The Building Blocks of Healthy Attachment

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Objectives

- Define Attachment
- Review the structure and function of the infant brain in terms of attachment
- Explain the importance of the parent infant dyad to the biology of attachment
- Review the “milestones” of infant attachment
- Review strategies to promote healthy parent infant attachment
Disclaimer

- We have no relevant financial disclosures

- However....

- We do not claim to be experts in attachment, but would like to share with you some of our experiences with families

What is Attachment?

Attachment is a special, secure emotional relationship or bond between an infant and his caregiver that involves an exchange of comfort, care and pleasure
Neurobiology of Attachment

Milestones of Attachment

Assisting in Attachment

Structure and Function: The Neurobiologic Elements of Attachment
A Two Year Journey

- Multiple neurobiologists have theorized that from birth to two years, the infant brain is right side dominant
- Alan Schore, PhD. describes “right to right brain communication” between a mother and her infant
- The brain volume doubles in size from the last trimester to the end of the second year
- After this, a period of synaptic pruning occurs in which connections that are not utilized are discarded
- “Cells that fire together, wire together. Cells that do not, die together” – A. Schore

Synaptic Pruning

BIRTH 7 YEARS 15 YEARS
Right and Left Brain Attributes

Evolving Cerebral Architecture
Brain Development in the First Year

<table>
<thead>
<tr>
<th>Right Side Brain Structure</th>
<th>Developmental Trajectory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amygdala – part of the limbic system – center of emotion</td>
<td>“Online” at birth – the right amygdala processes olfactory stimuli – mediating the recognition of maternal and baby scent</td>
</tr>
<tr>
<td>Anterior Cingulate</td>
<td>Critical development at 8 weeks – regulates laughing and crying, play and separation, face recognition and autonomic activity</td>
</tr>
<tr>
<td>Right Insula</td>
<td>Develops over the first year – in the temporal lobe. Regulates the subjective awareness of inner body feelings and emotionality</td>
</tr>
<tr>
<td>Right Parietal Cortex</td>
<td>Representation of the physical self and the ability to distinguish self from others</td>
</tr>
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Orbital-Frontal Cortex

- Between 9-12 months the orbital-frontal cortex undergoes a critical period of growth that continues through the second year of life
- This area of the brain acts as the highest level of control of behavior, especially in relation to emotion
- Functional MRI studies done by Nitschke and colleagues show that mothers viewing photographs of their babies have maximal brain activation in their right orbital-frontal cortex
Hypothalamic-Pituitary Adrenal Axis

- The right cerebral hemisphere is critically involved in regulating the HPA Axis and the infants physiologic stress response.
- This regulation originates from the right pre-frontal cortex. There is research to suggest that the volume of this area is actually larger in adults who experienced secure attachment as infants.
- Essentially, the mother’s own endorphins and opiates stimulate the baby's endogenous production of these substances thus fostering the milieu for brain growth and development.

Summing it up...

- Attachment is a neurobiologic phenomenon.
- Mother and Infant are both right brain predominant following delivery.
- This right brain predominance is so powerful that mothers are more likely to hold their babies in the left cradling position!
Milestones in Attachment

Parent Infant Dyad

PARENT BONDING

INFANT ATTACHMENT
Parent Bonding

- There is an exaggerated greeting response
- Imitation of facial expression
- Parents are wired to respond to their infants distressed cry
- Bonding begins in utero

The parents are primed to respond...
Infant Attachment

- The infant has built in capacity to “hook” the parents
- They are soothed by their hold and comforted by their touching and swaying
- They will turn to their voice preferentially
- They are attracted to the human face

Birth

<table>
<thead>
<tr>
<th>Infant</th>
<th>Parent</th>
</tr>
</thead>
<tbody>
<tr>
<td>The “golden hour” after birth</td>
<td>Establishing their new role</td>
</tr>
<tr>
<td>Baby is awake and interactive</td>
<td>Adrenalin Rush</td>
</tr>
<tr>
<td>Prefers the parents voice and face</td>
<td>Anticipation is over – meet new family member</td>
</tr>
<tr>
<td></td>
<td>Learning the baby’s cry – a great opportunity to forge trust</td>
</tr>
</tbody>
</table>
One Month

**Infant**
- Infant uses their sense of smell, taste, and touch to interact with their social environment
- Baby is learning that parent will always be there, needs will be met

**Parent**
- Learning how to respond to the baby's needs and how to console
- You cannot spoil the infant
- The parent develops routines to establish connections with the infant

Two Months

**Infant**
- Mutual gaze encourages intense face to face interaction with the parent
- Facial, vocal and gestural communications occur

**Parent**
- “Affect Synchrony” occurs- the parent synchronizes their affect with that of the newborn
- Post-partum Depression can impair the synchrony
### Four Months

<table>
<thead>
<tr>
<th>Infant</th>
<th>Parent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in reciprocal</td>
<td>Parents “fall in love” with the baby</td>
</tr>
<tr>
<td>communication</td>
<td></td>
</tr>
<tr>
<td>Baby is social and interactive</td>
<td>More comfortable with care</td>
</tr>
<tr>
<td>Screams to get attention</td>
<td>Find comfort in “knowing their baby”</td>
</tr>
</tbody>
</table>

### Six to Nine Months

<table>
<thead>
<tr>
<th>Infant</th>
<th>Parent</th>
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</thead>
<tbody>
<tr>
<td>Stranger Anxiety – memory</td>
<td>Parent becomes the “secure base” – Bowlby</td>
</tr>
<tr>
<td>development</td>
<td></td>
</tr>
<tr>
<td>Saves the biggest laughs and</td>
<td>Parents know their child’s needs</td>
</tr>
<tr>
<td>smiles for parents</td>
<td></td>
</tr>
<tr>
<td>Looks to parent for safety</td>
<td></td>
</tr>
<tr>
<td>and comfort</td>
<td></td>
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</table>
Nine to Twelve Months

**Infant**
- With added mobility, need a secure base
- Knows where to get comforted, when hurt or afraid
- Looks to parent for praise
- Joint attention

**Parent**
- Provide secure base
- Respond with comfort and praise (clapping)
- Shares activities

Babies are primed to connect!!
Clinical Interventions in Assisting Healthy Attachment

A crucial time

- For the rest of the life span, the right hemisphere is imprinted with the template for future relationships and attachment.

- Right brain neuropsychology represents the substrate of three critical human interactions: trust, empathy and moral development.

- We have a front row seat during this critical time in human development…. What are issues that derail this natural process? What can we do to help get things back on track?
Situations which may impair normal attachment

- Unexpected C-Section
- Maternal or infant illness after delivery
- Postpartum Depression
- NICU stay
- Ghosts in the Nursery - Selma Fraiberg
- Colic
- Infant Temperament
- Environment

Our goal is simple...

To assist parents in seeing their newborn as a unique individual, who knows them best and is hardwired to attach
Attachment Rounds

- We take time once per week to address these issues at normal newborn nursery rounds
- Resident physicians are challenged to understand the milieu in each family unit
- They are asked to identify temperament and newborn state

How do we begin?

- What is your baby's name?
- How did you choose that name?
- Who does she remind you of?
- Does she have a personality yet? What is she like?
- What have you noticed about him so far?
- How is he different from your other children?
Brazelton’s Neonatal Behavioral Observation Scale (NBOS)

- An observational scale designed to assist clinicians and parents in understanding their newborns unique temperament and strengths
- It provides the infant with “a voice”
- We teach residents in pediatrics and family medicine how to integrate elements of this tool into their routine newborn exam

Six States of the Newborn

Recognizing newborn state can reveal to parents that infants have a non-verbal way of communicating with their parents

- Deep Sleep
- Light Sleep
- Drowsy
- Quiet Alert
- Active Alert
- Crying
Educating Families on the Strengths of their newborn

- Infants can see clearly at 12 inches and can visually track
- Hear and locate sounds
- Habituate
- Recognize mom’s voice
- Discriminate mom’s face
- Recognize emotional expression

“She is so strong! Look at her head control.”
“Look at her go dad!”

“Wow, she really seems to like this position”
“Look at how alert she is!”

“She really knows who her mom is!”
Promoting Attachment in the First Year

- Screening for postpartum depression and domestic violence and getting mother help
- Talking for the baby during the exam
- Acknowledging stranger anxiety
- Asking about the babies temperament
- Reframing the behaviors in a positive light
Conclusions

- Babies are hardwired to attach
- Attachment is a dynamic process that can be impacted by the parent/infant relationship
- Families bring their own story to the table, and several element of this unique story may impact the attachment process
- Health care providers can assist families in identifying these elements and provide means to overcome them
- We can directly impact the future psyche of the infant.

Thank You!
References

Fraiberg, Selma; Adelson, Edna; Shapiro, Vivian - *Ghosts in the Nursery: A Psychoanalytic Approach to the Problems of Impaired Infant-Mother Relationships*

Schore, Ph.D., Allan; *Attachment, Affect Regulation, and the Developing Right Brain: Lining Developmental Neuroscience to Pediatrics; Pediatrics in Review, Vol26 No.6, June 2005. 204-217*


