Food-package assignments and breastfeeding initiation before and after a change in the Special Supplemental Nutrition Program for Women, Infants, and Children^{1–3}

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ABSTRACT

Background: In 2009, the USDA implemented an interim rule that changed the prescribed foods in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Options for mother and infant dyads include a full breastfeeding package with no infant formula, a partial breastfeeding package with some infant formula, and a full formula package with a smaller postpartum food package for the mother. The changes were designed to encourage WIC mothers to choose breastfeeding for their infants.

Objective: The purpose of this study was to measure changes in the following 3 outcomes: WIC food-package assignments, WIC infant formula amounts, and breastfeeding initiation.

Design: We compared outcomes before and after implementation of the interim rule in a national random sample of 17 local WIC agencies (LWAs). The data source was administrative records for 206,092 dyads with an infant aged 0-5 mo in the sampled LWAs. Results: There were changes in WIC food-package assignments and infant formula amounts but no change in breastfeeding initiation. For dyads in whom the infant was in his or her birth month, the percentage of mothers who received the partial breastfeeding package fell from 24.7% (preimplementation) to 13.8% (postimplementation), the percentage of mothers who received the full breastfeeding package rose from 9.8% (preimplementation) to 17.1% (postimplementation), and the percentage of mothers who received the full formula package rose from 20.5% (preimplementation) to 28.5% (postimplementation). Conclusions: After the change, fewer WIC mothers of new infants received the partial breastfeeding package. More WIC mothers received the full breastfeeding package, but more mothers also re-Am J Clin Nutr doi: 10. ceived the full formula package. 3945/ajcn.112.037622.

INTRODUCTION

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)⁴ provides nutritious foods, nutrition education, breastfeeding support, and health-referral services to low-income mothers and their children. In 2007, the USDA published an interim rule that changed the composition and quantities of prescribed foods in WIC food packages (72 Federal Register 68965–69032). The implementation of the interim rule was complex and required cooperation between administrators in federal, state, and local WIC agencies (LWAs) over a period of many months. The interim rule took effect in 2009. This study evaluates the impact of the interim rule on WIC food-package assignments, WIC infant formula amounts, and breastfeeding initiation.

The WIC food-package revisions were based on recommendations from an expert panel of the Institute of Medicine, which published its consensus report in 2005 entitled *WIC Food Packages: Time for a Change* (1). The committee recommended several modifications to the WIC package that were designed to increase breastfeeding and improve nutrition. The committee recommended postponing the introduction of complementary foods (which are foods other than breast milk and infant formula), increasing the value of the WIC package for mothers who fully breastfeed (without getting an infant formula package for their infant), and reducing the amount of infant formula in a package for mothers who partially breastfeed.

A large body of research showed multiple benefits of breastfeeding for infant health, nutrition, immune-system function, and social and psychological development (2–6). WIC may affect breastfeeding in multiple ways. The provision of free infant formula could encourage formula feeding, whereas the foodpackage design and vigorous breastfeeding education efforts of WIC could encourage breastfeeding. Breastfeeding promotion and support are central tenets of the WIC program.

During the period 2000–2007, which was before the revision of the WIC package, breastfeeding rates for WIC participants were lower than for eligible nonparticipants. According to the National Immunization Survey 2007, the percentage of infants ever breastfed was 67.5% for WIC participants, 77.5% for eligible nonparticipants, and 84.6% for ineligible nonparticipants (7). Such cross-sectional participant and nonparticipant comparisons did not show cause and effect.

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⁴ Abbreviations used: LWAs, local WIC agencies; SNAP, Supplemental Nutrition Assistance Program; WIC, Special Supplemental Nutrition Program for Women, Infants, and Children.

Several studies have controlled for observable characteristics while measuring breastfeeding outcomes for WIC participants and nonparticipants. With data from the Ross Laboratories Mothers Survey for 1978–2003, Ryan and Zhou (8) estimated higher rates of breastfeeding initiation for WIC nonparticipants than for seemingly similar participants. Racine et al (9) estimated that WIC participants had a significantly greater hazard of cessation (HR: 1.50) compared with seemingly similar nonparticipants. Jacknowitz et al (10) estimated that the percentage of exclusive breastfeeding for \geq 4 mo was 5.9 percentage points lower for WIC participants than for comparable nonparticipants. Although these regression analyses still did not prove causation and could not control for unobservable characteristics, they suggested lower rates of breastfeeding in WIC participants.

WIC offers distinct food packages for mother-infant pairs (or dyads) based on breastfeeding status as follows: a full breastfeeding package with no infant formula, a partial breastfeeding package with some infant formula, and a full formula package with a smaller postpartum food package for the mother.

To encourage breastfeeding initiation, when the infant was in his or her birth month, the interim rule limited the amount of infant formula available to dyads who received the partial breastfeeding package to ≤ 104 oz. To encourage greater duration and intensity of breastfeeding, when the infant was aged 1–5 mo, the formula amount for these partial breastfeeding dyads was limited to no more than $\sim 45\%$ of the maximum formula amount. After implementation, if a dyad required more than these amounts of formula, the mother would receive the WIC full formula package, even if she was partially breastfeeding her infant. In this circumstance, with the full formula package, the mother's food package ends when the infant is 6 mo old. By contrast, the benefits of the partial breastfeeding package for the mother last throughout the infant's first year of life.

These changes affected the economics of package choice from the mother's perspective. Before implementation, the estimated average market value was \$668 for the full breastfeeding package, \$1669 for the partial breastfeeding package, and \$1380 for the full formula package; hence, the partial breastfeeding package had the highest value. After implementation, the estimated average market value was \$1028 for the full breastfeeding package, \$1130 for the partial breastfeeding package, and \$1345 for the full formula package; hence, the full formula package had the highest value (11).

SUBJECTS AND METHODS

The study used a pre and post research design, which compared outcomes before and after implementation of the interim rule. For most LWAs, the implementation month was October 2009, but some LWAs had a different implementation month earlier in 2009. The analysis months in this study were enumerated relative to the implementation month in a consistent fashion for all LWAs as follows: analysis months 1–3 referred to the 3 mo before implementation, and analysis months 4–12 referred to the 8 mo after implementation. The transitional analysis months 3–4, just before and after the implementation date, were excluded in preimplementation and postimplementation comparisons. In some analyses, multivariate regression models were used to control for explanatory variables that may have changed, but the research design had no control group. A pre and post research design without a control group did not account for all environmental changes that coincided in time with the implementation of the interim rule. In this study, because the policy treatment appeared sufficiently strong, and the time periods before and after implementation appeared sufficiently close, this limitation seemed acceptable. Staff from state and local agencies reported that the changes were implemented in full by the planned implementation date. If we observed changes in outcomes between the preimplementation and postimplementation periods, we could not be sure of causation, but the adoption of the interim rule was a leading candidate explanation.

Subjects

For this article, we used WIC administrative records from 17 LWAs in 10 states (California, Florida, Georgia, Idaho, Illinois, Minnesota, Rhode Island, Tennessee, Texas, and Utah). The LWAs were sampled from the universe of the 1885 LWAs in the United States. The original study design called for a stratified random sample of 16 LWAs. These 16 LWAs were randomly selected with probability proportional to size, whereby size was measured as the number of pregnant women served. Because of complications in fielding a related participant survey (12), the results of which were not used in this article, one of the sampled LWAs was replaced by an adjacent LWA. Hence, the administrative records used here were available for all 17 LWAs (including both the originally sampled LWA and its replacement).

Within the sampled LWAs, extracts from administrative records provided information about food packages, infant formula amounts, and breastfeeding initiation for all 206,092 dyads with infants aged 0-5 mo before and after implementation of the interim rule. In the preimplementation period, the sample was 50% Hispanic, 23% non-Hispanic black, and 10% white; 29% of subjects participated in the Supplemental Nutrition Assistance Program (SNAP), which was formerly known as the Food Stamp Program; and the mean household income was 67% of the federal poverty standard. These descriptive characteristics were not significantly changed in the postimplementation period. Sampled LWAs, in comparison with the population of WIC mothers as reported in the data from 2008 on WIC participant characteristics (12), had a higher percentage of Hispanic mothers (55.2% compared with 44.8%, respectively), a lower percentage of white, non-Hispanic mothers (15.7% compared with 27.0%, respectively), and a higher level of poverty (<100% federal poverty level) (69.6% compared with 64.0%, respectively). Household size, program participation, and breastfeeding initiation rate were comparable.

Outcome measures

Mother's food package

A 5-category variable described the WIC food package issued to the mother in the dyad. This variable was constructed by using the following 2 types of information in the administrative records: the certification status of the mother (pregnant, breastfeeding, or postpartum) and the specific food quantities that a dyad received, which were used to determine the federal food-package number (V, VI, and VII). The first 3 categories were as follows: *1*) full breastfeeding (received package VII), *2*) partial breastfeeding (received package V and was certified as breastfeeding), and *3*) full formula (received package VI). Two less common categories were 4) pregnant (received Federal Package V and was still certified as pregnant, typically for a short period after the infant's birth for a mother who had participated in WIC while pregnant) and 5) not in WIC (the mother was not recorded as having received a WIC food package).

Infant formula amount

First, a uniform measure of the prescribed amount of infant formula was based on quantities and forms (ready-to-feed, powder, or concentrate) as reported in the administrative records and then converted to fluid ounces (mL). Second, we defined a 4-category variable by using the postimplementation limit for the partial breastfeeding package. For a dyad with an infant in his or her birth month, the mutually exclusive categories were *I*) no formula, 2) low formula (≤ 104 oz; 3076 mL), 3) high formula (≤ 800 oz; 23,655 mL), and 4) maximum or nearly maximum formula amount (> 800 oz; 23,655 mL). For a dyad with an infant aged 1–3 mo, the postimplementation limit for the partial breastfeeding package was higher, and thus, the upper threshold for the low-formula category differed as follows: 2) low formula (≤ 364 oz; 10,765 mL).

Breastfeeding initiation

The binary breastfeeding-initiation variable indicated whether the infant in the dyad had ever been breastfed, according to mother's report at the time of WIC certification. Mothers were asked by the WIC program whether they were currently breastfeeding or whether they had ever tried breastfeeding. To be sure of noting all breastfeeding initiators, this study classified a dyad as having initiated breastfeeding if the administrative records showed that the infant was currently being breastfed, was breastfed in an adjacent month, or had ever previously been breastfed.

Analysis methods

Analyses included univariate preimplementation and postimplementation comparisons and multivariate analysis. In the multivariate analysis of breastfeeding-package choices, logistic regression models were adjusted for the following covariates: household income relative to the federal poverty standard, mother's race-ethnicity (Hispanic, non-Hispanic black, non-Hispanic white, and other), program participation (SNAP and cash assistance), household size, mother's employment, and mother's highest level of education. In all analyses, sampling weights were used to account for the LWA's probability of selection. With the use of complex survey procedures in the SAS statistical package (SAS 9.2; SAS Institute Inc), all SEs were adjusted for the LWA-level clustering in the complex sampling design, and the estimates were nationally representative. In addition to the main analyses, a post hoc analysis measured breastfeeding-initiation rates separately to compare dyads in whom the mother had participated in WIC while she was pregnant with dyads in whom the mother joined WIC after the infant's birth.

Data analyses were conducted with SAS 9.2 software (SAS Institute Inc). The study was reviewed and approved by the Institutional Review Board of Abt Associates Inc.

RESULTS

WIC food-package assignments

After implementation of the interim rule, fewer WIC mothers were assigned the partial breastfeeding package, whereas more mothers were assigned to the full breastfeeding and full formula packages (**Figure 1**). For dyads or partial dyads in whom the infant was in his or her birth month, the percentage of mothers who received the partial breastfeeding package fell from 24.7% (preimplementation) to 13.8% (postimplementation). The percentage of mothers who received the full breastfeeding package rose from 9.8% (preimplementation) to 17.1% (postimplementation), and the percentage of mothers who received the full formula package rose from 20.5% (preimplementation) to 28.5% (post-implementation).

Dyads with infants aged 1–2 mo showed the same general pattern that was observed for dyads with infants in their birth month (ie, greater use of the full breastfeeding package, less use of the partial breastfeeding package, and greater use of the full formula package) (Figure 1). However, in dyads with infants who were 3–5 mo old, the use of the full breastfeeding package was nearly the same before and after implementation of the change. Thus, the increased use of the full breastfeeding package after implementation was observed for dyads with infants aged 0–2 mo but not for dyads with infants aged 3–5 mo.

Multivariate analysis reaffirmed these results while other potential explanatory variables were constant. Explanatory variables that might have affected the odds of having the full breastfeeding package are shown in Table 1. As expected from the univariate results, dyads in the postimplementation period were estimated to be more likely to have had the full breastfeeding package than were dyads in the preimplementation period (OR: 2.564). Compared with the reference category (Hispanic), non-Hispanic black respondents were less likely to have had the full breastfeeding package (OR: 0.686), and non-Hispanic white residents were more likely to have had the full breastfeeding package (OR: 1.600), with all other explanatory variables in the model controlled for. Higher-income respondents were more likely to have had the full breastfeeding package (OR: 1.002 for each percentage-point increase in income relative to the poverty standard), with other explanatory variables controlled for. Participants in the SNAP were less likely than nonparticipants to have had this WIC food package (OR: 0.763), with other explanatory variables in the model controlled for.

Explanatory variables that might have affected the probability of being assigned the full formula package are also shown in Table 1. Again, as expected from the univariate results (Figure 1), mother-infant dyads in the postimplementation period were significantly more likely to have had the full formula package (OR: 1.443) than were dyads in the preimplementation period.

WIC infant formula amounts

According to some but not all preimplementation and postimplementation comparisons, infant formula amounts also changed after the interim rule was implemented. When measured as a continuous variable in dyads with infants in the birth month, the mean formula amount increased significantly from 546.8 fluid oz

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FIGURE 1. Food packages issued to new mothers by age of infant. The sample included administrative records of all dyads with infants aged 0–5 mo. Analysis months 1–2 were before implementation, and analysis months 5–12 were after implementation. Preimplementation sample sizes were as follows: infants aged 0 mo (n = 18,864), infants aged 1 mo (n = 21,896), infants aged 2 mo (n = 21,701), infants aged 3 mo (n = 21,672), infants aged 4 mo (n = 22,477), and infants aged 5 mo (n = 22,996). For postimplementation, sample sizes were as follows: infants aged 0 mo (n = 69,387), infants aged 1 mo (n = 83,845), infants aged 3 mo (n = 93,396), infants aged 4 mo (n = 95,359), and infants aged 5 mo (n = 96,913). *****Statistical significance of differences between preimplementation and postimplementation (chi-square test): **P < 0.01, ***P < 0.001. ¹Mothers with infants certified for WIC, ²Mothers who were not recertified postpartum but who had infants who had been certified. Post, after implementation; Pre, before implementation; WIC, Special Supplemental Nutrition Program for Women, Infants, and Children.

(16,171 mL) before implementation to 559.6 fluid oz (16,549 mL) after implementation (t = 4.36, P < 0.001). When measured as a categorical variable (**Figure 2**), again in dyads with infants in the birth month, the preimplementation and postimplementation difference was not statistically significant ($\chi^2 = 5.108$, P = 0.16). The

estimated proportions of infants who received no formula were 12.2% (preimplementation) and 19.7% (postimplementation). The estimated proportions of infants who received the maximum or nearly the maximum formula amount were 49.4% (preimplementation) and 56.4% (postimplementation).

TABLE 1

Factors associated with the receipt of the full breastfeeding package and full formula package in the birth month^I

	Outcomes		
	Received full breastfeeding package	Received full formula package	
After implementation	2.567 (2.410, 2.734)***	1.444 (1.385, 1.505)***	
Race-ethnicity (reference: Hispanic)			
White	1.600 (1.478, 1.731)***	1.325 (1.255, 1.401)***	
Black	0.686 (0.638, 0.738)***	1.294 (1.238, 1.353)***	
Other	0.802 (0.708, 0.909)**	1.495 (1.380, 1.620)***	
Income (percentage of federal poverty level)	1.002 (1.001, 1.002)***	0.998 (0.997, 0.998)***	
Program participation			
SNAP	0.765 (0.714, 0.819)***	1.322 (1.263, 1.385)***	
TANF	0.886 (0.802, 0.980)*	1.274 (1.177, 1.378)***	
Household size	1.013 (0.998, 1.029)	1.037 (1.026, 1.048)***	
Total sample size (n)	77,123	77,123	
Sample size who received the package (n)	15,404	22,623	

¹ All values are ORs; 95% CIs in parentheses. The sample included administrative records of all dyads with infants in the birth month. Analysis months 1–2 were preimplementation, and analysis months 5–12 were postimplementation. *******Statistical significance of the relation between each explanatory variable and outcome (Wald's chi-square tests from logistic regression analyses): *P < 0.05, **P < 0.01, ***P < 0.001. SNAP, Supplemental Nutrition Assistance Program; TANF, Temporary Assistance for Needy Families Program.



FIGURE 2. Infant formula amounts issued for infants in the birth month. The sample included administrative records of all dyads with infants in the birth month in analysis. Analysis months 1-2 were preimplementation (n=17,597), and analysis months 5-12 were postimplementation (n = 62,427). With the use of a chi-square test (P = 0.16), the preimplementation and postimplementation difference was not significant at conventional levels. Infant formula amounts were expressed as the following 4 categories: 1) no formula, 2) low formula [104 oz (3075.6 mL), which is the postimplementation partial breastfeeding limit for the birth month, or less], $\hat{3}$) high formula [more than the postimplementation partial breastfeeding limit of 104 oz (3,075.6 mL) but <800 oz (23,658.8 mL)], and 4) the maximum or nearly maximum formula amount of 800 oz (23,658.8 mL) or more. The actual formula amount provided to a dyad could range from 0 to 806 oz (0-23,836.3 mL) in the preimplementation period and from 0 to 884 oz (0-26,143.0 mL) in the postimplementation period. Post, after implementation; Pre, before implementation.

Breastfeeding initiation

As measured in administrative records, the breastfeeding initiation rate for WIC participants was essentially unchanged at 65.5% (preimplementation) and 65.1% (postimplementation) (**Table 2**). Overall rates of breastfeeding initiation appeared quite stable even as WIC package assignments changed.

A post hoc analysis investigated these rates of breastfeeding initiation separately for dyads in which the mother had participated in WIC during pregnancy and for dyads in whom the mother had not participated in WIC during pregnancy. In dyads with an infant in the birth month and a mother who had not been in WIC during pregnancy, 53.9% (preimplementation) and 55.3% (postimplementation) of mothers initiated breastfeeding. By contrast, in dyads with an infant in the birth month and a mother who had been in WIC during pregnancy, 67.6% (preimplementation) and 65.8% (postimplementation) of mothers initiated breastfeeding. Consistent with the results in Table 2, the preimplementation and postimplementation changes were not significant. However, differences across previous participation status while pregnant were significant (P < 0.01).

DISCUSSION

In this article, we evaluated the impact of regulatory changes on WIC package choices, infant formula amounts, and breastfeeding initiation. The results for WIC food-package choices suggested a move away from intermediate WIC packages and toward the 2 extremes (full breastfeeding or full formula). The changes in package choices and infant formula amounts did not generate any corresponding change in breastfeeding-initiation rates.

In a pre and post research design, it is generally helpful to have a short interval between the 2 time periods, which limits the extent to which unrelated changes in the larger environment can confound results. However, it is still possible that rapid changes in the US economy in 2009 could have influenced WIC package choices. Also, whereas the interim rule was in effect on schedule in all local agencies selected for the study, the process was neither immediate nor homogeneous. Interviews with state and LWA staff indicated that some aspects of policy changes and breastfeeding promotion were discussed with participants even before the formal implementation date. These interviews also indicated that WIC participants typically were issued new food packages at their recertification appointments, which could have taken as long as 3 to 6 mo after a pregnancy certification, or at a quarterly voucher pickup. Moreover, after implementation, administrative records indicated some assignments of infant formula amounts that appeared higher than we expected on the basis of the new limits for participants who received the partial breastfeeding package. This pattern may have reflected data limitations, such as our inability to determine whether infant formula amounts were changed partway through a month, but it may also indicate that LWAs were still learning the new rules in the postimplementation months or that LWAs sometimes allowed exceptions to the formal limits.

An objective of the policy changes was to encourage adoption of the full breastfeeding package and to promote breastfeeding. However, the changes in package options could, in principle, have multiple effects. First, even if infant feeding choices are predetermined or fixed, the policy change could have a reclassification effect that leads fewer cases to be assigned partial breastfeeding status and more cases to be assigned full formula status, without greatly influencing actual breastfeeding behaviors in either direction. A mother who relies principally on infant formula, supplemented by breastfeeding, could have been classified as partial breastfeeding before implementation and full formula after implementation. In this case, there would have been a change in package assignments without large effects on breastfeeding outcomes. Second, the policy change could have an incentive effect, with ambiguous potential implications for breastfeeding promotion. A shift from the partial breastfeeding package to the full formula package would seem like bad news for breastfeeding promotion, whereas a shift from the partial breastfeeding package to the full breastfeeding package would seem like good news for breastfeeding promotion.

The evidence in this article suggests that the preimplementation and postimplementation differences in WIC package assignments do not merely reflect the reclassification effect alone, for 2 reasons. First, this effect could, in principle, explain a shift from the partial breastfeeding package to the full formula package, but it cannot explain the modest increase we observed in the proportion of dyads whose mother received the full breastfeeding package (Figure 1). Second, the preimplementation and postimplementation changes in the distribution of package assignments were accompanied by changes in mean infant formula amounts, which could not be explained by reclassification alone.

Breastfeeding-initiation rates appeared very stable in this study, even as WIC package assignments and infant formula amounts changed (Table 2). The initiation decision may have

TABLE 2	
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Breastfeeding	initiation	overall	and by	mother's	food	package'

	Preimplementation	Postimplementation	Difference	Р
	%	%	%	
Overall	65.5	65.1	-0.4	0.580
Mother's food package				
Full breastfeeding package	99.6	99.3	-0.3	0.035*
Partial breastfeeding package	96.5	96.5	0.1	0.895
Full formula feeding package	46.7	55.4	8.7	< 0.001***
Pregnant package ²	67.3	64.8	-2.5	0.012*
Did not receive WIC ^{3,4}	47.7	45.8	-1.9	0.271
Total sample size (n)	80,658	77,534	—	_

^{*l*} Sample included administrative records of all dyads with infants aged 0–5 mo. Analysis month 2 was preimplementation, and analysis month 10 was postimplementation. *****Statistical significance of differences between preimplementation and postimplementation (chi-square test): *P < 0.05, ***P < 0.001.

² Mothers who have not recertified postpartum but who have infants who have been certified.

³WIC, Special Supplemental Nutrition Program for Women, Infants, and Children.

⁴ Mothers with infants certified for WIC.

been strongly influenced by the mother's information and environment during pregnancy and at the time of birth but more weakly influenced by anticipated advantages in the future of one WIC package over another when the infant was 1–5 mo old. It is possible that WIC could have more strongly influenced breast-feeding initiation for mothers who participated in WIC while pregnant than for mothers who enrolled after the infant's birth.

The interim rule sought to address the challenging policy dilemma of balancing breastfeeding promotion with the provision of safe and appropriate food for infants who are formula fed. The WIC food package is only one of many factors that shape breastfeeding decisions in WIC mothers. The results of the study raise the question of what other steps can be taken, singly or in combination, toward more vigorous breastfeeding promotion.

A first option is to investigate an additional increase in the economic value of the full breastfeeding and partial breastfeeding packages relative to the full formula package. Although the interim rule shifted the package incentives somewhat toward making the full breastfeeding package more valuable, the full formula package continues to have the highest market value (11). Compared with before implementation, this study showed that more dyads had mothers who received the full formula package after implementation, and most of these full formula amount. Within the current structure of WIC's overall program design, WIC could investigate an additional reduction of the food content and economic value of the full formula package while increasing the food content and economic value of the full formula package.

A second option is to assess additional improvements in staff training and efforts of breastfeeding promotion at the state and LWA levels. The implementation of the interim rule is just one event in an ongoing process of promoting breastfeeding through WIC. Besides educating mothers about the package changes, an expansion of breastfeeding education programs may offer another approach to breastfeeding promotion. Such programs cover the benefits of exclusive breastfeeding, especially during the first month postpartum. This study showed considerable diversity across LWAs in breastfeeding promotion, package assignments, and infant formula amounts and breastfeeding outcomes. For example, although the interim rule allows for the provision of ≤104 oz (3076 mL) of formula for partial breastfeeding dyads with infants in their birth month, LWAs are encouraged routinely to provide no formula to such dyads. The Food and Nutrition Service of the USDA anticipates that, over time, fewer breastfeeding WIC dyads will be provided any formula in the birth month. According to the interim rule (72 Federal Register 68965–69032), the "[Food and Nutrition Service's] view is that the provision of a small amount of formula for certain infants in the first month of life is a temporary option that State agencies may invoke to assist breastfeeding mothers who may otherwise choose to fully formula feed." As infants reached 1–5 mo of age, approximately one-half of LWAs in this study responded to requests from mothers for additional formula by addressing the concerns of mothers through counseling before issuing a new package. Such efforts could be extended to more LWAs.

A third option, motivated in particular by the stability of the breastfeeding-initiation outcomes after implementation of the interim rule, is to investigate additional outreach to pregnant women and mothers in the very first days postpartum. WIC could explore investing even more heavily in the education of pregnant women and new mothers about the relative merit of the full breastfeeding package. Through outreach efforts, and perhaps even through changes in the pregnancy WIC package, the WIC program could seek to recruit eligible pregnant women earlier in their pregnancies.

This research was conducted under the oversight of Pat McKinney, Joseph Robare, Jay Hirschman, Ted Macaluso, and Patti Mitchell. Nancy Burstein led the development of the research design and analysis plan; Alyssa Rulf Fountain and Don LaLiberty obtained and processed administrative data; KP Srinith developed the sample frame and constructed weights; and Jacob Klerman, Yvonne Bronner, Miriam Labbok, Rafael Perez-Escamilla, Julie Reeder, and Shannon Whaley offered influential comments on draft results.

The authors' responsibilities were as follows—AC: directed the project; and all authors: conducted the analysis and wrote the article. None of the authors had a conflict of interest.

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