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# Examining the Need for Psychosocial Services in Pediatric Non-Accidental Trauma

Samantha Nicole O'Bannon

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LOMA LINDA UNIVERSITY  
School of Behavioral Health  
in conjunction with the  
Department of Psychology

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Examining the Need for Psychosocial Services in Pediatric  
Non-Accidental Trauma

by

Samantha Nicole O'Bannon

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A Project submitted in partial satisfaction of  
the requirements for the degree  
Doctor of Psychology

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September 2019

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Each person whose signature appears below certifies that this doctoral project in his/her opinion is adequate, in scope and quality, as a doctoral project for the degree Doctor of Psychology.

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\_\_\_\_\_  
Adam L. Aréchiga, Associate Professor of Psychology

## ACKNOWLEDGEMENTS

To my mother, thank you. From a young age, you sparked a flame in me concerning the welfare and wellbeing of children. Through your professional work and your personal interactions with those who could not advocate for themselves, you demonstrated that unique feature of your character that I cherish most. This is for you. Dad, thank you for being a stellar example of how to work hard and keep fighting to pursue your goals, dreams, and aspirations; with enough hard work, anything is possible. To my husband, your support during this process – helping me through the long nights, fatigue, tears, stress, worry, fears, and more... words alone can't portray my gratitude. To my family and friends who encouraged me to continue along this journey, your love and support has not gone unnoticed. I love you all and appreciate you.

I would also like to thank the members of my committee (Drs. Neece & Aréchiga) as well as any individual who was involved in my research and graduate education in any capacity. To my beautiful island and home, may my efforts and the efforts of those with similar aspirations for Bermuda continue to act as agents of positive change, resulting in better outcomes for our people. To the children (some of which are now adults) who have endured trauma at any level, I'm sorry. Know that you are loved and that someone cares. Lastly, I would like to thank God, for without Him, none of this would be possible.

## CONTENTS

Approval Page .....	iii
Acknowledgements.....	iv
List of Abbreviations.....	vii
Abstract.....	viii
Chapter	
1. Introduction.....	1
Neurological and Developmental Outcomes .....	5
Benefits of Early Psychosocial Intervention.....	7
Effective Services and Interventions .....	9
The Current Study.....	13
2. Methods.....	14
Participants.....	14
Measures and Procedures.....	14
3. Results.....	16
Participant Characteristics .....	16
Demographic Characteristics .....	16
Characteristics of Injury and Responses .....	17
Hospitalization and Consultations .....	19
Discharge Recommendations.....	21
4. Discussion.....	23
Implications.....	28
Limitations .....	29
5. Conclusions/Future Direction .....	31
References.....	33

## Appendices

A. Original trauma registry database form .....	38
B. Chart review data collection form.....	48
C. TABLE 1: Demographic characteristics of children and non-accidental trauma .....	52
D. TABLE 2: Injury characteristics of children with non-accidental trauma.....	53
E. TABLE 3: Hospital response to non-accidental trauma and level of trauma .....	54
F. TABLE 4: Top 13 ICD-9 diagnoses combined into larger categories within the sample .....	55
G. TABLE 5: Consultation services provided to non-accidental trauma patients .....	56
H. TABLE 6: Discharge recommendations, evaluation, and disposition outcomes for patients of non-accidental trauma .....	57

## ABBREVIATIONS

ABC	Attachment and Biobehavioral Catch-Up
ACEs	Adverse Childhood Experiences
AT	Accidental Trauma
CAPTA	Child Abuse Prevention and Treatment Act
CBT	Cognitive Behavioral Therapy
CPP	Child-Parent Psychotherapy
CPS	Child Protective Services
ED	Emergency Department
EIP	Early Intervention Programs
GCS	Glasgow Coma Scale
ICD	International Classification of Diseases
IRB	Institutional Review Board
LLUCH	Loma Linda University Children's Hospital
NAT	Non-Accidental Trauma
PCAT	Parent-Child Attunement Therapy
PCIT	Parent-Child Interaction Therapy
PFC	Prefrontal Cortex
TAFC	Trauma-Adapted Family Connections
VOC	Victims of Crime



## ABSTRACT OF THE DOCTORAL PROJECT

Examining the Need for Psychosocial Services in Pediatric Non-Accidental Trauma

by

Samantha Nicole O'Bannon

Doctor of Psychology, Graduate Program in Clinical Psychology  
Loma Linda University, September 2019  
Dr. Cameron L. Neece, Chairperson

Child abuse is a significant issue within our society. In 2014, there were a reported 702,208 cases of child abuse and neglect across the country, with nearly 120,000 suffering from physical abuse. Research has shown the adverse physical and psychological consequences of child maltreatment. Despite what we know about the benefits of early intervention for this population, the degree of implementation of psychosocial interventions, specifically in a hospital setting, remains unclear. In an initial study that utilized archival data from the Loma Linda University Children's Hospital (LLUCH) Trauma Registry Database, researchers found that the majority of children admitted to the hospital for non-accidental trauma (NAT) received minimal inpatient psychosocial services and psychosocial referrals at discharge. Given the gravity of these statistics, this doctoral project sought to verify the initial findings of the archival data through an in-depth chart review. A random sample of 20% (n=151) of the original 746 archival charts were selected. Subjects were previous pediatric patients at LLUCH who sustained a traumatic injury and whose case was identified as NAT. The results of the current study were consistent with previous findings and demonstrated that Pediatric Psychology saw 5.3% of children while inpatient and only 4.6% were referred for an inpatient consultation by a separate psychological service. Furthermore, a mere 3.3% of

the sample received a psychosocial referral upon discharge. While the majority of the sample (87.4%) received a social work referral, only 52% of those children were actually seen. Finally, while the current study found higher rates of referrals to Child Protective Services (CPS; 82.8%) compared to the previous findings (67.6%), it highlighted that 17.2% of the sample was not referred to CPS despite the mandated referral. This study demonstrated that psychosocial services needed to address the impact of trauma are often not being provided at LLUCH. In an attempt to evaluate if this was a more pervasive problem, researchers reviewed the National Trauma Database and determined that the important search fields for psychosocial supports are not available. This data underscores the importance of improving the coordination of care between pediatric psychology, psychosocial services, and the medical field.

## **CHAPTER ONE**

### **INTRODUCTION**

Child abuse is a significant issue within our society. Childhood non-accidental trauma (NAT) is considered a leading cause of traumatic injury and death in the United States (Paul & Adamo, 2014a). In 2014, there were a reported 702,208 cases of child abuse and neglect across the country, with the highest number of reports originating in California – accounting for 75,033 cases (U.S. Department of Health and Human Services, Families, Administration on Children, & Children’s Bureau, 2014). Furthermore, an estimated 1,580 children died as a result of abuse or neglect, demonstrating an alarming rate of 2.13 per 100,000 children in the national population (U.S. Department of Health and Human Services et al., 2014). While NAT occurs in children of all ages, younger children tend to have the greatest risk of death as a result of child abuse and neglect. Specifically, 70.7% of all child fatalities related to child abuse and neglect reported in 2014 were under the age of 3 (U.S. Department of Health and Human Services et al., 2014). Even more alarming, children under age 1 accounted for 44.2% of the total number of fatalities related to maltreatment. While girls accounted for a higher number of children who experienced maltreatment and/or neglect (1.82 per 100,000 girls in the population) boys had a much higher rate of fatality within the population (2.48 per 100,000, U.S. Department of Health and Human Services et al., 2014). In terms of race/ethnicity, the report produced by the United States Department of Health and Human Services (2014) found that over 88% of child fatalities represented Caucasian (43%), African-American (30.3), and Hispanic (15.1%) groups; however, the

rate of African-American fatalities was more than three times more likely than both Caucasian and Hispanic groups.

That said, while there is a growing body of literature that seeks to examine the characteristics of this NAT population, in addition to risk and protective factors, very little information is available for appropriate interventions that can be geared towards addressing the psychological impact of trauma for this population, specifically for victims who are under 1 year of age. Therefore, it is important to define the term Non-accidental Trauma (NAT) for the purposes of this research.

Non-accidental trauma is a term used within the medical setting to describe intentional physical abuse. Other terms such as “child maltreatment” are also widely used within the literature to refer to various types of abuse and neglect. According to the Child Abuse Prevention and Treatment Act (CAPTA), the existing child abuse and neglect definition is as follows: “*any recent act or failure to act on the part of a parent or caretaker which results in death, serious physical or emotional harm, sexual abuse or exploitation; or an act or failure to act, which presents an imminent risk of serious harm*” (U.S. Department of Health and Human Services et al., 2014). With this definition in mind, there are four types of abuse: physical abuse, neglect, sexual abuse, and emotional abuse (Paul & Adamo, 2014b; U.S. Department of Health and Human Services et al., 2014). Leventhal, Martin, and Gaither (2012) noted that physical abuse is specifically defined as “any child who was admitted to the hospital with an injury that was coded as abuse” using ICD-9 codes 800-959.9. Further, they showed that 6.2 per 100,000 children in the national population will suffer from severe physical abuse each year. While a large body of literature has highlighted the issue of sexual abuse, several

studies have indicated that physical abuse occurs at a far greater rate within the United States representing 41.3% of all maltreatment types compared to the 1.1% represented by sexual abuse (Feather & Ronan, 2009; Queensland Government Department of Child Safety, 2007; Ronan, Canoy, & Burke, 2009; Child Maltreatment Report, 2010; Child Maltreatment Report, 2014). Moreover, as researchers have concluded that NAT is a significant predictor of child mortality rates (Ronan, Canoy, and Burke, 2009), the Child Maltreatment Report of 2014 has supported these findings with research indicating that children who received consultations from Child Protection Services (CPS) were three times more likely to die than those in the general population (Child Maltreatment Report, 2014). In light of these grave statistics, a study conducted by the Denver Children's Hospital found that NAT cases accounted for 7.3% of their trauma evaluations. More alarmingly, this study indicated that many of the mortalities that occurred within this population often stemmed from misdiagnosed or overlooked cases of NAT (Roaten et al., 2006).

In a study comparing the incidence rates, demographic characteristics, and severity of both accidental and non-accidental trauma (AT and NAT respectively), when compared to AT patients, NAT patients were found to be younger, required a higher rate of ICU stays, resulted in more deaths, and tended to go unrecognized until after the patients had either presented with severe injuries or were deceased (Estroff, Foglia, & Fuchs, 2015). Thus, for the purposes of this study, the term NAT will be used to represent physical abuse, where the child was admitted to the hospital with a traumatic injury resulting in at least one ICD-9 injury code.

Guided by this growing body of literature, the question then becomes what

difficulties do physicians face in their ability to accurately identify this at-risk population, which then leads to the lack of adequate support, referrals, and interventions for the child-victims? Researchers have stated that the variability of presentation, developmental factors, and patient histories often make it difficult for physicians to adequately diagnose NAT (Chang et al., 2008). For example, when children are admitted to the Emergency Department, they tend to present with a number of symptoms that can be also be attributed to accidental traumas, such as bruises, somatic complaints, behavioral problems, seizures, unresponsiveness, or broken bones. In 1962, C. Henry Kempe published “The Battered Child Syndrome,” which described features common in physical abuse in children below 2 years of age and included common clinical features such as: head trauma, ecchymosis, and multiple fractures (Kempe, Silverman, Steele, et al., 1962). This publication eventually led to the creation of mandated reporting for maltreatment in the United States and subsequent physician training for pediatric-focused providers on how to identify and question the presence of NAT (Paul & Adamo, 2014). Despite these indicators, without the presence of a thorough history or specific report from childcare facilitators, teachers, and various health care professionals, due to the symptom overlap, it may be easy to overlook child abuse (Theodore & Runyan, 1999; Gilbert et al, 2009; Goad, 2008). With that information in mind, it is concerning is that research continues to indicate that while an estimated 4-16% of all children sustain physical abuse, a mere 1% of those cases are formally reported (Gilbert et al, 2009; Chang et al., 2008). Thus, published literature is vastly underestimating the problem of pediatric physical abuse. Accordingly, while we may see alarming statistics and rates of abuse in the literature, if only 1% of cases are formally reported – the vast majority of children are not receiving

appropriate medication treatment or interventions, leading to poor developmental outcomes.

It is our belief that in light of what we know about the challenges of diagnosing this population and the subsequent decline in both psychological and medical services, child victims of NAT face a substantial risk for negative outcomes (Brown, 2003; MacMillan, et al., 2009; De Young, De Young et al., 2011; Springer et al, 2003, Jonson-Reid, Jonson-Reid, Kohl, & Drake, 2012, Wotherspoon & Gough, 2008; Wotherspoon, Hawkins & Gough, 2009; Finkelhor & Browne, 1985; Shonkoff, 2011; & Mizushima et al, 2015). However, while literature may indicate poor health outcomes and attempt to highlight the importance of early intervention, there is little research on age-appropriate, psychosocial interventions that can aid in protecting and supporting the developmental trajectories of these children.

### **Neurological and Developmental Outcomes**

For years, research has indicated that childhood trauma can lead to poor developmental and neurological outcomes. We know based on a long line of research on adverse childhood experiences (ACEs) that both positive and negative childhood experiences can have a paramount impact on biological pathways, risk assessment, health outcomes, risky and delinquent behaviors, and more (Dube, et al, 2003; Anda, et al, 2006). We also know that this relationship tends to be partially mediated by resiliency and other protective factors such as supportive familial environments (Moore & Ramirez, 2016). Further, researchers have shown that chronic stress, often experienced by child NAT victims, can lead to substantial impairments in brain development, a compromised

immune system, higher rates of mortality throughout the lifespan, and behavioral problems (Wotherspoon & Gough, 2008). Likewise, children exposed to multiple risk factors, such as neglect, high-risk communities, and attachment difficulties as a direct result of trauma, have been shown to have an IQ score 30 points lower than their same-aged peers (Wotherspoon & Gough, 2008). Literature has also shown that continually high levels of our primary stress hormone, cortisol, leads to cell death in key brain structures. Similar lines of research also indicate that the emotional neglect that is acquired via maltreatment leads to severe cognitive and academic deficits, social withdrawal, limited peer interactions, and a variety of internalizing problems – most commonly depression and anxiety (Lee, Ogle & Sapolsky, 2002; Hildyard & Wolfe, 2002). Maltreated infants and toddlers also tend to develop difficulties providing accurate emotional cues, due to their invalidating and harsh environments – often leading to difficulties in temperament and communication (Wotherspoon & Petrowski, 2008).

In terms of specific neurological impact, trauma that occurs in early childhood impacts right hemispheric brain development, specifically affect regulation and overall infant mental health (Wotherspoon, Hawkins, & Gough, 2009; Schore, A., 2001). A longitudinal study conducted in 2017 showed that adults who experienced high levels of stress in early childhood demonstrated significantly lower levels of brain activation when processing information regarding risk assessment and increased reactivity/responsivity when experiencing these losses (Birn, Roeber, & Pollak, 2017). More specifically, this study indicated that these adults had reduced activation in the posterior cingulate/precuneus, middle temporal gyrus, and superior occipital cortex while they anticipated potential rewards. They also demonstrated reduced levels of activation in the



putamen and insula when anticipating loss and increase left inferior frontal gyrus activation when the loss occurred. This line of research, along with others, have indicated that other brain structures impacted by childhood trauma include the amygdala, hippocampus, and prefrontal cortex (PFC) which often results in risky behaviors, disruptive behavioral problems, criminal involvement, delinquency, aggression, highly sexualized behaviors, and much more (Shonkoff, 2011). Researchers have found, through measuring salivary patterns, that NAT is correlated with hormonal dysregulation and alters the levels of oxytocin and cortisol in the brain, which has implications on social learning, stress, and behavior (Mizushima et al., 2015). Overall, we see that the neurological outcomes of children who have suffered abuse are significant and often detrimental. Not only are these children having to face negative social environments, but the academic, social, emotional, behavioral, neurological, and psychological impact is enough to substantially derail their lives and significantly disrupt their developmental trajectories and ability to learn – ultimately impacting their future.

### **Benefits of Early Psychological Intervention**

Being aware of the detrimental impact of trauma on the developing brain of infants and children, newer research has begun to highlight the fact that children who receive appropriate interventions are more likely to overcome their aversive experiences and achieve positive psychological outcomes by adulthood (Brown, 2003; De Young, Kenardy & Cobham, 2011; Runyon & Urquiza, 2011). For example, the Child Welfare Information Gateway (2015), an information database funded by the Children’s Bureau, Administration for Children and Families, and U.S. Department of Health and Human

Services, released an article highlighting the effects of trauma and stated that providing these children with trauma-informed treatment, geared towards improving attachment, home dynamics, and the child's mental health, was shown to improve their mental health outcomes. In addition, research has indicated that while prevention, as opposed to intervention, is the best strategy for this population, gearing interventions towards both the parent and the child can help to decrease intergenerational effects of trauma and improve the overall environment for the child (Child Welfare Information Gateway, 2011). Runyon & Urquiza (2011) found that in addition to providing interventions to NAT victims, non-offending family members must also be addressed in hopes of reducing the overall dysfunctional state of the family, which confirmed previous findings of the Child Welfare Information Gateway lending to the importance of intervention for the entire family system. With that said, there has been an increase in research discussing the importance of addressing the non-offending caregiver, in addition to the child victim, in hopes of re-establishing attachments and providing the caregiver with adequate resources and knowledge on how to properly assist the child in overcoming the impact of their trauma (Runyon & Urquiza, 2011). However, Runyon & Urquiza (2011) noted that while services for this group are important, the dropout rate tends to remain high due to low commitment and high rates of hesitancy for parents. Specifically, parents may not be receptive to mental health interventions and may face barriers to treatment including: strained economic positions, lack of transportation, time constraints, and lack of information regarding available services. Ultimately, research demonstrates the importance of swift psychological intervention to assist in reducing the potentially negative impact of a trauma – though arguably intervention at any stage (whether delayed

or immediate) can be beneficial.

### **Effective Services and Interventions**

Given the prevalence of NAT and its associated consequences, it is imperative for health professionals to be aware of the interventions that are available to address the mental health needs of the NAT population, specifically those who are under the age of 1. A comparative analysis of the effectiveness of various interventions addressing maltreatment, conducted by the Agency for Healthcare Research and Quality (2013), reviewed a series of seven unique interventions that are geared towards the “early childhood” population. However, of the specific trauma-focused treatments that were reviewed, there were no interventions listed to address children under the age of 3. That said, specific literature and interventions geared towards the subgroup involving foster care children included a broader range of intervention options. Other studies looking at the impact of early intervention on children who had undergone traumatic experiences, recommended federally-funded programs such as Zero to Three and statewide Early Intervention Programs yet there were limited interventions geared specifically towards children age 1 and under who experience trauma (EIP; Child Welfare Information Gateway, 2015; Child Welfare Information Gateway, 2011). Notably, while there were available interventions geared toward foster parents and offending parents, there were no specific interventions listed for children who remained in the homes with their perpetrator(s). Thus, what happens to the unknown percentage of children who are sent back to the same home where they were abused? What happens to the unknown percentage of abused children who social work was unable to see? In light of this

information, and the questions that have been posed, researchers sought to identify specific treatment information for the target population.

While there are limited studies providing evidence-based psychological treatments for children ages 0-3 who have experienced trauma, several interventions have been suggested for use: trauma-focused play therapy, therapeutic day care, parent-child interaction therapy, and attachment-based therapy (Runyon and Urquiza, 2011; Moss et al., 2011, Thomas and Zimmer-Gembeck, 2011; & Chaffin and Friedrich, 2004).

Furthermore, a practice brief conducted for the Administration for Children and Families and the U.S. Department of Health and Human Services stated that parent support is a pivotal part of treatment for this infant/toddler population (Harden, 2015). The brief went on to say that practitioners must engage parents in supporting their children and creating safety. Further, for those children who remain in the care of their parents (who have been identified as their perpetrators), interventions must address parental functioning, improving parenting behaviors, and avoiding familial patterns involving inappropriate parenting strategies. In a randomized trial for families at risk for maltreatment, researchers found that the use of attachment-based approaches resulted in an increase in parent sensitivity, attention, organization, and an overall reduced risk for maltreatment (Moss et al., 2011). In addition, Thomas and Zimmer-Gembeck (2011) found that utilizing Parent Child Interaction Therapy (PCIT), with the parents of children who were labeled as high-risk for maltreatment, resulted in both decreased levels of parental stress and behavior problems seen in the children. While Chaffin and Friedrich (2004) described PCIT as an effective intervention for this population, researchers Runyon & Urquiza (2011) found that this treatment tends to focus on the interpersonal relationships

and the externalizing behaviors of the child, while neglecting the child's overall mental health. As such, researchers reported that interventions, such as PCIT, should be supplemented with additional psychological interventions geared towards addressing these mental health needs directly, such as Cognitive Behavioral Therapy (CBT; Runyon & Urquiza, 2011).

In a specific study that looked at interventions for NAT patients, researchers found that CBT group therapy aided in the overall reduction of school-age children's symptoms of PTSD, dissociation, anxiety, and anger (Brown, 2003). Other studies supported the use of trauma focused-CBT as the most empirically supported intervention (Kliethermes, Drewry, & Wamser-Nanney, 2017; Dorsey et al, 2016). Overall, these findings suggest that a combination of both parent and child interventions are more effective than either one being performed independent of the other. In a report published by The National Child Traumatic Stress Network (2008) and a separate brief released for the U.S. Department of Health and Human Services Administration for children and Families (2015), authors identified a list of trauma-focused interventions that have been utilized within various populations impacted by trauma. The researchers were able to identify four treatments, two of which were labeled as evidence-based, that were utilized for children from early infancy to age 6: Child-Parent Psychotherapy (CPP), Attachment and Biobehavioral Catch-Up (ABC), Parent-Child Attunement Therapy (PCAT) and Trauma-Adapted Family Connections (TAFC).

Child-Parent Psychotherapy (CPP), geared towards children ages 0-6, is a year-long evidence-based treatment approach focusing on domestic violence, maltreatment situations, safety, affect regulation, improving the child-caregiver relationship,

normalizing trauma-related responses, and uses a trauma narrative. While this intervention was deemed effective, it does not seem feasible to provide this NAT population with weekly, year-long treatments within which are able to be tracked to help reduce the level of impact their trauma may have caused considering the low rate of follow-through as previously highlighted. Attachment and Biobehavioral Catch-Up (ABC), an evidence-based intervention for children ages 0-24 months, was designed as a short-term, home-based treatment, lasting for only 10 sessions. This treatment specifically focuses on four target behaviors (e.g., nurturance, avoiding behaviors that are frightening, “following the lead,” and “overriding voices from the past”) and utilizes video clips to foster positive parenting practices. Parent-Child Interaction Therapy (PCIT), geared towards children ages 12-24 months, is available in a home or office setting and designed to last between 8-12 weeks. This treatment involves didactic sessions and live coaching sessions focusing on parental responsiveness and positive discipline strategies. However, utilizing this treatment approach would miss the large number of children who are under one year of age. Lastly, Trauma Adapted Family Connections (T AFC) is an adapted version of an evidence-based program known as Family Connections designed to enhance protective factors, decrease risk factors, and help to improve child safety and welfare for families. T AFC is designed to target families at risk for neglect and provides them with knowledge and appropriate strategies inside of the home once per week for up to six months. These findings highlight the fact that there are limited interventions for the age category most impacted by NAT, children under one years old which would include specific psychosocial-based approaches.

In light of these findings, it is our hope to determine how many children, given the diagnosis of NAT at Loma Linda University Children's Hospital (LLUCH), are receiving appropriate psychosocial services during hospitalization or referrals at discharge. This information will allow us to assess the severity of this issue and help shed some light on the gap in the literature regarding translating what we know about the effects of trauma and implementing effective interventions to help reduce these effects.

### **The Current Study**

The current study examined children who were previously admitted to Loma Linda University Children's Hospital (LLUCH) with severe physical injuries and identified as victims of NAT based on the physician's examination and the presence of at least one ICD-9 injury code. Researchers investigated the demographic characteristics of this population and determined the percentage of psychosocial consultations which were either provided during hospitalization or arranged by discharge referrals.

## **CHAPTER TWO**

### **METHODS**

#### **Participants**

This study was performed with the Loma Linda University Institutional Review Board (IRB) approval (IRB #5120310). Participants were selected from archival data taken from the Loma Linda University Children's Hospital (LLUCH) Trauma Registry Database. Specifically, participants were prior patients at LLUCH who were admitted for injuries under suspicion of NAT between 1995 and 2012. These cases were identified as NAT based on physician's examination and the presence of at least one ICD-9 injury code (ICD-9 800-959.9). Once patients were identified, it is important to note that for the purposes of this study, diagnostic codes specific to late effects of injury (ICD-9 905-909.9) were excluded, as these injury codes would not apply to the current trauma at time of hospitalization. In addition to the physician examination and injury codes, the selected participants also met one of the following criteria: hospital admission, patient transfer in or out of facility, trauma activation while in the Emergency Department (ED), or death resulting from traumatic injuries. Patient information was de-identified by the Trauma Registry Service prior to being utilized for the analyses in the current study.

#### **Measures and Procedures**

This study was performed to determine if children with suspected NAT were seen by mental health professionals during their hospital stay and if they received discharge recommendations or referrals for outpatient psychological/psychosocial services. In a



previous study (Finckbone et al., 2013), researchers reviewed the Trauma Registry information on 746 children who fit the criteria of NAT from 1995 – 2012 at our institution. This information came from data collection form (Appendix 1), abstracted by trauma registry employees upon discharge and submitted to the Trauma Registry Service and the National Trauma Data Bank®. This data was utilized to collect information on patient demographics, injury characteristics, hospital consultations and discharge recommendations. Preliminary results indicated that while in the hospital, a mere 1.7% of children received a Psychiatry consultation and 2.5% were seen by Psychology. Upon discharge, only 3 out of 746 children (0.4%) were documented to have been referred directly for psychological services. Given the gravity of these initial findings, we sought to verify the results derived from the archival data through an in-depth chart review.

In this follow-up study, a random sample of 20% (n = 151) of the original 746 archival charts were selected. Researchers underwent IRB training, in addition to training by members involved in the original study, on medical chart review procedures. Once training was complete, researchers reviewed the medical records for the encounter date in which the participant was admitted to the hospital and completed a chart review form which reflected the information contained in the original trauma database registry (e.g., services consulted, list of injuries, identified perpetrator). An inter-rater reliability was established at the onset of this chart review (80%) and maintained (82.4%) by double-coding a random sample of 20% to ensure accuracy.

## CHAPTER THREE

### RESULTS

#### **Participant Characteristics**

##### *Demographic Characteristics*

Although LLUCH is the only Level I trauma center hospital servicing four counties, participants in the current sample were primarily children living in San Bernardino County (61.6%). Table 1 depicts the demographic characteristics of the current sample. Of note, approximately 80% of the sample was either Caucasian or Latino (34.4% and 46.4% respectively), which is consistent with the general population of San Bernardino County (US Census Bureau State & County QuickFacts, 2015). The remaining breakdown of the population was comprised of 16.6% African American, 2% American Indian, and 0.7% Asian ethnicities. When compared to the general population of San Bernardino County, Latino's were under-represented and accounted for 46.4% of the NAT sample, which is less than the 52.2% found in the general population (US Census Bureau State & County QuickFacts, 2015). Similarly, the Asian population represented 7.4% of the general population as compared to 0.7% of the NAT sample. In contrast, the Caucasian population represented 30% of the general population and was over-represented by the 46.4% represented in the NAT sample. Lastly, the African American population was over-represented in the NAT sample (16.6%) as they comprised 9.5% of the general population. Notably, the largest group of children who experienced NAT were under the age of 5 (98%) with 66.7% of those children being

under the age of 1. The rate of NAT was also slightly higher for females than males (51% and 49%, respectively). Overall, these demographic characteristics were comparable with results of the initial NAT study.

### *Characteristics of Injury and Response*

Table 2 demonstrates the injury characteristics of the trauma experienced by our NAT sample. Specifically, it provides information on the identified perpetrator, type of injury (i.e., blunt or penetrating), where the injury occurred, and results of a drug screen, typically provided at admission. In regard to the perpetrators of the abuse, results of a frequency analysis indicated that 52.8% of children were injured by their parents; with just under half of the sample receiving injuries from a father/stepfather/mother's boyfriend (40.5%) or a mother/stepmother/father's girlfriend (11.4%). Of note, for approximately 37.1% of the sample, the perpetrator was unknown or unspecified (19.9% and 17.2%, respectively). Furthermore, approximately 7.9% were injured by a non-relative caregiver or other specified person, a more conservative estimate when compared to the estimate in the original study (16%). Consistent with the original sample, the majority of the children (71.8%) were not provided a drug screen, likely due to the young age of the victims.

Table 3 outlines the hospital's response to these NAT cases and the specific level of trauma encountered. Specifically, variables such as how the patient arrived at the hospital, their Glasgow Coma Scale (GCS) assessment results, length of stay, and whether a consultation was initiated upon hospital admission, are all outlined below. At time of injury, approximately half of the sample (55%) were initially taken to a local

hospital and transferred to LLUCH for a high level of trauma-based care. For the remainder of the sample, 22.5% of children were brought to LLUCH in a private car, likely by a parent/family member/caregiver. Upon arrival, a mere 40.4% of the sample received a trauma team consultation upon unit admission.

Additionally, patients' Glasgow Coma Scale (GCS), an indicator of level of consciousness in patients with an acute brain injury, was evaluated upon arrival to determine level of brain injury. Specifically, the emergency team assessed patients' motor, eye, and verbal responses and rated them on a scale ranging from 3 – 15, with 3 indicating that the patient had no eye opening, verbal, or motor response and 15 indicating that the patient was able to spontaneously open their eyes, was orientated, and obeyed motor commands or motor movements. Of note, only 23.9% of the sample had a severe head injury (GCS of  $\leq 8$ ). It is important to note that due to the young age of the patient's in the sample, the GCS may not be a valid indicator of head injury. Specifically, due to the limited verbal skills of the sample, the application of this assessment is often an unreliable measure for children under the age of 3 (Finckbone, Neece, Moores, & Tagge, 2013).

As the length of stay for children with NAT varied, 90% of children had a length of stay lasting between 3 – 30 days. Specifically, 17.2% were discharged within 2 days, 33.1% between 3 –7 days, 28.6% between 7 –14 days, 18% between 15 – 30 days, 9% between 31 –60 days, and 1.4% between 61 –90 days.

Lastly, once admitted, each child was evaluated and assigned ICD-9 codes, based on corresponding injuries, from the medical team. For the purposes of this study, similar to the initial study, these ICD-9 codes were compiled into larger categories of injury

based on the initial codes assigned. Once all items were recoded, a frequency analysis was conducted to examine the injury types and characteristics that were most common among our sample and can be found in Table 4. Within this sample, the most common injury was a contusion of the face, scalp, and neck (40.4%), followed by injury of the eye (37.1%). Notably, this information differs from the primary study which indicated the most common injury was contusion of the eye (60.9%); which represented 35.8% of the current samples injury characteristics. Among this sample, hemorrhages and skull fractures were also frequently indicated as characteristics of injury with subdural hemorrhages representing 31.8%, vault skull fractures representing 19.9%, and unspecified hemorrhages representing 13.2% of the sample. Contusions and fractures made up the remainder of the injury characteristics with the following frequencies represented among the current sample: contusion of any type (23.2%), closed fracture of the leg (16.6%), contusion of the trunk (15.2%), closed fracture of the arm (13.2%), contusion of the extremities (11.9%), and rib fractures (11.3%). Of note, abrasions represented 7.9% of the current sample's injury characteristics.

### **Hospitalization and Consultations**

Table 5 indicates the number and type of consultative services that were provided to NAT patients under the domains of psychological, psychosocial, and child abuse. Based on the literature, we know that receiving appropriate psychosocial services is essential for this population due to the myriad of psychological problems that are often associated with child abuse (Brown, 2003). With that said, findings confirmed results of previous study and indicated that children received a limited amount of psychological

services during their stay. Specifically, out of 151 children in our sample, none were seen by Psychiatry, while 5.3% were provided psychology-based consultative services (e.g., pediatric psychology).

While the findings for psychosocial-based referrals improved from the initial data abstraction evaluations to the current chart review study, there was an extreme lack of psychosocial services provided. Specifically, 4.6% of the sample received psychological services (i.e., emotion-focused therapy, neuropsychological assessment) while in the hospital while 4.0% received a referral to outpatient psychological services. Moreover, while these figures may be skewed by length of stay, 21.2% received a consultation by Chaplain/Spiritual care and 16.6% received a consultation from Child Life, a specialty that is designed to provide psychosocial support to children and families (e.g., coping skills) in the health care setting. With that said, it is important to note that researchers coded “referrals” from physician and chart-based notes where a physician or member of the care team indicated that a specific service was required. More specifically, estimates of services provided may be a gross overestimate as a specific consultation note was not required during chart review.

Furthermore, while social work consultations were requested for 87.4% of these patients and appeared to be the main source of psychosocial care, only 52.3% of the sample was noted to be seen by a social worker during hospitalization. Regarding child abuse consultations, Forensic Pediatricians were consulted in approximately 93.4% of the cases.

Perhaps one of the most alarming findings of this study was that CPS was consulted in only 82.8% of the cases. While this number is refreshingly higher than many

of the other services provided, it raises a significant concern of safety. Specifically, if evidence of abuse is required to receive a diagnosis of NAT, what is happening to the other 17.2% of the sample when child abuse is required to be reported by law? This highlights a potential gap in the standard of care for this population as some children appear to be “falling through the cracks” and are left with an increased safety and psychosocial risk when compared to their counterparts.

### **Discharge Recommendations**

Upon discharge from the hospital, patients are typically provided referrals and recommendations for their continued care. While the majority of the children in this sample received multiple follow-up referrals (e.g., ophthalmology, primary care physician, etc.), it was rare that these referrals included any specific and documented referrals for psychosocial services at discharge. Specifically, results of this study, found in Table 6, indicated that 3.3% of patients received a psychosocial referral at discharge (e.g., social work, psychology, child life, chaplain, etc.). Furthermore, none of the 151 patients in this sample were referred for any type of family-based counseling service and only one patient received a referral for psychiatric services (0.7%). However, when talking to treatment teams, it was communicated that it is Social Work’s duty during NAT consultations to provide the patient with a referral to outpatient therapy services, as well as a follow-up appointment with their outpatient clinic. Thus, while unlikely, it is possible that some children may have received services and referrals directly from Social Work which are not being adequately documented in the database. Of the non-psychosocial based discharges that were provided during discharge, 88.1% were

instructed to schedule a follow-up appointment with specialties such as ophthalmology or orthopedics, 19.9% were instructed to restrict their activities, and 14.6% were provided short-term medications. Notably, 9.3% of the sample did not receive any documented discharge recommendations or referrals.

In addition to recommendations and referrals, evaluations were conducted, by the medical team, to assess the patient's status (i.e., vision, hearing, speech, feeding, bathing, dressing, walking, cognitive, and behavior) and determine if they were functioning at an age-appropriate or impaired level upon discharge. Specifically, these evaluations focused on the behavioral and cognitive functioning of the patients. With that said, of those children who were able to be assessed, the majority of the sample were deemed to be functioning at an age-appropriate level for both behavior and cognition (64.9% and 62.9% respectively). However, 6.6% of the sample were shown to be functioning at the impaired level behaviorally and 7.9% of the sample were cognitively impaired upon discharge.

Lastly, once medically stable, children diagnosed with NAT may be discharged to many possible locations (e.g., home, foster care, acute care facility). Results indicated that 9.9% of the sample died as a result of their injuries prior to discharge. That said, among the children who survived their trauma, 52.3% of children were placed in foster care, 21.9% returned to their homes, 13.2% were provided with alternate living arrangements (i.e., with a family member/non-foster care placement), 2.0% were placed in a skilled nursing facility, 0.7% were placed in a residential facility.



## **CHAPTER FOUR**

### **DISCUSSION**

Overall, the purpose of this study was to conduct an in-depth chart review to examine the validity of the initial findings using the archival data. Specifically, researchers sought to determine how many children, given the diagnosis of NAT at LLUCH, received appropriate psychosocial services during hospitalization or referrals at discharge. In doing so, we hoped to highlight the gap between what the literature says regarding the impact of childhood trauma and the current standard of care in our hospitals.

In our initial study that utilized archival data from the LLUCH Trauma Registry Database, researchers found that the majority of children admitted to the hospital for NAT received minimal psychosocial services while in the hospital and few psychosocial referrals at discharge. Alarming, the results of the current study were generally consistent with previous findings.

Results of this study closely mirrored the demographic profile outlined in the literature which states that in 2014, over 88% of child fatalities, due to abuse or neglect, were of Caucasian, African-American, and Hispanic decent – results that are reflective in the primary ethnic representations of our sample (U.S. Department of Health and Human Services et al., 2014). Furthermore, these demographics are reflective of the 2014 ethnic representations for the 702, 208 cases of child abuse and neglect cited across the country, the greatest of which originated in California (U.S. Department of Health and Human Services et al., 2014).

In the current study, researchers found that Pediatric Psychology saw 8 out of 151

(5.3%) children during the course of their hospitalization and a mere 5 (3.3%) were referred to an outpatient psychological service (e.g., inpatient rehabilitation, neuropsychology, or social work). In addition, 7 out of 151 (4.6%) children in the sample received psychological services during hospitalization. Furthermore, while the majority of the sample (87.4%) received a social work referral, only half (52.3%) of those children were actually seen by a social worker. Finally, while the recommendations made during hospitalization were low, the rate of specific psychosocially-based recommendations or referrals being provided at discharge were under 4%, highlighting a major deficit in the standard of care of our services to this population.

Ultimately, this study demonstrated that psychosocial services, required to address the impact of trauma, are often not being provided. While social work was the primary psychosocial referral made during hospitalization, a question arises as to why less than half of LLUCH NAT patients were actually seen. This finding provokes significant cause for concern because it suggests that despite the extenuating circumstances that led to their hospitalization (i.e., child abuse), these children are not being adequately assessed and thus are not receiving adequate care based on literature that indicates the negative outcomes of children who endure these traumas and furthermore the long-lasting impact if not addressed. Furthermore, this could lead to additional safety concerns of greater severity resulting in recurrent hospitalizations, reduced psychosocial and cognitive abilities secondary to trauma, and ultimately death as a result of numerous life-threatening injuries (Deans et al., 2014; Gerber & Coffman, 2007). It appears there is a lack of an accepted clinical pathway for NAT cases in a medical setting. However, regardless of the reason, which should ultimately be

addressed, these children are likely experiencing significant consequences as a result.

During this study, a question was raised as to what the role of social work was in a medical setting. Based on the information discussed in the initial study, the role of Social Work during NAT consultations includes: providing a psychosocial assessment of the child, making a CPS report (if necessary), and providing supportive services (e.g., counseling, organization plan to continue in-home care, coping strategies) for the duration of the hospitalization. Furthermore, according to a web-based social work degree guide, in serious cases of child abuse, medical social workers may be responsible for providing psychosocial support, grief counseling, and assisting law enforcement in their investigations (Social Work Degree Guide, 2017). In addition, Social Work will often consult with Psychology and Child Life services regarding children with a history of trauma to assist in regulating the environment and will refer the patient and non-offending parent for outpatient therapy and/or to the Victims of Crime (VOC) Resource Center (LLUCH Department of Social Work, personal communication, June 6, 2013).

During the chart review process, researchers noted that outpatient referrals did not appear to be presented within the discharge recommendations within the database. Therefore, it is unclear whether Social Work provides the referrals directly to the patients, places the recommendations in the patient's chart, or whether the referrals are being included in the chart discharge summary and subsequently provided to the patient. With that said, the question then becomes whether patients are receiving any potentially helpful recommendations, regardless of if the referrals were made.

Also, forensic social workers tend to work alongside the forensic pediatrics team to provide an assessment of the child and interview the parents. In addition to these

duties, they tend to be involved in both diagnosis of the child and in the legal aspect of NAT – whereas the forensic social workers attend to the patient and family’s psychological needs through referrals (Department of Forensic Pediatrics, personal communication, June 11, 2013).

While this study found higher rates of referrals to CPS (82.8%) compared to the previous findings (67.6%), it highlighted a 17.2% deficit in mandated referrals. While this is encouraging, it still indicates a significant deficit in mandated referrals. Specifically, the study highlighted that approximately 4 out of 5 children admitted for NAT did NOT receive a CPS referral despite the nature of their injuries requiring mandated reports. It is our hope that although unlikely, these referrals were made and that this issue is reflective of a breakdown in the documentation process. However, these findings beg to question why ALL of these cases are not being reported and further followed by CPS. As these results are alarming, they provide additional concern for the outcomes of this population which according to the literature, account for 4-16% of all children (Gilbert et al, 2009; Chang et al., 2008). Furthermore, research also indicates that approximately 1% of physical abuse cases are ever formally reported, indicating that the previous estimate is likely a gross underestimate (Gilbert et al, 2009; Chang et al., 2008). Furthermore, research also indicates that due to the nature of abuse and injury, in addition to the negative family cycles that exist in the homes, children who receive consultations from CPS are three times more likely to die from abuse than those children in the general population – which could indicate that children NOT referred to CPS may have an even higher rate of dying (Ronan, Canoy, and Burke, 2009). Thus, the findings of this study are concerning, as these children are at a greater risk for further abuse. In

addition, if our sample is reflective of the 1% of cases that are being formally reported, our hospitals must do everything in their power to protect and adequately provide for this population to reduce the potential for further abuse and/or negative outcomes.

Lastly, perhaps the most pertinent finding of this study is the limited number of psychosocial referrals that are being provided at discharge. Within the context of the negative repercussions of trauma, based on research previously highlighted, when children who are exposed to multiple risk factors and trauma do not receive psychosocial services, the neurological/psychological/social impact is lasting (Brown, 2003). Specifically, not only does this level of trauma possess the power to alter brain structures (i.e., amygdala, hippocampus, prefrontal cortex) but these children may experience long-standing and decreased adaptive and cognitive functioning (Shonkoff, 2011; Wotherspoon & Gough, 2008). Therefore, appropriate interventions are imperative because they have been found to increase a child's ability to overcome these negative effects and have led to increased ability to achieve positive psychological outcomes by adulthood (Brown, 2003; De Young, Kenardy & Cobham, 2011; Runyon & Urquiza, 2011).

Even with the low rates of referrals noted in this study, based on research, follow-up or compliance by patients is often very poor and is estimated to range between 26% and 56% depending on the population (Vukmir, Kremen, & Dehart, 1992; Vukmir et al., 1993). With that said, with the low percentage of patients who are receiving referrals in our study, it is likely that the probability of patients who were compliant and went on to receive care from a psychological service or evaluation is even lower.

In light of these findings and the potential impact on this NAT population, it is important to allow research to inform clinical standards and practice. Specifically, with what we know to be true about the impact of trauma on children, a protocol needs to be established in hopes of increasing the psychosocial services received both during hospitalization and after discharge.

### **Implications**

Perhaps one of the most salient take-away messages of this study is the need for well-defined roles and protocols that inform and guide the standard of care for NAT patients. For example, in this study, it appears that all NAT patients are funneled through the forensic pediatrics department. However, it is important to note that forensic pediatricians do not function as a psychological service and would not be providing psychosocial care. Thus, improved communication between departments, including the outlining of their roles and responsibilities is imperative. Also, it is important for future clinicians and researchers to develop a “NAT protocol” that would include appropriate psychosocial services and provide a quick reference guide for available treatments for this population, an outcome that has recently been acknowledged by a team of researchers at Mary Bridge Children’s Hospital and Health Center in Tacoma, Washington (Escobar et al., 2016). For example, to assist in dissemination and coordination of care, a protocol check sheet might be established and attached to every medical chart identified as a NAT patient. Within this protocol should be a list of all the disciplines to be integrated into the patient’s care through consultative and/or referral-based services and should include psychosocial services (e.g., therapy, psychological

consultation). With this system in place, a child would not be eligible for discharge without the signatures from all disciplines indicated on the check sheet and the ultimate approval of the primary attending physician. It would also be beneficial to have the leads of each department update and maintain this protocol, ensuring the proper use of materials and integration of psychosocial services.

### **Limitations**

There are several limitations to this study that should be addressed and taken into consideration when interpreting the findings. Primarily, we do not know the extent to which these findings are representative of what occurs in children's hospitals across the country or if our findings are only specific to LLUCH. Unfortunately, the National Trauma Database does not track information which would be required for this study. However, the significant results of this study do highlight the importance of looking at similar data among different hospitals to ensure that the needs of the patients are being met and that if there are similar patterns, they are addressed. Due to the major implications that our findings likely have on the future trajectories and well-being of these children, most of which are age 1 and under, this study highlights a critical concern. Furthermore, because this study produced similar findings as the initial study, we have confidence that these results may be generalizable to the overall population of the United States, and that there is clearly a need to change and improve hospital standards and protocols among a NAT population.

Additionally, this study was limited by the chart review/archival data that was utilized. Specifically, because this data was previously collected, the researchers may not

have consistent information across patients and did not have the freedom to manipulate and/or expand certain variables (e.g., tracking patients at different time points). While it may be possible that doctors were making recommendations and referrals without proper documentation, potentially highlighting a different set of problems, researchers do not have information regarding the patient's response and/or compliance to these recommendations or referrals. In an ideal situation, researchers would have complete information across participants, information regarding physician's dialogue with the patients and other physicians regarding care, and information regarding compliance and/or follow-up care. Thus, if this study were to be reproduced, researchers should seek to obtain additional variables which could provide more robust and informative data.



## CHAPTER FIVE

### CONCLUSIONS/FUTURE DIRECTIONS

In light of the information discussed in this study, a future direction of this research is to develop and implement a protocol or treatment outline for LLUCH to improve the standard of care for NAT patients. In addition, psychoeducational seminars should be provided to physicians to assist in “closing the gap” between the literature and the psychosocial needs of this population – which can ultimately lead to better health outcomes for this population.

Ultimately, this study highlighted a significant deficit in the overall standard of care for this pediatric NAT population. Much is known, based on literature, regarding the psychological and cognitive impacts of trauma on the developing brain. It is concerning that in a Level-I trauma center, where pediatric care is held as a standard, this population may be “slipping through the cracks” and are not being afforded psychological/psychosocial support to assist in the recovery of the potential impacts of their trauma. With these alarming results, supported by the literature, not only are these children having to utilize varying levels of resiliency to combat negative social environments, the academic, social, emotional, behavioral, neurological, and psychological impact is enough to substantially derail their lives and significantly disrupt their developmental trajectories and abilities to learn – ultimately impacting their futures. Thus, it is our goal for this research to be addressed and replicated in other healthcare settings to ensure that the standard of care provided is congruent with and informed by the research surrounding this population and other similarly medically-fragile

populations. Finally, it is our hope that these findings will indicate the need for psychosocial services among a Pediatric Non-Accidental Trauma population.

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**APPENDIX A**  
**ORIGINAL TRAUMA REGISTRY DATABASE FORM**



Start date  
05/02/07

FEB 2011\_JLG MHS

MC TRAUMA ABSTRACT 2011

In-house  D/C as of / / NTDS: PASS FAIL: TXP EMS

**SECTION I - DEMOGRAPHIC DATA**

Inclusion Criteria:

- 1.2 ED Death Department
- 1.3 ED Discharge Against Medical Advice Service
- 2.1 Admitted Through the Emergency Department
- 2.2 Admitted Directly to Inpatient.

TRAUMA # \_\_\_\_\_ MR # \_\_\_\_\_ SS # \_\_\_\_\_

Patient Name:

Last \_\_\_\_\_

First \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

County:

- 06037 Los Angeles
- 06071 San Bernardino

Race:

- 1 White
- 2 Black
- 3 Hispanic
- 5 American Indian
- 6 Pacific Islander
- 7 Other
- Unknown

Date of Birth:

Sex:  1 Male

Insurance:

- 01 - ~~Medical~~ Type \_\_\_\_\_
- 02 - Medicare
- 05 - Workman's Comp
- 08 - Managed Care
- 09 - BC/BS

**SECTION II - INJURY DATA**

Injury Date & Time: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ : \_\_\_\_\_

Cause of Injury:

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Blunt/Penetrating:  1 Blunt  2 Penetrating

Place of Injury:

- 0 Home
- 1 Farm
- 2 Mine
- 3 Industry
- 4 Recreation
- 5 Street
- 6 Public Building
- 7 Residential Institution
- 8 Other
- 9 Unspecified
- Inappropriate
- Unknown

Work Related  1 Yes  2 No  Inappropriate  Unknown

Protective Devices:

- 00 None
- 01 2-point
- 02 3-point
- 03 Airbag
- 04 Airbag & Belt
- 05 Helmet
- 06 Seatbelt
- 07 Car seat
- 08 Elbow/Knee Pads
- 09 Window Bars
- 10 Other
- Unknown
- Inappropriate

Scene:

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

County:

- 06037 Los Angeles
- 06059 Orange
- 06071 San Bernardino
- 00005 Other

**SECTION III - PREHOSPITAL & TRANSFER DATA**

- Designated By:**  Inappropriate  Unknown
- 1 Field Team
  - 2 Inter-Hospital Transfer – skip directly to **TRANSFER DATA**
  - 3 Private
  - 4 Field Team & Transfer (if you have info from both)

**Transport from Scene:**

- 01 Mercy Air 80009
- 03 AMR 20026
- 04 Police
- 06 Private Car
- 07 Other \_\_\_\_\_
- 09 Sheriff's Air 80002
- 10 CHP Helicopter 80014
- 11 Military Helicopter 80000
- Inappropriate
- REACH AIR 80022
- Rialto FD 10002
- SB City FD 10003
- SB CO. FD 10017
- Unknown

**EMS Sheet Present:**  1 Yes  2 No  Inappropriate

**EMS Agency:** \_\_\_\_\_

**Dispatch:** \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ @ \_\_\_\_\_ : \_\_\_\_\_

**Arrive at Scene:** \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ @ \_\_\_\_\_ : \_\_\_\_\_

**Leave Scene:** \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ @ \_\_\_\_\_ : \_\_\_\_\_

**Pretriage**

- 1 Damage
- 2 Death
- 3 Ejection
- 4 Rollover
- 5 Extrication If Extrication, Time: \_\_\_\_\_
- 6 Pedestrian
- 7 Other \_\_\_\_\_
- 8 Fall
- 9 GSW/Stabbing
- Unknown

Pulse Rate \_\_\_\_\_ GCS: Eye Opening: \_\_\_\_\_

Respiration \_\_\_\_\_ Verbal Response \_\_\_\_\_

B/P \_\_\_\_\_ / \_\_\_\_\_ Motor Response \_\_\_\_\_

SaO2 \_\_\_\_\_ FIO2 \_\_\_\_\_ Total \_\_\_\_\_

RTS \_\_\_\_\_

**Treatments:**  Inappropriate  Unknown

- 1 Airway Mgmt.
  - If Airway:**
    - 01 B & M
    - 02 Cric
    - 03 EOA
    - 04 ETT
    - 05 Oral
    - 06 Oral ETT
    - 07 Trach
    - 08 Nasal ETT
    - 09 NOS
    - 10 Other
    - Inappropriate
    - Unknown
- 2 Mast
- 3 Fluids
  - If Mast:**  1 Applied  2 Inflated  3 Deflated Enroute  Inappropriate
  - If Fluids:**  1 500-2000 ml  2 <500 ml  3 >2000 ml  4 IVF Unk Amt
  - 5 IO Infusion  Inappropriate
- 4 CPR
  - If CPR:** \_\_\_\_\_
- 5 Skeletal Immobilization
  - If Skeletal Immobilization:**  Inappropriate  Unknown
  - 1 Skeletal Immobilization
  - 2 Spine Board, Long
  - 3 Spine Board, Short
  - 4 Cervical Collar
  - 5 KED
  - 6 Other \_\_\_\_\_

**TRANSFER DATA**

**Referring Hospital:** \_\_\_\_\_ Hosp. # \_\_\_\_\_

**Type of Facility:**  1 ED (NOS)

- 2 Trauma Level I ED
- 3 Trauma Level II ED
- 4 Trauma Level III

**Arrive at Referring:** \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ @ \_\_\_\_\_ : \_\_\_\_\_

**Depart from Referring:** \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ @ \_\_\_\_\_ : \_\_\_\_\_

**Type of Tx:**  1 Admission & Stabilization  2 Admission & Surgery  Unknown

**Pediatric Transport Team**  Yes  No

Pulse Rate \_\_\_\_\_ GCS: Eye Opening: \_\_\_\_\_

Respiration \_\_\_\_\_ Verbal Response \_\_\_\_\_

B/P \_\_\_\_\_ / \_\_\_\_\_ Motor Response \_\_\_\_\_

Total \_\_\_\_\_

**SECTION IV - EMERGENCY DEPARTMENT DATA**

**Transport From:**

- 1 Scene
- 2 Other Hospital ER
- 3 Other Hospital Inpt. Facility
- 4 Home
- 5 Physician's Office
- 6 ECF
- 7 Other

**Transported By:**

- 1 Helicopter
- 2 Ambulance
- 3 Car

**Admission at Hospital:** / / @ :

**Attended By:**

- 1 EMT
- 2 EMT-P
- 3 RN
- 4 MD
- 5 RT
- 6 Other Medical Personnel
- 7 Family/guardian/Friend

**TRAUMA TEAM DATA**

**Trauma Team Activated:**

- 1 Yes - (Level A)
- 2 No - (Not Activated)
- 3 Alert - (Level B)
- 4 Declassified (Downgraded)
- I - Level C (Level C)

Activation Time: : : -

Trauma Team Consult:  1 Yes  2 No

Temperature: Method:  1 Oral  2 Rectal  3 Axillary  4 Other  Unk

Pediatric Weight: in  1 Pounds  2 Kilograms

Pulse Rate \_\_\_\_\_ GCS: Eye Opening: \_\_\_\_\_  
 Respiration \_\_\_\_\_ Verbal Response \_\_\_\_\_  
 B/P \_\_\_\_\_ / \_\_\_\_\_ Motor Response \_\_\_\_\_  
 Pediatric TS \_\_\_\_\_ Total \_\_\_\_\_

**Pediatric Trauma Score**

	+2	+1	-1
Size (Kg)	>20	10-20	<10
Airway	Normal	Maintained	Unmaintained
Sys BP	>90	50-90	<50
CNS	Awake	Obtunded	Coma
Open Wound	None	Minor	Major
Fractures	None	Closed	Open/Mult.

SaO2 \_\_\_\_\_ FIO2 \_\_\_\_\_

**Notify Debbie if Level is not the same in COLLECTOR** Trauma Team **A B C DOWNGRADE**

	Time Called	Time Arrived		Time Called	Time Arrived
ED Attending: Physician _____			<input type="checkbox"/> Orthopedics _____		
Trauma Attending _____			<input type="checkbox"/> Plastics _____		
<input type="checkbox"/> Sr. Trauma Resident _____			<input type="checkbox"/> Cardiothoracic _____		
<input type="checkbox"/> Jr. Trauma Resident _____			<input type="checkbox"/> Other _____		
<input type="checkbox"/> Neurosurgery _____			<input type="checkbox"/> Other _____		

Trauma Attendings: **ADULT:**  
 ~~Mehr 10050~~  Rivera 10035  
 Catalano 10  ~~Newen 10055~~  Tavior 10070

**PEDS:**  
 ~~Moore 10046~~  ~~Berg 19991~~

**ED TREATMENTS/PROCEDURES**

Initial CT Scan:  1 Head  2 Abd/Pelvis  3 Other \_\_\_\_\_ Patient Arrival Time to CT : :

**Procedures:**

- 1 DPL  2 Angio  3 IVP  4 ICP  5 Other \_\_\_\_\_
- Chest Tube  CVL-line  Fast scan  Sutures/Staples  Steinmann Pin  Cracked Chest

Drug Screen:  Not Done  Unknown Results

- 1 Amphetamine     4 Cocaine     7 PCP
- 2 Barbiturate     5 Marijuana     8 Other \_\_\_\_\_
- 3 Benzodiazepine     6 Opiate     9 Drug Screen Negative

ETOH/BAC: \_\_\_\_\_

Airway Management:  Inappropriate

- 01 B & M     04 ETT     07 Trach     10 Other \_\_\_\_\_
- 02 Cric     05 Oral     08 Nasal ETT \_\_\_\_\_
- 03 EOA     06 Oral ETT     09 NOS

ED Disposition::

\*CHECK VS FREQUENCY\*

- 01 Home     06 ICU (Q 1 HR VS)
- 02 AMA     07 OR
- 03 Observation     08 Transfer
- 04 Floor >Q2 VS     09 Morgue/Coroner
- 05 ~~Stoopdown~~ Q2     10 Other    CDU    L&D \_\_\_\_\_

ED Discharge Date & Time: \_\_\_\_ / \_\_\_\_ / \_\_\_\_ @ \_\_\_\_ : \_\_\_\_

Duration of CPR: \_\_\_\_\_ min

Units of Blood: \_\_\_\_\_

Admit Service:

- 01 Trauma     06 Cardiothoracic
- 02 ENT     07 Pediatrics
- 03 Neurosurgery     08 PICU
- 04 General Surgery     09 Orthopedics
- 05 Pediatric Surger     10 Other

\_\_\_\_\_ TO \_\_\_\_\_ @ \_\_\_\_\_ ± \_\_\_\_\_

Admitting Physician: \_\_\_\_\_

**SECTION V - ANATOMICAL DIAGNOSIS**

"Head to Toe" (Head....Neck....Chest....Thorax....Abdomen....Pelvis....Extremities....Skin)

- |     |  |     |  |
|-----|--|-----|--|
| 1.  |  | 14. |  |
| 2.  |  | 15. |  |
| 3.  |  | 16. |  |
| 4.  |  | 17. |  |
| 5.  |  | 18. |  |
| 6.  |  | 19. |  |
| 7.  |  | 20. |  |
| 8.  |  |     |  |
| 9.  |  |     |  |
| 10. |  |     |  |
| 11. |  |     |  |
| 12. |  |     |  |
| 13. |  |     |  |

96.07 NGT 31.10 TRACH 43.11 PEG TUBE

57.94 FOLEY CATHETER 86.51 SCALP SUTURE

21.81 NOSE SUTURE

93.54 SPLINT 27.51 LIP SUTURE

93.52 ASPEN COLLAR 86.59 SUTURE SKIN

93.57 WOUND DRESSING 96.59 WOUND IRRIGATION 86.22 WOUND DEBRIDE

OPERATIVE TEMP INCISION TIME NTDB

DATE	TIME	OP #	CODE	DESCRIPTION
/ /	:			
/ /	:			
/ /	:			
/ /	:			
/ /	:			
/ /	:			
/ /	:			
/ /	:			
/ /	:			
/ /	:			

**SECTION VI - INPATIENT/TRAUMA CENTER MANAGEMENT**

- Location**
- 1 Prehospital
  - 2 Transferring
  - 4 Radiology
  - 5 Floor
  - 7 Other
  -

**Non Operative Procedures:**

LOCATION	ICD-9 CODE	DESCRIPTION
	88.76	FAST
	99.03	BLOOD-WHOLE NOS
	87.03	CT-HEAD
	99.04	RBC
	99.05	PLATELETS
	99.07	FFP
SPINE	88.38	CT-C
	87.41	CT-CHEST
	89.52	EKG
	88.72	ECHO/TEE
	88.01	CT-ABD/PELVIS
	99.29	BANANA BAG
	88.38	CT-ALL OTHERS
	99.21	IV ABX
	88.91	MRI-HEAD
	89.61	A-LINE
	88.93	MRI-C/SPINE
	38.93	CENTRAL LINE
	96.04	ETT
	96.71	VENT <96 HOURS
	96.72	VENT >96 HOURS

Facility Out: \_\_\_\_\_

Out of State Transfer:  1 Yes  2 No  Inappropriate  Unknown

If Expired Autopsy:  1 Yes  2 No  Unknown

**Autopsy Status:**

- 1 Autopsy Performed by Coroner
- 2 Autopsy Performed by Hospital at Coroner's request
- 3 Coroner Declined, Autopsy Performed by Hospital
- 4 Coroner Declined, No Autopsy Performed
- 5 Family Declined, No Autopsy Performed
- 6 Indeterminate  Unknown

**Organ Donation:**

- 01 Not requested
- 02 Refused
- 03 Unsuitable
- 04 Heart
- 05 Kidney
- 06 Liver
- 07 Cornea
- 08 Pancreas
- 09 Lung
- 10 Skin
- 11 Bone
- 12 Multiple
- 13 Other
- Inappropriate
- Unknown

**Social Work Consult:**

- 1 Placement
- 2 Substance Abuse
- 3 Family Issues
- 4 Child Abuse
- 5 Other
- Inappropriate  Unknown

**Discharge Recommendations:**

- 01 None
- 02 Follow-up appt.
- 03 Restricted Activity
- 04 OPD P.T.
- 05 OPD O.T.
- 06 OPD S.T.
- 07 Psychiatry
- 08 Life-long Meds
- 09 Long-term Meds
- 10 Short-Term Meds
- 11 Family Counseling
- 12 Special Education
- 13 Home tutor
- 14 Home Nurse
- 15 Visiting Nurse
- 16 Other
- 17 Follow-up pm /PMD
- 18 Wound Care
- Unknown

**FINANCIAL DATA**

Hospital Charges \$ \_\_\_\_\_

Payors: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, Other \_\_\_\_\_

**PEDIATRIC ST:**

	Evaluation	Expected Duration	Pre-exist	Worsen
Vision				
Hearing				
Speech				
Self-Feeding				
Bathing				
Dressing				
Walking				

**Evaluation:**

- 1 Age Appropriate
- 2 Impaired
- 3 Unable
- Inapp/Unknown

**Expected Duration:**

- 1 Under 7 months
- 2 7 - 24 months
- 3 Over 24 months
- Inapp/Unknown

**Pre-existed:**

- 1 Yes
- 2 No
- Inapp/Unknown

**Worsened:**

- 1 Yes
- 2 No
- Inapp/Unknown

**SECTION VIII - F**

Cognition **IONS:** 1 = Yes 2 = No I = Inappropriate U = Unknown

Behavior

**American College of**

- ABCDN** Was there at least hourly determination and recording of B/P, pulse, respirations, and GCS for any trauma patient beginning with EDA, including time spent in radiology, up to admission to the ward, OR, ICU, transfer to another hospital, or Death?
- ABCDN** Did comatose patient (GCS < 9) leave ED before definitive airway (endotracheal tube or surgical airway) was established?
- ABCDN** Was patient sustaining a GSW to the abdomen managed non-operatively?
- ABCDN** Did patient w/abdominal injuries & hypotension (SBP < 90) undergo laparotomy > 1 hr. after EDA?
- ABCDN** Did patient undergo laparotomy > 4 hrs. after EDA?
- ABCDN** Did patient w/EDH or SDH receive a craniotomy > 4 hrs. after EDA, excluding those performed for ICP monitoring?
- ABCDN** Was there an interval of > 8 hrs. between arrival and the initiation of debridement of an open tibial fx, excluding a low velocity GSW?
- ABCDN** Was abdominal, thoracic, vascular, or cranial surgery performed > 24 hrs. after arrival?
- ABCDN** Did patient require reintubation of airway within 48 hrs. of extubation?
- ABCDN** Patient w/diagnosis at D/C of cervical spine injury not indicated in admission diagnosis?

**Hospital Questions:**

- AB** Was there a trauma note by surgeon on activation?
  - AB** Was Trauma Team activated per Trauma Team activation criteria?
- Trauma Team Activation Guidelines:**
- AB** Adult Trauma Score <= 12 (Prior to/or on arrival to ED)?
  - AB** GSW to the head, neck, chest, or abd cavity?

**ADULT Filter Questions:** 1 = Yes 2 = No

**Box:**

**MISC1** **ABCD** Box filled in on ED Trauma Nursing Record?  
Y N

Temperature on OR Arrival: \_\_\_\_\_ Urgent OR:  1 Abdominal  2 Thoracic  3 Vascular  4 Cranial  Inappropriate  Unknown Return to OR on: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Total Blood ICU:  Inappropriate

Whole: \_\_\_\_\_ mL. FFP: \_\_\_\_\_ mL. PRC: \_\_\_\_\_ mL. Plts: \_\_\_\_\_ mL. T & S:  1 Yes  2 No  Inappropriate  Unknown Other: \_\_\_\_\_ mL.

ICU Days: \_\_\_\_\_ Return to ICU:  1 Yes  2 No  Inappropriate  Unknown

Inpatient/Trauma Center Management:  Inappropriate

- |   |  |   |
|---|--|---|
| <input type="checkbox"/> 01 Observation         | <input type="checkbox"/> 11 Operation      | <input type="checkbox"/> 21 ICP Monitor     |
| <input type="checkbox"/> 02 Splinting           | <input type="checkbox"/> 12 Foley Catheter | <input type="checkbox"/> 22 CPR             |
| <input type="checkbox"/> 03 Debridement         | <input type="checkbox"/> 13 Drugs          | <input type="checkbox"/> 23 Traction        |
| <input type="checkbox"/> 04 Nutritional Support | <input type="checkbox"/> 14 Wd Dressing    | <input type="checkbox"/> 24 Irrigation      |
| <input type="checkbox"/> 05 Dialysis Support    | <input type="checkbox"/> 15 IV Fluids      | <input type="checkbox"/> 25 Chest Tube      |
| <input type="checkbox"/> 06 Intraosseous Infuse | <input type="checkbox"/> 16 EEG Monitor    | <input type="checkbox"/> 26 Respiration Sup |
| <input type="checkbox"/> 07 X-ray/CT/Image      | <input type="checkbox"/> 17 Rehab Svcs     | <input type="checkbox"/> 27 Blood           |
| <input type="checkbox"/> 08 Casting             | <input type="checkbox"/> 18 Mast           | <input type="checkbox"/> 28 Other _____     |
| <input type="checkbox"/> 09 Peritoneal Lavage   | <input type="checkbox"/> 19 Suture         | <input type="checkbox"/> Unknown            |
| <input type="checkbox"/> 10 EKG Monitor         | <input type="checkbox"/> 20 NG Tube        |   |

Floor/Rehab Management:  Inappropriate

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> 00 None         | <input type="checkbox"/> 04 Rotor Rest Bed | <input type="checkbox"/> 08 Other _____ |
| <input type="checkbox"/> 01 Chest Tube   | <input type="checkbox"/> 05 Biodyne Bed    | <input type="checkbox"/> Unknown        |
| <input type="checkbox"/> 02 DPL          | <input type="checkbox"/> 06 Whirlpool Tx   |   |
| <input type="checkbox"/> 03 Central Line | <input type="checkbox"/> 07 Debridement    |   |

Other Consults:

1. \_\_\_\_\_  
\_\_\_\_ / \_\_\_\_ / \_\_\_\_
2. \_\_\_\_\_  
\_\_\_\_ / \_\_\_\_ / \_\_\_\_
3. \_\_\_\_\_

Ventilator Days: \_\_\_\_\_

### SECTION VII - OUTCOME/DISCHARGE DATA

General Complications:

- |  |   |   |  |
|--|---|---|--|
| <input type="checkbox"/> 01 DVT                    | <input type="checkbox"/> 17 Intra-Abd abscess   | <input type="checkbox"/> 33 Hematologic                     | <input type="checkbox"/> 50 Loss of Operative Reduction/Fixation |
| <input type="checkbox"/> 02 Shock                  | <input type="checkbox"/> 18 Other abscess       | <input type="checkbox"/> 34 Renal                           | <input type="checkbox"/> 51 Pancreatitis                         |
| <input type="checkbox"/> 03 Cardiac Arrest         | <input type="checkbox"/> 19 Sepsis              | <input type="checkbox"/> 35 Skin                            | <input type="checkbox"/> 52 Pneumonia                            |
| <input type="checkbox"/> 04 MI                     | <input type="checkbox"/> 20 GI Bleed            | <input type="checkbox"/> 37 Septic                          | <input type="checkbox"/> Unknown                                 |
| <input type="checkbox"/> 05 Heart Failure          | <input type="checkbox"/> 21 Pseudomemb Colitis  | <input type="checkbox"/> 38 Ocular                          |  |
| <input type="checkbox"/> 06 Coagulopathy           | <input type="checkbox"/> 22 Sm Bowel Obstruct   | <input type="checkbox"/> 39 Auditory                        |  |
| <input type="checkbox"/> 07 Compartment Syndrome   | <input type="checkbox"/> 23 Ent. Cutan. Fistula | <input type="checkbox"/> 40 Neuro                           |  |
| <input type="checkbox"/> 08 Arrythmia              | <input type="checkbox"/> 24 Enterotomy          | <input type="checkbox"/> 41 Endocrine                       |  |
| <input type="checkbox"/> 09 Arterial Occlusion     | <input type="checkbox"/> 25 Cholecystitis       | <input type="checkbox"/> 42 Psychological                   |  |
| <input type="checkbox"/> 10 Abd wound complication | <input type="checkbox"/> 26 Hyper Bilirubinemia | <input type="checkbox"/> 43 GI                              |  |
| <input type="checkbox"/> 11 Decubitus              | <input type="checkbox"/> 27 Stroke              | <input type="checkbox"/> 44 Other ETOH INTOX Rhabdomyolysis |  |
| <input type="checkbox"/> 12 Acute Renal Failure    | <input type="checkbox"/> 28 Encephalopathy      | <input type="checkbox"/> 45 Aspiration Pneumonia            |  |
| <input type="checkbox"/> 13 UTI                    | <input type="checkbox"/> 29 Musculoskeletal     | <input type="checkbox"/> 46 Disseminated Fungal Infection   |  |
| <input type="checkbox"/> 14 Respiratory Failure    | <input type="checkbox"/> 30 Hepatic             | <input type="checkbox"/> 47 Dehiscence/ +Evisceration       |  |
| <input type="checkbox"/> 15 Hemopneumothorax       | <input type="checkbox"/> 31 Pulmonary           | <input type="checkbox"/> 48 Esophageal Intubation           |  |
| <input type="checkbox"/> 16 Empyema                | <input type="checkbox"/> 32 Cardiovascular      | <input type="checkbox"/> 49 Hypothermia BELOW 97.7F/36.5C   |  |

Treatment Complications:

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> 01 None           | <input type="checkbox"/> 07 Septic          | <input type="checkbox"/> 13 GI          |
| <input type="checkbox"/> 02 Pulmonary      | <input type="checkbox"/> 08 Skin            | <input type="checkbox"/> 14 Ocular      |
| <input type="checkbox"/> 03 Cardiovascular | <input type="checkbox"/> 09 Musculoskeletal | <input type="checkbox"/> 15 Auditory    |
| <input type="checkbox"/> 04 Hematologic    | <input type="checkbox"/> 10 Neuro           | <input type="checkbox"/> 16 Other _____ |
| <input type="checkbox"/> 05 Renal          | <input type="checkbox"/> 11 Endocrine       | <input type="checkbox"/> Inappropriate  |
| <input type="checkbox"/> 06 Hepatic        | <input type="checkbox"/> 12 Psychological   | <input type="checkbox"/> Unknown        |

Pre-existing Medical Conditions:

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> 01 Unknown         | <input type="checkbox"/> 05 Mental Handicap   | <input type="checkbox"/> 09 Psych History |
| <input type="checkbox"/> 02 None            | <input type="checkbox"/> 06 Physical Handicap | <input type="checkbox"/> Inappropriate    |
| <input type="checkbox"/> 03 Acute Illness   | <input type="checkbox"/> 07 Substance Abuse   | <input type="checkbox"/> Unknown          |
| <input type="checkbox"/> 04 Chronic Illness | <input type="checkbox"/> 08 Other _____       |   |

Discharge Disposition:

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> 01 Home                | <input type="checkbox"/> 05 SNF                  | <input type="checkbox"/> 09 Foster Care              |
| <input type="checkbox"/> 02 Left AMA            | <input type="checkbox"/> 06 Residential Facility | <input type="checkbox"/> 10 Other Living Dispo _____ |
| <input type="checkbox"/> 03 Acute Care Facility | <input type="checkbox"/> 07 Expired              |  |
| <input type="checkbox"/> 04 Inpt. Rehab         | <input type="checkbox"/> 08 Jail                 |  |

Discharge Date & Time: \_\_\_\_ / \_\_\_\_ / \_\_\_\_ @ \_\_\_\_ :



**AB** Traumatic limb amputation or uncontrolled external bleeding?

**AB** Chest wall trauma w/significant respiratory distress?

**AB** Traumatic Full Arrest?

**AB** Neck or back injury w/Neuro Deficit?

**PEDS Filter Questions: 1= Yes 2=No**

**MISC1\_\_ABCD** Box filled in on ED Trauma Nursing Record?

**MISC2\_\_ABCD** Attending Signature present on Trauma H & P?

**MISC3\_\_ABCDN** Trauma Activation Level  A  B  C  None

**MISC4\_\_ABCDN** Appropriate Level?

**MISC10\_\_ABCD** Trauma H&P Box Completely filled out

**MISC11\_\_ABCD** Resident Discussed case w/Attending MD

**\*\*\*NO C-SPINE FILTERS FOR PEDIATRICS\*\*\***

## APPENDIX B

### CHART REVIEW DATA COLLECTION FORM

Reviewer: \_\_\_\_\_

ID# \_\_\_\_\_

Admit Date: \_\_\_\_\_

1. What services were consulted? (circle all that apply; Psychosocial Consults in **Bold**)

- |  |                                     |  |
|--|-------------------------------------|--|
| Anesthesia Consultation                                | Adult Protective Services           | Cardiology Consultation                      |
| Brief Addictive Intervention Treatment                 | Cardiothoracic Surgery              | <b>Child Life Consultation</b>               |
| Child Protective Services Consultation (CPS &/or DCFS) | <b>Chaplain / Spiritual Care</b>    | Dentistry Consultation                       |
| Craniofacial Consultation                              | Endocrinology Consultation          | Ear Nose & Throat                            |
| Dermatology Consultation                               | Gynecological Oncology Consultation | Family Practice Consultation                 |
| Forensic Pediatrics (USA & CAN)                        | Gynecology Consultation             | Gastrointestinal Consultation                |
| Genetics Consultation                                  | Law Enforcement Consultation        | Hyperbaric Oxygen                            |
| Hematology Consultation                                | Medicine on Duty Consultation       | Massage Therapy Consultation                 |
| Medical Intensive Care Unit                            | Nephrology Consultation             | Medicine Consultation                        |
| Nutrition Consultation                                 | <b>Neuropsychology Consultation</b> | Neurology Consultation                       |
| Oncology Consultation                                  | Obstetrics & Gynecology             | Neurosurgery                                 |
| One Legacy Consultation (Organ Donation)               | Occupational Therapy Consultation   | OroMaxilloFacial Surgery                     |
| Orthotics Consultation                                 | Ophthalmology Consultation          | Orthopedics                                  |
| Pain Service Consultation                              | Pediatric Surgery                   | Palliative Care Consultation                 |
| Pediatric Intensive Care Unit                          | Plastic Surgery                     | Pediatric Hematology / Oncology Consultation |
| Pediatrics Consultation (includes WAMO)                | Preventative Medicine Consultation  | Physical Medicine & Rehabilitation           |
| Physical Therapy Consultation                          | Pulmonary Consultation              | <b>Psychiatry</b>                            |
| Stroke Team Consultation                               | Safe Kids Consultation              | Rehabilitation                               |
| Surgical Intensive Care Unit                           | Trauma Surgery Consultation         | Speech Therapy / Pathology Consultation      |
| Vascular & Interventional Radiology                    | Vascular Consultation               | <b>Social Work Consultation</b>              |
| Wound / Ostomy Care Team                               |                                     | Urology Consultation                         |
|  |                                     | Ward Admitting Medical Officer               |

Other \_\_\_\_\_

Reviewer: \_\_\_\_\_

ID# \_\_\_\_\_  
Admit Date: \_\_\_\_\_

2. What referrals are included in the discharge summary?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. Social Work:

Was a psychosocial assessment done on the child?                      Yes                      No

Are there psychosocial referrals made at discharge? (i.e., psychology, social work)                      Yes                      No

Were psychological services (i.e., therapy, counseling, etc) provided in hospital?                      Yes                      No

If yes, please describe \_\_\_\_\_

Was a referral made for outpatient psychological services?                      Yes                      No

Was contact made with CPS?                      Yes                      No  
where \_\_\_\_\_

If so, by what dept?      Forensic Peds      Social Work      Attending      Nurse      Transfer Hospital  
Other \_\_\_\_\_

Did CPS come to the hospital?                      Unknown                      Yes                      No

4. What was the child's initial documented living situation?

foster care      biological parents      step parents      Not Documented      Other \_\_\_\_\_

5. Admitting Service / Doctor: \_\_\_\_\_

6. Was a skeletal scan performed?                      Yes                      No

Reviewer: \_\_\_\_\_

ID# \_\_\_\_\_

Admit Date: \_\_\_\_\_

7. What are the child's documented injury for this encounter? (please check current / historical)

Injury Description	Current	Historical

8. Has the child had prior hospitalization? (not including transfer hospital) Yes No

9. What was the presenting problem for the prior hospitalization?  
\_\_\_\_\_

10. Was a drug screen (urine analysis) performed at Loma Linda Hospital? Yes No

11. If Yes:

What service ordered the drug screen?

Forensics    Emergency Department    Attending Physician    Other \_\_\_\_\_

Reason for drug screen referral:  
\_\_\_\_\_

Was the drug screen positive? Unknown Yes No

If so, for what drug? \_\_\_\_\_

12. Identified perpetrator:

- Father            Boyfriend            Step Father            Mother            Girlfriend
- Step Mother      Foster Parent      Baby Sitter      Relative      Unspecified
- Unknown

Reviewer: \_\_\_\_\_

ID# \_\_\_\_\_  
Admit Date: \_\_\_\_\_

13. Primary caregiver age: \_\_\_\_\_

14. Who is Primary caregiver: \_\_\_\_\_

15. Primary caregiver ethnicity:

Caucasian      Hispanic/Latino      African American      Asian

Other \_\_\_\_\_      Unspecified

16. Does the child have siblings?      Yes      No      Unspecified

If yes, how many? \_\_\_\_\_

Sibling ages (if applicable): \_\_\_\_\_

17. Was patient deceased?      Yes      No

Other Notes / Questions:

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**APPENDIX C**

**TABLE 1: DEMOGRAPHIC CHARACTERISTICS OF CHILDREN AND NON-ACCIDENTAL TRAUMA**

<b>Demographics</b>						
	Total Sample		Current Sample		San Bernardino County	
	Frequency ( <i>n</i> = 744)	Percent	Frequency ( <i>n</i> = 151)	Percent	Population Percent 2015	
<b>County Of Residence</b>						
<b>San Bernardino</b>	465	62.6	93	61.6	--	
<b>Other</b>	278	37.4	58	38.4	--	
<b>Ethnicity</b>						
<b>Caucasian</b>	293	39.4	52	34.4	30.0	
<b>African American</b>	126	16.9	25	16.6	9.5	
<b>Latino/a</b>	289	38.8	70	46.4	52.2	
<b>Asian</b>	9	1.2	1	0.7	7.4	
<b>American Indian</b>	26	3.5	3	2.0	2.0	
<b>Age</b>						
<b>Under 1</b>	453	61.1	100	66.7	--	
<b>1 – 4 years</b>	254	34.3	47	31.3	7.2 under 5	
<b>5 – 10 years</b>	29	3.9	3	2.0	26.9 under 18	
<b>11 – 14 years</b>	6	0.8	0			
<b>Gender</b>						
<b>Male</b>	397	53.4	74	49.0	--	
<b>Female</b>	346	46.6	77	51.0	50.2	

**APPENDIX D**

**TABLE 2: INJURY CHARACTERISTICS OF CHILDREN WITH NON-ACCIDENTAL TRAUMA**

<b>Injury Characteristics</b>			
	Total Sample Frequency (n=743)	Current Sample Frequency (n=151)	Current Sample Percent
<b>External Cause of Injury</b>			
Father, Stepfather, Boyfriend	347	61	40.5
Mother, Stepmother, Girlfriend	100	17	11.4
Spouse / Partner	7	--	0.9
Another Child	2	--	0.3
Sibling	6	--	0.8
Grandparent	5	--	0.7
Other Relative	20	2	1.3
Non-relative Caregiver	22	9	5.9
Other Specified Person	98	3	2.0
Unspecified Person	136	26	17.2
Unknown	--	30	19.9
<b>Type of Injury</b>			
Blunt	729	148	98.7
Penetrating	10	2	1.3
<b>Place of Injury</b>			
Home	700	139	92.1
Unspecified	13	1	0.7
Recreation	2	1	0.7
Residential Institution	2	1	0.7
Public Building	3	2	1.3
Foster Care	1	1	0.7
Other	19	5	3.3
<b>Drug Screen</b>			
Amphetamine	3	--	0.4
Barbiturate	3	2	1.3
Benzodiazepine	4	1	0.7
Marijuana	1	--	--
Opiate	7	1	0.7
Drug Screen Negative	195	38	25.2
Not Applicable	527	107	71.8

**APPENDIX E**

**TABLE 3: HOSPITAL RESPONSE TO NON-ACCIDENTAL TRAUMA AND LEVEL OF TRAUMA**

	<b>Hospital Response</b>		
	Total Sample Frequency (n = 743)	Current Sample Frequency (n = 151)	Percent
<b>How Patient Came to Hospital</b>			
Inter Hospital Transfer	393	83	55.0
Private Car	162	34	22.5
Field Team	115	19	12.6
Field Team And Transfer	72	14	9.3
<b>Trauma Team Activation</b>			
Level A	13	--	1.8
Level B	56	--	7.5
Level C	100	--	13.5
Consultation Upon Unit Admission	308	61	40.4
Unknown	5	1	0.7
No Consultation / Activation	261	86	57.0
<b>Glasgow Coma Scale for Total Sample</b>			
Severe Head Injury (< 8)	162	36	23.9
Moderate Head Injury (9-12)	40	6	4.1
Mild Head Injury (13-15)	519	13	8.6
Unknown	7	--	0.9
Inappropriate	9	--	1.2
<b>Glasgow Coma Scale for &gt; 3</b> (n = 51)			
Severe Head Injury (<8)	9	--	17.7
Moderate Head Injury (9-12)	4	--	7.9
Mild Head Injury (13-15)	37	--	72.5
Inappropriate	1	--	2.0
<b>Length of Stay</b>			
1 Day	60	11	7.3
2 Days	63	15	9.9
3-7 Days	280	50	33.1
7 – 14 Days	155	43	28.6
15 – 30 Days	111	27	18
31 – 60 Days	55	13	9.0
61 – 90 Days	10	2	1.4
Over 90 Days	4	--	--



**APPENDIX F**

**TABLE 4: TOP 13 ICD-9 DIAGNOSES COMBINED INTO LARGER CATEGORIES  
WITHIN SAMPLE**

Code Description	ICD-9 Codes		
	Total Sample Frequency (n=743)	Current Sample Frequency (n = 151)	Percentage
<b>Contusion of Face, Scalp and Neck</b>	288	61	40.4
<b>Injury of the Eye</b>	236	56	37.1
<b>Contusion of the Eye</b>	216	54	35.8
<b>Subdural Hemorrhage</b>	196	48	31.8
<b>Contusion, any type</b>	183	35	23.2
<b>Vault Skull Fracture</b>	114	30	19.9
<b>Contusion of the Extremities</b>	112	18	11.9
<b>Closed Fracture of Leg</b>	109	25	16.6
<b>Other Types of Hemorrhage</b>	102	20	13.2
<b>Closed Fracture of Arm</b>	101	20	13.2
<b>Contusion of the Trunk</b>	101	23	15.2
<b>Abrasion</b>	91	12	7.9
<b>Rib Fractures</b>	87	17	11.3

**APPENDIX G**

**TABLE 5: CONSULTATION SERVICES PROVIDED TO NON-ACCIDENTAL TRAUMA PATIENTS**

	<b>Consultations</b>		
	Total Sample Frequency/% (n = 743)	Current Sample Frequency (n = 151)	Percentage
<b>Psychological Consultations</b>			
<b>Psychiatry</b>	11/1.5%	0	0.0
<b>Psychology</b>	20/2.7%	8	5.3
<b>Other Psychosocial Consultations</b>			
<b>Chaplain / Spiritual Care</b>	178/24%	32	21.2
<b>Child Life</b>	101/13.6%	25	16.6
<b>Social Work</b>	616/82.9%	132	87.4
<b>Psychological Services</b>	--	7	4.6
<b>Child Abuse Consultations</b>			
<b>Forensic Pediatrician</b>	636/85.6%	141	93.4
<b>Child Protective Services</b>	502/67.6%	125	82.8
<b>Child Abuse Consult</b>	2/0.3%	--	--

## APPENDIX H

**TABLE 6: DISCHARGE RECOMMENDATIONS, EVALUATION, AND DISPOSITION OUTCOMES FOR PATIENTS OF NON-ACCIDENTAL TRAUMA**

	Discharge		
	Total Sample Frequency/% (n = 743)	Current Sample Frequency (n = 151)	Percent
<b>Psychological Discharge Referrals</b>			
Family Counseling	1/0.1%	0	0.0
Psychiatry	2/0.3%	1	0.7
Psychosocial Referrals	--	5	3.3
<b>Other Discharge Referrals</b>			
Follow Up Appointment	647/87.1%	133	88.1
Short Term Medications	84/11.3%	22	14.6
Long Term Medications	18/2.4%	4	2.6
Life Long Medication	1/0.1%	1	0.7
Restricted Activities	169/22.7%	30	19.9
Nursing Home Placement	2/0.3%	0	0.0
Physical Therapy	42/5.7%	9	6.0
Occupational Therapy	38/5.1%	8	5.3
Speech Therapy	3/0.4%	1	0.7
Special Education	3/0.4%	1	0.7
Wound Care	1/0.1%	0	0.0
Other	47/6.3%	4	2.6
None	77/10.4%	14	9.3
<b>Discharge Evaluation</b>			
Behavioral	(n=139)		
Unable to Assess	4/0.6%	1	0.7
Impaired	42/5.9%	10	6.6
Age Appropriate	528/74.8%	98	64.9
Unknown	132/18.7%	30	19.9
Cognitive	(n=139)		
Unable to Assess	4/0.6%	1	0.7
Impaired	60/8.5%	12	7.9
Age Appropriate	506/71.6%	95	62.9
Unknown	137/19.4%	31	20.5
<b>Discharge Disposition</b>			
Foster Care	386/52.2%	79	52.3
Home	161/21.8%	33	21.9
Other Living Disposition	106/14.3%	20	13.2
Acute Care Facility	8/1.1%	--	--
Skilled Nursing Facility	9/1.2%	3	2.0
Inpatient Rehabilitation	4/0.5%	--	--
Residential Facility	1/0.1%	1	0.7
Expired	65/8.8%	14	9.3