

# Period of Purple Crying Implementation

Jamye Coffman, MD  
Medical Director CARE Team  
682-885-3953



# Objectives

- Define and describe symptoms associated with abusive head trauma
- Discuss the significance of abusive head trauma
- Describe the Period of Purple Crying
- Explain the role of healthcare providers in implementing the Period of Purple Crying

# Definition of SBS

- Shaken Baby Syndrome is a form of Abusive Head Trauma that occurs when a frustrated caregiver violently “shakes”, or “shakes” and “slams” a child’s head against an object.
  - Usually to stop them from crying or to get a child to respond to the expectations of the caregiver.
- There are often no outward signs of abuse, but there is injury to the brain and often to the eyes

# Abusive Head Trauma

- The use of broad medical terminology that is inclusive of all mechanisms of injury, including shaking, is required. The AAP recommends...a less mechanistic term, Abusive Head Trauma...

AAP 2009;123;1409-1411

# Other Terms Used for Abusive Head Trauma

They are essentially synonymous

- Shaken Baby Syndrome
- Shaken Impact Syndrome
- Closed Head Injury
- Inflicted Head Injury
- Shaken Infant Syndrome
- Blunt Force Trauma to the Head
- Cranio-cerebral Trauma
- Non-accidental Head Injury

# AHT Significance

- Infants less than 1 year **most commonly abused** age group- 21.7 per 1,000 infants (CDC, 2010a)
- **AHT leading cause of death** in child abuse cases; **babies less than 4 mo at highest risk for AHT** (CDC, 2010b)
- **Most common cause of death from TBI** in children less than 2 yr (Kochanek, 2007); **43% of infant deaths r/t head trauma from abuse** (Bruce & Zimmerman, 1989); **most head injuries in infants are abusive** (US Dept Health & Human Services, 1999)



# AHT Significance

## ■ Actual incidence unknown

- **150 children shaken for every known case** (Theodore, et al., 2005); **6% of parents** admit to smothering, slapping, or shaking their baby in response to infant crying (Reijneveld, et al., 2004) ; **2.6% of parents** of children <2 report shaking as an act of discipline (Runyan, D. 2008)
- May be listed as other form of abuse
- May not seek care if no apparent injuries
- With **subtle signs/symptoms, correct diagnosis of AHT only 1:5** (Jenny, et al., 1999)

# AHT/SBS

- Form of child abuse in children < 3 years
- Set of symptoms caused by violent shaking from a frustrated caregiver, usually in response to infant **crying**
  - May have impact injuries
  - May have other associated injuries
  - May not have any outward signs of abuse



# Common “Triggers” for Shaking

**CRYING**

**Toilet Training**

**Feeding Problems**

**Interrupting**

# Vulnerability to SBS / AHT

Children are more vulnerable to being victims of SBS / AHT for several reasons:

- Children are small and the caregivers are big
- Physical development
  - Weight Distribution (Head 10% vs. 2%)
- Underdeveloped anatomy
  - Brain Consistency (Soft vs. Firm)

# VICTIMS

- Victims are usually less than 1 year old, majority being less than 6 months
- Premature / special needs / difficult to soothe babies
- 60% of victims either die from their injuries or suffer lifetime disabilities
- More male victims than female





## Example Of Shaking

- **Child grasped by trunk or arms**
  - **Shaken back and forth**
    - **Chin impacts chest**
    - **Back of head impacts upper back**

# Perpetrators

- Studies show 67% to 70% of perpetrators are male.
  - Most are the biological father of the victim or the mother's boyfriend
- Other perpetrators include mothers, grandparents, step-parents, other relatives and child care providers
- No traditional profile
- Infant crying is the number one trigger for a shaking incident.

# VICTIMS

- Estimated 1,200 to 1,400 cases reported annually.
  - 25 – 30% die as a result of their injuries
- No central reporting for shaking injuries
  - Process of tracking SBS/AHT varies in each state
  - Could be listed as other form of abuse
  - Medical attention not sought because injuries may not be apparent or appear life threatening

# Symptoms of SBS / AHT

## Mild

- Irritability
- Poor Feeding
- Vomiting
- Lethargy

## Severe

- Limp/posturing
- Respiratory Distress
- Altered consciousness /  
Coma
- Death

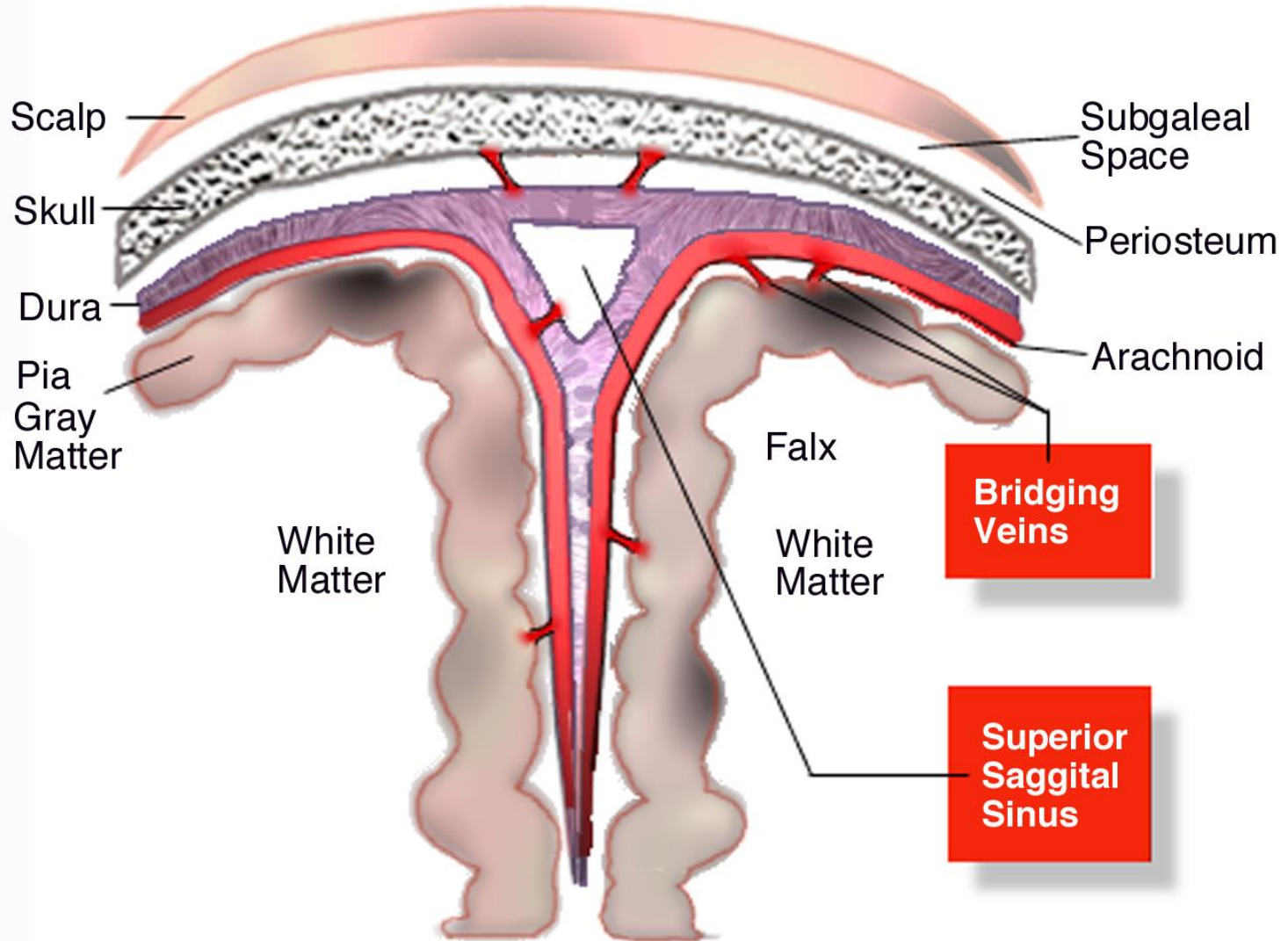
# Clinical

- Cerebral edema
- Subdural hematomas
- Subarachnoid hemorrhages
- Retinal hemorrhages

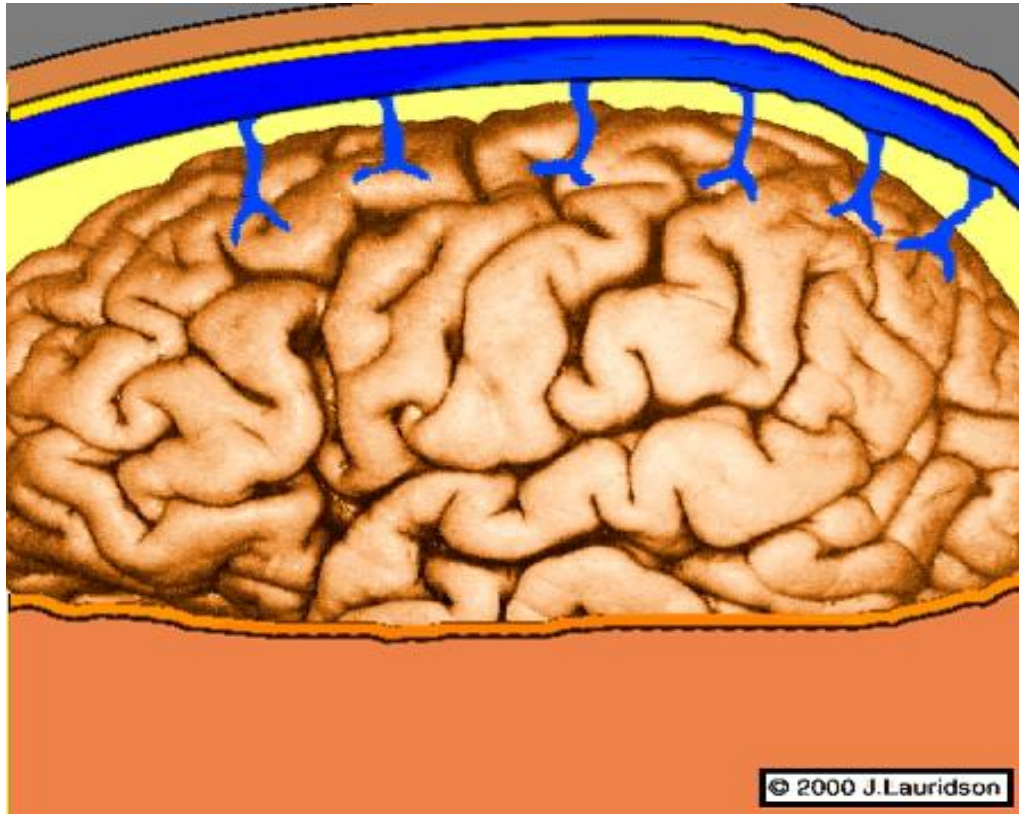


# Subdural Hematoma: Bleeding over the Brain

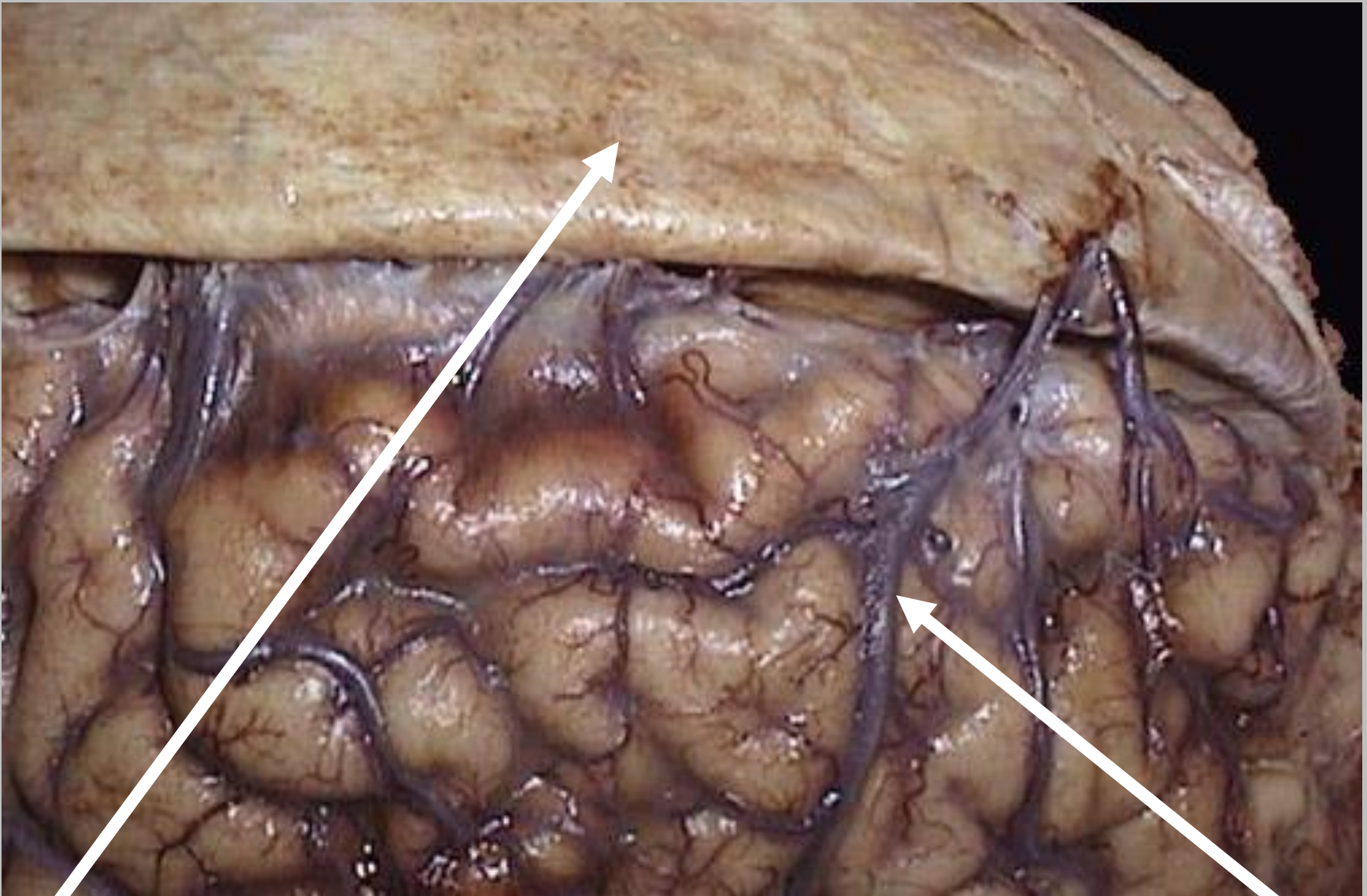
# Coronal view of scalp, skull, meninges and cerebrum



# Subdural Hematoma



- Often small volumes of blood
- Marker for SBS
- Bridging veins tear during abuse
- Decreased oxygen (cerebral hypoxia) heightens brain injury

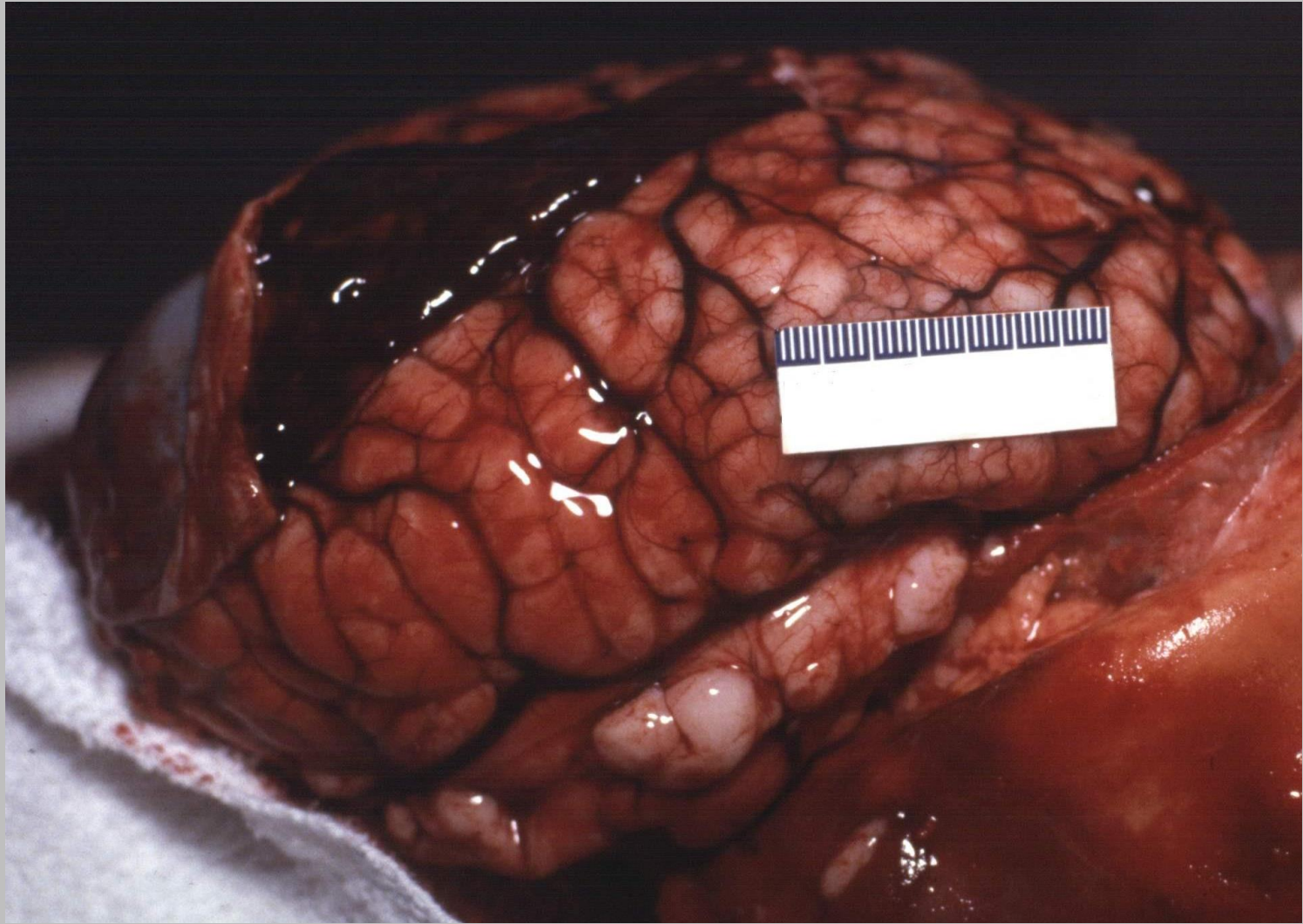


**Dura (cover over the brain)**

**Bridging veins**

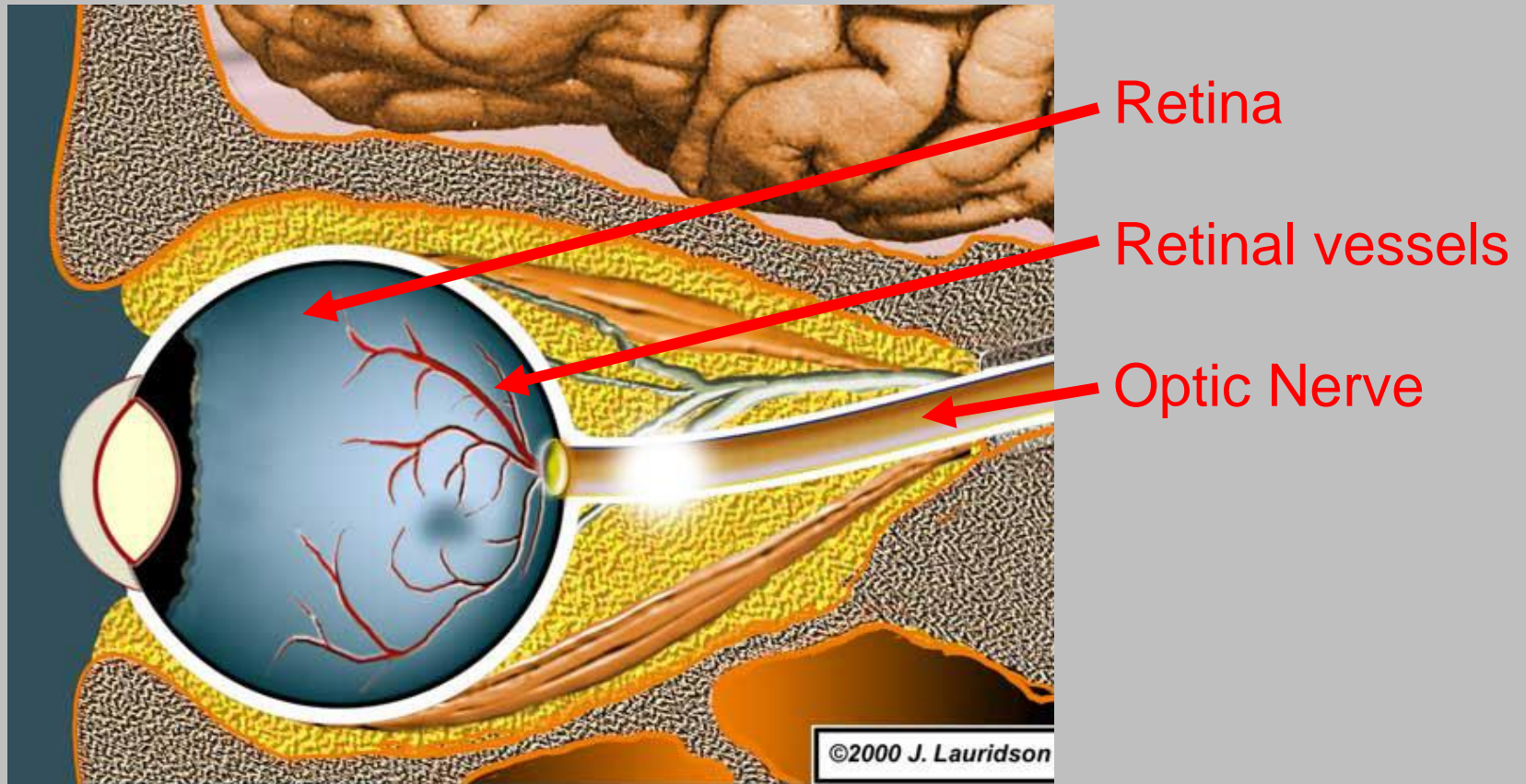


# Subdural Hematoma



# Retinal Hemorrhages

## An Important Marker For Shaking



# Retinal Hemorrhages

## An Important Marker For Shaking



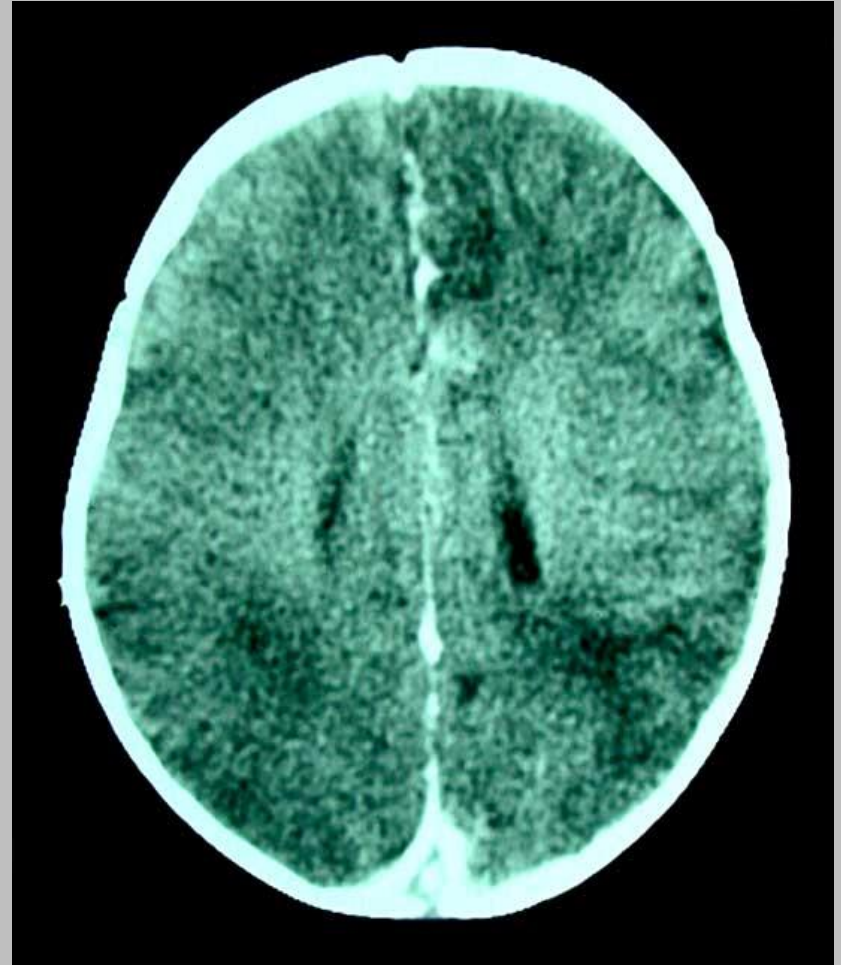
Widespread, multi-layer hemorrhages are virtually only seen with rotational head trauma



# Cerebral Edema On CT



**Normal**



**Swelling & Bleeding**



# Other Findings Common to SBS:

- **No External Sign of Injury**
- **Axonal Injury - (shearing of axonal nerves as brain whiplashes back and forth)**
- **Skeletal Trauma**
  - **Rib fractures**
  - **Skull fractures**
  - **Metaphyseal lesions** (fractures at the growth plate)
- **History of a short fall**

# No External Sign of Injury



# Rib Fractures

- Most common type of abusive fracture
- Posterior (back) rib fractures are highly likely to be abuse
- Anterolateral fractures rarely seen in infant CPR
- Accidental causes are rare, especially if there are multiple fractures in differing stages of healing



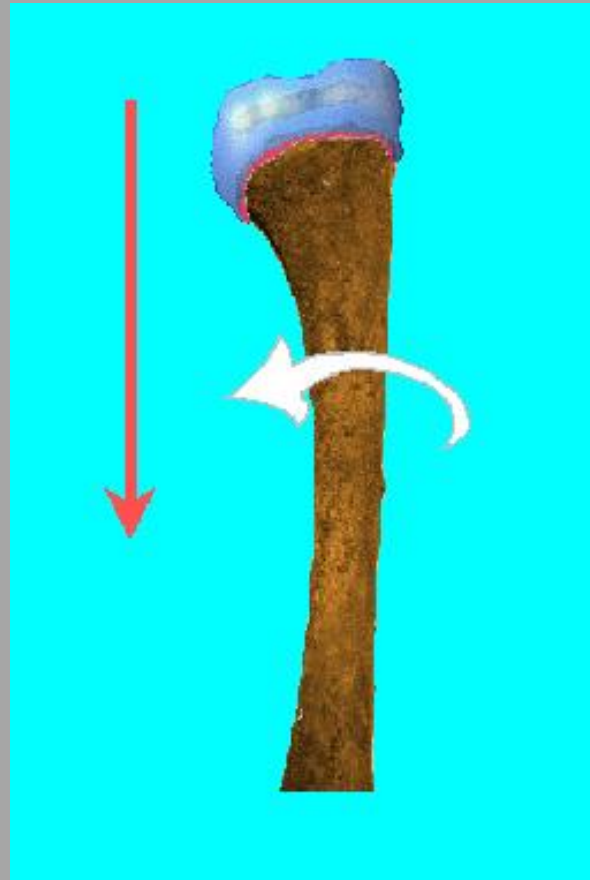
**R**  
80J  
Ⓞ





# Metaphyseal “chip” fractures

Mechanism of injury: flailing and jerking of limbs during severe shaking causes shear fractures through the soft metaphyseal tissue.



# Why do we need AHT prevention?

## 2010 (N = 20)

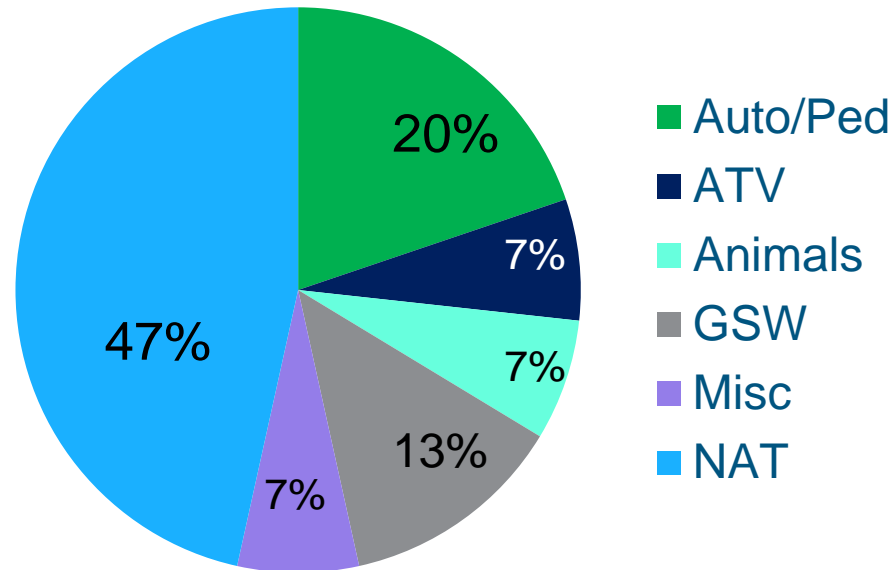
- NAT = 12
- All other trauma = 8
  
- NAT 60%

## 2011 (N =14)

- NAT = 7
- All other trauma = 7
  
- NAT 50%

# Why do we need AHT prevention?

2012 (N = 15)





# AHT at CCMC

- 90% of Nonaccidental trauma fatalities at CCMC had AHT
  - 50% male
  - 40% Caucasian
  - 27% African American
  - 27% Hispanic
  - All less than 3 years of age
    - 50% < 12 mo
    - 33% < 5 mo

(Weaver, 2011)

# AHT Significance

- **Mortality rate 25-30%**

(Nat'l Center on SBS)

- **Morbidity rate 50-65%**

(King, et al., 2003; Sinal & Ball, 1987; Ludwid, 1984)

- Long term effects

- Brain damage, blindness, severe learning and behavioral problems, cerebral palsy, seizures, deafness, permanent vegetative state

- **Cost for first 5 years of AHT survivor can be as high as \$3 million**

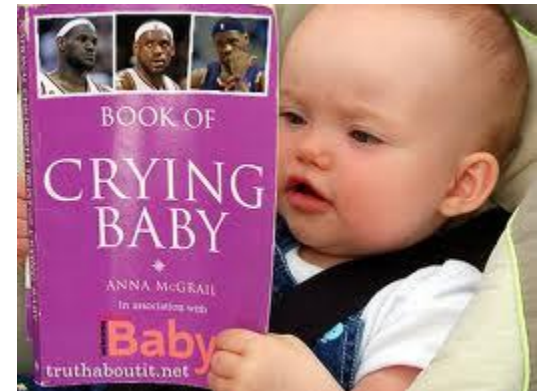
(Center for Health Promotion, n. d.)



# What is the Period of PURPLE Crying?



- SBS prevention program that provides a positive message to parents of newborns addressing normal infant crying and parental coping.
- Individual or classroom introduction
- Parents watch a 10 minute DVD
- Parents take home DVD and a pamphlet
- Parents now have coping and soothing component included on the DVD – 17 min.



# Period of PURPLE Crying

- **Evidenced based program** (Barr, Barr, et al., 2009; Barr, Rivera, et al., 2009)
  - **Improves caregiver knowledge**
    - Infant crying
    - Dangers of shaking a baby
    - Ok to walk away during inconsolable crying
  - **Increased caregiver sharing of information**



## The Letters in **PURPLE** Stand for

**P**

### **PEAK OF CRYING**

Your baby may cry more each week. The most at 2 months, then less at 3-5 months

**U**

### **UNEXPECTED**

Crying can come and go and you don't know why

**R**

### **RESISTS SOOTHING**

Your baby may not stop crying no matter what you try

**P**

### **PAIN-LIKE FACE**

A crying baby may look like they are in pain, even when they are not

**L**

### **LONG LASTING**

Crying can last as much as 5 hours a day, or more

**E**

### **EVENING**

Your baby may cry more in the late afternoon and evening

The word *Period* means that the crying has a beginning and an end.

# Implementation: A Three Dose Model

- Dose One: Maternity services or Home Visitor Programs (one-on-one or small discharge class)
- Dose Two: Prenatal classes, postnatal education, pediatricians, family practice physicians, childcare providers, foster care workers, nurse hotline, emergency room personnel
- Dose Three: Public education campaign – primary method for reaching the general population

# Training For Professionals

- Training options:
  1. online training – 27 minute training
  2. training CD
  3. Train the Trainer Webinar
  4. onsite training available

# How To Present the Program to Parents

- 3-Minute Bedside Talking Points
  - Go through booklet, page by page
  - Teach-back method (what does the parent believe the messages are)
  - Show PURPLE film
  - Give materials to parents to take home
- 10-Minute Classroom Talking Points
  - Go into more detail



- **Current study ongoing** - *The Period of PURPLE Crying: Keeping Babies Safe in North Carolina-2007-2012*



**Opportunity** for intervention through a cultural change

# How to implement

Contact the NCSBS:

Email: [purple@dontshake.org](mailto:purple@dontshake.org)

visit the website at [www.dontshake.org](http://www.dontshake.org)

call the Center at 801-627-3399

or write to: 2955 Harrison Blvd. Suite #102,  
Ogden, Utah, 84403.

**They make it easy!!**

**Sign forms- guided process**

**Staff training**

**Order materials**

# CCMC Implementation

- CCMC is currently providing **POPC** via classroom instruction to all parents leaving the hospital with infants discharged from NICU
- CCMC Neighborhood clinics provide **POPC** one on one to caregivers of infants at their well child exams up to age 5 months



# POPC Community Implementation

- Parenting and Pregnant teen programs through:
  - FWISD*
  - AISD*
  - Eagle Mountain ISD (only ISD to completely incorporate into all high schools \*4)*
  - Everman ISD*
- Gladney Center
- Catholic Charities (Various parenting programs: Mommy and me, Healthy Start, Families First)
- Women's Center (Children's Case Management, Homeless Initiative: there are parenting classes held at the area shelters)
- Parenting center
- Fort Worth Pregnancy Center
- Alliance For Children Family Advocates

- Why is the Period of PURPLE Crying different from other SBS prevention programs?
  - Based on 30 years of research
  - Teaches parents about normal infant development vs. only the negative warnings of shaking a baby
  - Aimed at creating a cultural change
  - Gives all parents useful information
  - Gives parents encouragement that facilitates improved relationship with their baby
  - Attractive, positive message
  - Designed to increased penetration rate

- What kind of testing of the program has been done?
  - 3 year study
    - First year, materials revised through testing with 19 parent focus groups in US and Canada; Reviewed by professionals
  - Years 2 & 3
    - Parallel, randomized controlled studies in Seattle and Vancouver; 4400 parents to assess ability to change in knowledge and behavior (Pediatrics, Canadian Medical Association Journal)
  - Current research

Just completed 3 year study in British Columbia and North Carolina to assess effect on rate of AHT

- What is the process for implementing?
  - 3 Dose Implementation strategy
    - Dose 1: Maternity Wards
    - Dose 2: Prenatal, postnatal, public health nursing
    - Dose 3: Public education and media campaign
    - Reinforcements: ED, advice and hotlines, childcare providers, foster care workers, WIC...





**Thanks for all  
that you do!**

**CookChildren's**<sup>SM</sup>