level 4 = semi-urgent). The triage level is ranked in reverse numerical order; level 2 represents the highest acuity (patient needs to be seen promptly), while level 4 represents the lowest acuity (patient is stable enough to wait a short period of time to be seen).

The continuous predictor variable, *years of ED experience*, was also problematic in that the scores ranged from one year to more than 40 years (range =46) which made response tables very long and cumbersome, and caused a large number of zero response cells. To minimize this problem the continuous variable was re-coded into groups based on the mean score, one and two standard deviations above and below the mean. This resulted in a grouped continuous variable with 4 cutpoints (1-10 years, 11-20 years, 21-30 years, and 31-41 years).

Logistic Regression Methods

To address the research questions for Phase II an ordinal logistic regression approach with a cumulative logit model was used to measure the strength and direction of relationships between predictor variables on the dependent variable of triage level assigned for each vignette (logistic regression procedure was done using SAS® software program). Logistic regression methods are robust to the distribution assumptions that apply to linear regression and therefore are the method of analysis recommended for data with non-linear relationships between predictor and dependent variables; in this instance, use of categorical and continuous predictor variables and an ordinal ranked dependent variable. A logit is described as the natural logarithm of an odds ratio, or the ratio of two probabilities. Use of a logit or log-odds approximates a linear function with a predictor and represents the amount of change seen in the logit with a 1-unit change in the predictor (Agresti, 1984; Pedhazer, 1997; Zumbo & Ochieng, 2002). Two assumptions of ordinal logistic regression with a cumulative logit model are:

1) Cumulative information along the predictor variables effects the outcome variable so that the odds of $Y \leq 1$ rather than > 1and the odds of $Y \leq 2$ rather than > 2.

2) At any given point on the X-axis the orders of the logistic curves have a common slope (Zumbo & Ochieng, 2002).

For the first step of data analysis, chi-square tests were used to assess the association between individual predictor variables and the proportion of triage level of the dependent variable (level 2 = emergent, level 3 = urgent, level 4 = semi-urgent) across all 24 vignettes (Mantel-Haenszel χ^2 for ordinal measures of association were reported). The nurse characteristic variables of education and years of experience were

found to be highly correlated. Participants who assigned higher triage levels for a given vignette were more likely to do the same for every vignette (i.e. correlated rather than independent observations). While this design of multiple ratings of vignettes by the same participants would not necessarily bias resultant odds ratio estimates, the within-subject correlation would be expected to bias standard error estimates (smaller than expected) thereby increasing the possibility of Type I errors at the conventional significance level of $p < 0.05$. Therefore, to be conservative, a modified p-value of < 0.005 was used to determine statistical significance throughout the data analysis.

Unadjusted Chi-Square Analyses

Ethnicity predictor variable categories were White, Black and Hispanic. In chi-square analyses, whereas Black versus non-Black race was not associated with vignette triage levels, vignettes with Hispanic ethnicity were associated with higher triage level χ^2 (1, N= 118) =34.934, p<.0001. Vignettes with male gender were also associated with a higher acuity level χ^2 (1, N=118) = 24.588, *p*<.0001. Similarly, vignettes with an infant were associated with a higher acuity χ^2 (1, N= 118) = 172.91, *p*<.0001, whereas vignettes with crying compared to quiet behavior resulted in no statistical difference in acuity levels assigned. Nurse predictor variables of years of experience and education, were associated across all levels with a higher proportions of level 3 triage scores compared to level 4; however there were no significant differences noted.

The second step of data analysis involved classifying the vignettes grouped by clinical condition to evaluate for associations with acuity levels (i.e. subgroup of analyses of the vignettes by clinical condition). As the data results were examined, it seemed logical that the survey participants might tend to view various clinical conditions

differently in terms of acuity. The clinical condition categories included the following proportions of the total number of vignettes: soft tissue injury 16.7% (bruises, burns, and lacerations); abdomen/thoracic injuries 29%, neurological/head injury 25%, and orthopedic injury 29%. Predictor variables were evaluated for any associations or trends towards higher acuity levels within each clinical grouping (Table 6).

Within the soft tissue injury grouping, and like the overall results, the ethnicity category of Hispanic compared to non-Hispanic was associated with a higher acuity χ^2 (1, N=118) =31.057, p<.0001. Female gender was also associated with a higher triage level χ^2 (1, N=118) =11.765, p =.0006, as was the variable age of infant: χ^2 (1, N=118) =33.839, p<.0001. Neither nurse characteristic variables of education or years of experience were associated with triage level assigned to soft tissue injury vignettes.

The next clinical condition grouping analyzed was abdomen/thoracic injury which accounted for 29% of the vignettes. The ethnicity categories of Black χ^2 (1, N=118) =14.915, p<.0001 and Hispanic χ^2 (1, N=118) =38.306, p<.0001 were associated with a higher acuity, however the Hispanic category had a higher proportion of vignettes rated more serious (60%) compared to the Black category (42%). The gender category was not associated with triage level ratings. Both the infant χ^2 (1, N=118) =61.559, p<.0001, and crying χ^2 (1, N=118) =32.577, p<.0001 variables were associated with higher acuity in this clinical condition grouping. Once again, the nurse characteristic variables of education and years of experience were not associated with triage level ratings.

The third clinical condition group analyzed included vignettes simulating neurological/head injury problems which represented 25% of the vignettes. The variable of ethnicity was not associated with higher acuity levels in this clinical condition

grouping. Gender also was not associated with any ratings of acuity. , In contrast, the variable of infant compared to school aged child was associated with a higher acuity level χ^2 (1, N=118) =38.111, p<.0001, as was the variable of quiet compared to crying χ^2 (1, N=118) =14.841, p<.0001. Several participants wrote comments to say the vignettes which included the combined variables of a quiet infant with a bruise on the head would have caused concern as to whether the infant was sleeping or had a decreased level of consciousness, and therefore warranted a higher acuity level to allow the patient to be evaluated by a physician sooner. The nurse years of experience variable was also associated with higher triage level ratings as years of experience increased χ^2 (1, N=118) =11.361, p=.0008, but education levels were not.

The final clinical condition grouping analyzed included vignettes simulating orthopedic injuries which represented 29% of the vignettes. The category of non-Black compared to Black ethnicity was associated with a higher triage level χ^2 (1, N=118) =120.219, p<.0001, and Hispanic ethnicity was also associated with higher acuity levels χ^2 (1, N=118) =32.105, p<.0001. Similarly male gender χ^2 (1, N=118) =145.288, p<.0001, and infants χ^2 (1, N=118) =81.571, p<.0001, were both associated with higher acuity levels for orthopedic injury vignettes, however behavior (crying or quiet) was not associated with higher acuity. Neither nurse variables of experience or education were associated with higher acuity triage levels. Written comments from participants mentioned the possibility of concern for child abuse for vignettes with infants with orthopedic injuries, which may have contributed to the trend towards higher acuity triage levels.

Table 5. Unadjusted Chi-Square Analyses by Vignette Clinical Condition

Clinical Condition	*Df*	Wald χ^2	*Pr>ChiSq*
Soft tissue injury			
Hispanic: ethnicity	1	31.057	< .0001
Female: gender	1	11.765	.0006
Age: Infant	1	33.839	< .0001
Abdomen/Thoracic injury			
Ethnicity: Black	1	14.915	< .0001
Ethnicity: Hispanic	1	38.306	< .0001
Age: Infant	1	61.559	< .0001
Behavior: crying	1	32.577	< .0001
Neurological/Head injury			
Age: Infant	1	38.111	< .0001
Behavior: Quiet	1	14.841	< .0001
Nurse: Yrs. Exp.	1	11.361	.0008
Orthopedic injury			
Ethnicity: non-Black	1	120.219	< .0001
Ethnicity: Hispanic	1	32.105	< .0001
Gender: Male	1	145.288	< .0001

Logistic Regression Adjusted Methodology and Results

An ordinal logistic regression (OLR) approach was used to simultaneously analyze multiple variables across all 24 vignettes, followed by OLR with the vignettes

sub-divided by similar clinical condition as previously described, and analyzed separately. A cumulative logit model was used to evaluate the independent effect of the predictor variables on the probabilities of triage level assigned for a given vignette, which are reported as adjusted odds ratios. A Wald χ^2 test with an alpha significance value of $p < .005$ was used to identify the best combination of predictor variables associated with the dependent variable; triage level. A response profile of descending order values was designated such that a positive coefficient was associated with an increased triage acuity score (ordered value 1 = triage level 2, or emergent; a value of 2 = triage level 3, or urgent; and a value of 3 = triage level 4, or semi-urgent. Taking into account multiple ratings per participant, the total numbers of triage level ratings across all vignettes were as follows: value = 1; 933 observations, value =2; 1160 observations and value =3; 576 observations, (hence 933+1160+576=2669 observations for analysis). A test for the proportional odds assumption – that the regression lines for cumulative logits are parallel χ^2 (12, N=118) =68. 861, p<.0001 was rejected. The global null hypothesis test of BETA=0 was rejected; likelihood ratio χ^2 (12, N=118) =328.316, $p < .0001$, which indicates that at least one of the predictor variable regression coefficients is not equal to zero, and the model is significant. Analysis of maximum likelihood estimates calculated the ordered logit regression coefficients and tested whether each individual predictor in the model is different than zero, given the other predictor variables in the model, using a Wald χ^2 and alpha of .005 for significance (Table 6). Predictor variables with significant Wald statistical values have a significant effect on the dependent variable. For the logits, a one unit increase in a predictor variable is expected to result in a change of the logit by

its respective regression coefficient while other variables are held constant (UCLA, ATS, 2010).

The estimates or logits (regression coefficients) for the Hispanic ethnic category compared to non-Hispanic did have a significant effect on the probability of higher triage scores, Wald χ^2 (1, N=118) =36.7916, $p< .0001$. For the gender variable, the female category compared to males had a significant negative effect (estimate of -0.3763) Wald χ^2 (1, N=118) =25.9576, $p< .0001$, or a decline in the probability of a higher triage level for females compared to males. Infants compared to school-age children had a significant effect on the probability of higher triage scores Wald χ^2 (1, N=118)186.988, $p< .0001$; however the behavior variable (crying compared to quiet) had no effect on overall triage levels across vignettes.

For the nurse characteristic variables, the grouped variable years of experience (11-20 years) was related with a decline in the probability of higher triage scores compared to more years of experience (Wald χ^2 16.412, $p< .0001$). Associate Degree Nurses (ADN) (Wald χ^2 49.138, $p< .0001$), as well as those with a Master's Degree (MSN) (Wald χ^2 10.687, $p=.001$), and "other" education category (Wald χ^2 13.345, $p=.0003$), all had a significant effect on the probability of higher triage scores compared to Bachelor's Degree (BSN) and Diploma nurses. The "other" category is unclear as to the nature of the educational preparation of the participant.

Table 6. Analysis of Maximum Likelihood Estimates and Odds Ratio Estimates

Parameter	*df*	*Est. (logit)*	*St. Error*	*Wald Chi-Sq*	*Pr> ChiSq*	*Point est.*	*99.5% Wald CI*	
Intercept 2	1	-1.5345	0.1264	147.3281	<.0001			
Intercept 3	1	0.5725	0.1229	21.7169	<.0001			
Black	1	0.1324	0.0896	2.1833	0.1395	1.142	0.888	1.468
Hispanic	1	0.5509	0.0908	36.7916	<.0001	1.735	1.344	2.239
Female	1	-0.3763	0.0379	25.9576	<.0001	0.686	0.558	0.845
Infant	1	1.0351	0.0757	186.9884	<.0001	2.815	2.277	3.482
Crying	1	0.1432	0.0737	3.7777	0.0519	1.154	0.938	1.419
Years exp:								
11-20yrs	1	-0.4230	0.1044	16.4121	<.0001	0.655	0.489	0.878
21-30yrs	1	0.0886	0.1089	0.6632	0.4154	1.093	0.805	1.483
31-41yrs	1	0.1377	0.1297	1.1276	0.2883	1.148	0.797	1.652
ADN	1	0.7974	0.1138	49.1379	<.0001	2.220	1.613	3.055
DIPL	1	0.2148	0.1500	2.0506	0.1521	1.240	0.814	1.889
MSN	1	0.3099	0.0948	10.6873	0.0011	1.363	1.045	1.779
Other	1	0.4827	0.1321	13.3447	0.0003	1.620	1.118	2.348

The effect of the predictor variables was assessed by examining the Odds Ratio (OR) point estimates (Table 6) which compared the odds of a vignette having been rated a triage level of 2 compared to a level of 3 or 4. Hispanic ethnicity was 1.74 times more likely to have a higher triage acuity rating than non-Hispanic in the vignettes (CI 99.5%;

1.344 and 2.239). Females compared to males were 0.69 times less likely to have a triage level of 2 or 3 assigned (CI 99.5%; 0.558 and 0.845). Infants compared to school-age children were 2.815(CI 99.5%; 2.277 and 3.482) times more likely to have a higher triage level assigned. Nurses with 11 – 20 years of experience were 0.66 times less likely to rate a given vignette a triage level of 2 or 3, compared to a triage level of 4. ADN nurses were 2.2 times more likely to rate vignettes with a higher triage level, as were MSN (OR: 1.363, CI 99.5%; 1.613 and 3.055) and "other" (OR: 1.62, CI 99.5%; 1.118 and 2.348).

Vignettes were sorted by clinical condition as previously described and evaluated with logistic regression using a cumulative logit model again to identify factors associated with triage level ratings (Table 7). The same logistic regression procedure was used as in the full OLR. The first clinical condition explored was soft tissue injuries. For these vignettes, both Black (Wald χ^2 9.7437, p= .001) and Hispanic (Wald χ^2 33.9645, p< .0001) ethnicity had a significant effect on the probability of higher triage scores, however the magnitude for vignettes with Hispanic ethnicity was larger (OR: 4.87, CI 99.5%; 2.273 and 10.452) compared to the vignettes with Black ethnicity (OR: 2.220, CI 99.5%; 1.084 and 4.549). For the gender variable in these vignettes, the female category compared to males had a significant effect (Wald χ^2 8.350, p= .004), on the probability of a higher triage level.

The next clinical condition examined were the vignettes with simulated abdomen/thoracic pain. In these vignettes predictor variables which had significant effects on the probability of higher triage scores included Hispanic ethnicity compared to non-Hispanic (Wald χ^2 89.602, p< .0001), infant compared to school-age child, (Wald χ^2

55.2473, $p<.0001$) crying compared to quiet behavior, (Wald χ^2 21.4227, $p< .0001$) and ADN education (Wald χ^2 14.3989, $p< .0001$). OR for these predictors were quiet impressive; Hispanic ethnicity was 11.76 times more likely to have been rated a higher triage level (CI 99.5%; 5.662 and 24.424). Infants were 4.4 times more likely than school-age children to have a higher triage level, as well as crying compared to quiet behavior (OR 2.48, CI 99.5%; 1.43 and 4.31). ADN education was also 2.36 times more likely to be associated with rating higher triage levels for these vignettes.

For vignettes with simulated neurological/head injury problems, infants compared to school-age children had a significant effect on the probability of higher triage scores, (Wald χ^2 28.276, $p< .0001$) with an OR of 4.02 (CI 99.5%; 1.93 and 8.37). The only other predictor with a significant effect was ADN education compared to other categories (Wald χ^2 32.828, $p< .0001$) and an OR of 4.01.

Orthopedic injury vignettes, both Black compared to non-Black ethnicity, (Wald χ^2 23. 552, $p< .0001$), and female compared to male gender (Wald χ^2 45.366, $p< .0001$) had a decline in the probability of higher triage levels. Black ethnicity was 0.197 times less likely to have higher triage levels, and females were 0.243 times less likely to have higher triage levels assigned.

These results demonstrated a wide range of responses to triage vignettes. Sorting the vignettes by clinical condition revealed contrasting areas of difference. Participants may have made triage choices with the vignettes based on overall concern for clinical condition, rather than consideration of how much pain the infant or child in the vignette might be experiencing.

Table 7. Logistic Regression and Odds Ratio Estimates by Clinical Condition

Clinical Condition	*Df*	Wald χ^2	*Pr>ChiSq*	*OR*	*99.5% CI*	
Soft tissue injury						
Ethnicity:						
Black	1	9.7437	.001	2.220	1.084	4.549
Hispanic	1	33.9645	<.0001	4.874	2.273	10.452
Gender						
Female	1	8.3501	.003	2.046	1.021	4.102
Abd/Thoracic injury						
Ethnicity: Hispanic	1	89.602	< .0001	11.76	5.662	24.424
Age: Infant	1	55,2473	< .0001	4.422	2.522	7.753
Behavior: crying	1	32.577	< .0001	2.484	1.431	4.314
Nurse Educ: ADN	1	14.3989	< .0001	2.364	1.241	4.466
Neuro/Head injury						
Ethnicity: Hispanic	1	.6892	.003	2.118	1.036	4.326
Age: Infant	1	28.2756	< .0001	4.016	1.928	8.366
Nurse Educ. ADN:	1	32.8284	<.0001	4.010	2.031	7.920
Orthopedic injury						
Ethnicity: Black	1	23.5520	< .0001	0.197	0.077	0.504
Gender: Male	1	43.3656	< .0001	0.243	0.125	0.428

Pain measurement methods

Following analysis of the Phase I data it appeared that informants were not able to clearly articulate the different pediatric pain scales available. The most commonly mentioned scale was the "smiley face". The FLACC scale was mentioned only twice during the interviews by name; however most of the informants described assessing infants for behaviors which are in fact, components of the FLACC scale. One behavior in particular, being inconsolable, was mentioned frequently as an indicator of pain. Based on the discussions about pain scales with the Phase I informants, for the Phase II survey, a question was added following each vignette which asked for a choice of pain scale or method of pain assessment that would be most appropriate to use with the patient in each survey vignette. The response choices included: 1) ask parents, 2) 0-10 rating, 3) observation, 4) faces scale, 5) FLACC scale, and 6) other. Frequency and percentages of responses for each vignette were calculated (table 7). The responses were also assessed for appropriate methods, based on whether the vignette portrayed an infant or school-age child. A number of participants wrote comments at the end of the survey indicating a need for specifying an age range for "school-age" child. Some felt the range included ages from 5 to 18 years old.

Table 8. Pain Assessment Method by Vignette

Vignette/ Age	*Pain Assessment Method*					
	f (%)	*f (%)*	*f (%)*	*f (%)*	*f (%)*	*f (%)*
	Ask parent	0 -10 Rating	Observation	Faces scale	FLACC scale	Other
V1/Infant	3 (2%)	0	34 (25%)	15 (11%)	63 (46%)	3 (2%)
V2/Infant	1 (.7%)	0	38 (28%)	19 (14%)	57 (42%)	3 (2%)
V3/ School age	0	42 (31%)	3 (2%)	69 (50%)	3 (2%)	1 (.7%)
V4/School age	0	51 (37%)	2 (2%)	63 (46%)	1 (.7%)	1 (.7%)
V5/ Infant	1 (.7%)	0	34 (25%)	15 (11%)	65 (47%)	2 (2%)
V6/Infant	1 (.7)	1 (.7%)	33 (24%)	17 (12%)	63 (46%)	3 (2%)
V7/Infant	2 (2%)	0	31 (23%)	19 (14%)	59 (43%)	3 (2%)
V8/School age	0	48 (35%)	3 (2%)	65 (47%)	1 (.7%)	1 (.7%)
V9/School age	0	48 (35%)	6 (4%)	58 (42%)	2 (2%)	0
V10/Infant	1 (.7%)	1 (.7%)	29 (21%)	15 (11%)	64 (47%)	3 (2%)
V11/School age	0	55 (40%)	3 (2%)	53 (39%)	1 (.7%)	0
V12/Infant	3 (2%)	1 (.7%)	30 (22%)	11 (8%)	63 (46%)	3 (2%)
V13/School age	0	47 (34%)	6 (4%)	58 (42%)	1 (.7%)	0
V14/Infant	3 (2%)	0	35 (26%)	8 (6%)	64 (47%)	1 (.7%)
V15/Infant	2 (2%)	0	31 (23%)	12 (8%)	64 (47%)	2 (2%)
V16/School age	0	43 (31%)	8 (6%)	54 (39%)	6 (4%)	0
V17/Infant	3 (2%)	2 (2%)	28 (20%)	11 (8%)	58 (42%)	2 (2%)
V18/School age	0	48 (35%)	5 (4%)	50 (37%)	2 (2%)	0
V19/School age	1 (.7%)	49 (36%)	3 (2%)	48 (35%)	3 (2%)	1 (.7%)
V20/Infant	2 (2%)	3 (2%)	31 (23%)	14 (10%)	54 (39%)	1 (.7%)
V21/School age	0	55 (40%)	1 (.7%)	48 (35%)	1 (.7%)	0
V22/School age	0	52 (38%)	2 (2%)	49 (36%)	1 (.7%)	0
V23/Infant	2 (2%)	0	33 (24%)	10 (7%)	58 (42%)	1 (.7%)
V24/School age	0	52 (38%)	1(.7%)	50 (37%)	1(.7%)	0

Approx. 15% of questions had no response

Survey comments

The Phase II survey included a final comment box for participants to write in comments about the survey. These comments were read verbatim, compared for similarity and are summarized here. These comments provided useful feedback and some criticism of the study. Thirty nine participants (28%) wrote in comments at the end of the triage survey. The most frequent comments entered indicated there was not enough information to accurately make a triage decision. Use of the category "school aged child" was problematic for some participants who considered the range of "school-aged" to be 5 years to 18 years. Vignettes with sleeping or quiet infants or children, and bruises brought to mind concerns of neurological status and possible signs of child abuse. Several participants were concerned with, or insulted by the inclusion of ethnicity as a variable. One participant wrote the comment, "level of pain seldom factors in when deciding a triage level". Comments as to which pain scale would be appropriate for a given child varied between a "faces" scale and nurse rated "0 – 10 numbers scale". These comments further validate the complexity of the lived experience of the triage nurse when making triage decisions, as well as the need for increasing awareness of the disparity of pain assessment and management for the youngest patients who use ED services.

Summary

Phase II of this study involved preparing for, obtaining and analyzing quantitative data relative to the last two research questions; the first question asked whether there are differences in triage level assigned for a given vignette, based on nurse variables of: educational background, (four levels) or years of experience (grouped continuous

variable). The second research question was intended to describe differences in triage level assigned for a given vignette based on patient variables of: age (two categories), ethnicity (three categories), gender (two categories), or behavior (two categories). Qualitative data from Phase I identified themes which were congruent with the conceptual model of the study and validated the predictor variables to be included in the study. One additional question was added along with each vignette to ask which method of pain assessment would have been used with the patient in the vignette.

A triage vignette survey was developed, evaluated for validity and reliability with appropriate methods and made available to ED nurses via the Internet using the Checkbox 4.6® program. Responses from 137 ED nurses were analyzed for demographic data. Further statistical analyses of the triage vignettes were conducted using descriptive methods, followed by logistic regression. The pain assessment methods question and post-survey comments were analyzed using descriptive methods. Results are discussed in Chapter 7.

Chapter 7

Discussion and Implications

The final chapter of this study offers a summary of the research including the conception process, instrument development, data gathering, analysis methods, and a discussion of results, limitations, and implications for nursing.

Summary

This was a mixed-methods study that blended a qualitative-descriptive inquiry guided by phenomenological methods with quantitative methods to describe processes, knowledge sources and factors that influence triage decisions with infants and young children who come to the ED with painful problems or injuries. This study was conceptualized as a unique approach to study ED triage nurse decision-making for pediatric patients experiencing pain. Both Phases of this study revealed outcomes consistent with other reported research as well as some outcomes that were not consistent.

Phase I informants were recruited from several area hospitals through a convenience sample and snowball technique in an effort to enroll participants. Thirteen interviews were completed for the study with nurses who were predominantly White females with ED experience ranging from 2 to 29 years. Ultimately all of the informants came from one large ED study site. Participants for Phase II were recruited from an e-mail address list of ENA members from across the United States. The final sample size

for Phase II was 137 participants. Neither of the samples for this study achieved the diversity in gender or ethnicity that had been sought.

Instrument Development

Pediatric Triage Pain Assessment Scale

In order to begin Phase II of the study a series of 24 triage vignettes were designed to further clarify and validate the factors and processes identified in the first phase. The intent of the vignette survey was to determine associations or differences in recognition and assessment of painful conditions based on child and/or nurse characteristics, and a triage score rated for each vignette. Including 24 vignettes allowed for each category of each variable to be included in a balanced manner, in an effort to reduce variance error. For example; there was a vignette with a crying White, Black and Hispanic infant as well as a vignette a quiet White, Black and Hispanic infant and so forth (Appendix L). Each vignette was scored by assigning a triage level ranked from (1) emergent, to (5) non-urgent. In this study the triage scores were compared across all vignettes and participants using logistic regression methods to evaluate which variables or set of variables were more likely to be associated with or predict triage scores.

The validity of the survey was estimated by assessing a CVI with a panel of experts. Relevance of the vignettes resulted in an index of 0.92, however; sufficiency of information resulted in an index score of 0.46, which was lower than anticipated. The reliability of the triage vignette survey was estimated by measuring the stability and equivalence of the instrument (Polit & Beck, 2004). A test-retest procedure estimated a Pearson reliability coefficient of 0.90; however the pilot sample size of participants was

very small so the reliability coefficient is not dependable. A measure of internal consistency was also calculated using Cronbach's alpha (0.95).

For future use as a teaching tool, the vignettes could be expanded and an ideal or correct answer for triage level indicated. This scale had potential for use as a research or ED triage teaching tool with further validation and refinement. Validity and reliability estimates would need to be conducted with a larger sample size. Further refinement of the vignettes may be achieved by piloting the vignettes in a different format such as comparing responses between paired participants, or a comparison of matched vignettes with and without painful conditions to compare pain score or triage level responses. Piloting the scale with an onsite group of participants rather than an internet –based format may allow discussion and clarification of participant responses.

The scale included a question concerning participant choice of pain assessment scale or method that would have been used with the patient in each vignette. This question provided some information about participant knowledge of pediatric pain assessment scales. Responses for vignettes that depicted infants revealed knowledge deficits as to which pain scale would be more appropriate. The FLACC scale was reported more than 40% of the time; however the Faces pain scale was reported as often as 14% of the time, and observation of the infant was reported up to 28% of the time. A very small number of participants indicated they would ask the parent.

Discussion

Phase I

The study was guided by a conceptual model developed from the literature review and ED experience of the researcher. The first phase of this study consisted of a qualitative descriptive exploration of ED triage nurse thoughts, perceptions and factors that influence decisions and actions taken with pediatric patients who come to the ED with painful conditions. Thirteen semi-structured interviews were conducted with ED nurses. The interviews were limited in depth due in part to the novice researcher, and to the lack of informants who were willing to meet for a longer period of time. Despite the brevity of interviews the researcher was able to gain insight into the lived experience of the pediatric triage nurse.

Five themes were identified from analysis and interpretation of the interviews: 1) Age of the child is important, 2) Behavior can tell a lot, 3) Really looking at the patient, 4) Things that help make decisions, and 5) Things that hinder decisions. Data analysis from the interviews, and the conceptual model guided the variables that were included in Phase II of the study. The themes are discussed in this section.

Age of the child is important

Interviews with these informants provided insight into the daily complexity of triage in the ED. All of the informants expressed concern with assessment of pain and assigning triage levels for infants and the very youngest patients. The policy of the ED was that all infants and children were taken directly to an exam room and triage completed at the bedside. Therefore, in many instances, the pediatric patient bypassed the triage nurse. When the ED was busier or all rooms were occupied, the triage nurse would

bring the patient into the triage room to begin an assessment. During busier hours the triage nurse needed to be vigilant for any patients who arrived and were waiting to be taken to an exam room in the Pediatric ED. Several informants expressed concern, or a need to scan the waiting room periodically to make sure no patients had been overlooked. The need for good communication between the meeter-greeter, triage nurse and charge nurse was important to facilitate the flow of patients and accommodate any newly arrived pediatric patients with higher acuity problems.

The infant who was brought to triage required more in- depth assessment to determine if the infant was experiencing pain. Important indicators discussed by informants included obtaining an adequate history from the parents, assessing physiologic signs, and the interaction between the parents and the patient. Parents who reported symptoms that were no longer evident or who changed the story seemed to raise concerns. Only two informants discussed using the FLACC infant pain scale. For infants in particular there seemed to be limited knowledge of pain assessment scales. Others mentioned observation of the infant for crying, and efforts to gather information from the parents as to the infant's baseline activity. They wanted to know how the infant had changed, what was different that prompted the parents to come to the ED. There was a general concern among the informants about the reliability of the parents to give adequate information.

The reliability of parents was mentioned frequently and is a common element of all five themes. Informants were sharply divided in their attitudes towards parents. Parents who were emotional, crying, or otherwise unable to provide an adequate history were viewed as unreliable, causing the nurse to call upon good assessment skills in order

to formulate an idea of the clinical problem. Calm, informative parents who could explain the problem were viewed as reliable and helpful. An assessment of the parental credibility seemed necessary as a component of the triage process. Previous research had reported discrepancies in pain ratings between patients, nurses and physicians which supported this issue as a common concern in the ED setting. This therefore is an area for further research in order to gain a better understanding of why this occurs (Singer, et al., 2002; Rajasagaram et al., 2009).

Behavior can tell a lot

Pain scales proved to be challenging with young children. Informants discussed improvising use of pain scales by estimating a pain score through observation of behavior. Observation of the child and interaction between the child and parents were important indicators. Another potential source of concern was being observant for possible signs of child abuse. Several informants expressed that the inconsolable infant or child was a definite sign of distress that needed further assessment. If the patient was inconsolable, even by the parent after several minutes, this was considered an obvious indicator of pain. Other behaviors noted as signs of pain included facial grimacing, wincing, protecting or withdrawal of body parts from the nurse or the parent. While these informants could clearly articulate these behaviors as signs of pain, only two of them identified them as the FLACC scale or mentioned using this pain scale.

The other type of behavior that was significant was the quiet stoic child who may or may not have had an obvious injury. Visual cues could be missed and allow a child to wait when there might have been an injury. One informant expressed regret about a child who was very quiet on arrival and was sitting in the waiting room or had been bypassed

somehow and, once the child was evaluated, was found to have a fractured arm. Recognition of behavioral indicators of pain were related to experience with recognizing symptoms gained after a number of years working in the ED setting.

Really looking at the patient

The first initial contact with the patient involved looking at the patient and asking the initial question about the reason for coming to the ED. Scanning the patient for obvious signs of distress or obvious injuries such as displaced extremity fractures would allow for quick intervention. This initial observation was linked to nurse experience. The informants believed that years of experience gave them an intuitive skill –

> "You just know by eyeballing the patient and that comes from years of experience."

Another informant discussed observing the patient before ever touching the patient by looking, observing, taking in all the details possible, but also avoiding becoming judgmental and jumping to conclusions about the patient. Informants talked about really looking at the patient in the context of close assessment of physiologic signs such as respiratory rate, skin color, body positioning and the reactivity or response of the patient. This assessment encompasses more than using a pain assessment scale and was meant to focus in closely and observe the patient. It seemed that a number of these informants may have used these types of observation skills rather than a specific pain assessment scale.

Things that help make decisions

These informants had internalized the practical and theoretical knowledge needed to make sound decisions regarding young children and infants experiencing pain. While

none of the informants specifically mentioned the other elusive knowledge source nurses use - intuition, it was implied a number of times during the interviews. For example:

> "It seems that if you do pediatrics long enough you come to realize who the sick kids are just by looking at them. A chance to be said, by them walking by you face to face, it's like you know, something isn't right".

Reliability of parents was viewed from two different perspectives. Those who were calm, able to provide a coherent history and interacted appropriately with the infant or child were viewed as reliable and trustworthy to give information about the patient. Parents who were emotional, crying, angry or who could not give an adequate account of events that led to the ED visit, or who provided a description of the patient that did not match the appearance at the time of arrival ,were viewed as less dependable. The researcher did not ascertain from these informants what efforts were made to help improve the reliability of those parents who were viewed less favorably. While there may have been evidence for the need for health teaching, infant or child care, not many opportunities for exist in the fast pace of the ED.

Things that hinder decisions

Things that hinder triage decisions seemed to be sources of frustration for the informants. The only indication of concerns towards patient and parents of different ethnicity was relative to language barriers. Communications with non-English speaking families were described as sources of frustration. New guidelines that require professional telephone translators were described as time consuming and sometimes difficult.

One frequently mentioned problem area was a situation in which the nurse recognized a patient was experiencing pain but the physician would not order pain medication except possibly ibuprofen or acetaminophen. Another concern, especially in a teaching hospital setting was whether or not new residents were familiar with pediatric dosage ranges.

The analysis, interpretation and description of themes identified from the Phase I data and comparison to the conceptual model supported development of the variables and factors used in Phase II. Development of the triage vignettes allowed further validating of the significant factors relative to triage decision-making and pediatric pain assessment.

Phase II

The second phase of the study was conducted to obtain data relative to the last two research questions; 1) what are the differences in triage level assigned for a given vignette, based on nurse variables of: educational background, (five levels) or years of experience (grouped continuous variable), and 2) what are differences in triage level assigned for a given vignette based on patient variables of: age (two categories), ethnicity (three categories), gender (two categories), or behavior (two categories). The Pediatric Triage Pain Assessment Scale (PTPAS) was developed based on these variables for use in an internet-based survey.

Chi-square tests for frequency trends evaluated the association between individual predictor variables and the proportion of triage level of the dependent variable (level 2 = emergent, level 3 = urgent, level 4 = semi-urgent) across all 24 vignettes. Hispanic ethnicity, infants compared to school-age children, and male gender compared

to female were all associated with higher triage levels. The vignettes were then sorted by similar clinical condition and evaluated again with chi-square test for association between predictors and higher acuity (triage level). The researcher noted comments from participants who indicated concern about symptoms other than pain, and the need for additional information to make an accurate triage decision. This concern prompted exploring the vignettes subdivided by the clinical symptoms (contextual details) which had been added to the vignettes. There were interesting differences based on the nature of the injury or problem in the subsets. With the neurological/head injury vignettes the predictors infant compared to school age child, and quiet compared to crying were associated with higher triage levels. Several participants wrote comments indicating concern that a quiet infant with a bruise on the head would need further evaluation to assess level of consciousness and therefore warranted a higher triage level. In this instance the higher triage level assigned was not related to pain assessment but rather due to concern for neurological status.

Full analysis across all vignettes with ordinal logistic regression methods and a cumulative logit model, Hispanic ethnic category compared to non-Hispanic did have a significant effect on the probability of higher triage scores. Reported in terms of odds ratios, Hispanic ethnicity was 1.74 times more likely to have a higher triage acuity rating than non-Hispanic in the vignettes. The data from this study failed to demonstrate disparity in triage level as that reported in previous research (James, et al., 2004).
For the gender variable, the female category compared to males had a significant negative effect (estimate of -0.3763), ($\chi 2$ 25.9576, $p < .0001$), or a decline in the probability of a higher triage level for females compared to males. Infants compared to school-age

children had a significant effect on the probability of higher triage scores; however the behavior variable (crying compared to quiet) had no effect on overall triage levels across vignettes. This observation supported the overall theme of the challenges triage nurses face with evaluating infants. Crying, inconsolable infants were obviously in distress while the concern with a quiet infant in some instances raised the question of decreased level of consciousness as opposed to just sleeping.

Other predictors with significant effects on the probabilities of higher triage levels included nurse characteristics of ADN and MSN education. Upon further review of participant demographic data the researcher noted that for the participants who reported ADN education, 79% of them also reported less that 20 years experience, while 46% of participants who held a BSN degree and 60% of those with an MSN degree reported more than 20 years experience. The higher triage levels based on education may have been a reflection of years of experience or simply erring on the side of caution with triage scores.

A secondary logistic regression with the separated clinical condition grouping revealed different predictors with significant effects on probabilities with each different clinical condition group. For the abdomen/thoracic injury, Hispanic ethnicity was 11.76 times more likely to have been rated a higher triage level (CI 99.5%; 5.662 and 24.424). Infants were 4.4 times more likely than school-age children to have a higher triage level, as well as crying compared to quiet behavior (OR 2.48, CI 99.5%; 1.43 and 4.31). ADN education was also 2.36 times more likely to be associated with rating higher triage levels for these vignettes. It is unclear why this clinical condition grouping resulted in these higher odds ratios. Perhaps the clinical picture of a Hispanic crying infant with indicators

of abdominal pain was viewed differently than other vignettes. Participants who reported ADN education also had a much higher percentage (79%) who reported less than 20 years experience while the BSN and MSN prepared participants reported (46% and 60% respectively) more than 20 years of ED experience. It is unclear whether those participants were more or less confident with their triage decisions.

The predictor variables that were more likely to have been rated higher triage levels overall were Hispanic ethnicity compared to non-Hispanic and infant compared to school-age children. In the full OLR, female gender was less likely than male to have higher triage levels, and nurse years of experience (11 – 20 years) was also less likely to be associated with higher triage levels.

Comparison of the outcomes from Phase I to Phase II provided evidence and validation of variables that impact ED nurse triage decision-making with pediatric patients experiencing pain. Infants were found to be a significant predictor of higher triage scores. Whether this finding is directly related to pain assessment or other assessment parameters was unclear. Crying infants, particularly those who were Hispanic were more likely to have a higher triage level assigned. The PTPAS was designed with balanced vignettes, to avoid introducing bias with any of the child predictor variables, such as ethnicity. Why a vignette which depicted a crying Hispanic infant resulted in much higher odds of a higher triage level than other crying infant vignettes is of interest. For this study which used patient vignettes there was no evidence of ethnic disparity. Some participants wrote comments at the end of the survey to indicate dissatisfaction with ethnicity having been included as a variable. Different clinical conditions in the

vignettes resulted in varying differences of significant predictors; however these differences appeared to be related to the clinical condition more so than to a pain score.

Limitations

Limitations of this study related to small sample size and the limited ability to generalize the findings. The researcher took necessary precautions to bracket all presuppositions and opinions towards the triage decision-making process, which resulted from more than 14 years of emergency nursing experience. However, from the perspective of interpretive phenomenology, the experience and knowledge of the researcher as an ED nurse can be a valuable guide to the research (Lopez & Willis, 2004). LeVasseur (2003) suggested a different perspective towards bracketing. She recommended rather than setting aside the perspective and assumptions of researcher experience, bracketing could be employed as a temporary suspending of knowledge and experience to allow a fresh view of the topic of interest; described as "persistent curiosity" (p. 419).

Sampling procedures used for both components of the study may limit generalizability of the results. Use of a convenience sample could introduce sampling bias. Sampling bias for Phase II may have occurred due to the large percentage of participants with advanced education, membership in a professional organization, and active participation in the organization at the state and/or national level. ED nurses who actively participate in a professional organization may have been more willing to participate in a research study.

Use of an internet based survey allows for convenience with participation by participants, however there are limitations in controlling access to the survey, and

whether the participant completed the survey independently. Potential sources of error related to use of an internet-based survey which can limit results of this study include coverage and sampling error, and nonresponse error. Recommendations and principles for design of internet based surveys that provided approaches to limit these sources of error were incorporated in the procedures for this study (Dillman & Bowker, 2001).

Social desirability response bias

One source of bias that may affect the outcomes of this research is the concept of social desirability response bias (SDRB) which is described as the tendency of participants to answer questions in a manner that is more socially desirable, particularly when the subject or context of the survey question is of a sensitive nature (Polit & Beck, 2004; Streiner & Norman, 2003). SDRB can have an impact on the validity of a study. In the context of this study; triage decision-making of children with painful conditions who come to the ED, responses that would give the impression of taking actions that would alleviate the painful problem more quickly could be viewed as more socially acceptable.

During the Phase I interviews informants frequently commented that pediatric patients are taken directly to a treatment room where the initial assessment and triage level are assigned. This response seemed almost automatic, or as if following a script, or this may have been an example of SDRB. Decreasing patient wait times in the ED is an important patient satisfaction factor; however, the reality of ED care is that the treatment area may be filled quickly during high volume times and pediatric patients may wait for treatment longer than desirable. The triage nurse is responsible for re-evaluating any patients waiting to be seen and take action when needed.

Responses from participants who completed the internet-based survey may also have demonstrated evidence of SDRB, particularly with respect to the ethnicity variable that was included in the vignettes. Research related to ED triage and treatment has previously reported some evidence of ethnic disparity with pain assessment and management (James, et al., 2004) however; evidence of ethnic disparity was not observed in this study. The variable of Hispanic ethnicity was consistently associated with higher triage levels and several participants wrote comments expressing dissatisfaction with inclusion of ethnicity as a variable in the survey. Due to the sensitive nature of the issue of ethnic disparity in ED patient care, it is possible higher triage levels assigned for Hispanic patients in the survey vignettes and the negative comments from some participants were both evidence of SDRB. Participants may have wanted to be viewed favorably in their responses for vignettes that portrayed ethnic minority patients. The reasons for higher triage levels assigned for Hispanic infant vignettes compared to similar vignettes with White or Black infants were not clear, but it was possible evidence of SDRB.

Internet-based survey vignettes that require assessing pain in pediatric patients and assigning a triage level could potentially elicit SDRB through the participant's desire to choose a triage level that would result in a shorter time until the patient is moved to the ED treatment area. Any of the triage vignettes in this study could have been a potential source of SDRB, and resulted in a higher acuity triage level assignment for a given vignette.

SDRB is not considered to be an intentional choice, but rather an unconscious desire to be perceived favorably. Many factors may contribute to this type of bias; the

participant responding to a survey, the context and setting, whether the survey is administered in a live face-to-face or anonymous survey (Streiner & Norman, 2003). The rational choice theory provides a framework to explain SDRB, described as cognitive incentives, based on the need for social approval which increases as the need for approval rises, and when the interviewer is able to recognize the behavior according to the explanation offered by Stocke and Hunkler (2007). These authors suggest the One Point Measure developed by Edwards in 1957 as the most parsimonious method for measuring incentives that contribute to SDRB.

Another potential source of SDRB has been suggested with the method of personalizing invitations to participate in internet-based surveys. While personalization or use of individual e-mail addresses to invite survey participants has been recommended to increase response rates, there is a potential unintended effect of causing SDRB due to a perceived decrease in anonymity of participants. Heerwegh and Loosveldt (2006) explored this hypothesis in a mixed-methods study which compared face-to-face interviews contrasted with non-personalized and personalized internet surveys. Specific surveys items did show evidence of SDRB when comparing face-to-face interviews with non-personalized internet surveys; however comparisons of personalized and non-personalized surveys did not reveal any significant differences in responses.

Implications for Nursing

Practice

Assessing pain in infants and young children who present to the ED is a challenging component of triage assessment. In this study, choosing a triage level for a given vignette which portrayed an infant or school-aged child with a painful condition

has been used as proxy for assigning a pain measurement for the patient in each vignette. Use of the triage level as a proxy for pain assessment is problematic for several reasons. Assigning a triage level involves a more comprehensive assessment of the patient including physiologic measurements, appearance, and interaction with parents, a brief history and chief complaint in addition to pain assessment. It is very likely that triage survey responses were based on the clinical condition portrayed in a given vignette rather than being focused on how much pain the infant or child might be experiencing. This observation is another indicator of the difficulty in evaluating nursing practice towards pain assessment in the clinical setting. Comments from a small number of survey participants indicated that pain is not necessarily a consideration in triage decisions.

Another concern for nursing practice that was made evident in the Phase I interviews was lack of physician support for pain management. Nurses must act as patient advocates to facilitate pain management for the youngest patients who do not have the ability to ask for pain medication.

Education

One implication of the outcomes of this research is the need for further education for ED nurses as to the various pediatric pain measurement scales available, and updates in the application of different scales periodically. This researcher searched the Internet recently for pain assessment scales and found seventeen different pain scales listed on Wikipedia.org. While this site is not an information source for scholarly work, many people, nurses included may use it for a quick reference. Pain scale competency validation could be incorporated into hospital based yearly updates. The pain measurement method question included with the triage vignette survey in this study

provided some evidence that up to 28% of nurses who responded may not have a clear understanding of infant pain assessment scales.

There are implications for increasing education for ED physicians as well as nurses as to pain assessment and management practices. Long standing myths and misconceptions towards pediatric pain management may still exist in the ED setting. Incorporating pain related information and research articles into evidence-based practice models may increase awareness. Increasing pharmacologic knowledge in regard to safe pediatric analgesics, opioid analgesics and safe dosages would help dispel misconceptions towards pediatric pain management. The goal of any education program concerning pediatric pain is to improve patient care and outcomes.

Research

The outcomes of this research indicate that more research in the area of ED pediatric pain management could add to the knowledge base of ED nurses, it is equally important to support ED nurses as consumers of research. Efforts to increase awareness of the evidence that exists, such as the information included in the literature review for this study are needed. Activities such as journal clubs, participation in professional organizations, and other means for disseminating research evidence can increase awareness, generate interest in participating in research, and lead to changes in practice. Activities that promote interest in research and dissemination of information will in turn, promote better patient care, better pain management and improved patient outcomes.

Further research to refine and validate the Pediatric Triage Pain Assessment Scale would make this new scale available for additional research and education of triage nurses and physicians.

References

Agresti, A. (1984). Analysis of ordinal categorical data. John Wiley & Sons, Inc: USA.

American Heart Association, (2005). Part 11: Pediatric basic life support [Electronic version]. *Circulation,* 112(4), 156-166.

Atack, L., Rankin, J. A., & Then, K. L. (2005). Effectiveness of a 6-week online course in the Canadian Triage and Acuity Scale for emergency nurses. *Journal of Emergency Nursing,* 31(5), 436-441.

Berragan, L. (1998). Nursing practice draws upon several different ways of knowing. *Journal of Clinical Nursing,* 7(3), 209-217.

Bergeron, S., Gouin, S., Bailey, B., & Patel, H. (2002). Comparison of triage assessments among pediatric registered nurses and pediatric emergency physicians. *Academic Emergency Medicine,* 9(12), 1397-1401.

Bulloch, B. & Tenenbein, M. (2002). Validation of 2 pain scales for use in the pediatric emergency department . *Pediatrics, 110* (3), 199-202.

Burns, N. (1989). Standards for qualitative research. *Nursing Science Quarterly, 2*, 44-52.

Carper, B. (1978). Fundamental patterns of knowing in nursing. *Advances in Nursing Science, 1*(1), 13-23.

Cioffi, J. (1999). Triage decision making: Educational strategies. *Accident and Emergency Nursing, 7,* 106-111.

Cone, K., & Murray, R. (2002). Characteristics, insights, decision making and preparation of ED triage nurses. *Journal of Emergency Nursing, 28*(5), 401-406.

Cordell, W.H., Keene, K. K., Giles, B. K., Jones, J. B., Jones, J.H., & Brizendine, E. J. (2002). The high prevalence of pain in emergency medicine. *American Journal of Emergency Medicine, 20* (3), 165-169.

Dillman, D. A., & Bowker, D. K. (2001). The web questionnaire challenge to survey methodologists. In U. Reips, & M. Bosnjak (Eds.), *Dimensions of Internet Science.* Eichengrund 28, D-49525 Lengerich, Germany: Pabst Science Publishers. Retrieved January 30, 2009, from: http://www.sesrc.wsu.edu/dillman/papers.htm

Drendel, A. L., Brousseau, D. C., & Gorelick, M. H. (2006). Pain assessment for pediatric patients in the emergency department. *Pediatrics, 117* (5), 1511-1518.

Durani, Y., Brecher, D., Walmsley,D., Attia, M.W., &Loiselle, J. M. (2009). The emergency severity index version 4 reliability in pediatric patients. *Pediatric Emergency Care, 25*(11), 751-753.

Estabrooks, C. A., Rutakumwa, W., O'Leary, K. A., Profetto-McGrath, J., Milner, J., Levers, M. J., and Scott-Findlay, S., (2005). Sources of practice knowledge among nurses. *Qualitative Health Research, 5 (*4), 460-476.

Emergency Medical Treatment and Active Labor Act. 99-272, 42 U.S.C. 1395dd (1985).

Emergency Nurses Association. (2006). Emergency Nurses Association Position Statement: Crowding in the Emergency Department. *Journal of Emergency Nursing, 32* (1), 42-47.

Evans, C. (2005). Clinical decision making theories: patient assessment in A&E. *Emergency Nurse, 13* (5), 13-19.

Evans, M. (1992). Using a model to structure psychosocial nursing research. *Journal of Psychosocial Nursing, 30* (8), 27-31.

Fawcett, J. (1999). The relationship of theory and research. Philadelphia: F. A. Davis.

Fernandes, C. M. B., Tanabe, P., Gilboy, N., Johnson, L. A., McNair, R. S., Rosenau, A. M., et al. (2005). Five-Level triage: A report from the ACEP/ENA five-level triage task force. *Journal of Emergency Nursing, 31* (1), 39-50.

Gerdtz, M. F., & Bucknall, T. K. (1999). Why we do the things we do: applying clinical decision-making frameworks to triage practice. *Accident & Emergency Nursing, 7,* 50-57.

Gerdtz, M. F., & Bucknall, T. (2001). Triage nurses' clinical decision making. An observational study of urgency assessment. *Journal of Advanced Nursing, 35* (4), 550-561.

Gilboy, N., Tanabe, P., Travers, D.A., Rosenau, A.M., & Eitel, D. R. (2005). *Emergency Severity Index, Version 4: Implementation Handbook*. AHRQ Publication No. 05-0046-2, May 2005. Agency for Healthcare Research and Quality, Rockville, MD. Retrieved March 31, 2010 from: http://www.ahrq.gov/research/esi/

Goransson, K. E., Ehrenberg, A., Marklund, B., & Ehnfors, M. (2006). Emergency department triage: Is there a link between nurses' personal characteristics and accuracy in triage decisions? *Accident and Emergency Nursing, 14,* 83-88.

Heerwegh, D., &Loosveldt, G. (2006). Personalizing e-mail contacts: Its influence on web survey response rate and social desirability response bias. *International Journal of Public Opinion Research, 19*(2), 258-268.

Hinds, P. S., Chaves, D. E., & Cypess, S. M. (1992). Context as a source of meaning and understanding. *Qualitative Health Research, 2* (1), 61-74.

Hostetler, M. A., Mace, S., Brown, K., Finkler, J., Hernandez, D., Krug, S. E., et al. (2007). Emergency Department overcrowding and children. *Pediatric Emergency Care,* 23(7), 507-515.

Institute of Medicine (2006). The Future of Emergency Care in the United States Health System. Retrieved July 7, 2007 from: http://www.iom.edu/?id=16107&redirect=0

Jadav, M. A. R., Lloyd, G., McLauchlan, C., & Hayes, C. (2009). Routine pain scoring does not improve analgesia provision for children in the emergency department. *Emergency Medicine Journal,* 26, 695-697. doi: 10.1136/emj.2008.065193. Retrieved April 1, 2010 from: **http://emj.bmj.com/content/26/10/695.full.html**

James, C. A., Bourgeois, F. T., & Shannon, M. W. (2005). Association of race/ethnicity with emergency department wait times. *Pediatrics, 115*(3), 310-315.

Johnston, C C., Bournaki, M., Gagnon, A. J., Pepler, C. J., & Bourgault, P. (2005). Self-reported pain intensity and associated distress in children aged 4-18 years on

admission, discharge, and one-week follow up to emergency department. *Pediatric Emergency Care, 21*(5), 342-346.

Kaplan, C. P., Sison, C., & Platt, S. L. (2008). Does a pain scale improve pain assessment in the pediatric emergency department? *Pediatric Emergency Care, 24*(9), 605-608.

Kellermann, A. (2006). Crisis in the Emergency Department. *The New England Journal of Medicine, 355*(13), 1300-1303.

Kelly, A., Powell, C. V., & Williams, A. (2002). Parent visual analogue scale ratings of children's pain do not reliably reflect pain reported by child. *Pediatric Emergency Care,* 18 (3), 159-162.

LeVasseur, J.J., (2003). The problem of bracketing in phenomenology. *Qualitative Health Research, 13*(3), 408-420.

Lopez, K. A., & Willis, D. G. (2004. Descriptive versus interpretive phenomenology: Their contributions to nursing knowledge. *Qualitative Health Research, 14* (5), 726-735.

MacLean, S., Obispo, J., & Young, K. D. (2007). The gap between pediatric emergency department procedural pain management treatments available and actual practice. *Pediatric Emergency Care, 23* (2), 87-93.

Maldonado, T., & Avner, J. R. (2004). Triage of the pediatric patient in the emergency department: Are we all in agreement? *Pediatrics, 114*(2), 356-360.

Margaret, N.D., Clark, T.A., Warden, C.R., Magnusson, A.R., & Hedges, J.R. (2002). Patient satisfaction in the emergency department – A survey of pediatric patients and their parents. *Academic Emergency Medicine,* 9 (12), 1379-1387

Morse, J., & Richards, L. (2002). Readme first for a user's guide to qualitative methods. Thousand Oaks, CA: Sage Publications.

Petrack, E.M., Christopher, N. C., & Kriwinsky, J. (1997). Pain management in the emergency department: Patterns of analgesic utilization. *Pediatrics,* 99 (5), 711-715.

Patel, V., Gutnik. L., Kurlin, D. R., & Pusic, M. (2008). Calibrating urgency: Triage decision-making in a pediatric emergency department. *Advances in Health Science Education, 13*, 503-520.

Pedhazer, E. J. (1997). Multiple regression in behavioral research explanation and prediction (3rd Ed). United States: Thompson Learning.

Polit, D., E. & Beck, C. T. (2004). Nursing research: Principles and methods (7th Ed). Philadelphia: Lippincott, Williams & Wilkins.

Probst, B. D., Lyons, E., Leonard, D., & Esposito, T. J. (2005). Factors affecting emergency department assessment and management of pain in children. *Pediatric Emergency Care, 21*(5), 298-305.

Puntillo, K., Neighbor, M., O'Neil, N., & Nixon, R. (2003). Accuracy of emergency nurses in assessment of patient's pain. *Pain Management Nursing,* 4(4), 171-175.

Rajasagaram, U., Taylor, D. M., Braitberg, G., Pearselll, J. P., & Capp, B. A. (2009). Pediatric pain assessment: Differences between triage nurse, child and parent. *Journal of Pediatrics and Child Health,* 45, 199-203.

Ramponi, D. (2009). Reducing pain in pediatric procedures in the emergency department. *Journal of Emergency Nursing,* 35, 379-382.

Schaefer, D. R. & Dillman, D. A. (1998). Development of a standard e-mail methodology: Results of an experiment. *Public Opinion Quarterly, 62*, 378-397. Retrieved January 30, 2009 from: http://www.sesrc.wsu.edu/dillman/papers.htm.

Simons, J., Franck, L. & Roberson, E. (2001). Parent involvement in children's pain care: Views of parents and nurses. *Journal of Advanced Nursing, 36*(4), 591-599.

Singer, A. J., Gulla, J. & Thode, H. C. (2002). Parents and practitioners are poor judges of young children's pain severity. *Academic Emergency Medicine,* 9(6), 609-612.

Stocké, V., & Hunkler, C. (2007). Measures of desirability beliefs and their validity as indicators for socially desirable responding. *Field methods, 19*(3), 313-336.

Streiner, D. L., & Norman, G. R. (2003). Health Measurement Scales a practical guide to their development and use. 3rd Ed., New York: Oxford University Press, Inc.

Tamayo-Sarver, J. H., Hinze, S. W., Cydulka, R. K., & Baker, D. W. (2003). Racial and ethnic disparities in emergency department analgesic prescription. *American Journal of Public Health, 93*(12), 2067-2073.

Tanabe, P., and Buschmann, M. (1999). A prospective study of ED pain management practices and the patient's perspective. *Journal of Emergency Nursing, 25*(X), 171-177.

Todd, K. H. (2001). Influence of ethnicity on emergency department pain management. *Emergency Medicine, 13*, 274-278.

Todd, K. H., Samaroo, N., & Hoffman, J. R. (1993). Ethnicity as a risk factor for inadequate emergency department analgesia. *Journal of the American Medical Association,* 269, 1537-1539.

Trzeciak S, and Rivers E. (2003). Emergency Department overcrowding in the United States: An emerging threat to patient safety and public health. *Emergency Medicine Journal, 20*(5), 402-405. Retrieved November 5, 2005 from: http://emj.bmjjournals.com/cgi/contents/full/20/5/402.

UCLA: Academic Technology Services, Statistical Consulting Group. Introduction to SAS. from:http://www.ats.ucla.edu/stat/sas/notes2/ (accessed March 15, 2010).

Van Hulle, Vincent, C., & Denyes, M. (2004). Relieving children's pain: Nurses abilities and analgesic administration practices. *Journal of Pediatric Nursing, 19* (1), 40-50.

Whittemore, R., Chase, S., & Mandle, C. L. (2001). Validity in qualitative research. *Qualitative Health Research, 11(*4), 522-537.

Zumbo, B. D., & Ochieng, C. O. (2002). The effects of various configurations of likert, ordered categorical, or rating scale data on the ordinal logistic regression pseudo R-squared measure of fit: The case of the cumulative logit model. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 1-5, 2002)

Appendices

Appendix A

DEMOGRAPHIC DATA FORM

Demographic Data Form – Phase I

Date _____ Subject # _____
Interview #_____

Age: _____ Sex: Male _____ Female _____

Racial/Ethnic Identification:
_____White (not of Hispanic origin)
_____Black/African-American (not of Hispanic origin)
_____Hispanic (including Black individuals whose origins are Hispanic)
_____Chinese/Chinese-American
_____Japanese/Japanese-American
_____Filipino/Philipino
_____Other Asian _____
_____American Indian/Alaskan Native
_____Mexican/Mexican-American
_____Latin-American/Latino
_____Other Spanish/Spanish-American _____
_____ Other_____

Nursing Education:

Associate in Nursing Degree _____

Bachelor of Science in Nursing Degree_____

Other_____

Years of Emergency Nursing Experience_____

Advanced certification_____

Are you a parent yourself? Yes_____ No_____

Appendix B

INTERVIEW GUIDING QUESTIONS (QUALITATIVE COMPONENT)

You were recently asked to participate in a research study to describe the cognitive processes Emergency Department (ED) nurses use in decision-making regarding triage and pediatric pain assessment and management, as well as the external and internal factors influencing triage decisions and pain interventions.

1) Did you agree to participate?

If *yes*:

2) On what did you base your decision to participate?

If *no*:

On what did you base your decision not to participate?

3) What was your understanding of the study?

4) Tell me about a situation in which you felt very good about your triage decision for a pediatric patient in pain?

5) Tell me about a situation in which you did NOT feel good about your triage decision of a pediatric patient in pain?

6) What things help make decisions?

7) What things hinder making decisions?

8) What else can you tell me about pediatric ED nursing and pain management of children?

Appendix C

Morton Plant Mease Baycare Health System Letter of Support

Morton Plant Mease
BayCare Health System

MEASE DUNEDIN HOSPITAL
601 Main Street
Dunedin, FL 34698
T. 727.733.1111
www.mpmhealth.com

April 13, 2009

USF College of Nursing
12901 Bruce B Downs Blvd.
Tampa, FL 33612

Dear Ms. Russo:

Thank you for your presentation to the MPM Nursing Research and Outcomes Council on 2/13/08. The group enjoyed hearing about your research proposal and the Emergency Room group is looking forward to talking to you.

Morton Plant Mease will be happy to provide access to our emergency room nurses for your dissertation research. We can provide a room for your interviews. Additionally that room would be available to you should any participant become upset and need assistance. You will need to complete and submit the BayCare IRB application. This should be done after you have approval from the USF IRB. The application will be provided in a separate communication.

Again thank you.

Sue Hartranft

Sue Hartranft MS, ARNP, CNL
Coordinator, Nursing Research
Morton Plant Mease Health Care

cc: Susan Binkowski

Appendix D

Tampa General Hospital Office of Clinical Research Letter

Tampa General Hospital

Tuesday, May 26, 2009

Teresa Russo, RN, MSN
TGH Nursing Research
4134 Key Thatch Drive
Tampa, FL 33610

RE: **Factors Affecting the Process of Clinical Decision-Making in Pediatric Pain Management by Emergency Department Nurses**
IRB #: **107869**

Dear Ms. Russo:

The above referenced protocol has been reviewed and approved by the TGH Office of Clinical Research for conduct at Tampa General Hospital (TGH) pending the Modification Request approval of the USF Institutional Review Board. **Please forward a copy of the IRB approval to the Office of Clinical Research upon receipt.**

- Subsequent approval and study continuation are based on our timely receipt of annually approved Continuing Review documents from the IRB reviewing this study. These can be submitted to the Office of Clinical Research in the Cedar Building, Room E-145 at Tampa General Hospital.
- Please note that any documents submitted for IRB review must also be received in our office **within thirty (30) days prior to IRB submission.** This includes all protocol modifications, adverse events, amendments, and other changes requiring IRB review.
- Further, it is the responsibility of the Principal Investigator to guarantee that an adequate number of study coordinators and research staff exist to ensure patient safety at this facility.
- It is also the Principal Investigator's responsibility to ensure all areas of the hospital affected by this protocol are informed and aware of the details of the study.
- During the conduct of this study at TGH, you are expected to be in compliance with all policies and procedures of this facility related to research.
- It is the Principal Investigator's responsibility to ensure that all phase II-IV drug and device trials and all NIH-funded studies must be registered at ClinicalTrials.gov within 21 days of enrollment of the first participant.

If a need arises to close a study to enrollment due to the loss of sufficient staff to conduct the study, non-compliance or non-payment, the TGH Office of Clinical Research may take such an action.

Sincerely,

Anna Valencia
Director, Office of Clinical Research

cc: Sally Houston, MD, TGH Chief Medical Officer
Henry Zych, USF Division of Sponsored Research
Corinne Walters, USF Health Sponsored Research Administrator
TGH File

P.O. Box 1289 •Tampa, Florida 33601-1289 •(813) 844-7000 •www.tgh.org
Affiliated with the USF College of Medicine

Appendix E

Human Subject Consent Form A - Phase I

USF
UNIVERSITY OF
SOUTH FLORIDA

IRB Approval
FWA 00001669
IRB Number: 107869I
From: 6-5-09
Thru: 4-23-10

Informed Consent to Participate in Research

Information to Consider Before Taking Part in this Research Study

IRB Study # _____

Researchers at the University of South Florida (USF) study many topics. To do this, we need the help of people who agree to take part in a research study. This form tells you about this research study.

We are asking you to take part in a research study that is called: Factors Affecting the Process of Clinical Decision-making in Pediatric Pain Management by Emergency Department Nurses

The person who is in charge of this research study is Teresa A. Russo RN, MSN. This person is called the Principal Investigator.

The research will be done at:
Tampa General Hospital

This research is being paid for in part, by a Research Award from The Delta Beta-at-large Chapter of Sigma Theta Tau International.

Purpose of the study

The purpose of this study is to:

- Describe the cognitive processes/knowledge sources Emergency Department (ED) nurses use in decision-making regarding triage and pediatric pain assessment and management, as well as the external and internal factors influencing triage decisions and pain interventions.
- This study is being conducted by a doctoral student as part of the requirements for a dissertation.

Study Procedures

If you take part in this study, you will be asked to:

- Participate in Phase I which consists of an interview with the principle investigator, lasting approximately 1 hour,
    - If you agree to participate in an interview, it will be conducted at the hospital where you work, (Tampa General Hospital) in a designated private room or area, to maintain your confidentiality. The interview will be audio recorded, and notes written by hand, for analysis by the principle investigator. You would be asked to complete a short demographic data form. There would be one interview, lasting approximately 1 hour.
    - You would need to agree to audio-recording of the interviews in order to participate.
        1. Recordings of interviews will be kept on a digital recorder by the researcher and transcribed to a password protected computer for analysis.

2. Once transcription and reviewing is completed, then recordings will be destroyed. All names and identifying information will be removed to protect confidentiality of informants.

- A sub-set of participants, chosen at random, will be asked to read the data analysis interpretations made by the PI to verify whether the resultant model reflects their experiences. All names and identifying information will be removed to protect confidentiality of informants.

Alternatives

You have the alternative to choose not to participate in this research study.

Benefits

We don't know if you will get any benefits by taking part in this study.

Risks or Discomfort

This research is considered to be minimal risk. That means that the risks associated with this study are the same as what you face every day. There are no known additional risks to those who take part in this study.

Compensation

We will not pay you for the time you volunteer while being in this study.

Conflict of Interest Statement

There are no known conflicts of interest involved with this study

Confidentiality

We must keep your study records as confidential as possible. Audiotapes of interviews will be kept in a locked cabinet by the PI, until all transcription and reviewing is completed, then tapes will be destroyed to protect your privacy to the full extent of the law.

However, certain people may need to see your study records. By law, anyone who looks at your records must keep them completely confidential. The only people who will be allowed to see these records are:

- The research team, including the Principal Investigator, study coordinator, research nurses, and all other research staff.
- Certain government and university people who need to know more about the study. For example, individuals who provide oversight on this study may need to look at your records. This is done to make sure that we are doing the study in the right way. They also need to make sure that we are protecting your rights and your safety. These include:
  - The University of South Florida Institutional Review Board (IRB) and the staff that work for the IRB. Other individuals who work for USF that provide other kinds of oversight may also need to look at your records.
  - The Department of Health and Human Services (DHHS).
  - Tampa General Hospital and the staff that work for the TGH Office of Clinical Research.

We may publish what we learn from this study. If we do, we will not let anyone know your name. We will not publish anything else that would let people know who you are.

Voluntary Participation / Withdrawal

You should only take part in this study if you want to volunteer. You should not feel that there is any pressure to take part in the study, to please the investigator or the research staff. You are free to participate in this research or withdraw at any time. There will be no penalty or loss of benefits you are entitled to receive if you

stop taking part in this study. Your decision to participate or not to participate will not affect your student status (if you are a student), or job status.

Questions, concerns, or complaints

If you have any questions, concerns or complaints about this study, call Teresa Russo at 813-468-0508.

If you have questions about your rights as a participant in this study, general questions, or have complaints, concerns or issues you want to discuss with someone outside the research, call the Division of Research Integrity and Compliance of the University of South Florida at (813) 974-9343.

If you experience an unanticipated problem related to the research call Teresa Russo at 813-468-0508.

Consent to Take Part in this Research Study

It is up to you to decide whether you want to take part in this study. If you want to take part, please sign the form, if the following statements are true.

I freely give my consent to take part in this study. I understand that by signing this form I am agreeing to take part in research. I have received a copy of this form to take with me.

_____ _____

Signature of Person Taking Part in Study Date

_____

Printed Name of Person Taking Part in Study

Statement of Person Obtaining Informed Consent

I have carefully explained to the person taking part in the study what he or she can expect.

I hereby certify that when this person signs this form, to the best of my knowledge, he or she understands:

- What the study is about.
- What procedures/interventions/investigational drugs or devices will be used.
- What the potential benefits might be.
- What the known risks might be.

_____ _____

Signature of Person Obtaining Informed Consent Date

_____

Printed Name of Person Obtaining Informed Consent

Appendix F

Human Subjects Consent Form B – Phase I

Institutional Review Board
207 Jeffords, MS 143
Clearwater, FL 33756
(727) 461-8311
FX: (727) 461-8967

BAYCARE PASCO-PINELLAS INSTITUTIONAL REVIEW BOARD

May 29, 2009

IRB #2009.012 – Factors Affecting the Process of Clinical Decision-making in Pediatric Pain Management by Emergency Department Nurses.
Teresa Russo, RN, MSN

The BayCare Pasco-Pinellas Institutional Review Board (formerly known as the Morton Plant Hospital Institutional Review Board, the Mease Hospitals Institutional Review Board and the St. Anthony's Hospital Institutional Review Board) reviewed and approved via expedited review the following:

IRB #2009.012 – *Factors Affecting the Process of Clinical Decision-making in Pediatric Pain Management by Emergency Department Nurses* is approved via expedited review for up to one year, to expire May 14, 2010. This approval includes Appendices A, B, G and F. Expedition is based upon meeting the criteria in category 7 of the OHRP's expedited review categories (research on individual or group characteristics).

Informed Consent – the consent version MPMHC Version 1, Date of Consent 5/29/09 and the Authorization of Use and Disclosure of Protected Health Information Related to Investigational Treatment (no version) are approved and date stamped May 29, 2009.

- Any changes in the above referenced research may not be initiated without Institutional Review Board approval except in the event of a life-threatening situation where there is not sufficient time to obtain IRB approval.
- All emergency uses of a test article must be reported to the IRB within five (5) working days of occurrence.
- All changes in the protocol and informed consent must be reported to the Institutional Review Board.
- If there are any serious adverse events, the Chairman of the Institutional Review Board must be notified immediately in writing.
- It is the responsibility of the Principal Investigator and all members of the research team to comply with all aspects of the Health Insurance Portability and Accountability Act of 1996 (HIPAA) Privacy Rule.
- The Institutional Review Board is consistent with the requirements of FWA00011037. It is organized and operates according to GCP and the applicable laws and regulations.
- It is the responsibility of the research site to ensure that research patients are consented with the appropriate IRB approved Informed Consent. Informed consents reviewed and approved by the IRB are date stamped with the date of approval (generally consistent with the IRB meeting) and thus this approval date will not be consistent with the date the consent and accompanying approval letter are received by the research site.

Sincerely,

Gail Stanton, MD
Chair
BayCare Pasco-Pinellas Institutional Review Board

Informed Consent to Participate in Research

Information to Consider Before Taking Part in this Research Study

IRB Study # _____

Researchers at the University of South Florida (USF) study many topics. To do this, we need the help of people who agree to take part in a research study. This form tells you about this research study.

We are asking you to take part in a research study that is called: Factors Affecting the Process of Clinical Decision-making in Pediatric Pain Management by Emergency Department Nurses

The person who is in charge of this research study is Teresa A. Russo RN, MSN. This person is called the Principal Investigator. The sub-investigator for this study is Jacqueline Munro, RN, MSN

The research will be done at:
Mease Countryside Hospital
Morton Plant Hospital
Mease Dunedin Hospital
Morton Plant North Bay Hospital

This research is being paid for in part, by a research grant from Sigma Theta Tau, Delta-Beta at large Chapter

Purpose of the study

The purpose of this study is to:

- Describe the cognitive processes/knowledge sources Emergency Department (ED) nurses use in decision-making regarding triage and pediatric pain assessment and management, as well as the external and internal factors influencing triage decisions and pain interventions.
- This study is being conducted by a doctoral student as part of the requirements for a dissertation.

Study Procedures

If you take part in this study, you will be asked to:

- Participate in Phase I which consists of an interview with the principle investigator, lasting approximately 1 hour,
    - If you agree to participate in an interview, it will be conducted at the hospital where you work, in a designated private room or area, to maintain your confidentiality. The interview will be audio recorded, and notes written by hand, for analysis by the principle investigator. You would be asked to complete a short demographic data form. There would be one interview, lasting approximately 1 hour.
    - You would need to agree to audio-recording of the interviews in order to participate.
        1. Recordings of interviews will be kept on a digital recorder by the researcher and transcribed to a password protected computer for analysis.
        2. Once transcription and reviewing is completed, then recordings will be destroyed. All names and identifying information will be removed to protect confidentiality of informants.

- A sub-set of participants, chosen at random, will be asked to read the data analysis interpretations made by the PI to verify whether the resultant model reflects their experiences. All names and identifying information will be removed to protect confidentiality of informants.

Alternatives

You have the alternative to choose not to participate in this research study.

Benefits

We don't know if you will get any benefits by taking part in this study.

Risks or Discomfort

This research is considered to be minimal risk. That means that the risks associated with this study are the same as what you face every day. There is the potential risk of a breach in confidentiality, however every effort will be made to protect your confidential information, as written under the Confidentiality section below. There are no known additional risks to those who take part in this study.

Compensation

We will not pay you for the time you volunteer while being in this study.

Conflict of Interest Statement

There are no known conflicts of interest involved with this study

Confidentiality

We must keep your study records as confidential as possible. Audiotapes of interviews will be kept in a locked cabinet by the PI, until all transcription and reviewing is completed, then tapes will be destroyed to protect your privacy to the full extent of the law.

However, certain people may need to see your study records. By law, anyone who looks at your records must keep them completely confidential. The only people who will be allowed to see these records are:

- The research team, including the Principal Investigator, study coordinator, research nurses, and all other research staff.
- Certain government and university people who need to know more about the study. For example, individuals who provide oversight on this study may need to look at your records. This is done to make sure that we are doing the study in the right way. They also need to make sure that we are protecting your rights and your safety. These include:
  - Baycare Pasco-Pinellas Institutional Review Board and the staff that works for the IRB.
  - The University of South Florida Institutional Review Board (IRB) and the staff that work for the IRB. Other individuals who work for USF that provide other kinds of oversight may also need to look at your records.
  - The Department of Health and Human Services (DHHS).

We may publish what we learn from this study. If we do, we will not let anyone know your name. We will not publish anything else that would let people know who you are.

Voluntary Participation / Withdrawal

You should only take part in this study if you want to volunteer. You should not feel that there is any pressure to take part in the study, to please the investigator or the research staff. You are free to participate in this research or withdraw at any time. There will be no penalty or loss of benefits you are entitled to receive if you stop taking part in this study. Your decision to participate or not to participate will not affect your student status (if you are a student), or job status.

Questions, concerns, or complaints

If you have any questions, concerns or complaints about this study, call Teresa Russo at 813-468-0508.

If you have questions about your rights as a participant in this study, general questions, or have complaints, concerns or issues you want to discuss with someone outside the research, call the Chair, Baycare Pasco-Pinellas Institutional Review Board at (727) 461-8311.

If you experience an unanticipated problem related to the research call Teresa Russo at 813-468-0508.

Consent to Take Part in this Research Study

It is up to you to decide whether you want to take part in this study. If you want to take part, please sign the form, if the following statements are true.

I freely give my consent to take part in this study. I understand that by signing this form I am agreeing to take part in research. I have received a signed copy of this form to take with me.

Signed:

_____ _____

Signature of Person Taking Part in Study Date

_____

Printed Name of Person Taking Part in Study

Statement of Person Obtaining Informed Consent

I have carefully explained to the person taking part in the study what he or she can expect.

I hereby certify that when this person signs this form, to the best of my knowledge, he or she understands:

- What the study is about.
- What procedures/interventions/investigational drugs or devices will be used.
- What the potential benefits might be.
- What the known risks might be.

_____ _____

Signature of Person Obtaining Informed Consent Date

_____

Printed Name of Person Obtaining Informed Consent

AUTHORIZATION OF USE AND DISCLOSURE OF PROTECTED HEALTH INFORMATION RELATED TO INVESTIGATIONAL TREATMENT

PROTOCOL TITLE: Factors Affecting the Process of Clinical Decision-making in Pediatric Pain Management by Emergency Department Nurses

SPONSOR: None

INVESTIGATOR: Teresa A. Russo RN, MSN.

SUBINVESTIGATORS: Jacqueline Munro RN, MSN

PURPOSE:
The Health Insurance Portability and Accountability Act of 1996 (HIPAA) Privacy Rule was designed to protect the privacy of patients and their protected health information (PHI). This authorization explains how protected health information (PHI) collected about you for this research may be used. Your protected health information (PHI) includes, but is not limited to, information that was collected for your entry into the research and information that is collected during the study. This includes your name, date of birth, sex, address, social security number, dates of treatment, and other personal information about you that could identify the health information as yours. In most cases, for research purposes, patients are identified by an identification number or code and not by name. This allows the study doctor and study staff to share your information with the sponsors of the study without identifying you. By signing this authorization you will allow the study doctor and study staff to use your protected health information to carry out and evaluate this study.

INFORMATION TO BE USED OR DISCLOSED:
The information to be used or disclosed for this research includes: No personal identifying information will be used for this study. No patients or PHI will be used. This study involved interviewing nurses. Minimal identifying information will be asked for. Signed consent forms will be kept in a locked box by the investigator.

PURPOSE OF USE OR DISCLOSURE:
The information listed above will be disclosed for the following reasons: We must keep your study records as confidential as possible. Audiotapes of interviews will be kept in a locked cabinet by the PI, until all transcription and reviewing is completed, then tapes will be destroyed to protect your privacy to the full extent of the law.
However, certain people may need to see your study records. By law, anyone who looks at your records must keep them completely confidential.

PERSONS AUTHORIZED TO USE OR DISCLOSE INFORMATION:
Information listed above will be used or disclosed by:

- The research team, including the Principal Investigator, study coordinator, research nurses, and other research staff.
- The BayCare Pasco-Pinellas Institutional Review Board and the staff that works with them.

Patient Initials _____

- The University of South Florida Institutional Review Board (IRB) and the staff that work for the IRB.

We may publish what we learn from this study. If we do, we will not let anyone know your name. We will not publish anything else that would let people know who you are.

PERSONS OR ORGANIZATIONS TO WHOM INFORMATION MAY BE DISCLOSED:

Certain government and university people who need to know more about the study. For example, individuals who provide oversight on this study may need to look at your records. This is done to make sure that we are doing the study in the right way. They also need to make sure that we are protecting your rights and your safety. These include:

- The BayCare Pasco-Pinellas Institutional Review Board and the staff that work for the IRB
- The University of South Florida Institutional Review Board (IRB) and the staff that work for the IRB
- Other regulatory agencies such as the Food and Drug Administration and the Department of Health and Human Services Office of Civil Rights

EXPIRATION DATE OF AUTHORIZATION:
This authorization is effective through the end of the research study unless cancelled or terminated by the patient or the patient's personal representative.

RIGHT TO TERMINATE OR REVOKE AUTHORIZATION:
You may cancel or terminate this authorization by submitting a written letter of cancellation to the investigator in charge of this research Teresa Russo RN, MSN. You should contact: Teresa Russo RN, MSN at 813-468-0508 to cancel this authorization.

POTENTIAL FOR REDISCLOSURE:
Every effort will be made to keep your personal health information private. Once your PHI is shared with the individuals and/or organizations listed above, it may no longer be covered by the HIPAA Privacy Rule.

RIGHTS OF THE INDIVIDUAL:

You may refuse to sign this authorization.

If you start this research study and then cancel your permission you will not be able to continue in the study. If you decline having the interview with the investigator recorded, you will not be able to continue in this study.

Patient Initials _____

CONSENT

You have read this authorization very carefully. In addition, the investigator and or study staff have explained the purpose of this authorization to you. The investigator and or study staff have answered your questions to your satisfaction. You understand that if you decide not to participate in this research or withdraw your consent, this will not affect you in any way.

You understand that you will receive a signed and dated copy of this authorization.

By signing this authorization you have not waived any of your legal rights that you would otherwise have as a participant in a research study.

Date	Print name of Patient	Signature of Patient
Date	Person Obtaining Consent	Signature of Person Obtaining Consent

Patient Initials _____

Institutional Review Board
207 Jeffords, MS 143
Clearwater, FL 33756
(727) 461-8311
FX: (727) 461-8967

BAYCARE PASCO-PINELLAS INSTITUTIONAL REVIEW BOARD

May 15, 2009

IRB #2009.012 – Factors Affecting the Process of Clinical Decision-making in Pediatric Pain Management by Emergency Department Nurses.
Teresa Russo, RN, MSN

Dear Ms. Russo:

The Chair, BayCare Pasco-Pinellas Institutional Review Board and I reviewed your submission, *Factors Affecting the Process of Clinical Decision-making in Pediatric Pain Management by Emergency Department Nurses* on Friday May 15, 2009. At that time your study was determined to be eligible for expedited approval under category 7 of the OHRP's expedited review categories (research on individual or group characteristics). At this time, the only revision necessary prior to expedited approval is to the informed consent.

Please revise the consent and HIPAA Authorization as described below and upon receipt, your study will be approved via the expedited review process. Please feel free to contact me with any questions you might have. We look forward to working with you and to the successful conclusion of your research project.

Informed consent –

- ✓ The consent can not be on USF Letterhead or in USF format.
- ✓ Please add Jackie Munro to the first page as the sub-investigator.
- ✓ Please remove the footer and replace it with the informed consent version and date of consent on the left and a space for patient initials on the right.
  example: MPMHC Version 1-5/18/09 patient initials ____
  Page 1 of 3
- ✓ Under risks and discomfort, while there are no known physical risks associated with this study it is possible for a breach of confidentiality to occur and that would be a potential risk. Please add that to the risks section.
- ✓ Please add the BayCare Pasco-Pinellas Institutional Review Board under Confidentiality on page 2.
- ✓ Concerns about the rights of a BayCare team member taking part in your research should be addressed by the Chair, BayCare Pasco-Pinellas Institutional Review Board at (727) 461-8311. Please substitute this for the USF Division of Research on page 3 of the consent.
- ✓ BayCare IRB requires that subjects receive a copy of the consent after execution. Please add "signed" to the last line of the consent on page 3 just above signature of person taking part in the study.
- The HIPAA Authorization on page 2 addresses treatment. Since this is a research study of group and individual characteristics with no treatment phase, please remove the second paragraph under rights of the individual on page 2. The first line of the 3rd paragraph should be deleted as well.

Sincerely,

Neal Stecher, MA-Bioethics
Manager, Institutional Review Board
BayCare Pasco-Pinellas Institutional Review Board

Appendix G

Letter of introduction for Phase I interviews

Dear Emergency Nurse,

I would like to invite you to participate in a research study that will describe triage decision-making and pediatric pain assessment by emergency nurses. I am a doctoral student at the University of South Florida, conducting this study for my dissertation. I obtained your name from your response to an announcement posted at your hospital. I will not use your information for any other purpose, nor share your confidential information, as explained in the enclosed informed consent section.

Please read everything carefully. If you choose to participate, please sign the consent form, complete the demographic page and we will begin the interview. I will be audio recording the interview. If you have any concerns or change your mind, even as we begin the interview, do not hesitate to stop. If you have any questions about this study, you can call me at 813-468-0508.

Sincerely,

Teresa Russo MSN, RN

Research Resident/ Ph.D. candidate

University of South Florida College of Nursing, Ph.D. Program

Tampa, FL

Appendix H

Recruitment Flyer

ED Nurses needed to participate in research project!!!

Factors Affecting the Process of Clinical Decision-making in Pediatric Pain Management by Emergency Department Nurses
Dissertation Research Study

Can you give me an hour of your time?

Recruiting ED nurses who meet the following criteria:

Work more than 16 hours per week

Have more than 6 months experience as the triage nurse

Ideally, have completed an orientation to triage, or a triage course

Will agree to participate in an audio recorded interview

If you are interested in participating, or would like more information please take one of the tabs below and contact me by telephone or e-mail for more details. I am interested in interviewing triage nurses to ask about pediatric pain assessment and management decisions.

These interviews would be conducted during your off-duty hours, by appointment, in a designated location at your hospital. All personal information will be held confidential. You are under no obligation to participate. If you choose to participate, your responses may add to the knowledge base of Emergency Nursing.

All information will be held confidential

This study is being conducted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, USF College of Nursing.

This study has been approved by the USF IRB, and Baycare IRB.

Teresa Russo RN, MSN
PhD program, Doctoral candidate
University of South Florida, College of Nursing
Tampa, FL

Contact me: Teresa Russo
813-468-0508
E-mail: trusso@health.usf.edu

Teresa Russo RN, MSN
USF College of Nursing
Ph: 813-468-0508, Email: trusso@health.usf.edu

Appendix I

Letter of Introduction for Phase II Internet-based survey

Dear Emergency Nurse,

I would like to invite you to participate in a research study that will describe triage decision-making and pediatric pain assessment by emergency nurses. I am a doctoral student at the University of South Florida, conducting this study for my dissertation. I obtained your name from an e-mail list of members of the Emergency Nurses' Association. I will not use your information for any other purpose, nor share your confidential information.

We are asking you to take part in a research study that is called: Factors Affecting the Process of Clinical Decision-Making in Pediatric Pain Management by Emergency Department Nurses. If you agree to participate in the e-mailed survey, you will be able to complete it in your home, at your convenience. There will be a consent form to read, a short demographic form and a series of 48 case vignettes in which you would be asked one question about the vignettes. Your consent to participate is implied by your completion of the survey. Completed surveys will be retrieved by the principle investigator, stored on a password protected computer and entered into a data base for analysis . Your information would be kept confidential once received by the principle investigator.

Please read everything carefully. If you choose to participate, please follow the electronic link to the survey, complete the demographic page and begin the survey.

If you have any concerns or change your mind, do not hesitate to stop. If you have any questions about this study, you can call me at 813-468-0508.

Sincerely,

Teresa Russo RN, MSN, Doctoral Candidate

University of South Florida

College of Nursing, Doctoral Program

Tampa, FL

Appendix J

Human Subjects Consent Form- Phase II

Informed Consent to Participate in Research
Information to Consider Before Taking Part in this Research Study

IRB Study # 107869I

Researchers at the University of South Florida (USF) study many topics. To do this, we need the help of people who agree to take part in a research study. This form tells you about this research study.
We are asking you to take part in a research study that is called: Factors Affecting the Process of Clinical Decision-making in Pediatric Pain Management by Emergency Department Nurses

The person who is in charge of this research study is Teresa A. Russo RN, MSN. This person is called the Principal Investigator.

The research will be done by analyzing responses to an internet-based survey.

This research is being paid for, in part by a research award from Sigma Theta Tau, Delta Beta at-large Chapter.

Purpose of the study
The purpose of this study is to:

- Describe the cognitive processes/knowledge sources Emergency Department (ED) nurses use in decision-making regarding triage and pediatric pain assessment and management, as well as the external and internal factors influencing triage decisions and pain interventions.
- This study is being conducted by a doctoral student as part of the requirements for a dissertation.

Study Procedures
If you take part in this study, you will be asked to:

- Complete a survey on an internet website. If you choose to complete the survey, you will be asked to follow the electronic link provided in the e-mail inviting you to participate.
    - The survey should take no more than 1 hour of your time.
    - The survey includes a short demographic form and a series of 48 case vignettes in which you would be asked one question about the vignettes.
    - Choosing to participate will serve as your consent to participate in the study. You can stop at any time if you do not wish to continue.
    - Your information would be kept confidential once received by the principle investigator.

Alternatives

You have the alternative to choose not to participate in this research study.

Benefits

We don't know if you will get any benefits by taking part in this study.

Risks or Discomfort

This research is considered to be minimal risk. That means that the risks associated with this study are the same as what you face every day. There are no known additional risks to those who take part in this study.

Compensation

We will not pay you for the time you volunteer while being in this study.

Conflict of Interest Statement

There are no known conflicts of interest involved with this study

Confidentiality

We must keep your study records as confidential as possible. However, certain people may need to see your study records. By law, anyone who looks at your records must keep them completely confidential. The only people who will be allowed to see these records are:

- The research team, including the Principal Investigator, and all other research staff**.**
- Certain government and university people who need to know more about the study. For example, individuals who provide oversight on this study may need to look at your records. This is done to make sure that we are doing the study in the

right way. They also need to make sure that we are protecting your rights and your safety. These include:

- The University of South Florida Institutional Review Board (IRB) and the staff that work for the IRB. Other individuals who work for USF that provide other kinds of oversight may also need to look at your records.
- The Department of Health and Human Services (DHHS).

We may publish what we learn from this study. If we do, we will not let anyone know your name. We will not publish anything else that would let people know who you are.

Voluntary Participation / Withdrawal

You should only take part in this study if you want to volunteer. You should not feel that there is any pressure to take part in the study, to please the investigator or the research staff. You are free to participate in this research or withdraw at any time. There will be no penalty or loss of benefits you are entitled to receive if you stop taking part in this study. Your decision to participate or not to participate will not affect your student status (if you are a student), or job status.

Questions, concerns, or complaints

If you have any questions, concerns or complaints about this study, call Teresa Russo at 813-468-0508.

If you have questions about your rights as a participant in this study, general questions, or have complaints, concerns or issues you want to discuss with someone outside the research, call the Division of Research Integrity and Compliance of the University of South Florida at (813) 974-9343.

If you experience an unanticipated problem related to the research call Teresa Russo at 813-468-0508.

Consent to Take Part in this Research Study

It is up to you to decide whether you want to take part in this study. If you want to take part, please follow the directions to the survey below, if the following statements are true.

I freely give my consent to take part in this study. I understand that by completing the survey I am agreeing to take part in research. I have received a copy of this form to take with me.

Appendix K

Content Validity Index Survey for Triage Vignettes

Please read each of the following triage vignettes and respond to the 2 questions about the vignettes. Please enter an X under the column that corresponds to your answer choice, save the file and return to me via email (trusso@health.usf.edu)

Triage Vignettes	1. Is this question relevant to measuring some aspect of triage clinical decision-making? Please rate each vignette on a the 4-point scale below by placing an X in one of the boxes: 1 not relevant 2 slightly relevant 3 relevant 4 very relevant				2. Is there sufficient information in this vignette to make a triage decision? Please rate this vignette information on the 4 point scale below by placing an X in one of the boxes: 1 not sufficient 2 slightly sufficient 3 sufficient 4 very sufficient			
1. A woman enters the ED carrying a white male infant who has an obvious deformity of his left forearm. The infant is asleep in her arms, and the woman is quietly asking for help.								
2. The ED is extremely busy when a woman enters the ED entrance carrying a crying, Hispanic male infant, who has an obvious deformity of his right forearm.								
3. A man walks in the ED entrance with a Black school-aged boy crying and walking behind him. The child has a large bloody bandage on his left arm.								
4. A school-aged Hispanic girl walks into the ED with a woman who asks for help with her child who fell from a tree and is complaining of stomach pain.								
5. A woman comes to triage carrying a black male infant who is screaming, with his legs and arms drawn tightly to his body								
6. A man and woman run into the ED entrance carrying a Black female infant who is crying and has a bloody towel wrapped around her leg								
7. A white female infant who is quiet and alert, and has								

Triage Vignettes	1. Is this question relevant to measuring some aspect of triage clinical decision-making? Please rate each vignette on a the 4-point scale below by placing an X in one of the boxes: 1 not relevant 2 slightly relevant 3 relevant 4 very relevant				2. Is there sufficient information in this vignette to make a triage decision? Please rate this vignette information on the 4 point scale below by placing an X in one of the boxes: 1 not sufficient 2 slightly sufficient 3 sufficient 4 very sufficient			
a large swollen bruised area on her left leg is carried to triage by her parents.								
8. The ED is very busy when a white school age boy comes to triage with his mother crying and complaining of a headache.								
9. A black school age female walks to triage with her mother, bent over holding her stomach and crying.								
10. A woman comes to triage carrying a white male infant who is crying and has a large bruise on his head from falling out of bed.								
11. A school age white male who is quiet, holding his hand over his lower abdomen and bent over slightly, comes to triage with his mother.								
12. A Hispanic infant sleeping in an infant carrier is brought to triage. The infant has an obvious deformity of the right forearm.								
13. A Hispanic school age boy who is crying and complaining of a headache comes to the ED during a very busy evening shift.								
14. A woman carrying a sleeping Black male infant in an infant carrier comes to the ED. The infant has a large bruise on his forehead.								
15. A woman carries a screaming white female infant to triage in an infant carrier, with a large bruise on her forehead.								

Triage Vignettes	1. Is this question relevant to measuring some aspect of triage clinical decision-making? Please rate each vignette on a the 4-point scale below by placing an X in one of the boxes: 1 not relevant 2 slightly relevant 3 relevant 4 very relevant				2. Is there sufficient information in this vignette to make a triage decision? Please rate this vignette information on the 4 point scale below by placing an X in one of the boxes: 1 not sufficient 2 slightly sufficient 3 sufficient 4 very sufficient			
16. A school age Hispanic boy is carried to triage by a crying woman. The child is very quiet and has an obvious deformity of his left ankle.								
17. A woman carries a Black female infant to triage, who is quiet but lying with her arms and legs drawn tightly to her body.								
18. A woman walks into the ED with a school aged Black male who is quiet, walking slowly with his hand holding his left ribs tightly.								
19. A school age Hispanic female is crying and being carried into the ED with a large bruise on her right thigh, following a bicycle accident.								
20. A man and woman carry a Hispanic female infant into the ED who is crying and has large reddened blister area on her left thigh.								
21. A Black school age female who is very quiet comes to the ED with her mother limping on her left foot after playing volleyball.								
22. A White school age female who is crying and has a large red blistered area on her left arm comes to the ED with a woman.								
23. A man and woman come to the ED with a Hispanic female infant who is lying quietly in an infant carrier, with a large bruise on her forehead.								
24. A woman comes to triage with a White school age female who is quietly walking with her left forearm								

Triage Vignettes	1. Is this question relevant to measuring some aspect of triage clinical decision-making? Please rate each vignette on a the 4-point scale below by placing an X in one of the boxes: 1 not relevant 2 slightly relevant 3 relevant 4 very relevant				2. Is there sufficient information in this vignette to make a triage decision? Please rate this vignette information on the 4 point scale below by placing an X in one of the boxes: 1 not sufficient 2 slightly sufficient 3 sufficient 4 very sufficient			
supported with her right hand.								

Appendix L

Pediatric Triage Pain Assessment Scale

Triage Vignette Survey

The following are a series of simulated triage situations you might experience in your work setting in the Emergency Department. The information provided is not as detailed as you might want to obtain in an actual triage situation, so base you answer choice on your first reaction to the information in the vignette. Please read them carefully, and then choose the triage level you would assign for this patient in the space provided, according to the triage levels below.

This survey will use a 5 - level triage system based upon these categories:

Level 1 = Immediate (patient needs immediate evaluation and treatment)
Level 2 = Emergent (patient needs to be seen within 15 minutes)
Level 3 = Urgent (patient needs to be seen within 30 minutes)
Level 4 = Semi-urgent (patient needs to be seen within 60 minutes)
Level 5 = Non-urgent (patient needs to be seen within 120 minutes)

1. A woman enters the ED carrying a White male infant who has an obvious deformity of his left forearm. The infant is asleep in her arms, and the woman says he fell off the couch one hour ago.

- ○ Level 1 - Immediate
- ○ Level 2 - Emergent
- ○ Level 3 - Urgent
- ○ Level 4 - Semi-urgent
- ○ Level 5 - Non-urgent

Please indicate how you would determine or assign a pain level for this patient:

- ○ Ask parent
- ○ "Faces" pain scale
- ○ 0 -10 number rating
- ○ FLACC scale
- ○ Observation of behavior
- ○ Other

2. The ED is extremely busy when a woman enters the ED entrance carrying a crying, Hispanic male infant, who has an obvious deformity of his right forearm. The woman says he fell off the bed 1 hour ago.

- ○ Level 1 - Immediate
- ○ Level 2 - Emergent
- ○ Level 3 - Urgent
- ○ Level 4 - Semi-urgent
- ○ Level 5 - Non-urgent

Please indicate how you would determine or assign a pain level for this patient:

- Ask parent
- "Faces" pain scale
- 0 -10 number rating
- FLACC scale
- Observation of behavior
- Other

3. A man walks in the ED entrance accompanied by a Black school-aged boy who is crying and has a large bloody bandage on his left arm. The boy says he got cut on broken glass 20 minutes ago.

- Level 1 - Immediate
- Level 2 - Emergent
- Level 3 - Urgent
- Level 4 - Semi-urgent
- Level 5 - Non-urgent

Please indicate how you would determine or assign a pain level for this patient:

- Ask parent
- "Faces" pain scale
- 0 -10 number rating
- FLACC scale
- Observation of behavior
- Other

4. A school-aged Hispanic girl who is quiet and walking with her arm across her stomach walks into the ED with a woman who asks for help. The girl says she fell from a tree 1 hour ago, and is complaining of stomach pain.

- Level 1 - Immediate
- Level 2 - Emergent
- Level 3 - Urgent
- Level 4 - Semi-urgent
- Level 5 - Non-urgent

Please indicate how you would determine or assign a pain level for this patient:

- Ask parent
- "Faces" pain scale
- 0 -10 number rating
- FLACC scale
- Observation of behavior
- Other

5. A woman comes to triage carrying a Black male infant who is screaming, with his legs and arms drawn tightly to his body. The woman says he has been like this for 2 hours.

- Level 1 - Immediate
- Level 2 - Emergent
- Level 3 - Urgent
- Level 4 - Semi-urgent
- Level 5 - Non-urgent

Please indicate how you would determine or assign a pain level for this patient:

- Ask parent
- "Faces" pain scale
- 0 -10 number rating
- FLACC scale
- Observation of behavior
- Other

6. A man and woman run into the ED entrance carrying a Black female infant who is crying and has a bloody towel wrapped around her leg. The woman says the infant fell on broken glass 20 minutes ago.

- Level 1 - Immediate
- Level 2 - Emergent
- Level 3 - Urgent
- Level 4 - Semi-urgent
- Level 5 - Non-urgent

Please indicate how you would determine or assign a pain level for this patient:

- Ask parent
- "Faces" pain scale
- 0 -10 number rating
- FLACC scale
- Observation of behavior
- Other

7. A White female infant who is quiet and alert, and has a large swollen bruised area on her left leg is carried to triage by her parents, who state the child fell off a chair 1 hour ago.

- Level 1 - Immediate
- Level 2 - Emergent
- Level 3 - Urgent
- Level 4 - Semi-urgent
- Level 5 - Non-urgent

Please indicate how you would determine or assign a pain level for this patient:

- Ask parent
- "Faces" pain scale
- 0 -10 number rating
- FLACC scale
- Observation of behavior
- Other

8. The ED is very busy when a White school age boy who is crying and complaining of a headache that began after lunch comes to triage with his mother.

- Level 1 - Immediate
- Level 2 - Emergent
- Level 3 - Urgent
- Level 4 - Semi-urgent
- Level 5 - Non-urgent

Please indicate how you would determine or assign a pain level for this patient:

- Ask parent
- "Faces" pain scale
- 0 -10 number rating
- FLACC scale
- Observation of behavior
- Other

9. A Black school age female who is bent over holding her stomach and crying walks to triage with her mother. The girl says she fell while playing at school today.

- Level 1 - Immediate
- Level 2 - Emergent
- Level 3 - Urgent
- Level 4 - Semi-urgent
- Level 5 - Non-urgent

Please indicate how you would determine or assign a pain level for this patient:

- Ask parent
- "Faces" pain scale
- 0 -10 number rating
- FLACC scale
- Observation of behavior
- Other

10. A woman comes to triage carrying a White male infant who is crying and has a large bruise on his head. The woman says he fell out of bed 30 minutes ago.

- ○ Level 1 - Immediate
- ○ Level 2 - Emergent
- ○ Level 3 - Urgent
- ○ Level 4 - Semi-urgent
- ○ Level 5 - Non-urgent

Please indicate how you would determine or assign a pain level for this patient:

- ○ Ask parent
- ○ "Faces" pain scale
- ○ 0 -10 number rating
- ○ FLACC scale
- ○ Observation of behavior
- ○ Other

11. A school age White male who is quiet, holding his hand over his lower abdomen and bent over slightly, comes to triage with his mother. He says he woke up in the morning with pain in his lower stomach area.

- ○ Level 1 - Immediate
- ○ Level 2 - Emergent
- ◉ Level 3 - Urgent
- ○ Level 4 - Semi-urgent
- ○ Level 5 - Non-urgent

Please indicate how you would determine or assign a pain level for this patient:

- ○ Ask parent
- ○ "Faces" pain scale
- ○ 0 -10 number rating
- ○ FLACC scale
- ○ Observation of behavior
- ○ Other

12. A Hispanic male infant sleeping in an infant carrier is brought to triage. The infant has an obvious deformity of the right forearm. The mother says he fell off the couch 1 hour ago.

- ○ Level 1 - Immediate
- ○ Level 2 - Emergent
- ○ Level 3 - Urgent
- ○ Level 4 - Semi-urgent
- ○ Level 5 - Non-urgent

Please indicate how you would determine or assign a pain level for this patient:

- Ask parent
- "Faces" pain scale
- 0 -10 number rating
- FLACC scale
- Observation of behavior
- Other

13. A Hispanic school age boy who is crying and complaining of a headache comes to the ED with his mother during a very busy evening shift. He says he fell and hit his head at school today.

- Level 1 - Immediate
- Level 2 - Emergent
- Level 3 - Urgent
- Level 4 - Semi-urgent
- Level 5 - Non-urgent

Please indicate how you would determine or assign a pain level for this patient:

- Ask parent
- "Faces" pain scale
- 0 -10 number rating
- FLACC scale
- Observation of behavior
- Other

14. A woman carrying a sleeping Black male infant comes to the ED. The infant has a large bruise on his forehead. The woman says he fell off the couch 30 minutes ago.

- Level 1 - Immediate
- Level 2 - Emergent
- Level 3 - Urgent
- Level 4 - Semi-urgent
- Level 5 - Non-urgent

Please indicate how you would determine or assign a pain level for this patient:

- Ask parent
- "Faces" pain scale
- 0 -10 number rating
- FLACC scale
- Observation of behavior
- Other

15. A woman carries a screaming White female infant to triage in an infant carrier, with a large bruise on her forehead. The woman says she fell off the bed 30 minutes ago.

- Level 1 - Immediate
- Level 2 - Emergent
- Level 3 - Urgent
- Level 4 - Semi-urgent
- Level 5 - Non-urgent

Please indicate how you would determine or assign a pain level for this patient:

- Ask parent
- "Faces" pain scale
- 0 -10 number rating
- FLACC scale
- Observation of behavior
- Other

16. A school age Hispanic boy is carried to triage by a crying woman. The child is very quiet and has an obvious deformity of his left ankle from falling at school.

- Level 1 - Immediate
- Level 2 - Emergent
- Level 3 - Urgent
- Level 4 - Semi-urgent
- Level 5 - Non-urgent

Please indicate how you would determine or assign a pain level for this patient:

- Ask parent
- "Faces" pain scale
- 0 -10 number rating
- FLACC scale
- Observation of behavior
- Other

17. A woman carries a Black female infant to triage, who is quiet but lying with her arms and legs drawn tightly to her body. The woman says she has been like this for 2 hours.

- Level 1 - Immediate
- Level 2 - Emergent
- Level 3 - Urgent
- Level 4 - Semi-urgent
- Level 5 - Non-urgent

Please indicate how you would determine or assign a pain level for this patient:

- Ask parent
- "Faces" pain scale
- 0 -10 number rating
- FLACC scale
- Observation of behavior
- Other

18. A woman walks into the ED with a school aged Black male who is quiet, walking slowly with his hand holding his left ribs tightly. He says he fell while coming home from school.

- Level 1 - Immediate
- Level 2 - Emergent
- Level 3 - Urgent
- Level 4 - Semi-urgent
- Level 5 - Non-urgent

Please indicate how you would determine or assign a pain level for this patient:

- Ask parent
- "Faces" pain scale
- 0 -10 number rating
- FLACC scale
- Observation of behavior
- Other

19. A school age Hispanic female is crying and being carried into the ED with a large bruise on her right thigh, following a bicycle accident 20 minutes ago.

- Level 1 - Immediate
- Level 2 - Emergent
- Level 3 - Urgent
- Level 4 - Semi-urgent
- Level 5 - Non-urgent

Please indicate how you would determine or assign a pain level for this patient:

- Ask parent
- "Faces" pain scale
- 0 -10 number rating
- FLACC scale
- Observation of behavior
- Other

20. A man and woman carry a Hispanic female infant into the ED who is crying and has a large reddened blistered area on her left thigh from pulling a cup of coffee over on herself 20 minutes ago.

- Level 1 - Immediate
- Level 2 - Emergent
- Level 3 - Urgent
- Level 4 - Semi-urgent
- Level 5 - Non-urgent

Please indicate how you would determine or assign a pain level for this patient:

- Ask parent
- "Faces" pain scale
- 0 -10 number rating
- FLACC scale
- Observation of behavior
- Other

21. A Black school age female who is very quiet, but limping on her left foot after playing volleyball at school comes to the ED with her mother.

- Level 1 - Immediate
- Level 2 - Emergent
- Level 3 - Urgent
- Level 4 - Semi-urgent
- Level 5 - Non-urgent

Please indicate how you would determine or assign a pain level for this patient:

- Ask parent
- "Faces" pain scale
- 0 -10 number rating
- FLACC scale
- Observation of behavior
- Other

22. A White school age female who is crying and has a large red blistered area on her left arm after knocking over a cup of coffee 20 minutes ago comes to the ED with her mother.

- Level 1 - Immediate
- Level 2 - Emergent
- Level 3 - Urgent
- Level 4 - Semi-urgent
- Level 5 - Non-urgent

About the Author

Teresa Russo received a Bachelor's Degree in Nursing from the University Of South Florida College Of Nursing in 1976; the second graduating class from the college. During the ensuing years she worked in the hospital-based clinical setting, primarily in Emergency Nursing, and was active with the local Emergency Nurse's Association. She received an MSN from the University of Florida in 1993. Her nursing experience gradually moved towards nursing education, including specific required nursing courses, emergency department nurse educator and full time nursing faculty positions.

In 2004 she began Ph.D. coursework at the University Of South Florida College Of Nursing and accepted a Nursing Faculty position with Hillsborough Community College Nursing Program. While in the Ph.D. program she served as a Research Resident and Graduate Teaching Assistant. She is currently an Assistant Professor at South University College of Nursing.