

How Does My Milk Help My Baby's Brain Grow and Develop?

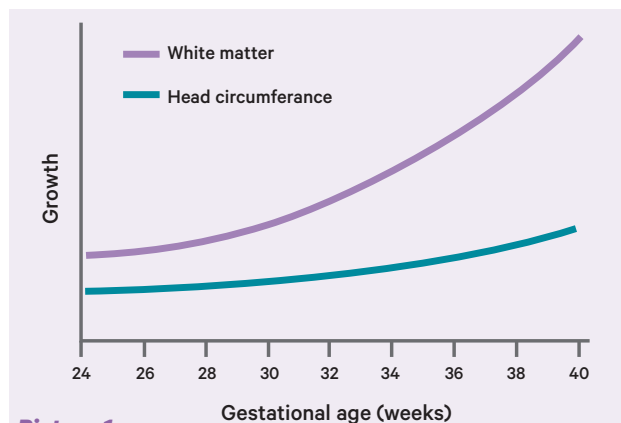
The human brain is much larger and more complicated than the brain of other animals, and it grows very rapidly during the first two years of life. Mothers' own milk has special substances to support the brain's need for energy, as well as for its growth, development and protection during this time.

- High amounts of **lactose**, a sugar that supplies quick energy to support the brain's work of controlling breathing, thinking and moving
- Lower amounts of **protein** than other animal milks, but the protein in human milk is specially directed toward brain development
- Special **fats** that help to grow connections in the brain that help learning, remembering, language, emotions and other behaviors
- **Non-food substances** that provide protection to the fragile brain tissue while it is growing

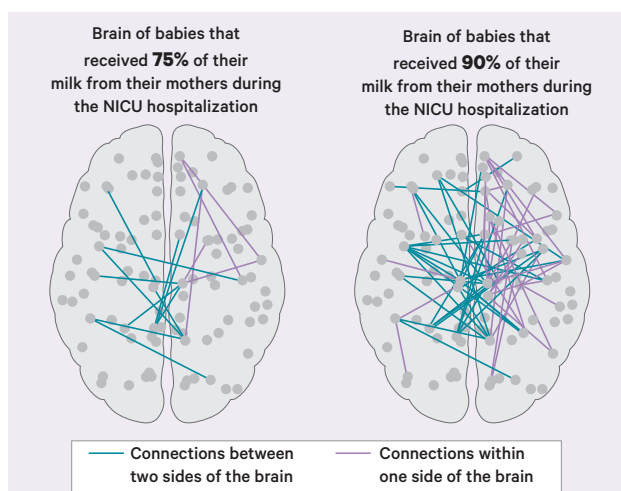
What if my baby is born prematurely?

The premature baby's brain is much smaller and less developed than the brain in a full-term baby, so all NICUs have care practices that focus on the growth and protection of the brain in premature babies. Mothers' own milk is an essential part of these NICU practices. Research shows that high amounts of mothers' own milk through to NICU discharge is linked to better brain growth and infant development than is donor human milk or formula for premature babies.

- Some parts of the premature infant brain grow more rapidly than others during the NICU hospitalization. The part of your baby's brain that is growing rapidly is called **white matter**. The name, **white matter**, refers to the color of the nerves in the brain (white) as they become covered with a type of insulation that is mostly fat. This insulation layer speeds up messages in the brain and is related to learning and behavior later in childhood. **Mothers' own milk fat** is the very best substance for this special insulation process. This insulation process is called **myelinization**.



Picture 1



Picture 2

- **Picture 1** shows how some parts of the brain in premature babies grow more rapidly than others. You can see that the white matter is growing faster than your baby's head size overall (head size = head circumference size that we measure each week).
- **Picture 2** shows the differences in the number of connections between parts of the brain when premature babies receive different amounts of their mothers' own milk through to NICU discharge.

So, in addition to holding your baby in Kangaroo Care, reading and singing to your baby, and helping him/her get lots of relaxing sleep, providing your milk is an important thing that you can do to help the growth and development of your baby's brain during the NICU stay.

Kapellou et al. (2006). PLOS Medicine 3: e265.

Blesa et al. (2019). NeuroImage 184: 431-439.

Created by: Paula Meier, PhD, RN; Aloka Patel, MD and Judy Janes, RN, IBCLC





Disclaimer

This general information sheet is intended for use under the guidance of health professionals in the neonatal intensive care unit (NICU). It is primarily for training purposes and for additional information to be given to parents or private persons without medical education by NICU health professionals. The general information sheets provided by Rush University Medical Center are for parents and interested private persons without medical education and we do not raise any claim to completeness of the information sheets. Under no circumstances should this information be regarded as a substitute for professional advice or treatment or for any independent medical judgment of a healthcare professional regarding specific patient diagnoses or treatment plans. Healthcare providers should exercise their own independent medical judgment, and decisions as to any diagnosis or treatment plan are the sole responsibility of such healthcare provider. The general content of this information sheet cannot and shall not be used to make independent diagnoses or begin treatment. Our information is not personally related to you. We therefore recommend that you visit recognised healthcare professionals to get specific advice for any medical problems.

This information sheet was published on www.LactaHub.org on 4 August 2020. It is provided in good faith. We will be happy to provide you with further information and guidance.

We look forward to your inquiry at: contact@lactahub.org