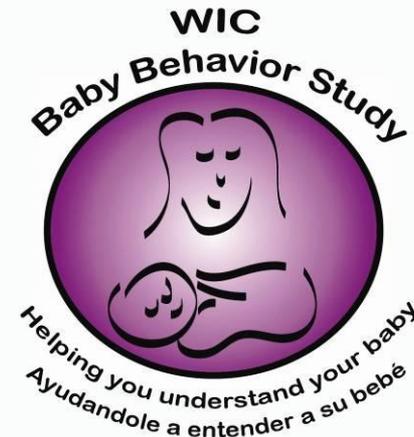


New Tools to Reduce Overfeeding:

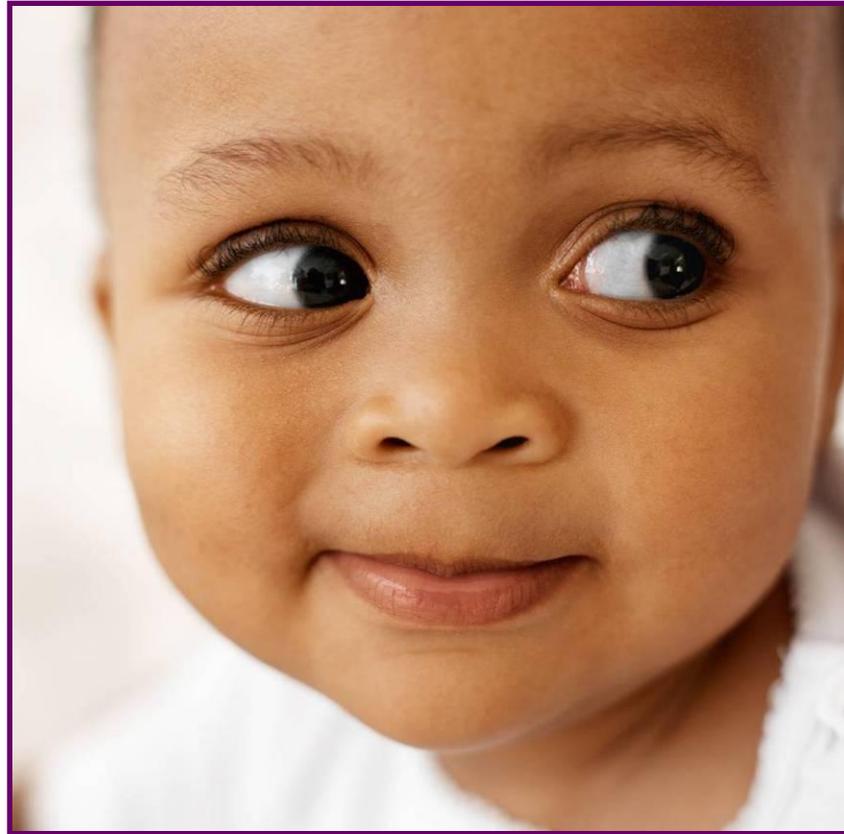
The FitWIC Baby Behavior Study

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Welcome!



How much do you know?

- How far (in inches) can a newborn see?
- What do babies like to look at more than anything else?
- What percentage of a newborn's weight comes from the baby's head?
- How many diapers does the average baby go through in the first year of life?

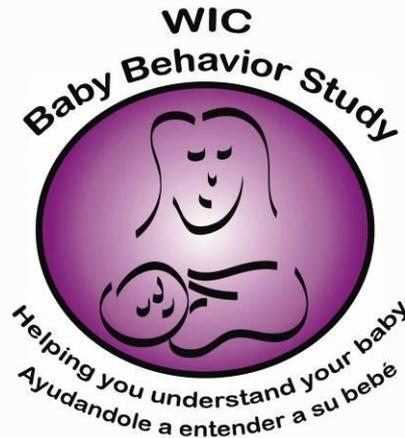
How much do you know?

- How far (in inches) can a newborn see?
 - **12 inches**
- What do babies like to look at more than anything else?
 - **Faces (especially their own mother's face)**
- What percentage of a newborn's weight comes from the baby's head?
 - **25%**
- How many diapers does the average baby go through in the first year of life?
 - **3000**

We want to help you learn:

- Why baby behavior can influence risk for childhood overweight and obesity
- “Secrets” of baby behavior
 - How infants’ moods affect their behavior
 - How babies communicate with caregivers so that their needs are met
 - How healthy babies sleep
 - Why babies cry
- How to teach parents about these secrets

Part One



The FitWIC Baby Behavior Study Background

UC Davis Focus Groups (2003)

- Many moms feel helpless in dealing with their baby's behavior
- They believe babies cry because of hunger (formula and cereal prevent hunger)
 - “When I gave formula, the baby no longer cried and slept, and that is when I decided not to give him breast milk.”

Heinig et al. J Hum Lact. 2006; 22: 27-38.



UC Davis Focus Groups (2003)

- They believe babies wake because of hunger
 - “The baby sleeps better with formula.”
 - “From the time she was maybe 3 or 4 months old, I started putting a little cereal in her bottle, and it was like at night. It would help her; she would be full and sleep through the night.”

Heinig et al. J Hum Lact. 2006; 22: 27-38.



UC Davis Focus Groups (2003)

- They think their babies will stay full longer if they are overfed
 - “My baby used to wake up, but now I am giving him formula if he is already full and he no longer wakes up.”

Heinig et al. J Hum Lact. 2006; 22: 27-38.



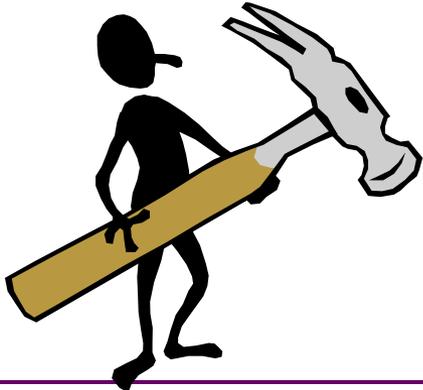
UC Davis Focus Groups (2003)

- Mothers are pressured by others to feed:
“ His dad went and bought the formula and he still would wake up. Oh my God, I’m not going to get no sleep. His grandma, she went and bought the rice cereal and started mixing it up, and he’d eat it and he’d burp a little and then he started sleeping more and more because he was full, but before that he was not full, he was always hungry and crying. His dad would say, ‘Are you feeding him?’ ”

Heinig et al. J Hum Lact. 2006; 22: 27-38.

Coping with Stress

- If parents can see a solution – they'll try to find ways to fix the problem

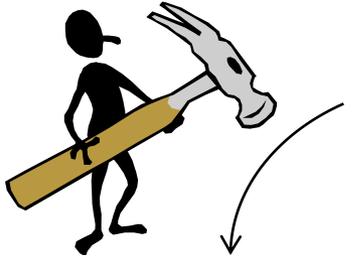


- If parents can't see a solution – they'll try to calm themselves down



Glanz J Occup Med 1992; 34: 1071-8.

Coping with Stress



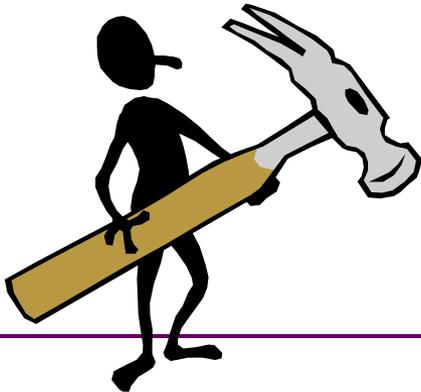
- If parents believe there is a solution – they'll try to find ways to fix the problem
 - I'm going to call the lactation consultant
 - I'll try to swaddle the baby the way the nurse showed me in the hospital
 - I'll talk to my doctor about why he wakes up

- If parents don't believe there is a solution – they'll try to calm themselves down
 - Breastfeeding isn't really that important. She'll be fine.
 - If I didn't have to work, I wouldn't have to formula feed.
 - My child is overweight, but he only stops crying when I feed him

Glanz J Occup Med 1992; 34: 1071-8.

Coping with Stress

- If parents can see a solution – they'll try to find ways to fix the problem



*Parents need tools to help them believe they can handle their infants' crying and waking behavior without overfeeding

- If parents can't see a solution – they'll try to calm themselves down



Glanz J Occup Med 1992; 34: 1071-8.

Feeding in Response to Baby Behavior

- We found that mothers feel overwhelmed by crying and waking
 - If breastfeeding, they start adding formula
 - Add more formula, and more formula
 - Start solid foods (cereal in the bottle)
 - Add other solid foods
 - Feed every time the baby makes noise



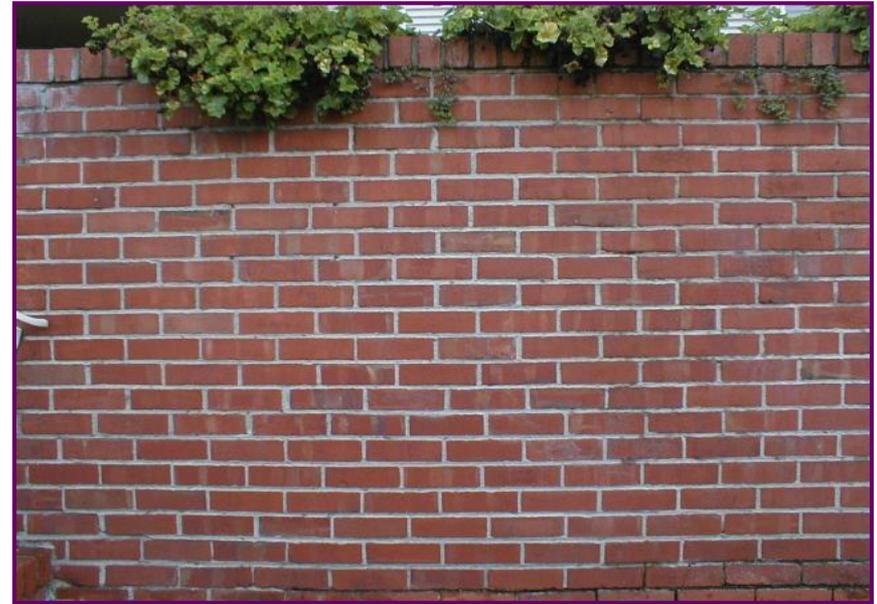
Your Turn!

Do you see this happening in
your agency?

Do you see mothers feeding their
babies to control their
behavior?

WIC Participants: Coping with Stress

- We can't ask participants to run through walls
- We have to provide tools so that what we're asking them to do sounds doable!
- Every "should" must include the "how"



What can WIC do?

- Many WIC moms misinterpret normal infant behavior (crying and waking) as never ending hunger cues
 - WIC can help moms and dads to tell the difference between hunger and other cues
 - WIC can help moms and dads know why babies wake up
 - WIC can help moms and dads feel confident that they know what their babies need

Baby Behavior Works!

- Our intervention clinics increased their 0-6 mo exclusive breastfeeding rates almost 7%, a 43% increase above the rates when we started!
 - Biggest increases 1-4 mo
- Formula use in our intervention sites dropped even though caseload increased



Normal Infant Behavior

- Baby behavior information is just another “tool” for you to help WIC moms
- Does not replace current breastfeeding or nutrition support
- Here we go....



Part Two



Infant States and Cues

The Big “Secret” of Baby Behavior

- Babies’ brains are hardwired to drive them to learn and socialize
 - Anything that gets in the way of that can bother them
 - Some babies are more sensitive than others but they all behave this way



Infant “States”

- State = group of behaviors that occur together
 - Body movement
 - Eye movement
 - Breathing (fast or slow)
 - How much they respond

NCAST Keys to Caregiving

Infant States

- Crying
- Irritable
- Quiet alert
- Drowsy
- Active sleep
- Quiet sleep



Increasing
intensity

Crying

- Tears
- Jerking motions
- Color changes
- Tight muscles
- Rapid breathing
- Generally don't respond



Irritable

- Lots of body and facial movement
- Irregular breathing
- Eyes open but may not want to interact
- Sometimes fussy
- Sensitive to what's going on inside and around them
- Common before feeding



Quiet Alert

- Little body movement
- Eyes open and wide
- Steady, regular breathing
- Highly responsive
- Wants to learn and play - interactive
- For young babies, requires active effort to control! Tiring.



Drowsy

- Variable movement
- Irregular breathing
- Opens and closes eyes
- Eyes glazed
- Takes time to react
- Easily startled



Active Sleep

- Moves a little every now and then
- Irregular breathing
- Facial twitches
- Rapid Eye Movements (REM)
- Easy to wake



Quiet Sleep

- No body movement
- Rhythmic breathing
- Bursts of sucking
- Startles but does not wake
- Does not respond
- Hard to wake



Your Turn



Let's play:

“Name that State”

Changing States

- **Variety to waken**

- Use different positions, touch, words
- Will take longer if very drowsy or in deep sleep
- Can take up to 10-15 minutes for very young or premature infants to wake up enough to eat well

- **Repetition to soothe**

- Address the child's needs – see if change in position or circumstances helps
- Repeat actions or words over and over
- May take time if infant is very upset

-NCAST Keys to Caregiving

Crying



Helping Infants Control their State

- Healthy infants will try to control their own state and give cues to “tell” others what they need
- Caregivers can play an important role in helping infants feel comfortable and safe

Adapted from: NCAST Keys to Caregiving

Types of Infant Cues

- Young infants try to tell caregivers when they want to interact (**engagement cues**)
- Young infants try to tell caregivers when they need to “take a break” or something to be different (**disengagement cues**)
- Interactions will have both types of cues, caregivers need to **look for pattern**

Kelly et al. Promoting First Relationships, NCAST Pub 2003

Engagement Cues

“I want to be near you”

- Obvious

- Looking intently at face
- Rooting
- Feeding sounds
- Smiling
- Smooth body movements



- Subtle

- Eyes open
- Face relaxed
- Feeding posture
- Raising head
- Following voice and face



Kelly et al. Promoting First Relationships, NCAST Pub 2003

Disengagement Cues

“I need a break”

- Obvious

- Turns away
- Pushes, arches away
- Crying
- Choking, coughing
- Extending fingers, stiff hand
- Falling asleep



- Subtle

- Looks away
- Faster breathing
- Yawning
- Hand to ear
- Grimace
- Glazed look



Kelly et al. Promoting First Relationships, NCAST Pub 2003

Engagement



Disengagement



Clustered Cues: Hunger

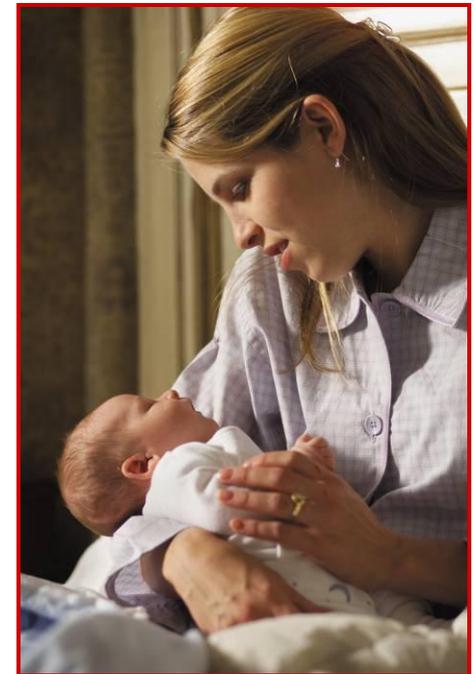
- Clenched fingers and fists over chest and tummy
- Flexed arms and legs
- Mouthing
- Rooting
- Fast breathing
- Sucking noises/motions



Kelly et al. Promoting First Relationships, NCAST Pub 2003

Clustered Cues: Full

- Arms and legs extended
- Fingers extended and relaxed
- Pushing away
- Falling asleep
- Slow or decreased sucking
- Back arching



Kelly et al. Promoting First Relationships, NCAST Pub 2003

Your Turn



Let's practice. From the slides, tell us:

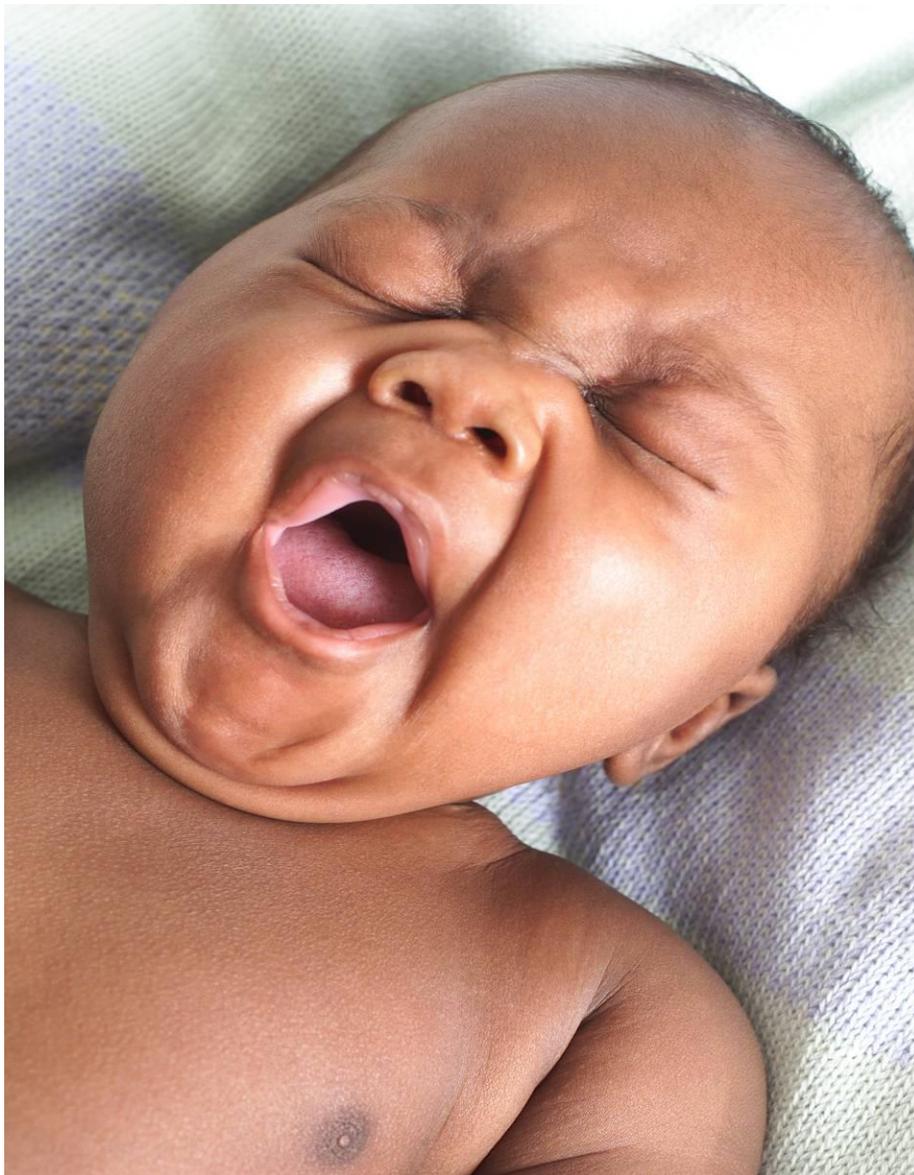
- 1) what is the infant's state?
- 2) what kind of cue is the baby using (engagement or disengagement)?



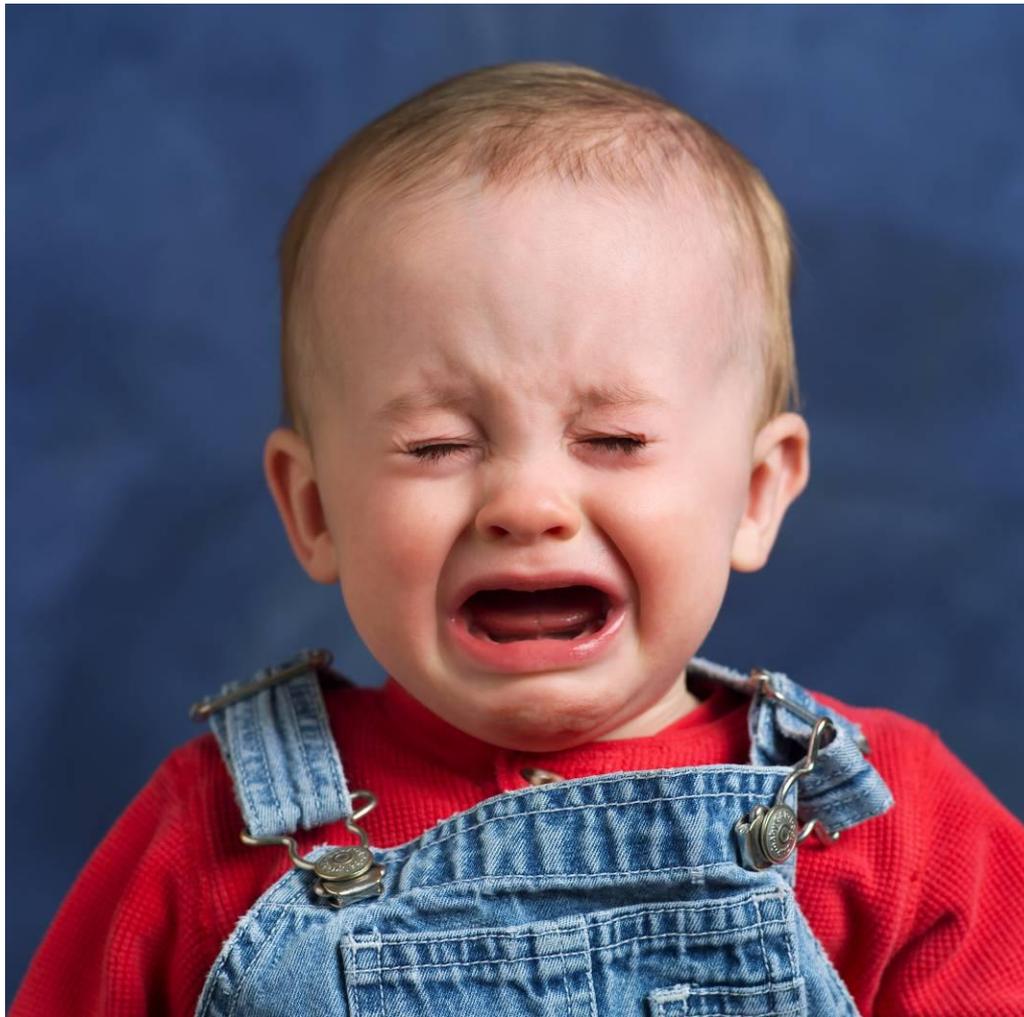
What is my state? What cue am I using?



Quiet Alert, Engagement cue



Drowsy, Disengagement
cue



Crying, Disengagement Cue



Quiet Alert, Engagement Cue

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Irritable, Disengagement cue



Quiet Alert, Engagement Cue



Quiet Alert/Irritable,

Hunger Cue



Irritable,
Disengagement
cue



Drowsy, Disengagement cue



Quiet alert, Engagement Cue



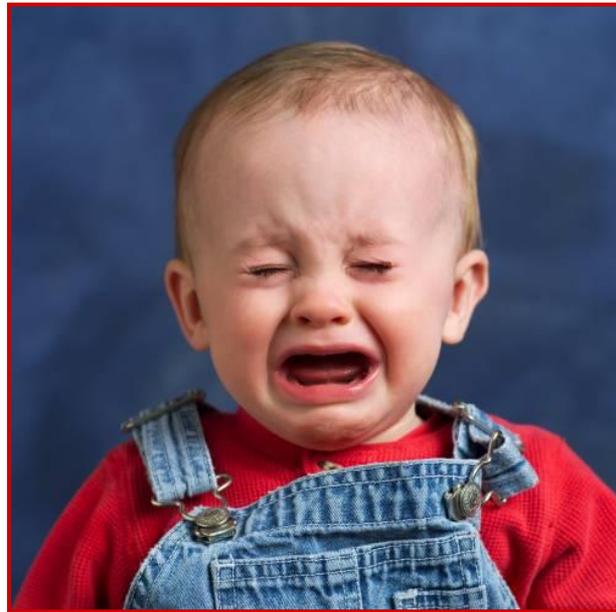
Irritable, Disengagement Cue

Helping Parents Respond to Cues

- Engagement cues
 - Interact and play with baby
 - Best time to learn, play, feed
 - Keep in mind that engagement is hard work!
- Disengagement cues
 - Change the environment (diapers included)
 - Fix the problem, provide comfort
 - Stop interactions (siblings too)
 - Let the baby have a break

Kelly et al. Promoting First Relationships, NCAST Pub 2003

Part Three



Infant Crying

“Normal” Crying

- Crying makes adults want to help (important for survival)
- ALL infants cry
 - Crying begins in first hours of life, and on average, peaks at 2.6 hours per day at 6 wks
 - Crying decreases over the next 10 weeks, much better by 12-16 wks
- Responding early to cues will reduce crying



Hiscock H. The Crying Baby. Australian Family Physician 2006; 35: 680-4.

Is There a “Hungry Cry”?

- Babies cry whenever they are uncomfortable or unhappy
- How can caregivers tell when a crying baby is hungry?
- Hungry babies *might* cry but they will ALSO bring their hands to their face, clench their hands, flex their arms and legs, root, make sucking motions and noises
- All these behaviors together help us know when a baby is hungry

Caregivers can help crying babies (who have been fed) by:

- Letting babies suck on their hands
- Showing babies their face
- Speaking softly over and over (repetition)
- Holding, rocking, stroking the baby over and over (repetition)
- Babies will take longer to calm down if they are very young or very upset

Kelly et al. Promoting First Relationships, NCAST Pub 2003

Persistent Crying: Definition

- Persistent crying is sometimes called “colic”
 - Colic doesn't have a consistent definition
 - Colic is supposed to be crying for 3 hours a day, more than 3 days per week, for more than 3 weeks
- “Persistent crying” refers to daily inconsolable crying
 - Only 25-30% of persistent criers have problems with digestion - obvious signs



Persistent Crying: Good News and Bad News

- The good news

- 95% of persistent criers are healthy and thriving
- Persistent crying (just like all newborn crying) improves by the time the baby is 12-16 weeks old



- The bad news

- It can take 12-16 weeks before the persistent crier settles down
- Persistent crying is associated with maternal depression and child abuse

Persistent Crying: Reasons

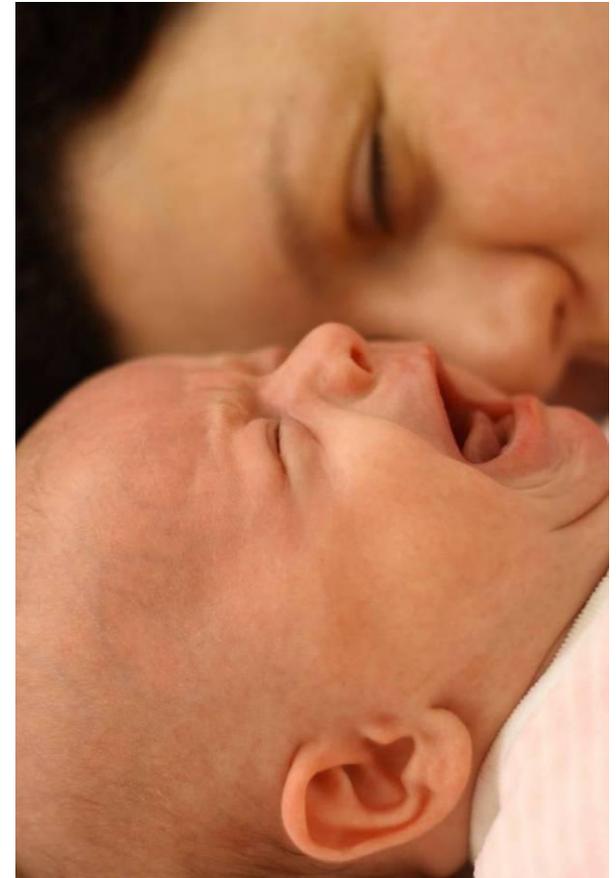
- Baby's body is immature
- Infant can't self-soothe or regulate states
- Infant can't provide readable cues
- Infant illness, injury, or GI problems
 - Crying with signs of illness or a big change in behavior should be investigated by the doctor
- Sometimes parents need referral for professional help



Hiscock H. The Crying Baby. Australian Family Physician 2006; 35: 680-4.

Persistent Crying: Tips for Parents

- Learn about crying
- Address cues early
- Reduce stimulation OR increase repetitive stimulation
- Keep on a loose schedule (keep stimulation similar throughout the day)
- Soothing techniques
 - Beware of overuse



Your Turn



BABY BEHAVIOR DETECTIVE!

Why are these babies crying?

All of these babies are healthy and thriving.

Be a Baby Behavior DETECTIVE!

- Baby Tanya is 3 weeks old
- 10-15 minutes after nearly all feedings she becomes fussy, arches her back, and stiffens her hands and legs



Be a Baby Behavior DETECTIVE!

- Baby Marcus is 3 months old
- During his sister's 4th birthday party, Marcus shuts his eyes, stiffens his body, and cries loudly



Be a Baby Behavior DETECTIVE!

- Baby Luz is 5 months old
- Every evening from 6 to 8pm, Luz becomes quite fussy, she closes her eyes, tightens her face, and cries unless she is constantly held and rocked



Be a Baby Behavior DETECTIVE!

- Baby Elena is 6 weeks old
- Despite being fed an hour ago, Baby Elena begins to cry, she draws her fists toward her chin and her legs toward her body, she moves her head from side to side





Case Studies

Your Turn

In pairs:

- Each pair will receive a case study
- Each case study describes an answer to a question on “BABY NUTRITION QUESTIONS (BIRTH–5 MONTHS)”
- Talk about what **additional information** you need to know about the baby
- How can you tell if the caregiver is misunderstanding normal baby behavior or if something else is going on?

Part Four



Sleep Patterns in the Newborn



Your Turn

How many times do parents *think* that babies wake up...

At 2 mo? _____

At 4 mo? _____

At 6 mo? _____

What Parents Said

- What parents *really think* about their babies waking at night:
 - At 2 mo: 0-20 times per night
 - At 4 mo: 0-6 times per night
 - At 6 mo: 0-6 times per night

Average Night Waking

- Average waking at night is:
 - 2-3 times at 2 mo
 - 2 times at 4 mo
 - 1 time at 6 mo
- Too much waking is stressful and should be investigated (before infants are switched from breastfeeding to formula)
- Babies may wake too often when sick, uncomfortable, or because of a change in routine
- *Limited* waking is OK



Peirano et al. J Pediatr 2003; 143: 70-9.
Kliegman et al. Essential of Pediatrics 2006

Reasons for Excessive Waking

- Baby's body is immature
- Baby is not getting enough to eat
- Illness or injury
- TV in room (or other intermittent stimulation)
- Caffeine or meds
- Change in routine
- May need to refer

Infant Sleep States

- Active sleep (REM) is considered to be important for brain development
 - Babies dream and *more* blood flows to the brain bringing nutrients to active brain cells
 - Images stimulate brain function



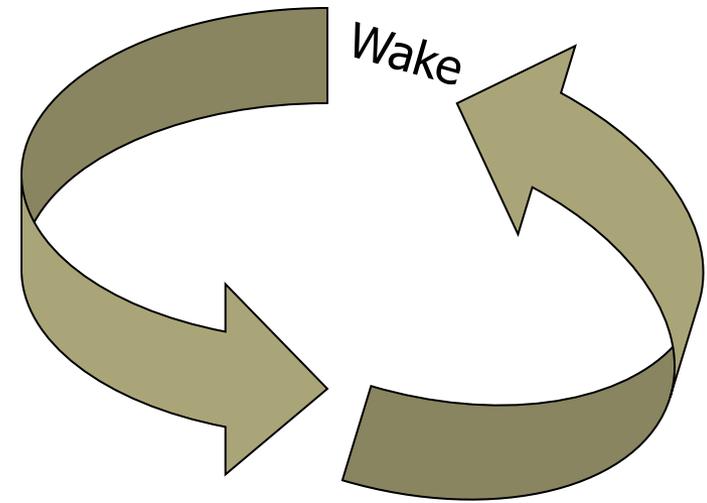
- Quiet sleep is deep sleep
 - No dreaming
 - Little or no movement
 - Important for the brain to rest

Peirano et al. J Pediatr 2003; 143: 70-9.

❖ Infants “cycle” through active sleep, quiet sleep, and waking.

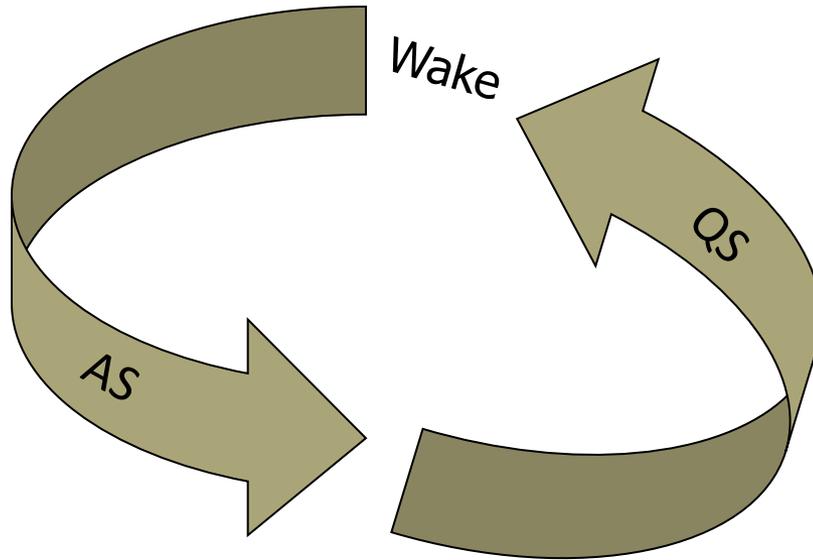
Infant Sleep Cycles

- Infant sleep cycles are 60 minutes long (adult cycles are 90 minutes long)
- Infants sleep 13-14 hours per day from 2-12 months – but not all at once!
 - Initially, newborns will wake with each cycle (every 1-2 hours)



Peirano et al. J Pediatr 2003; 143: 70-9

Newborn Sleep/Wake Cycle

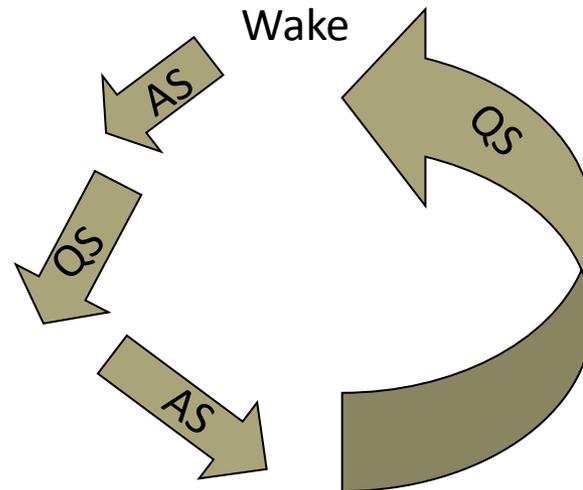


Newborns start sleep in Active Sleep (AS) (dreaming for 20-30 mins) and move to Quiet Sleep (QS)

Infants in active sleep may wake up easily when put down, because active sleep is a light sleep

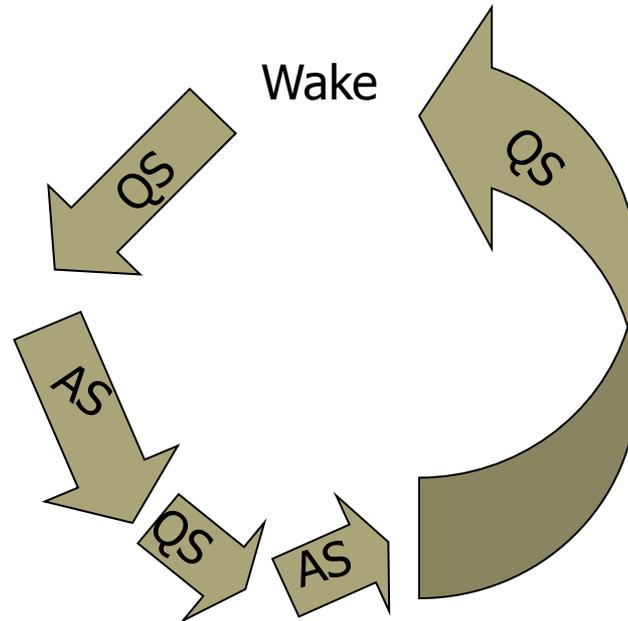


2-Month-Old Infant Sleep/Wake Cycle



At 2-3 mo, infants begin with shorter periods of Active Sleep (AS) then move into Quiet Sleep (QS); they start to have longer quiet sleep periods at night

4+ Month-Old Infant Sleep/Wake Cycle



By the time babies are 3-4 months, they have more regular sleep patterns. Around the same time, they start to fall asleep in quiet sleep just like adults do.



Infant Sleep Patterns

- As infants get older, they can link cycles together:
 - ≤ 2 mo (links 2 cycles: 2 hrs)
 - 3 - 4 mo (links 4 cycles: 4 hrs)
 - ≥ 6 mo (links several cycles: 6-8 hrs)
- So, infants will sleep longer and will not be as easy to wake as they get older



Peirano et al. J Pediatr 2003; 143: 70-9.

Why Active Sleep and Night Waking are Good

- Active sleep is important to brain development
- Waking may be essential to survival—needs must be met for breathing, feeding, warmth
- Breastfeeding mothers' hormonal cycles are interrupted by night feeds, not having periods may lower risk for hormone-related cancers
- Therefore, active sleep and waking at night are beneficial for mothers and young babies

Peirano et al. J Pediatr 2003; 143: 70-9.

Infant Feeding and Sleep

- New studies say breastfed infants *don't* wake more than formula-fed infants, but:
 - Breastfed infants have more active sleep
 - Babies digest breast milk more quickly than formula – this is best for their development and growth
- Formula-feeding moms can promote active sleep by putting babies “back to sleep” or using pacifiers

Montgomery-Downs, et al. Pediatrics 2010.

Horne et al. Ped Resp Rev 2004; 5: 190-8.

Sleep States...



Active sleep

- Dreaming and rapid-eye movements
- Body and face twitches
- Blood and nutrients to brain
- Newborns fall asleep this way
- Easy to wake

Quiet sleep

- Important for complete rest
- Very little movement
- Harder to wake
- Infants who are 4-months-old or older fall asleep this way

Coming Up In the Next Section

- Barriers to exclusive breastfeeding
- Physical activity for infants
- How to talk to parents about their babies' behavior without offending them
- Quick & easy ways to share Baby Behavior messages while counseling and in classes



What are your questions about infant sleep or crying?