CARING FOR YOUR BABY’S BRAIN
WHILE IN THE NICU
A guide for you and your family

UFHealth
Shands Children's Hospital
A small scientific guide of WHY and HOW to care for your baby’s developing brain.

*Medical science says*

YOU are the MOST IMPORTANT PERSON to help with your baby’s neuro-development.
YOUR BABY’S BRAIN DEVELOPMENT

Your baby’s brain develops in stages. This development naturally occurs when the baby is inside the mother’s womb. The natural environment in the womb gives it adequate stimulation to develop, together with nutrition and protection.

However, since your baby has arrived early, various factors can alter its development such as:

- External environment in NICU (and home after baby is discharged)
- Unfortunate events/injuries after birth while in the NICU and later

Some of the effects are reversible and some are not. However there is a window of opportunity to work and help the brain re-wire, which is most crucial in early months to years.

Research says that YOUR presence and your stimulation is very important, which begins right here in the NICU and then continues at home.

Developmental care team

You play a central role in the developmental care team which includes your doctors, nurses and specialized occupational therapists, or OTs.

- Your baby’s doctor will tell you what you can do at each stage
- Your baby’s nurse will be at baby’s bedside to help you
- Your baby’s therapist will show you the techniques
- ...and most importantly, your baby will tell you when he/she is ready
GETTING TO KNOW YOUR BABY

Understanding your baby’s cues and knowing when he/she is ready

Your baby is ready to interact when...
- Breathing is smooth and regular
- Color is pink
- Looks comfortable with arms and legs more close to the body
- Holding hands close to face
- Awake and trying to make eye contact
- Looking around
- Cooing
- Trying to open and close their mouth
- Seeking something to put in their mouth
- Moving arms and legs smoothly

Your baby is not ready or needs a break when...
- Breathing is very fast, slow, irregular or gasping
- Skin color is pale, purple/dusky
- Startles easily
- Trembles/jerky movements
- Sudden movements of arms and legs away from body
- Squirm/restless
- Inconsolable/excessive crying
- Fussiness
- Yawning and wanting to sleep
- Looks away from you
- Does not want to engage
- Arching back

Your baby will show different signs depending on his/her stage of development. Your baby’s nurse and therapist will guide you towards understanding these cues.
HELPING YOUR BABY’S BRAIN DEVELOP

Stimulating different areas of brain and working towards overall neuro-development

- Sense of hearing  
  (for development of auditory and language centers of brain)

- Sense of touch  
  (for development of sensory area of brain)

- Movements, massage  
  (for development of motor area of brain)

- Sense of vision  
  (for development of visual area of brain)
HELPING YOUR BABY’S BRAIN DEVELOP

Sense of hearing

Babies are able to hear as early as 25 weeks, and their hearing continues to develop as they grow. They are especially able to recognize mom’s voice.

What can you do in the NICU?
- Talk to your baby in a soft and sweet voice
- Sing in soft tones
- Read to your baby
- Record your sounds and leave with your baby’s nurse
- Music therapy is also highly beneficial

You can do this from a few minutes to a few hours in a day, increasing the time as he/she grows. You can continue doing this at home.

If your baby is very sick or extremely small, he/she needs more protection rather than stimulation.

You can ask your baby’s nurses to lower alarm sounds if possible.

Advocate for keeping voices low around your baby.

Sense of hearing later helps with development of:
- Speech
- Language
- Memory

What will this do to baby’s brain?

Research has shown that it helps with:
- Mother-baby bonding
- Forms new connections in brain
- Increases size of hearing center of brain
- Decreases heart rate and blood pressure
- Language development
- Memory development
Sense of touch (sensory stimulation)
Before the babies are born they are surrounded by fluid, which constantly gives them a sense of touch. Babies also experience different position changes and joint movements as they move around inside the womb.

What can you do in the NICU? You can start with the following depending on your baby’s medical condition.

- Skin-to-skin contact
- Kangaroo mother care
- Gentle but constant touch
- Gently place your hand on arm/leg/body
- Let your baby hold onto your finger

Once your baby is about 31-33 weeks and again, depending on his/her medical condition, you can do:

- Massaging
- Very gentle rocking by holding baby in your arms
- Moving the joints
- Stretching

These are specialized techniques and will be shown to you by your baby’s therapist on when and how to do.
What will this do to baby’s brain?

Research has shown that it helps with:

- Mother-baby bonding immensely
- Increases brain maturation
- Kangaroo mother care has especially been shown to:
  - Lower risk of death
  - Decreases risk of infection
  - Stabilizes heart rate, breathing and blood pressure
  - Helps with temperature control and blood glucose levels
  - Decreases risk of hospital admission and helps you start breast feeding
  - Decreases their pain and improves oxygen saturation
  - Leads to increased head growth
- Decreases risk of depression in mother
- Massaging and stretching:
  - Helps with weight gain and calcium deposition in bones
  - Improves coordination
  - Improves muscle tone
  - Decreases length of hospital stay
**Visual stimulation**

The visual system starts to develop when baby is in the last trimester and is not yet well-formed at birth. This is especially true if baby is born early. Vision rapidly develops during the first few months after birth. Hence, during early phases in NICU when your baby is extremely small, eyes have to be protected from light and any kind of stimulation as much as possible.

What can you do in the NICU? When your baby is medically stable and is able to open their eyes and starts showing interest, you can:

- Start with making direct eye contact for a few seconds to minutes
- Talk and sing to your baby while maintaining eye contact
- Bright objects can be introduced later
- Different patterns with contrasting colors also helps

**What will this do to baby’s brain?**

Research has shown that it helps with:

- The eyes and brain have special nerves associated with the visual system in the brain that are highly influenced by visual stimulation after birth
- This not only helps the visual system but also aids in the growth of hearing and coordination centers within the brain
- Increases bonding with your baby which later helps in forming a strong mother-baby relationship

![Photo of a parent holding a baby in the NICU](image-url)
References:


3. Brett JT, Staniszewska S, Newburn M, Jones N, Taylor L. A systematic mapping review of effective interventions for communicating with, supporting and providing information to parents of preterm infants. BJM open 2011


19. Behavioral analysis of preterm neonates included in a tactile and kinesthetic stimulation program during hospitalization. Ferreira AM1, Bergamasco NH. Rev Bras Fisioter. 2010


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