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Recognizing When a Child's Injury or Illness Is Caused by Abuse

PORTABLE GUIDE TO INVESTIGATING CHILD ABUSE

OJJDP

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Recognizing When a Child's Injury or Illness Is Caused by Abuse

The investigation of child abuse is a critical and sensitive issue that affects the safety and well-being of children nationwide. It is estimated that law enforcement agencies in the United States investigate more than 3.3 million cases of child maltreatment each year and that as many as 2,000 children die as a result of this maltreatment. Law enforcement personnel are responsible for protecting children and often have the difficult task of determining if a child's injury is accidental or deliberately inflicted.

Careful investigation is required to determine whether a child's injuries are accidental or intentional. This guide, first developed in 1996, provides information about the many indicators of child maltreatment and abuse to help first responders and investigators differentiate between physical abuse and accidental injury. Over the years, advancements in medicine have helped further distinguish between accidental and abusive injuries. This fourth edition of the guide reflects the most current literature on how to distinguish between types of injuries and includes the questions that investigating officers must ask.

Could This Be Child Abuse?

Child physical abuse is not a constant or daily occurrence; instead, it is a pattern of violent behavior that is usually concealed along with its resulting injuries. When responding to reports of abuse, law enforcement should be aware of the risk factors for abuse, the most common injuries or "red flags" in abusive situations, and the ways in which caretakers may conceal an abusive injury.

Although physical abuse and neglect occur in all kinds of families, an increased risk of abuse is often associated with the following:

- Intimate partner violence, criminal activity, mental illness, substance abuse, inappropriate expectations of children, and punitive childrearing habits.
- Premature babies and children with physical, developmental, or behavioral difficulties.
- Incidents that may be triggers for abuse, such as a crying infant, a toilet training accident, or a child's misbehavior.

When responding to a call for suspected abuse, law enforcement should investigate all injuries. Some characteristics of injuries are considered red flags and warrant further scrutiny:

- Injuries on children who are not mobile, especially infants.
- Injuries on protected surfaces of the body, such as the back and buttocks, ears, inside the mouth, genitalia and inner thighs, the neck, arms or legs, and underarms.
- Multiple injuries in various stages of healing (i.e., skin injuries, lesions of varying ages, bruises).
- Patterned trauma, even if the object used to commit the abuse cannot be determined.
- Injuries that routine, age-appropriate supervision of the child should have prevented.
- Significant injury with either no explanation or an explanation that is not plausible.

A statement from the parent or guardian and any witnesses regarding how the child sustained the injury will help determine whether the injury is accidental or abusive. A statement from the parent or guardian explaining why he or she delayed in seeking medical treatment is important to the investigation because caretakers often postpone medical treatment or fail to provide treatment for an injured child to hide physical abuse. The abusing parent or caregiver may also put a child in oversized clothing or keep the child inside a residence for extended periods of time in an attempt to conceal the child's injuries.

Investigators must determine whether the explanation of how an injury occurred and the reason for delay in seeking treatment are plausible. If a discrepancy exists between the history provided and the injuries noted during a medical examination, law enforcement should investigate further. Exhibit 1 contains a list of questions investigators should ask, both at the scene of the incident and with medical personnel when they examine the child.

Caretaker Assessment

Whenever suspected physical abuse or neglect of a child is reported, an investigator must complete a caretaker assessment, which is a report on the caretaker's explanation of the injury. In many cases of neglect and in some cases of physical abuse, a caretaker's actions or lack of appropriate actions can be attributed to a simple lack of resources or parenting skills. It is incorrect to assume that every parent has innate parenting abilities and instinctively knows how to care for a child. The investigator must determine whether the caretaker's intent was to injure a child or if the caretaker knew that his or her actions would cause injury.

The caretaker should be questioned in a nonintrusive and nonthreatening manner. The best way to begin questioning a caretaker suspected of physical abuse is to ask him or her to explain how the child's injury happened; for example, "I understand there was an accident and your child was injured. Tell me about that." Caretakers are more likely to answer these

EXHIBIT 1. INVESTIGATOR'S CHECKLIST

If performed correctly, the investigation process will ultimately provide sufficient information to determine if a child's injuries were caused by abuse.

Investigators must first answer these questions to determine if the child is safe:

- Is the child safe in this environment?
- Does the child need immediate medical attention?
- Does the child need long-term protection?

Additional questions to be asked and issues to be considered when investigating a suspected case of child abuse include the following:

At the Scene

- How could the child's behavior or the caretaker's stress have contributed to these events?
- Is the child developmentally able to do what the caretaker told you he or she did?
- Is the child a "target" child (that is, a child perceived by the parent as having negative characteristics), or are other target children present?
- What are the locations, configurations, and distribution of any skin injuries, such as bruises, welts, bites, lacerations, abrasions, or burns? Does the child have multiple injuries in various stages of healing?
- Does it appear that someone's hands or an instrument caused the injuries? Can you determine what instrument might have been used? Are there control or ligature marks on the wrists, forearms, legs, or neck?
- Can you determine the positions of the offender and the child during the incident? Is there any evidence of attempts to hold the child in a certain position or at a certain angle during the incident?
- Does the child have any injuries that are highly specific for abuse? Are there alternative nonabusive explanations that are consistent with these injuries?
- Does the child have any injuries on difficult-to-reach places or on the sides of the body?

At the Medical Examination

- What is the child's medical history (including all medications) and the family's medical history? Is there substance abuse or are there other environmental factors in the home? What is the parents' marital status, employment history, and expectations of the child? Are the parents' expectations reasonable for what a child of that age should be able to do?
- Was there any delay in treatment or was hospital "shopping" involved? Is there any evidence of prior injury, malnutrition, or lack of medical attention? Does the child have multiple injuries in various stages of healing?
- Were the child's head, mouth, ears, nose, anus, and genitals examined carefully for injuries?
- What other specific injuries have been identified? Have head injuries, eye injuries, fractures, or abdominal injuries been identified? Are blood tests or medical imaging planned? Are specialists, such as social workers and child abuse pediatricians, being consulted?
- Have pictures of the injuries been taken or has medical imaging been ordered?
- Are the injuries life threatening or severe? Does the child need to be admitted to a hospital? If not, what are the safety plans, need for medications, and followup appointments?
- What is the prognosis for recovery? Should residual disabilities be expected?

types of questions—which contain no threats or accusations—than those that refer to an incident as abuse or suggest in any way that the caretaker caused the child's injuries.

A credible explanation of how an injury occurred should be (1) reasonable and supported by fact and (2) consistent with the type, location, and severity of the child's injury. The absence of details, failure to mention the injury, and/or presence of any contradictory or unconvincing explanations may provide clues about whether an injury was accidental or the result of abuse or neglect. Investigators should thoroughly report and investigate any explanations that seem contrary to the injury observed.

Injury Assessment

Following a report of abuse, a licensed medical professional should examine the child. The investigator should use the report from this examination to conduct an injury assessment, which focuses on three important questions:

- Is the injury natural or caused by a medical condition?
- Is the injury accidental?
- Is the injury inflicted?

It is important to remember that children's statements to healthcare providers during the medical evaluation may be admissible in court as exceptions to the hearsay rule. Also, a lack of medical corroboration does not necessarily mean that a child was not abused or that an offense cannot be proved in court. Some types of abuse do not result in physical injury that a medical examination can identify and, depending on the child, some injuries can heal rapidly. Law enforcement should review the specific injuries with medical staff, assess the potential that the injuries were accidental or caused by a medical condition, determine whether there are likely alternative explanations, and confirm with the child protective services caseworker that the child is safe.

Ruling Out a Natural Phenomenon or Medical Conditions

Investigators should confer with a pediatrician or child abuse specialist to determine if the child's condition is a natural phenomenon or an injury. A medical examination is critical to ruling out medical conditions that may appear to be a result of abuse or neglect. For example:

- Mongolian spots and some birthmarks that occur in dark-skinned individuals can be mistaken for bruises.
- Impetigo can imitate cigarette burns.
- Excessive bruising, or petechiae, may result from low platelet counts or clotting disorders, such as hemophilia or Von Willebrand disease.

- Some infections, such as Fifth Disease, can cause rashes that may appear to be slap marks on the face.
- Rarely, a young infant may have an abnormality of bone or collagen (e.g., osteogenesis imperfecta) that causes bone fractures.

Obtaining a medical history from the child's pediatrician or family practitioner can help determine if the child has any medical conditions with symptoms that may look like injuries and if abuse can be ruled out.

Distinguishing Between Accidental and Abusive Injuries

Accidental injuries usually occur along areas commonly known as bony prominences (elbows, knees, hands, nose, chin, and forehead). They generally involve less force than nonaccidental injuries, except in some well-described circumstances such as falls or motor vehicle collisions.

Nonaccidental injuries are typically found in an area called the primary target zone (an area for inflicted injury, such as corporal punishment, that extends from the back of a child's neck to the area behind his or her knees). Injuries in the primary target zone should be viewed with suspicion and should be investigated to determine whether the force of punishment was criminal. It is important to be aware of your state's laws on corporal punishment during the investigation.

A triggering mechanism is a crisis or other event that precedes and precipitates an incident of physical abuse. It is a single event that causes a parent or caretaker to feel suddenly angry, out of control, or overwhelmed and leads him or her to react with abuse.

Child abuse investigators should try to determine both the timing and the triggering mechanism in all cases of abuse. Asking a simple question such as "What were you doing just prior to the incident?" may provide valuable clues as to what was happening and the caretaker's behavior during that time. This question may also lead you to identify the object that was used to inflict the injury.

Investigators can help determine when the child was last exhibiting normal behavior with a question such as "When did you see that the child was last well?" as evidenced by normal awake behaviors. Medical professionals may be able to estimate the timing of the injuries, but investigators should always attempt to determine the timing of the event through interviews with the caretaker rather than relying solely on the medical examination.

Constructing a Timeline

It is crucial that you obtain a detailed, precise timeline of events surrounding the incident. The more detailed the history, the more likely the assessment of the injury will be accurate. Document the caregiver's words in quotes. Whenever possible, do not paraphrase. Clarify

vague references to times, places, or observers. Following are some key questions to ask when constructing a timeline of events:

- When was the child last known to be well or acting normally, without injury?
- What is the child's age and developmental status (on target or delayed)?
- Is there a history of chronic illness or other medical conditions? What are the child's medications, if any?
- When did a medical professional, such as a family doctor, pediatrician, or emergency physician, last see the child?
- When did the caregiver first notice there was a problem? How did it come to his or her attention?
- Where and when did the incident occur?
- Who witnessed the incident? Were there any other objective observers in the vicinity who might have seen or heard something?
- How did the child respond after the incident?
- What did the caregiver do after the incident? Were any treatments administered?
- How did the symptoms of the injury progress over time?
- When and how was the decision made to seek medical care?

Skin Injuries

The most common forms of child abuse involve skin lesions (such as bruises and burns) and bone fractures; they are also the most common accidental injuries. Because of variations in the appearance of bruises and burns and in the time it takes for healing to occur, it can be difficult to determine whether the injury was caused by accident or abuse and when it occurred. (See sidebar, "Common Skin Injuries," for a description of the medical terms used for various types of skin injuries.)

Contusions (Bruises)

Contusions are the result of trauma to the skin, which causes ruptures in underlying blood vessels that leak blood into the surrounding tissues. The appearance of the bruise depends on many factors:

- The amount of blood leaked into tissues.
- The distance of the blood from the skin's surface (deeper contusions may take longer to appear as bruises).

COMMON SKIN INJURIES

Abrasion: Removal of superficial layers of skin due to friction (e.g., scrapes, "road rash").

Petechiae: Minute hemorrhages into the skin resulting from pressure, friction, or both. Common locations include the eye, scalp, and neck.

Contusions: Hemorrhage into the skin and underlying tissues after blunt trauma (i.e., bruises).

Lacerations: Tears of the skin due to shearing or crushing forces.

Burns: Destruction of tissue by heat, chemical agents, or radiation.

- The number of blood vessels in the particular area of the body.
- The skin's thickness.
- The amount of underlying fat, muscle, or bone.
- The velocity of the striking force (more damage occurs as the velocity increases).
- The surface area over which force is applied (the same force concentrated in a small area will create more damage than when it is distributed over a larger surface area).

How Old Is This Bruise?

No one can precisely assess the age of bruises based on their color. Even physicians do not agree on how to determine the age of a bruise by its color, and their predictions of age are no more accurate than chance because the color changes that occur as a bruise heals are not as predictable as once thought and may not provide an accurate timeline of injury. In fact, color changes are quite variable. The earliest color (yellow) is seen about 18 hours after onset; red, blue, purple, and black can be seen any time from onset to resolution. Bruises sustained at the same time on different parts of a person's body may also change color at different rates. Thus, the investigation should not rely on opinions that assign an age to bruises.

Distinguishing Between Accidental and Abusive Bruises

Child's age and development. One of the most important factors to consider in infants and very young children is their mobility. The prevalence, number, and location of bruises on

COMMON MEDICAL IMAGING TECHNOLOGIES

CT: Computed tomography.

MRI: Magnetic resonance imaging.

US: Ultrasound.

Endoscope: An instrument with magnification capabilities for visualizing the interior of a hollow organ, such as the stomach, colon, or rectum.

babies are linked to their motor abilities. Infants who are not mobile rarely have bruises. Once they are ambulating, however, babies' bruises occur mainly on the legs, shins, and forehead. Bruises on the head, face, and ears of a young infant are very suspicious for abusive head trauma and should prompt medical examination and a CT scan of the child's head. (See sidebar, "Common Medical Imaging Technologies," for a list of tests commonly performed as part of a medical evaluation.)

Location. Falls are the most common cause of childhood injury, and the corresponding bruises occur where bones are closest to the skin and on the front of the body (e.g., knees, shins, forearms, chin, and the forehead in toddlers). Bruises on the soft parts of the body (e.g., cheeks, neck, buttocks, thighs, calves) are uncommon in accidental injury. Investigators should obtain a detailed history of the child's previous injuries and a description of the fall because they are essential for distinguishing between accidental and inflicted trauma.

Distribution. Bruises that are symmetric, located on both sides of the body, or located on multiple body surface planes suggest that abuse occurred. Groups or clusters of bruises often seen on the upper arms, on the outside of the thighs, and on the trunk and adjacent extremity should be considered suspicious.

Size and number. Accidental bruises are characteristically few in number and small in size (1 to 2 cm). Abusive bruises are typically greater in number (averaging 5 to 10) and larger in size (>10 cm).

Patterned bruises. Patterned bruises often indicate abuse and may show the imprint of an object. For example, common patterned bruises include a handprint caused by slapping; linear marks caused by blows with belts, cords, or sticks; imprints caused by a household item, such as a wooden spoon or flyswatter; bite marks; ligature marks from ropes, cords, or other bindings; and fingertip bruises caused by forceful grabbing or squeezing.

See sidebar, "Bruises Suggesting Abuse."

BRUISES SUGGESTING ABUSE

- Any bruise on an infant younger than about 9 months old or a noncruising child.
- Bruises in areas other than bony prominences.
- Bruises on the ears, face, abdomen, buttocks, back, arms, thighs, hands, and feet.
- Multiple bruises in clusters or large bruises.
- Patterned, symmetric, or bilaterally located bruises.

Other Factors To Consider

The medical provider must take into account any conditions or disorders that could cause or worsen bruising in a child, such as bleeding disorders, connective tissue diseases, and medications that predispose children to bleeding or bruising. Although it may be more difficult to see bruises in people with darker complexions, there is no evidence that babies or very fair children bruise more easily than others. Multiple contusions in the same area may blend together and obscure patterns of the object used.

Burns

Burns are classified as superficial (redness, no blisters), partial thickness (painful, form blisters, vary in depth), and full thickness (not painful, appear white or dry, scars with healing). An older system uses the categories of first-, second-, and third-degree burns. Currently, the three most common burns in young children are thermal burns, contact burns, and scalds. An overview of burn types is helpful in determining how this type of injury may have occurred and whether it was accidental or abusive.

Thermal Burns

Thermal (or heat) burns account for almost all burn injuries in children. Children younger than age 6 (especially 2- to 4-year-olds) are the most frequent victims of abusive burns. Scalds with hot liquids, contact with a hot object, exposure to flame, or radiation injury may cause thermal burns. The severity of a thermal burn depends on six factors:

- Thickness of the skin (varies with age, gender, and location on the body).
- Temperature of the agent.
- Length of time the agent is in contact with the skin.

- Heat-dissipating capacity of the skin (amount of blood flow).
- Amount and type of clothing worn.
- Type of liquid.

Contact Burns

Prolonged contact with a hot object causes contact burns, which reflect the size and shape of the part of the object that contacted the skin. Accidental contact burns usually have indistinct or smeared edges because the child quickly pulls away from the hot object.

Contact burns involve prolonged exposure to heat and produce more uniformity of depth, sharply demarcated edges, and distinct patterns. They are unlikely to occur on clothed parts of the body. "Running into a cigarette" produces an indistinct, superficial burn that is oval or comet shaped; this is in contrast to an inflicted cigarette burn, which is typically a deep partial thickness, round to oval-shaped lesion with well-defined edges.

Objects commonly used in abusive burns include clothes irons, cigarettes, curling irons, stovetop burners, cigarette lighters, and heated kitchen implements.

Scalds

Burns caused by hot liquids are some of the most difficult cases to assess. Most scald burns in children result from household accidents involving spills or splashes by hot coffee, soup, or cooking oil. Typically, accidental burns have indistinct margins, are usually located on one side of the body, exhibit a trailing-off pattern (the hot liquid cools as it runs down the body), and have areas that are spared or relatively spared because of the presence of clothing.

Most abusive scald burns are caused by hot tap water, typically by immersing the child in standing hot water (e.g., in a sink or bathtub) or by holding the child under running hot water. When feet and hands are submerged, the scald creates a "stocking or glove distribution" pattern. Characteristics of forced-immersion scalding include:

- Burns that are of uniform depth and sharply demarcated (indicating the child was restrained).
- Bilateral, symmetric burns.
- Sparing of the flexion creases, indicating the position of the body at the time of the injury (drawing up the arms and legs will minimize burning in the area behind the knees and where the thighs touch the abdomen).
- Areas of relative sparing where the body is in contact with a cooler surface (e.g., soles of the feet pressing against the bottom of the bathtub).

With scald burns, investigators must act quickly to preserve the integrity of the scene and obtain accurate measurements. The depth of the bathtub or sink, setting of the hot water

heater, and temperature of the water at varying time intervals should be documented immediately.

See sidebar, "General Indicators of Abusive Skin Injuries."

Fractures

Accidental fractures can occur in children who are mobile and active. Household accidents and falls produce the most common accidental fractures: linear skull, clavicle, forearm, and lower leg "toddler's" fractures. Most abusive fractures occur in infants and young toddlers. Similar to bruises, accidental fractures are rare in infants because they do not have the strength or mobility to cause them. In fact, infants' bones, which are more flexible than those of older children and adults, can bend significantly before breaking.

When assessing the likelihood of abuse, the most critical component is a detailed history of how the injury occurred. The history should include the child's age and developmental abilities (e.g., some babies are learning to stand at 12 months, while others are running) as well as the presence of possible contributing medical conditions (e.g., vitamin D deficiency or osteogenesis imperfecta, also known as "brittle bones"). The timeline of events from the initial injury to the time when the caregiver sought medical treatment should also be determined.

Investigators should obtain as much information as possible about the position and motion of the child just before, during, and immediately after the injury. Questions asked and the investigation at the scene should focus on details of the surroundings, including the height of the fall, location of nearby objects, and type of landing surface (e.g., carpet or tile). Confirm whether the child was alone when he or she fell, if the child was dropped, or if the child was being held and fell with another person. Injuries can be more severe when a baby falls while being carried; the adult's mass falling along with the child creates significantly more force than when a baby falls alone from the same height. Ask how the

GENERAL INDICATORS OF ABUSIVE SKIN INJURIES

- Many injuries are present.
- Injuries occur in unusual locations.
- Injuries cover a large area.
- Medical care is delayed.
- Injuries are inconsistent with family history and the child's developmental abilities.
- Injuries show a pattern.

child acted and behaved immediately after the injury and later during daily activities (such as diaper changes).

When a fracture is suspected, children younger than age 2 should have x rays of all bones to look for older healing fractures from previously undetected injury or abuse. A complete survey of the skeleton (full body scan) should be conducted; this includes separate exposures of each of the long bones, spine, head, hands, and feet.

Types of Fractures and Mechanisms of Injury

Location	Type of Fracture	Type of Force	Examples of Accidental Injury	Examples of Abusive Injury
Shaft of long bone (e.g., femur, humerus)	Spiral, oblique	Twisting (rotating)	Child falls while running, twists leg	Caregiver grabs or twists an arm
Shaft of long bone (e.g., femur, humerus)	Transverse	Direct blow, bending	Child runs into edge of coffee table	Femur is struck with baseball bat
Shaft of long bone (e.g., femur, humerus)	Buckle, impaction	Compression	Child falls onto outstretched arm	Child is slammed onto knees on a table
Shaft of long bone (e.g., femur, humerus)	Greenstick	Bending	Child's arm hits edge of step with a fall	Child's arm is grabbed and yanked upward
Metaphysis of long bone (near growth plate)	Metaphyseal "corner" fractures (classic metaphyseal lesions)	Tension, shearing	Traction on limb during physical therapy (unusual)	Violent shaking of infant
Skull	Simple, linear	Direct blow	Infant rolls off the changing table onto the floor	Caretaker throws infant onto the floor
Skull	Complex, depressed	Direct blow	Child falls off bunk bed, hitting head on corner of wooden toybox	Child is hit in the head with a hammer
Ribs	Transverse	Bending during compression of chest; direct blow (uncommon)	Infant is resuscitated by two-handed CPR	Infant's chest is squeezed during violent shaking

How Old Is This Fracture?

The opinion of a radiologist experienced in child abuse cases is essential because it is often difficult to determine the exact age of a fracture by x ray. Also, because injuries in children heal faster than those in many adults, the age of fractures as determined through x rays can be given only in broad timeframes. In abused children, this process can be interrupted if the bone is not immobilized (causing repeated movement of the fractured ends) or if other episodes of trauma are inflicted on the same area.

Followup x rays for suspected fractures are key to determining when the injury occurred and whether it is supported by the caregiver's explanation. A very new fracture without a lot of inflammation or that is not widely separated, especially in very small bones (such as those in infants) may be difficult to see on an x ray in the first few days. Fractures become more visible when they begin to heal because of the presence of callus, a healing bone tissue that forms to bridge the break in the bone to make it stable again. During this stage of healing, medical professionals are able to better identify fractures that may have been missed during the initial x ray. This followup skeletal survey is part of the investigation, and ensuring its completion is vital to the assessment of injuries.

Features Strongly Suggesting Abuse

Following are some common features suggesting that fractures are a result of abuse:

- Fractures in infants who are not independently mobile.
- Unexplained fractures.
- Inconsistency between the movement necessary to cause a fracture and the description of how the injury occurred.
- Severity of the injury out of proportion to the event described.
- Fracture accompanied by other evidence of abuse or neglect.
- Significant delay in seeking medical care.
- Multiple fractures of different ages.
- Metaphyseal fractures (classic metaphyseal lesions).
- Rib fractures.
- Complex, depressed skull fractures.

Head and Eye Injuries

The most common signs of head injury are vomiting, seizures, stupor, and coma. However, sometimes the signs and symptoms of abusive head trauma are nonspecific, such as irritability, lethargy, or poor appetite.

Investigators should determine whether a head injury is consistent with the reported injury and whether the events surrounding the incident explain the severity. Severe or life-threatening injuries generally do not occur from short falls, falls down stairs, or minor accidents when children are playing. These types of injuries usually require more force, such as a high-speed auto collision or a fall from several stories in height. An evaluation of a serious head injury usually requires blood tests and imaging, and it may involve surgeons, neurologists, neurosurgeons, and other specialists.

Distinguishing Between Accidental and Abusive Head Injuries

Most fatalities from child abuse involve serious head injuries. The depth of the injury within the skull has been correlated to the amount of force used (i.e., deeper injury means more force). Bruising to the face, ears, eyes, and neck is often associated with abuse in children who are not walking or who are younger than age 3.

Following are some common types of head injuries:

- Hair loss or baldness (alopecia) or bleeding into the scalp or eyes may be caused by hair pulling as a means of discipline.
- A subdural, subarachnoid, or epidural hemorrhage under a skull fracture is caused by direct impact to the head and often features overlying bruising or swelling of the scalp. These hemorrhages may be associated with an intentional blow to the head, such as when a child is struck or thrown against a hard object, or with an accidental injury.
- Subdural hematomas without external injury correlate with whiplash or shaking.
- Abusive head trauma may present as retinal hemorrhages or trauma to the eye and its surrounding structures. Abuse should always be considered in children younger than age 3 who have these symptoms without an adequate history of accidental injury.

It is also important to observe the child's living situation for cues of abuse. For example, increased rates of abusive head trauma have been associated with a crying infant who lives in a home with adults who are not related to each other.

Distinguishing Between Accidental and Abusive Eye Injuries

Isolated external eye injuries are so common in children that they seldom show clear evidence of abuse. Investigators should use their best judgment based on the caregiver's explanation and the nature of the injury. For example, two black eyes seldom occur together accidentally unless the nose is broken. Also, internal eye injuries (such as retinal

hemorrhages in multiple layers of the retina that are diffuse and numerous) strongly suggest whiplash or shaking as the means of injury. An ophthalmologist should examine the child to determine if internal eye injuries, such as retinal hemorrhages, have occurred.

Abdominal Injuries

Abdominal trauma is second only to head trauma as the most common cause of death in child abuse. Pain and poor appetite may be the only symptoms of abdominal trauma because there is often no external bruising. Severe symptoms resulting from damage to internal organs (liver, spleen, pancreas, stomach, and intestines) can be delayed; this, in conjunction with a false or misleading history, often causes delayed recognition and treatment, leading to high rates of serious complications (internal bleeding, organ death, infection) and death.

Accidental abdominal injuries are usually caused by a long fall to a flat surface or a motor vehicle accident. In rare circumstances, a contact sport or bicycle accident may cause an abdominal injury in an older child. These patients usually seek medical attention immediately. Abusive abdominal injuries occur more often in younger children with a delayed presentation for medical care. Punching, kicking, and striking with objects can cause internal organ damage. Sometimes an external bruise can help to identify the means of injury.

A Note on Investigating Injuries

Once a suspicious injury has been reported, it is critical that law enforcement conduct an immediate assessment of the situation, ensure that the child receives medical care, identify witnesses, and collect evidence from the scene of the incident. In documenting evidence, investigators should obtain high-quality photos (including a scale) to document all injuries and their changes over time, to enhance testimony, to solicit second opinions from other professionals, and to supplement case reviews.

Working With the Medical Community

The most effective way to investigate child maltreatment is through interagency coordination and planning, also known as a multidisciplinary team approach. Physicians and other healthcare providers are key participants in cases involving child abuse alongside social workers, therapists, victim/witness service providers, prosecutors, judges, and law enforcement officers.

Law enforcement should work with healthcare providers to ensure that all suspicious injuries are reported to the proper authorities. Physicians, nurses, sexual assault nurse examiners, and other medical professionals play a vital role in the investigative process by objectively

evaluating occurrences of child maltreatment, recognizing and documenting suspicious injuries, interviewing children, and referring children for additional treatment.

The medical community has four basic responsibilities in the identification and treatment of injuries:

- Identify, diagnose, interpret, and document injuries.
- Treat and make appropriate referrals for conditions and injuries.
- Report suspected incidents of abuse to the appropriate authorities.
- Provide evidence for subsequent legal proceedings.

Before obtaining medical care from a provider, investigators should confirm that the provider has been trained and is experienced in the special needs, diagnoses, and treatment of child abuse victims. The provider should also be willing and able to appear as an expert witness and present his or her findings in court.

Obtaining a Medical Examination

A medical evaluation should be performed as soon as possible on all children suspected of having been abused; preferably, the evaluation should be conducted by a medical professional who has been trained in and is experienced with examining abused children. Immediate medical exams can prevent further injury to the child or complications from the injury and help to avoid accusations that a child's injuries occurred after removal from the home. See sidebar, "How To Obtain a Medical Examination."

Medical emergencies (such as severe pain, bleeding, fracture, head trauma, internal injuries, or acute sexual assault) require immediate evaluation in a hospital emergency room where specialized resuscitation, surgery, and testing are available. Law enforcement should remain at the hospital with the child and family. Officers play a vital role by providing critical details of events, collecting evidence, and helping hospital medical and social work staff contact and interact with family members.

In nonemergency situations, medical evaluations can be performed at less specialized facilities, depending on the resources available in the community. The timing for these exams is less critical, but they should be scheduled within 1 to 3 days to increase the potential for evidence collection. Many medical services are provided at Children's Advocacy Centers (CACs). If your agency does not already coordinate with the local CAC, you may want to include CAC staff on your multidisciplinary team or establish a relationship with them for future investigations. The accrediting body for CACs is the National Children's Alliance, which has a list of CACs in each state (www.nationalchildrensalliance.org).

A secondary but nevertheless vital purpose of a medical examination is to determine the presence of and properly collect any corroborating evidence of acute or chronic

HOW TO OBTAIN A MEDICAL EXAMINATION

- For emergencies, the child should be taken to the closest emergency room, preferably a facility with pediatric trauma services. However, children with life-threatening injuries should be stabilized at the closest facility before transfer for specialized care.
- For nonemergency cases, healthcare providers at a Children's Advocacy Center, clinic, or medical office should conduct the medical evaluation as soon as possible after the abuse has occurred. As time passes, the probability of recovering evidence is reduced. However, even if delayed, an evaluation should still be performed to provide treatment and maximize recovery.
- Coordinate with child protective services (CPS) to determine if law enforcement or a CPS worker will accompany the victim to the evaluation.
- Help the victim and his or her parents or guardian with the medical visit. CPS may provide this assistance, depending on who has requested the examination.
- Inform medical personnel about the facts, allegations, suspect's information, victim's mental state, and past incidents, if applicable. Discuss potential evidence to be collected and the goals of both the law enforcement and CPS investigations.
- Meet with the CPS caseworker, healthcare provider, victim, and parent or guardian at the treatment facility to review the findings and safety plan.

trauma. In recent years, better training, the establishment of protocols, and technological advancements have greatly improved the ability and willingness of physicians to corroborate physical and sexual abuse in children.

Preparing and Presenting Medical Evidence for Trial

Preparation for trial begins with good practice and documentation the moment a child presents for medical care with an abusive injury or illness. Child abuse cases rely heavily on medical evidence, and complicated information must be presented in a clear, concise manner that all jurors can understand. For this to occur, investigators and prosecutors must be in frequent contact with the physician assisting them. The entire team should be fully aware of what can and cannot be proved, what statements have been given, and whether the evidence corroborates the crimes charged. Exhibit 2 on page 18 presents a list of tasks and questions to consider when preparing for trial.

The ultimate goal of medical testimony is to teach. The judge or jury's decision is only as good as their understanding of the evidence. The value of visual aids (including x rays, photographs, or models of objects) cannot be overemphasized—they can help juries

EXHIBIT 2. PREPARING MEDICAL EVIDENCE FOR TRIAL

Organizing the Team

- Obtain and review all medical records, including past primary care and hospital records, which often contain clues to previous abuse or neglect. These records may include films or a disk containing diagnostic images.
- Review (in a face-to-face meeting) the salient features of the medical evidence, ask questions, clarify details, view x rays and scans, and ensure that everyone has the same understanding of the facts.
- Determine the expertise and experience of the physician involved and whether additional medical experts are needed.

Collecting the Medical Evidence

- What is the nature and extent of the child's injury or illness?
- What is the mechanism of injury? What type and amount of force are required to produce the injury?
- Does the history the caregiver provided explain (in whole or in part) the child's injury?
- Have other diagnoses been explored and ruled out, whether by information gathering, examination, or medical tests?
- Could the injury be consistent with an accident?
- Can the timing of the injury be estimated? To what degree of certainty?
- Have all injuries been assessed in light of any exculpatory statements?
- What treatments were necessary to treat the injury or illness?
- What are the child's potential risks from the abusive event?
- What are the long-term medical consequences and residual effects of the abuse?
- Have all reports by medical experts retained by the defense been obtained and reviewed? What are the similarities and differences between the reports?

Preparing for Trial

A thorough understanding of all medical evidence is helpful only if this information can be communicated effectively to the trier of fact. Prepare to answer questions about the following:

- How the child's and family's medical and social history can assist in arriving at a diagnosis.
- Basic anatomical and physiological principles.
- Symptoms anticipated with the abusive injury.
- The basis for the medical diagnosis and widely accepted scientific research about the particular diagnosis.
- Limitations of what medicine can and cannot prove definitively.

understand object relationships and unfamiliar concepts. Video reenactments and computer-generated graphics can also be helpful. Resources have been created to educate medical and lay audiences about the most common abusive injuries (see "Resources for Educating Others About Abusive Injuries").

Conclusion

An injury by itself does not indicate abuse. The history of how the injury occurred is vital when determining if abuse occurred. A comprehensive assessment by a team of knowledgeable professionals is the best approach to reaching an accurate conclusion.

Supplemental Reading

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Kellogg, N.D., and the Committee on Child Abuse and Neglect. 2007. Evaluation of suspected child physical abuse. *Pediatrics* 119(6):1232–1241.

Resources for Educating Others About Abusive Injuries

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Palusci, V.J., and Fischer, H., eds. 2011. *Child Abuse and Neglect: A Diagnostic Guide.* London, England: Manson Publishing.

Reece, R.M., and Christian, C.W., eds. 2008. *Child Abuse: Medical Diagnosis and Management,* 3d ed. Elk Grove Village, IL: American Academy of Pediatrics.

Organizations

American Academy of Pediatrics
Section on Child Abuse and Neglect
141 Northwest Point Boulevard
Elk Grove Village, IL 60007–1098
847–434–4000
childabuse@aap.org
www2.aap.org/sections/childabuseneglect

American Professional Society on the Abuse of Children
350 Poplar Avenue
Elmhurst, IL 60126
877–402–7722
apsac@apsac.org
www.apsac.org

Children's Hospital Association
401 Wythe Street
Alexandria, VA 22314
703–684–1355
www.childrenshospitals.org

Children's Advocacy Centers

National Children's Alliance
516 C Street NE.
Washington, DC 20002
202–548–0090
800–239–9950
www.nationalchildrensalliance.org

National Children's Advocacy Center
Southern Regional Children's Advocacy Center
210 Pratt Avenue
Huntsville, AL 35801
256–533–5437
www.nationalcac.org

Midwest Regional Children's Advocacy Center
347 North Smith Avenue, Suite 401
St. Paul, MN 55102
651–220–6065
www.mrcac.org

Northeast Regional Children's Advocacy Center
201 31st Street, Suite 2
Brigantine, NJ 08203
215–387–9500
www.nrcac.com

Western Regional Children's Advocacy Center
423 South Cascade Avenue
Colorado Springs, CO 80903
719–884–0379
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