

Outpatient Approach to Child Physical Abuse Evaluation

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Key Points

- Child physical abuse is a common pediatric medical problem that carries the risk of substantial morbidity and mortality.
- Abuse must be of concern in a child of any age whenever there is no or inadequate history for a significant traumatic injury.
- Infants and toddlers are at particular risk of serious or fatal physical abuse. Any significant injury in this age group should prompt inclusion of physical abuse on the differential diagnosis. In a premobile child *any significant injury* should prompt evaluation for possible physical abuse; this includes bruising, unless there is a single bruise with a clearly plausible history.
- The skeletal survey is highly useful for evaluating occult fractures in young children when physical abuse is being considered. Providers should be familiar with the indications for a skeletal survey as well as how to obtain this study for patients when needed.
- Abusive head and abdominal injuries have the highest incidence in the youngest children and carry substantial morbidity and mortality. Providers should have a low threshold for including these in differential diagnoses, even if the initial complaint seems unrelated to trauma.
- Providers are often confronted with a decision about whether a particular injury is indicative of abuse or not. It is typically best to collect objective data, such as skeletal surveys and any other appropriate diagnostic evaluation, prior to making such a decision, rather than deciding to forego diagnostic evaluation for more subjective reasons, such as impressions of a family.
- This Guideline conforms to recommendations outlined in the 2015 Clinical Report: “The Evaluation of Suspected Child Physical Abuse” from the American Academy of Pediatrics (AAP). See References for complete citation information.

“... it is not the physician’s responsibility to identify the perpetrator of the abuse or the exact details of an abusive event, but to recognize potential abuse, obtain a thorough medical and event history, initiate appropriate workup, and then refer the patient or involve the specialists who are expert in completing the medical evaluation and/or investigation.”

—From the 2015 AAP Clinical Report: “The Evaluation of Suspected Child Physical Abuse”

Introduction and Epidemiology

- All health care providers who regularly treat children will most likely encounter child physical abuse. Often children with physical abuse present with complaints that have nothing to do with trauma or injury.
- Arkansas has higher-than-average rates of child physical abuse and of death from child abuse and neglect.
- About 75% of deaths resulting from child maltreatment occur in children <4 years of age.
- Child physical abuse and other forms of child maltreatment not only have an enormous impact on the child’s health and functioning into adulthood but also result in an enormous fiscal cost to society.
- Often victims of child physical abuse are also victims of other forms of child maltreatment, such as neglect.
- Physical abuse frequently occurs in a repetitive and escalating pattern. Appropriate recognition and intervention has the potential to avert substantial morbidity and mortality.

Definition

- The Federal Child Abuse Prevention and Treatment Act (CAPTA) sets the minimum standards for child abuse and neglect. The definition under CAPTA is the following:
 - *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.*
- Each state has its own specific laws and statutes pertaining to child abuse and neglect. For state-specific laws see the Child Welfare Information Gateway’s State Statutes.

Recognition of Potential Child Physical Abuse

- Whenever a traumatic injury is present without adequate history, abuse is a concern in a child of any age.
- Physical abuse may come to the provider’s attention in the following ways:
 - Disclosure by the patient and/or caregiver
 - Presentation as accidental trauma
 - Symptoms or signs encountered during a visit for a seemingly unrelated complaint

Assessment

Medical and Event History

- Obtain an appropriate history from the caregiver(s).
- If information from the child would be helpful for guiding medical assessment and the child is sufficiently verbal, obtain an event history from the child out of the presence of the caregiver.
- Perform an appropriate physical exam, including a skin assessment, with the child undressed and in a gown.
- Conduct further testing as guided by the history and exam.

Physical Evaluation

Bruising

- Minor injuries in nonmobile infants can be significant signs of child abuse.
 - Nonmobile infants do not have the ability to cause significant injury during normal daily activities.
 - In nonmobile infants *any* injury, including bruising of any degree or intraoral injury (eg, oral frenulum injury), warrants further medical evaluation and a low threshold for reporting.
 - This age group is at particular risk of serious abusive injury or death.
- In mobile children the location of the bruising is significant. Bruising caused by accidents typically occurs over bony prominences, such as the shins, knees, forearms, and the forehead in toddlers.
 - In children ≤ 4 years of age, bruising of the torso, ears, and neck is predictive of abuse.
 - In children < 4 months of age, *any* bruising is predictive of abuse.
 - Bruising with a pattern (ie, bruising that resembles the object or objects that caused it) is rare and doesn't usually result from minor childhood falls.
 - When this type of bruising is accidental, it is typically associated with mechanisms of substantial force, such as the "seatbelt sign" seen following motor vehicle accidents.
 - Some objects that cause abusive-patterned bruising in children include hands, belts, electrical cords, switches, and common household items, such as kitchen implements.

Bruising is frequently overlooked as a sign of physical child abuse because it can be difficult to differentiate from accidental bruising. A useful tool to help differentiate bruises caused by abusive versus accidental trauma is the mnemonic TEN-4.

- Bruising to the torso (T), ears (E), and neck (N) in any child < 4 years of age is predictive of abuse.
- Any bruising in a child < 4 months of age is predictive of abuse.
- In a child with extensive or multiple bruises, consider laboratory evaluation for disorders of clotting including complete blood count and coagulation profile. More specialized testing such as for factor deficiencies may be indicated depending on the results of initial evaluation and clinical history.

Burns

- Abusive burns constitute a minority of all burn injuries in childhood. However, abusive burns

tend to be more severe with greater delay in seeking care and greater morbidity and mortality than accidental burns.

- Scalding is a common mechanism of both accidental and inflicted childhood burns; immersion in hot tap water is the most common cause of inflicted childhood burns. Some injury features may be useful in detecting inflicted scalds:
 - Burns with symmetrical distribution without splash marks, particularly of lower extremities and genitals
 - Uniformity of burn depth
 - Uniform linear demarcation of burn edges
- Toddlers are the most common age group among patients with inflicted scalds, which are associated with toileting accidents and other activities that require cleaning the child.
- Contact burns, or burns due to a hot solid object, may be patterned whether accidental or inflicted. Inflicted contact burns may be deeper, grouped, have sharply demarcated 'branded' patterns, and appear on body parts normally covered by clothing.
- Cigarette burns may be accidental or inflicted. Accidental cigarette burns from brushing the lit tip are more superficial and of ill-defined shape due to the child's movement. Inflicted cigarette burns are round, deep, sharply demarcated lesions 5-10mm in diameter with a characteristic 'punched out' appearance.
 - Many skin conditions can mimic inflicted cigarette burns, including impetigo, eczema, and epidermolysis bullosa. Use caution in interpreting a round skin lesion as a cigarette burn, particularly in the absence of disclosure.

Skeletal Injuries

In many cases of abuse in young children, skeletal injuries are not immediately evident during physical exam. Identifying skeletal injuries resulting from abuse can help prevent future injury to the child.

Definition of a Skeletal Survey

- The skeletal survey is a series of radiographs which are used as follows:
 - To detect abusive fractures which are often clinically occult, such as rib fractures and classic metaphyseal fractures (eg, corner/bucket-handle fractures),
 - To further assess the risk to a child who presents with an injury of ambiguous etiology
- The American College of Radiology established standards for the radiographs to be included in a skeletal survey (Table 1).
- A single full-body radiograph (ie, "babygram") is not an adequate substitute for an appropriate skeletal survey under any circumstances. If used in place of a skeletal survey, the opportunity to diagnose abusive fractures could be missed.

Table 1. Standard Radiographs Included in a Skeletal Survey

To view a larger image on your device, please click or touch the image.

Table 1. Standard Radiographs Included in a Skeletal Survey

Radiographs in a Skeletal Survey
<ul style="list-style-type: none">• Anterior-posterior (AP) and lateral skull• Chest AP, lateral, and bilateral obliques• AP pelvis• Lateral cervical spine• Lateral lumbosacral spine• AP humeri, forearms, femurs, lower legs, and feet• Posterior-anterior (PA) hands

Indications for a Skeletal Survey

- A skeletal survey should be performed on any child <2 years of age with a diagnosed abusive injury or a suspicion of abusive injury.
- In children >2 years of age, the skeletal survey may be useful under certain circumstances. This includes children with developmental disabilities or other conditions that may complicate disclosure or physical assessment. However, in older children the rate of detection of occult fractures is lower.
- In children <2 years of age, expert consensus agrees that a skeletal survey is necessary under certain clinical circumstances as outlined in Table 2.
- Other circumstances in which skeletal survey should be strongly considered are the following:
 - Intraoral injuries in nonambulatory infants
 - Infants and toddlers with unexplained or inadequately explained burns
 - Infants with unexplained, unexpected sudden death (discuss first with medical examiner/coroner)
 - Infants and toddlers with unexplained head injuries, including hemorrhage and/or hypoxic ischemic injury
 - Household contacts/siblings of an abused child who are themselves <2 years of age

Table 2. Clinical Circumstances Indicating a Skeletal Survey is Necessary in Children <2 Years of Age

To view a larger image on your device, please click or touch the image.

Table 2. Clinical Circumstances Indicating a Skeletal Survey is Necessary in Children <2 Years of Age^a

Injury	Description
Fractures	<ul style="list-style-type: none"> • Children with fractures from known abuse or domestic violence • Fractures attributed to being hit by a toy • Any fracture without a history of trauma (except for distal tibia/fibula fracture in a toddler or distal radius/ulna buckle fracture in a mobile child >12 months old) • Clavicle fractures (except in neonates with fracture age consistent with potential birth trauma or children >1 year old with appropriate history of a fall) • Any rib fracture • Any complex skull fracture • Any child whose index fracture is a classic metaphyseal lesion (CML), also called a corner/bucket-handle fracture • A simple linear parietal skull fracture (may be optional in cases of children >6 months old with history of fall from a substantial height/fall with caregiver and no other concerns) • Fractures in children <12 months old <ul style="list-style-type: none"> • Presentation with any fracture (except for a distal radius/ulna buckle or a distal tibia toddler's fracture if 9 to 11 months old and a reported fall while cruising or walking) • Delay of >24 hours in seeking care for a child with symptoms of distress related to a fracture
Bruising ^b	<ul style="list-style-type: none"> • Patterned bruising • Bruising of ear, neck, torso, buttocks, genitals, hands, or feet if there is no history of trauma • Bruising away from the bony prominences <ul style="list-style-type: none"> • >4 such bruises if 12 to 24 months old • >1 such bruise if <12 months old • Bruising in infants <ul style="list-style-type: none"> • >1 bruise in any location if 6 to 9 months old • Any single bruise (except if history of a fall) in infants <6 months old
More than 1 type of injury	Presentation with concerning injuries of more than one type (ie, fracture + bruising)

^a A skeletal survey is considered necessary in these circumstances regardless of the perceived presence or absence of social risk factors.

^bThe guidelines for skeletal survey indications in children with bruising were developed specifically for the hospital setting and have not been validated in the primary care setting.

A skeletal survey is potentially appropriate in any scenario involving injury in a young child and should be considered whenever there are concerns.

Head Injury and Abusive Head Trauma

Definition and Epidemiology

- The presentation of inflicted head injury can be nonspecific and resemble a wide variety of clinical entities. Often a child will present for medical care repeatedly for symptoms such as irritability, vomiting, or change in crying or sleep pattern before the injuries are diagnosed.
- Abuse is the most common cause of fatal head injury in infants and the leading cause of morbidity and mortality from child physical abuse.
- Abuse is the most common cause of subdural hematoma in infants.
- Analysis of perpetrator confessions shows that crying is a frequent trigger for abusive head injury.

Screening for Head Injury/Trauma Victims

- Cranial imaging should be performed in any child with a suspected abusive head injury, an infant with any abusive injury, and an infant or young child with suspected abuse and neurological symptoms or significant head and/or neck bruising. Cranial imaging modality choices are shown in [Table 3](#).
- Children diagnosed with an inflicted intracranial injury need to undergo a dilated eye exam by a pediatric ophthalmologist to evaluate for possible retinal hemorrhages. If there is skull or soft tissue injury without intracranial injury, then an eye exam is not mandatory because significant retinal hemorrhages are unlikely.
- Children with symptomatic abusive head injury need to be managed at a pediatric tertiary care facility in most cases.

Table 3. Cranial Imaging Modality Choices

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Table 3. Cranial Imaging Modality Choices

Modality	Strengths and Limitations
CT	<ul style="list-style-type: none">• Immediate assessment of acute head trauma for possible intervention• Skull fracture• Soft tissue injury
MRI	<ul style="list-style-type: none">• Optimal modality for assessing intracranial injury• Performed when the head CT demonstrates abusive findings• Can be performed when extracranial abusive injury is identified in an infant without neurological symptoms (ie, when the infant does not need acute imaging).
Ultrasonography	<ul style="list-style-type: none">• Often the initial study for macrocephaly• Can identify large extraaxial collections (but MRI would be needed for any detected abnormality)• CT is preferred to ultrasound in the acute trauma setting

Abbreviations. CT: computed tomography; MRI: magnetic resonance imaging

Abdominal Trauma

Definition and Epidemiology

- Abusive intraabdominal injuries may include solid organ injuries, such as hepatic lacerations and contusions, as well as hollow viscus injuries, such as perforations and duodenal hematoma.
- Abdominal injury is the second leading cause of morbidity and mortality due to child physical abuse.
- The morbidity and mortality of inflicted abdominal injuries are increased by the delay in seeking care that often occurs following the injury.
- The highest rates of abusive abdominal injuries are in infants and toddlers. In one series more than 25% of all abdominal trauma in children <1 year of age was abusive.

Screening for Abdominal Injury

- Evidence supports the use of hepatic transaminases in screening for occult abusive abdominal injury in children <5 years of age and should be strongly considered whenever such children are being evaluated for possible physical abuse.
- In a child being evaluated for possible physical abuse, either aspartate aminotransferase (AST) or alanine aminotransferase (ALT) greater than 80 IU/L should prompt contrasted computed tomography (CT) of the abdomen. Abdominal ultrasound is limited in its ability to detect some types of abusive abdominal injuries.
- Abdominal CT should also be performed in children evaluated for physical abuse who have abdominal bruising, distension, or tenderness regardless of transaminase levels.

Reporting

- **Hotline.** Make reports of suspected child maltreatment to the Arkansas Child Abuse Hotline (1-844-728-3224).
- **Mandatory reporting.** In Arkansas the mandated reporting statute (§12-184-02) states that a report must be made if the reporter
 - Has reasonable cause to suspect that
 - A child has been subjected to child maltreatment
 - A child has died as a result of child maltreatment.
 - Observes a child being subjected to conditions or circumstances that would reasonably result in child maltreatment.
- **Not reporting.** Failure to report is prosecutable as a misdemeanor.
- **Liability protection.** Reporters are protected from civil liability for reporting *if* the suspicion is “documented” and the report is made “in accordance of state mandate.” This immunity is in effect even if the report is ultimately unfounded.
- **Maltreatment definitions.** It can be useful to be familiar with the state’s definitions of maltreatment types when making a report. Over 40 types of maltreatment are defined in the Arkansas code; here are some reportable examples:
 - Striking a child aged ≤6 years of age in the face or head, regardless of whether or not an injury resulted
 - Tying a child up, regardless of whether or not an injury resulted

Referral or Transfer to a Higher Level of Care

- The need for appropriate specialized testing and assessment is a valid reason for referral or transfer to a tertiary care center.
 - For a stable premobile infant with bruising, it may be appropriate to transfer the child for evaluation and management for the potential diagnosis of physical abuse. This may seem excessive at first glance, but the reason for transfer is not for management of bruising but rather for specialty evaluation for possible physical abuse, which is associated with substantial morbidity and mortality.
- The need for evaluation and treatment by a pediatric subspecialist, such as a neurosurgeon, orthopedist, or child abuse pediatrician, is often an indication for transfer.
- The legal obligation of the mandated reporter is not altered if the child is ultimately transferred to a different facility.

Resources

The following resources may be helpful for the healthcare provider:

- Arkansas Hotline: 1-844-728-3224
- [Arkansas Child Maltreatment Definitions](#)
- [Federal Definitions of Child Abuse and Neglect](#)
- [Child Welfare Information Gateway](#)
- [AAP Clinical Report: The Evaluation of Suspected Child Physical Abuse](#)

This guideline was developed to improve health care access in Arkansas and to aid health care providers in making decisions about appropriate patient care. The needs of the individual patient, resources available, and limitations unique to the institution or type of practice may warrant variations.

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