

POSTER REVIEW

Practical Considerations for Infant Formula Recommendations



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INTRODUCTION

The American Academy of Pediatrics (AAP) counsels that exclusive breastfeeding represents the best approach to feeding all infants for at least the first four to six months of life.¹ Breastfeeding is unequivocally recommended for a myriad of reasons, including its health and economic benefits. A primary role of pediatricians is to promote breastfeeding, have expert knowledge in the principles and management of breastfeeding, and to provide support and resources for mothers around breastfeeding.¹ However, whether by choice or need, there are many mothers and caregivers who will opt to feed their infants formula, and a pediatrician must have the knowledge and resources to confidently advise these patients.

The choice to feed an infant formula may be made for physiological reasons, such as active infection (eg, untreated tuberculosis, HIV) or insufficient milk pro-

duction.¹ Other mothers may opt not to breastfeed because they are receiving medications that are contraindicated or not recommended for breastfeeding women. Alternatively, the choice to use formula may be based upon personal preference, rather than clinical basis. Regardless of the rationale to choose to formula feed, it is the responsibility of the pediatrician to provide unbiased advice, as well as reassurance that infant formula is safe and nutritious. Pediatricians must also be comfortable helping caregivers to choose a formula that will be best formula for their infant.

In this regard, pediatricians must be aware of the wide variety of infant formulas available, which can be overwhelming for parents and caregivers choosing between them in a retail setting. Marketing of different brands of formula, as well as frequent changes in ingredients, can also create confusion. Parents of newborns, especially first-time parents, may be primed

to heed advertising campaigns that stress the importance of new additives for their baby's development, and may need help in choosing the formula that is right for their infant. Pediatricians must be prepared because parents and caregivers will often look to them for guidance. This means they need to keep up-to-date in the science behind advances in formulations.

Of course, parents and caregivers should have confidence in the brand of formula they are using. The U.S. Food and Drug Administration (FDA) passed the Infant Formula Act in 1980, with the addition of some key amendments in 1986.² The primary objective of the Act was to designate infant formula as a special category of food, and to ensure that it would be protected with strict regulations. In accordance with the rule, all current manufacturers must adhere to specific nutrient requirements, including minimum levels of all nutrients and maximum levels of some, such as of

vitamins, which are vital but can be toxic in high doses. The Infant Formula Act also stipulates strict quality control procedures and firm regulations on recall procedures. When new infant formulas are developed, all requirements of the bill must be met before they can come to market.

The FDA has continued to revise and update infant formula regulations since the original Infant Formula Act. Most recently, in June 2014, the FDA presented a Final Rule on Current Good Manufacturing Practices, Quality Control Procedures, Quality Factors, Notification Requirements, and Records and Reports, for Infant Formula, which further updated the standards and practices expected for manufacturers of infant formula.³ In turn, parents of infants can rest assured knowing that all infant formulas available across all brands for purchase in the United States have passed strict FDA regulations mentioned above. This includes Walmart's Parent's Choice and other store brand infant formulas that are sold as "store brands" at retail, grocery, and drug store chains across the country.

Pediatricians should also be cognizant of the financial burden felt by parents and caregivers who are formula feeding their infants. Indeed, one of the benefits of breastfeeding is that it is essentially free of charge, while infant formula can be quite costly. Many pediatricians may be unaware of the wide availability of store brand formulas, which are held to the same standards as nationally advertised brand formulas (eg, Enfamil [Mead Johnson Nutritionals], Similac [Abbott Laboratories]), but generally cost half as much. Pediatricians can be an excellent resource for parents and caregivers who are questioning whether it is reasonable to use a less costly formula. Specifically, pediatricians can be instrumental in providing education about the strict government regulations that surround the manufacturing of all infant formulas, as these ensure that store brand formulas are as nutritious and safe as nationally advertised brands.

Parents can also be assured that switching formulas is a safe and com-

mon practice. Switching formulas may occur for a number of reasons, including availability and price. Anecdotally speaking, most pediatricians know that infants are able to easily switch between different advertised brands and store brand formulas without noticeable differences in tolerance or growth. Nevertheless, parents are often anxious about how to implement a switch. Pediatricians must therefore become well versed in personal recommendations to switch from one brand of formula to another.

SWITCHING INFANT FORMULA

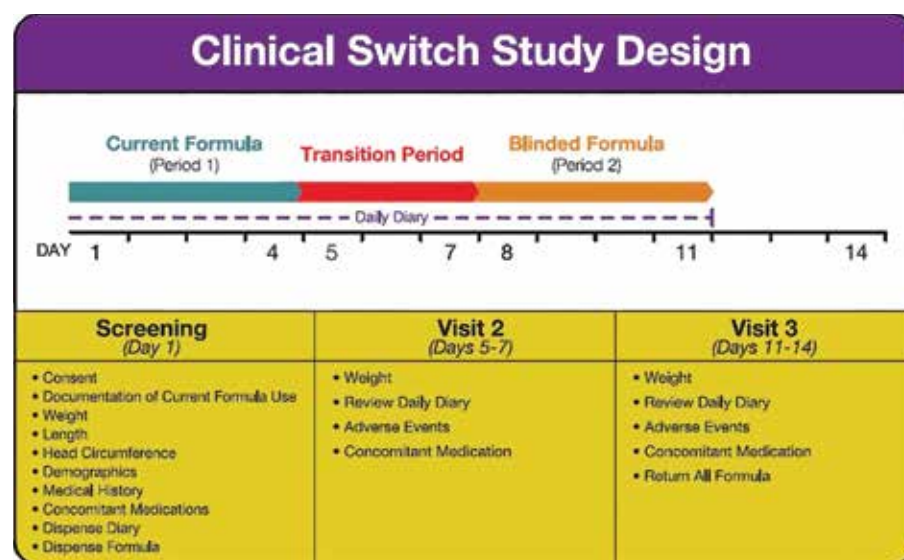
Recently, Cynthia M. Barber, PhD, and colleagues from the University of Virginia specifically investigated the safety and tolerance of formula switching in a prospective cohort study.⁴ The research team's primary objective was to investigate whether infants had worrisome symptoms after switching, either all at once or gradually, between national brand formulas, or from a national brand formula to a store brand formula.

In Dr. Barber's study, 67 infants were randomized into 3 groups that switched from: (1) a national brand formula to a store brand formula; (2) a national brand

formula to a different national brand formula; and (3) a national brand formula to the same national brand formula. Parents were blinded to the type of formula that their infant was switched, rendering the third group essentially the "placebo control" or sham group. The brands used in the study were Similac Advance milk-based infant formula (Abbott Nutritionals), Enfamil Premium milk-based infant formula (Mead Johnson Nutritionals), and Parent's Choice milk-based infant formula (Walmart store brand).

Infants began the study on their current "at home" formula for a 4-day interval (Period 1) followed by a 3-day wash-out period where they were switched to the different formula or same formula. Caregivers were allowed to transition the infants gradually over the 3-day period or to switch immediately to the blinded formula. A 4-day observation period followed (Period 2) where caregivers used a 5-point scale from "none" to "excessive" to rate how much their infant spit-up, burped, had gas, was crying, and seemed irritable, relative to their usual behaviors. These were considered markers of tolerance. **Figure 1** provides further detail on the study design.

Figure 1. Clinical Switch Study Design⁴



Schematic of Switch Study Design. Infants were screened on Day 1. Visit 2 included physical examination and review of diary. Visit 3 included physical examination and review of diary.

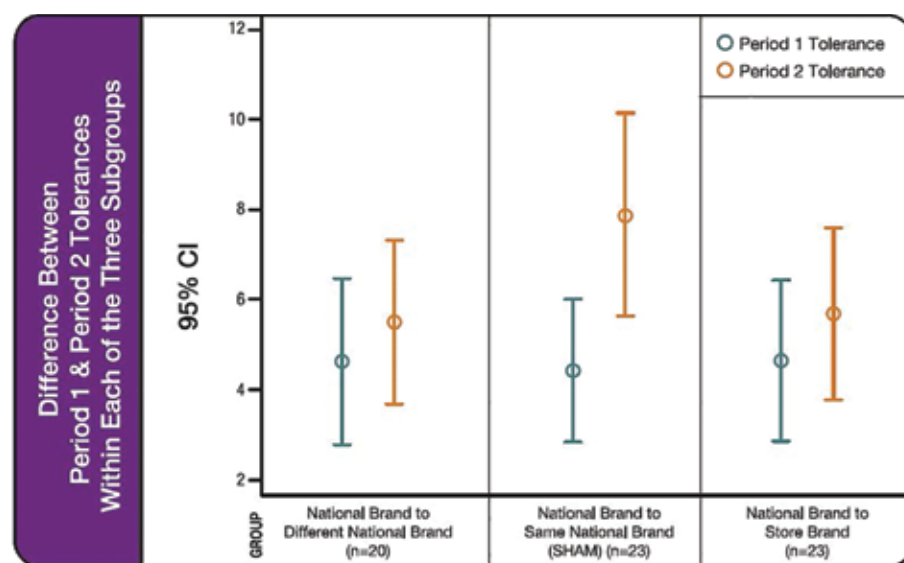
In their study, Dr. Barber and colleagues found no significant differences in overall measures of tolerance as infants switched from one national brand to another, or from a national brand to a store brand.⁴ Interestingly, in the placebo group, the investigators found worsening tolerance to be reported by caregivers in Period 2, even though infants had technically continued to receive the same national brand formula they had been receiving in Period 1.

Of course, although the researchers blinded parents to which formula they were provided in Period 2, it is likely that parents could sense when they had received new formula. For instance, they may have noted a slight difference in color and smell in the new formula, which may have conferred a positive bias that infant symptoms would improve. For those parents who received the same formula, there may not have been that same bias. In their conclusions, the researchers postulated that the continued reports of symptoms in Group 3 may have been due to caretaker anxiety, as well as increased sensitivity to infant behavior. **Figure 2** provides a side-by-side comparison of the difference between Period 1 and Period 2 tolerances within each of the subgroups.

Researchers analyzed the data further to examine differences between Periods 1 and 2 in caretaker reports of spit-up, burping, gas, crying, and irritability. In the group of infants that were switched from a national brand to a different national brand, no statistically significant differences were found in reports along any measure. Similarly, the group that switched from national brand to store brand had no differences in burping, gas, crying, and irritability, although there was a difference in reports of spit-up between the 2 periods.

The study analyzed the 44 infants that were switched to a different formula, and found a statistically significant increase in overall tolerance from Period 1 to Period 2. In short, Dr. Barber's study supports the fact that switching from

Figure 2. Clinical Switch Study Results⁴



Wilcoxon Signed Rank Test analysis between period 1 and period 2 tolerance within each of the 3 subgroups.

national brand to store brand formulas is safe, and should not lead to increased symptoms of poor tolerability.

There are economic implications to Dr. Barber's study. Less expensive, increasingly available store brand formulas are as well tolerated by infants as national brands and may be helpful to clinicians and their recommendations to parents. The results of this study may indeed be critical to reassuring families who are cost conscious, and who may be trying to understand whether paying less for formula risks an uncomfortable or unsafe infant.

As most parents and caregivers know, there are a multitude of expenses associated with raising a child. If parents opt to formula feed, infant formula will become one of the most vital and ubiquitous purchases they will be making during the first year of their child's life. Understandably, parents choosing among formulas may have the desire to buy the most expensive product and "get the best" for their infant. While the notion that the more something costs, the better it is may be valid at times, there is no scientific evidence to support this claim with regard to infant formula. Instead, Dr. Barber's study helps clarify that infants will react similarly to store brand formulas,

even though they are less costly. In addition, the strict FDA regulations will ensure that all formulas, both national brand and store brand, will have the same minimum (and maximum) nutrient content, regardless of manufacturer.

Pediatricians should also be wary of any evidence that parents may be diluting formula in an effort to save costs. A 2012 article by Burkhardt and colleagues⁵ on food insecurity in urban clinics reported that formula stretching was a common practice, even among families that were receiving public assistance. Approximately 50% of the 144 caregivers surveyed noted that they did not believe that store brand formula was equivalent to national brand formula and nearly 60% stated that they would not use store brand formula. If a parent or caregiver is under the impression that national brand formula is better for their child, they may choose to pay more and then dilute their formula to make it last. This practice obviously poses a serious health risk to the infant as it reduces the caloric content and level of nutrients ingested and is associated with negative health consequences, including poor growth and nutrient deficiencies.⁶

It is essential that all parents/caregivers be advised to follow preparation instructions on the packaging and to never purposefully dilute or thin out formula. This practice is especially worrisome if parents/caregivers are choosing to dilute national brand formula instead of purchasing store brand formula on the basis of an unfounded belief that store brand formula is nutritiously inferior. Of course, some parents and caregivers may not follow the directions on the can, and can be accidentally diluting formula. In either case, it may be appropriate for pediatricians to make a standard practice of always inquiring about formula mixing practices, and reminding parents and caregivers to always use recommended amounts and mixing technique.

CONCLUSION

As pediatricians, it is our responsibility to promote exclusive breastfeeding as the optimal feeding method for all young infants. However, we must also

recognize and be prepared for the fact that many infants will receive infant formula. As is well known, parents and caregivers may try several different types of formula over an infant's first year of life in an effort to find a brand that is best tolerated, available, and affordable. At least one study (reviewed earlier) has found that switching formulas is safe and well tolerated. In addition, a growing literature on food insecurity suggests that patients may opt to dilute national brand formula, rather than buy a less expensive option. As pediatricians, we must remain unbiased, as well as sensitive to our patients' practical needs. We also should help educate parents and caregivers, as consumers, that widely available, lower cost store brand formulas in the United States provide the same quality nutrition in large part because they must conform to the same FDA standards. In turn, families who choose a less expensive formula can be reassured that their infants will thrive.

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Author Disclosures

Dr. Lightdale reports that she is on the medical advisory board for Perrigo Company plc, and is an invited speaker for Mead Johnson & Company, LLC.

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