Let's talk about AJ

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Osteopathic Founders Foundation
September 15th, 2026

Disclosure

Neither I nor any member of my immediate family has a financial relationship or interest with any proprietary entity producing health care goods or services related to the content of this activity.

I do not intend to discuss an unapproved or investigative use of commercial products or devices.

I have been a paid expert witness in child maltreatment casesd for criminal, juvenile, and civil court.

Additional Disclosures:

This lectures involves discussing child maltreatment with some graphic photographs which can be disturbing to some participants

The child and family featured in this talk have signed a legal release allowing them to be represented.

OBJECTIVES

Recognize common injury patterns and historical features that raise concern for child physical abuse.

Demonstrate appropriate documentation of suspected abusive injuries, including injury description, location, and relevant clinical context.

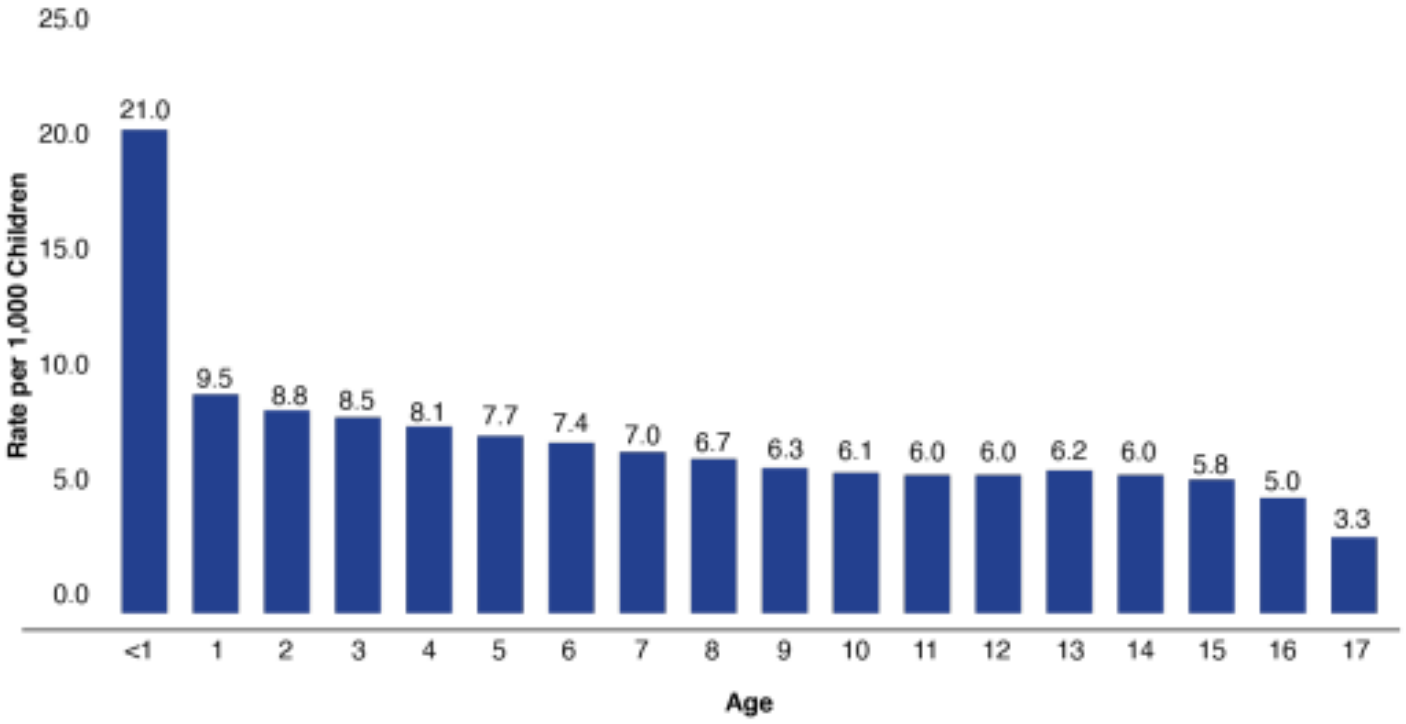
Formulate a broad differential diagnosis when evaluating injuries concerning for child maltreatment.

Describe the recommended medical work up and evaluation for suspected child physical abuse.

2023 NCANDS data

Exhibit 3–B Victims by Age, 2023

The youngest children are the most vulnerable to maltreatment

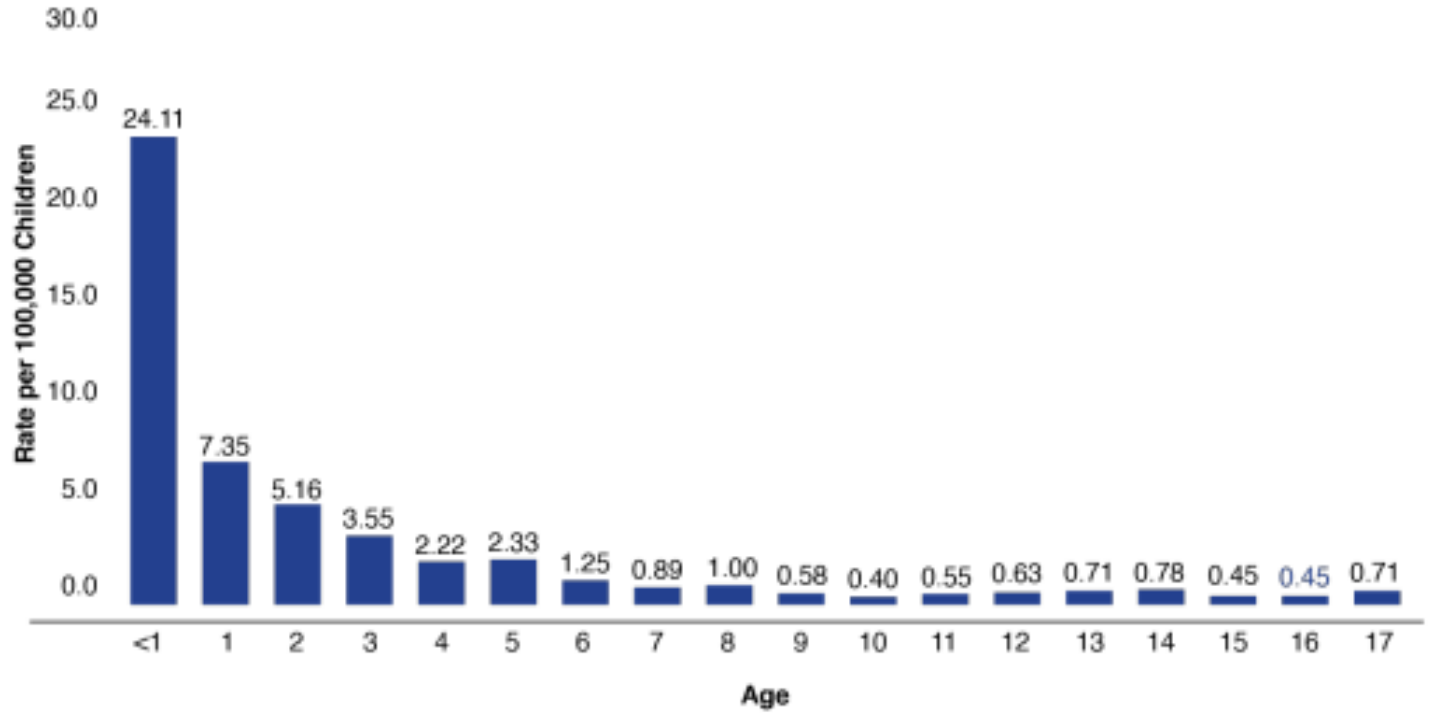


Based on data from 52 states. See table 3–5.

2023 NCANDS data

Exhibit 4–B Child Fatalities by Age, 2023

Children <1 year old died from abuse and neglect at more than three times the rate of children who were 1 year old.



Based on data from 46 states. See table 4–3.

2023 NCANDS data

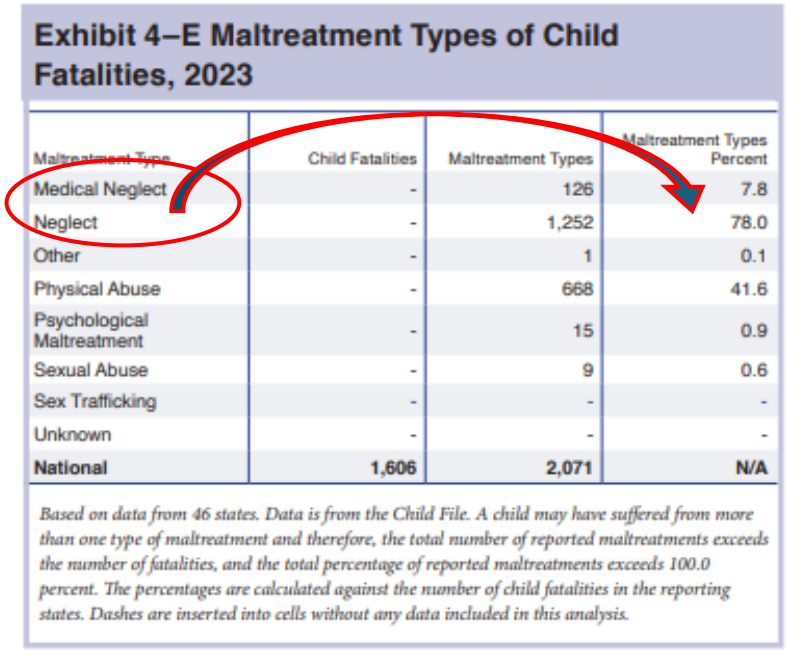


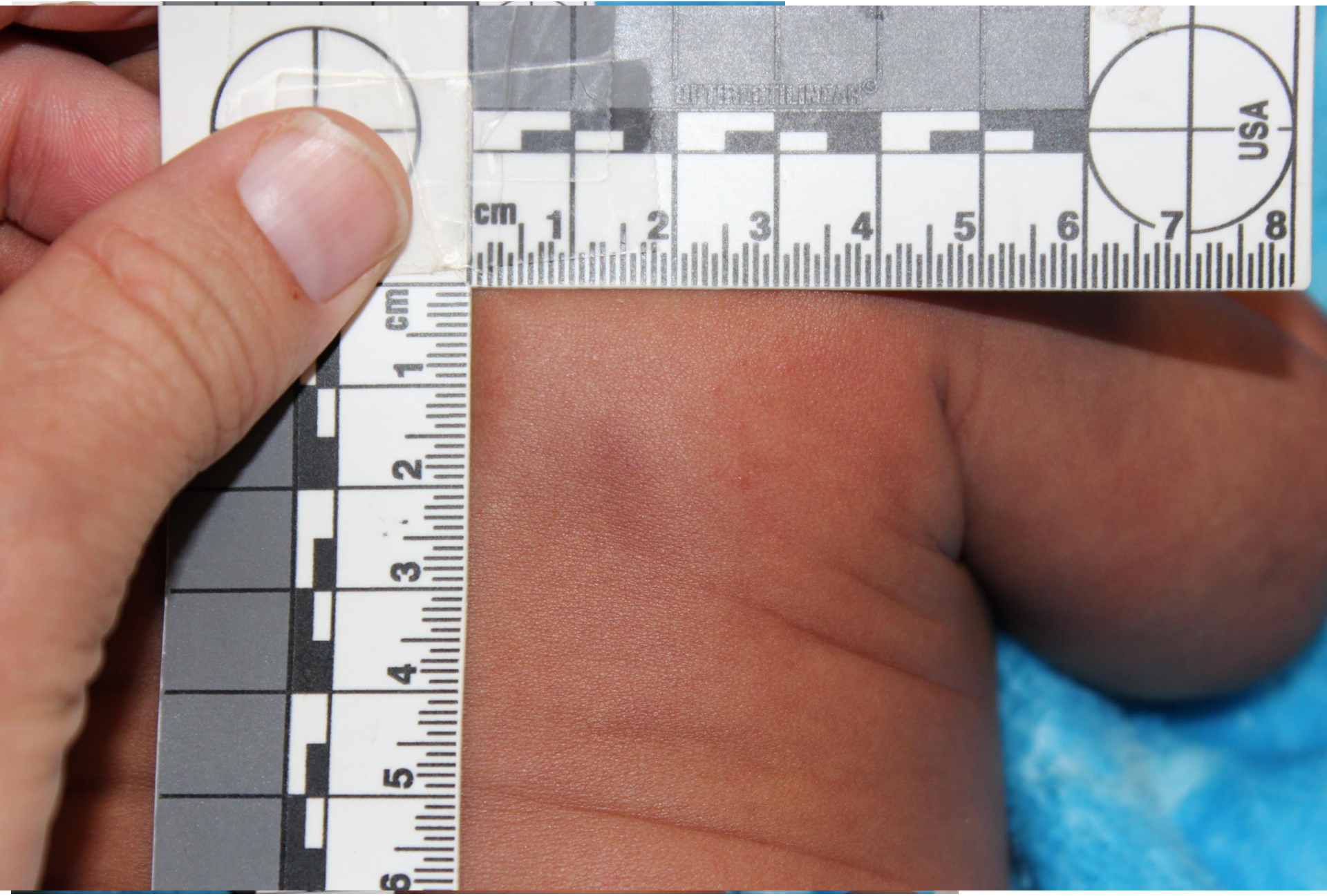
Exhibit 4–E Maltreatment Types of Child Fatalities, 2023

Maltreatment Type	Child Fatalities	Maltreatment Types	Maltreatment Types Percent
Medical Neglect	-	126	7.8
Neglect	-	1,252	78.0
Other	-	1	0.1
Physical Abuse	-	668	41.6
Psychological Maltreatment	-	15	0.9
Sexual Abuse	-	9	0.6
Sex Trafficking	-	-	-
Unknown	-	-	-
National	**1,606**	**2,071**	**N/A**

Based on data from 46 states. Data is from the Child File. A child may have suffered from more than one type of maltreatment and therefore, the total number of reported maltreatments exceeds the number of fatalities, and the total percentage of reported maltreatments exceeds 100.0 percent. The percentages are calculated against the number of child fatalities in the reporting states. Dashes are inserted into cells without any data included in this analysis.

Case presentation

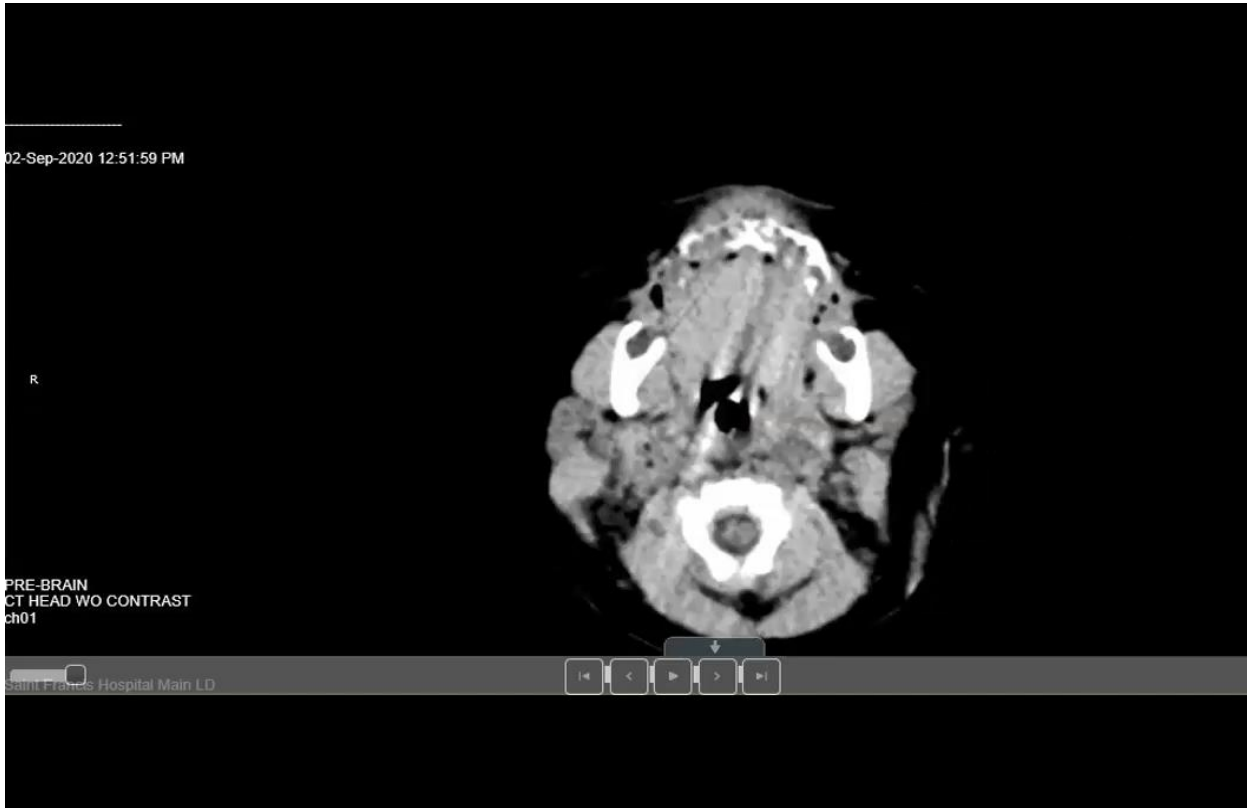
- 4-week-old presented with multiple contusions to the face, trunk, and arm.
  - History
  - Examination


cm
1
2
3
4
5
6
7
8
USA

Case presentation

- 4-week-old presented with multiple contusions to the face, trunk, and arm.
  - Radiology
    - Head CT and Skeletal survey
  - Outcome

INITIAL HEAD CT



AJ



SENTINEL INJURIES

- Injury reported in medical history or found on exam that is suspicious for abuse due to implausible history or infant's developmental level
  - Any bruise on an infant
  - Subconjunctival hemorrhages
  - Frenulum injuries

Back to AJ

TEN-4-FACES(P)

Trunk – Ears - Neck

4 months and younger

Patterned Bruising

4 years or less

- Frenulum
- Angle of jaw
- Cheeks (fleshy)
- Eyelids
- Subconjunctivae
- Patterned

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

TEN

Torso | **E**ars | **N**eck



FACES

Frenulum
Angle of Jaw
Cheeks *(fleshy part)*
Eyelids
Subconjunctivae

INFANTS

4 months and younger



Any bruise, anywhere

PATTERNS

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.

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

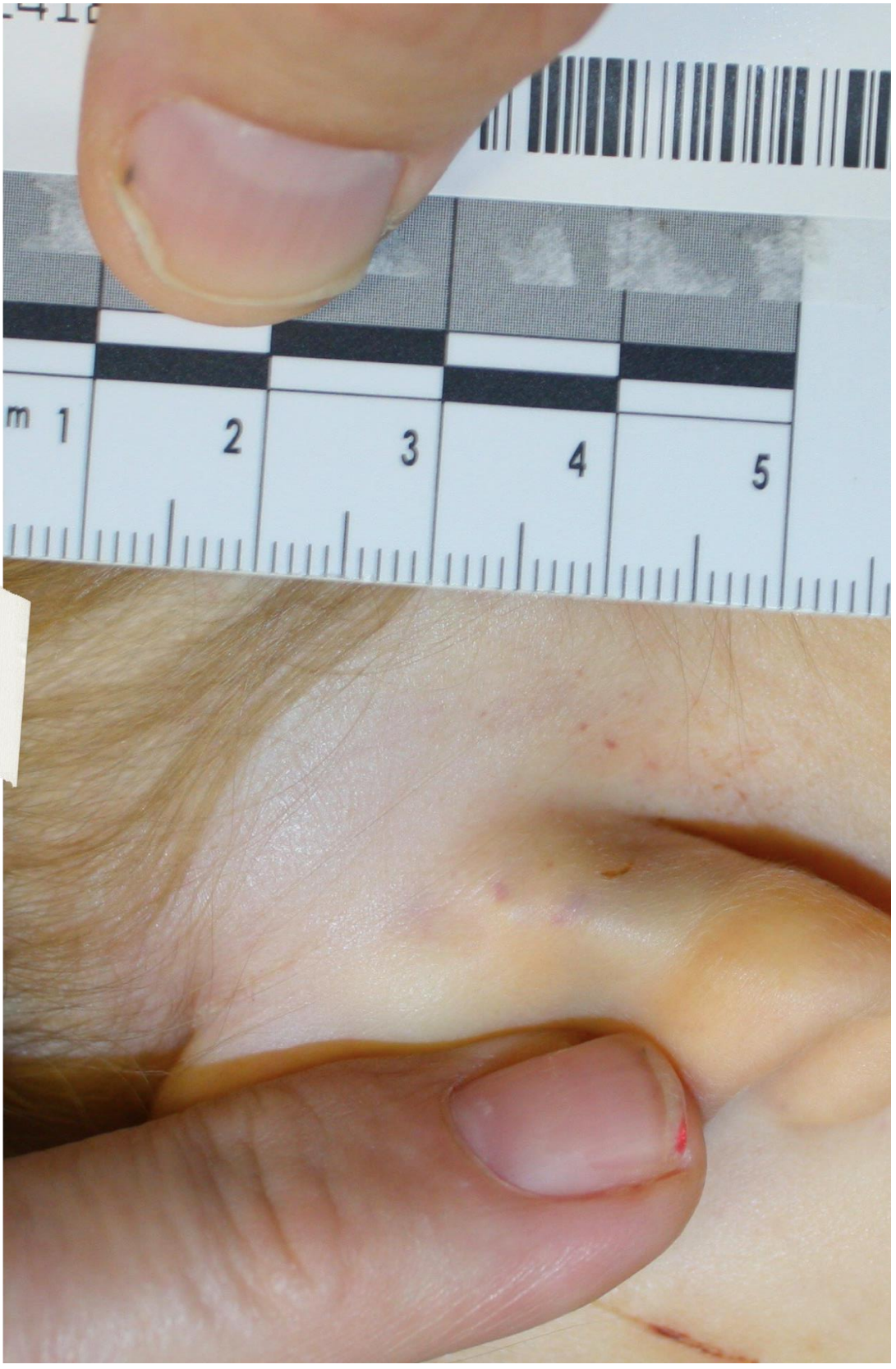
TEN-4-FACESp was developed and validated by Dr. Mary Clyde Pierce and colleagues. It is published and available for FREE download at **luriechildrens.org/ten-4-facesp**.

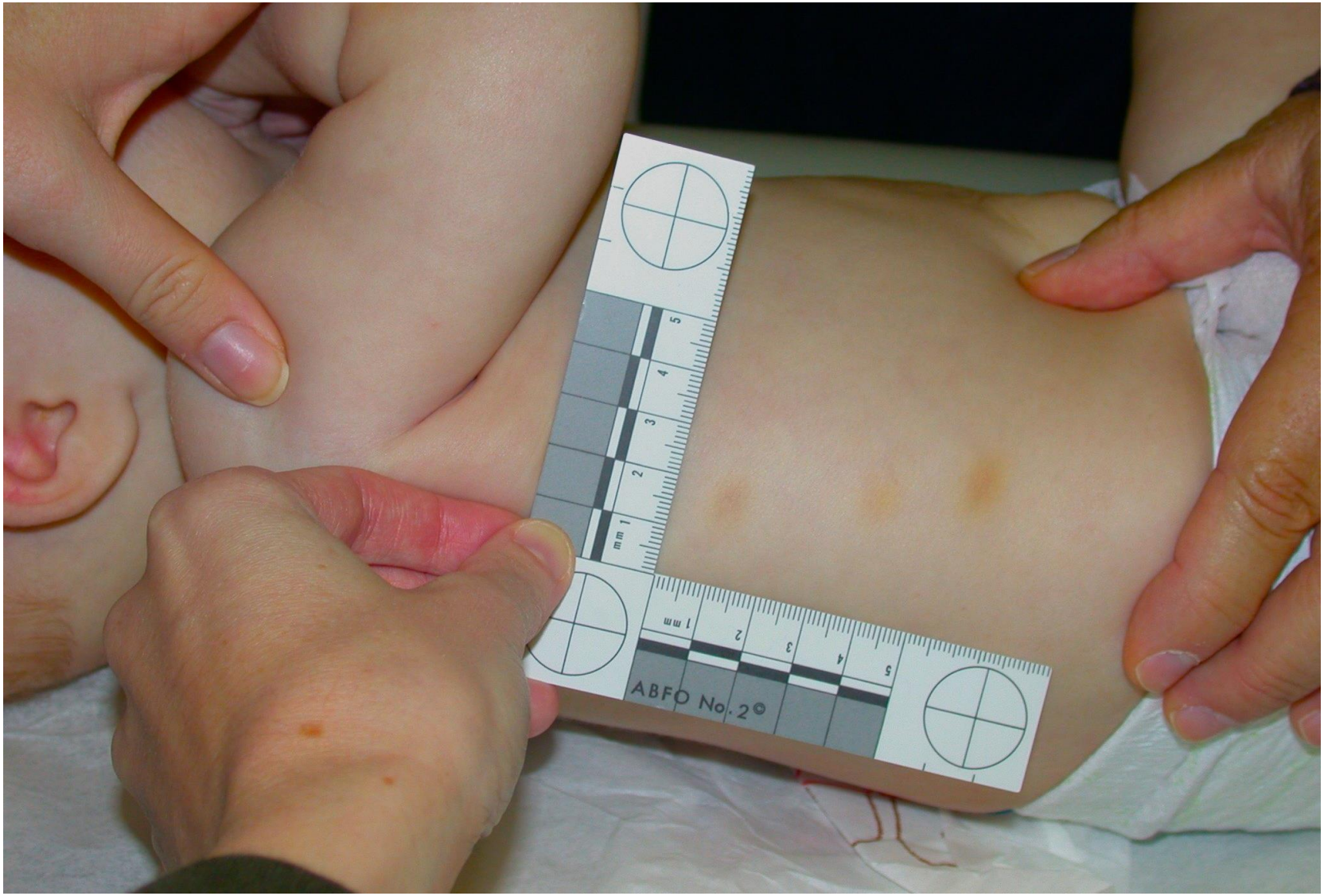
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Examples of Sentinel injuries and TEN-F-FACES


USA
OPTIRECTILINEAR®
cm
CM


ABFO No. 2©
1 mm
2
3
4
5
cm
1
2
3
4
5


m 1
2
3
4
5


ABFO No. 2©


mm 1
2
3
4
1 mm
2
3
4
ABFO No. 2©

Back to AJ

Case presentation

- So, what sentinel injuries and/or TEN-4-FACES(p) did AJ have on presentation at 1 months of age?
- What would you do if an infant with these findings presented to your continuity clinic for a 1 month follow up from the nursery?
- What are possible outcomes for the patient?

AJ



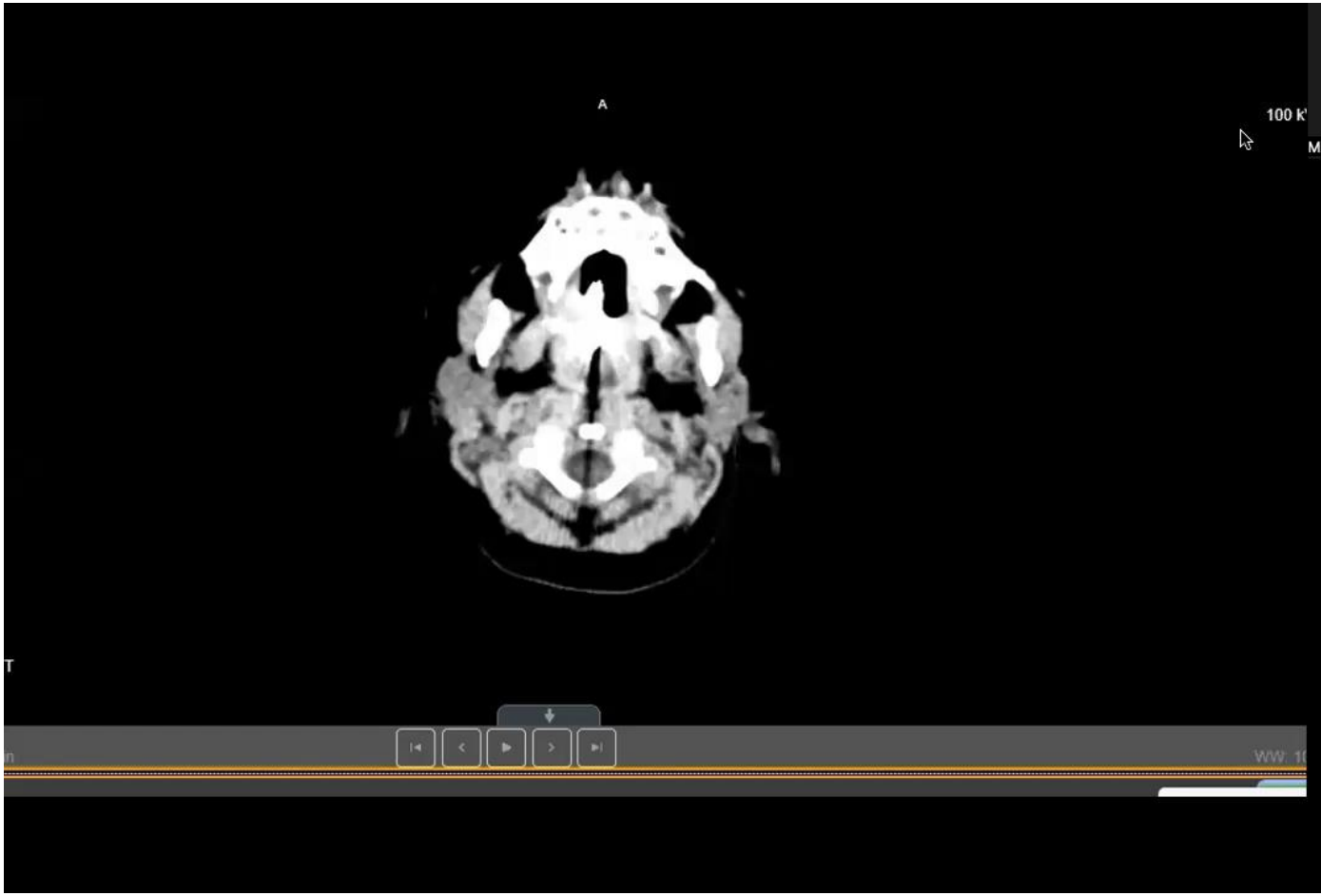
Case presentation

- 1 month later AJ was admitted to outlying facility with:
  - Seizures
  - On exam found to have bruising
    - left arm
    - left foot

Case presentation

- Indicated Work up
  - Imaging
    - Head CT with 3D reconstruction
    - Skeletal survey
    - MRI Head
    - MRI Total spine

SECOND HEAD CT



Case presentation

- Radiology Results
  - Bilateral subdural hemorrhages on CT and MRI brain
  - Distal cervical and proximal thoracic extra-axial hemorrhage on MRI total spine

Case presentation

- Indicated work up
  - Labs
    - CBC
    - CMP
    - Bleeding disorder studies

Case presentation

- Summary:
  - Seizures
  - Bruising of left arm and left foot on exam
  - Right and Left sided subdural hemorrhages
  - Distal cervical and proximal thoracic extra-axial hemorrhage
  - Mildly anemic
  - Normal bleeding studies
  - Normal AST and ALT

Case presentation

- Additional Consultations needed
  - Additional consults
    - Pediatric Ophthalmology
      - Right and left retinal hemorrhages
      - Recommended follow up
    - Pediatric Neurosurgery
      - observation
    - Pediatric Neurology
      - EEG and started phenobarbital
  - Child Abuse Pediatrics
    - Recommended follow up skeletal survey and exam

Case presentation

- Other Resources?
  - Notification of:
    - Child protective services
    - Law Enforcement

Abusive Head Trauma

- Defined by the CDC as:
  - "…an injury to the skull or intracranial contents of an infant or child younger than 5 years caused by inflicted blunt impact, violent shaking, or both."
  - May see injuries to the appendicular and axial skeleton, brain and spinal cord, and retina.
  - Other common areas of injuries include skin, soft tissue, visceral, and oral trauma.

Abusive Head Trauma

- Epidemiology
  - Systematic challenges
  - Incidence is around 15-40 cases per 100,000 infants
    - National estimate 38.9 per 100,000 infants
  - Slight male predominance
  - Age less than 6 months are at increased risk
  - Perpetrators often less than 21 years of age
    - Single caregivers with unrelated partners
  - Exposure to intimate partner violence

Abusive Head Trauma

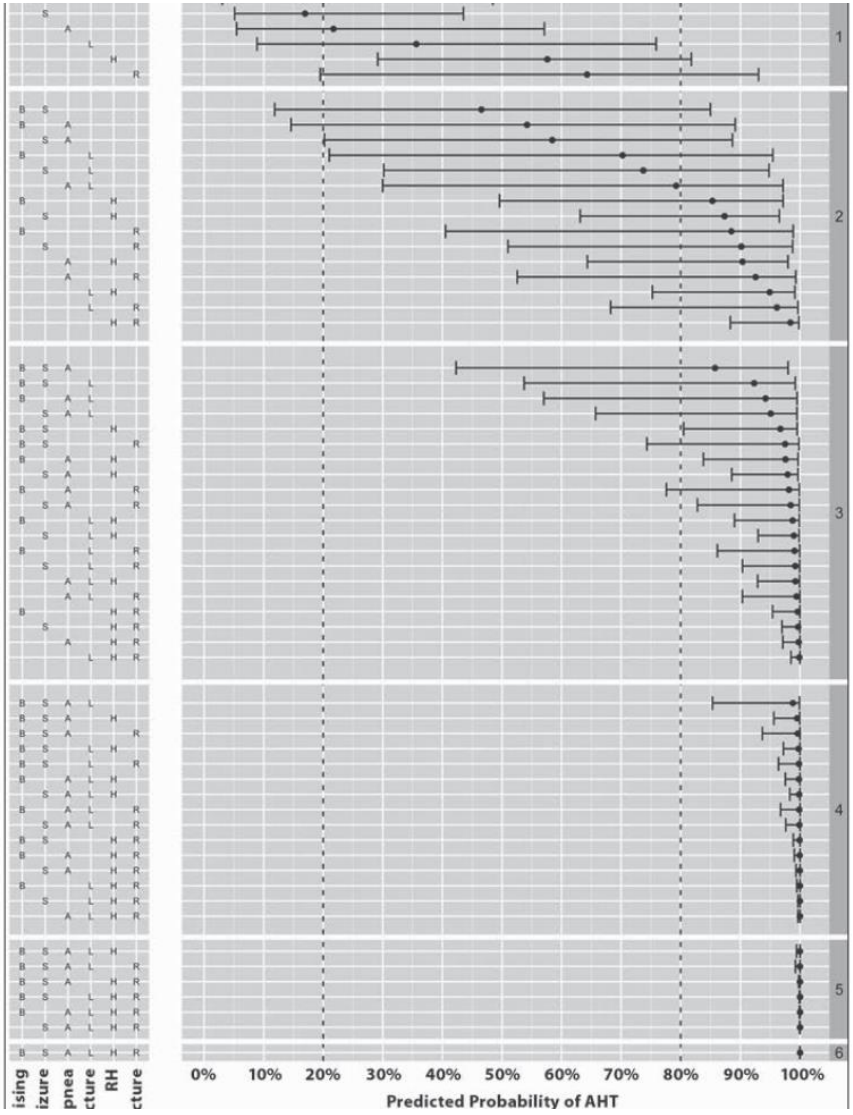
- Clinical findings
  - Head
  - Skin
  - Skeletal
  - Eyes
  - Neck
  - Consider abdominal trauma

Case presentation

- So what abusive findings did AJ have?
  - Subdural hemorrhages - bilateral
    - Bruising foot and hand
    - Seizures
    - Spinal sub-dural hemorrhage
    - Bilateral retinal hemorrhages
- How specific are these findings for abusive head trauma?

Abusive Head Trauma

- Clinical findings
  - Combination of findings
    - Pooled Analysis of AHT
      - Maguire, et al.



Abusive Head Trauma

Biomechanics

- Acceleration/Deceleration
- Rotational
- Impact or no impact

Primary injuries

- Neuronal injury - traumatic axonal injury

Secondary injuries

- Neuronal death
- Cerebral edema
- Cervical spine injury

AJ

- St. Patrick’s Day!



Abusive Head Trauma

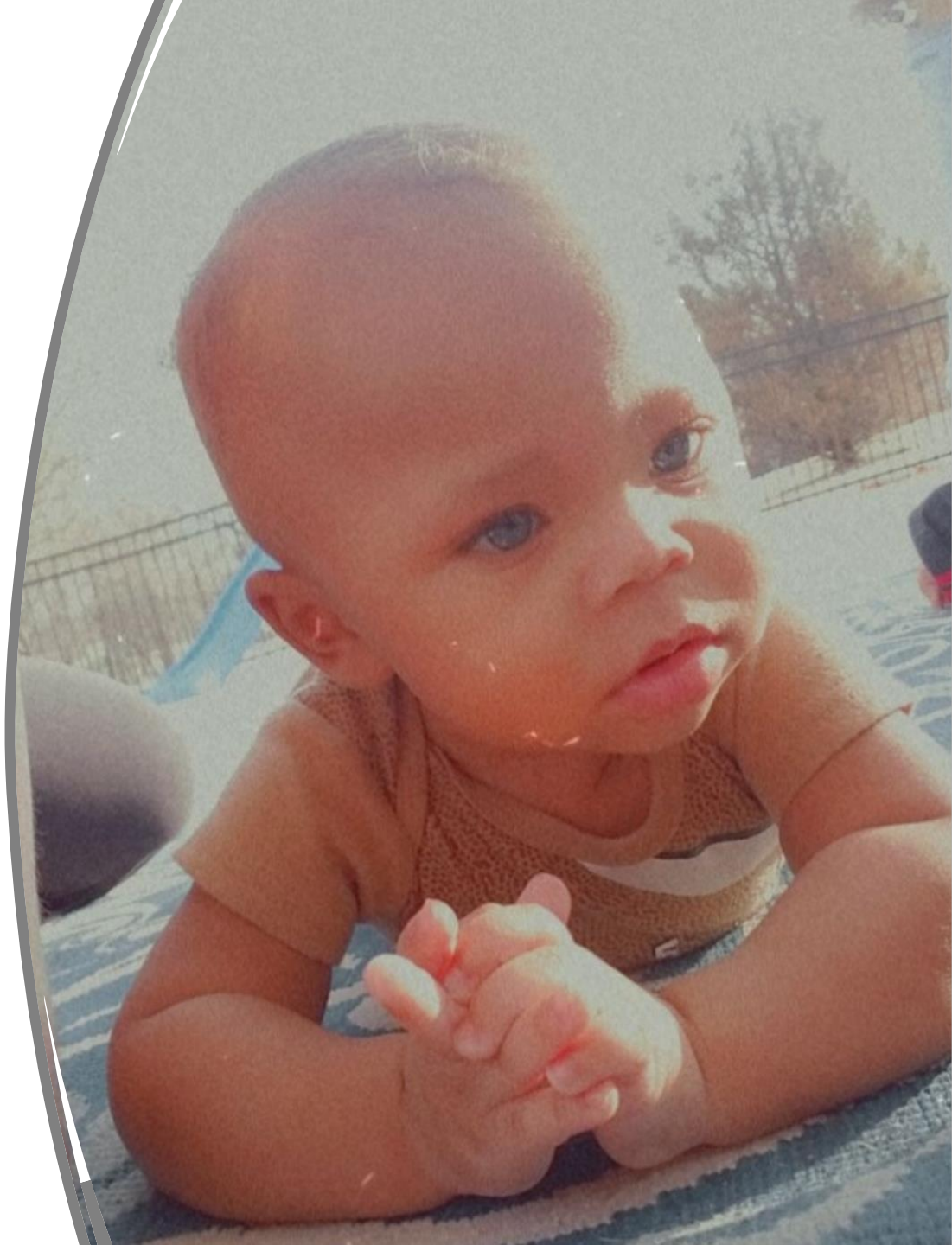
- Outcomes
  - Most common cause of traumatic death in infancy
  - Estimate range from 8-25% mortality
  - High rate of long-term morbidity for survivors
  - Only 7% of survivors found to have normal neurological function
  - Common to see gross motor, fine motor, cognitive, and speech delays

Case presentation

- What are possible outcomes for the AJ?
- What information should be provided the caregivers by medical team?
- What follow up would needs to arrange?

AJ

- Check out that head control!



Case presentation

- At follow up at the Children's Advocacy Center
  - History
  - Exam
  - Radiology
    - Follow up skeletal survey
      - right distal tibial metaphyseal fracture
  - Plan
    - Establish care with PCP
    - Peds neurology 3 months
    - Ophthalmology 2 weeks
    - Peds Ortho follow up

Case presentation

- Follow up at foster care clinic as primary care medical home
  - Ophthalmology – still following
  - Pediatric neurology -still following but off all mediations
  - Pediatric orthopedics - released
  - Pediatric neurosurgery - released
  - Physical therapy, Occupational therapy, & Speech therapy
  - Dietician

AJ

- Sitting up!



Case presentation

- Current Problem List and Action Plans
  - Chronic Constipation - referred to Pediatric GI
  - Speech delay -
    - Concerns for texture with oral intake
  - Gross motor delay - sees physical therapy
  - Cerebal palsy - physical therapy and occupational therapy





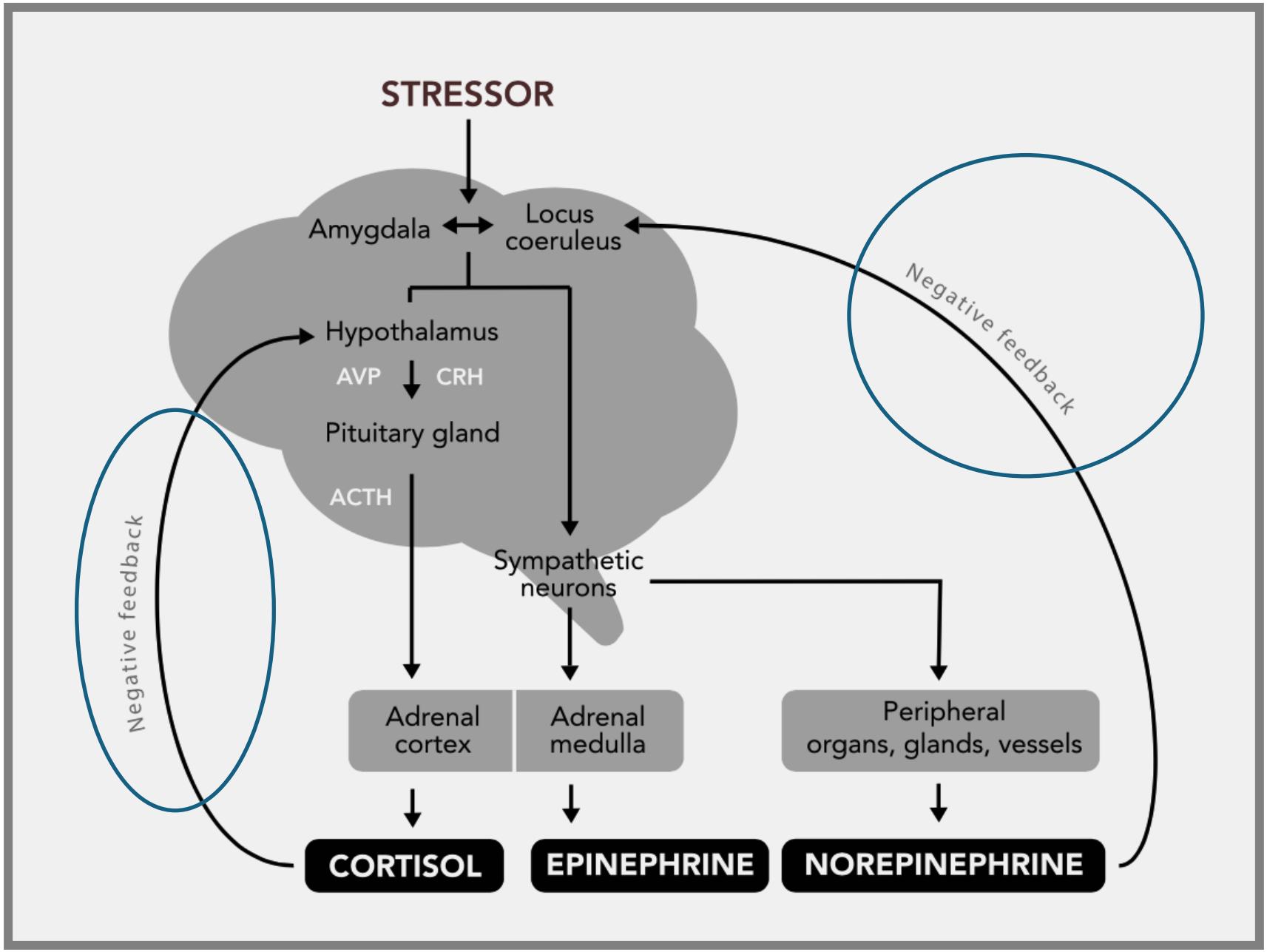




MIKE SIMONS/Tulsa World

Toxic stress

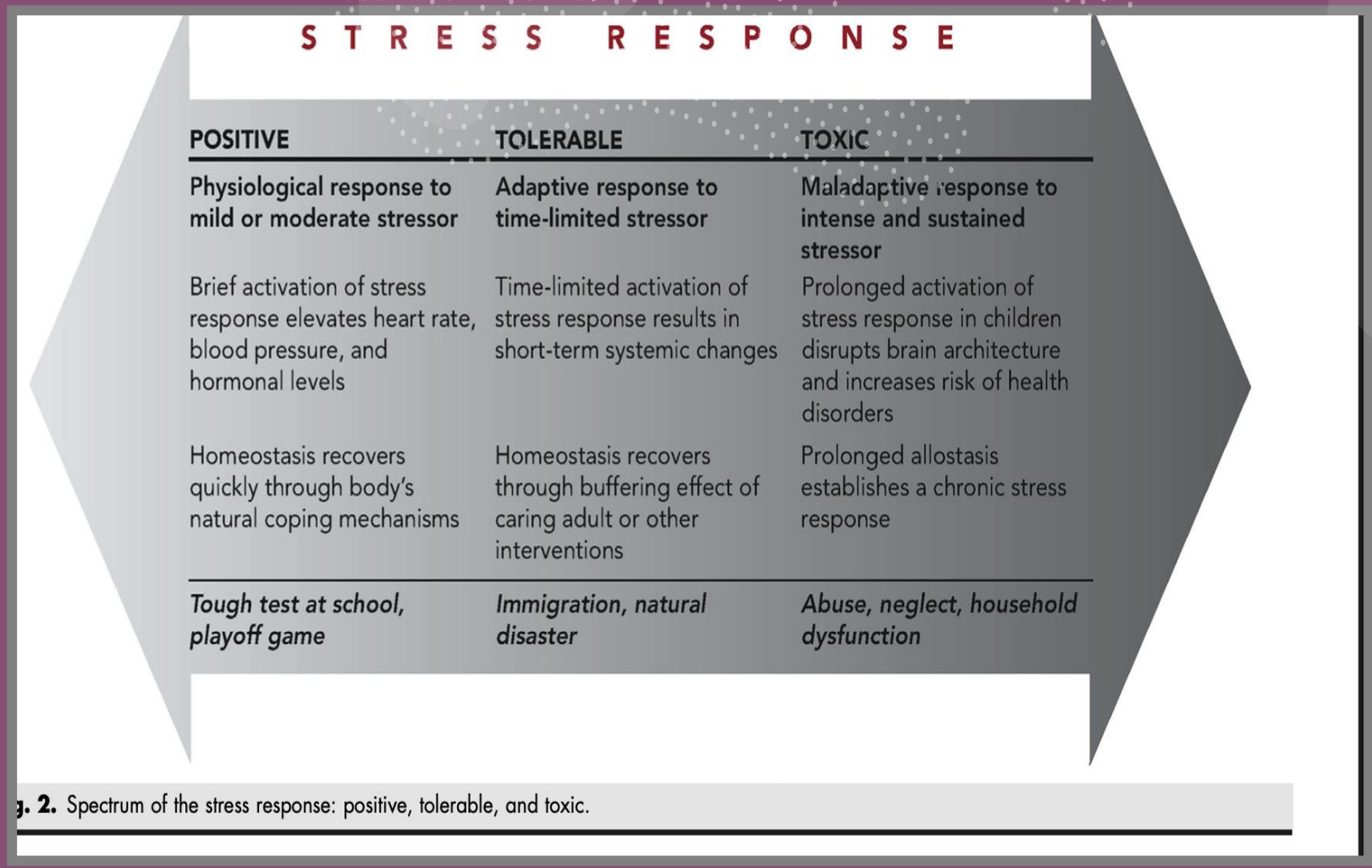
The longterm impact of child maltreatment on children



REVIEW ARTICLE | VOLUME 63, ISSUE 1, P403-428, AUGUST 01, 2016

Toxic Stress in Children and Adolescents

Monica Bucci, MD • Sara Silvério Marques, DrPH, MPH • Debora Oh, PhD, MSc
Nadine Burke Harris, MD, MPH

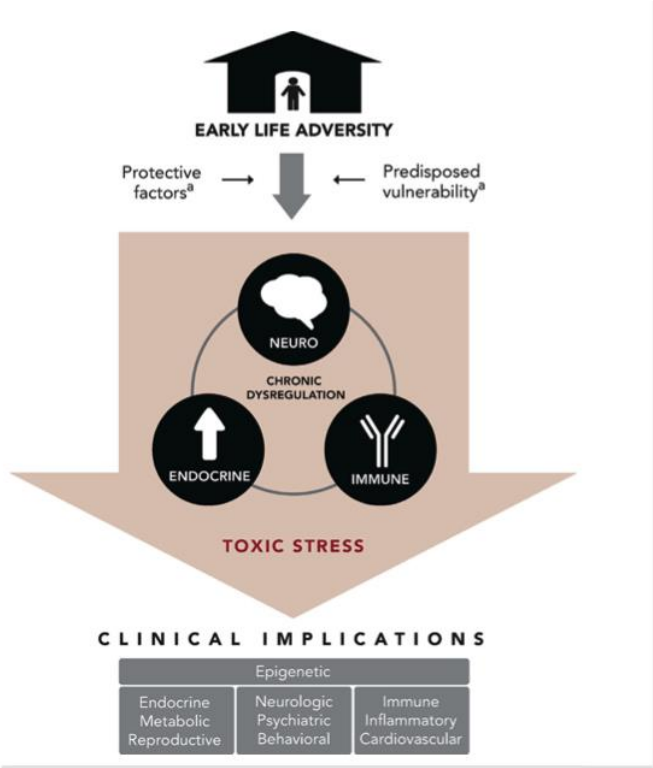


g. 2. Spectrum of the stress response: positive, tolerable, and toxic.

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Toxic Stress vs relational health

Toxic Stress: defines the problem.

"Toxic stress explains how many of our society's most intractable problems (disparities in health, education, and economic stability) are rooted in our shared biology but divergent experiences and opportunities."

Relational Health: defines the solution.

"Relational health explains how the individual, family, and community capacities that support the development and maintenance of SSNRs also buffer adversity and build resilience across the life course."

Preventing Childhood Toxic Stress: Partnering With Families and Communities to Promote Relational Health

Andrew Garner, MD, PhD, FAAP[a] Michael Yogman, MD, FAAP[a,b]
COMMITTEE ON PSYCHOSOCIAL ASPECTS OF CHILD AND FAMILY HEALTH, SECTION ON DEVELOPMENTAL AND BEHAVIORAL PEDIATRICS, COUNCIL ON EARLY CHILDHOOD

“Approaches to minimizing toxic stress that only look at measures of adversity, such as ACE scores or biomarkers, will miss out on opportunities to support the relational health that promotes flourishing despite adversity.”

- - AAP Preventing Childhood Toxic Stress: Partnering with Families and Communities to Promote Relational Health

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