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GUT HEALTH FOR MOTHER AND BABY



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- Is it possible to improve the outcome for baby with interventions for mother and baby?
- Possibly – the research is starting to paint a picture
- The key is to improve the health of the mother before, during pregnancy and during breast feeding and providing the best start for baby – no matter the circumstances of the research



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In A Perfect World

- Women would be taught to prepare six months before conception
- They would work to correct the gut dysbiosis, perhaps detox, eat a healthy diet to prepare for pregnancy
- They would follow a healthy protocol with a focus on gut health during pregnancy and a follow-up protocol for after the baby is born for both mother and baby
- Unfortunately, this is just not happening.



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What We Need To Know

- The newborn was presumed to be sterile (from a microbe perspective) – the newborn is the perfect microbial habitat – food, warmth, moisture.
- New information suggests that the mother passes on some good bacteria from her gut to the baby (in the womb) through nerve cells
- More good bacteria that the baby needs is received from the environment both as and after the baby is born into the world
- But the mother has to have good gut flora



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First Exposure

- Vaginal Birth: Exposure to good bacteria is skin, vaginal canal, and rectal micro flora from the mother
- Strains: Mainly Lactobacilli (mainly acidophilus types), streptococci non-haemolytic (does not cause changes), Enterobacteria: various types including E coli.
- Minor Colonisers : Bifidobacteria, bacteroides, clostridia



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First Exposure

- C-section: Exposure to bacteria is from skin and hospital environment
- First Strains: Staphylococci, Enterococci, enterobacteria. Minor Colonisers : Lactobascilli
- Minor Colonisers : Bifidobacteria, bacteroides, clostridia.



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Breast Milk

- Until recently, breast milk was thought to be contaminated with bacteria from skin, nipple ducts –
- Now it is known that small number of good bacteria is collected by dendritic cells and macrophages from small intestines
- It is transferred to the breast tissue, via the lymph system



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Breast Milk

- Numbers are low – 10,000 – 1 million CFU per 100 ml breast milk but significant given the timing and the condition of the baby
- This starts during the third trimester and stops when breast tissue returns to normal after breast-feeding stops. Proves baby can get mother intestinal flora through breast milk
- Gut microflora growth and diversity continues in infants until the age of two - this will represent the nature of the residential bacteria the baby will have for life.
- Newborns – need 570-900 ml breast milk per day (19-30 oz)

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Building Gut Bacteria

At 1 Week

- Bacteria in breast fed is 95% bifidobacteria and 3% enterobacteria whereas the
- Bacteria in bottle fed only has 22% bifidobacteria and 69% enterobacteria

At 19 weeks,

- The breast fed baby is still at 95%
- Bottle fed is 77% bifidobacteria with enterobacteria at 2% and 8 % respectively

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Prebiotics

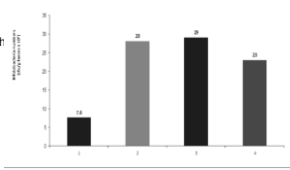
- Breast milk contains prebiotics mainly galactose oligosaccharides (GOS) which causes the increase production of bifidobacteria at 1 week.
- Study: One group: Adding prebiotics to formula 900 mg GOS 100 mg FOS)
- Another group fed bifidobacteria to mother 2 weeks before birth and feeding baby bifidobacteria for 2 months after birth
- Plus one bottle fed only group and one breast feed group



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Study

1. Bottlefed
2. Breastmilk fed
3. Formula fed with GOS/FOS
4. Formula Fed with Probiotics (B. Lactis) given to mother 2 weeks before delivery and 2 months after delivery



Group	Percentage of Bifidobacteria in stool
1	12
2	28
3	29
4	23

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Allergy in Children

- Delay in the diversity of and in the amount gut microflora was a general finding in allergic children
- Alterations in intestinal microflora have been detected both in infants suffering from allergies and in those later developing the disorder.
- Good bacteria can induce the production of IL-10 and transforming growth factor-beta, which play an important regulative role in the development of allergic type immune response
- Probiotics also strengthen gut lining defence mechanisms and reduce bad bacteria load in the gut.



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Study

- In an study of infants 6-12 months all with eczema and a suspicion of cow milk allergy – three groups – one received L.Rhamnosus GG, one group received 4 bacteria mixture and the third a placebo.
- Significant reduction in eczema with the greatest reduction in the L.Rhamnosus GG group especially in those infants who had not been on antibiotics during the study period



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Allergy Studies

- Although 9 studies have been published on the potential of probiotics to prevent allergic diseases in childhood ([Table 2](#)), only one, Kalliomaki's study, was fully successful, while four studies reported no significant effect.
- The issue is that the studies generally have short term interventions and probiotics do not have enough potential to increase residential or increase diversity
- The goal is to craft a protocol that serves long term goals
- New research is showing that antibiotic use by mother or baby decrease diversity and strains in baby

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Issues For Optimal Gut Health for Baby

- Is baby breast fed or formula fed
- Is baby delivered vaginally or cesarean
- Pre-birth is the time to improve the vaginal canal flora
- Condition of mother pre-conception, during pregnancy and while breast feeding
- Has the baby received an early course of antibiotic – before the age of 2
- Was the mother automatically given an antibiotics during delivery (always with CS, sometime with vaginal delivery)
- Quality of mothers diet during pregnancy and while breast feeding



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Diet

- High sugar, high fat and high protein diets are all associates with dysbiosis
- Mothers need a high complex carbohydrate diet, healthy fats and low is refined sugars and poor quality fats
- Reasonable amounts of animal protein (if not vegetarian)
 - consider digestive enzymes if needed



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Building Mother's Residential Bacteria

- Mother should be on probiotics for entire duration of pregnancy and breast feeding
- The probiotic should contain GOS and if not then GOS should be added to the dietary protocol (dairy, legumes)
- FOS and other prebiotics can be obtained from diet and should be a priority in a protocol
- Mother should also consume fermented foods and glutamine-rich foods
- Once baby is born, the mother needs to continue this protocol – if breast feeding

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For Baby

- Probiotics and prebiotics are provided through breast milk
- If baby is formula fed – then formula needs to have GOS and FOS
- Baby can start probiotics with prebiotics at 6 months
- Formula with GOS - Similac Go and Grow Omega 3 and 6 or Enfalac A+ Stage 1
 - neither have FOS



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In general

- Women can do a lot to improve many issues with pregnancy from morning sickness to post partum depression
- It is not easy and is best started before conception
- If this cannot be the case then introducing healthy gut foods and supplements at any point will be helpful
- Women need to be educated about what a healthy gut can do to help them and how it can help their baby
- Right now there is a lot of misinformation so let's spread the word and be kind to all mothers



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Leap Study on Peanuts

- 640 children with severe eczema and egg allergy. Either consumer peanuts or avoided them until 60 months of age
- 98 of the infants already showed positive result to peanut sensitivity

Results:

- 530 of the children with no sensitivity to peanuts – 13.7% developed a peanut allergy in the avoidance group compared to 1.9% in the group that ate peanuts
- In the group with the pre-existing sensitivity to peanuts 35.3 % develop a peanut allergy in the avoidance group compared to 10.6 in the consumption group