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Psychological Services for Pediatric Victims of Non Accidental Trauma

Robyn Finckbone

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

Psychological Services for Pediatric Victims of Non Accidental Trauma

by

Robyn Finckbone, M.A.

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the requirements for the degree of
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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.

_____, Chairperson

Cameron Neece, Assistant Professor of Psychology

_____

Edward Tagge, Professor, School of Medicine

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Finally, I dedicate this project to all of the children who endure the lifelong affects of non-accidental trauma. May this research raise awareness and shed light on the need for greater care and increased psychological services for all children who experience non-accidental trauma.

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ABSTRACT

Psychological Services for Pediatric Victims of Non Accidental Trauma

by

Robyn Finckbone

Doctor of Psychology, Graduate Program in Psychology
Loma Linda University, June 2013
Dr. Cameron Neece, Chairperson

Child abuse is a significant problem within our society. In 2010, there were approximately 1,560 fatalities as a result of child abuse; 17.6% of those deaths were the direct result of physical abuse and 80% occurred in children under the age of 4. There is a dearth of research examining severe physical abuse among children and, as a result, the demographics of this population are unclear as are the psychological referrals and services provided to these children. The aims of the current study are to identify the demographic characteristics of child victims of non-accidental trauma (NAT, i.e. physical abuse) as well as examine the psychological services provided to these children in the hospital and at discharge. The current sample included 743 children who were admitted to Loma Linda University Children's Hospital after suffering NAT. The majority of NAT patients were under the age of 5 (96%), and of Caucasian (39.4%), Latino (38.8%) or African American (16.9%) decent. Consultations, referrals and recommendations for psychological services were minimal. While in the hospital, less than two percent of the children and families in this sample received a Psychiatry consultation and less than three percent were seen by Psychology consultation services. Upon discharge, only 3 children (0.4%) were documented to have been referred directly for psychological services. The implications of this study show the great need for a medical system of care which ensures

that children with NAT receive psychological treatment as very few of these children received psychological interventions during their initial admission when intervention is felt to be most beneficial.

CHAPTER 1

PSYCHOLOGICAL SERVICES FOR PEDIATRIC VICTIMS OF NON ACCIDENTAL TRAUMA

Child abuse is a significant problem within our society. Approximately 1,560 child fatalities were reported in the United States due to maltreatment in 2010 (Child Maltreatment Report, 2010). Of these children, approximately 80% were under the age of 4 and approximately 62% were 1 year or under (Child Maltreatment Report, 2010). Physical abuse appears to account for a significant number of mortalities in that among those who suffered fatal maltreatment, 22% died from the effects of physical abuse alone and approximately 45% from physical abuse which occurred in combination with sexual abuse, psychological abuse, neglect, and/or medical neglect (Child Maltreatment Report, 2010). Unfortunately, 12% of the children who died from abuse or neglect had received family preservation services (i.e., family crisis intervention) within the past five years (Child Maltreatment Report, 2010). This may suggest that these families are not receiving the support services that they need to prevent fatal maltreatment. It may also suggest that most of these children are not being identified by CPS prior to their fatal injuries. This is significant because research shows that maltreatment, specifically physical abuse, is generally chronic in nature, and that injury requiring hospitalization is likely not the first occurrence of maltreatment (Brown, 2003). Despite the high prevalence of physical abuse (17.6% of all maltreatment reported in 2010; Child Maltreatment Report, 2010) very little research has examined the characteristics of this population, identified risk and protective factors, or investigated the development of these children over time leaving a critical gap in our current understanding of child maltreatment.

There are four generally defined forms of abuse: physical, sexual, emotional, and psychological. The Child Abuse Prevention and Treatment Act defines abuse and neglect as "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." (Child Maltreatment Report, 2010). Abuse is also referred to as Non-Accidental Trauma (NAT) within the medical setting and will be used to describe physical abuse specifically within this study. The term "child maltreatment" is used within the literature to encompass all types of abuse and neglect and will be used as such for the purposes of this study.

There is significant research on the incidence rates of the broad category of child maltreatment; however, the incidence rates of children who have experienced severe physical abuse (i.e., resulting in hospitalization, surgery, and/or death) have limited documentation in the literature. One recent study by Leventhal, Martin and Gaither (2012) estimated an incidence rate of 6.2 per 100,000 children suffer serious physical abuse (defined as "any child who was admitted to the hospital with an injury that was coded as abuse"; ICD-9-CM: 800 – 959.9) annually. There have also been several studies indicating that physical abuse occurs at a greater rate than sexual abuse in the U.S., yet there is significantly more research on sexual abuse and its affects (Feather & Ronan, 2009; Queensland Government Department of Child Safety, 2007; U.S. Department of Health and Human Services, 2007; as cited in Ronan, Canoy, & Burke, 2009; Child Maltreatment Report, 2010). Ronan, Canoy and Burke (2009) also reported that children registered with the department of Child Protective Services (CSP) were three times more

likely to die than children in the general population, suggesting that NAT is a significant predictor of child mortality.

The reasons behind the limited research on child victims of NAT are unclear; however there are several hypotheses to be considered. One reason may be that making a diagnosis of NAT can be difficult due to the variability of presentation, consideration of history and developmental factors (Theodore & Runyan, 2008). Children can present to the Emergency Department with a variety of symptoms including: bruises, abrasions, somatic complaints, behavioral problems, seizures, or unresponsiveness (Theodore & Runyan, 1999). This makes it difficult for physicians to immediately suspect or diagnose abuse without the parent's history raising a red flag. It is also possible that some of these children are never identified due to under reporting by teachers, mental health and medical professionals (Gilbert et al, 2009; Goad, 2008). In one survey of mandated reporters, they endorsed that underreporting may be due to a belief that reporting may do more harm to the child than provide protection (Goad, 2008). Specifically, respondents endorsed that they feared the parents would remove the child from medical care, the child would be prematurely removed from the home, they may have to provide court testimony, and feelings of uncertain in reporting laws (Goad, 2008). Potential samples may also be limited as these children may not ever present to a hospital, medical, or mental health facility (Gilbert et al, 2009; Goad, 2008). One recent study reported that internationally, approximately 1% of all children have substantiated maltreatment reports; while informal estimates show that physical abuse occurs in 4-16% of all children (Gilbert et al, 2009; Theodore & Runyan, 1999). This estimate supports the hypotheses that most maltreated children do not present for treatment and go unidentified. Given this

finding, it is unknown how many children are experiencing physical abuse and do not get the appropriate medical or mental health treatment. A final argument for the lack of research on NAT is a limited amount of federal funding available specifically for this population, making this population more difficult to examine (Theodore & Runyan, 1999). The NIH reported that there was $32 million dollars available for research on child maltreatment annually since 2009, however this is in the bottom 30% of funding available for research with the median being $631 million in 2013 and $634 million estimated for 2014 (NIH, 2012). In 1999, Theodore and Runyan reported that only 1 NIH funded study had been done with maltreated children, however there had been several studies done through private funding.

We suspect that child victims of NAT are at risk for negative psychological outcomes given the host of research examining the poor psychological and medical outcomes of childhood victims of other types of maltreatment (Brown, 2003; MacMillan, Wathen, Barlow, Fergusson, Leventhal, & Taussig, 2009; De Young, Kenardy & Cobham, 2011; Springer, Sheridan, Kuo, Carnes, 2003, Jonson-Reid, Kohl, & Drake, 2012). However, considering the limited ability to identify these children for research studies, there is limited data on the services which are provided to these children and how early intervention impacts their outcomes. Moreover, the demographic characteristics of this population are unknown, further limiting our ability to identify samples for research.

Thus, the aims of this study are to (1) identify the demographic characteristics of children who are victims of NAT, which will facilitate the recruitment of future research samples and (2) given the suspected risk for poor psychological outcomes, we sought to

examine what, if any, psychological services are provided to these children during hospitalization or referrals after hospitalization.

Risk Factors for Maltreatment

Family structure and socioeconomic status (SES) are well-documented risk factors in the research on child maltreatment (Ronan, Canoy & Burke, 2009). The statistics for the demographic information of child maltreatment indicate that 40% of victims were maltreated by their mother acting alone, where 20% of victims were maltreated by their fathers acting alone, and 18% of victims were maltreated by both parents (Child Maltreatment Report, 2009). These statistics are for the broad category of child maltreatment; the statistics of physical abuse are still unknown. We do know that children who are living in low income single family homes are more likely to be at specific risk for physical abuse (Larrivee, Tourigny & Bouchard, 2007). Demographically, we also know that in 2010 44.8% of child fatalities were Caucasian, 21.9% were African-American and 21.4% were Hispanic; again, these statistics are unknown for physical abuse specifically (Child Maltreatment Report, 2010).

The known risk factors for abuse include risk for all types of child maltreatment. It is unknown whether risk factors change depending on the type of maltreatment. It is important for this study to examine whether the demographic risk factors are different for children who have been physically abused (i.e., age, sex, perpetrator).

Maltreatment, Psychopathology and Adult Outcomes

We know from the vast research that children who experience trauma can have a broad range of negative outcomes (Brown, 2003; MacMillan, Wathen, Barlow, Fergusson, Leventhal, & Taussig, 2009; De Young, Kenardy & Cobham, 2011; Springer, Sheridan, Kuo, Carnes, 2003, Salzinger, Feldman, Ng Mak, Mojica, Stockhammer, & Rosarie, 2002; Dufour, Clement, Chamberland, & Dubeau, 2011; Delima & Vampani, 2011; Ronan, Canoy, & Burke, 2009; Perry, 2009). The above research indicates that children may experience psychological, externalizing behaviors, medical and academic difficulties as a result of trauma. Some negative psychological outcomes may include post traumatic stress disorder, substance abuse, depression, anxiety, antisocial behavior, personality disorders, eating disorders, lowered self-esteem, poor social skills, and suicidal and self harm behaviors. They may also exhibit externalizing behaviors which may include: risky behaviors, disruptive behavior problems, criminal involvement, aggression, delinquency, teenage pregnancy. There may also be medically negative sequalae of maltreatment including: somatic complaints, IBS, and chronic pain. Academic difficulties and language delays may also be common; however it is possible for some children to continue to develop typically with minimal adjustment issues (Brown, 2003; MacMillan, Wathen, Barlow, Fergusson, Leventhal, & Taussig, 2009; De Young, Kenardy & Cobham, 2011; Springer, Sheridan, Kuo, Carnes, 2003, Salzinger, Feldman, Ng Mak, Mojica, Stockhammer, & Rosarie, 2002; Dufour, Clement, Chamberland, & Dubeau, 2011; Delima & Vampani, 2011; Ronan, Canoy, & Burke, 2009; Perry, 2009).

There has been increasing research on the effects of adverse childhood experiences (ACE) which suggest that the number of adverse experiences a child has is directly related to their affective, somatic and behavioral outcomes (Jonson-Reid, Kohl, & Drake, 2012). Research has shown that there is a linear relationship between chronic adverse experiences and the severity of negative outcomes in both childhood and adulthood (Jonson-Reid, Kohl & Drake, 2012). It is also suspected that injury severity is a moderating factor in the development of negative outcomes (Skowron & Reinemann, 2005), This is important to this study as NAT is, generally, chronic in nature and more severe than other types of maltreatment, therefore suggesting that the children in this study are at an increased risk for the development of severe negative outcomes.

Benefits of Early Psychological Interventions

We know that maltreated children who receive early interventions are more likely to have positive psychosocial outcomes as adults than children who do not (MacMillan et al, 2009; Brown, 2003; De Young, Kenardy & Cobham, 2011; Springer, Sheridan, Kuo, Carnes, 2003, Runyon & Urquiza, 2011). However, we do not know how many children are receiving services while in the hospital setting. It is important to determine when services are being offered to both the children and non-offending family members (Runyon & Urquiza, 2011). Providing psychological services to the family is the most important intervention for children who have experienced NAT due to the dysfunctional state of the family (Runyon & Urquiza, 2011). Since it has been established that early psychological interventions are the most beneficial then it would be in the best interest of

the child to have access to those services as soon as they have been identified as a victim of NAT within the hospital setting.

There has been increasing research examining treatment for child victims of NAT specifically focusing on the importance of providing services for the non-offending parent as well as for the child in order to re-establish the family unit and address the potential for child psychopathology (Brown, 2003). This research is especially important to the body of literature due to the young age of children who suffer NAT, it is imperative that the non-offending parent / caregiver receive intervention services to aid the child (Runyon & Urquiza, 2011). The dropout rate for parents of children with NAT is high due to resistance to psychological intervention as well as the low SES of this population (Runyon & Urquiza, 2011).

Runyon and Urquiza (2011) described several treatment approaches that are commonly used, however they have little to no empirical evidence at this time (for example, trauma-focused play therapy and therapeutic day care). There are a limited number of studies which have provided empirical support for treatment approaches with trauma. In one randomized trial with families at risk for maltreatment, attachment-based interventions were conducted, and found that the parents were more sensitive, attentive and organized in their parenting after the intervention, thus reducing their risk for maltreatment (Moss, Dubois-Comtois, Cyr, Tarabulsy, St-Laurent & Bernier, 2011). Additionally, Thomas and Zimmer-Gembeck (2011) found that parents of children at high risk for maltreatment who participated in Parent Child Interaction Therapy (PCIT) had decreased levels of stress and their children had decreased levels of behavior problems. As with the attachment-based intervention, these parents reported less

maltreatment and increased parental sensitivity (Thomas & Zimmer-Gembeck, 2011). Chaffin and Friedrich (2004) also describe PCIT as an effective family intervention specifically for families at risk for NAT. However, while PCIT addresses the interpersonal relationships and externalizing problems of the child, it does not address the child's mental health and should be supplemented with psychological interventions, such as CBT, to address the child's mental health needs directly (Runyon & Urquiza, 2011).

One meta-analysis examined the interventions available for maltreatment and reported that when high-risk parents received psychological interventions they had significant improvements in their parenting skills in comparison to no treatment and community treatment groups (Skowron & Reinemann, 2005). One study specific to NAT by Swenson and Brown (1999) found that cognitive behavioral group therapy was effective in reducing school age children's symptoms of PTSD, anxiety, dissociation, and anger after NAT (Brown, 2003). Webster-Stratton and Hammond (1998) examined the common risk factors for parents and outcomes for children (self report abuse potential and disruptive behavior, respectively) during concurrent parent and child interventions, and found that those in the combination group had greater positive interactions and decreased disruptive behavior problems (as cited in Brown, 2003). This finding suggests that combination parent and child interventions are more effective than parent or child interventions alone, thus is an important area of future research in this population.

The Current Study

The current study examined children who were admitted to the hospital with severe physical injuries and are suspected victims of NAT. We investigated the

demographic characteristics of these children as a group. Once the population was identified, we looked to see whether the children received any psychological services during their hospitalization and whether they received referrals for follow up outpatient psychological services. This was feasible because LLUCH has a preexisting Psychology service which is available to pediatric patients for individual therapy to address coping, adjustment, and behavioral problems secondary to hospitalization, brief neurological assessments, developmental assessments and family support. These services are provided at the request of the attending Physician. There are two research questions for this data analysis.

1. What are the characteristics of children hospitalized with suspected NAT?
2. Are children with suspected NAT seen by mental health professionals during their hospital stay? Additionally, are they receiving discharge recommendations for outpatient psychological services?

CHAPTER 2

METHODS

Participants

Participants were prior patients at Loma Linda University Children's Hospital (LLUCH) who were admitted for injuries under suspicion of NAT. The participants' information was identified as a case of NAT and coded into a database by Loma Linda University's Trauma Registry Service. Patient information was de-identified by the Trauma Registry Service prior to being used for the analyses in the current study.

The LLUCH Trauma Registry database contains information on all pediatric patients who sustained a traumatic injury and meet criteria for at least one injury or poisoning code (ICD-9-CM: 800-959.9), which describe the classification and diagnosis of injury. All diagnostic codes for late effects of injury (ICD-9-CM: 905-909.9) are excluded as these injury codes would not apply to current trauma. In addition they must also include one of the following criteria: Hospital admission, patient transfer in or out of facility, trauma activation while in the Emergency Department or death resulting from traumatic injury.

Measures and Procedures

The Data Collection Form (Appendix 1) lists all the elements collected and entered into the registry. The Data Collection Form is completed by the medical team upon discharge and then submitted to the Trauma Registry service which codes all of the information and enters it into their database. The information is also submitted to the

National Trauma Data Bank® for national comparison and reviewed by the American College of Surgeons.

CHAPTER 3

RESULTS

Participant Characteristics

Demographic Characteristics

Participants in the current sample were primarily children from within San Bernardino County (62.6%). Table 1 depicts the demographic characteristics of the current sample. The demographics for the total sample will be reported and compared with the general population sample, as they did not differ from the San Bernardino County participants. Approximately 80% of the sample was either Caucasian or Latino (39.4% and 38.8% respectively) which is consistent with the general population of San Bernardino County (US Census Bureau State & County QuickFacts, 2012). The rest of the population was comprised of 16.9% African American, 3.5% American Indian and 1.2% Asian. When compared to the general population of San Bernardino County, African Americans were over-represented in our sample comprising 16.9%, which is more than the 9.6% found in the general population (US Census Bureau State & County QuickFacts, 2012). Similarly, the American Indian population comprised 2% of the general population but 3.5% of the NAT sample (Table 1). The largest group of children who experienced NAT were under the age of 5 (95.4%) with 61% of those children under the age of 1. The rate of NAT was also slightly higher for males than females (53.4 and 46.6%, respectively).

Table 1
Demographic Characteristics of Children with Non Accidental Trauma

Demographics					
	Total Sample		San Bernardino County Sample		San Bernardino County
	Frequency (*n* = 744)	Percent	Frequency (*n* = 465)	Percent	Population Percent 2011
County Of Residence					
San Bernardino	465	62.6			
Other	278	37.4			
Ethnicity					
Caucasian	293	39.4	183	39.4	32.6
African American	126	16.9	87	18.7	9.6
Latino/a	289	38.8	174	37.4	49.9
Asian	9	1.2	6	1.3	6.9
American Indian	26	3.5	15	3.2	2.0
Age					
Under 1	453	61.1	274	58.9	
1 – 4 years	254	34.3	164	35.3	7.7 under 5
5 – 10 years	29	3.9	31	5.4	28.7 under 18
11 – 14 years	6	0.8	1	0.2	
Gender					
Male	397	53.4	249	53.5	
Female	346	46.6	216	46.5	50.3

Injury Characteristics And Response

Table 2 presents the injury characteristics of the trauma; specifically, it shows where the injury took place, the identified perpetrator, type of injury and whether the participant received a drug screen at admission. A frequency analysis showed that 60% of children were injured by their parents; with approximately half of the children in the complete sample perpetrated by their Father, Stepfather or Mother's Boyfriend (46.6%)

and 13.4% by their Mother, Stepmother, or Father's Girlfriend. Approximately 16% were injured by a non-relative caregiver or other specified person. There were 18.3% of children whose perpetrator was unspecified. Upon further post hoc analysis of qualitative injury notes, it was found that the majority of "unspecified" perpetrators were cases in which the parent/caregiver reported "finding the child with injuries" (72.8%). However, additional analysis showed that there was a small percentage which in which the parents (20.5%), sibling (1.5%), babysitter (1.5%), relative (2.2%) or Foster Parent (1.5%) were suspected, but perpetrator was not determined prior to discharge. Additionally, we found that within the "Father, Stepfather, or Boyfriend" category biological father's made up 38.9%, boyfriend's made up 9.7%, and step father's made up only 2.5% of that category. However the remaining cases within this category could not be qualitatively coded (51.1%). It should also be noted that upon further analysis "mother's boyfriend" was represented in multiple categories, which included: 27% of the "other specified person" category as well as 28% of the "spouse/partner" categories.

Approximately 95% of NAT took place in the home and was caused by blunt force trauma. Within the sample, 2.3% of the children had positive drug screening, including Amphetamines, Barbiturates, Benzodiazepines, Marijuana, and Opiates; however, the majority of the children (71.2%) were not screened likely due to the young age of the victims. Surprisingly, of the children who tested positive only two of them were over the age of four. Given the young age of the children who did test positive, it is suspected that the use of illicit substances was an additional form of abuse or may possibly be the result of drug use in a breast feeding mother for very young children. This appears to be an area of inconsistency in the clinical pathway of treating these children

and the reasons for drug screening are unclear at this time. Considering the young age and number of children who did test positive (2.3% mostly under the age of 4) in comparison to the number of children who were not screened (71.2%), this may be an important area to bring awareness to as an additional form of abuse.

Table 2
Injury Characteristics of Children with Non Accidental Trauma

Injury Characteristics		
	Frequency (n=743)	Percent
External Cause of Injury		
Father, Stepfather, Boyfriend	347	46.6
Mother, Stepmother, Girlfriend	100	13.4
Spouse / Partner	7	0.9
Another Child	2	0.3
Sibling	6	0.8
Grandparent	5	0.7
Other Relative	20	2.7
Non-relative Caregiver	22	3
Other Specified Person	98	13.2
Unspecified Person	136	18.3
Type of Injury		
Blunt	729	98.6
Penetrating	10	1.4
Place of Injury		
Home	700	94.6
Unspecified	13	1.8
Recreation	2	0.3
Residential Institution	2	0.3
Public Building	3	0.4
Foster Care	1	0.1
Other	19	2.6
Drug Screen		
Amphetamine	3	0.4
Barbiturate	3	0.4
Benzodiazepine	4	0.5
Marijuana	1	0.1
Opiate	7	0.9
Drug Screen Negative	195	26.4
Not Applicable	527	71.2

Table 3 depicts the hospitals response to NAT; specifically, how the patient arrived at the hospital, Glasgow Coma Scale assessment (GCS), whether the trauma team was consulted versus activated upon arrival at the emergency department and the child's length of stay. At time of injury, approximately half of the children were taken to a local hospital and transferred to LLUCH for a higher level of trauma care, while another 25% of patients were brought in by ambulance from either the scene of injury or rerouted to LLUCH for higher trauma care. The final 20% of children were brought into LLUCH by a parent, family member or caregiver.

Patients GCS was evaluated upon arrival and is reported in Table 3. The emergency team assessed patients' motor, eye response, and verbal response using the Glasgow Comma Scale (GCS), which records the level of brain injury on a scale from 3 – 15, with 3 meaning that the patient had no eve opening, verbal or motor response and 15 meaning that the patient was able to spontaneously open eyes, was oriented and obeyed motor commands or motor movements (Teasdale & Jennett, 1974). Approximately 70% of the children had either a mild or no head injury (GCS of 13-15), 5% had a moderate head injury (GCS of 9-12), and 22% had a severe head injury (GCS $\leq$ 8) (Table 3; Advanced Trauma Life Support, 1993).

However due to the young age of patients in this sample, the GCS is not a valid measurement of head injury; specifically, the patients' verbal skills and the application of the assessment is unreliable in children under the age of 3 (LLUCH Department of Pediatric Neurosurgery, personal communication, February 22, 2013). The use of a pediatric GCS would need to be used to make it a valid measurement in these children. Therefore we separated out the children who were over the age of 3 and reported those

statistics separately. Of the sample that was 4 years or older, 75% had either a mild or no head injury (13 – 15), 6% had a moderate head injury (9 – 12) while 19% had a severe head injury (< 8).

Once the patient reached the emergency department, they were evaluated for level of response required by the trauma team. There are three levels of trauma activation within LLUCH, Level A, Level B and Level C. One percent of the patients in this sample required a full team response (Level A), which is the highest level of trauma response and takes place when a patient comes in with age-specific hypotension, uncontrolled bleeding, respiratory compromise, GCS less than or equal to 8, gunshot wounds, or traumatic full arrest (LLUCH, 2008). An additional 7.5% of the children in this sample activated at a partial team response (Level B). A level B activation is described as meeting one or more of the following: neck or back injury with neurological deficit, single air rifle or BB gun wounds to the abdomen, suspicion of potentially serious intra-abdominal injury, multi-system injury, or trauma transfer who are likely to be admitted to the Pediatric service and do not meet a level A activation (LLUCH, 2008). If the patient does not meet the criteria for an activation of the trauma team, they may have a trauma consultation in the emergency department with the on call physicians; this happened in approximately 13.5% of cases (Level C). Another 41.6% of cases received neither a trauma activation nor consultation in the emergency department, but did receive a non-emergency trauma consultation on the admitting unit. The remaining 35.6% did not appear to receive a consultation from the trauma team.

The length of stay for children with NAT varies, and may influence the availability of some consultation services. Most children in this study had a length of stay

between 3 – 30 days (74%). More specifically, 16.7% were discharged within 2 days, approximately 38% stayed for 3-7 days, 21% stayed 1 – 2 weeks, 15% stayed 2 weeks – 1 month, 7.5% stayed for 1 – 2 months, 1.4% stayed for 2 – 3 months and .5% stayed for over 3 months, with 1 of those children staying inpatient for 6 months.

Table 3
Hospital Response to Non Accidental Trauma and level of trauma

Hospital Response		
	Frequency (n = 743)	Percent
How Patient Came to Hospital		
Inter Hospital Transfer	393	53.0
Private Car	162	21.8
Field Team	115	15.5
Field Team And Transfer	72	9.7
Trauma Team Activation		
Level A	13	1.8
Level B	56	7.5
Level C	100	13.5
Consultation Upon Unit Admission	308	41.6
Unknown	5	0.7
No Consultation / Activation	261	34.9
Glasgow Coma Scale for Total Sample		
Severe Head Injury (< 8)	162	21.7
Moderate Head Injury (9-12)	40	5.3
Mild Head Injury (13-15)	519	69.8
Unknown	7	0.9
Inappropriate	9	1.2
Glasgow Coma Scale for > 3	(*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
Length of Stay		
1 Day	60	8.1
2 Days	63	8.5
3-7 Days	280	37.9
7 – 14 Days	155	21
15 – 30 Days	111	15
31 – 60 Days	55	7.5
61 – 90 Days	10	1.4
Over 90 Days	4	0.5

Once admitted, the child is evaluated and each injury a patient presents with is given an ICD-9 code from the medical team. For the purposes of this study, the 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 which injury types were the most common among this sample. These frequencies are presented in Table 4. The most common injury was contusion of the eye (60.9%), followed by contusion of the face, scalp or neck (38.8%). Hemorrhage and skull fractures were also frequent injuries among this sample with subdural hemorrhages (26.4%), unspecified hemorrhages (13.7%) and vault skull fractures (15.3%) being most common. Contusions of the extremities made up an additional 15.1% and contusions of the trunk another 13.6% of all injuries. Fractures also made up several of the most common injury types within the sample and included skull fractures, which were mentioned above (15.3%), leg fractures (14.7%), arm fractures (13.6%) and rib fractures (11.7%) being most common. These percentages may reflect the findings of historical abuse during skeletal surveys which may artificially inflate the number of children within each injury code. It is important to note that the majority of patients had multiple injury codes (84.5%).

Table 4
Top 13 ICD-9 diagnoses combined into larger categories within sample

ICD-9 Codes		
Code Description	Frequency (n=743)	Percentage
Contusion of Face, Scalp and Neck	288	38.8
Injury of the Eye	236	31.8
Contusion of the Eye	216	29.1
Subdural Hemorrhage	196	26.4
Contusion, any time	183	24.6
Vault Skull Fracture	114	15.3
Contusion of the Extremities	112	15.1
Closed Fracture of Leg	109	14.7
Other Types of Hemorrhage	102	13.7
Closed Fracture of Arm	101	13.6
Contusion of the Trunk	101	13.6
Abrasion	91	12.2
Rib Fractures	87	11.7

Hospitalization and Discharge

Consultations

Table 5 indicates the number and type of consultation services provided to NAT patients in regards to psychological, psychosocial, and child abuse domains. One area of important attention is assessment of mental health during hospitalization post NAT, given the host of psychological problems associated with child abuse (Brown, 2003). It was found that children in LLUCH received limited psychological services during their stay; specifically, less than 2% were seen by Psychiatry and less than 3% were seen by Psychology consultation services. There was a higher rate of consultations that may fit under the umbrella of psychosocial services including 83% who were seen by a Social Worker, 14% by Child Life and 24% who were provided with spiritual care. Social work appears to be the main source of psychosocial care provided to these patients. When consulted on a NAT patient Social Work provides a psychosocial assessment, makes the CPS report if necessary, and provides supportive services for duration of hospitalization. Social Work will consult with Psychology and Child Life services for children with clear histories of torture to regulate the environment, and refers the patient and non-offending parent for outpatient therapy and to the Victims of Crime (VOC) Resource Center (LLUCH Department of Social Work, personal communication, June 6, 2013). However, Social Work's outpatient referrals do not appear to be represented within the discharge recommendations of the database. 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 provided to

the patient. This begs the question of whether the patients are actually receiving these recommendations, regardless of whether Social Work is making the referral.

In terms or investigating the abuse, Forensic Pediatrics was consulted in approximately 86% of the cases while CPS was consulted in only 68% of the cases. Surprisingly, there were 5% of the children in the sample that did not receive any documented psychosocial or child abuse consultations (i.e., Psychology, Psychiatry, Forensic Pediatrics, or Social Work). Forensic Pediatricians are consulted when there is a suspicion on NAT. They provide an assessment of the child and interview the parents as well as consulting with a forensic Social Worker (Department of Forensic Pediatrics, personal communication, June 11, 2013). Forensic Pediatrics appears to be involved in diagnosis and the legal aspects of NAT while Social Work attends to the patient and family's psychological needs through referrals.

Table 5
Consultation Services Provided to Non Accidental Trauma patients

Consultations		
	Frequency (n = 743)	Percentage
Psychological Consultations		
Psychiatry	11	1.5
Psychology	20	2.7
Other Psychosocial Consultations		
Chaplain / Spiritual Care	178	24.0
Child Life	101	13.6
Social Work	616	82.9
Child Abuse Consultations		
Forensic Pediatrician	636	85.6
Child Protective Services	502	67.6
Child Abuse Consult	2	0.3

Discharge Recommendations

Upon discharge from the hospital patients are given referrals and recommendations for their continued care. The majority of children in the sample received multiple follow up referrals. Unfortunately, children in the current sample rarely received a documented referral for psychological services at discharge. Only one patient was referred for family counseling and 2 patients were referred to psychiatry (0.1 and 0.3%, respectively). However, a part of the Social Work consultation is to provide the patient with a referral to outpatient therapy services as well as a follow up in their outpatient clinic (LLUCH Department of Social Work, personal communication, June 6, 2013) suggesting that some children may be receiving services through social work which are not being documented in the database. The majority of patients received medical discharge recommendations; specifically, 87% were instructed to schedule a follow up appointment, 23% had restricted activities, while 10% were given no documented discharge recommendations or referrals. This suggests that while Social Work reports providing outpatient psychological referrals, they are not being documented in the patients discharge summary and therefore not coded into the database. Evaluations were conducted by the medical team to assess the patients' status (e.g., vision, hearing, speech, feeding, bathing, dressing, walking, cognition, and behavior) as either age appropriate or impaired upon discharge. Specifically, we examined the behavioral and cognitive functioning of patients. In the current sample, 6% had impaired adaptive behavioral skills and 8.5% with impaired cognitive functioning.

Once medically stable, children with NAT are discharged to many possible locations. Of the children in this sample, 52% were placed in foster care, 22% returned to

their home, 14% were placed in another living disposition (i.e., with family member / non foster care), while almost 9% died as a result of their injuries. Of the children in this sample who died, 91% of them had hospitalization which lasted less than 1 week and 40% less than 1 day, suggesting that they may have died as a result of their injuries while still in the emergency department. These discharge outcomes are detailed in Table 6.

Table 6

Discharge Recommendations, Evaluation, and Disposition Outcomes for patients of Non Accidental Trauma

Discharge		
	Frequency (n = 743)	Percent
Psychological Discharge Referrals		
Family Counseling	1	0.1
Psychiatry	2	0.3
Other Discharge Referrals		
Follow Up Appointment	647	87.1
Short Term Medications	84	11.3
Long Term Medications	18	2.4
Life Long Medication	1	0.1
Restricted Activities	169	22.7
Nursing Home Placement	2	0.3
Physical Therapy	42	5.7
Occupational Therapy	38	5.1
Speech Therapy	3	0.4
Special Education	3	0.4
Wound Care	1	0.1
Other	47	6.3
None	77	10.4
Discharge Evaluation		
Behavioral		
Unable to Assess	4	0.6
Impaired	42	5.9
Age Appropriate	528	74.8
Unknown	132	18.7
Cognitive		
Unable to Assess	4	0.6
Impaired	60	8.5
Age Appropriate	506	71..6
Unknown	137	19.4
Discharge Disposition		
Foster Care	386	52.2
Home	161	21.8
Other Living Disposition	106	14.3
Acute Care Facility	8	1.1
Skilled Nursing Facility	9	1.2
Inpatient Rehabilitation	4	0.5
Residential Facility	1	0.1
Expired	65	8.8

CHAPTER 4

DISCUSSION

The aims of this study were to (1) identify the demographic characteristics of children who are victims of NAT, and (2) examine what, if any, psychological services are provided to these children during their hospitalization and referrals at discharge. We found that the majority of the children hospitalized in this sample were Caucasian or Latino; interestingly, there were higher rates of African Americans and American Indians than what is represented in the general population of the sample demographic area. This finding appears to be consistent with the broad maltreatment demographic characteristics (Child Maltreatment Report, 2010). Not surprisingly, over 95% of the population was 4 years of age or younger and 61% was under the age of one. This finding is consistent with the data that children under the age of 4 are at the highest risk for maltreatment and NAT related fatalities (Child Maltreatment Report, 2010). Just under half of the children within the sample were injured by a male parent / caregiver and consistently, just under 95% were injured in the home. This is contradictory to the literature on child maltreatment which reports that maternal caregivers are more likely to be the perpetrator (Child Maltreatment Report, 2010; Brown, 2003). However, one other study suggested that non-biological male caregivers may be more likely to perpetrate serious physical injuries and biological and non-biological female caregivers were more likely to engage in other types of maltreatment (Brown, 2003). This may suggest that while women are more likely to perpetrate forms of maltreatment that are less overtly aggressive, men are more likely to act aggressively and inflict physical abuse. However, our data does not specify between biological parent, step parent and boyfriend/girlfriend, which we suspect

would provide a much different overall finding and contribute significantly to the body of research. Less than 5% of the sample was seen by a psychological consultation service and only 3 children were given documented referrals for outpatient psychological services upon discharge.

These findings may support the idea that there are not sufficient national standards of psychological care for child victims of NAT. The examination of the increasing problem of child maltreatment and the decreasing ability to fund programs to protect those at risk suggests that there is a deficit in services available for this population (Theodore & Runyan, 1999). This deficit is seen firsthand in that research shows even of those families who are referred for services only half of them present to treatment (Brown, 2003). Given this statistic, the need for services provided on an inpatient level at the time of injury is magnified as they may be the only services that the patient receives. These services are referral based and depend on the medical team to be knowledgeable about the services offered for children and their families. Unfortunately, this study has shown that these services are not current practice for NAT patients, at least at the LLUCH.

A significant implication of this study is the need for well-defined roles for consultation services within the standard of care for NAT patients. These patients may be receiving adequate services throughout their hospitalization; however there is not sufficient data to indicate those outcomes. It is unclear from these data what types of services are being provided as well as the duration and frequency of those services. For instance, patients are being referred for outpatient psychological services by the unit

Social Worker but these referrals are not documented in the discharge recommendations for the patient and therefore not coded into the Trauma Registry database.

A significant limitation of this study is the use of one hospital's database which lacked longitudinal data on the children within the sample. We know that trauma in early childhood can lead to negative outcomes in adults (MacMillan et al, 2009; Brown, 2003) and that other environmental and protective factors play important roles in appropriate adjustment as well (Rind, Tromovitch, & Bauserman, 1998; Brown, 2003). It has been well established that early interventions are the best precaution against negative outcomes (Brown, 2003, Runyan & Urquiza, 2011; MacMillan et al, 2009; De Young, Kenardy & Cobham, 2011; Springer, Sheridan, Kuo, Carnes, 2003). The findings of this study suggest that few of these children are receiving psychological services immediately after their NAT. Results highlight the need for longitudinal data to assess the long-term outcomes of these children.

Creating consistent and comprehensive data management systems would increase the ability to follow and understand the children within this population. By creating a standard of care and consistent documentation of the services provided to inpatients as well as outcome data, examining the effectiveness of services across time would be more feasible. A consistent and comprehensive system would increase the reliability and validity of the data, decreasing errors in documentation and increasing ease of trainability and analysis. A major limitation of the current system and study is the inconsistencies in coding data and collection of variables. This may be avoided in the future by creating a standard electronic data collection system in which Physicians and data management coordinators are able to cross check and reliability check the database. It is important to

note that some of these issues have been addressed since this study began, with the implementation of electronic medical records to track both inpatient and outpatient encounters and standardize charting throughout the hospital and outpatient clinics.

Coordination of Care

One aim of this study was to examine how children who received psychological services faired overall in comparison to children who did not receive psychological services. Unfortunately, what we found was that, within this sample, children were not receiving psychological services during their hospitalization at all in most cases and therefore we were unable to determine whether psychological services were beneficial due to the limited number of patients who did receive them. It is unclear why Physicians are not utilizing psychological services for patients who have NAT given the outcome research. Some possibilities for limited use of the Psychology service may be that Forensic Pediatrics and Social Work services are adequately addressing the psychological sequalae of the patients during their hospitalization, physicians may not be aware of availability of psychological services due to under utilization, stigma of calling in mental health, a lack of awareness of what psychological services are available to very young children or their importance. However, providing these services at an inpatient level may be the most reliable and effective opportunity to address the early psychological needs of these children. It may also be important for medical personnel to receive training on how to support NAT patients and what services are available to them. This is an important area for future investigation as this may be the only opportunity for psychological services that some of these children receive.

Early Interventions

Early interventions targeting not only the physical but the emotional and psychological needs of patients who have experienced NAT are important in increasing positive adult outcomes (Brown, 2003). Specifically, very young children, who made up the majority of the sample, are at increased risk for NAT and are at the peak of their physical and brain development (De Young, Kenardy, & Cobham, 2011). Research has shown that young children are at an especially high need for intervention as they are not able to naturally resolve their trauma symptoms (De Young, Kenardy & Cobham, 2011). This suggests that early intervention in this population is extremely important, however there has been little to no research showing that we, as a field, are meeting this need.

The LLUCH has psychological services available in the form of the Psychology service available for all patients, yet the data shows that services are severely underused, suggesting that these patients are not receiving early intervention services. The Trauma Registry database does not keep follow up data on these patients, so there is no way to know whether patients are seeking early intervention or how these patients faired as adults. However, given the research, unless they sought mental health services on their own, they are at a significantly higher risk for a range of negative psychosocial outcomes (De Young, Kenardy & Cobham, 2011; Brown, 2003; MacMillan et al, 2009). Brown (2003) reported that not all children of maltreatment suffer from negative outcomes, suggesting that even without intervention there are protective factors for child victims of NAT, however those specific factors have not been well-established in the literature. The most important implication of this study is that we have now identified the specific population characteristics and know that the research gives grim adult outcomes for them.

Now that we have identified these children, if we can provide them services earlier and provide referrals for early intervention services upon discharge we can ameliorate the effects of the trauma.

Future Directions

The research on children who have experienced maltreatment is heterogeneous with less severe injuries than the sample population (De Young, Kenardy & Cobham, 2011; Brown, 2003; MacMillan et al, 2009). This may indicate that the current research on maltreatment and childhood trauma is a conservative basis for the adult outcomes of this sample. However, without following these children longitudinally, it is unknown what their outcomes have been and how these children are doing today. This is a limitation of not only this study, but the field as a whole as these children appear to be difficult to track longitudinally. If injury severity does predict outcomes, this population is extremely vulnerable and requires future research to determine effective intervention strategies.

A future direction of this research study is to examine this population longitudinally and create an integrated clinical pathway for this population within the LLUCH. Some possible future directions of research on integrating psychological services into in medical settings may examine 1) Educating the medical team on the availability and importance of psychological interventions and services for young children; 2) Providing easy referral systems which are integrated into the current referral management system; 3) Integrating Psychologists into the LLUCH pediatric units, such as Social Work is already integrated; 4) Specific to children who have experienced NAT,

creating a clinical pathway for consulting with Psychological services anytime a CPS report is filed, or any time there is a suspicion of abuse; and 5) Include a Forensic Psychologist on the trauma team which evaluates all trauma patients. The trauma team is an integral part of caring for children with NAT and at this time there does not appear to be a team member to address the psychological needs of the trauma victim. Including such a team member may help to increase awareness of the importance of early psychological interventions and provide a structure within which to facilitate additional intervention services.

Overall, this study highlighted the lack of psychological services being provided for child victims of NAT during their hospitalization. These children appear to be a neglected population within the literature and are at high risk for developing negative outcomes. Effective and evidence based interventions need to be established for NAT patients and early intervention systems need to be in place to provide these children with the best outcomes possible.

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Start date 05/02/07

FEB 2011_JLG MHS

LLUMC TRAUMA ABSTRACT 2011

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

DEMOGRAPHIC DATA

Inclusion Criteria:
- 1.2 ED Death
- 1.3 ED Discharge Against Medical Advice
- 1.4 ED Transfer to Another Hosp. for Specialty Care
- 2.1 Admitted Through the Emergency Department
- 2.2 Admitted Directly to Inpatient. Service
- 4.2 Trauma Service Consultation Only in the ED

TRAUMA # _____ MR # _____ SS # _____

Patient Name:

Last _____ First _____

City _____ State _____ Zip Code _____

County:
- ❑ 06037 Los Angeles
- ❑ 06059 Orange
- ❑ 06065 Riverside
- ❑ 06071 San Bernardino
- ❑ Unknown
- ❑ 00005 Other

Race:
- ❑ 1 White
- ❑ 2 Black
- ❑ 3 Hispanic
- ❑ 4 Asain
- ❑ 5 American Indian
- ❑ 6 Pacific Islander
- ❑ 7 Other
- ❑ Unknown

Date of Birth: ____/____/____

Sex: ❑ 1 Male ❑ 2 Female

Insurance:
- ❑ 01 – Medical; Type _____
- ❑ 02 – Medicare
- ❑ 03 – HMO – Kaiser
- ❑ 04 – Self Pay
- ❑ 05 – Workman's Comp
- ❑ 06 – Private – All non-govt. plans except BCBS & Kaiser
- ❑ 07 – Auto
- ❑ 08 – Managed Care
- ❑ 09 – BC/BS
- ❑ 10 – MIA
- ❑ 11 – Other

SECTION II - INJURY DATA

Injury Date & Time: ____/____/____ @ ____:____

Cause of Injury:

_____

_____

_____

_____

_____

_____

_____

_____

_____ TXF FOR HIGHER LEVEL OF CARE

C/0 _____

Scene:

City: _____ State: ____ Zip Code: _____

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

County:
- ❑ 06037 Los Angeles
- ❑ 06059 Orange
- ❑ 06065 Riverside
- ❑ 06071 San Bernardino
- ❑ 00005 Other _____
- ❑ Unknown

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 Mgmnt
  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 — **If Mast:** ❑ 1 Applied ❑ 2 Inflated ❑ 3 Deflated Enroute ❑ Inappropriate
- ❑ 3 Fluids — **If Fluids:** ❑ 1 500-2000 ml ❑ 2 <500 ml ❑ 3 > 2000 ml ❑ 4 IVF Unk Amt ❑ 5 IO Infusion ❑ Inappropriate
- ❑ 4 CPR — **If CPR:** ❑ 1 Scene ❑ 2 En Route ❑ Inappropriate ❑ Unknown
- ❑ 5 Skeletal Immobilizatio — **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

Pulse Rate _____ **GCS: Eye Opening:** ___
Respiration _____ **Verbal Response** ___
B/P _____/_____ **Motor Response** ___
Total _____

Arrive at Referring: _____/_____/_____ @ ____:____
Depart from Referring: _____/_____/_____ @ ____:____

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

Pediatric Transport Team ❑ Yes ❑No

Direct Admit: ❑ 1 Yes ❑ 2 No ❑ Inappropriate ❑ Unknown

SECTION IV - EMERGENCY DEPARTMENT DATA

Admission at Hospital: _____/_____/_____ @ _____:_____

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
- ❑ 4 Fixed Wing
- ❑ 5 Walk-In
- ❑ Other _____

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

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:** ❑ 1Yes ❑ 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** _____

SaO2 _____ **FIO2** _____

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.

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

		Time Called	Time Arrived
ED Attending: Physician	_____		
Trauma Attending	_____	____:____	____:____
❑ Sr. Trauma Resident	_____	____:____	____:____
❑ Jr. Trauma Resident	_____	____:____	____:____
❑ Neurosurgery	_____	____:____	____:____

		Time Called	Time Arrived
❑ Orthopedics	_____	____:____	____:____
❑ Plastics	_____	____:____	____:____
❑ Cardiothoracic	_____	____:____	____:____
❑ Other	_____	____:____	____:____
❑ Other	_____	____:____	____:____

Trauma Attendings: ADULT:
❑ Catalano 10006 ❑ Mohr 10059 ❑ Rivera 10035
❑ Chi/Gee 10063 ❑ Nguyen 10065 ❑ Taylor 10070
❑ Hu 10064 ❑ Pourshahmir 10061 ❑ Teruya 10062

PEDS:
❑ Moore 10046 ❑ Baerg 19991
❑ Gollin 19992

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

Duration of CPR: _____ min Units of Blood: _____

ED Disposition:
❑ 01 Home
❑ 02 AMA
❑ 03 Observation
❑ 04 Floor >Q2 VS
❑ 05 Stepdown Q2

CHECK VS FREQUENCY
❑ 06 ICU (Q 1 HR VS)
❑ 07 OR
❑ 08 Transfer
❑ 09 Morgue/Coroner
❑ 10 Other ___CDU____L&D___

ED Discharge Date & Time: ____/____/____ @ ____:____

TO _____ @ _____:_____

Admit Service:
❑ 01 Trauma ❑ 06 Cardiothoracic
❑ 02 ENT ❑ 07 Pediatrics
❑ 03 Neurosurgery ❑ 08 PICU
❑ 04 General Surgery ❑ 09 Orthopedics
❑ 05 Pediatric Surgery ❑ 10 Other _____

AdmittingPhysician: _____

SECTION V – ANATOMICAL DIAGNOSIS

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

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____
25. _____
26. _____

SECTION VI – INPATIENT/TRAUMA CENTER MANAGEMENT

Location: • 1 Prehospital • 2 Transferring Hospital • 3 ED • 4 Radiology • 5 Floor • 6 ICU • 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
	88.38	CT-C SPINE			
	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	
	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
___/___/___	___:___	____	_____	
___/___/___	___:___	____	_____	
___/___/___	___:___	____	_____	
___/___/___	___:___	____	_____	
___/___/___	___:___	____	_____	
___/___/___	___:___	____	_____	
___/___/___	___:___	____	_____	
___/___/___	___:___	____	_____	
___/___/___	___:___	____	_____	
___/___/___	___:___	____	_____	
___/___/___	___:___	____	_____	
___/___/___	___:___	____	_____	

Temperature on OR Arrival: _____ Urgent OR: ❑ 1 Abdominal ❑ 2 Thoracic ❑ 3Vascular ❑ 4Cranial ❑ 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**

Floor/Rehab Management: ❑ Inappropriate

- ❑ 00 None
- ❑ 01 Chest Tube
- ❑ 02 DPL
- ❑ 03 Central Line
- ❑ 04 Rotor Rest Bed
- ❑ 05 Biodyne Bed
- ❑ 06 Whirlpool Tx
- ❑ 07 Debridement
- ❑ 08 Other _____
- ❑ Unknown

Inpatient/Trauma Center Management: ❑ **Inappropriate**

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

Other Consults:

1. _____ ____/____/____
2. _____ ____/____/____
3. _____ ____/____/____
4. _____ ____/____/____
5. _____ ____/____/____
6. _____ ____/____/____
7. _____ ____/____/____
8. **BAIT ORDERED/DONE**_____**SAFE KIDS ORDERED**____ ____/____/____

Ventilator Days: _____

SECTION VII – OUTCOME/DISCHARGE DATA

General Complications: ❑ Inappropriate

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

Treatment Complications:

- ❑ 01 None
- ❑ 02 Pulmonary
- ❑ 03 Cardiovascular
- ❑ 04 Hematologic
- ❑ 05 Renal
- ❑ 06 Hepatic
- ❑ 07 Septic
- ❑ 08 Skin
- ❑ 09 Musculoskeletal
- ❑ 10 Neuro
- ❑ 11 Endocrine
- ❑ 12 Psychological
- ❑ 13 GI
- ❑ 14 Ocular
- ❑ 15 Auditory
- ❑ 16 Other _____
- ❑ Inappropriate
- ❑ Unknown

Pre-existing Medical Conditions:

- ❑ 01 Unknown
- ❑ 02 None
- ❑ 03 Acute Illness
- ❑ 04 Chronic Illness
- ❑ 05 Mental Handicap
- ❑ 06 Physical Handicap
- ❑ 07 Substance Abuse
- ❑ 08 Other _____
- ❑ 09 Psych History
- ❑ Inappropriate
- ❑ Unknown

Discharge Disposition:

- ❑ 01 Home
- ❑ 02 Left AMA
- ❑ 03 Acute Care Facility
- ❑ 04 Inpt. Rehab
- ❑ 05 SNF
- ❑ 06 Residential Facility
- ❑ 07 Expired
- ❑ 08 Jail
- ❑ 09 Foster Care
- ❑ 10 Other Living Dispo_____

Discharge Date & Time: _____/_____/_____ @ _____:_____

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 prn /PMD
- ❑ 18 Wound Care
- ❑ Unknown

FINANCIAL DATA

Hospital Charges $_____ **Payors: ____, ____, ____, ____, ____, Other_____**

PEDIATRIC STATUS:

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

Evaluation:
- 1 Ages 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 - FILTER QUESTIONS: **1 = Yes 2 = No I = Inappropriate U = Unknown**

American College of Surgeons:

____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?

____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*****

ADULT Filter Questions: 1 = Yes 2 = No

Box:
MISC1____ABCD Box filled in on ED Trauma Nursing Record? Y N
MISC2____ABCD Attending signature on Trauma Resident H&P? Y N
MISC3____ABCDN Trauma Activation Level ☐ A ☐ B ☐ C ☐ None
MISC4____ABCDN Appropriate Level? Y N

C-Spine:*IF ADMITTED OR SEEN BY TRAUMA*
MISC5____ABCD C-spine Precautions? + -
MISC6____ABCD Placement of C-collar? ☐ 1. PTA ☐ 2. ED ☐ 3. Other
MISC7 ABCD Date C-spine Cleared
MISC8 ABCD Time C-spine cleared
MISC9 ABCD Cleared by Whom? (use #))
Notify Debbie if C-spine cleared by Jr. Resident
MISC10____ABCD Trauma H&P Box completely filled out? Y N
MISC11____ABCD Evidence of Attending Involvement? Y N
MISC12____ABCD Admit order regarding C-spine? Y N
Only answer 3 & 4 if NOT seen by Trauma7,8,9 if cleared by Trauma