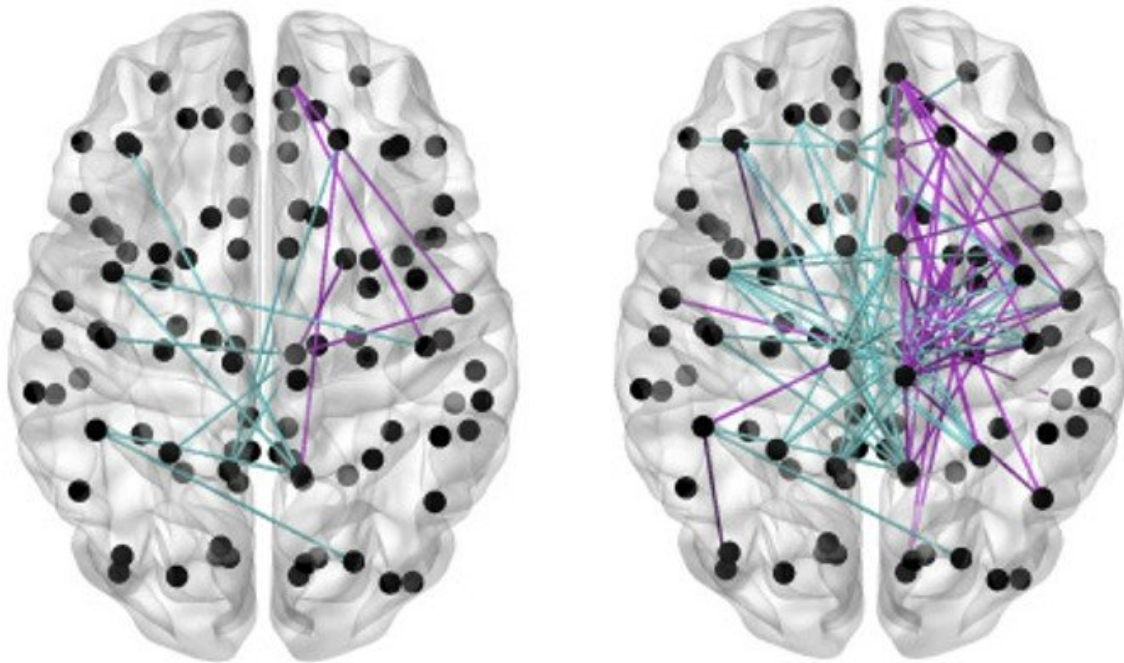


Breast milk may be best for premature babies' brain development

September 21 2018



Babies born before their due date show better brain development when fed breast milk rather than formula, a study has found. Image shows brain maps with information processing hubs represented as black dots. Hubs are widely connected with each other in highly complex ways to allow the transfer of information that govern all aspects of brain function. The lines on the map highlight connections that are less well developed in babies who receive breast milk for fewer than three quarters of the days they spent in neonatal intensive care (left image) or fewer than 90 per cent of their days in hospital (right image). The data suggest that brain connections in preterm babies are improved with greater amounts of breast milk in the weeks after birth. Credit: Jennifer Brown

Research Laboratory, the University of Edinburgh

Babies born before their due date show better brain development when fed breast milk rather than formula, a study has found.

Experts say that helping mothers to provide breast milk in the weeks after giving [birth](#) could improve long-term outcomes for children born pre-term.

Premature birth has been linked to an increased possibility of problems with learning and thinking skills in later life, which are thought to be linked to alterations in brain development.

Studies have shown that pre-term birth is associated with changes in the part of the brain's structure that helps brain cells to communicate with one another, known as white matter.

Researchers at the University of Edinburgh studied MRI brain scans from 47 babies from a study group known as the Theirworld Edinburgh Birth Cohort.

The babies had been born before 33 weeks gestation and scans took place when they reached term-equivalent age, an average of 40 weeks from conception.

The team also collected information about how the infants had been fed while in intensive care—either formula milk or breast milk from either the mother or a donor.

Babies who exclusively received breast milk for at least three-quarters of the days they spent in hospital showed improved brain connectivity

compared with others.

The effects were greatest in babies who were fed breast milk for a greater proportion of their time spent in intensive care.

The study was funded by the charity Theirworld and was carried out in the Jennifer Brown Research Laboratory at the University's Medical Research Council Centre for Reproductive Health. It is published in the journal *NeuroImage*.

Professor James Boardman, Director of the Jennifer Brown Research Laboratory at the University of Edinburgh, said: "Our findings suggest that [brain](#) development in the weeks after preterm birth is improved in babies who receive greater amounts of breast milk.

"This study highlights the need for more research to understand the role of early life nutrition for improving long-term outcomes for pre-term babies.

"Mothers of pre-term babies should be supported to provide [breast](#) milk while their baby is in neonatal care—if they are able to and if their baby is well enough to receive milk—because this may give their children the best chance of healthy [brain development](#)."

Sarah Brown, President and Trustee of Theirworld, said: "I am so proud of the achievements of the Jennifer Brown Research Laboratory. This latest report delivers valuable evidence to support [breast milk](#) feeding for even the tiniest, most vulnerable premature babies, to give them the best start in life.

"An immense debt of gratitude is due to the families of the Theirworld Edinburgh Birth Cohort, who are dedicated to sharing information to support their own little ones, and benefit many other premature [babies](#) in

the future."

More information: Manuel Blesa et al, Early breast milk exposure modifies brain connectivity in preterm infants, *NeuroImage* (2018). [DOI: 10.1016/j.neuroimage.2018.09.045](https://doi.org/10.1016/j.neuroimage.2018.09.045)

Provided by University of Edinburgh

Citation: Breast milk may be best for premature babies' brain development (2018, September 21) retrieved 26 April 2024 from <https://medicalxpress.com/news/2018-09-breast-premature-babies-brain.html>

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