

# APSAC Research to Practice Brief

**Study Title:** Annual Cost of U.S. Hospital Visits for Pediatric Abusive Head Trauma

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## **Introduction:**

This study aims to investigate the financial impact of pediatric abusive head trauma (AHT), also known as shaken baby syndrome.

It has long been known that pediatric abusive head trauma is a serious public health issue, however, there has not been a comprehensive way to document it. With the advent of an administrative code-based definition of abusive head trauma, created by the Centers for Disease Control (CDC), the health and financial consequences of AHT can be measured more systematically and accurately nationwide. There have been other studies looking at the prevalence of AHT mortality and hospital admissions and visits with this code. Yet, no previous study has looked at the costs of hospital services, neither inpatient nor emergency, for diagnosing and treating AHT cases that fit the code. By looking at the financial implications, AHT can be better understood from another crucial perspective and thus public health prevention efforts for child maltreatment can be allocated appropriately.

This study aimed to document the annual frequency of hospital emergency and inpatient visits and provider costs for the diagnosis and treatment of AHT. The study also assessed relationships between AHT patients and associated hospital medical costs nationwide in the U.S using this code.

## **Research Questions:**

In the U.S., what is/are 1) the frequency of hospital visits (emergency and inpatient admissions) for patients with AHT annually 2) the cost from the provider perspective of hospital visits for patients with AHT 3) characteristics of AHT patients that result in higher than average per-visit costs?

## **Subjects:**

The researchers used publicly available data from U.S. hospital emergency department visits to identify AHT diagnoses among children 0-4 years old between the years 2006-2011. These data included frequency of visits, patient characteristics, and medical costs. Using the CDC code, AHT was classified as a skull or intracranial injury caused by intentional blunt impact or

aggressive shaking. Unintentional head trauma, as from neglect or lack of supervision, gunshot, and stab wounds, were not classified as AHT under the code.

### **Findings:**

From 2006 to 2011, among children 0-4 years of age, the number of annual emergency department visits for AHT ranged from 1,009 – 1,223 visits per year and the number of annual inpatient admissions for AHT ranged from 1,790 – 2,688 admissions per year. Over the study period, AHT was diagnosed in a total of 6,827 emergency department visits and 12,533 inpatient admissions nationwide.

During the study period (years from 2006 to 2011), average estimated medical costs for an AHT-related emergency department visit and inpatient admission were \$2,612 USD and \$31,901 USD, respectively. Additionally, the estimated total cost of all AHT emergency department visits and inpatient admissions for AHT ranged between \$58.9 million USD to \$98.5 million USD annually, with estimated annual average of emergency department visits and inpatient admissions combined equaling \$69.6 million USD.

Characteristics associated with higher per-visit emergency departments costs in AHT patients included (1) the patient being less than one year old; (2) having an existing chronic condition like epilepsy; (3) developmental delays; (4) congenital abnormalities; (5) having public insurance; and (6) going to a hospital equipped for trauma cases or a teaching hospital in an urban area. Characteristics of AHT patients associated with higher per-visit inpatient admissions included (1) the patient being male; (2) having an existing chronic condition; and (3) coming from a household with a higher income.

### **Recommendation:**

Results underscore the need for greater AHT prevention efforts. Consideration should be given to universal prevention and awareness efforts, including home visiting and parent education. Prevention efforts for families of children with existing conditions – such as premature birth, developmental delays, congenital abnormalities, or colic – should be prioritized.

### **Bottom Line:**

AHT is an extremely serious form of child maltreatment that results in poor health outcomes for children and high healthcare costs. Nationwide AHT prevention efforts could minimize these negative health outcomes and reduce high healthcare costs by millions of dollars. Cost analysis could be an effective avenue to advocate for AHT prevention efforts and resource allocation.

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### **About the Student Research to Practice Brief Author**

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*This brief was produced as part of a collaboration between a SW708 at the University of Michigan and APSAC. The goal of this project is to teach a real-world application of research translation, offer an early opportunity for professional publication, and introduce students to how professional organizations can serve as an ongoing source of knowledge throughout their careers. By distributing the briefs among child maltreatment and child welfare professionals at all career stages, APSAC seeks to speed the dissemination of evidence-based practices and increase access to applied research findings for front line workers, while also helping to shape policy for organizations. If you would like to bring this project to your classroom, [contact Bri Stormer, MSW](#).*