

Shaken Baby Syndrome

The last 500 years

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Objectives

1. Review of the history of shaken baby syndrome
2. Identify some signs and symptoms of infants that may have been shaken
3. Review the morbidity and mortality associated with shaken baby
4. Identify some potential risk factors
5. Review normal crying in newborns
6. Identify prevention strategies

What's in a Name?

Whiplash-shaken infant syndrome

Shaken baby syndrome

Shaken infant syndrome

Shaken impact syndrome

Infant shaken impact syndrome

Inflicted non-accidental head injury

Traumatic head injury

Abusive head trauma

History

- 1559 – Henry II died from injuries sustained in a joust. His injuries were described from the “shaking of the brain”.
- 1860 - Ambroise Tardieu a French physician report detailing the abuse and maltreatment of children. He described the “thickening of blood on the brain”.
- 1891 – Dohle a German pathologist published a study that found that subdural hematoma to be a common finding in children less than one year of age.

History

1914 – Kovitz expanded on Dohle's work.
14% of infants one to three months old
10% of infants three to 12 months old
9% of children one to two years old

1907 – William Preyer suggested that violent motion may injure infants

1930 – David Sherwoods – Landmark case of subdural hematoma with retinal hemorrhages.

History

1939 – Ingraham and Heyl presented cases with subdural hematoma along with long bone fractures.

1946 – John Caffey reported cases of subdural hematoma with long bone fractures.

1968 Omayya a neurosurgeon showed that subdural hemorrhage could be caused by rotational displacement alone, without impact.

1972 – John Caffey's landmark article “the theory and practice of shaking infants”

Mechanism of Injury



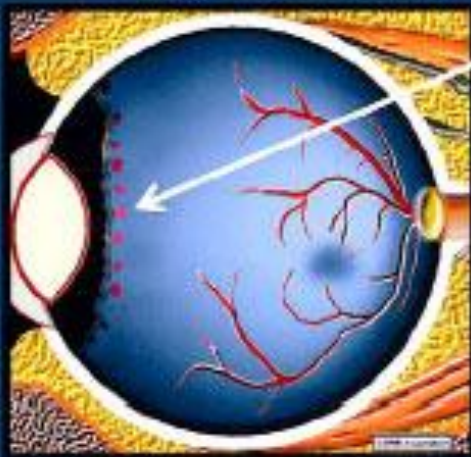
Retinal Hemorrhage

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A

Retinal Hemorrhage
at the Ora Serrata



B

Dot and Blot hemorrhages

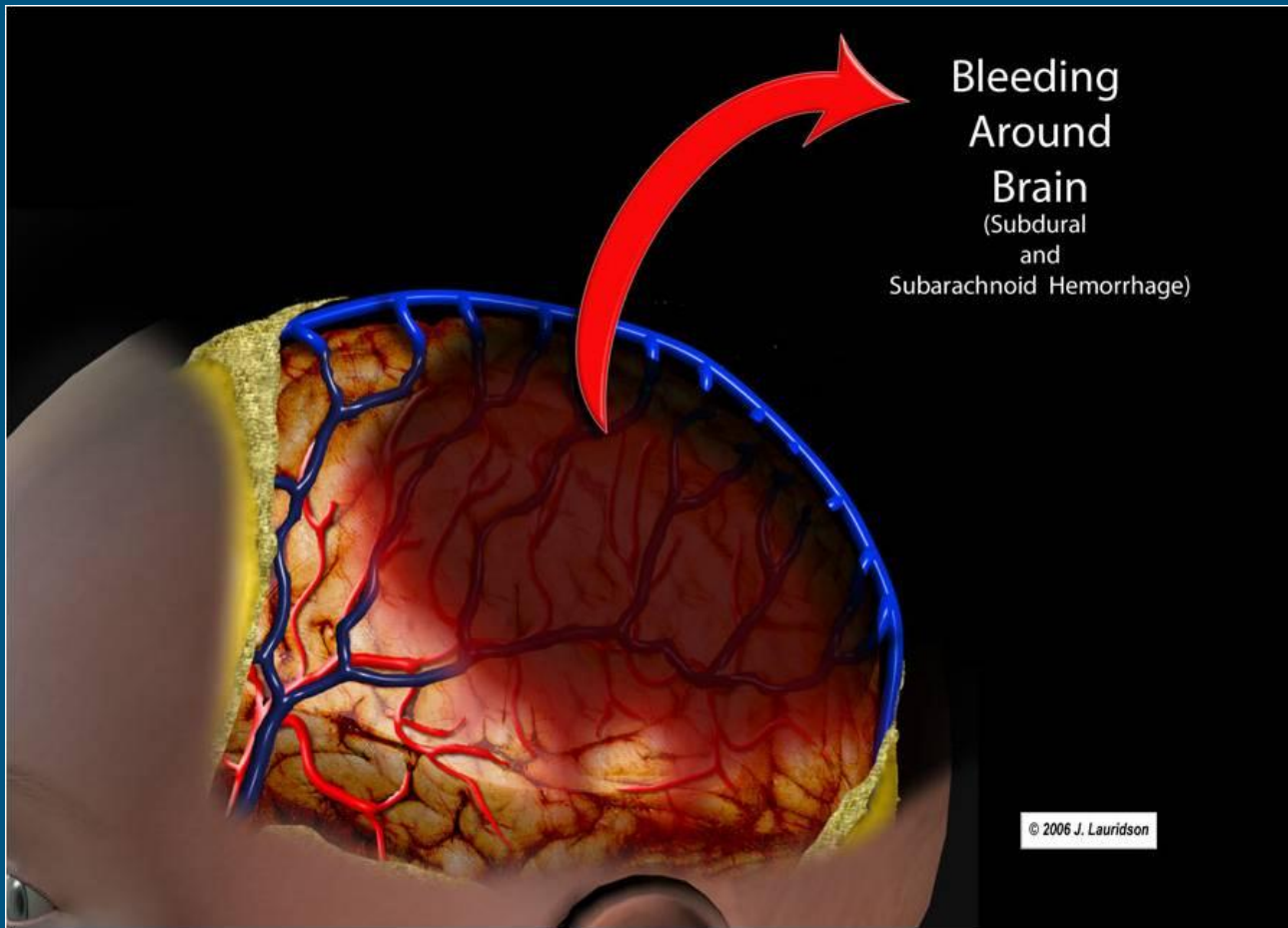


Preretinal
Hemorrhage

Source: Adv Neonatal Care © 2004 W. B. Saunders

CookChildren's

Subdural Hemorrhage

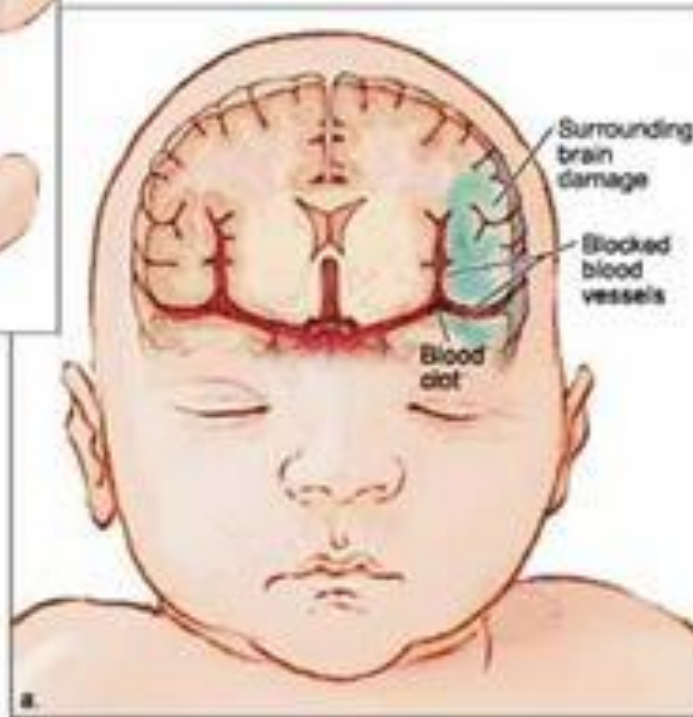


Encephalopathy

Full Term Newborns



Neonatal Stroke



Hypoxic Ischemic Encephalopathy



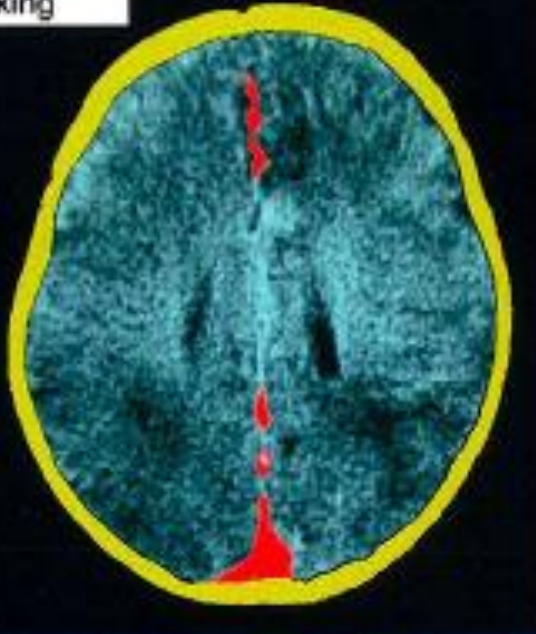
Encephalopathy

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CT Scan Immediately
After Shaking

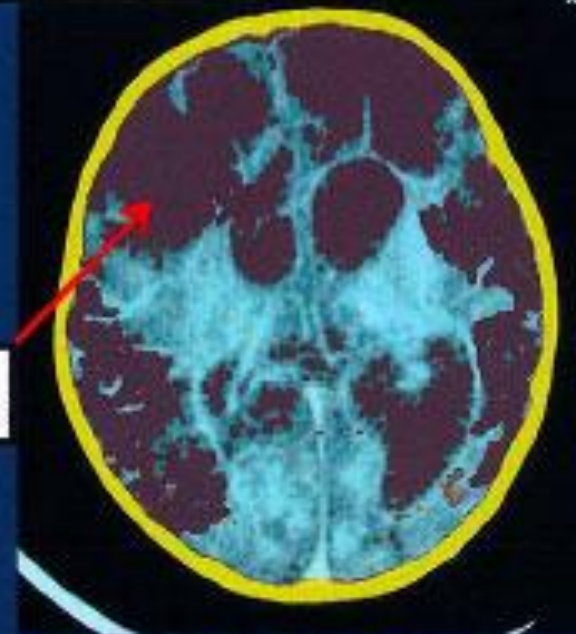
A



CT Scan Three Months Later

B

Areas of
Brain Loss



Source: Adv Neonatal Care © 2004 W. B. Saunders

Incidence

- Infants less than one year of age. (most common in less than six months old)
- 21.7 cases per 1000 infants (probably a low number)
- CDC states that acute head injury is a leading cause of death in child abuse cases with babies less than four months old.
- **One study suggests that there are 150 cases of unreported shaken baby for every known case that is reported.**

Mortality

- Mortality rates range from 15% to 38%
- Majority of survivors possess some degree of neurologic or cognitive impairment
- Less than 35% of survivors have no apparent morbidity and normal development.
- One out of ever four victims who were initially symptom-free were later found to have severe developmental consequences.

Morbidity

- Occipital lobe impairment can lead to blindness
- Microcephaly is common
- Plasticity
- Seizure disorders
- Chronic subdural fluid collections
- Enlarging ventricles
- Cerebral atrophy
- Encephalomacia
- Long-term impairment - Alzheimer's disease, Parkinson's disease, Dementia.

Infant characteristics

Infants have a number of characteristics that predispose them to injury:

- Small body size
- Large ratio of head to body size
- Weak neck muscles
- Underdeveloped and elastic neck ligaments
- Lack of head control
- Unfused sutures
- High brain water content
- less myelination of nerve cells
- Large subarachnoid space

Risk Factors - Infant

- Cry frequently, are inconsolable, colicky
- Have difficult temperaments
- Product of a multiple pregnancy
- Premature
- Special needs
- Suffering from drug, alcohol or nicotine exposure
- Low birth weight
- Medically fragile
- Congenital defects or syndromes
- Bond poorly with caregivers

Risk Factors - Caregiver

- Young parental age
- Unstable family environment
- Low socioeconomic status
- Infant prematurity or disability
- Unrealistic child-rearing expectations
- Rigid attitudes and impulsivity
- Feelings of inadequacy, isolation or depression
- Negative childhood experiences including neglect or abuse
- Parents or caretakers who have been involved with substance abuse

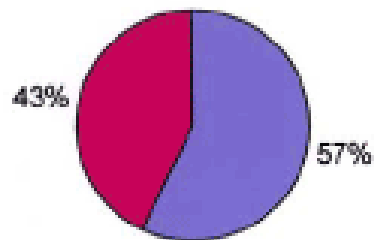
Risk Factors - Caregiver

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A

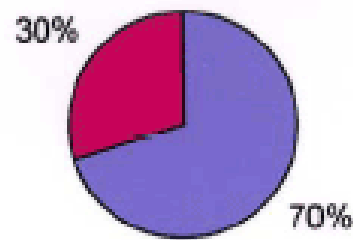
Gender-SBS Victims



■ Male ■ Female

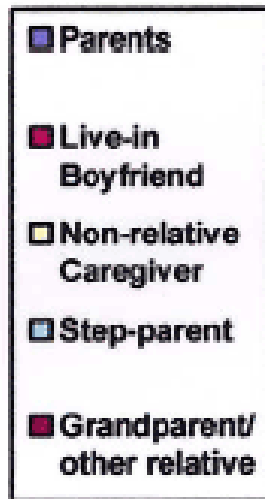
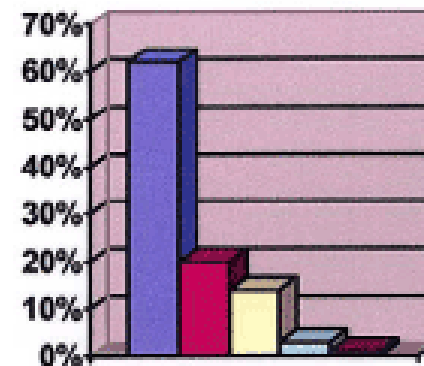
B

Gender-SBS Perpetrators



■ Male ■ Female

C



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Someday, when I'm very old & you're all grown up, I'm going to sit on your lap, soil my pants, & scream in your face all night long.



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INFANT CRYING IS
THE MOST COMMON
STIMULUS FOR
SHAKEN BABY





Newborn Crying

- Crying is the primary means of communication in the young infant
- Crying typically elicits a care response
- Crying plays a role in developing the attachment relationship
- Infants typically increase in crying across the first 3 months with a peak around 6 to 8 weeks
- Crying decreased significantly around 3 to 4 months of age

Peak Crying

- Described in different care giving styles.
- Described in different cultures.
- Strong evidence that other species have a similar crying curve.



Infant Colic

- A medical term for persistent and inconsolable crying by healthy infants.
- Usually between two and sixteen weeks.
- It is a syndrome – a defined set of signs and symptoms – not a specific disease.



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Colic

- Medical definition as a cramp-like pain that arises from a hollow organ.
- In Veterinary science, colic is a serious intestinal disorder in horses that is not only painful – but usually requires emergency surgery.
- Oxford English dictionary – a name given to severe paroxysmal griping pains in the belly.

Infant Colic

How did infant colic get its name?

- Is it a problem with the baby's intestine?
- Is the baby having severe cramping pain?

The answer seems to be “no”.

The use of the word colic apparently originated from the interpretation of the baby's cry and body positions, suggesting a painful intestinal condition to adult onlooker.

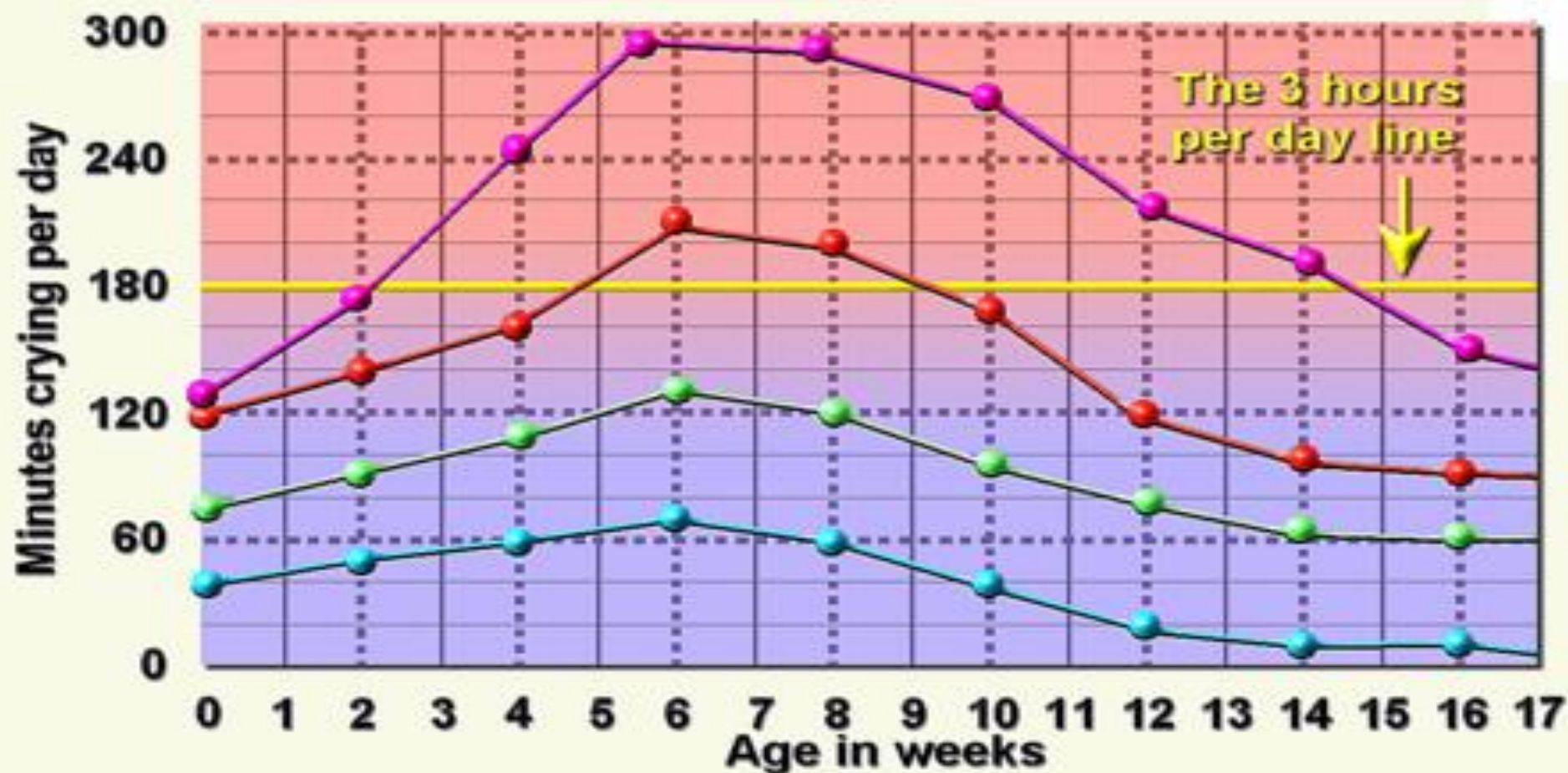
Infant Colic



- Pain like face
- Sudden onset
- Inconsolable
- Implies that something is “wrong”
- Medications are even prescribed with little affect

Daily crying at different ages

-  A quiet baby
-  Colicky for 6-8 weeks
-  Average crying
-  Colicky for 13 weeks





Newborn Crying and Colic

Newborn crying and Colic seem to be one and the same.

This does not imply that this condition is entirely innocent or inconsequential.

Infant colic has been identified as a significant risk for Shaken baby syndrome.

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"Of course I know what he wants when
he cries. He wants you."

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Colic and Normal Newborn Crying

Ronald Barr suggests that colic is simply one extreme of normal

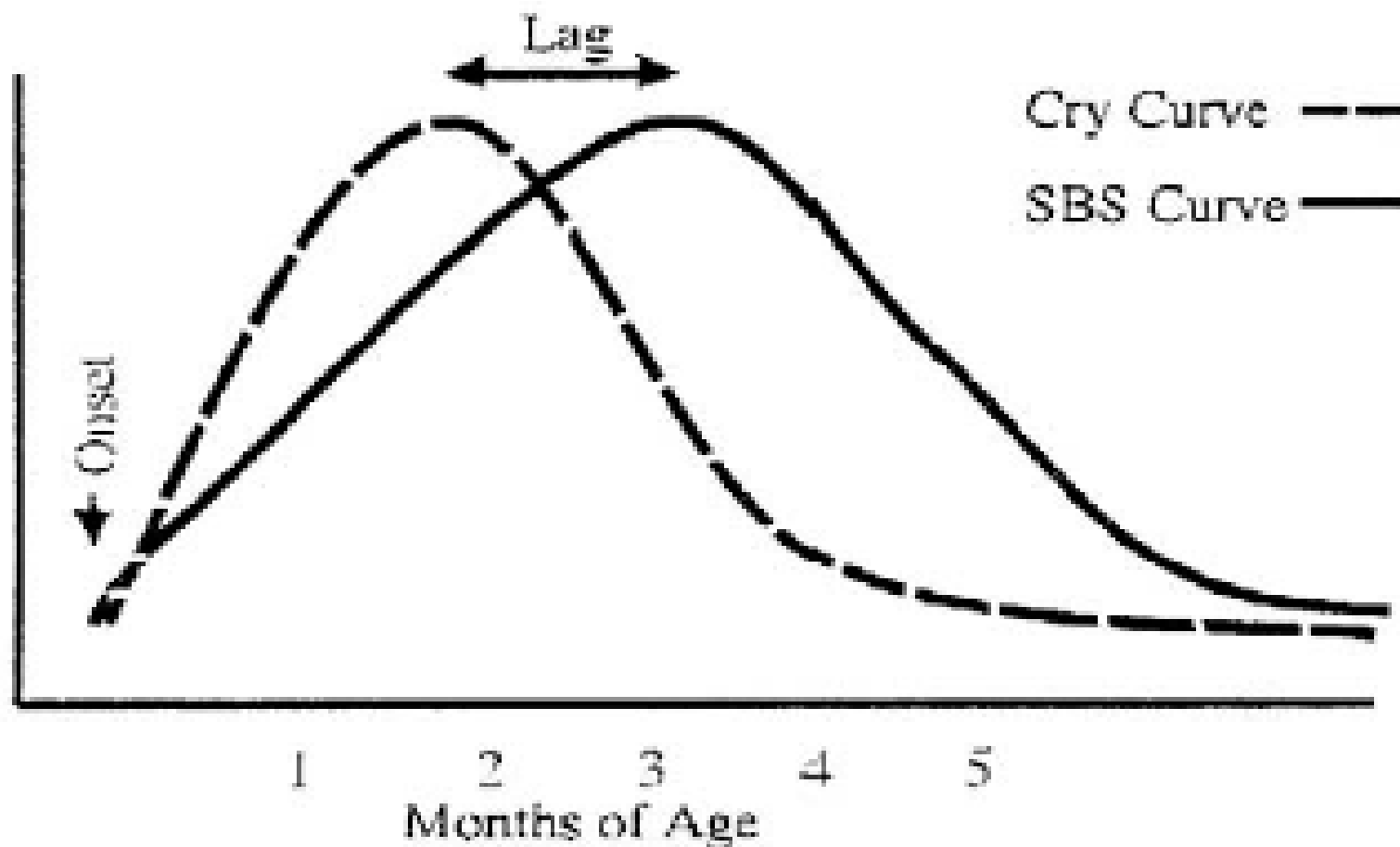
- The problem lies rather with the response that uninterrupted crying evokes in caregivers.
- 70% of mothers of very colicky babies admit to having aggressive thoughts towards the crying child.
- 26% have fantasies of infanticide.
- Education of caregivers is crucial.

Prevention of SBS

Three different levels of prevention

- Primary prevention activities: directed at the general population with the goal of ending child abuse and maltreatment.
- Secondary prevention activities: targeted to those populations who possess one or more risk factors associated with abuse or maltreatment.
- Tertiary prevention activities – focus on families in which maltreatment or abuse has already been identified.

Curves of Early Crying and SBS Incidence



Prevention

- The key is how parents and caregivers respond to the frustrating properties of crying.
- Seems counterintuitive to think of this crying as “normal”
- If increased crying were to be widely accepted as normal, the anger generated by this age-old behavior might be reduced.
- PURPLE Crying!



A new way to think!

- Crying is a normal developmental response
- We need to move away from the medical idea of “colic”
- Teach caregivers coping strategies to deal with the crying without harming the child

PURPLE Crying

Peaks at around two months of age

Unpredictable, often happening for no apparent reason

Resistant to soothing

Pain-like expression on the baby's face, even without any source of pain

Long bouts, lasting 2 to 4 hours or more

Evening crying

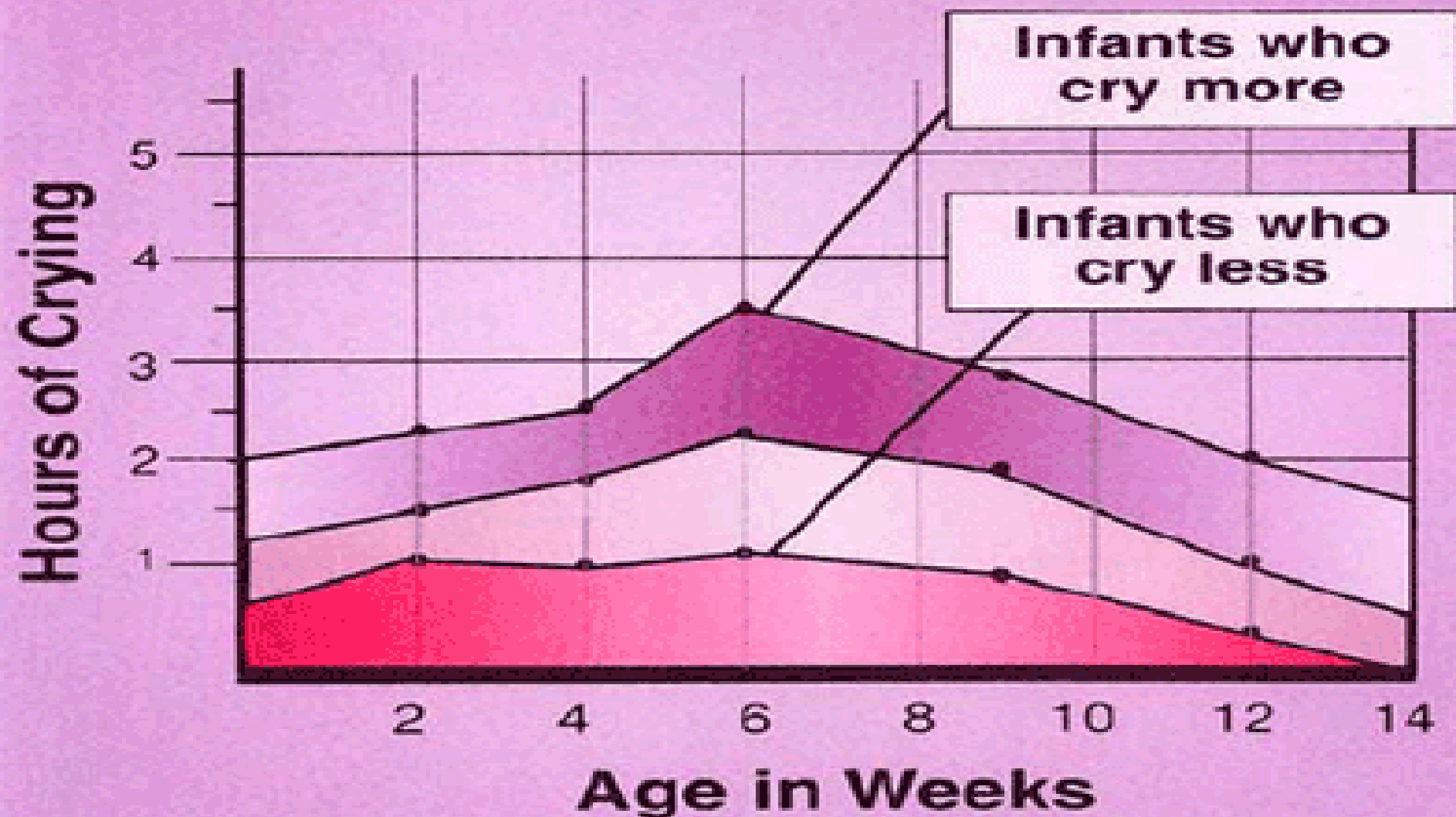
Peaks

The quality and quantity of early crying can vary greatly

Several studies demonstrated that infants typically increase in their crying across the first 3 months, with a peak around 6 to 8 weeks of age.

Crying decreases significantly around 3-4 months of age.

The Crying Curve of Normal Infants



Unpredictable

This crying occurs often without warning.

Difficult to plan or to prepare for.

Some days are better than others, and it is near impossible to find trends.

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Shiell

"HE TAKES AFTER YOUR MOTHER"

Resistant

This crying is resistant to soothing

Walking, holding, driving in the car and numerous other activities are employed to attempt to stop the crying

Pain-Like Face

The infant has a pain-like face

This is a factor in the association of the term
“colic”



Long bouts

This crying can last for extended period of time.

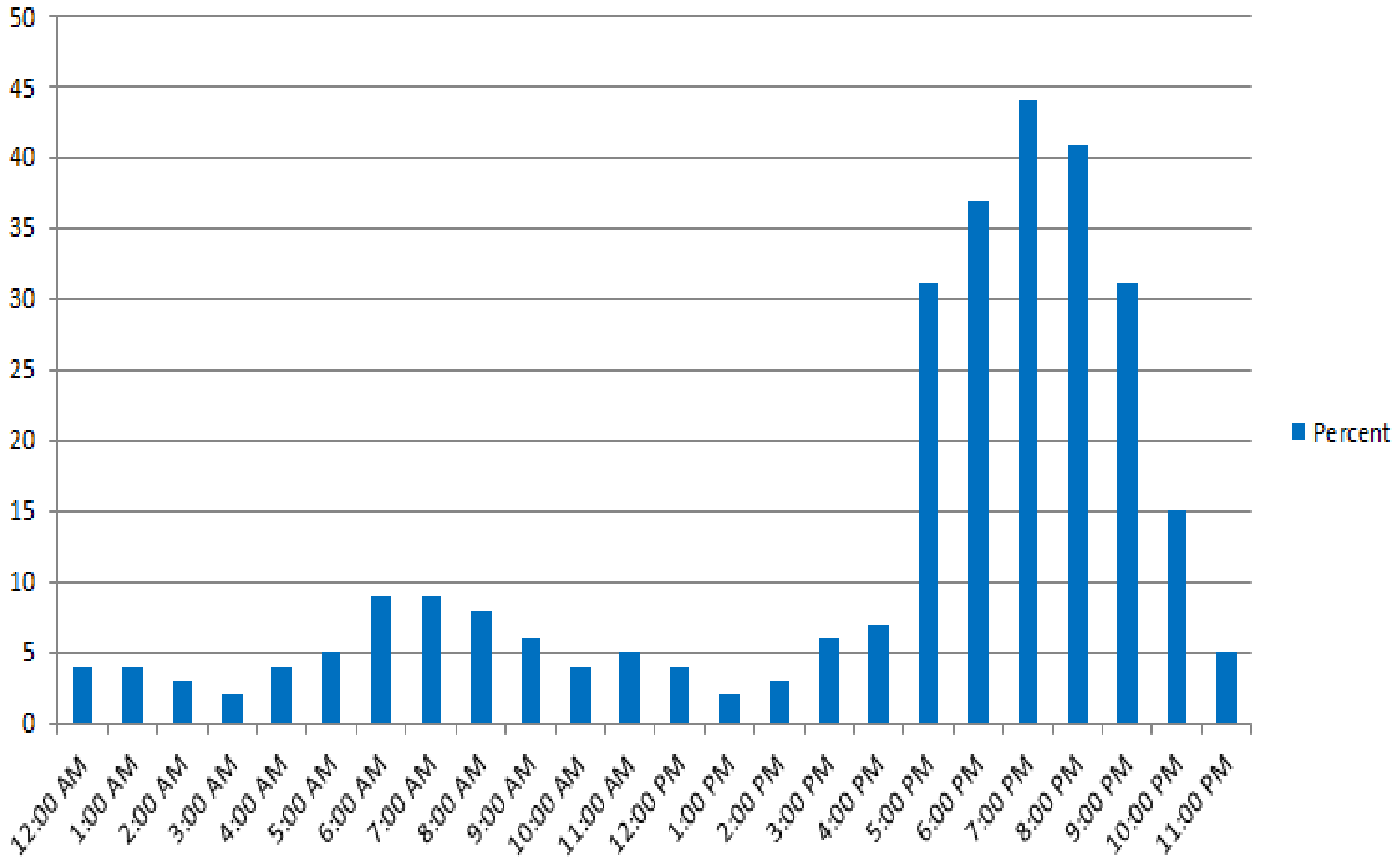
Can last as long as 5 hours of solid crying or even longer.

Evening

Crying commonly occurs in the evening.

Parents are home from work, or at the end of a day – already stressed and tired

Hourly Incidence of Fussiness of 68 Infants at Time of Post Natal Check



Prevention

Caregivers are encouraged to take three actions to prevent SBS

- Increase contact, carry, walk and talk responses.
- If crying becomes too frustrating, put the baby in the crib and walk away for a few minutes
- Never shake or hurt the baby

What you can do

Caregivers at the bedside can take an active role in SBS prevention.

- SBS education should be incorporated into infant discharge teaching protocols.
- Male caregivers must be included
- Teach all caregivers about infant crying and a systematic approach to coping with inconsolable crying.

What you can do cont.

- Encourage parents to express their feelings
- Affirm that fear, inadequacy, and frustration are very normal
- Emphasize that these feelings can escalate to anger
- Every caregiver needs to have specific and safe methods to cope.

What you can do cont.

Advise caregivers to take care of themselves:

- Rest
- Adequate nutrition
- A balanced routine
- Exercise
- Time away from the baby

Purple Crying

Crying is a normal stage in infant development.

This challenges the idea that the crying indicates that “something is wrong” for which “something must be done”

Emphasizes the wisdom of leaving the infant in a safe situation when the crying becomes intolerable for the caregiver, rather than losing control of impulses.

Important for the caregiver to realize that the baby’s continued crying is “just one of those things that babies do at this age” rather than a rejection of the caregiver.

Summary

- Shaken baby syndrome is a significant and devastating problem and 100% preventable with the right education.
- If your facility does not have a SBS prevention program – it needs to
- Education of healthcare providers and caregivers is the key in preventing these horrific infant deaths.

Web Resources

Resources

Description

National Center on Shaken Baby Syndrome

2955 Harrison Boulevard

Suite 102

Ogden, UT 84403

(801) 627-3399 or 1-888-273-0071

<http://www.dontshake.com>

The National Center for Shaken Baby Syndrome is a private, nonprofit organization that provides information to professionals and parents. The site provides answers to common questions about SBS, an extensive list of reference materials, resources, support services, current issues, press releases, conferences, and links to other SBS sites. Many SBS educational materials may be purchased through this site.

The Shaken Baby Alliance

P.O. Box 150734

Ft. Worth, TX, 76108

(877) 6-END-SBS

<http://www.shakenbaby.com>

The Shaken Baby Alliance is a nonprofit corporation whose mission is "to provide support for SBS victim families (including adoptive and foster parents), advocate for justice for SBS victims, and increase SBS awareness." The Shaken Baby Alliance site provides information regarding SBS prevention efforts, family support, victim advocacy, justice and legal issues, and a library of SBS related information.

Web Resources

Resource	Description
U.S. Department of Health and Human Services http://www.hhs.gov	U.S. Department of Health and Human Services provides general information about health and safety issues. This site provides links to child abuse information and topics.
American Academy of Pediatrics 141 Northwest Point Boulevard Elk Grove Village, IL 60007-1098 (847) 434-4000 http://www.aap.org/	This organization offers a variety of educational materials, AAP guidelines for various conditions, and links to other organizations and publications.
Prevent Child Abuse America 200 S. Michigan Avenue, 17th Floor Chicago, IL 60604-2404 (312) 663-3520 http://www.preventchildabuse.org	Provides information on topics related to child abuse and neglect. The organization offers various programs on child abuse prevention, and it also directs efforts toward increasing public awareness of child abuse and neglect.

More Information

For more information about how to implement a PURPLE Crying program in your own facility contact:

Rebecca.Sullivan@cookchildrens.org

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