PAIN ASSESSMENT IN PEDIATRIC TRAUMA PATIENTS:

A CHART REVIEW

Abstract

By MaryLu Hubbe, RN, BSN
Washington State University Yakima
May 2001

Chair: Margaret Bruya

A retrospective chart review was done on 63 pediatric trauma patients in three hospitals in a Central Washington community. A survey tool was developed for the review. Demographic, injury, trauma, and assessment data were gathered, with a special focus on pain management. Descriptive statistics were used to analyze data. Overall, the charts reviewed reflected national pediatric injury admissions.

86% of the patients did receive some pain medication during their emergency-department stay. However, data demonstrated that there was no documented use of pain assessment scales nor were narrative descriptions of pain charted in any of the reviewed cases. Also, there was no documented re-assessment or re-evaluation. There was no evidence that pain was adequately controlled. Without proper assessment and documentation, appropriate treatment of pain is definitely an unknown.

The role of the nurse practitioner is identifying the barriers, aiding in the elimination of barriers, through proper education of both the caregivers and the patients, and insisting on accountability of the medical institution to the clinicians.
To the faculty of Washington State University:

The members of the Committee appointed to examine the project of MaryLu Hubbe find it satisfactory and recommend that it be accepted.

Margaret Bruya, DNSc, ARNP, RN
Chair

Mary Anne Reynolds, PhD, RN, CNS

Gail Synoground, PhD, ARNP, RN
Acknowledgements

I would like to thank my husband for his support, tolerance, and computer expertise during the past four years, as I have worked advancing my degree in nursing. Many times when I was not able to see the light at the end, you did. In addition to my husband, my daughters Laura and Mari need to be thanked for the many times I needed to use the computer, or “go online”, or use the telephone when they wanted to. Thank you so much for letting me. Thank you for your words of praise, all three of you.

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Of course, I want to thank Margaret Bruya as the chair of my committee and her vision that this project is complete-able. Again, for the time on the telephone, away from your family, I appreciate every minute you gave to this project.

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This research project could not have been done without the health information personnel who made available the archived medical records. Thank you.
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Dedication

This project is dedicated to all nurses
and nurse practitioners who provide
care for injured children in pain.
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Pain assessment in pediatric trauma patients:

A chart review

Carlos is a 14 year old male Hispanic patient who has been brought to the emergency department by his parents one hour after colliding with another soccer player. He continues to have rib and chest pain. He is in the emergency department for two hours and 50 minutes, he has 14 different activities to endure, throughout which he “rests quietly”. After two hours he tells his nurse that his pain is “okay, as long as I lay quietly”. It is observed that his nurse charts Carlos is “resting quietly” five times during his Emergency Department stay. He does not receive anything for the pain associated with his fractured spleen. Is Carlos’ pain management a typical example of the 16 million injured pediatric patients that admitted emergency departments every year or is he the exception?

Purpose

The purpose of this study is to investigate pain assessment and pain management in the severely injured pediatric trauma patient population (0-15 years) in the emergency department setting. This study included 63 archived pediatric medical records in a three-hospital level-III trauma service, in the period 1995 to 2000. A survey tool (Appendix A) was developed to review the medical records. In addition to demographic data, information was collected regarding injuries: type and severity, number of procedures or treatments done, and pain related activities including: time and type of first medication, documentation related to pain medications and assessment after the medication was given.
Introduction

The most widely accepted definition of pain is “Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage” (American Pain Society, 1992, pp.2, Mersky & Bogduk, 1994, pp.217). Pain is complex and an individual’s perception of pain is subject to developmental, social, and psychological influences. All patients have the right to have their pain controlled, no matter how severe or what the cause (McCaffery & Pasero, 1999). Barriers to effective, appropriate pain control continue to be present despite efforts to eliminate them. Pain management is important to all patients, especially in trauma care and is an important part of the nursing trauma curriculum includes “comfort measures” (Kaiser, 1992). The ideal is to facilitate comfort measures as soon as airway, breathing, circulation have been evaluated to be stable (Morse & Proctor, 1998).

Trauma patients of all ages are routinely admitted to emergency departments for care. Approximately 40% are children under the age of 15 (National Center of Health Statistics, 1998). This is because one in five children require medical attention for trauma related injuries, assessing their pain is important, especially in light of the new Joint Commission Standards regarding pain as the “fifth vital sign” (Pain Assessment and Management, 2000). Numerous studies have been done that show pediatric patient’s pain is not being assessed and treated as an adult’s pain is. What is unknown and not available in the current literature is whether this is also true for the pediatric trauma patient as well. Pediatric trauma pain management faces unique challenges such as assessing pain in a population that have not yet developed coping strategies, or, perhaps more importantly, have a limited ability to communicate their needs, continues to be a challenge. These
limitations can be caused by their injury, being intubated, not having language yet, or speaking a different language.

The role of the nurse practitioner is to help identify the barriers, aid in the elimination of barriers, through proper education of both the caregivers and the patients, and to insist on accountability by the medical institution of the clinicians.

Review of Literature

Pain: Physiological

The role of pain is a protective mechanism, it occurs in trauma with tissue damage and causes the patient to react or remove the stimulus. Fast, or acute pain is felt when a needle is inserted into the skin, or when the skin is burned. Slow, or aching pain is often associated with tissue destruction (Guyton & Hall, 1996). The reaction of the patient may vary greatly as a result two types of pain pathways. In trauma patients, both fast and slow pain responses are occurring.

Some of the consequences of acute pain are the stimulation of the secretion of stress hormones that lead to tissue breakdown, energy mobilization, and fluid retention. Pulmonary function can be impaired by pain-restricting breathing. Pain can also cause tachycardia, hypertension, ischemia, ventricular arrhythmias, increased myocardial oxygen needs, and increased cardiac afterload (Fitzgerald & Anand, 1993). Pain can be managed correctly if it is assessed and appropriate medications are given. Assessing pain is important, especially in light of the new Joint Commission Standards regarding pain as the “fifth vital sign” (Pain Assessment and Management, 2000).
Pain: Complex

A complex interrelationship of the emotional and physical factors leads to pain. A common misconception is that all pain has an identifiable physical cause or that the etiology of the pain can be diagnosed and isolated (American Pain Society, 1992). Caretakers may, in error, decide that if the cause of pain cannot be identified, there is no pain. Physical pain and emotional pain are real, and should be treated as such, even if their causes have not been identified (McCaffery & Pasero 1999). The interrelationship of neurological, emotional and psychological influences remains poorly understood, scientists believe that factors such as a person’s mood or state of relaxation can activate nerve signals that either suppress or augment pain. Effective pain management includes accurate assessment, appropriate choice of medications, and ongoing assessment and evaluation of patients in pain. Misconceptions and biases that also affect pain management are related to gender (Cleeland, Gonin, Hatfield et al., 1994), age (Anand, Sippell, Aynsley-Green, 1987), and ethnicity (Todd, Samaroo, & Hoffman 1993).

Pain: Management

There is no one measure of pain. The self report of pain by a patient should be considered sufficient evidence to establish pain as a nursing and a medical diagnosis. The Agency for Health Care Policy and Research (AHCPR) guidelines state that, “patient self-report is the single most reliable indicator of the existence and intensity of acute pain and any concomitant affective discomfort or distress. Neither behavior nor vital signs can substitute for a self-report,” (Acute Pain Management Guideline Panel, 1992, p.11). There are well established pain scales available for use with specific populations (McCaffery & Pasero 1999). The most popular is the Likert Scale that has patients rating
pain on a scale of 0-10 with 10 being the highest or most amount of pain. It is quite simple to use, and provides a reliable means to assessment and reevaluation.

Barriers to Effective Pain Management

Often pain control has been inconsistent and inadequate (McCaffery & Pasero, 1999). The identified barriers include the health care system, health care professionals, and the patients (McCaffery, & Pasero 1999). Because very little time is dedicated to health care providers’ education about pain management, negative connotations associated with opioid analgesics, fear of addiction, and concern about side effects such as respiratory depression and hypotension may result (Reidenberg, 1996, Ashburn, Love, Pace, 1994). Health care providers lack of education in proper dosing of the pharmaceuticals has been identified as a barrier to pain management. Even though, clinicians have been caring for patients in pain for many years, little time is dedicated to developing a better understanding of how to manage pain.

Patients and their families can be barriers due to previous experiences, cultural expectations, age, and gender (Tesler & Wieging, 1998). Patients may try to minimize their pain for a number of reasons. They may wish to be seen as a “good patient” or may place a personal value on a stoic response to pain (Ward, Goldberg, Miller-McCauley, et al., 1993). Inadequate pain relief was associated with concerns about side effects, addictions, injections, tolerance, believing that “good” patients do not complain, and believing that pain is inevitable. Fear and misinformation create substantial barriers to patients with regard to reporting pain and taking analgesics. Many patient education tools have been developed, but not all patients and their families know about them, or are able to use them (McCaffery & Pasero, 1999).
The role of the nurse practitioner is invaluable to the field of pain management. The nurse practitioner must have the skills necessary to do the initial assessment and reevaluation and ongoing assessment of the patient’s pain, the ability to educate the patient about the appropriate goals of pain management, and finally, the ability to modify the system for effective pain management (especially for a vulnerable population like pediatrics). Pain management is important to all patients. It is especially important in trauma.

Trauma

Trauma is defined as injury to human tissues and organs resulting from the transfer of energy from the environment. Injuries are caused by some form of energy that is beyond the body’s resilience to tolerate (Robertson, 1993). Trauma is rated using the Injury Severity Score (ISS), an anatomical scoring system that provides an overall score for patients with multiple injuries. Each injury is assigned an Abbreviated Injury Scale (AIS) score and is allocated to one of six body regions (head, face, chest, abdomen, extremities-including pelvis, external). The three most severely injured body regions have their score squared and summed to produce the ISS. The ISS takes values from 0 to 75. If an injury is assigned an AIS of 6 (unsurvivable injury), the ISS score is automatically set to 75. The ISS has been used continuously, unchanged for over 25 years as the method of scoring injuries and is virtually the only anatomical scoring system in use that correlates linearly with mortality, morbidity, hospital stay and other measures of severity (Baker, 1974).

Trauma is categorized as blunt and penetrating. Blunt trauma relates to injuries that do not cause disruption of the skin, the remaining are penetrating in nature (Strange,
Pain Assessment

1998). The Subcommittee on Epidemiology of the American Trauma Society has guidelines for trauma systems to monitor the epidemiology of trauma. They suggest that demographic data elements such as age, gender, and ethnicity be collected to link particular populations with specific mechanisms of injury, for injury prevention planning (Committee on Injury Prevention and Control, 1999).

Priorities

Of highest priority in trauma care is the stabilization of the patient’s vital signs and direct care of their injuries. Pain should be managed, yet studies show repeatedly that in the trauma patient, it is often ignored due to concerns about masking injuries (Gregg, 1998). In a recent article in a critical care nursing journal, there was no mention of assessing pain or giving comfort measures (Laskowski-Jones & Salati, 2000). The emphasis on care is for the injuries. Many of the articles in the trauma literature are related to adults.

Pain management is especially important for the trauma patient because of the circumstances that cause the injury. Pain has serious physiologic consequences, yet it continues to be inadequately managed in the injured patient (Friedland & Kulick 1994). Even for a trauma patient, for whom the high priority is stabilizing vital functions and there may be difficulty in assessing pain, it should be done as soon as is possible. Effective pain management is achieved when the patient tells the clinician the pain is at an acceptable rate (Morse & Proctor, 1998).

The waiting for analgesia should be kept to a minimum to allow a thorough neurologic exam to be completed, then administration of a short-acting opioid could be titrated to maximize the effect in reducing pain (Gregg, 1998). The initial phase in pain
management of any patient with an injury is to assess all life threatening injuries and symptoms and to intervene as quickly as possible to stabilize. The ideal is to facilitate comfort measures as soon as airway, breathing, circulation have been evaluated to be stable (Morse & Proctor, 1998).

Incidence of trauma

Each year, one in every five children require medical attention for injuries (16 million emergency room visits by those aged 1-19). Of these, 600,000 children require hospitalization; 30,000 have permanent disabilities, and 22,000 die (http://rmstewart.uthscsa.edu/Ped/peditrauma.html). The top five causes of injuries for children are: pedestrian vs motor vehicle, drowning, bicycle accidents, falls, scalds and burns. National data lists motor vehicle crashes as the leading cause of unintentional injury and deaths in the 1 to 24 age group, followed by drowning, fires, and burns (National Safety Council, 1999). Blunt trauma accounts for 80% of pediatric injuries, the remaining are penetrating in nature (Strange, 1998). The ratio of male to females being injured is a 2 to 1 ratio (National Center for Health Statistics, 1998). Exposure to the injury producing event, the amount of risk involved, and cultural norms have been considered reasons for the gender differences (National Center for Health Statistics, 1998).

Caring for the pediatric trauma patient presents unique challenges for the health care professional. Care of the pediatric trauma patient is based on knowledge of pediatric anatomy, physiology, and the child’s response to injury (American College of Surgeons Committee on Trauma: Pediatric Trauma, 1997). The care also requires adapting to age, weight, circumstances, family and cultural preferences (Huth & Moore 1998). Children
are also individuals when it comes to describing their pain and understanding the
caregivers' questions and relating that to the treatment (Stark, 1998).

Pediatric pain

The psychological consequences of acute pain depend on age. Children's most
common emotional response to pain is fear (McGrath & Craig, 1989). In addition to
reducing the fear response, it is also important to reduce pain to reduce serious
physiological consequences (Fitzgerald & Anand, 1993).

The evidence continues to show that health care systems do not hold clinicians
accountable for assessing and relieving pain, especially in the pediatric population. The
nurse practitioner must consider the patient's behavior and pain-induced physiologic
changes, as well as the parents' input regarding the child's usual temperament and
response to pain (Yaster, 1997). A common misconception has been identified,
"children do not feel pain with the intensity that adults do" (Burokas, 1985, p. 377).

Pediatric vs Adult Pain Assessment and Management

The data supports the fact that like an adult's pain, children's pain is complex
with many environmental factors that can modify the strength and unpleasantness of the
pain (McCaffery & Pasero, 1999). Pharmacological and nonpharmacological advances
have been documented to be effective in the management of children's pain, but their use
in practice has not been maximized (Jacobs, Puntillo, 1999).

In a study done by Eland in 1977, postoperative pain relief in 25 children was
contrast with 18 adults. Orders for pain medication were written for 21 of the 25
pediatric patients. Only 12 patients received analgesics postoperatively for a total of 24
doses. Of these 24 doses, only 3 were narcotics. The adults hospitalized for the same
period received 372 narcotics and 299 nonnarcotic analgesics for a total of 671 doses (Eland, 1977).

Analgesic administration was studied in 50 children and 50 adults who had undergone open heart surgery (Beyer et al, 1983). The pediatric patients received half the number of analgesics that were given to adults. In addition, fewer potent narcotics were prescribed for the children than for the adults. Unfortunately, a significant number of children received no analgesics during the immediate postoperative time. The children received 30% of all analgesics administered while the adults received 70% (Beyer et al, 1983).

In another study, the nurses recognized in theory that pain exists for the infant and children, but that recognition did not result in the administration of narcotic analgesics as prescribed. In this hypothetical study in which nurses were to choose whether to medicate or not based on a vignette, only 2% of the children received all the analgesics that had been ordered (McCaffery & Pasero 1999).

A chart review of 90 children and 90 adults that were randomly selected and matched for sex and diagnosis demonstrated that children received significantly fewer doses of narcotics per day than adults and were less likely to have any narcotic analgesics ordered for them (Schechter, 1986).

Pediatric Pain Assessment

Another longstanding problem in pediatric pain management has been the difficulty of objectively assessing pain. Several studies have shown that health professionals consistently underestimate the amount of pain experienced by young children (Beyer & Wells, 1989).
A study that describes nurses’ perceptions of their practices in the assessment and management of pain in children showed that nurses are not consistently assessing pain in children, and pain management practices are not based on systemic assessment (Jacobs & Puntillo, 1999). Although nurses did not feel there were factors preventing them from assessing or managing pain in children, their practices revealed both that they are not using developmentally appropriate tools for assessing pain, and that they have not maximized the use of management strategies for controlling pain (Jacobs & Puntillo, 1999).

The fact that young children, lacking in verbal skills, often cannot adequately express their level of pain adds to the problem. Assessment in infants, before they can speak, is particularly challenging and may have been responsible for perpetuating the myth that infants experience less pain than adults. Children are much less likely than an adult to talk about their pain (Acute Pain Management Guideline Panel, 1992). As a result, pediatric pain therapy has developed slowly compared with its adult counterpart.

Sporadic improvement in pediatric pain has been made since the 1992 clinical practice guidelines published by the Agency for Health Care Policy and Research (AHCPR). These improvements are the identification of multiple pain-scale assessment tools (see sample tools), and the acknowledgement by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) that pediatric pain management should be a higher priority by health care systems (Pain Assessment and Management, 2000). The AHCPR states that by taking a multidisciplinary approach to pain management of the patient’s pain, this may result in a clinical, standardized approach to reducing pain.
In response, many pain assessment scales have been developed and validated for use in children, using both behavioral and self reporting assessments. (Beyer & Wells, 1989). Pain assessment tools have been designed to account for age, developmental appropriateness, and ease of using by the clinician at the bedside. A selection of assessment tools are summarized in Appendix B. The selection is not comprehensive, the tools are not necessarily recommended as the most suitable for use, simply a variety reflective of what is available. Ethical management of patients calls for care givers to assess the pain the patient is experiencing (Chinn & Kramer, 1999, Schwirian, 1998).

All patients are entitled to the best pain relief that can be achieved. Effective pain management in the pediatric trauma patient continues to be a challenge because of limited data relating to actual trauma pain management in the pediatric population. The pediatric trauma population has unique needs related to pain and trauma. Often their pain is related, but not limited to soft tissue injury and edema, fractures, pleural irritation, stimulation of nerve fibers, and invasive procedures and diagnostic tests.

In a current review of pediatric pain management literature, there are very few studies specific to pediatric trauma and pain management. However, many of the well documented barriers to effective pain management in general may be applicable to the trauma patient as well as to the pediatric patient in pain.

In summary, the above studies repeatedly indicate pediatric patients are undermedicated compared to adults with similar diagnoses. This review of the literature found very limited available data that describe the very basic pain management for pediatric trauma patients. Pain in this very unique and vulnerable population can be
effectively managed if the barriers identified are addressed with the use of education for the nurse practitioner, the bedside nurse, and the patient.

Study

Design

A descriptive design was used for this study. A descriptive design, “describes or classifies specific dimensions or characteristics of individuals, groups, situations, or events by summarizing commonalities found in discrete observation” (Polit & Hungler, 1995, p. 95). Demographics, diagnosis, ethnicity, age, gender, medications given, and any pain assessment scales (or tools) used, were described and compared. This was done to identify and describe the factors that may influence pain management.

Method

A retrospective chart review was done on pediatric trauma patients in three local hospitals that are part of a shared level III trauma service in Central Washington. Institutional approval was obtained from the Washington State University Internal Review Board (IRB) (Appendix C). Approval was also obtained from all three medical facilities’ IRBs (Appendix C). Data were then collected using a survey tool that was developed to gather demographic, injury, trauma, and assessment data, with a special focus on pain management. Descriptive statistics were used to analyze data.

Sample

The sample consisted of 63 archived medical records belonging to pediatric patients, and having injury severity scores of 9 or greater. No patients who had a head injury were included in the study.
Demographics

The ages of the trauma patients that were evaluated for this research project were between the ages of 0 and 15 years, with a mean age of 6 years. The ethnicity breakdown for this population is Caucasian-27, Hispanic-20, Black-1, Unknown-15 (Figure 1). Even though these children were all injured severely, 61% were brought to the hospital by private auto rather than by Emergency Medical Services.

Types of Injuries

The average ISS of this population was 9.95. The leading cause of injury in this sample population is falls (20%). Other causes were, object falling on patient (3%), motor vehicle crash (17%), pedestrian versus vehicle (8%), bicycle crashes (3%), sports related injuries (17%), burns (13%), abuse (6%), and all other causes (11%). In the population studied, blunt trauma accounted for 78%, while penetrating was the cause of 22%, half of which were burns. Of the 63 patients, 71% had orthopedic injuries, 24% had abdominal trauma, 14% had chest or thoracic injuries, and 35% had dermal injuries or burns (Figure 2). Of the 63 total patients, 31% had multiple injuries (Figure 2). The average emergency department length of stay was 157 minutes. The patients were discharged from the emergency department to pediatrics inpatient units (31), the operating room (12), Harborview Trauma Center (9), Intensive Care (7), Mary Bridges Children’s Hospital (2), and home (2). The average number of activities was 12.8.

Pain Management in the emergency department

86% of the patients did receive medication while they were in the emergency department. However, there was no written documentation, scale or narrative, related to
pain assessment. Of those who received an initial dose of medication, 48% received a repeated dose. Again, there were no documented reassessments done.

Of the 86% of patients who received some type of medication while in the emergency department, 37% received morphine sulfate, 30% received meperidine plus an antiemetic such as phenergan or hydroxyzine, 9% received meperidine, 7% received oral acetaminophen with codeine, 5% were given oral ibuprofen, 5% were given plain oral acetaminophen, 4% received diazepam (Figure 3). Of those who received medication, 22% had intravenous access and received medication either by oral or intramuscular routes.

The average time to medication was 55 minutes from the time of admission (Figure 4). Orthopedic injuries averaged 50 minutes, thoracic and chest injuries averaged 35 minutes, abdominal trauma averaged 78 minutes, burn patients averaged 14 minutes, and for all other injuries the average number of minutes until medication was given was 75 (Figure 4).

The data supported no significant correlation between age and medication. Older pediatric patients (10-14 years) did not receive their medication sooner than the younger children (0-9) (Figure 5). Males did receive medication on the average of 10% (41 minutes) sooner than the females (57 minutes) (Figure 4).

For the 14% (or n=9) who did not receive medication, 44% were male, 56% were female. The types of injuries sustained were 33% had orthopedic injuries, 44% had abdominal injuries, and 22% had skin or burn injuries. The male patients were in the emergency department for an average of 176 minutes and the females were in the emergency department for an average of 122 minutes (Figure 6). At the time of
discharge, they either were transferred to another hospital, to the operating room, to pediatrics, or to the intensive care unit.

The limitations of this study are that we did not look at age, weight, and injury and the appropriateness of the drug ordered. Even though medications were given in 86% of the population, the relationship between these variables should be evaluated. The strengths of this study include the fact that a specific population that has the untreated problem of pain has been identified. Specifically, pediatric trauma patient’s have pain and should be treated before they have waited 55 minutes.

Conclusions

In summary, 63 charts and pediatric trauma patients with a mean ISS of 9.95 waited a long time for their pain to be managed in these three emergency departments. Even though this study examined a very small percentage of the injured pediatric patients who presented, it is an important study because of the patient’s right to have their pain managed. Hospitals across the nation are being strongly encouraged by the Joint Commission to consider pain the “fifth vital sign” (Pain Assessment and Management, 2000). In addition to ethical and humanitarian reasons for relieving a child’s pain, pain relief is important for health reasons.

Implications for advanced practice nurses

The implications are the importance of developing protocols that educate providers on assessment and documentation and then educate on correct pain management medications and appropriate doses. Developing a protocol specifically for emergency department pediatric patients that calls for clinicians to be held responsible for pain assessment and management is imperative. The many guidelines that exist must be
utilized, and their use reinforced until the standard of care truly is managed pain. Educating bedside nurses and nurse practitioners about the appropriate management of pediatric pain should be a goal of nurse clinicians of the pediatric population (McGrath & Craig, 1989). There should be followup, with patient and family education that reminds them they have a right to have their pain managed.

Implications for nursing research

Further studies must continue to explore, at other institutions and in other communities, policies related to pain management in the pediatric population. Doing a study now before the new standards are in place and showing improvement with new standards and policies are important would show improved patient care through satisfaction, and fewer complications when pain has been managed well (Fitzgerald & Anand, 1993).
References


Appendix A, Survey Tool

Date: _________
Time: _________

A. Demographics

1. Initials ______________________
2. Age _______ DOB ______________________
3. Male: _______ Female: _______
4. Ethnicity: ____________________________ (If available)
5. Weight ______________________ (kg or lb)
6. Accompanied by ______________________________

Injury Information

1. Date of Injury ________ Time of Injury ________________
2. Hospital: Kadlec Medical Center (KMC) ________________
   Kennewick General Hospital (KGH) ________________
   Lourdes Medical Center (LMC) ________________
3. Admit time: _______ Admit date: ________________
4. Type of injury: Blunt ____ Penetrating ____ Other ______
5. Cause of injury:
   Motor vehicle crash (mv) Abuse (ab)
   Bicycle (bi) Firearms (gs)
   Fall (fa) Knife/sharp instrument (kn)
   Sports or play (sp) Other ______________________
6. Diagnosis:

   ________________________________

7. Injury Severity Score ________________________________
8. A. Transport to hospital information ________________________________
   B. Transport information regarding pain/pain management

9. A. Any significant medical history:

   ________________________________

   B. Current medications:

   ________________________________

   C. Any medication allergies:

   ________________________________

Discharge Information

Discharge Time: ________________ Discharge Date: ________________
Discharged to: ________________________________
KEY

Pain related:

Pain assessment
  Pain score
  Physical signs and or symptoms
  Blood pressure, pulse, respiratory rate, temperature
  Other
  Behavior signs and or symptoms
    Crying
    Whimpers
    Sleeping
    Sporadic
    Moaning
    Change in behavior
    Words used
  Other
    Parents or caregiver’s comments
    Health care provider’s reports or comments
    Other

Interventions

Pain medications
  Related medications (anti-anxiety agents, lidocaine, oxygen)
  Non medical interventions (positioning, ice, massage, pacifier)
  Other

Emergency Department Activities:

Activity
  Laboratory draws
  Intravenous starts
  Nasogastric tube placement
  Chest tube insertion
  Blanket application
  X-Rays done (in ed or in radiology)
  Foley catheter
  Intramuscular injections
  Clothing removal
  Other

Interventions

Wound care, cleansing
  Splint application
  Equipment used (oxygen saturation monitor, cardiac monitoring, active warming devices)
  Wound care, suturing
  Oral suctioning
  Other

People coming into and out of room

Health care workers
  Family members
  Parents
  Chaplain
  Other

Other
First hour

### Pain assessment

<table>
<thead>
<tr>
<th>Time</th>
<th>Pain Score 1-10</th>
<th>Physical sx/sx</th>
<th>Behavior sx/sx</th>
<th>Parents’ comment</th>
<th>Other</th>
<th>Pain management</th>
<th>Activities</th>
<th>Interventions</th>
<th>People in room</th>
<th>Other</th>
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Additional hour(s)

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</tbody>
</table>
## Appendix B

### Summary of assessment tools

<table>
<thead>
<tr>
<th>Tool Name</th>
<th>Indicators</th>
<th>Advantages/disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CRIES</strong> (Crying, Requires O2 for saturation above 95, Increased vital signs, Expression and Sleeplessness) (Neonate 0-1 month)</td>
<td>Cries, oxygen saturation, heart rate/blood pressure, expression, sleeplessness</td>
<td>Advantages: Easy to remember and use. Valid and reliable down to 32 weeks gestational age. Reliable between observers. Tracks pain and the effects of analgesics. Disadvantages: Uses oxygenation as a measure which can be affected by many other factors. BP measurement may upset babies.</td>
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<td><strong>TPPPS</strong> (Toddler/Pre-Schooler Post Operative Pain Tool) (1-5 years)</td>
<td>Verbal pain, complaint/cry, groan/moan/grunt, scream, open mouth, squint, brow bulge, restless motor behavior, rub/touch</td>
<td>Advantages: Suitable for age 1-5 years. Tracks pain relief and effects of analgesia. Correlates with nurse and parental pain assessments. Disadvantages: 7 categories to score.</td>
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<tr>
<td>Poker Chip Tool (4-13 years)</td>
<td>4 red chips or 4 red and 1 white chip (no pain). Chips represent “pieces of hurt”.</td>
<td>Advantages: Useful for children 4-13 years old. Quickly engages child’s interest. Self report.</td>
</tr>
<tr>
<td><strong>APPT</strong> (Adolescent Pediatric Pain Tool) (10-17 years)</td>
<td>Assesses 3 dimensions of pain: location, intensity, and quality.</td>
<td>Advantages: Multidimensional tool. Includes word graphic scale, visual analogue scale, graded graphic numerical and color scale.</td>
</tr>
</tbody>
</table>
Appendix C

IRB Approvals
MEMORANDUM

TO: MaryLu Hubbe
2246 Division Avenue
Richland, WA 99352

FROM: Misty Cato (for) Michael Hendryx, Chair, WSU Institutional Review Board (3140)

DATE: 30 November 2000

SUBJECT: Approved Human Subjects Protocol

Your Human Subjects Review Summary Form and additional information provided for the proposal titled "Determining pain assessment and treatment of the pediatric trauma patient," IRB File Number 4406-4 was reviewed for the protection of the subjects participating in the study. Based on the information received from you, the WSU-IRB approved your human subjects protocol on 30 November 2000.

IRB approval indicates that the study protocol as presented in the Human Subjects Form by the investigator, is designed to adequately protect the subjects participating in the study. This approval does not relieve the investigator from the responsibility of providing continuing attention to ethical considerations involved in the utilization of human subjects participating in the study.

This approval expires on 29 November 2001. If any significant changes are made to the study protocol you must notify the IRB before implementation.

In accordance with federal regulations, this approval letter and a copy of the approved protocol must be kept with any copies of signed consent forms by the principle investigator for THREE years after completion of the project.

This institution has a Human Subjects Assurance Number M1344 which is on file with the Office of Protection from Research Risks, National Institutes of Health. WSU’s Assurance of Compliance with the Department of Health and Human Services Regulations Regarding the Use of Human Subjects can be reviewed on OGRD’s homepage (http://www.ogrd.wsu.edu/ogrd/) under “Electronic Forms” OGRD Memorandum #6.

If you have questions, please contact Misty Cato at OGRD (509) 335-9661. Any revised materials can be mailed to OGRD (Campus Zip 3140), faxed to (509) 335-1676, or in some cases by electronic mail, to ogrd@mail.wsu.edu. If materials are sent by email attachment, please make sure they are in a standard file type, (i.e., ASCII text [.txt], or Rich Text Format [.rtf]).

Review Type: NEW
OGRD No.: NF
Review Category: XMT
Agency: NA
Date Received: 28 November 2000
April 27, 2001

Dr. Margaret Bruya  
Department Chair  
Washington State University  
School Of Nursing  
2917 West Fort George Wright Dr.  
Spokane, WA 99224

Dear Dr. Bruya:

In January 2001, I had approved the request of Marylu Hubbe to review pediatric trauma charts with the purpose of evaluating pain management.

Sincerely,

Loretta Wingard, RHIA  
Medical Records Department Director/Privacy Officer  
Email: loretta_wingard@kgbd.org

Cc: Marylu Hubbe
April 27, 2001

To Whom it May Concern:

In January of 2001, I received an approved request from Mary Lou Hubbe to review Emergency Department charts evaluating pediatric pain management.

It was understood that this was a project in conjunction with Washington State University.

Sincerely,

[Signature]

Doris J. Wiebe
Quality Care Management Assistant
April 25, 2001

Dr. Margaret Bruya
Department Chair
Washington State University
School of Nursing
2917 West Fort George Wright Drive
Spokane, WA 99224

Dear Dr. Bruya:

In January 2001, the Medical Record Department Director of Lourdes Medical Center approved the request of Marylu Hubbe to review pediatrics trauma charts with the purpose of evaluating pain management.

Respectfully,

Jean Foust, R.H.I.T.
Supervisor, Medical Record Department

Cc: Marylu Hubbe
Figure 1. Ethnicity of population.
Figure 2. Type of injury.
Figure 3. Medications received.

- Acetaminophen 5%
- Ibuprofen 5%
- Diazepam 4%
- Acetaminophen + Codeine 7%
- Meperidine 9%
- Meperidine + Promethazine 31%
- Morphine 39%
Figure 4. Average time to medication by hospital, injury, and gender.
Figure 5. Time until pain medication first administered, by age.
Figure 6. Length of stay, for patients not receiving pain medication, by hospital.