

THE FIRST 1000 DAYS OF LIFE – HOW NUTRITION IN THE WOMB MAY BE FUELING THE OBESITY EPIDEMIC

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Pregnancies complicated by maternal obesity and diabetes, result in increased fetal growth and development, that affect up to 1 in 3 pregnant women and are associated with risk of early onset childhood obesity, cardiometabolic and liver diseases during adolescence. Unfortunately, few effective treatments and intervention strategies are available, leaving these large patient groups with few options. Furthermore, emerging evidence clearly shows that adverse influences during fetal life, particularly dietary fats, can have a major impact on all organ systems, leading to metabolic, cardiopulmonary and neuropsychiatric disease later in life. There is an urgent need to identify early maternal and infant bioenergetic, epigenetic, inflammatory, and microbial biomarkers that mark mechanisms underlying metabolic disease in the next generation. Clinical studies using meticulously characterized cohorts of pregnant women and infants and state-of-the art methodologies are being used in Colorado to identify critical associations between adverse

influences and short- and long-term outcomes. In this lecture, we discuss how maternal and fetal/infant exposures can shift key pathways that may provide early clues mechanisms affecting appetite, and metabolic health in newborn infants during the first 1000 days of life. We have been doing research showing that obese women have higher glucose levels than normal weight women, and they also have higher triglycerides. When born with excess fat, their risk for childhood obesity is accelerated. To reduce the chances of a too-big baby and the resulting health risks, we are studying a diet that calls for a balance of complex carbohydrates and lower fat. What is unique about this study is that all meals are provided to the mothers and an initial study of this approach provided encouraging results. We hope that for the first time, we can finally determine the ideal diet for mothers with gestational diabetes, and perhaps for all pregnant women, to optimize both maternal and baby.

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