How to improve your child’s longterm health—while they’re in utero!

It makes common sense that diet can affect pregnancy outcomes and impact the health of offspring. Paradoxically, starvation and under-nutrition during pregnancy can lead to childhood and adult obesity; it’s as if the baby, anxious to play “catch-up”, becomes more sensitive to dietary carbohydrates.

Conversely, a high glycemic index diet not only increases the risk of maternal gestational diabetes but also imprints the child’s metabolism with insulin dysregulation that can lead to overweight and blood sugar problems in later life.

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I’m told that when my mom was pregnant with me, my dad sent her to a pregnant mothers’ retreat in rural New Jersey to escape New York’s summer heat (this was before air conditioning) while he worked in the city. It was apparently a thing in those days. Every weekend, my dad drove his trusty Buick down to visit her at the moms’ farm. There, my mother subsisted on fresh organic fruits and vegetables and locally-raised meat, eggs and poultry (Vitamins were virtually unknown in the early 50s). I owe my parents a debt of gratitude for their foresight!

It’s not just a matter of curbing carbs. In fact, moderate high-quality carbohydrate

intake is necessary to sustain a healthy pregnancy. It's no time to go strict keto!

A more nuanced approach to pre-natal diets incorporates something called the "inflammatory index" of foods. This tool is based on research linking specific foods to markers of inflammation: IL-1β, IL-4, IL-6, IL-10, TNF-α and CRP. The latter, C-reactive protein, is a commonly available lab test.

For example, trans-fat is the most pro-inflammatory diet component; tea, berries, ginger, soy and Omega 3-rich fish rank among the most anti-inflammatory foods.

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Research has revealed that higher early-pregnancy inflammatory index scores tended to be associated with higher odds of late-childhood overweight or obesity; boys had less lean body mass and girls had a greater percentage of body fat.

Other factors affect offspring's health. Among them:

- **Mother's use of oral contraceptives prior to pregnancy (of course they stopped in order to get pregnant):** A recent study showed moms' use of birth control pills increased children's risk of asthma and allergic rhinitis—but not eczema. It's not clear why, but I'd guess mothers' immune systems might acquire long-term alterations from the artificial hormones; these glitches are passed along to the developing fetus.
- **Breastfeeding:** A study was undertaken to see if breastfeeding could stave off autoimmune Type 1 diabetes in kids. It didn't work: The incidence of diabetes was the same in children who were breastfed compared to formula-fed kids. Nor were the children protected from celiac disease. But the kids who were breastfed exclusively for at least three months were less likely to be obese at five years of age; they also had less seasonal rhinitis.
- **Omega-3s:** A remarkable study in the *American Journal of Clinical Nutrition* demonstrated that women who had low blood levels of Omega-3 fatty acids (EPA and DHA) during early pregnancy gave birth to children who had smaller brain volumes of grey and white matter at age 9-11. That's why I tell expectant mothers to take plenty of Omega-3s, especially DHA. Before I prescribe how much, I facetiously warn them it could cost them big bucks: Imagine the cost of an Ivy League college education and years of post-graduate school in the 2040s!
- **Folate:** The March of Dimes has become a household name for their admirable fight to end preventable birth defects. Did you know that evidence suggests less than a dimes' worth of folate added to a prenatal multi can substantially cut the risk of devastating neural tube defects and spina bifida? It is now recommended that women obtain 400 to 1000 micrograms of folate per day before and during pregnancy. Folate should be on board before conception, because these birth defects develop early in the first trimester, sometimes before a confirmatory pregnancy test. Women at high risk of giving birth to a child with a neural tube defect are sometimes dosed higher, with as much as 4000 micrograms (4 milligrams) per day. The relationship between folate deficiency and neural tube defects was theorized as early as 1965, and research confirmed it in the 80s, but tragically, the wide implementation of folate supplementation for pregnancy was delayed until the 90s.
- **Vitamin D:** A recent review concludes, *"Vitamin D deficiency was related to a higher risk of maternal complications including preeclampsia, impaired glucose tolerance, and cesarean section rate, and neonatal complications including low birthweight, neonatal hypocalcemia seizure, and impaired skeletal, lung and*

immune development.” Most experts agree that 1000-2000 IU of vitamin D per day is safe during pregnancy.

- **Drugs:** Most medications have subtle, if not calamitous, effects on fetal development. Especially with more women delaying pregnancy until their late 30s and 40s, the pool of women who need to take drugs for various conditions is increasing. Conditions like ulcerative colitis, seizures, high blood pressure and bipolar disorder often require medication. In fact, there are now reproductive psychiatrists who help to select the most innocuous medications for expectant moms with psychiatric conditions. The usual way to determine if a medication has negative effects on the developing fetus is to feed drugs to experimental animals and see how their offspring turn out. This is expensive and inhumane. But a new technology promises to change all that: Swiss researchers have developed a cell culture platform that can predict whether various substances have toxic effects on the embryo. No animals are harmed or sacrificed.
- **Juice intake:** Many parents unwittingly feed their infants juice. *Why not?*, they reason—kids love it, and it’s preferable to sugary soft drinks. But juice is a frequent culprit in childhood diarrhea. A new study confirms that it’s also responsible for childhood obesity, which may persist into early adolescence. The American Pediatrics Association recommends *no* fruit juice for babies under one year, and limiting intake to four (4) ounces or less per day for toddlers aged one to three years.

Always consult with your own doctor before adjusting your prenatal nutrition plan, but following these guidelines can help prepare your child for better health—even before they enter into the world!