

INVESTIGATING NON-ACCIDENTAL TRAUMA IN INFANTS AND TODDLERS

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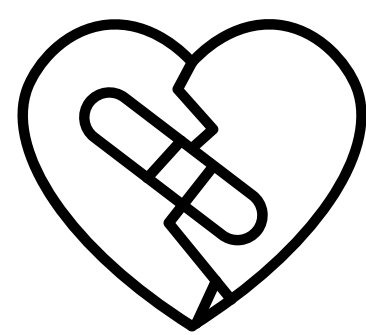
<https://zeroabuseproject.org/>

LEARNING OUTCOMES

- Define Non-Accidental Trauma (NAT) and distinguish it from accidental injury.
- Identify common presenting signs and types of injuries associated with NAT in infants and toddlers.
- Understand the significance of a discrepant or absent history in NAT cases.
- Explain the role of medical evaluation and specialized imaging in NAT investigations.
- Apply developmental appropriateness to injury assessment.
- Discuss the critical components of multidisciplinary investigation and collaboration.

Defining Non- Accidental Trauma (NAT)

Key Distinction: Discrepancy
between injury and
history/development



Definition: Injury to a child caused by abuse or neglect

Inflicted Injury: Intentional or willful action/inaction resulting in harm

Neglect: Failure to provide necessary care, leading to harm

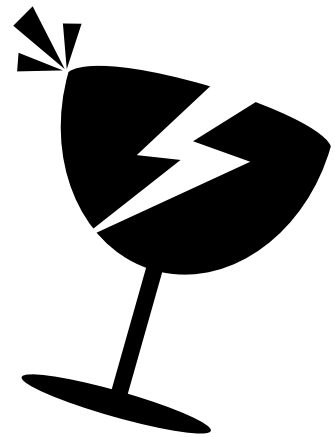
Often Hidden: Perpetrators are usually caregivers; injuries may be concealed

Spectrum of Severity: From minor bruises to fatal injuries

Key Distinction: Discrepancy between injury and history/development

THE VULNERABILITY OF INFANTS AND TODDLERS

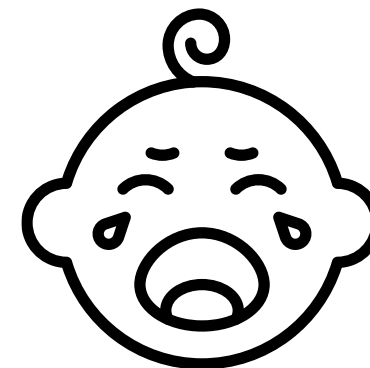
PHYSICAL
FRAGILITY



DEVELOPMENTAL
LIMITATIONS



COMPLETE
DEPENDENCE



HIDDEN
ENVIRONMENT



High-Risk Period: Infants under 1 year, especially under 6 months, are at highest risk for fatal abuse.

TYPES OF NON-ACCIDENTAL TRAUMA BRUISES



Most Common Sign: But often misattributed or missed



Concerning Locations (TEN-4-FACESp)



Mechanism: Slapping, squeezing, grabbing, impacts



Accidental Bruising: Typically over bony prominences in mobile children

Investigative Questions: How did it happen? Who was present? What was the child doing?

TEN-4-FACESp
Bruising Clinical Decision Rule for Children < 4 Years of Age

When is bruising concerning for abuse in children < 4 years of age?
If bruising in any of the three components (Regions, Infants, Patterns) is present without a reasonable explanation, strongly consider evaluating for child abuse and/or consulting with an expert in child abuse.

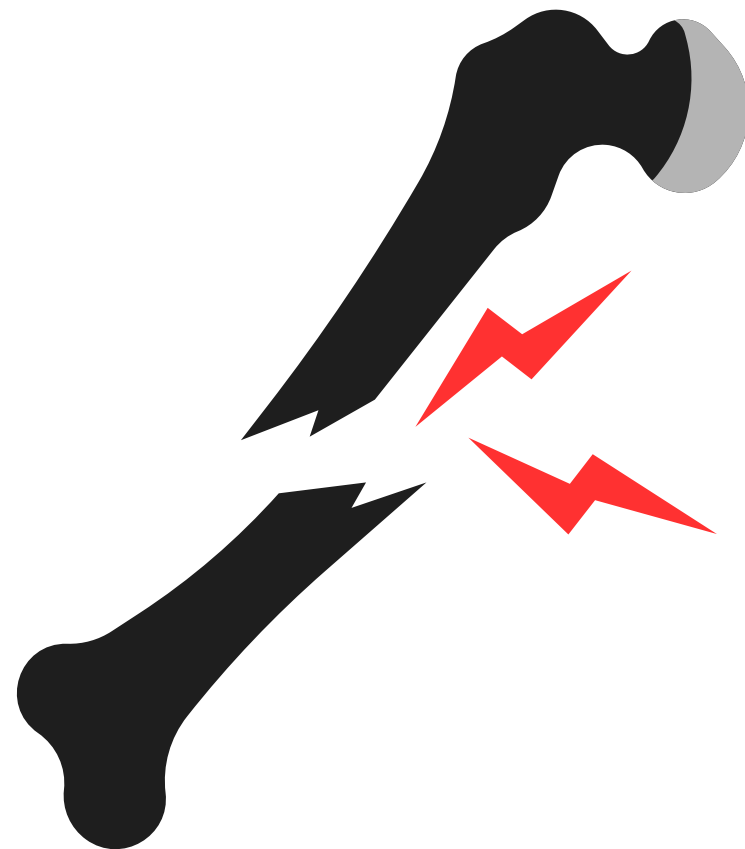
REGIONS	INFANTS	PATTERNS
TEN Torso Ears Neck FACES Frenulum Angle of Jaw Cheeks (<i>fleshy part</i>) Eyelids Subconjunctivae	4 months and younger Any bruise, anywhere	Patterned bruising Bruises in specific patterns like slap, grab or loop marks

See the signs Unexplained bruises in these areas most often result from physical assault. TEN-4-FACESp is not to diagnose abuse but to function as a screening tool to improve the recognition of potentially abused children with bruising who require further evaluation.

TEN-4-FACESp was developed and validated by Dr. Mary Clyde Pierce and colleagues. It is published and available for FREE download at turkchildrens.org/ten-4-facesp.

Ann & Robert H. Lurie Children's Hospital of Chicago

TYPES OF NON-ACCIDENTAL TRAUMA: FRACTURES



01 Highly Suspicious

02 Classic Metaphyseal Lesions (CMLs)

03 Rib Fractures

04 Spiral Fractures (Long Bones)

05 Multiple Fractures in Different Healing Stages

06 Skull Fractures

Investigative Challenge: Absence of an adequate explanation

TYPES OF NON-ACCIDENTAL TRAUMA: HEAD TRAUMA



- *Leading Cause of Fatal Abuse*
- **Formal Term:** Abusive Head Trauma (AHT)
- Forceful shaking, with or without impact
- **Triad:** Subdural hematoma, retinal hemorrhages, encephalopathy
- Often no external signs of injury
- **Impact Head Trauma:** Direct blow to the head
- **Signs:** Seizures, apnea, altered consciousness, vomiting, lethargy
- **Long-Term Consequences:** Developmental delays, cognitive impairment, blindness
- **Requires Immediate Medical Attention**

TYPES OF NON-ACCIDENTAL TRAUMA: INTERNAL INJURIES

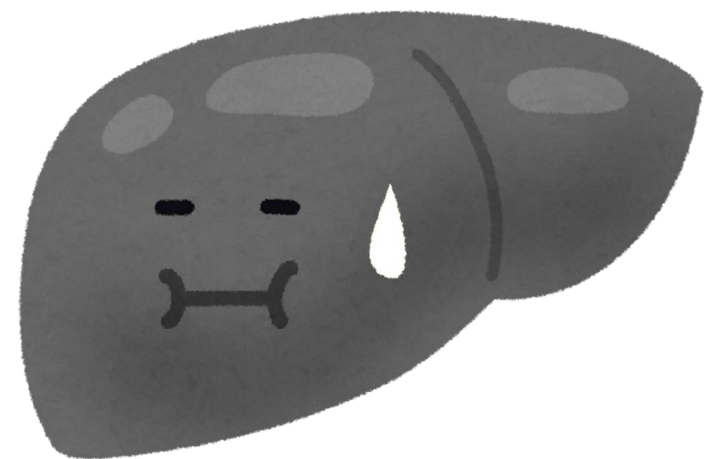
01 Abdominal Trauma

02 Thoracic Injuries

03 Vascular Injuries

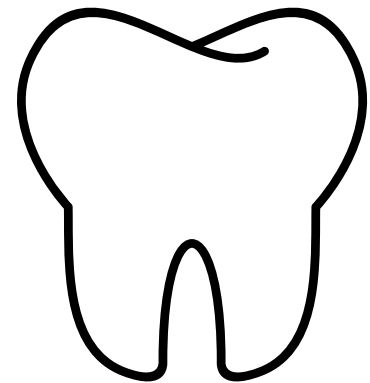
04 **Signs:** Abdominal distention, vomiting, lethargy, shock

05 **Medical Investigation:** Imaging (CT, ultrasound), laboratory tests

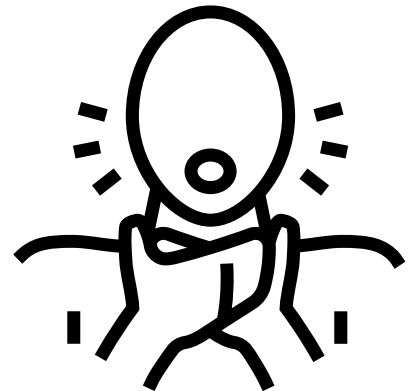


TYPES OF NON-ACCIDENTAL TRAUMA: OTHER

BITE MARKS



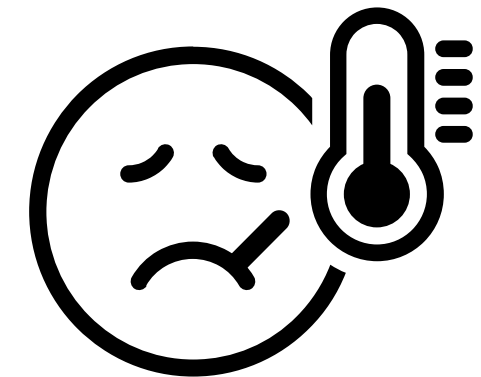
CHOKING,
SUFFOCATION



POISONING,
INTOXICATION



MÜNCHAUSEN
SYNDROME BY
PROXY



THE DISCREPANT OR ABSENT HISTORY: A MAJOR RED FLAG

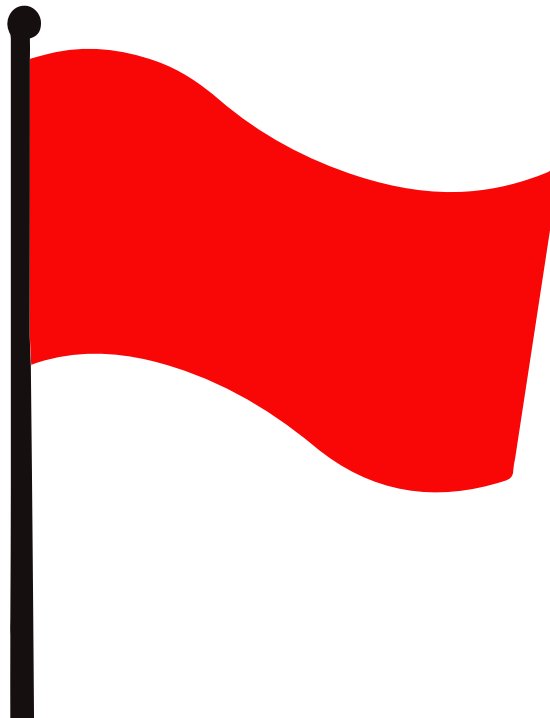
01 Inconsistent History

02 Absent History

03 Delayed Care

04 Caregiver Behavior

Critical Investigative Tool: Always
compare injury to explanation



DEVELOPMENTAL APPROPRIATENESS OF INJURIES



- **Infants (Non-ambulatory):**
 - Seldom bruise/fracture accidentally
 - Bruises in TEN-4 areas, rib fractures, spiral fractures, AHT are highly suspicious
- **Toddlers (Cruising/Walking):**
 - Accidental bruises common (shins, knees, forehead)
 - Still unlikely to sustain spiral fractures or severe AHT from typical falls

Investigative Questions: Can this child perform the action described? Is the injury consistent with the stated mechanism for a child of this age/stage?

Child Development Expertise: Often needed (e.g., Child Abuse Pediatrician)

Role of Medical Evaluation: Child Abuse Pediatrician



Specialized Expertise

Comprehensive Medical Assessment

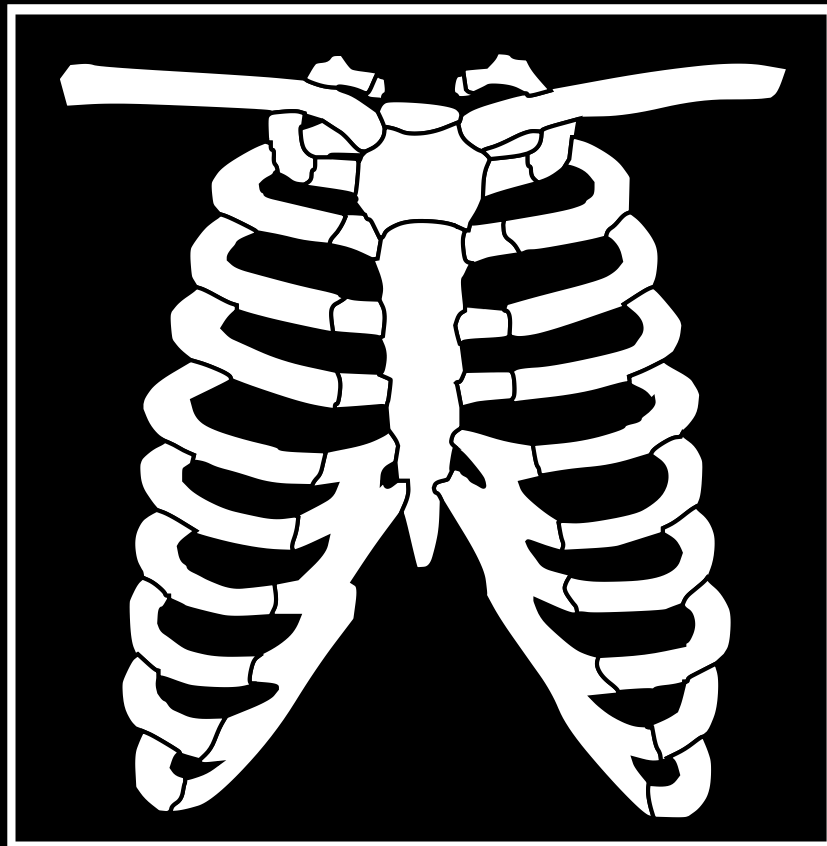
Distinguishing Accidental vs. Inflicted

Consultative Role

Expert Witness

Crucial Part of the MDT

MEDICAL IMAGING & DIAGNOSTICS



- **Skeletal Survey:** Full body X-rays for fractures (old and new)
 - Required for all suspected NAT in infants/toddlers + infant deaths
- **Head Imaging:** CT scan, MRI (for brain, skull, and vascular injuries)
- **Abdominal Imaging:** CT scan, ultrasound (for internal organ injuries)
- **Ophthalmological Exam:** Dilated eye exam for retinal hemorrhages
- **Laboratory Tests:** Blood work (coagulation, infection, toxicology), urine
- **Forensic Autopsy:** If fatal, comprehensive and specialized

FORENSIC AUTOPSY IN SUSPECTED NAT



- | | |
|----|--|
| 01 | Comprehensive External & Internal Exam |
| 02 | Full Skeletal Survey |
| 03 | Microscopic Examination |
| 04 | Toxicology |
| 05 | Detailed Documentation |
| 06 | Correlation with History |
| 07 | Forensic Pathologist Expertise |

INTERVIEWING CAREGIVERS IN SUSPECTED NAT CASES



- **Trauma-Informed & Non-Judgmental:** Despite suspicions, maintain professional demeanor.
- **Separate Interviews:** For each caregiver, to avoid contamination and identify discrepancies.
- **Open-Ended Questions:** Encourage full narratives, avoid leading questions.
- **Focus on History of Injury:** Exact mechanism, who, what, when, where, why.
- **Developmental Questions:** What could child do? (e.g., roll, sit, crawl).
- **Medical Seeking History:** When was care sought? Why delay?
- **Substance/Mental Health History:** Relevant for context (sensitive)

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Interviewing Challenges in Suspected NAT



Denial/Minimization

Evasive Responses

Blame Shifting

Fabricated History

Emotional Distress

Barriers

EXPERIENTIAL ACTIVITY: INTERVIEW SCENARIO PREP

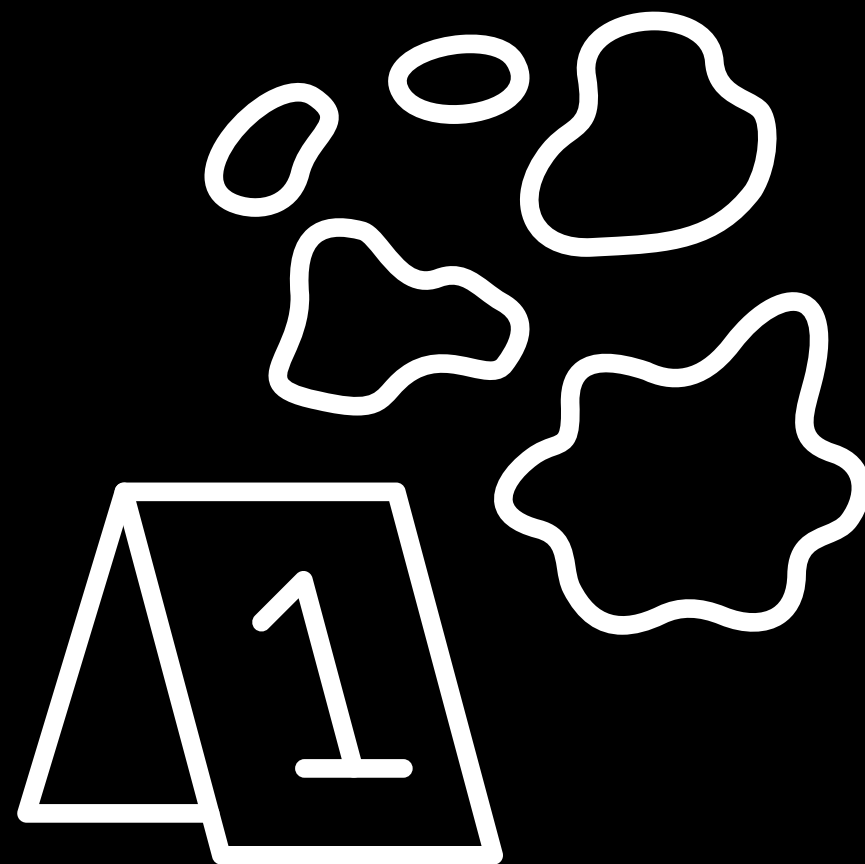
Scenario: You are about to interview a father whose 8-week-old infant presented to the ER with a fractured femur. He states he accidentally dropped the baby while changing a diaper.



Task (Individual Reflection):

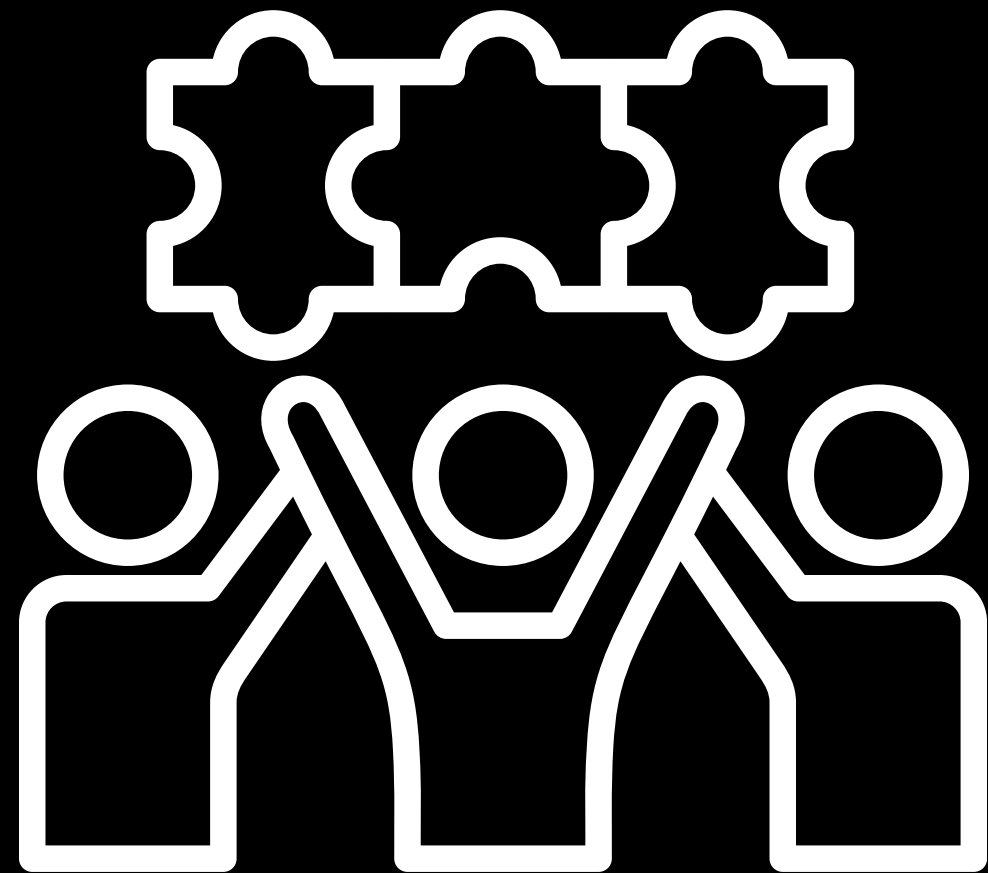
- What are 3 specific questions you would ask about the "accident"?
- What are 2 developmental questions you would ask about an 8-week-old?
- What are 2 "red flag" responses you'd listen for?
- Why is a single interviewer preferred for this interaction?

FORENSIC DOCUMENTATION AT THE SCENE



- 01 Meticulous Photography
- 02 Detailed Scene Sketch or Reenactment
- 03 Comprehensive Notes
- 04 Collection of Evidence
- 05 Chain of Custody
- 06 MDT Collaboration

MULTIDISCIPLINARY COLLABORATION: A MUST



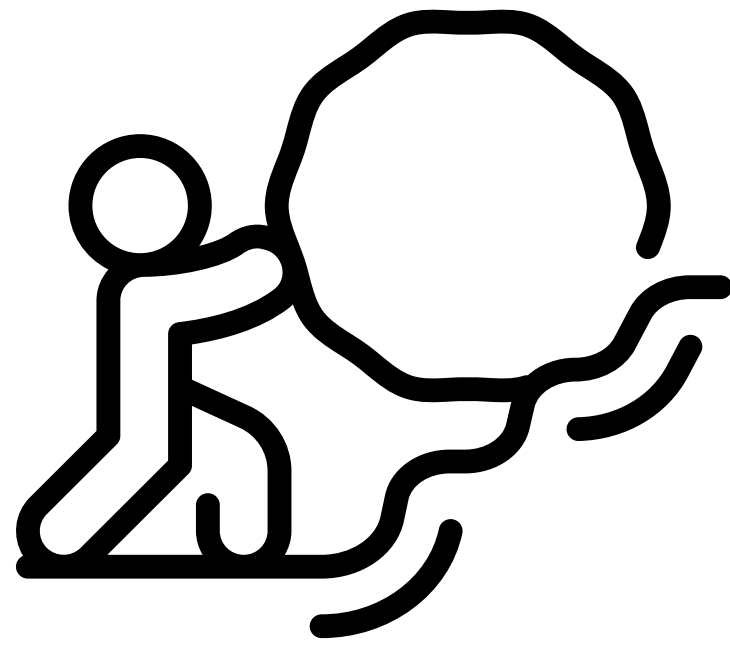
- **Core Team:** LE, DCS, Coroner, Child Abuse Pediatrician (CAP), Pathologist
- **Extended Team:** EMS, hospital staff, specialized forensic units
- **Joint Case Conferences:** Regular, structured meetings for information sharing
- **Shared Strategy:** Develop a unified investigative plan
- **Respect for Roles:** Understanding and valuing each agency's contribution
- **Child Advocacy Centers (CACs):** Provide a neutral, child-friendly setting for interviews

CHILD ADVOCACY CENTERS IN INFANT DEATH



- **Purpose:** Child-friendly setting for abuse investigations
- **MDT Model:** Co-location or coordination of services
- **Forensic Interviewing:** Specifically trained interviewers (often for verbal children).
- **Medical Evaluation:** Often have on-site Child Abuse Pediatricians
- **Victim Support:** Advocacy, mental health services for families
- **Role in Infant Deaths:** Facilitate MDT meetings, provide resources, expertise on trauma

COMMON CHALLENGES IN NAT INVESTIGATIONS



01 No Eyewitnesses

02 Caregiver Lies/Denial

03 Lack of External Injury

04 Mimics

05 Emotional Impact on
Investigators

06 Legal Hurdles

EXPERIENTIAL ACTIVITY: CASE STUDY ANALYSIS

Scenario: A 5-month-old infant presents to the ER with a fractured humerus (upper arm bone). Parents state the injury occurred when the infant rolled off the couch. Infant is not yet crawling.

Task (Individual Reflection):

- ID 3 red flags in this scenario.
- What medical evaluations would you immediately request?
- What type of fracture would be most concerning in this specific scenario? Why?
- Which agencies would you notify, and why?



Building a Comprehensive Case



Integration of Evidence

Timeline Development

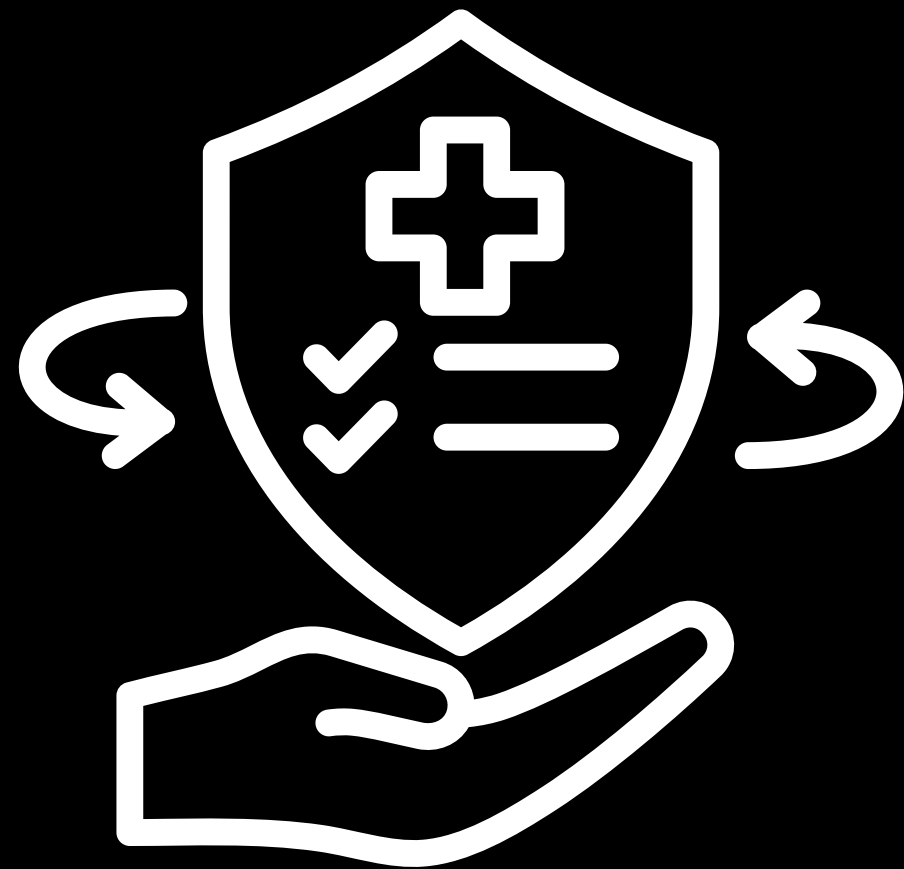
Corroboration

Rule-Out Alternatives

Expert Consultation

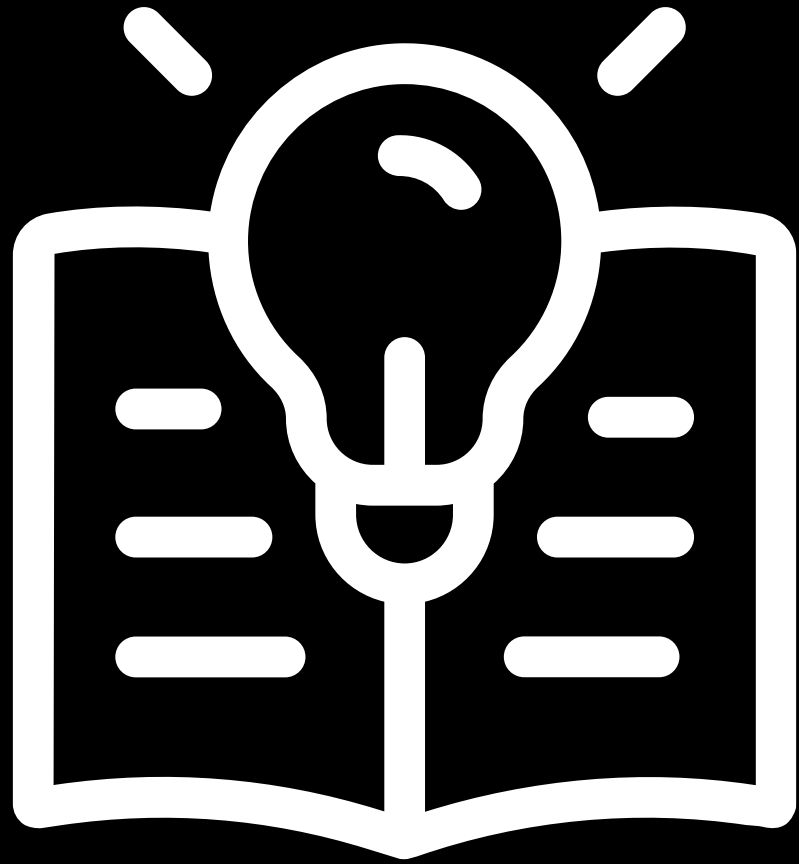
MDT Case Review

PREVENTION AND ADVOCACY IN NAT



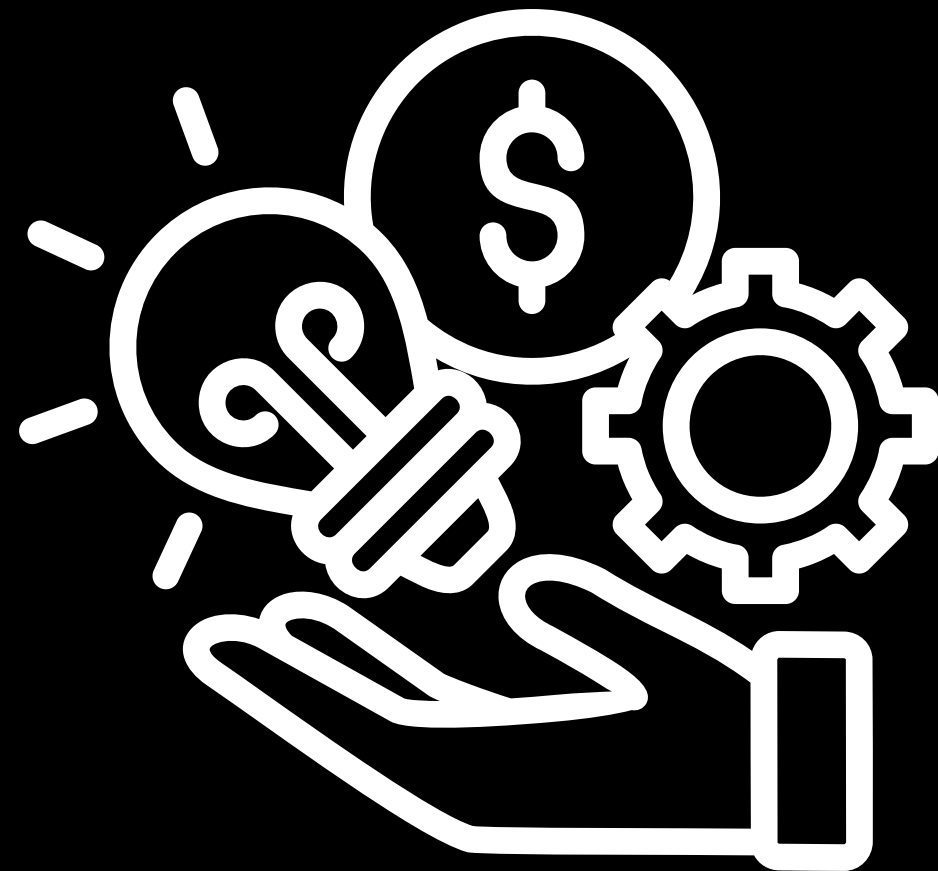
- 01 Primary Prevention
- 02 Secondary Prevention
- 03 Community Awareness
- 04 Resource Advocacy
- 05 Data-Driven Strategies
- 06 Your Role (Postvention)

KEY TAKEAWAYS



- **NAT Definition:** Injury from abuse or neglect
- **Vulnerability:** Infants and toddlers are especially fragile
- **Red Flags:** Discrepant/absent history, specific injury types/locations
- **Medical Evaluation:** Essential role of Child Abuse Pediatricians & specialized imaging.
- **Forensic Autopsy:** Definitive in fatal NAT cases.
- **MDT Collaboration:** Absolute necessity for comprehensive investigation & protection.
- **Prevention:** Every investigation informs future safety

RESOURCES FOR FURTHER LEARNING



- National Center on Shaken Baby Syndrome/Abusive Head Trauma: <https://www.dontshake.org/>
- American Academy of Pediatrics (AAP) – Child Abuse & Neglect: <https://www.aap.org/en/patient-care/child-abuse-and-neglect/>
- Prevent Child Abuse America: https://preventchildabuse.org/connect-with-services-in-your-community/AAcGvsE-saAmzxEALw_wcB
- Zero Abuse Project

THANK YOU!



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