

## Maternal & Infant Nutrition Briefs

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*A research-based newsletter prepared by the University of California for professionals interested in maternal and infant nutrition*



### **Mothers at Risk for Delayed Onset of Lactation**

Events occurring during delivery and the early postpartum period are critical in determining breast-feeding success. Often, much of the success hinges on the mother's perception of her ability to nurse her baby adequately. In particular, delays in the onset of lactation, or the point when a mother feels her milk has "come in", may influence that perception. Typically, at 2-3 days postpartum, most women experience this event, marked by breast heaviness or fullness, tingling, pain, and leakage of milk. However, for some, lactation onset is delayed beyond 4 days or more. If risk factors for delayed lactation are better understood, then lactation consultants and other health providers might be able to target women with these risk factors for more intensive early breast-feeding support.

In Hartford Connecticut, some researchers recently examined how socioeconomic factors, events during delivery, mother's build and medical history, and infant feeding patterns were related to the onset of lactation. In the study, 192 women delivering healthy, infants born at term, were followed from the first day postpartum until the onset of lactation. Infants in neonatal intensive care were not included in the study. The researchers interviewed the women daily, with follow-up via phone after discharge. Data were collected on socioeconomic factors, breast symptoms (i.e., fullness, heaviness, pain, tingling, milk leakage), and infant feeding practices. From the charts, the researchers obtained information on obstetric history, medical condition of the mother, labor and delivery, infant birth weight, and Apgar scores. The interviewer also rated the mother as having a slim, average, heavy or obese build. Based on the mother's report of breast symptoms, the timing of lactation onset was coded as either  $<$  or  $\geq$  72 hours.

Of the 192 women, 79% were white or Hispanic; 76% were breast-feeding on day 2 postpartum; 57% were primiparas; 27% had C-section deliveries; and 35% had delays in lactation onset (i.e.,  $>$  72 hours postpartum). The researchers found the following factors related to delays in lactation onset: *exclusive formula feeding, birth weight less than 8 lbs,*

*unplanned C-sections, prolonged labor in vaginal deliveries, heavy/obese build, and white/Hispanic ethnicity.* Many other factors did not prove to be independently related to risk of later lactation onset. Notably, these included planned C-sections, parity, pregnancy weight gain, pre-pregnancy body mass index, use of anesthesia or oxytocin; mother's age, serious medical condition (eg, diabetes, pregnancy-induced hypertension), smoking habits, mother's education, infant gender or Apgar score.

These findings are consistent with earlier studies that showed infrequent infant suckling and maternal-infant stress to be related to the delays in lactation onset. However, the association of heavy/obese build and delayed lactation onset has not been reported before and needs to be confirmed. Some possible explanations include difficulty in getting the infant to latch on or hormonal abnormalities related to obesity. In the meantime, health providers should alert at risk women to the possibility that their milk may "come in" later than 3 days postpartum and plan to give these women extra breast-feeding support.

**Source:** Chapman D.J. Perez-Escamilla R. 1999. Identification of risk factors for delayed onset of lactation. *JADA* 99 (4): 450-454.

### **When to Start Solids in Low Birth Weight Babies**

The American Academy of Pediatrics states that exclusive breast-feeding is "ideal" for the first six months of life and that iron-rich solid foods should be introduced around six months. Previous studies have shown that breast-fed infants adjust their intakes accordingly, so that earlier introduction of solids has no advantage for growth. But, what about low birth weight infants? Would starting solid foods at four months help these babies catch-up faster?

Dewey and colleagues have been examining the nutritional outcomes related to complementary feeding in Honduras for several years. In this study, they randomly assigned a group of 119 small-for-gestational-age babies to a early solids (i.e., start solids at four months) or control (start solids at six months) group. Both groups were breast-fed from birth to at least six months of age. The researchers provided breast-feeding support to both groups and commercially prepared baby food (rice cereal, fruit, vegetables, and chicken) to the early solids group during the study. Mothers were given careful instructions on how to give these foods and asked to breast-feed as often as before starting solid foods. At intervals, an observer spent 12 hours in the home to record breast-feeding frequency and duration and solid food intakes. Data were collected on infant growth, morbidity, breast milk intake and energy density, and solid foods intake.

At baseline (16 weeks), breast-feeding frequency and duration was the same in both groups. During the intervention, both groups breast-fed as often as before, but the total time spent breast-feeding dropped by 38 minutes per day for the early solids babies, whereas controls increased their time nursing by 11 minutes per day. Breast milk intake also declined significantly in the early solids group compared to controls ( $p < 0.006$ ). However, at 26 weeks, total energy intake did not differ between the two groups, because the early solids group had substituted solid food for the breast milk. Consequently, there were no differences in weight or length gain during the intervention (16 to 26 weeks) nor throughout the first 12 months of life. The only difference in illness was that controls had diarrhea slightly more often than the early solids group. The authors could not explain this finding that runs counter to what others have seen. However, the difference was marginal ( $2.9 \pm 5\%$  of days for controls vs.  $1.4 \pm 3\%$  for early solids,  $p < 0.07$ ).

The authors concluded that starting low birth weight babies on solids at four months has no effect on their growth, since the babies merely replaced breast milk with solid food. If preventing anemia is a concern, then iron drops are likely to be more effective than iron-fortified foods, based on findings these researchers have reported earlier. More research is still needed on growth outcomes in low birth weight babies of malnourished mothers.

**Source:** Dewey KG, Cohen RJ, Brown KH, and Rivera LL. 1999. Age of introduction of complementary foods and growth of term, low-birth weight, breast-fed infants: a randomized intervention in Honduras. *Am. J Clin. Nutr.* 69:679-86.

### **Revisiting the Institute of Medicine's Prenatal Weight Gain Guidelines**

In 1990, the Institute of Medicine (IOM) established guidelines that set prenatal weight gain goals according to the mother's body mass index (BMI) before pregnancy. Accordingly, women of low, average, high, and obese BMI should gain by 40 weeks 28-40, 25-35, 15-25, and at least 15 lb, respectively. African American women, who are at risk of delivering low birth weight babies, are encouraged to gain weight in the upper end of each IOM range. Since obesity has reached epidemic proportions in this country, some have questioned the need for this latter recommendation. Also, little is known about appropriate weight gains in Hispanic women. Therefore, the purpose of this study was to use data collected by the Centers for Disease Control (CDC) to examine the relationship of weight gains outside and within IOM ranges on birth weight.

Using data from the Pregnancy Nutrition Surveillance System, the researchers were able to examine weight gain and birth weight in 173,066 pregnancies from nine states between 1990-93. Most of the data came from the Women, Infants, and Child Nutrition Program (WIC). Only babies born between 39-41 weeks of gestation were included in the analysis. Thus, all low birth weight (<2500 gm) babies are growth restricted rather than premature. The researchers looked at the risk of delivering either low or high birth weight babies if prenatal weight gain was: 10 or more lb. below the IOM range, 1-9 lb. below range, in lower end of range, in upper end of range, 1-9 lb. above range, and 10 or more lb. above range.

Among low and average weight women, weight gain within the IOM range significantly reduced risk of low birth weight for all race/ethnicity groups. However, as weight gains exceeded IOM ranges, especially by 10 or more lbs., success in reducing LBW was offset by increasing risk of high birth weight in these women. Among overweight and obese women, the benefits of weight gains within IOM guidelines in reducing LBW were less clear. For example, in obese women weight gains 10 or more lb. below the range significantly increased risk of LBW in white and AA (1.6 to 2.6 times higher) but not in Hispanic women. For AA women, weight gains in the upper end of the IOM ranges did not consistently improve outcomes. Only in overweight AA women did upper-range weight gain reduce risk of low birth weight.

The strengths of this study are clearly in the numbers of low-income women who were included in the analysis. Unfortunately, no data were available on postpartum weight retention nor several other important variables like maternal diabetes or preeclampsia. Nevertheless, these findings suggest that IOM weight gain guidelines are reasonable for low and average weight low-income women, but more research is needed for heavier women in all race/ethnicity groups.

**Source:** Schieve LA, Cogswell ME, Scalton KS. 1998. An empiric evaluation of the Institute of

Medicine's pregnancy weight gain guidelines by race. *Obstet. Gynecol.* 91: 878-84.

### **Pediatrician Attitudes and Breast-feeding Promotion Practices**

As the federally funded Best Start Breast-feeding Promotion Campaign is launched, public awareness of the benefits of breast-feeding will grow. As a result, mothers are expected to approach their pediatricians for advice more than ever before. How prepared are pediatricians to provide that advice and support for breast-feeding? Results from a 1995 survey of 1602 pediatricians, selected at random by the American Academy of Pediatrics, indicates much work needs to be done to prepare the physician to support breast-feeding. Among the findings of the survey are the following points:

- 65% recommend exclusive breast-feeding for the first month; 13%, breast-feeding with formula supplementation; and 2%, exclusive formula feeding. 20% make no recommendations. Only 37% recommend breast-feeding for 1 year.
- 28% would discourage breast-feeding in cases of mastitis and nipple problems.
- Pediatricians without personal breast-feeding experience are more likely to agree that breast-feeding and formula feeding are equally acceptable feeding methods than pediatricians with experience (53% vs. 40%,  $p < 0.01$ )
- Only 23% advise against pacifier use until breast-feeding is well-established
- 30% recommend giving semisolid foods before 5 months to exclusively breast-fed infants.
- 72% of pediatricians are not familiar with the contents of the Baby-Friendly Initiative or the 10 Steps to Successful Breast-feeding. 46% did not know if the main hospital they affiliate with even have such a written policy.

Maternal and Infant Nutrition Briefs is a research-based newsletter prepared by Dr. Lucia Kaiser ([llkaiser@ucdavis.edu](mailto:llkaiser@ucdavis.edu)), a Cooperative Extension Specialist in the Department of Nutrition, University of California at Davis. This newsletter is written for health professionals interested in nutrition of mothers and young children.

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