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**Analysis of Policy Changes Aimed at Breastfeeding Promotion as Part of the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC): Making It Work For Michigan**

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## **Abstract**

In 2011, changes to the specific type, timing, and amount of food benefits to mothers in the WIC program were rolled out nationwide. These were the first substantive changes since 1980 and were designed to increase breastfeeding initiation rates and extend breastfeeding duration among WIC program participants. Effectiveness of the program changes have been mixed and variable by geographic area of the U.S., however. In Michigan, breastfeeding duration has not increased. This analysis examines the implementation of the national policy change at the state level for Michigan and suggests additions to program to specifically target duration breastfeeding by Michigan mothers.

## Overview

The goal of this work is to comprehensively evaluate the content of a policy to alter the food assistance (aka “food package”) assigned to recipients of the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) in the United States. The title and number of this federal legislation are: *7 CFR Part 246 [FNS–2006–0037] Special Supplemental Nutrition Program for Women, Infants and Children(WIC): Revisions in the WIC Food Packages; Final, passed in March 2014*<sup>1</sup> This rule represents the only major revisions to the food packages in the WIC program since 1980.<sup>1</sup> The changes were made to reflect current nutrition science; specific goals included: promoting successful breastfeeding, providing a wider variety of foods, and accommodating cultural food preferences of WIC recipients.<sup>1,3</sup> This policy analysis will focus on the effectiveness and appropriateness of food package changes to meet the goal of supporting breastfeeding for at least six months postpartum, specifically in context of the state of Michigan.

## Description

The WIC program was established in 1972 to protect low-income women and their children through age five from malnutrition.<sup>2,4-6</sup> Administered by the United States Department of Agriculture’s Food and Nutrition Service (FNS), it is the third largest food assistance program in the nation, smaller only than the Supplemental Nutrition Assistance Program (SNAP) and the National School Lunch Program.<sup>6</sup> In 2015, almost half of U.S. infants (~4 million infants) participated in WIC and federal program costs were approximately \$6.2 billion dollars.<sup>7</sup> The income limitation for WIC program participation is set at 185% of poverty, or approximately \$52,000 annually for a family of five in 2015.<sup>8</sup> In September 2003, the FNS contracted with the Institutes of Medicine (IOM) to review nutrition needs of WIC participants and evaluate the

existing WIC food packages in meeting those needs as well as to propose cost-neutral recommendations for changes to the food packages.<sup>5</sup> The resulting changes were published in the Federal Register in December 2006 as an interim rule that all WIC agencies nationwide were required to implement by October 1, 2009.<sup>5</sup> This interim rule permitted implementation of food package changes while the FNS reviewed public comment on the changes, which were eventually incorporated in the revised rule, published on March 4, 2014.<sup>1,5</sup>

In their review, the IOM-recommended WIC food package changes to increase breastfeeding among participants of the program in response to a growing body of evidence on the benefits of breastfeeding to both women and infants, particularly those with low-income as are targeted by the WIC program.<sup>3,9-17</sup> This group is both at high risk of poor birth outcomes (e.g. low birthweight, preterm birth, infant mortality) and is less likely to initiate breastfeeding and maintain breastfeeding to six months exclusively.<sup>17</sup> Both the American Academy of Pediatrics (AAP) and World Health Organization (WHO) recommend that infants receive only breastmilk (“exclusive breastfeeding”) for 6 months and continue to receive breastmilk as their primary source of nutrition through 12 months of age.<sup>12</sup> Additionally, the Healthy People 2020 initiative has recognized breastfeeding as a priority area and set national goals for 84% breastfeeding initiation and 61% breastfeeding to six months.<sup>14</sup>

Increases in breastfeeding among mothers and infants at risk for poor birth outcomes has the potential to reduce the severity of morbidity associated with low birthweight and preterm births, such as cognitive deficits and susceptibility to infectious diseases, particularly when breastfeeding is maintained for at least six months.<sup>10,16</sup> Breastfeeding for six months or more also is associated with lower risk of infant mortality from causes such as Sudden Infant Death Syndrome (SIDS) and Respiratory Syncytial Virus.<sup>18</sup> Overall, breastfeeding to six months

without supplementation and from 6 months through the child's first birthday with complementary foods is associated with lower risk of infant mortality as well as morbidity from both infectious and chronic disease.<sup>3,10,12-13,16</sup>

## **Methods**

This analysis uses a framework specifically for health policy analysis.<sup>19</sup> This framework, published in 2005 by Collins, was chosen for its emphasis on tying health policy to actual health outcomes. It also was selected because, while it acknowledges the political context of health policies, its focus is on evaluation of the policy related to the outcome of changes in health behavior.<sup>19</sup> National databases of peer-reviewed published literature were searched, including Scopus, PubMed, and MedLine. Specific search terms included: WIC, Breastfeeding, Lactation Support, Trans-theoretical Model, and Health Behavior Change. Finally, specific health outcomes and demographic information were gathered from publicly available, secondary data sources such as the Centers for Disease Control and Prevention, the Michigan Department of Health and Human Services vital records' data, and breastfeeding data published by the Michigan WIC program.

## Evaluation

Despite the recommendations from AAP and WHO, breastfeeding duration in Michigan falls short of national rates and recommendations.<sup>14,16</sup> In 2015, although 84% of women initiated breastfeeding statewide, by four weeks postpartum the percent still breastfeeding had fallen to 39%, and by six months only 10% of women reported breastfeeding.<sup>16</sup> Additionally, part of the population demographic served by the WIC program (young, low-income mothers from minority racial groups) is also the least likely demographic statewide to initiate breastfeeding and to breastfeed exclusively for at least three months, per Michigan Pregnancy Risk Assessment Monitoring (PRAMS) 2008 and Centers for Disease Control 2012 estimates.<sup>12,16</sup>

From the interim and final rules published in the Federal Register, a list of the breastfeeding-related changes made to the WIC food packages is discussed below.<sup>1</sup>

- The WIC program may no longer routinely provide infant formula to partially breastfeeding infants during the first month after birth.

This change was made to reflect current science about establishment of breastfeeding through supply and demand relationship in a mother-infant dyad.<sup>11</sup> Supplementing with formula in the first month of breastfeeding, while supply is being established, is associated with reduced breastmilk production and ability of a mother to adequately provide enough breastmilk to support her infant's growth during the first year of life.<sup>11</sup> WIC staff members in Michigan are able to issue up to one 104-ounce can of formula to mothers on the partially-breasted plan during the first month postpartum when there is cause to do so based on the infant's growth or health of the mother or infant.<sup>4</sup>

- For women in the first year postpartum, food packages are determined by the mother's breastfeeding status: exclusively breastfeeding, partially (mostly) breastfeeding, or formula feeding.<sup>1</sup>

Previous to the policy change, the WIC program encouraged staff to provide the least amount of formula possible to infants that were breastfeeding, but no formal gradations of mother-infant dyads were built into the program.<sup>1,5</sup> In response to increasing evidence on the benefits of breastmilk for optimal health, the three categories of food packages were implemented in 2009 with the intention to increase breastfeeding among WIC participants.<sup>1,5</sup> In the years since implementation, however, these changes have not produced an increase in breastfeeding. These revised categories were designed to provide additional foods for breastfeeding mothers as incentives, better meet nutritional needs of a breastfeeding mother, and provide less infant formula to partially breastfed infants than to infants who receive the fully formula fed package.<sup>1,4,5</sup> These WIC food package changes extended the length of time that breastfeeding mothers are eligible to receive food benefits for themselves to one year, while formula-feeding mothers receive food for six months post-partum only.<sup>4</sup> Additionally, the infant foods provided are set at a higher amount for breastfed infants from six months to one year of age compared to formula-fed infants.<sup>1,4</sup> See Tables 1 and 2 of the Appendix for complete food package contents for the three food package types under the new rule.

Health behavior change research, particularly that using social ecological and trans-theoretical model (stages of change), indicates that building motivation in the pre-action stage is most effective in promoting lasting adoption of new health behaviors, particularly among lower socioeconomic status individuals.<sup>22</sup> Similarly, research on breastfeeding rates shows that infant feeding decisions are most often made during the pregnancy period, that earlier decision-making

is associated with higher breastfeeding rates, and that exclusive breastfeeding is increased when breastfeeding education and support begin prenatally.<sup>20,21,23</sup>

In contrast, the WIC policy food package changes are largely based on building motivation to breastfeed using financial incentives. This technique is not supported by theories of health behavior change<sup>22</sup> or by published evidence, such as a recent study that concluded that building motivation to breastfeed using financial incentives related to the elevated cost of formula had no effect on mothers' decisions to breastfeed.<sup>23</sup> A 2016 systematic review of the WIC food package changes and another large national study evaluating the effectiveness of the WIC program at increasing breastfeeding initiation and duration have found mixed effects on breastfeeding initiation or duration as a result of either the interim or final rule food package changes.<sup>26</sup> Another barrier to the policy change's effectiveness may be that the added benefits in food package amounts provided to mothers and their infants do not take full effect until six months postpartum, when the infant food package is greater for breastfed infants and the mother's food benefits continue for those still breastfeeding.<sup>1,4</sup>

In Michigan, WIC program data on breastfeeding shows an increase in initiation but not duration of breastfeeding since implementation of the WIC food package changes.<sup>18</sup> Overall breastfeeding initiation increased from 51% in Spring 2007 to 65% in Spring 2016.<sup>18</sup> There was no significant difference (considering a 95% confidence interval) in breastfeeding at six months post-partum over the same period; in Spring 2007, 10% of WIC participants were breastfeeding at six months and in Spring 2016 that proportion was 11%.<sup>18</sup>

## Discussion

Although the WIC program's stated intentions to increase breastfeeding rates and duration of breastfeeding among their participants is an important goal, the reward systems for breastfeeding set up through the food package changes have so far failed to significantly increase breastfeeding duration, both in Michigan and nationwide.<sup>18,26</sup> In published examples of broader increases in breastfeeding duration, such as in California, the WIC food package changes have been combined with additional services to support breastfeeding, such as increased WIC staff training, expanded prenatal education, and peer counseling.<sup>24</sup> The added benefits in food package amounts provided to mothers and their infants do not take full effect until six months postpartum, past the point when most WIC participants that have ever breastfed have already stopped doing so.<sup>1,18</sup> Considering these points, the following recommendations are proposed to improve the effectiveness of the WIC food package policy changes at increasing duration of breastfeeding among WIC participants in Michigan.

## Recommendations

1. Emphasize WIC enrollment of mothers early in pregnancy and provide prenatal education on breastfeeding in the first trimester, focused on benefits for women and infants, to motivate the decision to commit to breastfeeding in the pre-action phase. According to theories of health behavior decision-making, such as the trans-theoretical model (stages of change), strong motivation for a health behavior ("why-to" messages) must be provided prior to action messages ("how-to") to produce lasting change.<sup>22</sup> This guidance is appropriate to address the WIC program's goal of increasing the participants meeting the recommendation of exclusive breastfeeding to six months postpartum. In 2014, 55% of pregnant WIC participants enrolled

during their first trimester<sup>2</sup>; these women represent an opportunity to provide education on breastfeeding and to build a breastfeeding plan that incorporates the new food package changes early in gestation to improve chances of breastfeeding success.

2. Assign a peer breastfeeding counselor to each breastfeeding mother in the month prior to delivery and through the first three months postpartum. To further support breastfeeding mothers in the WIC target population, peer counselors from similar low-income backgrounds have the potential, based on evidence<sup>20,24-25</sup>, to be effective in providing support to women during the first several weeks of breastfeeding, the time when many women in the Michigan WIC program discontinue breastfeeding.<sup>18</sup> Meeting this recommendation in Michigan will require expansion of the peer counseling program through Michigan State University Extension or through grant funding from the FNS for peer counselors housed in the WIC clinics, particularly the expansion into more rural counties of Michigan that are currently without peer counseling.<sup>25</sup> In addition to reduced morbidity from disease that is predicted from higher rates of breastfeeding and longer duration, the formula-containing packages carry the highest-dollar cost to the WIC program.<sup>3</sup>

The recommended addition of peer counselors and expanded prenatal breastfeeding education would represent an added cost to WIC programs if adopted in Michigan. Currently, breastfeeding peer counseling is delivered in Michigan through a partnership between Michigan State University Extension and the Michigan WIC program.<sup>25</sup> This service is in place in 31 of Michigan's 85 counties, or less than half the counties in the state.<sup>25</sup> In 2014, there were approximately 60,000 Michigan WIC participant mothers that were pregnant or in the first year postpartum.<sup>2</sup> This represents a sizeable number of women to be covered by peer counseling programs in Michigan; however, the anticipated benefits of breastfeeding through reduced food package costs on the breastfeeding food packages as well as potentially reduced healthcare costs

and morbidity and mortality through the beneficial effect of breastfeeding have the potential to balance the financial burden to the state for this important preventative service.<sup>3</sup> Recent assessments of anticipated cost savings from increased breastfeeding are needed, however, a 2001 report using analyses from the late 1990s estimated a savings of between \$800-\$1,000 dollars annually to WIC programs per infant that is at least partially breastfed compared to formula fed.<sup>2,3</sup> The cost of expansion of the breastfeeding peer counselor program in Michigan could potentially be reduced through use of available grant funding from the Food and Nutrition Service specifically marked for states to expand peer counseling within the WIC program.<sup>2</sup>

Although preliminary data in Michigan suggests that breastfeeding initiation rates among WIC participants may have increased since the policy changes took effect, there could be confounders affecting that association, such as changes in societal attitudes toward breastfeeding and shifts in the overall economic environment over the past several years. The final rule on these WIC policy changes took effect less than 24 months ago<sup>1</sup>; longer-term effects of the change are still unknown.

The recommended additions proposed (peer counselors and expanded prenatal breastfeeding education) address these issues; increasing participant education of health benefits of breastfeeding would de-emphasize the purely financial incentive by building intrinsic motivation for the behavior as supported by trans-theoretical model of behavior change theory.<sup>22</sup> Additionally, the expansion of funds for breastfeeding peer counselors would enhance the availability and increase efficacy of breastfeeding support provided to mothers both prior to delivery and post-partum, by delivering information and encouragement in a relatable, non-threatening format.<sup>20,24,25</sup> By providing evidence-based resources beginning in pregnancy that build self-efficacy and intention to breastfeed, the WIC program would promote protection of the

vulnerable low-income mothers and infants it serves. From a public health ethics perspective focusing on the population-level benefit there is potential for significant health benefits to many infants and their mothers from breastfeeding. Additionally, there is no harm produced by the increase in food benefits to breastfeeding mothers, and no reduction of benefits to others, so the WIC policy change (and the additions proposed here) are justified.<sup>27</sup> In economic terms, the increased food packages to breastfeeding mothers are less costly than the formula-containing infant packages<sup>3</sup>, and are advantageous from the perspective of economic sustainability of the publicly-funded program as well the improved short and long-term health of program participants through the benefits of breastmilk<sup>17</sup>. Breastfeeding is a health behavior that often requires the combination of education, social support, and hands-on intervention to support, making it a challenge to address on a population-wide scale. The potential benefits of breastfeeding, however, justify states making significant efforts to achieve higher breastfeeding rates to support the current and future health of mothers and their infants.

Table 1. Maximum monthly allowance of supplemental food benefits for mothers, by feeding type, under the revised food package policy.<sup>2</sup>

	Partially breastfeeding (up to 1 year postpartum)	Fully formula-feeding (up to 6 months postpartum)	Fully breastfeeding, (up to 1 year postpartum)
Juice, single strength	144 fl. oz.	96 fl. oz.	144 fl. oz.
Milk	19 qt.	13 qt.	18 qt.
Breakfast cereal	36 oz.	36 oz.	36 oz.
Cheese	1 lb.	1 lb.	3 lb.
Eggs	1 dozen	1 dozen	2 dozen
Fruits and vegetables	\$11.00 in cash-value vouchers	\$11.00 in cash-value vouchers	\$11.00 in cash-value vouchers.
Whole wheat or whole grain bread	1 lb.	N/A	1 lb.
Fish (canned)	N/A	N/A	30 oz.
Legumes, dry <i>and/or</i> Peanut butter	1 lb. And 18 oz.	1 lb. Or 18 oz.	1 lb. And 18 oz.

Table 2. Maximum monthly allowance of supplemental food benefits for infants, by feeding type, under the revised food package policy.<sup>2</sup>

	Exclusively Breastfed	Partially Breastfed	Fully Formula Fed
	A: 0-5 mos.	A: First month C: 4-5 mo.	A: 0-3 months C: 6-11 months
	B: 6-11 mos.	B: 1-3 mo. D: 6-11 mo.	B: 4-5 months
WIC Formula	A: 0 B: 0	A: 104 fl oz.* ‡ B: 435 fl oz.* C: 522 fl oz.* D: 384 fl oz.*	A: 870 fl oz* B: 960 fl oz* C: 696 fl oz*
Infant cereal	B: 24 oz.	D: 24 oz.	C: 24 oz.
Infant fruits and vegetables	B: 256 oz.	D: 128 oz.	C: 128 oz.
Infant meats	B: 77.5 oz.		

\*Reconstituted powder formula. ‡ Maximum possible amount for partially breastfed infants; supplemental need will be evaluated at each WIC appointment on an individual basis.

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