Probiotic promotes 'healthy bacteria' in c-section babies

A study published in the *Journal of Pediatric Gastroenterology and Nutrition*[1] found that a formula feed containing the probiotic *Lactobacillus reuteri* can modulate early development of the microbiota in caesarean-delivered infants.

The level of probiotics found in the digestive systems of babies delivered by caesarean section is poorly understood. At two weeks of age, babies born via c-section have lower levels of several healthy bacteria than those vaginally-delivered. Similar results are seen at the age of four months.

Infants delivered by c-section and vagina were randomised to receive either control formula or the same formula containing *L. reuteri* within 72 hours of birth. Stool samples were collected at two weeks and four months of age; microbial DNA was extracted, amplified and sequenced.

The results showed that the formula containing *L. reuteri* did not alter the microbiota in vaginally-born infants. However, in caesarean-delivered infants, the probiotic modulated early development of the microbiota towards the composition found after vaginal delivery.

Reference

1. **Garcia Rodenas Clara L. et al.** Effect of formula containing Lactobacillus reuteri DSM 17938 on fecal microbiota of infants born by cesarean-section. *J Pediatr Gastroenterol Nutr* 2016;63:681-87.

Molecular tests may offer improved diagnosis of neonatal sepsis

Current methods of detecting neonatal sepsis in newborn infants utilise blood or other body fluids and rely on culturing the infecting organisms in a laboratory. However, culture methods take a long time to generate results and may miss some infections. Newer diagnostic methods are based on detecting bacterial or fungal DNA; such tests are rapid and may have higher sensitivity. A Cochrane review[1] assessed the diagnostic accuracy of various molecular methods for the diagnosis of culture-positive bacterial and fungal sepsis in newborn infants. The review concluded that molecular assays have the advantage of producing rapid results and may improve neonatal outcomes.

Reference

1. **Pammi M. et al.** Molecular assays for the diagnosis of sepsis in neonates. *Cochrane Database Syst Rev* 2017:CD011926.

Interventions can promote the initiation of breastfeeding

Breastfeeding initiation rates remain relatively low in many high-income countries, particularly among women in lower-income groups. An updated review[1] attempted to identify, describe and evaluate health promotion activities intended to increase the initiation rate of breastfeeding. Twenty-eight trials involving 107,362 women in seven countries were included in the updated review, although the methodological quality of the trials was mixed.

The study found some evidence that healthcare professional-led breastfeeding education and non-healthcare professional-led counselling and peer support interventions can result in improvements in breastfeeding initiation rates, particularly among women living in areas where baseline breastfeeding rates are typically low, and in low-income settings.

Such reviews are important because they enable a better understanding of what works in breastfeeding promotion and inform the design of interventions for increasing initiation of breastfeeding rates.

Reference

1. **Balogun O.O. et al.** Interventions for promoting the initiation of breastfeeding. *Cochrane Database Syst Rev* 2016:CD001688.

Mother's BMI may affect the biological age of her infant

Higher body mass index (BMI) in mothers before pregnancy is associated with shorter telomere length – a biomarker for biological age – in newborn infants, according to a study published in *BMC Medicine*.[1]

Telomeres are structures at the ends of chromosomes that protect the chromosomes from degradation. Telomere length is directly linked to the number of times a cell can divide in its lifetime. Longer telomeres allow cells to divide more often; hence there is a link between telomere length and biological age. Telomere length in adults has been associated with age-related diseases such as cardiovascular disease, type 2 diabetes and increased mortality.

To examine associations between maternal BMI and newborn telomere length researchers examined 743 mothers (aged 17-44) and their newborn babies. Detailed information on parent's age at infant's birth, socioeconomic status, smoking status, parity, ethnicity, the infant's gender and birth weight and pregnancy complications was obtained by use of a questionnaire. To measure average telomere lengths, umbilical cord blood was drawn immediately after delivery from all mother-infant pairs.

Compared with the babies of mothers with a normal BMI, newborn infants born to obese women have shortened telomere lengths. For each one-point increase in the mothers' BMI, telomeres in the infants were approximately 50 base pairs shorter. These cells will have a shorter life-span, effectively making them older at the molecular level.

The results add to the growing body of evidence that high maternal BMI impacts on fetal programming leading to altered fetal development, which may increase the risk of chronic diseases in adulthood.

Reference

1. **Martens D.S. et al.** Maternal pre-pregnancy body mass index and newborn telomere length. *BMC Medicine* 2016 doi: 10.1186/s12916-016-0689-0.

Kangaroo care reduces procedural pain

A Cochrane review[1] found that skin-to-skin contact appears to reduce the pain response to, and recovery from, the various tests and procedures carried out in a neonatal intensive care unit (eg heel stick, venous puncture, injections). However, although it appears that skin-to-skin care is effective, the size of the benefit remains uncertain.

Skin-to-skin contact, also known as kangaroo care, is the practice of holding an infant wearing just a nappy next to its parent's bare chest. The literature search examined the effect of skin-to-skin contact alone on pain from medical or nursing procedures in neonates compared to no intervention, sucrose or other analgesics, or additions to simple skin-to-skin contact such as rocking. The effects of the duration of skin-to-skin contact and the method of administration (eg who provided the care) were considered. The reviewers also looked at the safety of skin-to-skin contact and compared the effects in different subgroups of infants (eg by postmenstrual age).

Skin-to-skin care appears to be effective in reducing pain from procedures in newborn infants as measured by composite pain indicators with both physiological and behavioural indicators, and via heart rate measurements and crying time.

Reference

1. **Johnston C. et al.** Skin-to-skin care for procedural pain in neonates. *Cochrane Database Syst Rev* 2017:CD008435.

Using a cup instead of a bottle helps establish breastfeeding in preterm infants

Preterm infants usually commence feeds by gavage tube and sucking feeds are gradually introduced as they mature. Women wanting to breastfeed their preterm infant are not always able to be with their baby in the neonatal unit and commonly milk is given by bottle (mother's milk or formula), although it has been suggested that using bottles may interfere with breastfeeding success.

A review has found evidence that if bottle feeds (with a conventional teat) are not given, babies are more likely to be fully breastfed or to have at least some breastfeeds on discharge home and at three and six months after discharge.[1] Moreover, using a feeding cup instead of a bottle increases the extent and duration of breastfeeding in preterm infants. The results suggest that the use of bottles in the transition to breastfeeds should be reconsidered for preterm infants.

Reference

1. **Collins C.T. et al.** Avoidance of bottles during the establishment of breast feeds in preterm infants. *Cochrane Database Syst Rev* 2016: CD005252.

Administering steroids before birth reduces respiratory distress

Prophylactic corticosteroids in preterm pregnancies accelerate lung maturation and reduce the incidence of severe respiratory distress syndrome. The use of antenatal corticosteroids is currently recommended at 24-34^{+6} weeks' gestation in women at risk of preterm birth, however, the evidence for use at ≥34 weeks is debatable.

A systematic review and meta-analysis published in *BMJ*[1] found that the use of antenatal steroids at ≥34 weeks' gestation reduces neonatal respiratory morbidity, reinforcing the value of administering corticosteroids before planned birth at term or near term. However, the review also found that antenatal corticosteroids increased the risk of hypoglycaemia in the newborn infant. The benefits, risks and long-term effects need to be considered before further recommendations can be made.

Reference

1. **Saccone G., Berghella V.** Antenatal corticosteroids for maturity of term or near term fetuses: systematic review and meta-analysis of randomized controlled trials. *BMJ* 2016;355:i5044.