Supporting Long-term Breastfeeding with the New WIC Food Packages

You Can Do It / WIC Can Help

Vermont 2009 WIC Special Project Grant
Final Report

Lynne Bortree Laurel Decher Karen Flynn
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VERMONT
AGENCY OF HUMAN SERVICES

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Contents

List of Figures

List of Tables

Acknowledgements

Vermont Department of Health: Central Office

Division of Maternal & Child Health

- Lynne Bortree, MS, WIC Nutrition Specialist, SPG Manager
- Donna Bister, Vermont WIC Director
- Tricia Cassi, IBCLC, Vermont WIC Breastfeeding Coordinator
- Karen Flynn, Vermont WIC Program Administrator
- Patrick Henry, Data Analyst
- Breena Holmes, MD, Maternal and Child Health Director

Division of Health Surveillance

- Laurel Decher, PhD, Chronic Disease Epidemiology Chief, SPG Social Scientist
- Moshe Braner, PhD, Public Health Analyst
- John Gauthier, MS, MCP, Vermont PRAMS Coordinator
- Caitlyn Dayman, MS, Public Health Analyst
- Erika Edwards, PhD, Public Health Analyst
- Jennifer Hicks, MS, Section Chief- Research, Evaluation & Epidemiology

Vermont Department of Health: Office of Local Health

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- Matt and Pam Heywood, Co-Principals, The Image Farm, Design and Marketing
- Andrea Grayson, EdD, The Grayson Group, Marketing Strategist
- Anya Koutras, MD, IBCLC, Colchester Family Practice
- Michelle Cangiano, MD, Family Practice Resident
- Marie Walsh, MD, Family Practice Resident
- Audrey Naylor, MD, DrPH
- PlainSpace Design, Web Designer
- Karen Pike, Photograher
- Amy Spangler, MN, RN, IBCLC

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Executive Summary

Project Overview

The Vermont 2009 Special Project Grant, Supporting Long-term Breastfeeding with the New WIC Food Packages, provided coordinated care for mothers at risk of poor breastfeeding outcomes.

The project was comprised of two interrelated interventions with the goals of improving exclusive long-term breastfeeding rates in Vermont's WIC mother/baby pairs (*You Can Do It*), and of strengthening WIC's reputation as a supporter of breastfeeding (*WIC Can Help*).

Social marketing was used to promote the new breastfeeding food packages and to highlight mothers' needs, before and after birth, for professional support and for referrals to community lactation resources.

YOU CAN DO IT *At prenatal and postpartum WIC visits, enrolled moms received screening and individualized counseling to increase knowledge about breastfeeding, identify support networks and build confidence.*

WIC CAN HELP *At detailing visits, WIC staff showed OB providers, family practitioners and pediatricians how WIC services can help mothers meet their breastfeeding goals.*

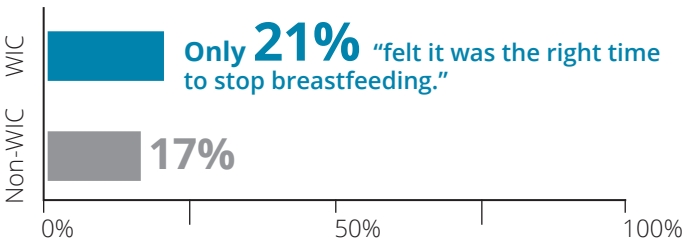
Rationale

Most prenatal Vermont WIC participants want to breastfeed. More than 73% of babies born to WIC mothers start out breastfeeding (2009 Pediatric Nutrition Surveillance System).

Rates of exclusive breastfeeding are much lower: one third of WIC mothers supplement with infant formula by the end of the first week postpartum.

Sadly, mothers face many challenges that often lead them to stop breastfeeding before they are ready. A high percentage of mothers participating in Vermont's Pregnancy Risk Assessment Monitoring System said they stopped breastfeeding before the time was right, indicating they did not meet their goals. (Figure A)

Figure A. Vermont PRAMS 2004-2006



"It was helpful just knowing I had support there (at WIC) when I needed it.

... that I could always go to them for questions about anything, about any of the food package, the breastfeeding, her in her 1st year of life, anything really. All together, they were a ton of help."

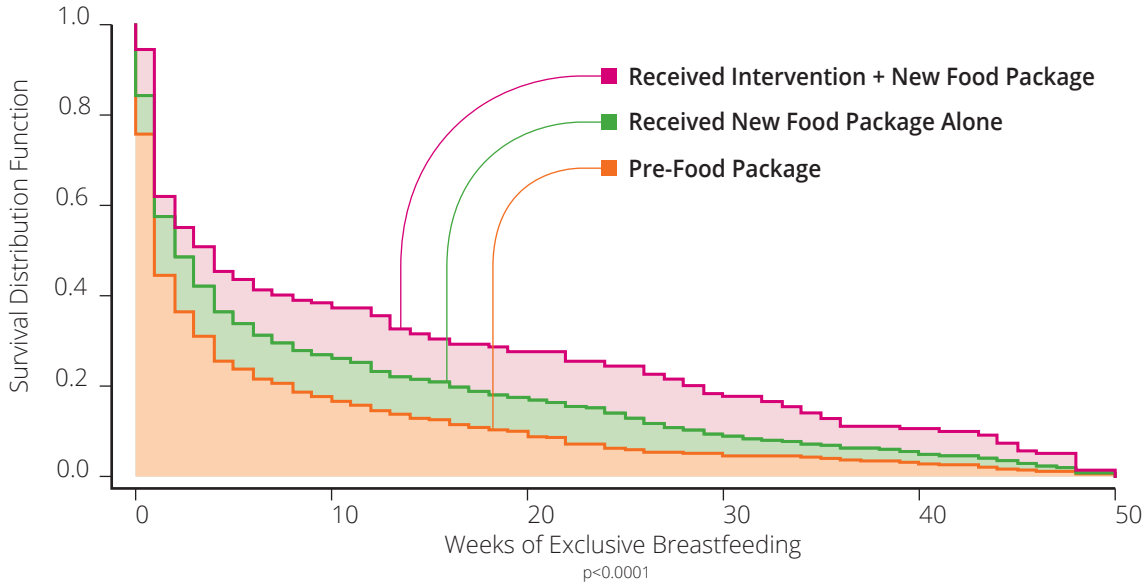
~ Study participant

Key Findings

Project plus New Food Package equaled more exclusive breastfeeding over time

More mothers who received the new WIC food packages and participated in the *You Can Do It* intervention breastfed their infants exclusively and for longer compared to 1) mothers who received only the new WIC food packages and to 2) mothers who received neither. These differences in exclusive breastfeeding persisted over time. (Figure B)

Figure B. Exclusive Breastfeeding Over Time



Project results exceeded the goal of a 10% increase in long-term breastfeeding rates

Significantly more mothers who participated in the intervention were exclusively breastfeeding at 4 weeks, 3 months and 6 months compared to mothers in the control group. (Figure C)

Significantly more mothers who participated in the intervention were exclusively breastfeeding at 4 weeks, 3 months and 6 months compared to moms who were eligible for the intervention but declined to participate in the study when it was offered. (Figure D)

Figure C. Exclusive Breastfeeding: Cases and Controls

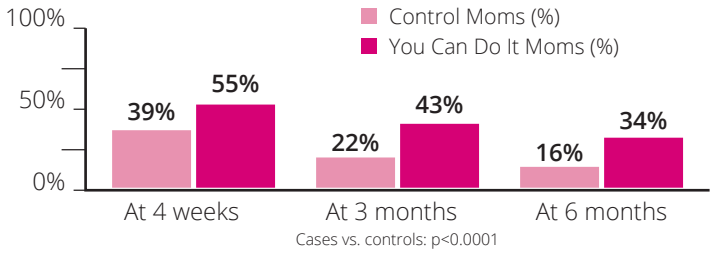
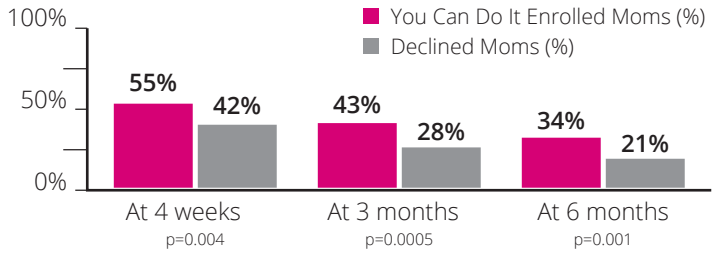


Figure D. Exclusive Breastfeeding: Enrolled and Declined



The 2009 Food Package Change increased long-term breastfeeding rates

Significantly more mothers at both study sites and non-study sites were exclusively breastfeeding at 4 weeks, 3 months, and 6 months after the new WIC food packages were implemented (p<0.001). (Figures E and F)

Breastfeeding rates in study sites were historically lower than non-study sites. After the food package change and interventions, study sites had nearly closed the gap in exclusive breastfeeding rates.

Figure E. Exclusive Breastfeeding for Eligible Moms at STUDY SITES

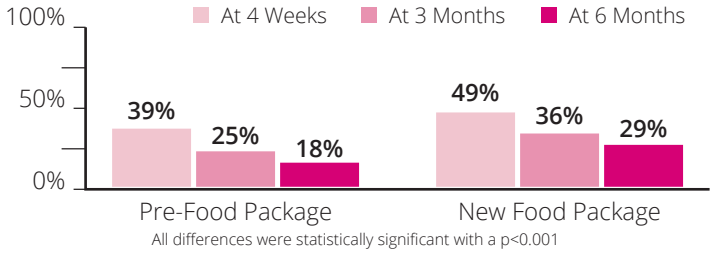
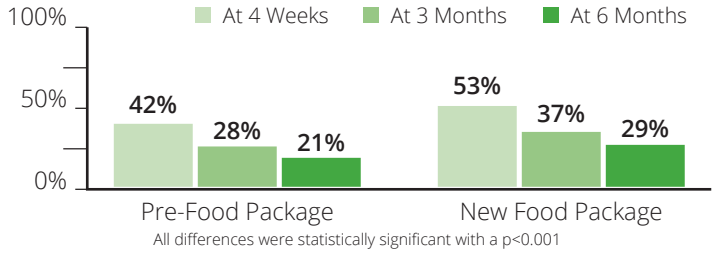


Figure F. Exclusive Breastfeeding for Eligible Moms at NON-STUDY SITES



WIC's reputation for supporting breastfeeding grew stronger

Qualitative data from interviews with physicians, WIC staff, breastfeeding peer counselors, and WIC mothers indicated generally favorable opinions of the social marketing messages and materials, with wide variations in which components were considered most valuable and effective. Additionally, pre/post opinion surveys conducted with WIC moms, WIC staff and physicians showed strong increases in favorable opinions of WIC. (Figure G)

Figure G. Pre/Post Opinion Survey

	Moms All Districts	Moms Study Districts	Staff All Districts	Providers
WIC's Food Package is an incentive to breastfeed	▲ ★	▲	▲ ★	▲ ★
WIC supports formula feeding more than breastfeeding	▼ ★	▼	▼ ★	▼
WIC helps moms meet breastfeeding goals	▲ ★	▲ ★	▲	▲

▲▼ Change at follow-up compared to baseline ★ Statistically significant

Social Marketing Materials

Checklists Plan for breastfeeding success prenatally and continue for baby's first few months and beyond

Detailing Packet For WIC Staff to use during site visits to providers

Buttons and Wristbands Proudly show support for and commitment to breastfeeding

The Hospital Experience* Features infant feeding plan

Comic Four moms plan to breastfeed, overcome challenges and discover amazing rewards

Website Project materials online healthvermont.gov/youcandoit

Videos Confidence building tips from a breastfeeding expert (DVD and online)

New WIC Food Packages* w/ Exclusive breastfeeding

Posters Quick tips and information about WIC services (series, 1 of 6 shown)

License to Breastfeed Summary of public and workplace breastfeeding laws

Magazine Inspiring mother/baby stories plus lactation consultant and peer counselor interviews

* Adapted with permission from the Texas WIC Program

Expert Recommendations

Ongoing

Routinely visit OB, Family and Pediatric providers in your area and strengthen professional supports for breastfeeding moms and babies.

1st Trimester

Screen moms for breastfeeding challenges; counsel moms to talk to family and friends about their breastfeeding goals.

2nd Trimester

Provide targeted counseling based on screening; counsel moms to talk to providers about their breastfeeding goals.

3rd Trimester / Breastfeeding Class

Teach moms about hospital practices that support breastfeeding; counsel moms to share infant feeding plan with hospital staff and birth support team; recommend moms contact WIC soon after birth for early breastfeeding support.

Birth and Beyond

Provide early support; refer moms to community lactation specialists, especially WIC breastfeeding peer counselors; Upgrade WIC food package to exclusive breastfeeding package.

Knowledge + Support + Confidence = Success

More Information

Contact: Lynne Bortree, MS, Vermont WIC Program lynne.bortree@ state.vt.us

CHAPTER 1.
You Can Do It: The WIC Mother/Baby Breastfeeding Study

Introduction and Background

Vermont Breastfeeding Rates

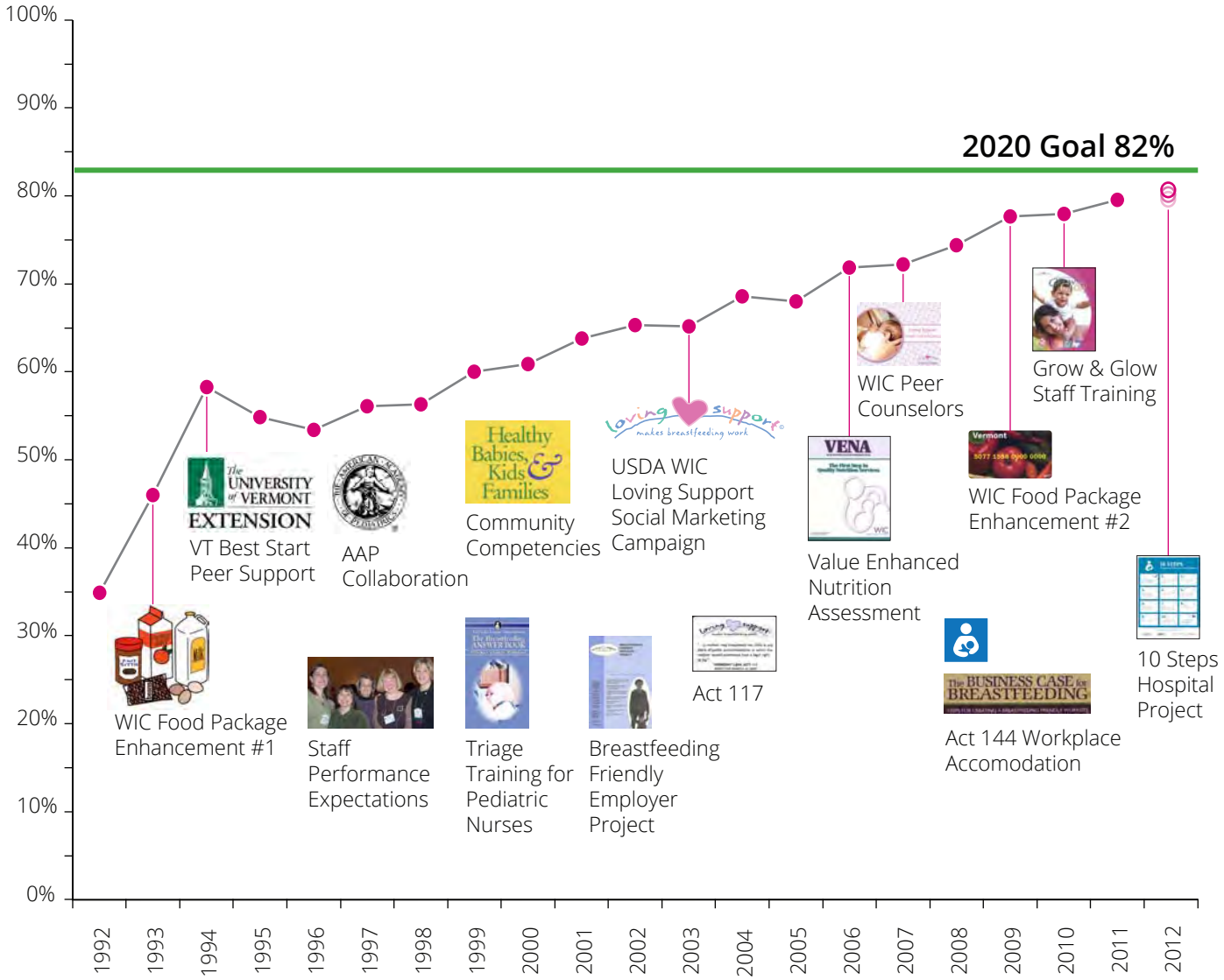
The majority of WIC mothers know breastfeeding is best, and most pregnant women state they intend to breastfeed. Prior to this project, 68% of pregnant women planned to breastfeed at their initial prenatal WIC appointment (2007 Vermont WIC Program). Breastfeeding intention correlates highly with initiation rates among Vermont WIC mothers, and 72 % of mothers initiated breastfeeding that same year (2007 Prenatal Nutrition Surveillance System).

The WIC program has committed numerous resources to strengthening breastfeeding outcomes and building a breastfeeding community. Over the past two decades Vermont WIC has initiated multiple projects that have helped breastfeeding initiation rates rise from 35% in 1992 to 78% in 2009. Figure 1 highlights some of the major state and federal initiatives that have positively impacted rates:

- The first enhanced WIC food package for breastfeeding mothers was implemented in 1993.
- Vermont adopted the "Using Loving Support to Build a Breastfeeding-Friendly Community" social marketing campaign and formed a statewide breastfeeding coalition in 2003.
- The Vermont legislature passed Act 117 in 2003, which protects the right of women to breastfeed in any place of public accommodation where the woman otherwise has a legal right to be present.
- Vermont's first peer counseling program began in the Rutland District Office in 2004. Middlebury added peer counselors in 2006, St. Albans in 2010, Bennington in 2011 and Burlington in 2012.

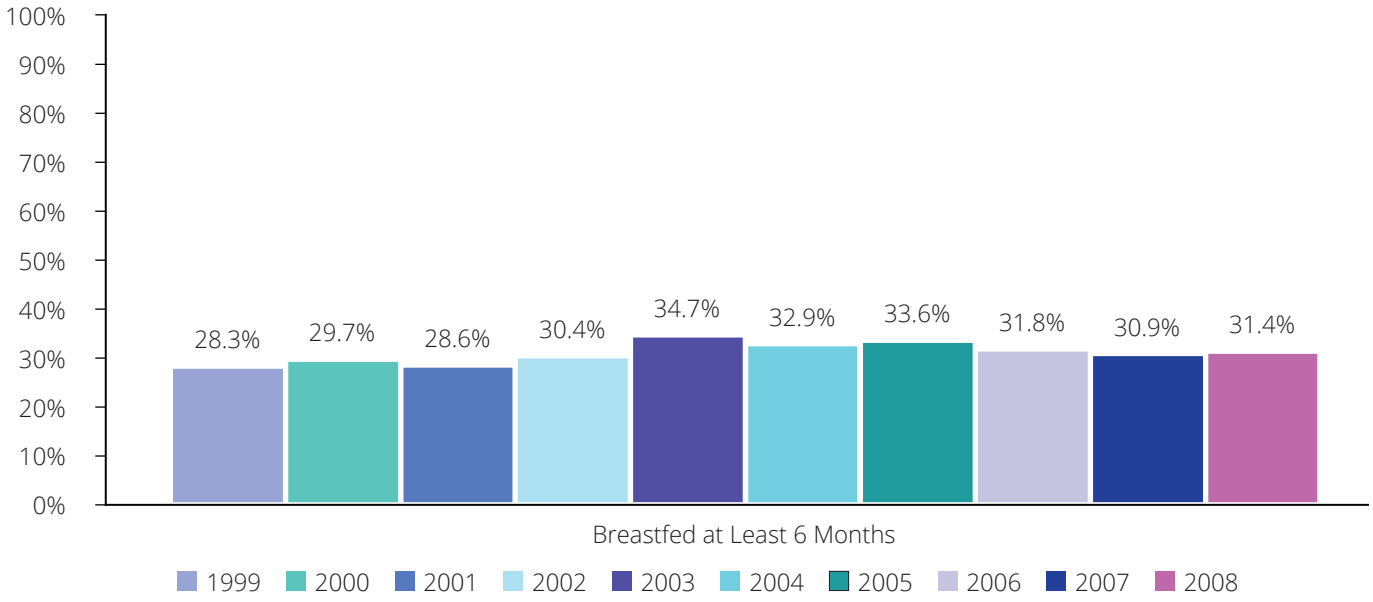
- In 2008, all Vermont WIC staff received training in Value-Enhanced Nutrition Assessment (VENA), which set assessment standards and improved WIC certifier skills for engaging participants in meaningful discussions around health and nutrition, including breastfeeding.
- Vermont labor laws were amended in 2008 to include Act 144, a requirement that employers provide a private space and break time during the day for lactating mothers to express milk for their children. To assist employers with Act 144 compliance, Vermont WIC partners with local breastfeeding coalitions to provide on-site consultation to employers.
- In 2009, the WIC food packages were improved for all participants, with the greatest food benefit, and other supports, going to breastfeeding mother/baby pairs.
- All Vermont WIC staff attended two days of breastfeeding competency training in 2010 using the Grow and Glow curriculum.
- Vermont WIC received a breastfeeding performance bonus from FNS in 2011. Part of the funds were used to develop the "Empowering Mothers, Nurturing Babies" program, which assisted hospitals to improve scores on the CDC Maternity Practices in Infant Nutrition and Care (mPINC) survey. (Figure 1)

Figure 1. Breastfeeding Initiation Trends Among Vermont WIC Mothers



Despite a sustained breastfeeding promotion effort, breastfeeding duration rates in the WIC population haven't kept pace with improving initiation, and have remained fairly stagnant over the 10 years prior to the 2009 food package changes. (Figure 2)

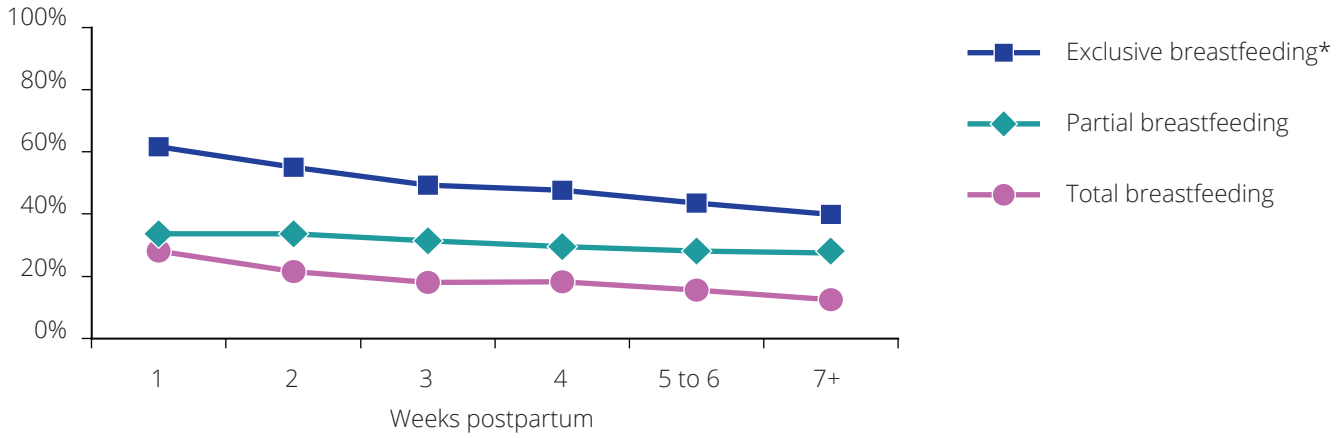
Figure 2. Vermont WIC Breastfeeding Duration, 1999-2008; Children Breastfed at Least 6 Months



Data Source: CDC 1999-2008 Pediatric Nutrition Surveillance Reports, Vermont Summary of Breastfeeding Indicators.

Rates for exclusive breastfeeding were even lower. For babies enrolled in WIC and born in 2007, only 34 percent were exclusively breastfed by the end of week 1 postpartum. The rate of exclusive breastfeeding remained relatively constant from the end of week 1 (34 percent) until 7+ weeks (27 percent). The breastfeeding rate for babies fed supplemental formula (the partial breastfeeding group) decreased much more quickly from 28 percent at week 1 to 12 percent at 7+ weeks. (Figure 3)

Figure 3. Breastfeeding Among Vermont WIC Participants, 2007 (n=3193)



Prenatal WIC Participant Characteristics

In order to understand our target population better, we drew a sample from WIC administrative data before designing our intervention. Based on our review of the literature (Appendix 1), and these demographic and descriptive characteristics, WIC women are highly at risk for breastfeeding failure. In Vermont WIC, women who intended to breastfeed in 2007 had the following characteristics:

- Many were young: half were age < 24 years, and 15% were age <19 years.
- Most (63%) had a high school education or less.
- More than one third smoked cigarettes pre-pregnancy.
- At the beginning of their pregnancies, close to half were at a healthy weight; nearly half were overweight (BMI 26) or very overweight (BMI 29); the remaining 10% were underweight or very underweight.
- Nearly half had excessive weight gains during pregnancy; less than one third achieved ideal weight gains; less than one quarter had low weight gains during pregnancy.
- About one third of moms were pregnant for the first time, approximately another third were pregnant for the second time and the last third had 3 or more pregnancies.
- Almost half had a short interval between pregnancies.
- 80% of moms received prenatal care in the first trimester, and 46% 'intensive' prenatal care.
- 8% of moms delivered pre-term babies.

  (Source: Linked VT WIC Program and Birth Certificate data, 2006-2007, VT residents only)

Women enrolled in WIC faced additional challenges that put them at risk for breastfeeding failure including: living in "crisis mode" where planning ahead is difficult; lack of social support from partners, friends and family; lack of support in the workplace; low self-efficacy that makes it difficult for women to advocate for their desires; and stereotyping by Health Care Providers (HCPs) as formula-oriented which results in women receiving inadequate breastfeeding education. (Chin and Solomonik, 2009)

Surveillance Data for WIC and non-WIC Mothers

In addition to Vermont WIC Program data, we examined Pregnancy Risk Assessment Monitoring System (PRAMS) data for Vermont. Vermont began participating in this national surveillance system in 2001. Currently, 37 states conduct PRAMS surveys. The Phase 5 questionnaire in 2004-2008 included a series of questions on breastfeeding barriers, reasons for stopping breastfeeding and "Baby Friendly" characteristics of hospitals where each mother delivered. The surveys were mailed to a random sample of new Vermont mothers and an oversample of low birth weight mothers at 2 to 6 months after birth. Follow-up of non-respondents by telephone yielded a response rate consistently over 79% for each year from 2004 to 2008.

Hospital Environment

Compared to non-WIC mothers, mothers participating in WIC responded differently for many of the "Baby Friendly" characteristics designed to promote breastfeeding success ($p<0.05$). Even after adjusting for breastfeeding initiation, mothers in Vermont's WIC Program were less likely to report feeding baby only breast milk in the hospital, more likely to report receiving a gift pack with formula, and more likely to report baby using a pacifier in the hospital. WIC mothers were less likely to report baby rooming in, breastfeeding baby in hospital, hospital staff helping learn how to breastfeed, hospital staff telling mom to feed on-demand, or hospital giving a phone number to call for breastfeeding help (Table 1). Self-report data limit the extent of conclusions that can be drawn, but it is clear that there are differences in support received and possibly real differences in the support offered to breastfeeding moms in WIC versus those not enrolled in WIC.

PRAMS uses a complex sample design. The unweighted counts from 2004 to 2006 for women participating in WIC (n=1315) and not participating in WIC (n=1964) represent approximately 7,774 Vermont women participating in WIC and 11,214 Vermont women not participating in WIC.

Table 1. Responses from WIC and Non-WIC Mothers to Hospital Environment Questions, 2004- 2006 VT PRAMS

Baby Friendly Hospital Environment (Mom's perspective)	WIC	Non-WIC	
Hospital staff gave information about breastfeeding	96%	97%	
Baby roomed-in	89%	93%	*
Breastfed baby in hospital	95%	98%	*
Breastfed baby in the first hour	74%	77%	
Hospital staff helped learn how to breastfeed	79%	85%	*
Baby fed only breast milk in hospital	75%	85%	*
Hospital staff told me to feed-on-demand	89%	94%	*
Received gift pack with formula	42%	30%	*
Hospital gave phone number to call for breastfeeding help	86%	89%	*
Baby used pacifier in hospital	39%	27%	*

*p < 0.05 Adjusted for breastfeeding initiation. Source: VT PRAMS 2004 – 2006

Barriers to Breastfeeding

The PRAMS survey included a list of possible barriers to breastfeeding with instructions to check all that applied. The most common barrier selected was "Didn't like breastfeeding". Over half of women in the PRAMS sample (WIC 57% and non-WIC 54%) checked this barrier. Other barriers to breastfeeding were not statistically different by WIC participation and only WIC percentages are reported here: Thirty percent of moms reported "other children to care for" as a barrier to breastfeeding. Other barriers were checked at a rate of about 15 percent: too many household duties, embarrassed, work/school, wanted body back to self, mom was sick or on medication. Only about 1 percent of moms checked "Baby was sick" as a barrier to breastfeeding.

One interesting statistically significant difference ($p<0.05$) in the reported barriers to breastfeeding for WIC versus non-WIC moms was that WIC moms were less likely to check "I didn't want to be tied down" (15%) compared to non-WIC moms (24%).

The PRAMS findings helped guide the design of our intervention. We focused on women who intended to breastfeed or were undecided about infant feeding plans and on support for moms overwhelmed by embarrassment, work/school, household duties and by expectations about breastfeeding.

Reasons for Stopping Breastfeeding

The percentage of WIC and non-WIC moms reporting milk-supply related reasons for weaning was similar. WIC percentages were:

- "Baby not gaining enough weight" (11%),
- "Breast milk alone did not satisfy baby." (38%),
- "Not enough milk." (37%)

These data highlighted the importance of exclusive breastfeeding and the concept of "supply and demand". Some of the comments moms wrote into the survey hinted at an understanding of this concept only after the fact. These responses indicated a lack of prenatal education on this topic.

Both WIC and non-WIC mothers reported reasons for stopping breastfeeding that seemed to reflect a lack of confidence in breastfeeding skills. (WIC percentages: "Nipples sore" (27%) and "Baby had difficulty nursing" (31%)).

Both WIC and non-WIC mothers reported reasons for stopping breastfeeding related to life events. (WIC percentages: "Want/Need someone else to feed baby" (20%), "Work/School" (16%), "Mom got sick" (7%). Twenty-eight percent of mothers checked "Other") Based on comments mothers wrote on the PRAMS survey, some of the reasons may have included alcohol, drug addiction or treatment, or domestic violence.

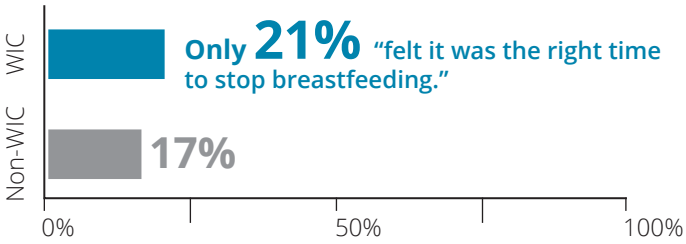
WIC mothers checked some reasons for stopping breastfeeding at a significantly ($p<0.05$) higher rate than non-WIC moms:

- "Baby got sick" (WIC 4% vs. non-WIC 1%).
- "Too many household duties" (WIC 14% vs. non-WIC 8%).
- "Baby was jaundiced" (WIC 11% vs. non-WIC 5%).

These differences seemed to indicate again that WIC mothers required more professional/clinical support and social support than they were currently receiving in order to meet their breastfeeding goals.

One of the most striking findings from the PRAMS surveillance data was the low proportion of WIC (21%) and non-WIC (17%) moms who agreed with the statement: "I felt it was the right time to stop breastfeeding". (Figure 4)

Figure 4. Vermont PRAMS 2004-2006



More than three-quarters do not appear to be satisfied with the timing of weaning. This reinforces the contrast between the high breastfeeding initiation data and the much lower percentage of WIC participants breastfeeding at the end of week 1 postpartum.

Content for our intervention was designed to emphasize social and professional support, breastfeeding knowledge, and confidence in breastfeeding skills. It was clear the intervention needed to begin in the prenatal period; to provide targeted support that would enable mothers to get through the early postpartum period; and to consider WIC risk codes for alcohol, drug abuse and treatment and domestic violence in light of their effect on breastfeeding success.

New Food Package Opportunity

In 2009, the WIC Program revised the food packages to better align the foods offered to WIC participants with the nutrition education messages shared with families who were enrolled in the program. These changes were intended to:

- Help families eat a healthier diet
- Reinforce nutrition education messages
- Add foods to appeal to diverse populations
- Provide a stronger incentive to breastfeed

The new food package policy gives mothers an added incentive to breastfeed by offering larger food package benefits for all breastfeeding mothers, with the greatest benefit provided to mothers who breastfeed exclusively for the first six months postpartum and continue to breastfeed to 12 months. Mothers who stop breastfeeding, or combine breastfeeding and formula feeding receive a smaller benefit, proportional to the amount of breastfeeding they do in the first six months only. The new food package policy was also designed to help build and maintain a healthy milk supply by limiting the amount of supplemental formula mothers may receive. No supplemental formula is provided during the first month of life for exclusively breastfeeding mother/baby pairs, and no more than 1 can of powdered formula to infants whose mothers intend to provide breast milk for the majority of feedings.

"Confident Commitment" is Key to Reaching Duration Goals

Helping mothers recognize that breastfeeding is both "natural" and a learned skill that requires knowledge, resources, strategies and support to overcome barriers is critical to achieve long-term breastfeeding targets. Mothers who are empowered and confident in their ability to manage challenges, and fully committed to working through individual barriers are more likely to meet their breastfeeding goals.

WIC has the opportunity to help prepare mothers for their breastfeeding experience and to provide support long term. WIC is positioned to provide targeted prenatal counseling to help prepare mothers for breastfeeding. WIC staff may benefit from a quick and efficient tool that can identify a mother's breastfeeding assets and deficits in order to tailor counseling and support her in planning and achieving her breastfeeding goal. Mothers who know their individual strengths and assets are better prepared for the challenges they will face.

Duncan et al (2007) explored asset-building as a way of improving adolescent health and led us to believe a similar approach might also benefit mothers in reaching their personal breastfeeding goals. (Figure 5) As in the strength-based approach for healthy adolescent choices, new mothers need support and direction as they acquire knowledge and master the skills necessary to negotiate the challenges of the current breastfeeding landscape. Raising a mother's awareness of the importance of developing strengths and assets needed for her own health and well-being may motivate her to "own" and to accomplish her breastfeeding goal.

Mothers also benefit from understanding the mechanics and the biology of breastfeeding, and from the support of family, professionals, employers and community. This combination of knowledge and support enables mothers to overcome the onslaught of challenges and the ensuing pressure to "just give formula" when a problem arises.

The work of Avery et al (2009) inspired us to focus on knowledge about breastfeeding and confidence in the process. Avery et al. wrote, "Commitment … appears to depend on confidence in the process of breastfeeding." We referred to this during the development of our intervention as "biology works". Avery further outlines the following components of "confident commitment":

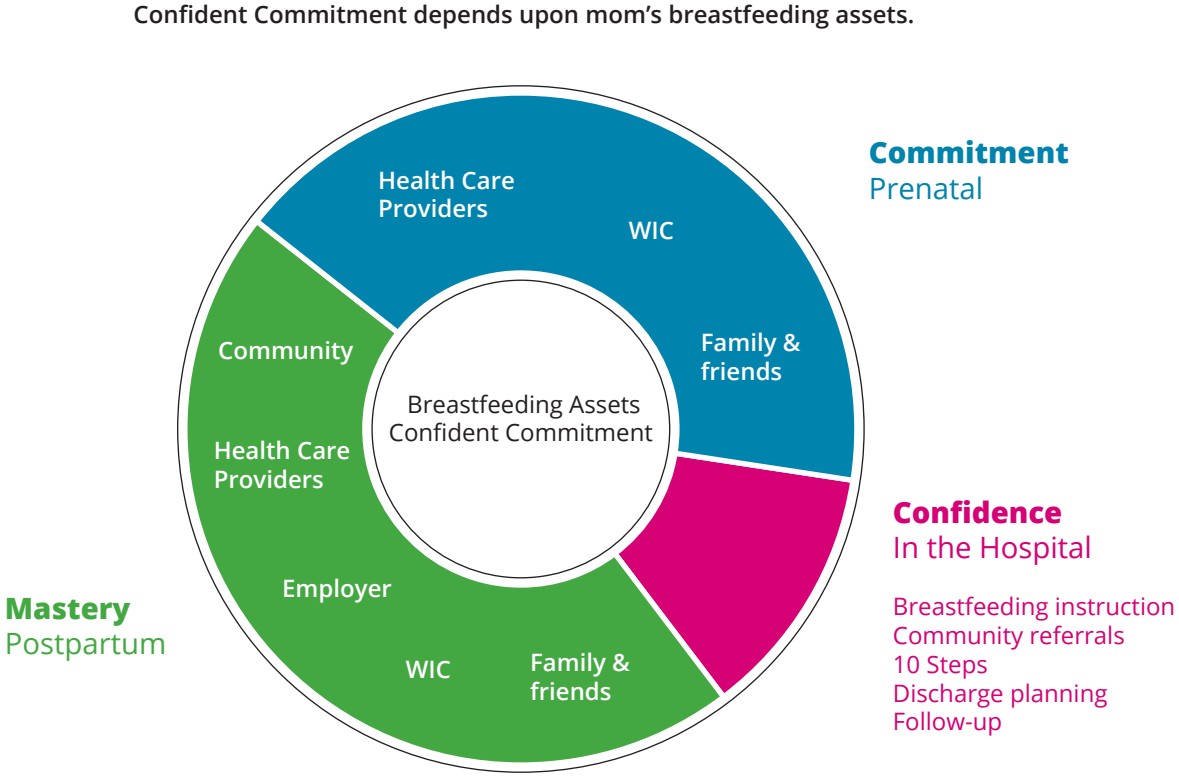
1. "Confidence in the process of breastfeeding" —necessary to start to build knowledge during pregnancy
2. "Confidence in her own ability to breastfeed" —grows out of successful experience
3. "Commitment to making breastfeeding work despite obstacles" —problem solving and skilled professional support

Breastfeeding confidence, from a strength based perspective, is a necessary asset for breastfeeding success. Additionally, understanding that breastfeeding is a learned skill is critical to success. Breastfeeding, like other learned skills, begins with the acquisition of knowledge, a chance to observe and ask questions, and, ultimately, the opportunity to practice. Together, the combination of identifying strengths and vulnerabilities prenatally, followed by customized counseling and resources to help overcome challenges can build confidence and support mothers to reach their breastfeeding goals. (Figure 5)

Our project focused on mothers who intended to breastfeed and was designed to support them to continue breastfeeding through at least the first 4 weeks postpartum. Our assumption was that breastfeeding success in the first 4 weeks would enable new mothers to establish a consistent milk supply, empowering them to continue to breastfeed as long as they planned. We wanted to prevent mothers from quitting before they were ready, or before reaching their intended goal, ultimately improving exclusive breastfeeding rates and duration.

Literature and surveillance data indicated social and professional support, breastfeeding knowledge and confidence in breastfeeding skills and process as the most important content areas for the intervention. We wanted to support mothers to learn how to breastfeed by increasing their knowledge and confidence, shoring up their commitment and providing social/professional support.

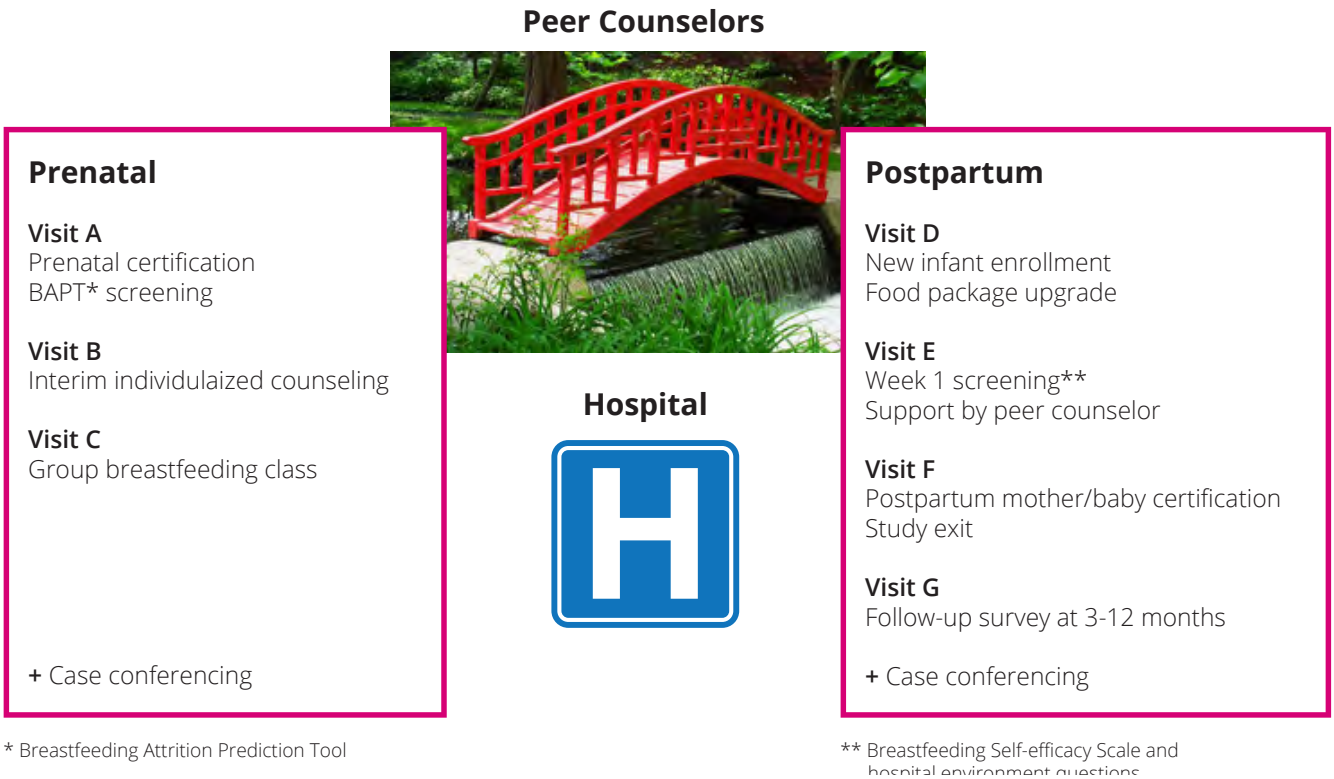
Figure 5. Vermont's Assets Approach to Breastfeeding Success



You Can Do It Intervention Design

The *You Can Do It* intervention was designed for newly enrolled pregnant women in WIC who intended to breastfeed, and included both prenatal and postpartum components. The project's key messages focused on helping moms gain the knowledge, social and professional support, and confidence they needed to meet their own personal breastfeeding goals. These were delivered using a variety of methods and materials over three prenatal visits, and 3 postpartum contacts. (Figure 6) The over-arching theme for *You Can Do It* was a success equation of knowledge + support + confidence = success.

Figure 6. *You Can Do It* Intervention



* Breastfeeding Attrition Prediction Tool

** Breastfeeding Self-efficacy Scale and hospital environment questions

Screening

We recognized that moms planning to breastfeed might benefit from understanding the areas of challenge they may be most likely to experience, and from identifying existing strengths that could be emphasized and reinforced during counseling. We chose four screening tools to use in the *You Can Do It* intervention:

1. the "infant feeding plans" question on the standard prenatal WIC Health and Nutrition Screening Form (Appendix 2);
2. the WIC eligibility risk codes associated in the literature with breastfeeding failure (See Appendix 1);
3. the Breastfeeding Attrition Prediction Tool, first developed by Janke,1994. and then later modified by Sara Gill et al. 2007, which predicts breastfeeding success in pregnant mothers. (BAPT- Appendix 3);
4. the Breastfeeding Self-efficacy Scale, developed by Cindy-Lee Dennis 2003, which predicts mothers likely to formula feed, mothers likely to feed both breast milk and formula and mothers likely to exclusively breastfeed at 4 weeks postpartum. (BSES-SF – Appendix 4).

Prenatal Intervention

Women who enrolled in *You Can Do It* received up to 3 prenatal contacts which included the following content: promotion of the new food packages; screening for breastfeeding attrition risks; targeted counseling to increase breastfeeding knowledge, identification of support networks and confidence building; and social marketing materials to address common myths and barriers.

- Visit A included the usual-care WIC prenatal certification, promotion of the exclusively breastfeeding food package; study recruitment, and a screening for risks related to early weaning to formula. Our study used (and further revised) the Breastfeeding Attrition Prediction Tool (BAPT).
- Visit B provided targeted counseling that addressed the risks identified by the BAPT screening completed at Visit A.
- Visit C, a group breastfeeding class focused on educating mothers about hospital best practices that support breastfeeding and what to expect around baby behavior in the first few weeks postpartum.

The A and B visits were individual sessions with the mother's WIC certifier; Visit C was a group breastfeeding class. As much as possible, moms were scheduled to see the same certifier at each visit to build consistency and rapport. Also whenever possible, peer counselors were invited to attend Visit B. WIC staff was encouraged to partner with their local hospitals to co-teach the breastfeeding classes; otherwise the classes were offered at the WIC office and co-taught by certifiers and peer counselors.

Prenatal Case Conferences

Based on mothers' BAPT screening score, and considering other risk factors linked to poor breastfeeding outcomes, WIC certifiers were trained to hold case conference discussions with the Breastfeeding Designee (the District Office breastfeeding expert) and the mother's WIC Breastfeeding peer counselor. The goal of these discussions was to assure frequent communication between WIC staff, and thus offer the highest level of consistent and coordinated support to the highest risk women.

Postpartum Intervention

There has historically been a significant gap in WIC services that occurs while the mother and baby are in the hospital, and in the very early postpartum period at home. WIC offers breastfeeding peer counselors to address this. Although peer counseling services were part of Vermont's intervention, peers are not universally available in all WIC programs. The inclusion of both prenatal and postpartum components and breastfeeding peer counselors reflects U.S. Preventive Services Task Force recommendations (Chung, Raman et al. 2008).

- Visit D was a telephone call with the WIC certifier shortly after mom and baby were discharged from the hospital to screen for breastfeeding successes and concerns, make appropriate referrals to community lactation supports and immediately increase the food benefit for moms who were exclusively breastfeeding.
- Visit E was also a telephone contact in the first week postpartum; however this contact was with mom's WIC breastfeeding peer counselor. In addition to the usual care, peers completed a second screening using the Breastfeeding Self-Efficacy Scale—Short Form (BSES-SF) (Cindy-Lee Dennis - 2003).
- At Visit F, the 4-6 week postpartum/infant recertification appointment, moms and babies received the usual care, and their participation in the study was ended.
- The final contact (Visit G) was a post-intervention telephone survey administered by the project manager at 3-12 months postpartum.

Postpartum Case Conferences

In the early postpartum phase of the intervention, staff could also case conference with the breastfeeding designee and peer counselor to bring added expertise to cases where mothers were at higher risk of breastfeeding failure. Higher risk mothers were identified by their BSES-SF score, WIC eligibility risk code or individual circumstances.

See Appendix 5 for a full description of the *You Can Do It* protocol.

Table 2. Outline of Study Services Compared to Usual Care Services

WIC Breastfeeding Promotion and Support Services Offered	All Districts (n=12), All Prenatal/ Postpartum Participants	Districts w/ Peer Counseling (n=3), All Prenatal/ Postpartum Participants	Districts w/ Peer Counseling (n=3), Study Participants ONLY
WIC Food Packages (food package determined by breastfeeding level)	X	X	X
Breastfeeding education and counseling	X	X	X *
Case consulting/management	X	X	X *
Referral to community breastfeeding support	X	X	X *
Group breastfeeding education	X	X	X *
Breastfeeding education print materials	X	X	X *
Peer counseling		X	X *
Targeted breastfeeding counseling based on BAPT & BSES scores			X *
Targeted Breastfeeding Success Plan based on BAPT & BSES scores			X *
Mom exposure to breastfeeding social marketing			X *
HCP exposure to breastfeeding social marketing			X *

* Plus enhanced services provided only to mothers who enrolled in the intervention

Social Marketing Materials

Intervention materials that reinforced the content of each visit were developed using social marketing principles. (Figure 7)

- *My Breastfeeding Checklists* to help mothers plan for breastfeeding success prenatally, and to continue exclusive breastfeeding for baby's first few months and beyond
- *Breastfeeding: Natural, Biological, Instinctual. Challenging.* brochure for WIC staff to use when visiting physician offices. These visits followed the "detailing" model used by formula and other pharmaceutical companies. The goals were to show how WIC services can help mothers meet their breastfeeding goals, to offer simple action steps providers can take to increase their patients' breastfeeding success and to invite providers to partner with WIC to improve the health of all mothers and babies.
- *The Hospital Experience* booklet, adapted from Texas WIC, to introduce mothers to baby-friendly hospital practices, and to help them develop and share a plan of action for breastfeeding in the hospital.
- *I Got Milk*, a comic-style booklet that follows four young moms as they make plans to breastfeed, create strong bonds, overcome challenges and discover amazing rewards.
- *What Breastfed Babies Do: Confidence Building Tips for You and Your Baby*, a DVD featuring a series of short videos with breastfeeding advice from expert Amy Spangler, MN, RN, IBCLC, and from WIC mothers who participated in this project.
- *WIC Food Packages for Moms and Infants* booklet, also adapted from Texas WIC, to promote exclusive breastfeeding and compare the food package options for breastfeeding mother/baby pairs.
- *Born and Raised the Vermont Way* magazine, for WIC and provider waiting rooms, that features inspiring family stories plus interviews with a community lactation consultant and WIC breastfeeding peer counselor.
- *Knowledge, Support, Confidence, Success* poster series, for provider and WIC offices. These promote WIC breastfeeding support services, and give tips for meeting breastfeeding goals.
- *Buttons and Wristbands* for moms, friends and family to publicly show support for breastfeeding.
- *License to Breastfeed*, a wallet-sized summary of workplace and public breastfeeding laws.

In addition, enrolled mothers received access to a study-only *Website* with electronic versions of the print materials. (See Appendix 6 for a description of each deliverable, with guidelines and recommendations for use).

Figure 7. Social Marketing Materials

BAPT Tool Overview

Helping mothers recognize that breastfeeding is a learned skill is critical to increasing rates of breastfeeding exclusivity and duration. A learned skill requires knowledge, resources, strategies and support to overcome barriers. Mothers must be prepared and empowered to manage challenges, and need to be committed to working through individual and community barriers that are disruptive to breastfeeding. To overcome the pressure to "just give formula" when a problem arises, they also need to understand the mechanics and the biology of breastfeeding, and receive support from family, professionals, employers and community.

WIC has the opportunity to help prepare mothers for their breastfeeding experience and to provide support long term, and WIC staff could benefit from a quick and efficient tool that identifies a mother's breastfeeding assets and deficits. After reviewing the literature, we felt the Breastfeeding Attrition Prediction Tool (BAPT) tool would best fit our intervention, and surmised it could be transferrable to a variety of WIC clinic environments.

The original Breastfeeding Attrition Prediction Tool (BAPT) (Janke 1994) consisted of 94 items and was administered postpartum. Revisions were subsequently made as described by Sara Gill et al (Gill 2007). These researchers modified the tool to identify risks for attrition prenatally. They also reduced the number of items to 32, which were divided into 3 categories or domains: Breastfeeding Sentiment, Social and Professional Support, and Perceived Behavioral Control. A simplified scoring method was also developed, which identified respondents as having either an "above-average intention to breastfeed", or a "below-average intention to breastfeed".

Vermont Modification of BAPT Tool and Development of Sub-Scores

For this WIC Special Project, Vermont further revised the tool to contain 27 items. Questions with zero weights were eliminated and Gill's item categories were re-labeled to match the project's aim of increasing breastfeeding knowledge, identifying social supports and building mothers' breastfeeding confidence. The positive and negative sentiment items were

assigned to the domain of knowledge, the professional and social support items to the domain of support and the perceived behavior control items to the domain of confidence. "I am confident I can learn to breastfeed" was added as a new question in the confidence domain (as a new item, it was 0 weighted).

Scoring

As with Gill's version, the overall scoring range of 0 - 38 was maintained, along with an overall score of above 20 as an indicator of breastfeeding intention. Additionally, Vermont created sub-scores for each of the 3 domains. Each mother's sub-scores were calculated by summing the weights of her responses in each of the 3 domains. In the knowledge domain, the score range was 0 - 11 for the positive sentiment items, and 0 - 7 for the negative sentiment items. Mothers could score from 0 - 8 in the domain of social support, and 0 - 12 in the domain of confidence. (Figure 8). The overall score at baseline, and the sub-scores, were used to determine the intensity and content of the counseling mothers received during the intervention.

Figure 8. BAPT Sub-Scores

Breastfeeding Knowledge

Score range:
Positive sentiment 0 - 11
Negative sentiment 0 - 7

Social Support

Score range: 0 - 8

Confidence

Score range: 0 - 12

BAPT Scores and Targeted Counseling

At Visit A, enrolled women completed the Vermont revised BAPT screening. After this visit, WIC staff entered the responses for each mother into an Excel spreadsheet, which was set up to auto-calculate the overall and subscale scores. Low sub-scale scores were automatically flagged.

Mothers with an overall score of < 20 , and/or a sub-score that was less than half of the total possible score in each domain (knowledge, support, confidence), were offered counseling that was targeted to the identified deficit; however, the actual numeric scores were not reported to the moms. Table 3 shows the possible combinations of counseling content mothers with low sub-score domains could receive.

Table 3. BAPT Sub Scores: Areas for Targeted Counseling

1	Breastfeeding knowledge, Social support and Confidence counseling
2	Breastfeeding knowledge and Social support counseling
3	Social support and Confidence counseling
4	Breastfeeding knowledge and Confidence counseling
5	Social support counseling
6	Breastfeeding knowledge counseling
7	Confidence counseling

Table 4 describes how the overall and sub scores were used to determine the protocol for supporting a mother's breastfeeding goals.

Table 4. BAPT Scores: Intervention Protocol

Score (Overall score range 0 – 38)	Mom gets:
Overall score of greater than 20 * Score above 20 indicates an above average intention to breastfeed	• Intervention care • Peer counselor
Overall score of 20 and under * Score less than 20 indicates a below average intention to breastfeed * Score 16 or less indicates need for intensive education	• Intervention care • Peer counselor • **PLUS** Case management between certifier, breastfeeding designee and peer counselor

Sub-Score	Mom Gets
Breastfeeding Knowledge Sub score Positive bf sentiment less than 6 OR Negative bf sentiment less than 4:	• Breastfeeding knowledge counseling content
Social Support Sub score Social/professional support score of 4 and under: (≤ 4)	• Social support counseling content
Confidence Sub score Perceived behavioral control score of 6 and under: (≤ 6)	• Confidence building counseling content

Breastfeeding Self-Efficacy Scale —Short Form:

The second screening tool used in Vermont's intervention was developed by Cindy-Lee Dennis in 2003. Administered during the first postpartum week, the 14-item Breastfeeding Self-Efficacy Scale—Short Form (BSES-SF) predicts mothers likely to formula feed, mothers likely to feed both breast milk and formula and mothers likely to exclusively breastfeed at 4 weeks postpartum. This scale has not been previously validated in a low-income population such as WIC participants. The overall score was used in our intervention to determine which mothers should receive additional coordination of breastfeeding support through case conferences. We used this tool in addition to the adapted BAPT because actual breastfeeding after childbirth was expected to be a different experience than learning about breastfeeding before childbirth.

WIC breastfeeding peer counselors called study mothers during the first week postpartum to complete the BSES-SF screening. They scored mothers's responses as described by Dennis (2003). As with the prenatal BAPT scores, peers reported the actual numeric score to the WIC Certifier, but not to the mother. Mothers were categorized based on their score, and peers delivered individualized support using the protocol shown in Table 5.

Table 5. Breastfeeding Success Categories based on Breastfeeding Self-Efficacy Scale (BSES-SF) Score

Score Range	Category	Protocol for WIC Breastfeeding Peer Counselors
60-70	likely to be exclusively breastfeeding at 4 weeks	offer social support, refer as needed, provide usual care
50-59	likely to be partially breastfeeding at 4 weeks	offer social support to promote exclusive breastfeeding, refer as needed, provide usual care
14-49	likely to be formula feeding at 4 weeks	offer social support to promote exclusive breastfeeding, refer as needed, provide usual care AND case conference with WIC certifier and breastfeeding designee

"I feel so happy to be breastfeeding this baby. The bond is indescribable. Without WIC's breastfeeding study I never would have realized how important breastfeeding is. No one else ever bothered to ask the questions that WIC did, questions that got me thinking and wanting more information about breastfeeding.

After the baby came, I had problems but Rachael (WIC Nutritionist) and my peer Amy answered all of my questions and were always there for me. I feel very lucky to have been a part of the WIC breastfeeding study. WIC is a really important source of information."

~ Study participant

Project Environment

Vermont's WIC program is centrally administered, with the state office located in Burlington. Program services are offered through 12 local health offices spread across the state, and are co-located with other human services programs including Maternal-Child Health, Economic Services, Child and Family Services, Immunizations, Epidemiology and Environmental Health.

In 2010, Vermont's average annual caseload was 16,569 participants. More than half of all babies born in Vermont participated in WIC and almost 80% of them were breastfed for some part of their first year of life.

Nutritionists, public health nurses and health outreach specialists certify WIC participants at 50 clinic sites around Vermont. All WIC staff at each district office (DO) have defined expectations for breastfeeding promotion and support, specific to individual job categories and roles. Each DO has a breastfeeding designee whose role includes: providing high risk follow-up and referral assistance to women who have special needs and concerns related to breastfeeding; answering questions regarding lactation and providing breastfeeding case consultation to other staff within district; providing local training on breastfeeding promotion and support; and assisting in developing systems to promote and support breastfeeding.

The designee must be a nurse or nutritionist who receives annual training specific to the role, and each designee has a back-up who can provide the same level of service. Designees have a variety of other duties, including WIC certification and nutrition education and, especially for nurses, duties for other health department programs. There is one statewide breastfeeding coordinator at the Central Office level. At the time of this study, 3 DOs offered WIC breastfeeding peer counselor programs; currently the program has expanded and is offered in 5 DOs.

During this Special Project period (FFY 2009-2013), Vermont's WIC food benefits had both home-delivery (all foods except fruits and vegetables) and retail components (EBT card for allowed fruit and vegetable purchases).

Intervention Sites

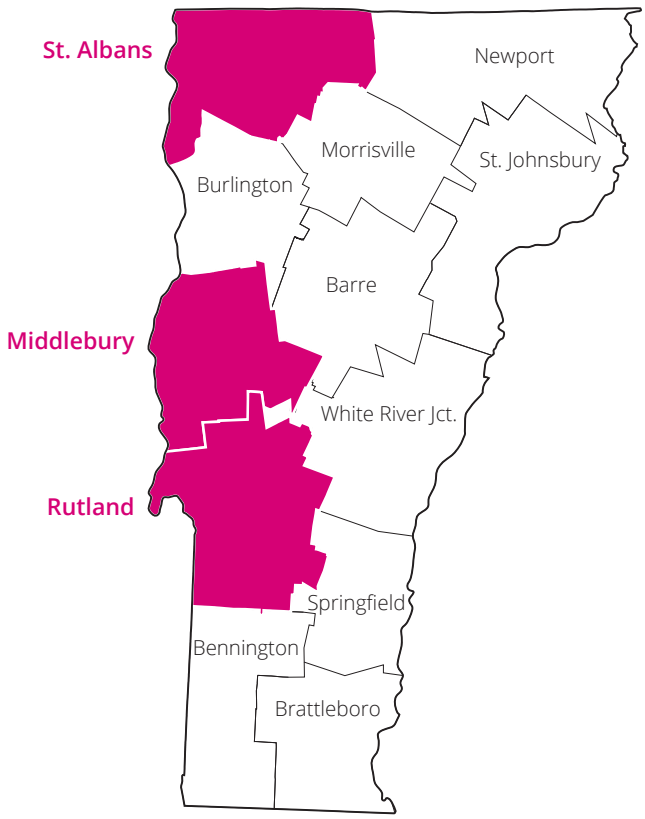
Vermont's project was implemented in the three district offices with peer counselor programs in 2009 (Figure 9), and this was the basis for their inclusion in the study.

Rutland serves about 2,000 participants, with 400 infants enrolled at birth each year. Breastfeeding rates are lower than the state average at initiation and at 4-6 weeks.

Middlebury serves about 1,000 with 200 infants enrolled at birth each year. Breastfeeding rates are slightly above the state average at every point of measurement.

St. Albans serves about 1,900 participants, with 375 infants enrolled at birth each year. Breastfeeding rates are lower than the state average at initiation and at 4-6 weeks.

Figure 9. Project Intervention Sites



CHAPTER 2.
You Can Do It: Evaluation and Results

Evaluation Design

Goal

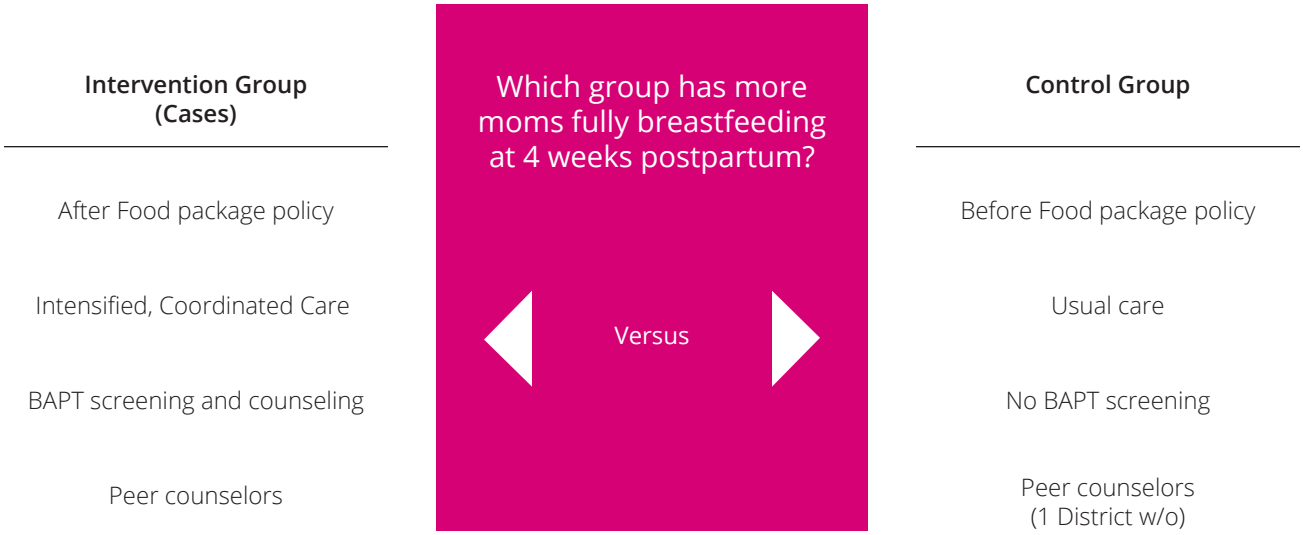
The primary goal was to increase exclusive breastfeeding by 10 percent at four weeks postpartum compared to historical controls.

Evaluation Plan

The main research questions for *You Can Do It* were: If mothers who intend to breastfeed are screened for predictors of success, offered targeted education and support and connected with breastfeeding resources, can a higher percentage fully breastfeed at 4 weeks postpartum? Does the effect of the intervention hold through 3 months postpartum?

The evaluation design was a case:control study, and compared the impact of both the intervention and the new (2009) national WIC food package policy vs. a control group using historical controls in a 2 controls:1 case ratio. (Figure 10)

Figure 10. Evaluation for the *You Can Do It* Intervention



Controls were enrolled in WIC before the national food package policy took effect in Vermont in October, 2009, and were drawn from the WIC history file for St. Albans, Middlebury, and Rutland. They received the usual care both during WIC visits and from peer counselors. The use of historical controls allowed us to use the District Offices with peer counseling in place (one Control District did not have peer counselors during that time period).

We selected three VDH District Offices (DOs) as our intervention sites, based on:

- Existing peer counseling programs (St. Albans, Middlebury, Rutland);
- Stability in district office staff and history of participation in research projects;
- Community infrastructure, including strong breastfeeding coalitions, partners and health care providers with an interest in breastfeeding support;
- Historically lower breastfeeding duration rates among the 12 DOs;
- Staff trained in Best Start 3 Step Counseling and Motivational Interviewing

The mothers in the intervention group received increased screening, targeted counseling, intensified outreach with peer counselors and case conferencing for study participants at high-risk for breastfeeding failure.

Recruitment

Recruitment began in May 2010 in the Middlebury, Rutland and St. Alban's District Offices, and was originally scheduled to end in June 2011, with a planned sample size of at least 327 women and an anticipated refusal rate of 10%. Eligibility requirements were: less than 32 weeks gestation at the time of study recruitment; planning to breastfeed or undecided; >18 years old; able to read and understand English. Mothers intending to fully formula feed were not eligible.

Recruitment was slower than expected, and enrollment in the project was extended through October 2011. We did not meet our planned sample size of 327, and a total of 281 pregnant women were recruited. A decline in Vermont's birth rate during that period may have affected this. Surprisingly, almost half of all eligible pregnant women who were offered the project declined to participate. Previous experience with asking WIC participants to volunteer for other research projects was more positive; however *You Can Do It* was our most intensive intervention and the only project requiring informed consent by an Institutional Review Board (IRB).

Historical controls were chosen so that we could evaluate the food package policy as well as the *You Can Do It* intervention. The controls were mothers participating in WIC with a live birth between March 1, 2007 and April 30, 2009. They were selected from WIC's administrative dataset and met the same eligibility criteria that were applied to cases: age 18 years or over; read and understood English; intended to breastfeed or were undecided; enrolled in WIC in one of the 3 study District Offices. If the mother had a multiple birth, the study child was selected randomly. Missing breastfeeding data from 306 controls was retrieved from the active WIC administrative data

in a two-step process, so that only 34 of 1171 mothers were excluded from the control group for missing breastfeeding information. We had planned for 654 unmatched controls, but were able to collect data for 1171 at no additional cost. (Table 6)

Table 6. *You Can Do It*: Recruitment

	Actual (May 10 - Oct 18, 2011)	**Planned Cases**	**Actual Controls**
Middlebury	70	75	--
Rutland	105	109	--
St. Albans	106	143	--
All sites combined	281	327	1171

Comparison of Enrolled vs. Declined

Eligible prenatals attending the Middlebury WIC clinic had the highest rate of study enrollment (70%). The Rutland WIC clinic had the highest decline rate (58%). About half of the moms attending the St. Albans WIC clinic enrolled and about half declined. These enrollment differences were statistically significant ($p < 0.0001$). (Figure 11)

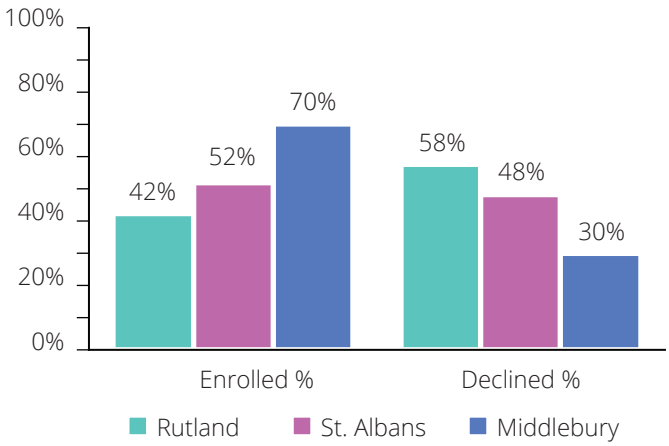
In many ways, moms who declined were similar to moms who enrolled in *You Can Do It*. (Table 7) There were no statistically significant differences between participants and declines for mother's median age at first visit, marital status, race/ethnicity, type of delivery, insurance status, obesity (BMI > 30), prenatal WIC Risk Score, postpartum WIC Risk Score or alcohol use in the 3 months before pregnancy or postpartum (data not shown).

Moms who enrolled in *You Can Do It* were statistically significantly more likely to have more education, to be pregnant for the first time, and to have plans to breastfeed for the first time, compared to moms who declined. Moms who declined were statistically more likely to be undecided about infant feeding plans or to have breastfed successfully before the current pregnancy.

Although moms planning to bottle feed at baseline were ineligible to participate, one mom planning to formula feed was approached about the study and declined to participate.

Moms who enrolled in the study were statistically significantly more likely to be exclusively breastfeeding at 4 weeks and 3 months postpartum, compared to moms who declined.

Figure 11. *You Can Do It* Enrollment by Study Site



Differences in recruitment status by study site, $p<0.0001$

Table 7. *You Can Do It*: Enrolled vs. Declined Baseline Characteristics

Live birth in Vermont from May 17, 2010 - Dec 31, 2011	**Enrolled Cases** (%) (n=256)	**Declined** (%) (n=250)	**p-value**
Mother's age at first visit > 24	56%	60%	NS
Mother completed high school or more	93%	84%	p=0.001
Mother married	34%	36%	NS
Race/ethnicity White	95%	91%	
Native American or Native and White	5%	6%	
All other race categories	0%	3%	
First pregnancy	43%	27%	p<0.0001
Plans to bottlefeed infant	0%	<1%	p<0.0001
Undecided about plans	12%	26%	
Plans to breastfeed—has bf before	22%	34%	
Plans to breastfeed—first time	49%	26%	
Plans to breastfeed—had problems bf	16%	14%	
Exclusive breastfeeding rates at 4 weeks	55%	42%	p=0.004
Exclusive breastfeeding rates at 3 months	43%	28%	p=0.0005

Comparison of Cases and Controls: Baseline Characteristics

We compared baseline characteristics for cases and controls to see if there were significant differences introduced through recruiting.

Historical Controls (Table 8)

Demographics.
Approximately half of the controls were 24 years old or older at their first WIC visit. Most (86%) had completed a high school education or more. One-third (36%) were married. Vermont's population is not racially diverse: 96 percent reported white race; 2 percent reported Native American and white race; 2 percent reported one or more other race categories.

Birth and Breastfeeding Factors.
For one-third (36%) of the mothers, this was a first pregnancy. The Kotelchuck index (Kotelchuck 1994) was used to calculate the intensity of prenatal care: 82 percent had adequate or intensive prenatal care by that index. Almost three-quarters (72%) of controls had vaginal deliveries (including VBAC). Approximately one-third of controls were either unsure about breastfeeding plans (20%) or had previous poor experiences with breastfeeding (14%). [This excludes moms who intended to bottle feed from the outset.]

General Health Risk Factors.
Most had some health insurance: 15 percent had none. Almost one-third (29%) were obese (BMI > 30).

Alcohol and Tobacco Use.
The WIC data system collects information about alcohol and tobacco use both as "Risk Codes" to determine eligibility and as separate data fields. Two-thirds of the controls reported no alcohol use before pregnancy. For the third trimester of pregnancy, 90 percent reported no alcohol use. Just over half (53%) did not smoke in the three months before pregnancy. The same proportion (68%) reported not smoking at the time of prenatal visit, in the third trimester of pregnancy or at the postpartum visit.

Cases (Table 8)

Demographics.
Cases tended to be more highly educated than controls ($p<0.02$). In Vermont, the population is not very diverse. Nonetheless, cases were statistically significantly less diverse than controls ($p<0.02$).There were no statistically significant differences between cases and controls for mother's age, or marital status.

Birth and Breastfeeding Factors.
Cases were also more likely than controls to have a first pregnancy ($p=0.04$). Cases were more likely to be breastfeeding for the first time. WIC moms with a history of breastfeeding problems were equally distributed among cases and controls. There were no statistically significant differences between cases and controls for Kotelchuck index of prenatal care (Kotelchuck 1994), type of delivery, prenatal risk for breastfeeding failure (WIC risk codes), postpartum risk for breastfeeding failure (WIC risk codes). Controls were selected from the administrative data from records with live births only. Cases were recruited in real time as they visited clinics.

General Health Risk Factors.
There were no statistically significant differences between cases and controls for obesity or health insurance status.

Alcohol and Tobacco Use
There were no statistically significant differences between cases and controls for alcohol use in the three months before pregnancy, alcohol consumption in the third trimester of pregnancy or reported smoking at any of the four time points when it was collected.

Table 8. *You Can Do It*: Case and Controls Baseline Characteristics

	Controls (Live births from control moms 03/01/07 - 04/30/09) (n=1171)	**Cases** (Live births from study moms 08/03/10 - Dec 19, 2011) (n=256)	**p-value**
Demographics			
Mother's age > 24 (median of controls) at first visit	55%	56%	NS
Mother completed high school or more	86%	93%	p<0.02
Mother's marital status: married	36%	34%	NS
Race/ethnicity: White	96%	95%	p=0.2
Native American or Native & white	2%	5%	
All other race categories	2%	0%	
Birth and Breastfeeding Factors			
First pregnancy	36%	43%	p=0.04
Plans to bottlefeed infant	0%	0%	p<0.002
Undecided about plans	19%	12%	
Plans to breastfeed—has bf before	28%	22%	
Plans to breastfeed—first time	39%	49%	
Plans to breastfeed—had problems bf	14%	16%	
Neonatal or post-neonatal death	<1%	<1%	NS
Risk factors			
No health insurance	16%	11%	NS
Obese (BMI GE30)	29%	31%	NS
Prenatal risks for breastfeeding failure (WIC codes)	74%	78%	NS
Postpartum risks for breastfeeding failure (WIC codes)	76%	78%	NS
No alcohol use before pregnancy	66%	60%	NS
Did not drink in 3rd trimester	90%	90%	NS
Did not smoke 3 months before pregnancy	52%	55%	NS
Did not smoke at time of prenatal visit	68%	70%	NS
Did not smoke in 3rd trimester	68%	73%	NS
Did not smoke at time of postpartum visit	68%	73%	NS

Risk Factors for Breastfeeding Failure

Approximately three-quarters of controls had WIC risk codes associated with breastfeeding failure prenatally (74%) and postpartum (77%). For the prevalence of individual WIC Risk Codes, see Table 9. More cases (56%) had WIC risk codes for prenatal overweight/obesity than controls (46%) (p=0.003). Cases also had a higher prevalence of WIC prenatal risk codes for drug use (5%) compared to controls (3%) (p=0.01). Postpartum, more babies of case moms (17%) were flagged with a WIC risk code compared to babies of control moms (4%) (p<0.0001).

Table 9. WIC Risk Codes for Breastfeeding Failure

	Controls		Cases	
	Prenatal	Postpartum	Prenatal	Postpartum
Overweight/obese*	**46%***	55%	**56%***	59%
Depression	13%	15%	16%	14%
Alcohol use	10%	1%	13%	2%
Smoking	33%	27%	29%	22%
Drug use	**3%***	2%	**5%***	2%
History of low birth weight	3%	3%	2%	2%
Pregnant woman, currently breastfeeding	1%	0%	1%	0%
Mother breastfeeding, baby has a risk code	0%	**4%***	0%	**17%***
Breastfeeding complications	0%	2%	0%	4%
Recipient of abuse	1%	0.2%	2%	0%

* Statistically significant difference between cases and controls, obese p=0.003, drug use p=0.01, baby risk code p<0.0001.

WIC Risk Codes for Breastfeeding Failure

A mother was considered at higher risk for breastfeeding failure if any of the WIC Risk Codes from our selected list were present in either the 10 prenatal data fields or the 10 postpartum data fields. Both the prenatal and the postpartum scores were predictive of exclusive breastfeeding at 4 and 12 weeks postpartum. (Table 10) Mothers with elevated risk for breastfeeding failure predicted by either of these measures were approximately twice as likely to fail at exclusive breastfeeding by 4 weeks or by 12 weeks compared to mothers without elevated risk. The elevated risk applied to approximately three-quarters of mothers both in case and control groups. (Table 8) Mothers without elevated risk by this measure tended to have exclusive breastfeeding rates that were 10 percentage points higher at each time point than mothers with elevated risk.

Prenatal WIC risk codes were consistent and statistically significant predictors of exclusive breastfeeding failure for moms at all three time points. Postpartum WIC risk codes were statistically significantly related to exclusive breastfeeding at 4 weeks, but not at 3 months or 6 months.

Table 10. Univariate Odds Ratios for Not Exclusive Breastfeeding at 4 and 13 and 26 weeks Postpartum by Prenatal and Postpartum WIC Risk Scores for Breastfeeding Failure (n=1391)

Not Exclusive breastfeeding	At 4 weeks OR (95%CI)	At 3 months OR (95%CI)	At 6 months OR (95%CI)
Prenatal WIC risk	**1.98 (1.5, 2.5)**	**1.65 (1.3, 2.1)**	**1.64 (1.2, 2.2)**
Postpartum WIC risk	**1.54 (1.2, 1.9)**	1.27 (0.96, 1.7)	1.23 (0.91, 1.7)

Bold=statistically significant at p=0.05.

Exclusive Breastfeeding Results

Comparison of Cases and Controls: Exclusive Breastfeeding

More WIC moms in the *You Can Do It* Intervention exclusively breastfed their infants compared to WIC moms who did not (historical controls).

At 4 weeks postpartum, there was a 16 percentage point difference: 55% of cases were exclusively breastfeeding compared to 39% of controls. Cases persisted in higher rates of exclusively breastfeeding at 3 months (43% vs. 22%) and 6 months postpartum (34% vs. 16%). At 3 months, there was a 21 percentage point difference between cases and controls. At 6 months, an 18 percentage point difference. All differences were statistically significant. (Table 11)

Controls attended clinics in the same District Offices as cases in the three years before the food package policy change. The difference in timeframe meant that cases received the new food packages while historical controls did not. To estimate the difference in exclusive breastfeeding that might be attributable to the *You Can Do It* Intervention, above and beyond the effect of the new food packages, we calculated exclusive breastfeeding for WIC moms who met the eligibility criteria, but did not attend clinics in District Offices where the intervention was offered. (Table 12)

Epidemiologic Causal Criteria: A Framework for the Project Findings

No single research project can address the causality of a relationship between a possible cause and an observed effect. Nonetheless, a framework for epidemiologic causal criteria is a useful organizing principle. We use the criteria here to present the evidence for the relationships between the *You Can Do It* intervention, the new food package policy and exclusive breastfeeding rates in Vermont. These criteria include the consistency of the observed association across diverse study sites, the temporality of the association, the dose response, the biologic plausibility of the Knowledge + Support + Confidence= Success equation and the magnitude of the association.

Consistency of Association Across District Offices

All three District Offices participating in the *You Can Do It* intervention experienced statistically significant gains in exclusive breastfeeding compared to baseline (Figure 12). Middlebury showed the largest increases in exclusive breastfeeding: a 26 percentage point increase at 4 weeks, 3 months and 6 months postpartum. Middlebury's baseline of 46% exclusively breastfeeding moms at 4 weeks postpartum

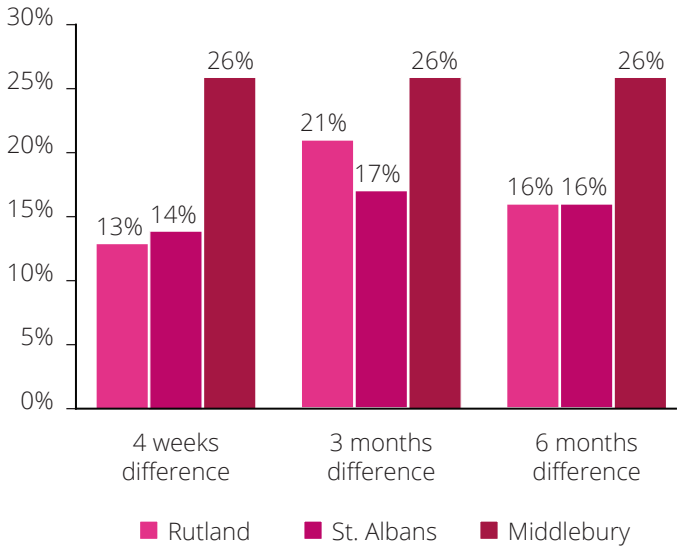
Table 11. Exclusive Breastfeeding for Control and Case Moms in the *You Can Do It* Intervention

	Controls with live births Mar 1, 2007 - Apr 30, 2009 (n=1137)	**Cases with live births** Aug 03, 2010 - Dec 19, 2011 (n=254)	**p-value**
Exclusive breastfeeding at 4 weeks	39%	55%	P<0.0001
Exclusive breastfeeding at 3 months	22%	43%	P<0.0001
Exclusive breastfeeding at 6 months	16%	34%	P<0.0001

Table 12. Measuring the Food Package Policy Alone: Exclusive Breastfeeding in Non-Study Sites

	Before Food Package (Live births from Oct 1, 2007 - Sept 30, 2008) (n=1336)	**During Study** (Live births from May 17, 2010 - Dec 31, 2011) (n=2125)	**p-value**
Exclusive breastfeeding at 4 weeks	42%	53%	p<0.0001
Exclusive breastfeeding at 3 months	28%	37%	p<0.0001
Exclusive breastfeeding at 6 months	21%	29%	p<0.0001

Figure 12. Gains in Exclusive Breastfeeding at Each Study Site After *You Can Do It* Intervention and New Food Package Policy



All increases statistically significant at a p<0.02

increased to 73% after the intervention. St. Albans and Rutland also had substantial increases in exclusive breastfeeding: both Districts had increases of over 10 percentage points in exclusive breastfeeding at 4 weeks, 3 months and 6 months postpartum. Rutland doubled this increase at 3 months postpartum, increasing from 18% at baseline to 40% after the intervention. All increases were statistically significant.

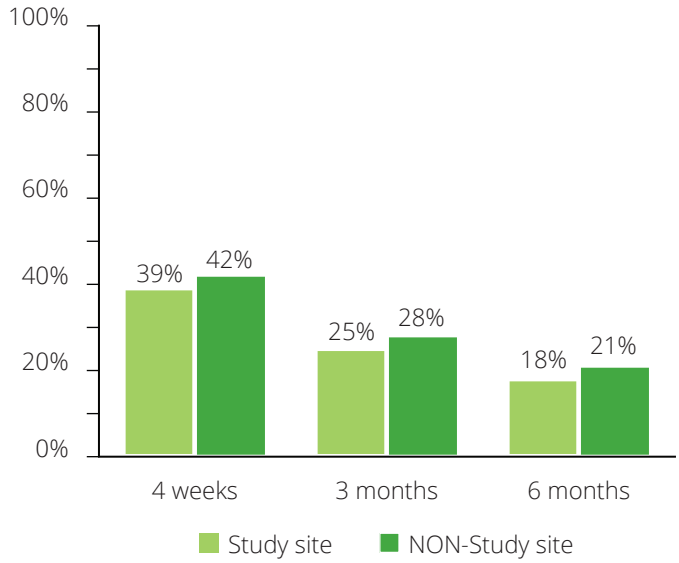
Vermont WIC staff at each study site adapted the *You Can Do It* intervention to the constraints of each of the three District Office settings. The consistent strong relationship across sites provides evidence for the transferability of the *You Can Do It* intervention.

These gains in exclusive breastfeeding also show the impact of the food package policy change. A change of similar magnitude (20 percentage points) occurred in Vermont from 1992 to 1994, when the first enhanced WIC food package for breastfeeding women was introduced.

Temporality: Exclusive Breastfeeding Before and After the *You Can Do It* Intervention

Temporality is the causal criterion that evaluates whether a proposed cause occurred before an effect. The historical control group was drawn from the same District Offices as the later study participants. This study design prevented the control group from receiving study materials or techniques and, simultaneously, made the control and case groups as similar as possible. Although Vermont is a small state, there are regional differences in exclusive breastfeeding. At baseline,

Figure 13. Exclusive Breastfeeding at Baseline



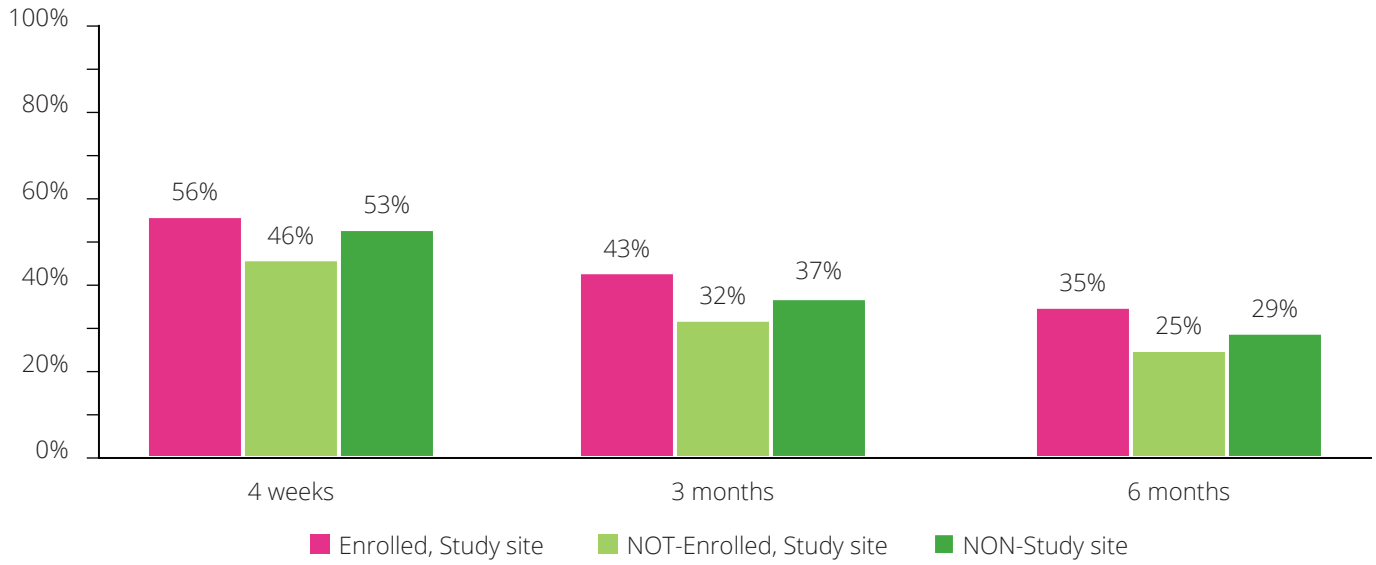
study sites had lower exclusive breastfeeding rates compared to non-study sites (Figure 13) for two reasons. District Offices with lower breastfeeding rates were given priority for peer counseling programs. Peer counselors were necessary to carry out the *You Can Do It* intervention so only District Offices with peer counselors were invited to participate. This comparison was restricted to WIC participants who met the eligibility criteria for the *You Can Do It* intervention: enrolled in WIC before 32 weeks gestation, over 18 years of age at WIC enrollment, planned to breastfeed or were undecided about feeding plan, read and understood English, and attended WIC during the appropriate date range.

After the *You Can Do It* intervention, exclusive breastfeeding was statistically significantly higher in study sites compared to non-study sites (p<0.001 for all time points). (Figure 14) Enrolled moms had higher exclusive breastfeeding rates compared to moms who were not enrolled (p<0.001).

The increases in exclusive breastfeeding in non-study sites (11 percentage points at 4 weeks; 9 at 3 months; 8 at 6 months) were presumably due to other breastfeeding initiatives implemented during this time, including the new food package policy. (Table 12)

You Can Do It intervention sites saw even larger increases in exclusive breastfeeding during this time period (16 percentage points at 4 weeks; 21 at 3 months; 18 at 6 months). Study sites began with lower exclusive breastfeeding rates and ended with higher breastfeeding rates than non-study sites. There is clear temporal evidence for a causal relationship between the *You Can Do It* intervention and an increase in exclusive breastfeeding rates.

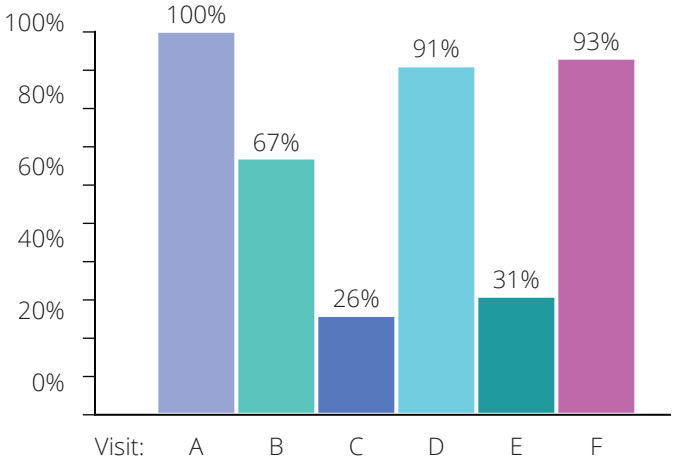
Figure 14. Exclusive Breastfeeding After Intervention



Dose Response: Exclusive Breastfeeding by Study Visits Completed

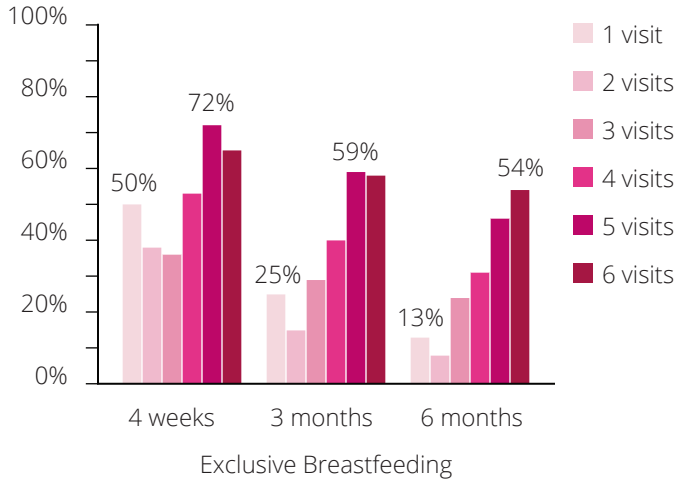
While all study participants completed Visit A of the *You Can Do It* intervention, attendance at other visits varied greatly. Staff was instructed to make 3 attempts to complete each study contact with enrolled moms. Visit C and Visit E had the lowest completion rates. Both of these visits were challenging for staff and study participants: Visit C was a group setting visit and Visit E was a phone contact that needed to be completed within the first 7 days after birth. Visit D was the notification of birth. Visit F was a standard WIC 4-6 week follow-up visit for study participants: no additional *You Can Do It* content was offered. (Figure 15)

Figure 15. Study Moms Completing Each Intervention Visit



The overall number of study visits attended was statistically significantly related to exclusive breastfeeding at 4 weeks, 3 months and 6 months ($p<0.001$ for all time points). (Figure 16)

Figure 16. Exclusive Breastfeeding By Number of Study Visits: Cases Only

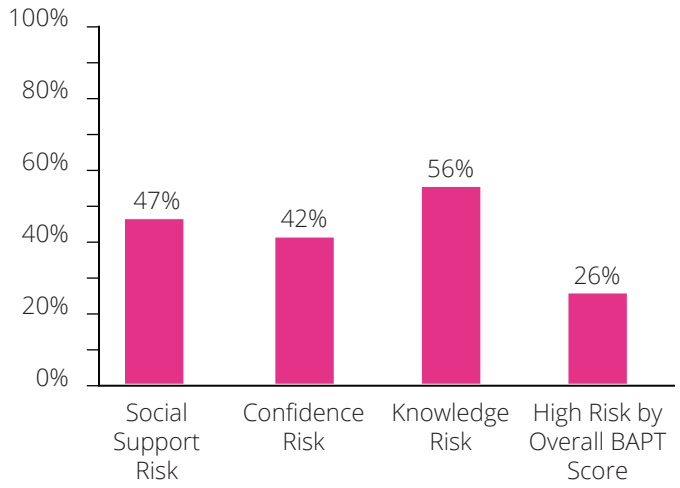


Source: BAPT Excel Sept 2013
4 weeks: p=0.003; 3 months: p=0.003; 6 months: p=0.005

Vermont Experience with BAPT-like Tool

From May 17, 2010 to December 1, 2011, 281 WIC participants filled out Vermont's BAPT (Breastfeeding Attrition Prediction Tool) at a prenatal visit. Of these, 256 had live births in Vermont and continued with the *You Can Do It* study. According to their sub-scores, more than half of these WIC participants (56%) needed knowledge support, 42% needed confidence support and 47% needed social support. Based on their overall scores, 26% of WIC participants were at high risk for breastfeeding failure. (Figure 17)

Figure 17. Breastfeeding Attrition Prediction Tool: *You Can Do It* Moms



Source: BAPT Excel Sept 2013

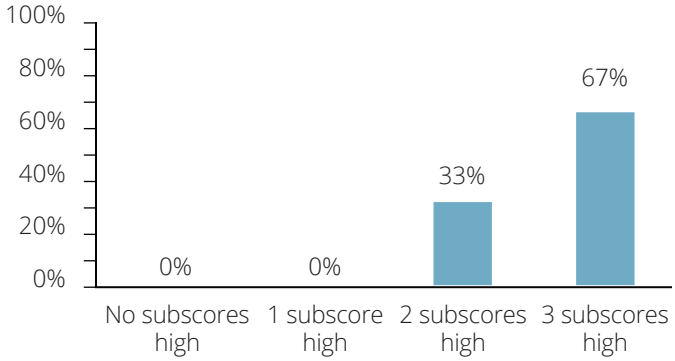
Among high risk WIC participants, 96% needed confidence support, 90% needed knowledge support and 82% needed social support (Figure 18).

Figure 18. Breastfeeding Attrition Prediction Tool: High Risk *You Can Do It* Moms

Source: BAPT Excel Sept 2013

All high risk WIC participants scored high on two or more of the sub-scores: 33% scored high on two sub-scores; 67% scored high on three (Figure 19).

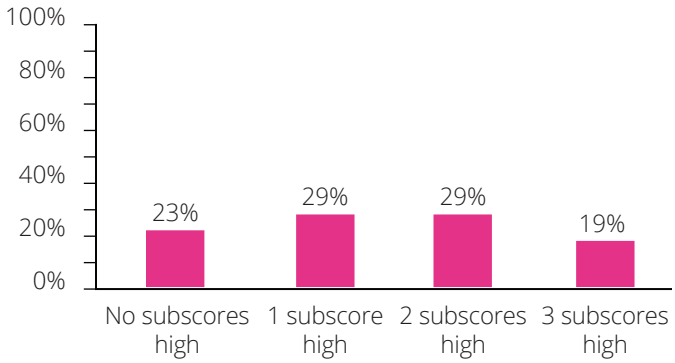
Figure 19. BAPT Subscores for High Risk *You Can Do It* Moms



Source: BAPT Excel Sept 2013

In contrast, WIC participants were fairly evenly distributed by the number of high sub-scores. 23% had no high sub-scores, 29% had one high sub-score, 29% had two, 19% had three (Figure 20).

Figure 20. BAPT Subscores for *You Can Do It* Moms



Source: BAPT Excel Sept 2013

Comparison of BAPT to Other Predictors of Breastfeeding Success (reliability and validity)

Causality: Biologic plausibility and BAPT screening + counseling

The core of the *You Can Do It* intervention was screening to identify each study mom's individual challenges and to prepare her for successful breastfeeding. As described in the *You Can Do It* protocol, we used the total BAPT score and the subscales to identify moms who needed additional support in the areas of social and professional support, breastfeeding knowledge, and breastfeeding confidence. WIC staff were provided with specific materials for study moms that addressed each content area.

We compared exclusive breastfeeding rates at 4 weeks, 3 months and 6 months for each of the three content areas. This analysis includes cases only because control moms did not receive BAPT screening.

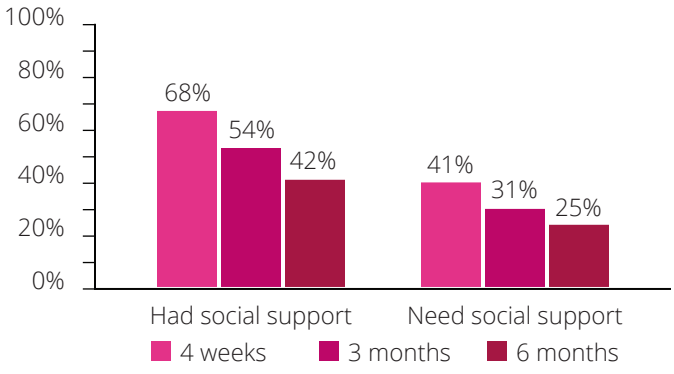
Social support

We hypothesized that study moms with family members or a personal doctor who supported breastfeeding would succeed with breastfeeding. The social support subscale asked study moms to choose a response (Feed formula/No opinion/Feed breast milk/Not applicable) for each of the following people:

21. The baby's father thinks I should.
22. My mother thinks I should.
23. My mother-in-law thinks I should.
24. My sister thinks I should.
25. My doctor thinks I should.

Social support as measured by the BAPT at the first study visit was statistically significantly related to exclusive breastfeeding at 4 weeks ($p<0.0002$), 3 months ($p=0.0001$) and 6 months postpartum ($p=0.006$). (Figure 21)

Figure 21. Social Support and Exclusive Breastfeeding



Statistically significant difference at each time point ($p<0.006$).

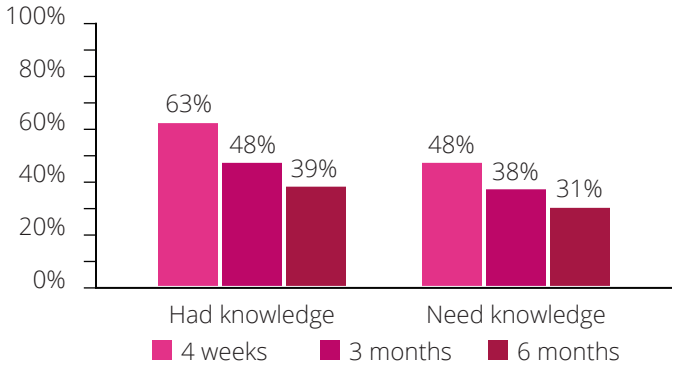
Breastfeeding Knowledge

Breastfeeding knowledge was measured using the negative and positive sentiment subscales of the BAPT. Study moms were asked to choose a response (Disagree/Neither Agree nor Disagree/Agree) for each of the following statements:

1. Breastfeeding is more convenient than formula feeding
4. Breast milk is healthy for the baby.
7. Breast milk is more nutritious that infant formula.
8. Breastfeeding makes your breasts sag.
10. Breastfeeding makes you closer to your baby.
11. Breastfeeding makes returning to work more difficult.
13. When you breastfeed you never know if the baby is getting enough milk.
14. Mothers who formula feed get more rest than breastfeeding mothers.
15. Breastfeeding is more time consuming than formula feeding.
16. Breastfeeding is messy.
18. Breastfeeding ties you down.
19. Breastfeeding helps you bond with your baby.
20. Breastfeeding is better than formula.

Study moms who "had knowledge" were more likely to be exclusively breastfeeding at each time point compared to moms who "needed knowledge" at baseline. However, not all of these differences were statistically significant. Breastfeeding knowledge as measured by the BAPT was statistically significantly related to exclusive breastfeeding at 4 weeks ($p=0.01$) but not at 3 months and 6 months postpartum (Figure 22).

Figure 22. Knowledge and Exclusive Breastfeeding



Statistically significant difference at 4 weeks only ($p=0.01$).

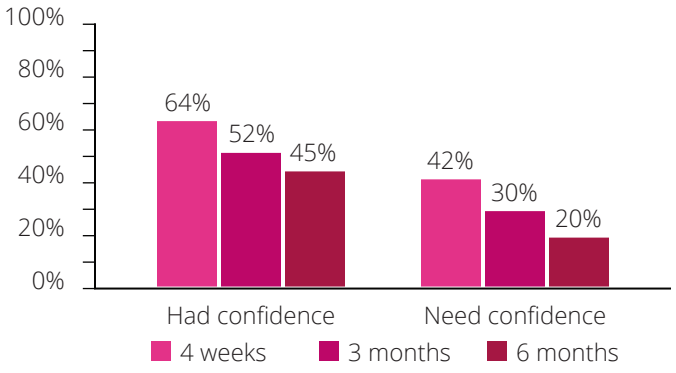
Confidence

Confidence was measured using the perceived behavioral control subscale of the BAPT. Study moms were asked to choose a response (Disagree/Neither Agree nor Disagree/Agree) for each of the following statements:

26. I have the necessary skills to breastfeed.
27. I am physically able to breastfeed.
28. I know how to breastfeed.
29. I am determined to breastfeed.
30. I won't need help to breastfeed.
31. Breastfeeding is easy.
32. I am confident I can breastfeed.

Mothers that reported having confidence at baseline were significantly more likely to report exclusive breastfeeding at 4 weeks ($p=0.0006$), 3 months ($p=0.0005$) and 6 months ($p<0.0001$) than mothers that indicated they needed confidence at baseline. (Figure 23)

Figure 23. Confidence and Exclusive Breastfeeding



Statistically significant differences at all time points (p<0.0001).

These results indicate that the subscales of the BAPT are highly predictive of exclusive breastfeeding. While the BAPT is a validated screening tool for predicting breastfeeding failure, Vermont's use of the subscales is new.

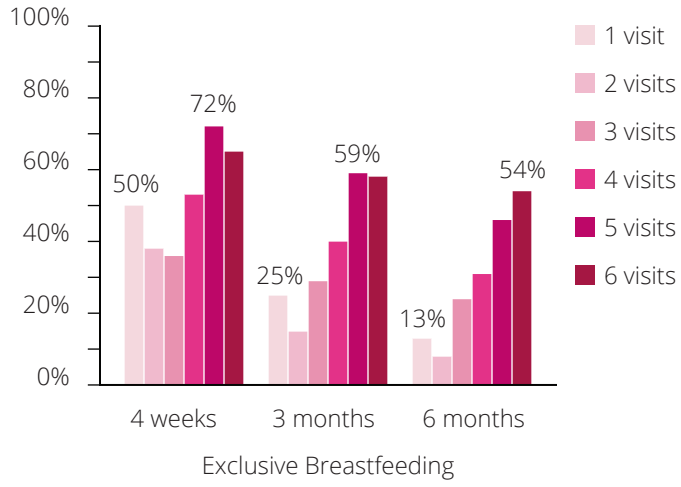
Further analysis for WIC Risk Codes and Study Moms

Did the *You Can Do It* intervention successfully reduce study moms' breastfeeding risks (as identified in the WIC risk codes and BAPT screening)? In order to answer this question, we looked at the relationship between WIC risk codes and exclusive breastfeeding after adjusting for the study dose (i.e. number of visits completed) and the BAPT score. (Table 13) These models include only study moms: moms in the control group received neither BAPT screening nor study visits. After adjusting for BAPT and study dose, WIC risk codes were not statistically significantly related to exclusive breastfeeding for study moms and are not included in the model.

BAPT score and number of study visits completed were strongly and statistically significantly related to exclusive breastfeeding at all three time points. The odds ratio estimates for BAPT and study visits completed did not change in magnitude or statistical significance when WIC risk codes were added to the model (data not shown). The odds ratios represent the change in risk associated with one unit of change in BAPT score or with each additional study visit.

To visualize the relationship between exclusive breastfeeding and study dose another way, it may be helpful to refer to a graph shown earlier. The percentage of study moms exclusively breastfeeding increased with increasing number of study visits. (Figure 24)

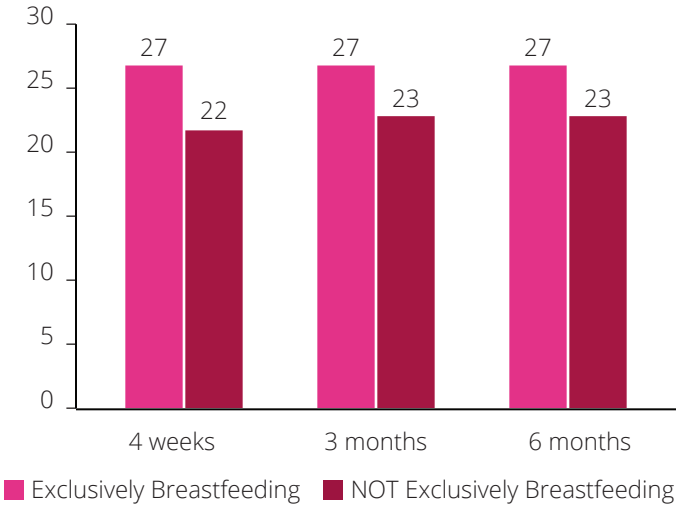
Figure 24. Exclusive Breastfeeding by Number of Study Visits: *You Can Do It* Moms



Source: BAPT Excel Sept 2013
4 weeks: p=0.003; 3 months: p=0.003; 6 months: p=0.005

The relationship between average BAPT scores and exclusive breastfeeding is shown in the following figure (Figure 25). At each time point, study moms who successfully breastfed had higher mean BAPT scores, compared to study moms who stopped exclusively breastfeeding. The distributions of BAPT scores overlapped (data not shown) for the study moms at each time point, but the means were statistically significantly different (p<0.0001).

Figure 25. BAPT Scores By Exclusive Breastfeeding: *You Can Do It* Moms



Difference in means at all time points (p<0.0001)

Table 13. Multivariate Logistic Regression for Study Moms only (n=254)

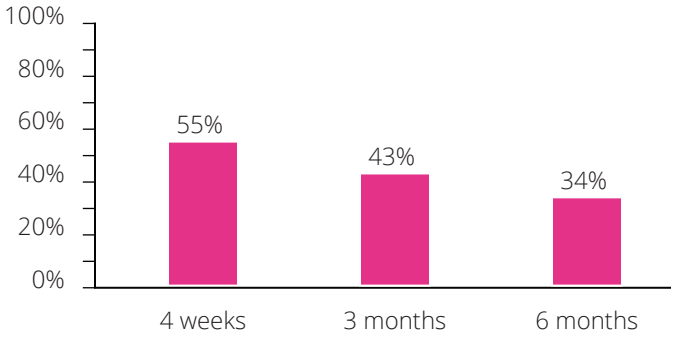
	Not Exclusive breastfeeding at 4 weeks OR (95%CI)	Not Exclusive breastfeeding at 3 months OR (95%CI)	Not Exclusive breastfeeding at 6 months OR (95%CI)
BAPT score	**0.9 (0.8-0.9)**	**0.9 (0.8-0.9)**	**0.9 (0.8-0.9)**
# of Study Visits Completed	**0.6 (0.5-0.8)**	**0.6 (0.5-0.8)**	**0.6 (0.4-0.8)**

Bold=statistically significant at p<0.05

Exclusive Breastfeeding and Individual Study Visits

Visit A has no comparison group because all study participants completed Visit A (Figure 26). Visit A included enrollment and screening with the Breastfeeding Attrition Prediction Tool (BAPT).

Figure 26. Exclusive Breastfeeding by Visit A: *You Can Do It* Moms

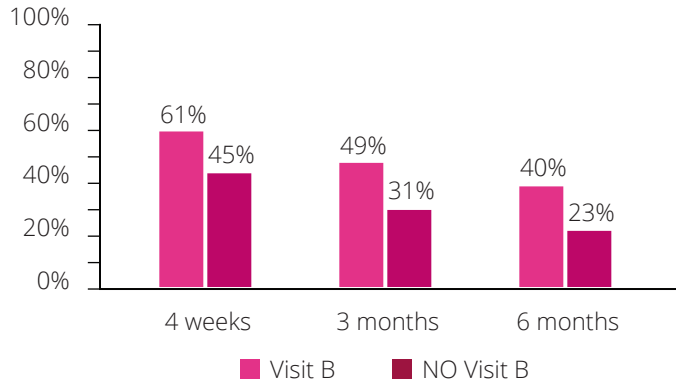


Dose Response Visits B – E

Study participants who completed Visits B, D, and E were more likely to be exclusively breastfeeding at 4 weeks postpartum compared to those who did not complete these visits. Completion of Visits C was not statistically significantly related to exclusive breastfeeding at 4 weeks postpartum. Attendance at Visits B,C,D and E was statistically significantly related to exclusive breastfeeding at 3 months and 6 months when each visit was examined separately. Only Visit F showed no significant difference in exclusive breastfeeding at any time point for those who completed the visit versus those who did not (data not shown).

Visit B content was linked to Visit A through the BAPT screening: the customized counseling given at Visit B was based on the participant's BAPT score. Visit B was considered the core of the intervention because of the individualized counseling. Exclusive breastfeeding rates were statistically significantly higher at all three time points for study participants who completed Visit B compared to those study participants who did not. (Figure 27)

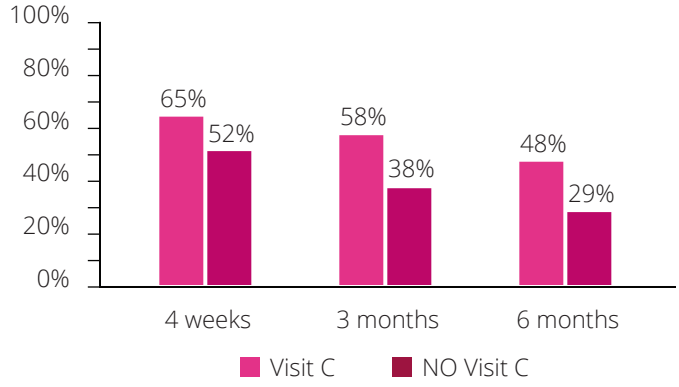
Figure 27. Exclusive Breastfeeding by Visit B: *You Can Do It* Moms



p<0.02 for all time points

Visit C was the group setting visit for study participants. Study participants completing Visit C had higher exclusive breastfeeding rates at 3 months and 6 months postpartum compared to moms who did not complete Visit C (p<0.006). There was no statistically significant difference at 4 weeks postpartum (Figure 28).

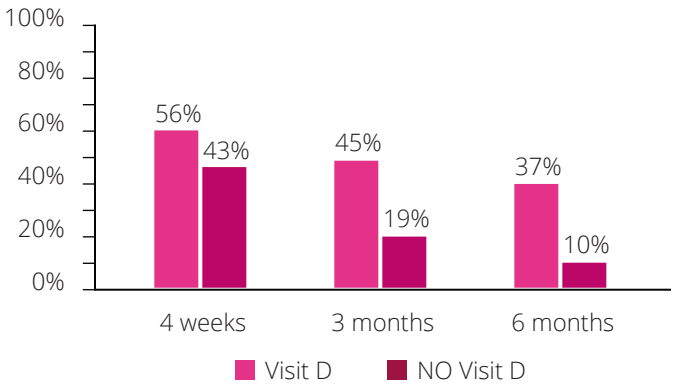
Figure 28. Exclusive Breastfeeding by Visit C: *You can Do It* Moms



p-value at 4 weeks: NS; at 3 and 6 months p<0.006

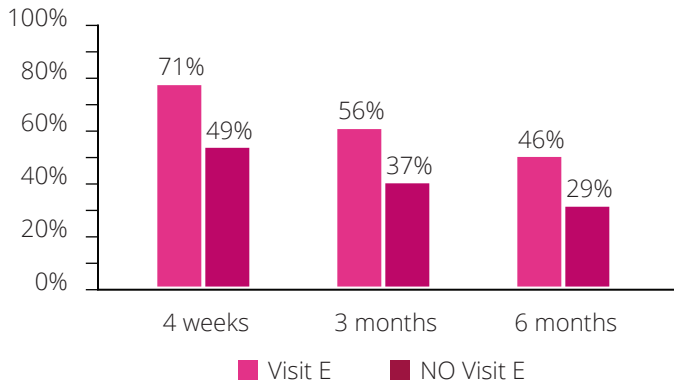
Visit D was the notification of birth. There was no statistically significant difference in exclusive breastfeeding at 4 weeks postpartum. Differences at 3 and 6 months were statistically significant. If study participants reported challenges at Visit D, staff could meet in a case conference to determine what additional help should/could be offered. Case conferences were held at Visit D for 13% of study participants. As part of usual care, food package assignments occurred at Visit D (Figure 29).

Figure 29. Exclusive Breastfeeding by Visit D: *You Can Do It* Moms



p-value at 4 weeks: NS; at 3 months and 6 months: p<0.01

Figure 30. Exclusive Breastfeeding by Visit E: *You Can Do It* Moms



p<0.004 for all time points

While only 31% of study participants completed Visit E, the visit had a strong and statistically significant effect on exclusive breastfeeding. This visit required a peer counselor to contact the study participants within 7 days of birth. While challenging to implement, the effect was striking: a 22 percentage point increase in exclusive breastfeeding at 4 weeks; a 19 percentage point increase at 3 months; and an 17 percentage point increase at 6 months (p<0.004 for all time points). (Figure 30)

Knowledge, Support, Confidence: Measuring the Intervention Dose

Breastfeeding Self-Efficacy Scale

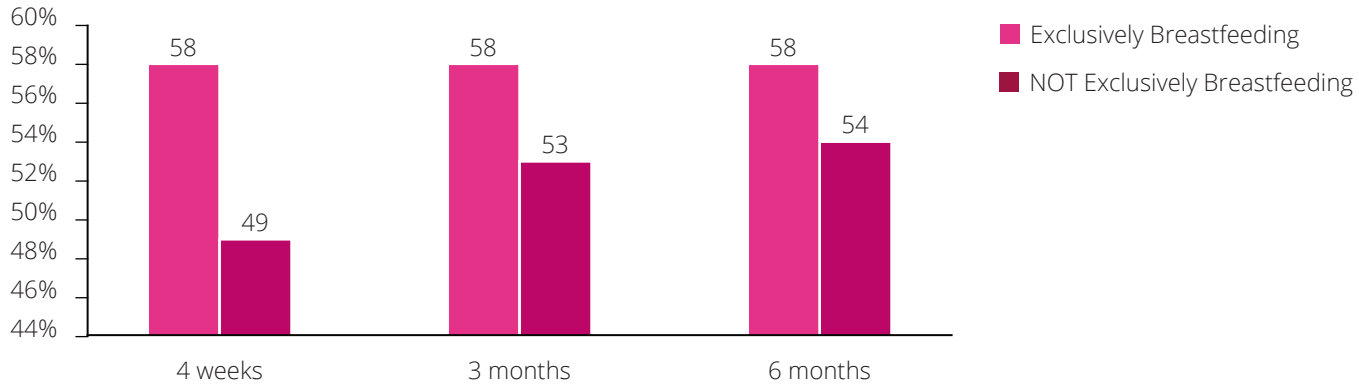
Peer counselors in each study site surveyed study moms by phone during the first seven days postpartum. The survey asked questions about the hospital environment and screened moms for high-risk of breastfeeding failure using the BSES-SF tool. It was more difficult than expected for peer counselors to reach study moms during the first week postpartum, so the sample size includes only 74 of 281 study moms. (Table 14) (Note: 135 study moms received the Postpartum Breastfeeding Survey, but only 74 received it during the 1-week window.)

Table 14. Study Moms' BSES-SF Responses During First Postpartum Week (n=74)

	Very confident	Extremely confident
I can always determine that my baby is getting enough milk	35%	16%
I can always successfully cope with breastfeeding like I have with other challenging tasks	41%	31%
I can always breastfeed my baby without using formula as a supplement	28%	46%
I can always ensure that my baby is properly latched on for the whole feeding	27%	27%
I can always manage the breastfeeding situation to my satisfaction	36%	31%
I can always manage to breastfeed even if my baby is crying	34%	38%
I can always keep wanting to breastfeed	46%	45%
I can always comfortably breastfeed with family members present	28%	39%
I can always be satisfied with my breastfeeding experience	42%	38%
I can always deal with the fact that breastfeeding is time consuming	47%	41%
I can always finish feeding my baby on one breast before switching to the other breast	35%	32%
I can always continue to breastfeed my baby for every feeding.	34%	49%
I can always manage to keep up with my baby's breastfeeding demands	31%	51%
I can always tell when my baby is finished breastfeeding	38%	36%

Overall BSES score differed statistically significantly for moms who were exclusively breastfeeding at each time point. At 4 weeks ($p<0.0002$) and at 3 and 6 months ($p=0.03$), exclusively breastfeeding moms had a higher BSES score compared to moms who were not exclusively breastfeeding (Figure 31).

Figure 31. BSES Score and Exclusive Breastfeeding: Cases with Peer Surveys Only (n=74)

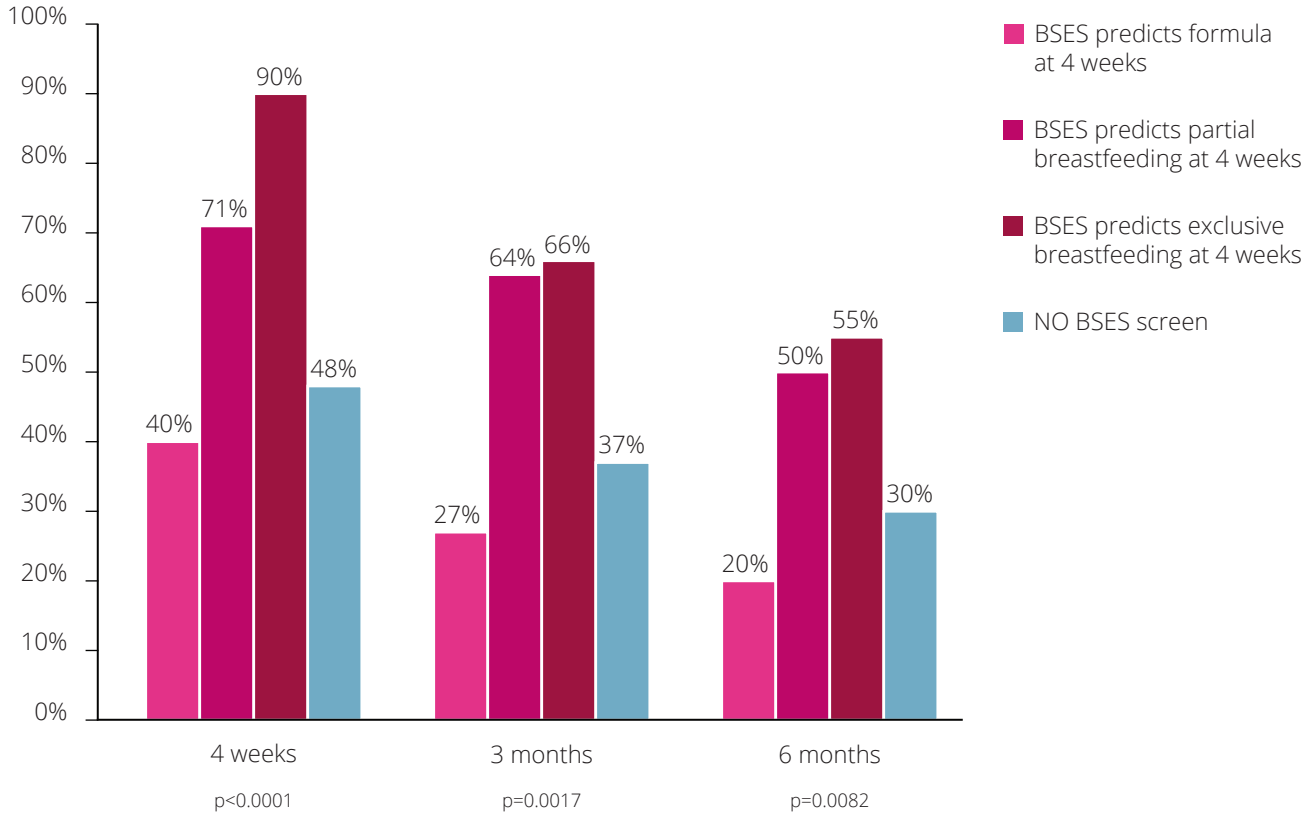


Statistically significant difference at 4 weeks ($p<0.0002$) and at 3 and 6 months ($p=0.03$)

During protocol development, based on work of Cindy-Lee Dennis (Dennis, C.L., 2003) with the BSES-SF, we hypothesized the following relationships between BSES-SF score in the first 7 days after birth and exclusive breastfeeding at 4 weeks postpartum. A BSES score falling between 14 and 49 (inclusive) was hypothesized to predict formula feeding at 4 weeks postpartum. A score between 50 to 59 (inclusive), to predict partial breastfeeding at 4 weeks. Scores between 60 and 70 (inclusive), to predict exclusive breastfeeding at 4 weeks.

Of the 254 case moms, 72 received BSES screening in the first 7 days after birth. *You Can Do It* participants who were not screened within the first 7 days after birth were included in the analysis in the "No BSES Screen" group. Control group moms did not receive BSES screening and were not included in this analysis. BSES-SF score in the first 7 days after birth was statistically significantly related to infant feeding status at all time points. (Figure 32)

Figure 32. Exclusive Breastfeeding by BSES Screening Results: *You Can Do It* Moms



Case moms whose BSES scores predicted formula feeding at 4 weeks were much less likely to be exclusively breastfeeding at any time point compared to moms whose BSES scores predicted partial or exclusive breastfeeding ($p<0.008$ at all time points). Case moms who did not receive BSES screening had exclusive breastfeeding rates between the moms with scores predicting formula feeding and the moms with scores predicting breastfeeding. BSES scores were designed to predict which moms would be exclusive breastfeeding at 4 weeks and 8 weeks. The combination of BSES score and *You Can Do It* intervention also appeared to predict breastfeeding success at 3 months and 6 months. 90% of moms were exclusively breastfeeding at 4 weeks, as predicted by their BSES-SF score. 66% of the moms in this BSES category were still exclusively breastfeeding at 3 months and 55%, at 6 months postpartum. Although the counts are small, it is interesting that 40% of case moms who were predicted to be formula feeding at 4 weeks were actually exclusively breastfeeding at 4 weeks.

Study Moms' Experience During Hospital Stay

The vast majority of *You Can Do It* moms gave birth in a Vermont or New Hampshire hospital (98%). A reciprocal data agreement provides birth certificate data for Vermont residents born in the neighboring Dartmouth-Hitchcock Medical Center. Fewer than 5% of babies in both the control and case groups were born at home (Figure 33).

Hospital Experience

Moms who participated in *You Can Do It* were interviewed about their hospital experience by phone, either by a peer counselor during the first postpartum week or by the project manager during the Exit Survey, several months after completing the study (See Appendix 7: Exit Survey Never Breastfed, and Appendix 8: Exit Survey Ever Breastfed)

A very small number of study moms (n=10) never breastfed their infants. Only 4 of these provided information about their hospital experience. All four reported receiving a gift pack and having their infant in the same room with them. The other responses did not form a clear pattern. (Table 15)

Figure 33. Place of Birth for *You Can Do It* Cases and Controls (n=1427)

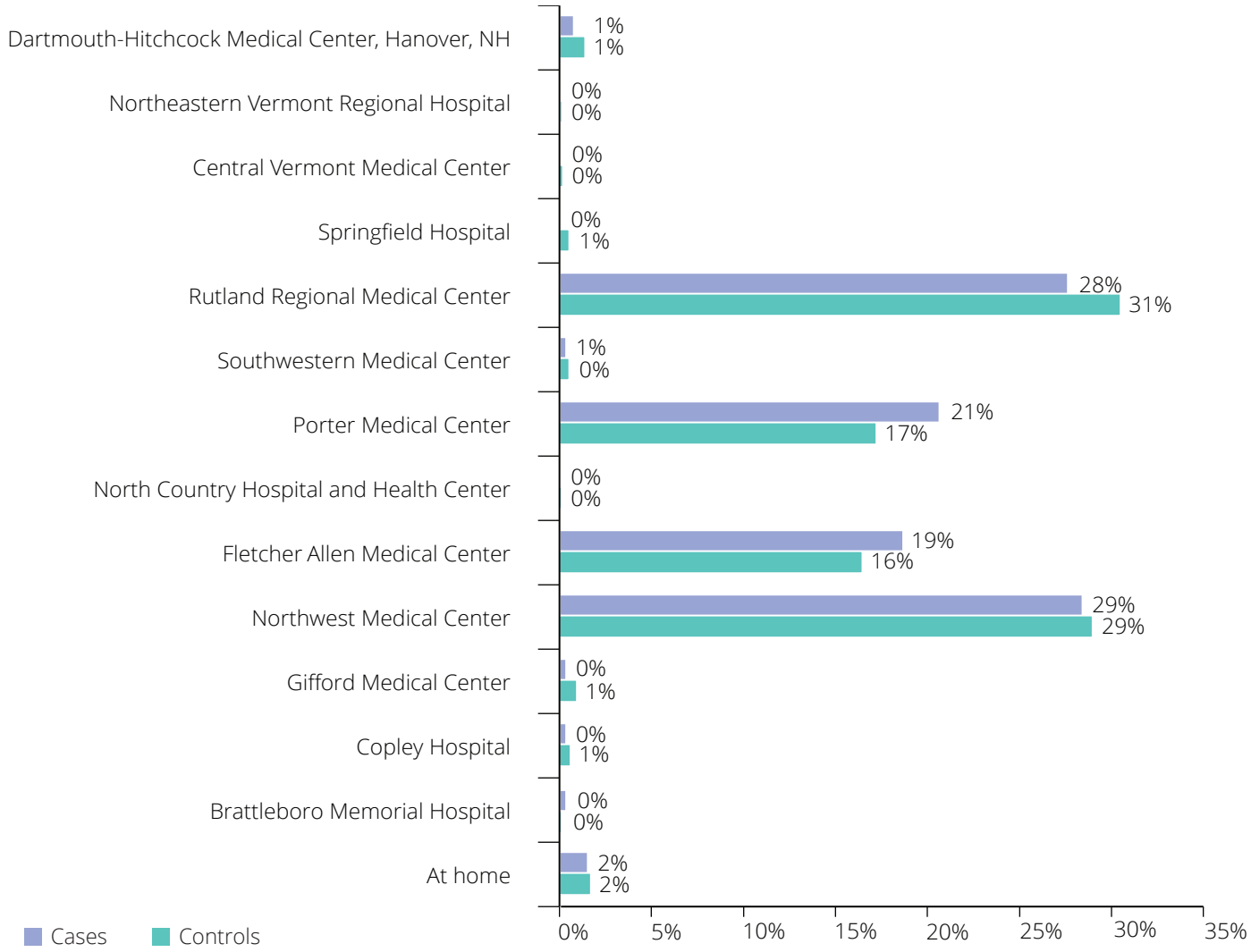
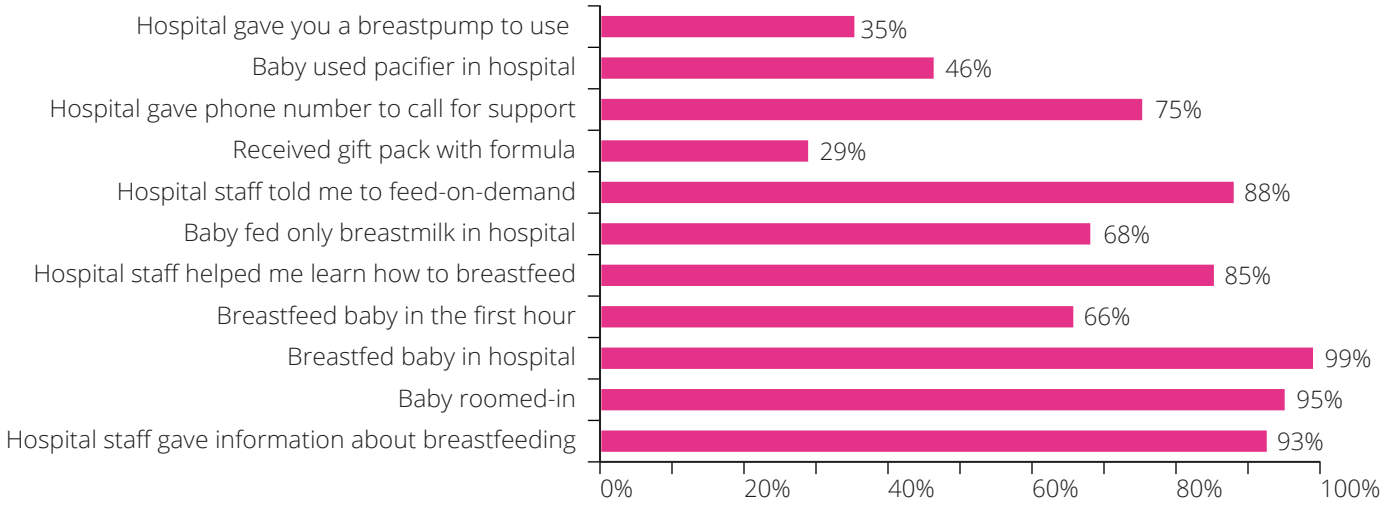


Table 15. Exit Interviews with Study Moms who Never Breastfed: Baby-Friendly Practices

	No	Yes	Don't Know	Missing	Total
Hospital staff gave information about breastfeeding	2	2		6	10
Baby roomed-in		4		6	10
Hospital staff helped learn how to breastfeed	3		1	6	10
Hospital staff told me to feed-on-demand	3		1	6	10
Received gift pack with formula		4		6	10
Hospital gave phone number to call for breastfeeding help	1	1	2	6	10
Baby used pacifier in hospital	1	3		6	10
Hospital gave you a breastpump to use	2	2		6	10

The vast majority of study moms initiated breastfeeding, and most (n=128) provided information about their hospital experience (Figure 34). (Source: Peer Counselor Survey, n=128)

Figure 34. Hospital Environment for EVER Breastfed *You Can Do It* Babies (n=128)



Barriers to Breastfeeding

Six study moms who never breastfed responded to questions about barriers to breastfeeding. Two study moms reported being sick or on medicine. The four study moms who provided a response to "Other reason?" had concerns about milk supply, baby's weight gain after premature birth, and challenges with previous breast surgery or chronic disease medication and breastfeeding. (Table 16)

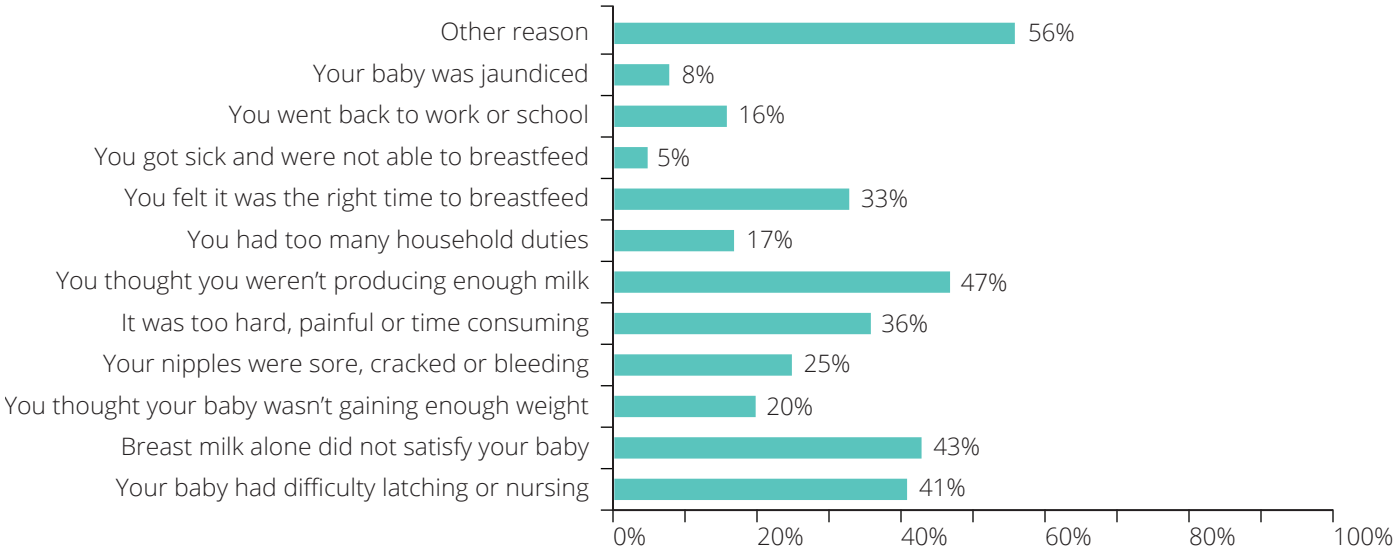
Table 16. Exit Interviews with Study Moms who Never Breastfed: Barriers to Breastfeeding

	No	Yes	Don't Know
Baby was sick and not able to breastfeed.		4	1
You were sick or on medicine	2	3	
You had other children to take care of.		5	
You had too many household duties.		5	
You didn't like breastfeeding.		5	1
You tried but it was too hard.		5	1
You were embarrassed to breastfeed.	1	4	
You went back to work or school.		5	
You wanted your body back to yourself		5	
Other reason?	4	1	
Did not reach for Exit Interview--data on BF only from WIC admin data	6		

Reasons for Stopping Breastfeeding

Mothers who EVER breastfed their infants, but had stopped breastfeeding at the time of the final follow-up interview, gave the following reasons for stopping. (Figure 35) (See Appendix 8: Exit Survey Ever Breastfed).

Figure 35. Reasons for Stopping Breastfeeding: *You Can Do It* Moms who stopped before study exit (n=83)



Qualitative Evaluation of Support Materials used in the *You Can Do It* Intervention

Methods

Materials created for pregnant mothers using social marketing techniques included a comic book, breastfeeding checklist, website with access to study materials, wristbands identifying mom and her support people as belonging to a breastfed baby, a DVD of tips from Amy Spangler, MN, RN, IBCLC, and a magazine for WIC and provider waiting rooms. These materials were all available in July 2010.

We received approval from the Vermont Agency of Human Services (AHS) IRB to conduct a qualitative evaluation of our study materials. Face-to-face interviews were carried out by Dr. Andrea Grayson, Marketing Strategist, of The Grayson Group. The interviews were structured around discussion guides designed for each target population: WIC participants, WIC staff, peer counselors and Health Care Providers (See Appendices 9 -12 for Discussion Guides). Results from the provider interviews are presented in Chapter 4, *WIC Can Help*.

WIC moms were eligible to participate in the evaluation if they had completed Visits A, B, and C of the *You Can Do It* intervention, and thus should have been exposed to all of the study materials. Dr. Grayson sampled from the list of eligible moms based on geography, to give a range of enrollment and due dates.

WIC staff were selected and invited to participate in the qualitative evaluation by Lynne Bortree, Project Manager. Staff was selected to represent a range of job titles (Nutritionist I, Nutritionist II, Public Health Nurse), years of work experience with WIC and degree of experience with the *You Can Do It* intervention. All WIC staff participating in the qualitative evaluation were required to have attended the *You Can Do It* intervention training.

Results

WIC Staff Interview Results

All 3 study sites were represented. The number of WIC staff and their disciplines that participated in the evaluation interviews were:

3 - WIC breastfeeding peer counselors
2 - Nutritionist II (peer supervisory duties)
2 - Nutritionist I (no supervisory duties)
2 - Public Health Nurses providing WIC certifications

One goal of the interviews was to determine which materials staff felt were most helpful to them in communicating the key

messages to mothers, and which ones staff felt were useful to moms. Although each of the materials addressed all 3 content areas, some were stronger in one or another content area.

Knowledge

Staff universally loved *Breastfeeding, Keep It Simple*, the book by Amy Spangler, and recommended continuing to use it. In our study, this book was used to help staff communicate a mom's BAPT score to her. For example if she had a low sub-score in the knowledge domain, staff were trained to refer her to specific pages in the book that addressed topics such as why moms should breastfeed, how to get started, returning to work or school. They felt that the questions and answer format really helped them direct their counseling to mom's specific questions. Note: this book was not a deliverable created for the study; it is a core resource used throughout Vermont WIC.

Interestingly, most staff was very disappointed in the DVD that Amy Spangler recorded for our project. The DVD is a series of short, (3-4 minute) segments of just Amy in her office talking directly to the camera about newborn baby behaviors: peeing and pooping, eating, sleeping, crying, growing. Staff described it as "dry, too much talking head, needs cute babies, illustration, more visuals." Their impression was that moms were watching it straight through in one sitting, rather than returning to watch an individual segment as questions or concerns came up. Although moms who attended the third prenatal visit, a group breastfeeding class, received the DVD, it really was intended to be viewed in single segments on our web page.

Support

Younger staff had very favorable comments about the comic, *I Got Milk*, which follows 4 young moms and their breastfeeding experiences, and most said they would recommend continuing to use it.

Most staff liked and used the pictures comparing the three postpartum food package options in another pre-existing core resource, *WIC Food Packages for Mom and Infants*, but felt that the food was not a "make or break" factor in the decision whether to and how long to breastfeed.

Confidence

The Hospital Experience booklet (also pre-existing core resource) was another universally well-received piece. Staff felt this booklet helped empower both mothers and hospital nurses to use baby-friendly practices, and showed moms how to advocate for themselves at the hospital.

My Breastfeeding Checklist was designed to be the "one stop shopping" resource, and a tool to facilitate communication about breastfeeding plans between moms, partners, WIC and physicians. Staff opinions varied widely in whether they thought this was a valuable communication tool. Some recommended it be broken into separate pieces, others thought it was very helpful for first time moms, and most liked and took the opportunity to write in the contact information for themselves and mom's WIC breastfeeding peer counselor.

Staff loved that we used local WIC moms from some of the study sites for the clinic poster series, but felt that moms did not read them or get any particular messages from them. At one study site visit, we did not see the posters anywhere in the clinic area.

Summary of Staff Interviews

The materials overall were seen as useful, but staff varied widely in what they thought was valuable for communicating with mothers about the importance of knowledge, social and professional supports and confidence. Staff have so much information they feel they have to review with moms at each visit, and they felt they had to rush through the study materials. When asked about which materials they thought moms referred to once they left the appointment, staff said they weren't sure what moms actually used once home.

One major criticism was that we had not developed any materials specifically for dads.

Study Mom Interview Results

Fifteen mothers (5 from each of the study districts) were also interviewed for their feedback on the materials. The key messages the materials gave were:

- There are some basic things you need to know about breastfeeding before your baby is born (knowledge)
- You need to talk to your partner, family, friends, OB, pediatrician, hospital birth team about your breastfeeding plans and goals (support)
- You need to believe in the biology of motherhood: pregnancy, birth and breastfeeding ARE natural, normal, innate behaviors (confidence)
- Knowledge + support + confidence = success

Knowledge

Amy Spangler's *Keep it Simple* was consistently mentioned as a great resource that moms would go back to multiple times for reference. Like staff, they really liked the Q & A format and found it very easy to find the specific information they were looking for. The topics they mentioned looking up included positioning, vitamins, concerns about milk production and breast size, and breastfeeding after a c-section.

Most mothers did not attend a group class and thus did not see What Breastfed Babies Do, the DVD featuring Amy Spangler. A few moms received it in the mail from their WIC certifier, but reported they never watched it.

The few who remembered seeing it commented it was boring. No moms interviewed accessed it on the study web site.

Support

Most remembered the booklet *WIC Food Packages for Moms and Infants* and found the pictures very helpful for seeing the different options for food packages. They all understood that breastfeeding mothers and babies received the most foods. Mothers who actually received the "exclusively breastfeeding package" all could name their food package as "exclusively breastfeeding". Moms receiving the mixed-feeding packages weren't sure which food package they were receiving.

I Got Milk was strongly and positively remembered. Moms especially liked seeing how friends supported one another. This resource was perceived as "real" and as something they could relate to.

Only 1 of the 15 study moms interviewed had visited our web page. Most moms said they had favorite sites they used instead, and a few had no internet access.

Confidence

The Hospital Experience was again universally remembered and appreciated. This piece seemed to accomplish the purpose of helping mom understand what to ask for and the confidence to tell her family and hospital staff what she wanted; several interviewees completed the *Infant Feeding Plan* and took it to the hospital, but a few more left it at home in the rush to get there.

Most moms said their WIC certifier wrote in her name and that of the peer counselor on the brochure *My Breastfeeding Checklist*, but added they did not fill out anything else after they brought it home. The moms who did refer back to the checklist at home felt it was helpful in preparing them for what to expect in the early days and weeks after birth. Most said they would recommend it to other moms.

Like staff, the photos on the clinic poster series were appreciated but moms didn't read the text and didn't get any memorable messages from them.

Summary of Mom Interviews

The WIC breastfeeding peer counselors and Amy Spangler's *Breastfeeding: Keep It Simple* were reported as the most useful and helpful resources for building knowledge, support and confidence. *The Hospital Experience* also was recognized as very helpful. The project sought to have moms meet with the same WIC certifier throughout the study, and for the moms who were interviewed, they were very satisfied when this was achieved.

Discussion

Staff and mom opinions of the materials were generally in line with each other (Table 17); one reason for this could be that staff interjected their own opinions when sharing the resources with moms. Dr. Grayson noted that there seemed to be "office cultures" around support/non-support of specific deliverables, as well as the study in general. However, staff indicated they would use and support the parts of the study that appealed to moms and were shown to be effective, even if they personally didn't agree.

Table 17. Participants, Staff and Peer Counselors View of Study Materials

	Most moms liked:	Most WIC staff liked:	Most peer counselors liked:
Breastfeeding Keep It Simple book	Y	Y	Y
Hospital Experience booklet	Y	Y	Y
I Got Milk comic	Y	Mixed	Y
Peer counselor program/peer assigned to mom	Y	NA	NA
WIC Food Packages brochure	Y	Y	NA

CHAPTER 3.
Impact of the 2009 WIC Food Package Changes on Exclusive Breastfeeding Rates

National Food Package Policy in Vermont

In October 2009, the new USDA food package policy for WIC participants was implemented in Vermont. The changes to the food packages for breastfeeding mother/baby dyads were designed to add incentives to increase initiation, duration and exclusivity, and further establish WIC as a serious supporter of breastfeeding. The new packages sought to minimize early supplementation with formula by establishing multiple feeding options for infants to better support successful breastfeeding in the first year of life. Additionally, the changes addressed the perceived imbalance in the monetary value of food packages for exclusively breastfeeding mothers as compared to formula feeding mothers.

Part of our evaluation was designed to measure any changes attributable to the new food package policy alone, i.e., apart from the *You Can Do It* or *WIC Can Help* interventions. We wanted to know if more moms chose to exclusively breastfeed after the new food package policy took effect. We also wanted to know if moms who received the *You Can Do It* intervention chose the new exclusively breastfeeding food package more often than moms who did not participate in the study.

Breastfeeding intention at prenatal visit, exclusive breastfeeding at 4 weeks and 3 months and feeding status at 4 weeks and 3 months were collected for Vermont WIC participants in non-study District Offices before and after the new food package policy.

Methods

Vermont WIC's data coding changed to accommodate the new food package policy. The coding was consistent over time for "pregnant woman" and for "postpartum woman, not lactating." For the evaluation, the following categories were defined as equivalent for WIC participants before and after the implementation of the new food package policy. (Table 18)

Table 18. Food Package Categories for Controls and Cases

Historical controls				Cases
Baseline Food Package		**Formula order**		**New Food Package**
Postpartum woman, lactating	+	no formula from WIC.	~ =	Woman, fully breastfeeding
Postpartum woman, lactating	+	Up to ½ of the formula allowed by age and tailored to the infant's intake.	~ =	Woman, mostly breastfeeding
Postpartum woman, lactating	+	From ½ up to the full quantity of formula allowed by age and tailored to the infant's intake.	~ =	Woman, some breastfeeding

The birth cohorts that were chosen for the evaluation of the food package differ from those used to evaluate the *You Can Do It* intervention, because they include all moms in all Districts, rather than only those meeting *You Can Do It* eligibility criteria [intended to breastfeed (or were undecided); age 18+; 32 weeks gestation or less; ability to read and understand English; and attended a clinic in Rutland, Middlebury or St. Albans].

Results

Comparison of Breastfeeding Intention at Prenatal Visit by Food Package Era and Site

Breastfeeding intention at prenatal visit is collected in all Vermont WIC clinics. Breastfeeding intention is a strong predictor of breastfeeding success. We compared WIC moms with live births before the new food package policy took effect in October 2009 to WIC moms with live births during the time of our *You Can Do It* intervention, from May 2010 onwards. (Table 19) We did not limit this analysis to WIC moms meeting eligibility criteria for the *You Can Do It* intervention.

For WIC moms attending clinics in the *You Can Do It* sites (Middlebury, Rutland and St. Albans), there was no statistically significant difference in feeding plans before or after the food package policy took effect

For WIC moms attending clinics in non-*You Can Do It* sites, there was a statistical difference in feeding plans. Under the new food package policy, more moms intended to breastfeed (78% vs. 73%), fewer moms were undecided (8% vs. 12%) and slightly fewer moms intended to bottle feed (14% vs. 15%) ($p<0.0001$).

The *You Can Do It* intervention was not designed to influence infant feeding plans, only to support moms who were undecided or who had already chosen breastfeeding.

Table 19. Breastfeeding Intention at Prenatal Visit (all moms*)

	Before Food Package (Live births from Oct 1, 2007 to Sept 30, 2008)	**During Study** (Live births from May 17, 2010 to Dec 31, 2011)	**p-value**
***You Can Do It* Sites:**	(n=751)	(n=1059)	
Intended to breastfeed	69%	68%	NS
Undecided about feeding plan	16%	15%	
Intended to bottle feed	15%	17%	
Non-Study Sites:	(n=1877)	(n=2933)	
Intended to breastfeed	73%	78%	p<0.0001
Undecided about feeding plan	12%	8%	
Intended to bottle feed	15%	14%	

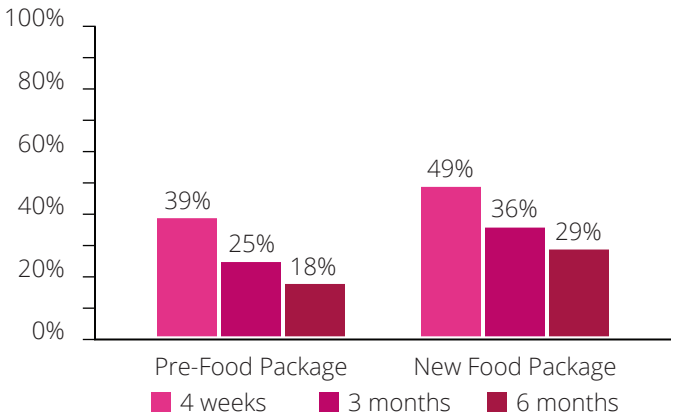
*All Vermont PNSS cases with prenatal WIC participation matched to a Vermont birth certificate.

Comparison of Exclusive Breastfeeding in Non-*You Can Do It* Sites by Food Package Era

The *You Can Do It* intervention took place at the same time as the new food package policy implementation. To estimate the increase in exclusive breastfeeding that could be attributed to the new food package policy, we calculated the percent exclusive breastfeeding in both study and non-study sites before and after the new food package policy took effect. In order for these estimates to be comparable to the results from the *You Can Do It* evaluation, we limited the analysis to WIC mothers who met the *You Can Do It* eligibility criteria for age, primary language, weeks gestation, and infant feeding plans: intending to breastfeed or undecided.

The exclusive breastfeeding estimates for study sites include all eligible moms, both those who participated in *You Can Do It* and those who did not. For eligible moms attending clinics at study sites (Figure 36), there was a 10 percentage point increase in exclusive breastfeeding at 4 weeks after the new food package policy took effect. This gain in exclusive breastfeeding among eligible moms persisted at 3 months (11 percentage points higher) and at 6 months (11 percentage points higher).

Figure 36. Exclusive Breastfeeding at Study Sites



All Pre-Food Package and During Study differences were statistically significant with a p<0.001

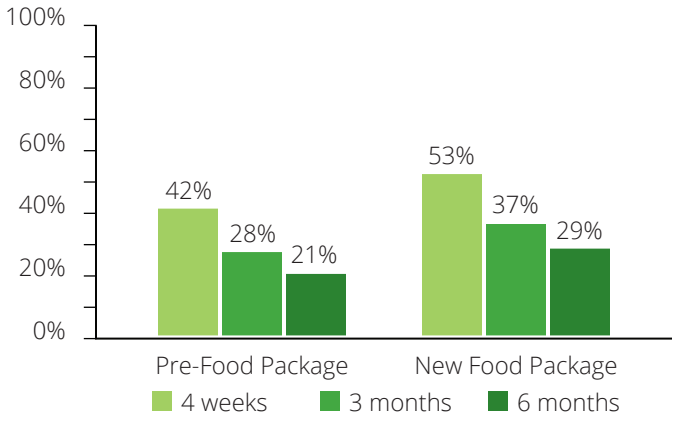
For eligible moms attending clinics at non-study sites under the new food package policy, there was a similar pattern. (Table 20 and Figure 37) At 4 weeks, the percent of eligible moms exclusively breastfeeding was 11 percentage points higher under the new food package policy. At 3 months, the difference was 9 percentage points higher. At 6 months, 8 percentage points higher.

Before the new food package, study sites had lower percentages of exclusive breastfeeding than non-study sites. The differences in baseline exclusive breastfeeding between

Table 20. Food Package Policy Along: Non-Study Sites (eligible moms)

Exclusive breastfeeding at	Before Food Package (Live births from Oct 1, 2007 to Sept 30, 2008) **(n=1336)**	During Study (Live births from May 17, 2010 to Dec 31, 2011) **(n=2125)**	p-value
4 weeks	42%	53%	p<0.0001
3 months	28%	37%	p<0.0001
6 months	21%	29%	p<0.0001

Figure 37. Exclusive Breastfeeding at Non-Study Sites



All Pre-Food Package and During Study differences were statistically significant with a p<0.01

study and non-study sites are not surprising. In Vermont, District Offices with lower breastfeeding rates were targeted to receive peer counseling programs. Since the *You Can Do It* intervention requires peer counselors, the study was carried out in these District Offices. After the new food package policy took effect, the differences between study and non-study sites narrowed. At 6 months postpartum, under the new food package, the percentage of eligible moms exclusively breastfeeding is exactly the same: 29%.

Comparison of Infant Feeding Status by Food Package Era and Site

Since the national policy affected food package choice specifically, we compared food package choice (as measured by infant feeding status) among WIC participants before and after the new food package policy took effect. In Vermont, the new food package policy took effect in October 2009. We included all WIC participants with a live birth in Vermont between October 1, 2007 and September 30, 2008 in the "Before Food Package" era and all WIC participants with

a live birth between May 17, 2010 and December 31, 2011 in the "During Study" era. *You Can Do It* sites are defined as Middlebury, Rutland and St. Albans District Offices.

The birth cohorts chosen for the evaluation of the food package differ from those used to evaluate the *You Can Do It* intervention, because they include all moms in all Districts, rather than only those meeting *You Can Do It* eligibility criteria [intended to breastfeed (or were undecided); age 18+; 32 weeks gestation or less; ability to read and understand English; and attended a clinic where the *You Can Do It* intervention was offered.] While most of the analyses reported here are simple frequency tables, the preparation of the administrative data was more complex. We re-coded the WIC administrative data to fit the new food package guidelines and converted the data from multiple records per person to one record per person. This conversion involved sorting control mom records into categories that were similar to the new food package categories (Table 18) and defining the exclusive breastfeeding status at 4 weeks, 13 weeks and 26 weeks. WIC administrative data often includes data around these time points but not exactly at these time points. We defined WIC moms as breastfeeding *at* each time point who were breastfeeding *at or after* 4 weeks, 13 weeks or 26 weeks. This analysis is not limited to WIC participants who were eligible or who participated in *You Can Do It* (Table 21 and Figure 38).

At four weeks postpartum, WIC moms attending clinics in *You Can Do It* sites were more likely to choose a fully breastfeeding food package after the new food package policy took effect

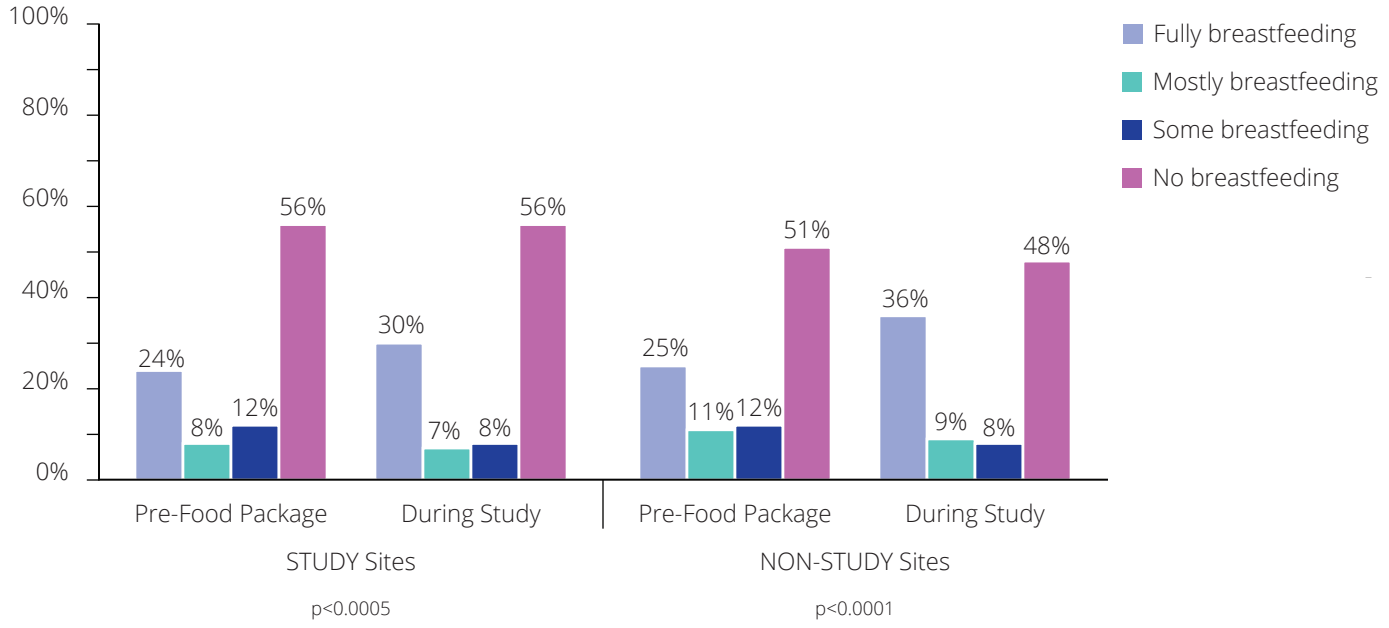
Table 21. Feeding Status at 4 Weeks Postpartum (all moms*)

	Before Food Package (Live births from Oct 1, 2007 to Sept 30, 2008)	**During Study** (Live births from May 17, 2010 to Dec 31, 2011)	**p-value**
***You Can Do It* Sites:**	(n=985)	(n=1438)	0.0005
Fully breastfeeding at 4 weeks	24%	30%	
Mostly breastfeeding at 4 weeks**	8%	7%	
Some breastfeeding at 4 weeks	12%	8%	
No breastfeeding at 4 weeks	56%	56%	
Non-Study Sites:	(n=2656)	(n=4040)	p<0.0001
Fully breastfeeding at 4 weeks	25%	36%	
Mostly breastfeeding at 4 weeks**	11%	9%	
Some breastfeeding at 4 weeks	12%	8%	
No breastfeeding at 4 weeks	51%	48%	

*All Vermont PNSS cases with prenatal WIC participation matched to a Vermont birth certificate.

**'Mostly' means more than half breastfeeding: WIC supplies enough formula to supply ½ of the child's needs at every age. Definition took effect October 2010.

Figure 38. Feeding Status at 4 Weeks by Study and Food Package Policy



(30% vs. 24%). Fewer WIC moms received some breastfeeding food packages (8% vs. 12%). Mostly breastfeeding packages and non-breastfeeding food packages were not different in the two time periods. The change in distribution of food packages was statistically significant (p=0.0005).

An even higher increase in fully breastfeeding food packages was seen among WIC moms attending clinics in non-study sites (36% vs. 25%). A slight decrease in non-breastfeeding food packages (48% vs. 51%) was complemented by decreases in the mostly breastfeeding (9% vs. 11%) and some breastfeeding food packages (8% vs. 12%). The change in distribution for food packages was also statistically significant for WIC moms in non-study sites (p<0.0001).

At three months postpartum, WIC moms attending clinics in *You Can Do It* sites were also more likely to choose a fully breastfeeding food package after the new food package policy took effect (23% vs. 9%) and less likely to choose either a mostly breastfeeding or some breastfeeding food package. (Table 22 and Figure 39) Approximately 2% more WIC moms chose non-breastfeeding food packages after the new food package policy took effect. The differences in food package choices before and after the food package policy change were statistically significant (p<0.0001).

A similar pattern was seen for WIC moms attending clinics in non-study sites. Almost three times as many moms chose a fully breastfeeding food package after the new food package policy took effect (29% vs. 10%). Fewer moms received mostly

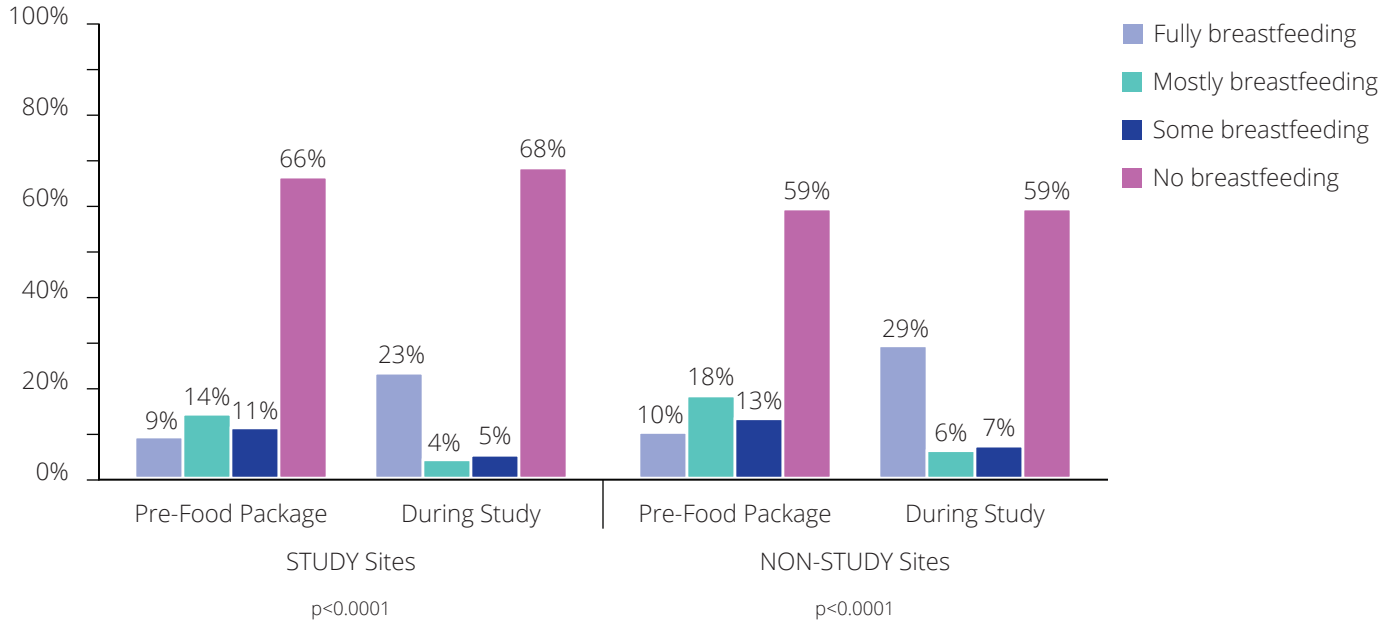
Table 22. Feeding Status at 3 months (all moms*)

	Before Food Package (Live births from Oct 1, 2007 to Sept 30, 2008)	**During Study** (Live births from May 17, 2010 to Dec 31, 2011)	**p-value**
***You Can Do It* Sites:**	(n=942)	(n=1390)	p<0.0001
Fully breastfeeding at 13 weeks	9%	23%	
Mostly breastfeeding at 13 weeks**	14%	4%	
Some breastfeeding at 13 weeks	11%	5%	
No breastfeeding at 13 weeks	66%	68%	
Non-Study Sites:	(n=2476)	(n=3916)	p<0.0001
Fully breastfeeding at 13 weeks	10%	29%	
Mostly breastfeeding at 13 weeks**	18%	6%	
Some breastfeeding at 13 weeks	13%	7%	
No breastfeeding at 13 weeks	59%	59%	

*All Vermont PNSS cases with prenatal WIC participation matched to a Vermont birth certificate.

**'Mostly' means more than half breastfeeding: WIC supplies enough formula to supply ½ of the child's needs at every age. Definition took effect October 2010.

Figure 39. Feeding Status at 13 Weeks by Study and Food Package Policy



breastfeeding or some breastfeeding food packages and the percentage of moms receiving a non-breastfeeding food package remained unchanged. These differences in food package choice at 3 months were also statistically significant ($p<0.0001$).

Overall at three months postpartum, Vermont WIC moms in all sites were more likely to choose food packages supporting exclusive breastfeeding after the new food package policy change.

Independent Effects of Food Package and *You Can Do It* Intervention

Exclusive Breastfeeding at 4 Weeks Postpartum

As described earlier, exclusive breastfeeding rates varied by District Office, food package era, breastfeeding plans at first prenatal visit and whether or not WIC moms participated in the *You Can Do It* Intervention. All of these were statistically significantly related to exclusive breastfeeding at 4 weeks postpartum in univariate analysis. In order to measure the effect of all of these factors in combination, we created a multivariate model.

All of the variables (except District Office) were statistically significantly related to exclusive breastfeeding at 4 weeks, even after adjusting for all other variables in the model (Figure 40). This means that the intervention, the food package policy and the mother's infant breastfeeding plans all influenced the percentage of moms exclusively breastfeeding at 4 weeks postpartum.

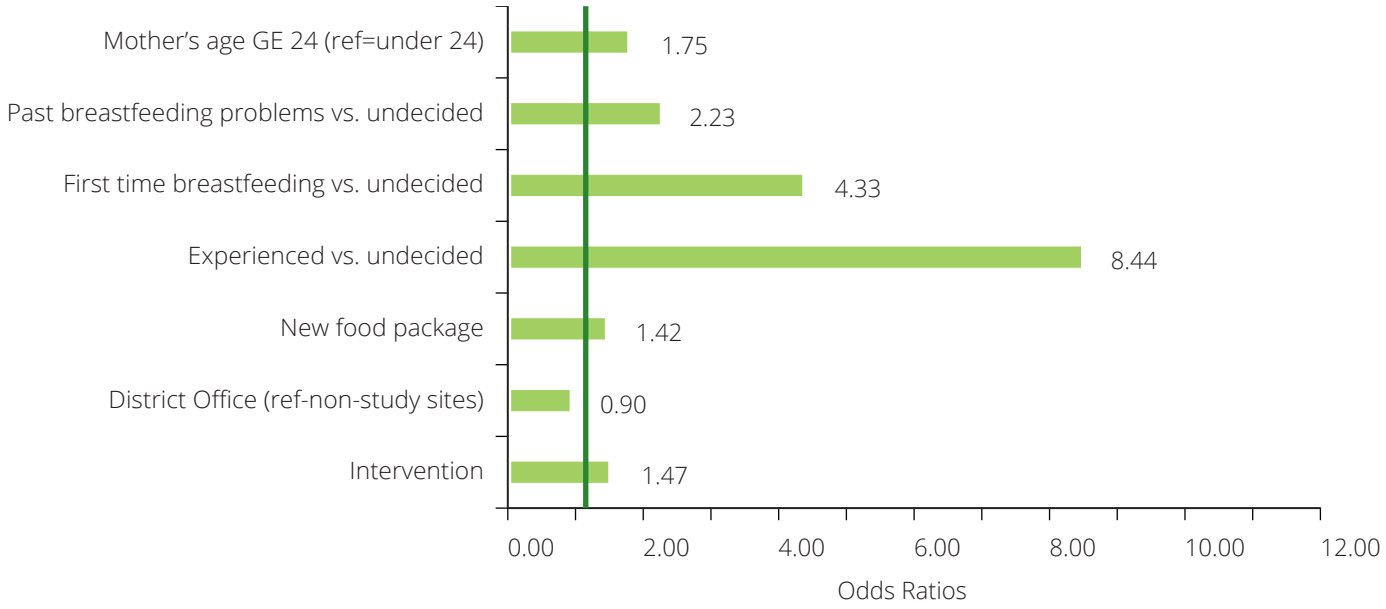
District Office was retained in the model as a confounding factor. The odds ratio estimate for the intervention changed by more than 10% depending upon whether or not District Office was in the model. District Office was also related to the original design of the study: WIC moms were only invited to participate in the intervention if they attended a clinic at a study District Office.

Participation in the *You Can Do It* intervention was associated with success in exclusive breastfeeding at 4 weeks, after adjusting for all of the other variables in the model. Attending clinic in a study District Office, after adjusting for all other variables in the model, was associated with failure in exclusive breastfeeding at 4 weeks. As seen previously in the baseline comparison, the study District Offices had lower rates of exclusive breastfeeding at baseline compared to the non-study District Offices.

The new food package was associated with success in exclusive breastfeeding at 4 weeks, after adjusting for all other variables in the model.

Infant feeding plans at first prenatal visit were also strongly associated with exclusive breastfeeding success, even after adjusting for all other variables in the model. Experience

Figure 40. Predicting Exclusive Breastfeeding Success at 4 Weeks, Multivariate Odds Ratios



in breastfeeding was associated with the highest exclusive breastfeeding success, followed by first time moms who intended to breastfeed, and followed by moms who had past challenges with breastfeeding. Moms with these categories of infant feeding plans were all more likely to succeed at breastfeeding compared to moms who were undecided about their feeding plans at the first prenatal visit. Moms who intended to formula-feed were excluded from the analysis.

Maternal age at first visit was also strongly associated with exclusive breastfeeding success at 4 weeks after adjusting for all other variables. Moms over the age of 24 were almost twice as likely to succeed compared to moms under age 24.

Exclusive Breastfeeding at 3 Months Postpartum

The new food package policy, the *You Can Do It* intervention, infant feeding plan and maternal age at first WIC visit were all strongly associated with exclusive breastfeeding at 3 months, even after adjusting for all of the other variables in the model. (Figure 41) Once again District Office was not statistically significantly related to exclusive breastfeeding, but was retained in the model for the same reasons as above.

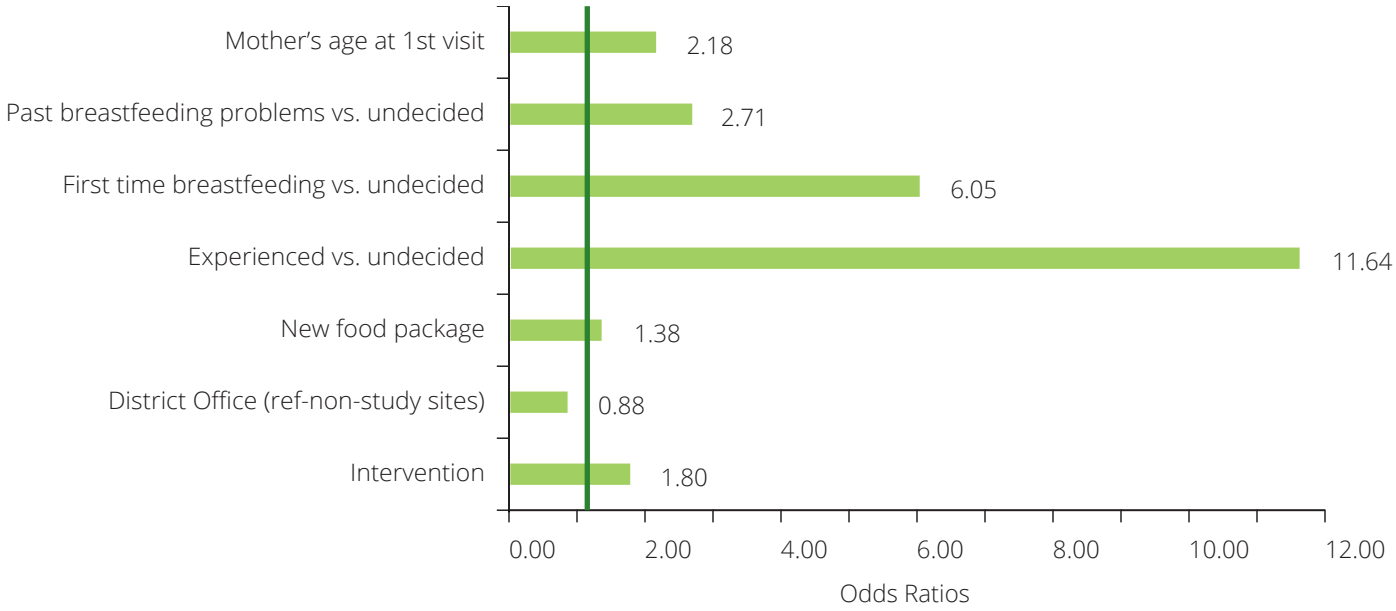
Under the new food package policy, WIC moms were 1.38 times as likely to succeed at exclusive breastfeeding at 3 months, after adjusting for participation in the *You Can Do It* intervention, the infant feeding plan, maternal age and whether the intervention was available at the District Office.

WIC moms receiving the intervention were almost twice as likely to succeed at exclusive breastfeeding at 3 months postpartum compared to those who did not, after adjusting for the new food package policy and all other variables in the model.

Infant feeding plan remained a strong predictor of exclusive breastfeeding success. WIC moms who were experienced at breastfeeding from a previous pregnancy were 11 times as likely to be successful as WIC moms who were undecided about feeding plans at their first prenatal visit. WIC moms who intended to breastfeed for the first time were 6 times as likely to be successful as WIC moms who were undecided. WIC moms with a history of breastfeeding problems were almost 3 times as likely to succeed, compared to undecided WIC moms.

Maternal age at first WIC visit was also associated with exclusive breastfeeding success at 3 months postpartum. Moms 24 years and older were more than twice as likely to succeed compared to younger moms.

Figure 41. Predicting Exclusive Breastfeeding Success at 3 Months, Multivariate Odds Ratios



Summary

Mothers who received the new WIC food packages **and** participated in the *You Can Do It* intervention exclusively breastfed their infants at 4 weeks, 3 months and 6 months more often than mothers who were in the historical control group, more often than mothers who declined to participate and more often than mothers who received only the new food packages. These differences in exclusive breastfeeding persisted over time (Figure 42). *You Can Do It* study moms had the best exclusive breastfeeding outcomes, followed by moms who received only the new WIC food packages, followed by moms who received neither the intervention nor the new food packages ($p<0.0001$).

Predictive Factors for Exclusive Breastfeeding Success

Because we were interested in duration of exclusive breastfeeding, we analyzed the evaluation data for *You Can Do It* and the new food package policy using Cox proportional hazards regression. Like the Kaplan-Meier analysis presented in Figure 41, this analysis method can measure the time to an event. Since the duration of exclusive breastfeeding is our main study outcome, we wanted to know which variables in the WIC administrative data are predictive of stopping exclusive breastfeeding. Stepwise Cox proportional hazards regression generated models for predicting success with exclusive breastfeeding over a 12-month follow-up period.

Predictors for Stopping Exclusive Breastfeeding: Cases only, 12-month follow-up.

Mom's infant feeding plans at the first prenatal visit, case management flag (based on BAPT score or WIC risk code), social support, confidence and knowledge sub-scores were all statistically significantly related to exclusive breastfeeding in univariate analysis. Prenatal and postpartum WIC risk code scores and BSES scores were not statistically significantly related to exclusive breastfeeding in univariate analysis. (Data not shown.)

The individual visits were not statistically significantly related to exclusive breastfeeding in univariate analysis. The number of visits completed was also not statistically significantly related to exclusive breastfeeding in univariate analysis.

Mom's infant feeding plans at the first prenatal visit combined with social support flag were both statistically significant predictors of exclusive breastfeeding with 12 months of follow-up. Mothers who needed social support were 1.6 times as likely to stop exclusive breastfeeding compared to mothers who had social support, based on BAPT screening at visit A. Mothers with definite plans for breastfeeding, with either positive or negative breastfeeding history, were less likely to stop exclusive breastfeeding compared to mothers who were undecided at the first prenatal visit. Mothers who planned to breastfeed for the first time were less likely to stop exclusive breastfeeding than mothers who were undecided, but this difference was not statistically significant. (Table 23)

Figure 42. Exclusive Breastfeeding Over Time: Food Package Era and Study Enrollment (Declined moms excluded)

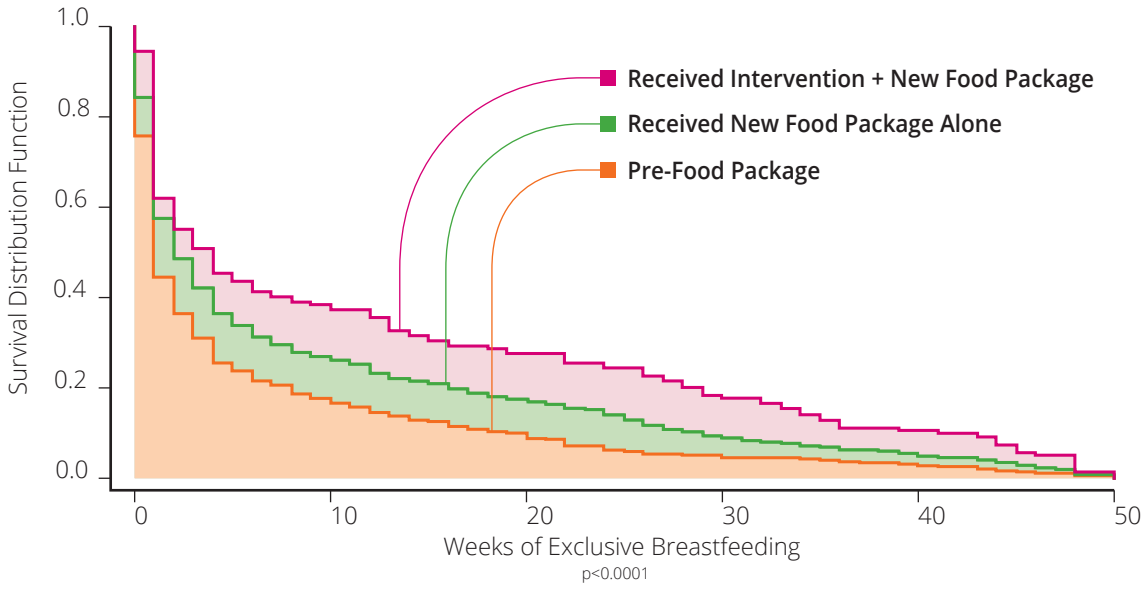


Table 23. Predicting Stopping Exclusive Breastfeeding with 12 Months of Follow-up: Cases Only Model (n=252)

Parameter	Hazard Ratio	95% Confidence Limits		Reference category
		Upper	Lower	
Needed Social Support	1.6	1.2	2.2	Had Social Support per BAPT score
Had Breastfeeding Experience	0.39	0.23	0.67	Undecided about infant feeding plan
First time Breastfeeding	0.82	0.51	1.31	Undecided about infant feeding plan
Had Previous Problems Breastfeeding	0.56	0.33	0.98	Undecided about infant feeding plan

Predictors for Stopping Exclusive Breastfeeding: Cases and Controls, 12-month follow-up.

Cases and controls were statistically significantly different at baseline for 7 measures: completion of high school, race/ethnicity, first pregnancy, District Office, WIC risk code for prenatal drug use, WIC risk code for prenatal obesity/ overweight, WIC risk code for baby having a postpartum risk.

These variables were included in the selection pool of variables for the stepwise Cox regression model (p-value for model entry=0.25, p-value for remaining in model=0.15). The pool of variables also included mother's age, marital status, infant feeding plan at prenatal visit, type of delivery, insurance status, prenatal and postpartum WIC risk codes, mother's pre-pregnancy body mass index (BMI), and mother's weight change during pregnancy. For this model, control moms were defined as receiving no case management. Case moms were defined as needing case management based on their BAPT or WIC risk codes.

The final multivariate Cox regression model for cases and controls showed an increased likelihood of stopping exclusive breastfeeding for mother's not completing high school, mother not married, attending a study site in Rutland or St. Albans (vs. Middlebury), and mother's BMI, after adjusting for all other variables in the model. (Table 24)

Mothers were more likely to sustain exclusive breastfeeding if they were flagged for case management in the *You Can Do It* study, were older, were pregnant for the first time, had positive or negative breastfeeding experience (compared to mothers who were undecided about infant feeding plans), and if their babies received a WIC postpartum risk code.

Table 24. Predicting Stopping Exclusive Breastfeeding with 12 Months of Follow-up: Cases and Controls Model (n=1188)

Parameter	Hazard Ratio	95% Confidence Limits		Reference category
		Upper	Lower	
Flagged for case management because of WIC risk code or BAPT	0.72	0.54	0.96	Control group or case with no case management
Did not complete high school	1.3	1.06	1.54	Completed high school
Mother's age	0.98	0.97	0.99	For each year of age
Mother not married	1.2	1.05	1.39	Mother married
First pregnancy	0.82	0.69	0.96	Subsequent pregnancy
Had breastfeeding experience	0.35	0.28	0.44	Undecided about infant feeding plans
First time breastfeeding	0.51	0.43	0.61	Undecided about infant feeding plans
Breastfeeding problems with previous child	0.53	0.42	0.67	Undecided about infant feeding plans
Rutland District Office	1.3	1.10	1.51	Middlebury District Office
St. Albans District Office	1.3	1.12	1.55	Middlebury District Office
Mother's BMI	1.0	1.00	1.02	For each unit increase in body mass index
WIC postpartum risk code for baby	0.39	0.29	0.52	Baby has no postpartum risk code

Predictors for Stopping Exclusive Breastfeeding: *You Can Do It* Intervention and New Food Package Policy, 12-month follow-up.

WIC administrative data and birth certificate data was used to evaluate the effects of the new food package policy in non-study sites, as described earlier. This dataset included moms who met *You Can Do It* eligibility criteria and had live births before and after the food package policy took effect. The "before" cohort included live births from October 1, 2007 to September 30, 2008. The "after" cohort included live births from May 17, 2010 to December 31, 2011. *You Can Do It* participants were flagged in the dataset based on their unique identifiers.

The variables in the selection pool for this model included: food package era (pre/post policy change), *You Can Do It* participants (yes/no), clinic in a study site District (yes/no), completed high school, race/ethnicity, mother's age, marital status, first pregnancy, infant feeding plans at first prenatal visit, type of delivery, insurance status, prenatal/postpartum WIC risks, neonatal or postneonatal death, place of birth, Kotelchuck index of prenatal care (Kotelchuck, 1994), mother's pre-pregnancy BMI, mother's weight change.

The Cox regression model confirmed the independent and strong effects of both the new food package policy and the *You Can Do It* intervention, after adjusting for all other variables in the model. (Table 25) Mother's age, first pregnancy, and having no prenatal/postpartum WIC risks for breastfeeding failure were all statistically significantly related to exclusive breastfeeding. Mothers who had positive or negative breastfeeding experience or who were intending to breastfeed for the first time were more likely to sustain exclusive breastfeeding compared to mothers who were undecided at the first prenatal visit.

Babies born at home were more likely to be exclusively breastfed compared to babies born to any other hospital inside or outside of Vermont, after adjusting for all other variables in the model.

Each additional increase in the mother's pre-pregnancy BMI was associated with an increased risk of stopping exclusive breastfeeding, after adjusting for all other variables in the model.

Both type of delivery and Kotelchuck index of prenatal care were statistically significantly related to exclusive breastfeeding at the $p<0.05$ level according to SAS proc phreg Type 3 Error tests. The 95% confidence intervals for the individual levels of these variables included 1.

Table 25. Predicting Stopping Exclusive Breastfeeding with 12 Months of Follow-up: *You Can Do It* Intervention and New Food Package Policy (n=3794)

Parameter	Hazard Ratio	95% Confidence Limits		Reference category
		Upper	Lower	
New food package policy	0.86	0.80	0.92	Baseline food package policy
You Can Do It participant	0.69	0.58	0.81	No intervention (NOT control group)
Did not complete high school	1.2	1.1	1.4	Completed high school
Age of mother	0.96	0.95	0.97	For each year of age
Mother not married	1.2	1.1	1.3	Mother married
First pregnancy	0.74	0.66	0.83	Subsequent pregnancy
Had breastfeeding experience	0.33	0.29	0.38	Undecided about infant feeding plans
First time breastfeeding	0.53	0.48	0.59	Undecided about infant feeding plans
Breastfeeding problems w/previous child	0.63	0.54	0.73	Undecided about infant feeding plans
VBAC delivery	0.95	0.71	1.3	Vaginal delivery
Primary C-section	1.2	1.1	1.3	Vaginal delivery
Repeat C-section	1.0	0.90	1.1	Vaginal delivery
No prenatal WIC risks for BF failure	0.89	0.80	0.98	Prenatal WIC risks for BF failure
No postpartum WIC risks for BF failure	0.84	0.75	0.93	Postpartum WIC risks for BF failure
Hospital 4	4.0	2.2	7.2	Home birth
Hospital 6	2.9	1.6	5.3	Home birth
Hospital 7	4.3	2.4	7.7	Home birth
Hospital 10	4.6	2.6	8.2	Home birth
Hospital 11	4.3	2.4	7.6	Home birth
Hospital 13	3.9	2.2	7.1	Home birth
Hospital 14	3.6	1.9	6.5	Home birth
Hospital 16	3.8	2.1	6.8	Home birth
Hospital 18	5.0	2.8	8.9	Home birth
Hospital 19	4.6	2.5	8.3	Home birth
Hospital 25	4.3	2.4	7.8	Home birth
Hospital 26	3.9	2.2	6.9	Home birth
Hospital 83	4.3	2.4	7.7	Home birth
Hospital 95	4.0	2.2	7.2	Home birth
Inadequate prenatal care	0.90	0.78	1.0	Intensive prenatal care
Intermediate prenatal care	1.1	0.96	1.3	Intensive prenatal care
Adequate prenatal care	0.89	0.82	0.96	Intensive prenatal care
Mother's pre-pregnancy BMI	1.01	1.01	1.02	pre-pregnancy BMI from WIC

CHAPTER 4.
WIC Can Help: Detailing Visits to Providers

Introduction and Background

The AAP (American Academy of Pediatrics) has addressed the importance of collaboration between pediatricians and WIC related to breastfeeding (AAP 2001). However, many of WIC's partners do not recognize WIC as a breastfeeding leader. As one pediatrician stated, "We think about WIC as the place where moms get formula." (Partnering with WIC for Success DVD, USDA, FNS 2007). While recognizing the effort made by WIC, Dr. Ruth Lawrence described WIC's funding support for breastfeeding as "feeble" (Lawrence 2006).

In focus groups to determine breastfeeding knowledge, attitudes and practices among providers in a medical home, Szucs et al reported "disconnected communication between provider groups and a lack of clarity regarding roles. Providers underestimated their own influence and ascribed responsibility to others" (Szucs et al. 2009). Based on similar anecdotal responses from Vermont medical providers, we decided to test an intervention to help providers support mothers who intended to breastfeed.

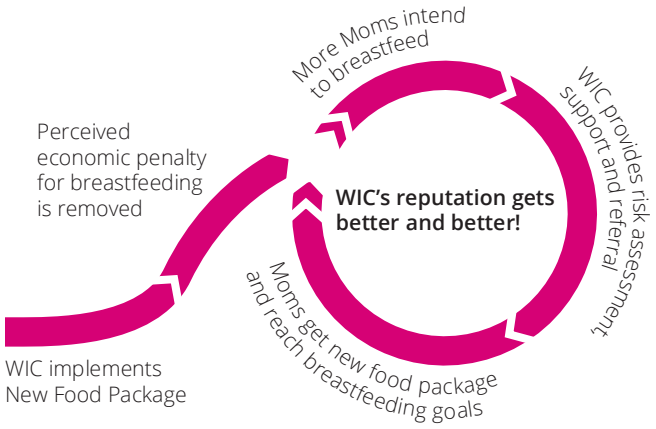
WIC is well-positioned to support mothers during pregnancy and in the first year postpartum. Mothers also receive breastfeeding support prenatally from their OB provider or midwife. New breastfeeding mothers in the immediate postpartum period receive the majority of their care from hospital staff, and after discharge the role of breastfeeding supporter passes to pediatricians and community lactation professionals.

After the birth of a child, WIC mothers do not typically return for a WIC clinic visit until 4-6 weeks postpartum. When health care providers cannot diagnose early breastfeeding problems or do not know where to refer breastfeeding mothers and babies for support, breastfeeding can stop prematurely. Since professional support is an important part of breastfeeding success, the WIC Program developed social marketing materials aimed at Family Practice, Pediatric and OB/GYN practices

Vermont's second intervention, *WIC Can Help*, sought to help health care providers talk with WIC mothers' about their breastfeeding plans during pregnancy, and to motivate them to refer breastfeeding mothers who needed support back to WIC in the early postpartum period. In order to provide an optimal continuum of care for breastfeeding dyads, our project used social marketing techniques to communicate with obstetric, family and pediatric medical practices in the geographic regions where the *You Can Do It* intervention was simultaneously occurring.

The engine concept is described in the book *Good to Great: Why Some Companies Make the Leap-and Others Don't* (Collins 2001), and refers to finding the core strength/task of an organization and building momentum by focusing on the strengths and core values of the organization. This concept fit well with our goals, and the food package change in 2009 provided the perfect catalyst. (Figure 43)

Figure 43. The Engine Concept: *WIC Can Help* Social Marketing Campaign



WIC Can Help: Social Marketing for Providers

Key Informant Interviews

Staff from the Middlebury, Rutland and St. Albans district offices identified pediatricians, OB providers and family practitioners in their respective areas who were most likely to be influential with their peers. Dr. Breena Holmes, MD, VDH Maternal and Child Health Director, conducted face-to-face interviews in 10 of these practices, and the information collected was used to help develop the content of the intervention. (See Appendix 13 Key Informant Interview Guide)

Materials Development

A framework for social marketing was developed based on our formative research. (See Appendix 14 Communication Strategy Development). Using the methodology of social marketing, the following were identified: target audience, the behavior(s) we wanted to influence, the corresponding messages and the most appropriate channel. From the key informant interviews, it seemed the most effective channel was likely to be "detailing visits" where WIC staff would visit provider practices in much the same way that pharmaceutical representatives inform providers about new products. At these detailing visits, local DO staff provided "lunch" with samples of foods from the new WIC food package and "gifts" in the form of authoritative clinical texts on breastfeeding best practices.

The breastfeeding messages for providers paralleled the messages in the *You Can Do It* intervention for breastfeeding mothers. The equation: Knowledge + Support + Confidence = Success appeared to be as relevant for the OB/GYNs, pediatricians and family practice doctors as it was for WIC mothers intending to breastfeed.

Detailing and Follow-up Visits

Medical practices enrolling in *WIC Can Help* received up to 3 visits from WIC staff: the initial detailing visit, a follow-up visit to deliver resources, and a professional development training visit. Providers in participating practices were offered professional and patient resources, and CEU/CME credit for attending breastfeeding training.

WIC staff making the provider visits were provided training from the Project Manager, and presentation aids that included a PowerPoint presentation and Facilitator's Guide (see Appendix15 Detailing Visit PowerPoint Presentation, and Appendix 16 Detailing Visit Facilitator's Guide).

Invitations for the detailing visit were mailed to the 47 family, pediatric and OB/GYN practices located in Rutland, Middlebury and St. Albans (see Appendix 17 *WIC Can Help* MD Recruitment Letter). If there was no response, up to 2 additional contacts were made in an attempt to enroll the practices. Once a visit was scheduled, office managers were sent Provider Baseline Surveys (see Appendix 18) and a Practice Level Needs Assessment (see Appendix 19). The office mangers coordinated the completion of the survey and assessment, and returned them to the District Office prior to the Detailing Visit.

Detailing presentations were held at the provider offices, usually during a lunch hour staff meeting. WIC staff described the Mother/Baby Breastfeeding Study, reviewed the materials that were developed for mothers enrolled in the study, discussed the benefits of partnering with WIC to support breastfeeding, and reinforced the importance of the physician's role in helping mothers achieve their personal breastfeeding goals. Practices were given the opportunity to request copies of WIC's materials to distribute to their own patients, and professional development reference texts were also offered (See Appendix 20 Order Form for WIC

Breastfeeding Resources). Additionally, WIC staff prepared and served a lunch showcasing the foods WIC provides.

Practices received a follow-up "Resource Visit", where WIC staff delivered the patient and professional development materials requested. Additionally, providers could schedule a formal 1-hour "Training Visit" using the curriculum "Increasing Breastfeeding Success: Why it matters and what the research shows" from the Physicians Lactation Education Collaborative (PLEC) of Washington (DVD: 2008).

Impact of the Detailing Visits

161 provider office staff in 19 practices attended the detailing visits. Seventeen practices followed up with orders for *WIC Can Help* patient and professional education materials and District Office staff completed the Resource Visit with all 17 practices.

The Training Visit was conducted by the State Breastfeeding Coordinator or a trained local physician, using the Physician Lactation Education Collaborative (PLEC) modules that were selected by each practice. Forty-one medical practice staff in 4 practices completed 5 PLEC trainings. The modules presented were: A Closer Look at Latch and its Impact on Breastfeeding; Insufficient Weight Gain - Is It Intake or Supply; and Immunology of Human Lactation.

Qualitative Evaluation of the Detailing Visits

WIC staff Interviews

Andrea Grayson, PhD, our contracted Marketing Strategist, conducted interviews with WIC staff (see Appendix 10 Discussion Guide for WIC Staff). Some WIC staff reported it difficult to present in front of providers, while others were very comfortable in this role. All of the WIC staff felt the visits validated WIC's role in breastfeeding support, and agreed that it is key to partner with providers to impact outcomes. They all said their visits were very well received. Many staff reported increases in provider referrals to WIC and other community lactation supports after the *WIC Can Help* detail visit.

Health Care Provider Focus Groups

Dr. Grayson also held focus groups with HCP staff who participated in the detailing visits (see Appendix 12 Discussion Guide for Health Care Providers). Twenty-three staff from 5 different practices attended the provider focus groups as part of the evaluation of social marketing materials. A mixture of MDs, RNS and other staff participated in the discussions. One highlight for providers was learning about all of the WIC services that are available to breastfeeding mothers. The reference books that practices could order after completing the Detailing Visit were universally appreciated. Patient materials requested and used most often by the providers were the Born and Raised the Vermont Way magazine and The Hospital Experience booklet.

Pediatric staff commented that OB providers should do more prenatally to support breastfeeding, and OB providers seemed to have doubts about their ability to impact breastfeeding initiation and duration. Their comments also indicated that practices did not recognize the socio-economic disparity in breastfeeding rates for WIC mothers; many felt upper income women were successful because they could afford to pay for lactation services, and WIC moms were equally as successful because they had WIC. While this is a lovely compliment to WIC, providers fail to recognize the extra challenges experienced by low-income mothers, and thus may fail to provide the additional support these mothers need to succeed.

These discussions indicated an overall favorable opinion of WIC, and the need for continued collaboration between WIC and health care providers to improve outcomes.

Health Care Provider's Knowledge of Baby-Friendly Hospital Practices

As discussed in Chapter 1 of this report, the breastfeeding-friendly hospital experience of low income mothers may be less than optimal. WIC and HCPs play an important role in educating pregnant women about hospital practices, and in empowering mothers to request baby-friendly practices in their birth plans.

In February 2011 we conducted a baseline survey with 46 prenatal and pediatric physicians practicing in the study districts (See Appendix 18 Provider Baseline Survey). One of the questions we asked was about their knowledge of baby-friendly hospital practices. We wanted to know the percent of providers correctly identifying 10 of 10 baby friendly hospital characteristics as important for breastfeeding success:

- Hospital staff gives information about breastfeeding
- Baby rooms in
- Mom breastfeeds baby in hospital
- Mom breastfeeds baby in first hour after birth
- Hospital staff helps mom learn how to breastfeed
- Baby receives only breast milk in the hospital
- Hospital staff tells mom to breastfeed on demand
- Mom does not receive a gift pack with formula
- Hospital gives mom a phone number to call for local breastfeeding help
- Baby does not use a pacifier in the hospital

We repeated the survey after WIC staff had made the *WIC Can Help* detail visit presentations (See Appendix 21 Provider Follow-up Survey). Thirty-one doctors responded to the baseline survey, and only 10 to the follow-up. The percentage of physicians correctly identifying all 10 of the steps rose from 13% at baseline to 20% at follow-up. There are limitations and the potential for bias, and we can't say whether the positive movement can be attributed to the intervention, or whether the doctors who chose to respond were already WIC supporters.

Next Steps

In 2011, Vermont WIC received breastfeeding performance bonus funding and implemented a breastfeeding training and quality improvement project,*10 Steps to Empower Mothers and Nurture Babies*. The *10 Steps* project is a statewide quality improvement initiative focused on increasing evidence-based maternity care practices as standards of care in Vermont hospitals. The collaborative goals for all participating hospitals are listed below. In addition to these, each of the participating hospitals established perinatal QI teams and created individualized goals to improve rates of exclusive breastfeeding and sustain breastfeeding once mother and baby are discharged.

Collaborative 10 Step Project Goals:

- 100% of participating hospitals will have administrative support for participation
- 100% of participating hospitals will have an updated written or drafted breastfeeding policy for all mother/baby units
- 90% of RN staff to complete 16 hour breastfeeding training
- 100% of intended breastfeeding infants will have a documented, appropriate need for supplementation

The *10 Steps* project addresses the "gap" in WIC's influence and reach that occurs when mothers and babies are in the hospital, and moves us toward sustaining the accomplishments we've achieved with *You Can Do It* and *WIC Can Help*.

CHAPTER 5.
Measuring WIC's Reputation as a Breastfeeding Supporter

Goal

The second goal of our project was to assess WIC's reputation in the community as a credible, effective and sincere partner in breastfeeding promotion and support. Baseline and follow-up surveys were conducted with WIC staff, mothers and physicians to measure knowledge, attitudes, and beliefs about breastfeeding. Additionally, for the qualitative evaluation of the project's materials, interviews were conducted with small samples from WIC staff, mothers who completed the intervention, and provider practices in each of the study regions, with the goal of learning about whether the intervention and/or social marketing materials had positive impacts. Figure 44 describes the evaluation design.

Figure 44. Process Evaluation Design for *WIC Can Help*

Pre-intervention	Which groups view WIC as supportive of breastfeeding?	Post-intervention
All Moms in WIC		All Moms in WIC
Health care providers in intervention sites	Versus	Health care providers in intervention sites
All WIC staff		All WIC staff

WIC Can Help Survey: Enrolled Women

Methods

We surveyed WIC participants from Vermont's 12 District Offices in July 2009 and again from September to December of 2011. WIC participants were eligible to participate if they were pregnant, postpartum or breastfeeding. For both surveys, women could belong to more than one category. Women not enrolled in WIC even if they had a child enrolled in WIC, women with limited English proficiency, and women who were being re-certified after a pregnancy loss were excluded. The convenience sample of one month's duration was planned to sample approximately one-sixth of the WIC population. Each clinic was assigned a quota of surveys to fulfill based on the clinic's size and number of women typically seen in a month. This methodology meant that the sample size for the follow-up and baseline surveys varied slightly.

The survey served as the annual WIC participant survey. It was designed to collect baseline information about women's perceptions of breastfeeding, of the WIC program's support for breastfeeding and of the WIC food package as a breastfeeding incentive. The goal of the survey was to measure women's perceptions of WIC as a breastfeeding supporter before the new food package was implemented. The content for the questionnaire was drawn from the NATFAN questionnaire (demographics) and qualitative research during the concept paper. The draft questionnaires were field-tested twice before the final version was mailed in batches to each District Office. Form numbers identified each survey, the District Office and whether or not that Office would be one of the study sites for the *You Can Do It* campaign. The numbers could not be tied back to individuals. Women completed the survey during the clinic visit, and the surveys were collected before they left. District Offices were encouraged to provide an envelope, folder or box for survey returns to maintain anonymity. Every week during the survey period, the WIC Program Director confirmed that completed surveys had been received, or followed-up with the District Office with a reminder. All District Offices participated in the surveys and returned completed surveys to fulfill their quotas in a timely manner. Every District Office had a response rate of 75% or higher. From September to December 2011, the follow-up survey was conducted using the same methodology as the baseline survey (see Appendix 22 Mom Survey).

Results

We received baseline survey responses from 517 of 571 mothers surveyed for a response rate of 91%. We received follow-up survey responses from 520 of 576 mothers surveyed for a response rate of 90%.

Characteristics of survey respondents

At baseline, more WIC participants were currently pregnant in the Study Districts compared to the Non-Study Districts (p=0.005). WIC participants responded to each yes/no question separately and could fall into multiple groups. The proportion of moms who had had a baby within the last 6 months, who had ever breastfed, who were currently breastfeeding or were currently feeding baby formula were not statistically significantly different at baseline. Many respondents skipped the baseline question about ever feeding baby formula and the remainder of that data was suppressed. At follow-up, there were statistically significant differences between Study and Non-Study Districts for all categories. (Table 26) More WIC participants in Study Districts were pregnant, fewer had a baby in the last 6 months, fewer had ever breastfed and fewer were currently breastfeeding compared to WIC participants in Non-Study Districts. Also at follow-up, more WIC moms in Study Districts reported ever feeding baby formula or currently feeding baby formula compared to WIC moms in Non-Study Districts.

Non-Study Districts had higher rates of breastfeeding than Study Districts in other data sources as well as in the *WIC Can Help* surveys. As mentioned elsewhere, Study Districts

Table 26. Characteristics of WIC Moms in Baseline and Follow-up Surveys, Pregnancy and Infant Feeding

	Baseline 2009 (n=510)					Follow-up 2011 (n=516)				
	Study Districts		Non-Study Districts			Study Districts		Non-Study Districts		
Question	Yes	No	Yes	No	p-value	Yes	No	Yes	No	p-value
Currently pregnant	49%	51%	36%	64%	0.005	51%	49%	34%	66%	0.0006
Baby last 6 months	51%	49%	50%	50%	NS	45%	55%	61%	39%	0.0012
Ever breastfed	64%	36%	67%	33%	NS	61%	39%	72%	28%	0.0168
Currently breastfeeding	32%	68%	31%	69%	NS	31%	69%	43%	57%	0.0117
Ever fed baby formula	--	--	--	--	--	53%	47%	59%	41%	NS
Currently feeding baby formula	32%	68%	36%	64%	NS	28%	72%	40%	60%	0.0141

were selected because they had lower levels of breastfeeding compared to other Districts. The follow-up survey fell in the time window when recruitment for *You Can Do It* was still ongoing. For this reason, the *WIC Can Help* surveys were not used to measure changes in breastfeeding rates attributable to *You Can Do It*. The Surveys were designed to measure changes in opinions, which were assumed to change earlier than behavior.

There were no statistically significant differences in race or educational status in Study districts compared to non-Study Districts, either at baseline or at follow-up. (Table 27) This implies that the baseline and follow-up survey populations were reasonably similar.

WIC Participants' views of WIC as a breastfeeding supporter

The key measures from the *WIC Can Help* Moms surveys are in Table 28. At follow-up, WIC participants were statistically significantly more likely to view the New WIC Food Package as a breastfeeding incentive. More WIC participants agreed that exclusive breastfeeding was important to build mothers' milk supply and that the WIC program helped moms to meet their breastfeeding goals. More WIC participants disagreed with a statement that WIC promoted formula feeding at the expense of breastfeeding. All of these differences were statistically significant.

Food packages

At follow-up, more WIC participants in all District Offices agreed or strongly agreed with the statement: "The NEW WIC food package gives an incentive to breastfeed" compared to those who responded at baseline. The increase was large, 11 percentage points, and statistically significant.

Exclusivity

At follow-up, more WIC participants in all District Offices agreed or strongly agreed with the statement: "Feeding only breastmilk builds breastmilk supply." The 10 percentage point increase was statistically significant.

WIC Program Reputation

At follow-up, more WIC participants in all District Offices agreed or strongly agreed with the statement: "WIC helps moms meet infant breastfeeding goals." The 8 percentage point increase was statistically significant. At follow-up, more WIC participants in all District Offices disagreed or strongly disagreed with the statement: "The WIC Program supports formula feeding more than breastfeeding." The 8 percentage point increase was statistically significant.

Study and Non-Study Districts were considered separately at follow-up. At follow-up, Study District moms (71%) were significantly more likely to disagree/strongly disagree with the WIC Program supporting formula feeding more than breastfeeding compared to Non-Study District moms (61%) p=0.02. (Table 29)

Table 27. Characteristics of WIC Moms in Baseline and Follow-up Surveys, Race and Education

	Baseline 2009 (n=499)			Follow-up 2011 (n=501)		
	Study Districts	Non-Study Districts	p-value	Study Districts	Non-Study Districts	p-value
White, non-Hispanic	93%	93%	NS	96%	89%	NS
Multi-racial	4%	3%		2%	5%	
Less than High School	12%	11%	NS	15%	10%	NS
High School Grad	43%	49%		41%	41%	
Some College	24%	22%		27%	29%	
Associate's/Technical Degree	11%	8%		6%	9%	
Bachelor's Degree	9%	10%		11%	12%	

*Race categories with fewer than 10 respondents were suppressed.

Table 28. WIC As a Breastfeeding Supporter: WIC Moms' Perspective

WIC Moms Agree or Strongly Agree…	Baseline 2009 (n=521)	Follow-up 2011 (n=520)	p-value
The NEW WIC food package gives an incentive to breastfeed	37%	48%	0.009
Feeding only breastmilk builds breastmilk supply	65%	75%	0.02
WIC helps moms meet infant breastfeeding goals	49%	57%	0.003
The WIC Program supports formula feeding more than breastfeeding (Disagree/Strongly Disagree)	56%	64%	0.02

Table 29. "The WIC Program Supports Formula Feeding More than Breastfeeding": WIC Moms' Perspective, Follow-up Survey Only

WIC Moms in…	Strongly Disagree	Disagree	Neither	Agree	Strongly Disagree	p-value
Study Districts	33%	38%	24%	2%	2%	p=0.02
Non-Study Districts	26%	35%	29%	6%	4%	

Referrals for breastfeeding support

Approximately half of all WIC moms reported referrals for breastfeeding support. The most common type of breastfeeding referral was for lactation consultants, followed by referrals to the WIC Program. Note: The question was designed as a "check all that apply", so the total number of referrals do not add to 100%. When all Districts were considered together, there were no significant differences in referral patterns at baseline versus follow-up. (Table 30)

When the Study Districts were considered alone, there were no significant differences in referral patterns at baseline versus follow-up. (Table 31)

At follow-up, there were statistically significant differences in referral patterns for WIC participants in Study Districts compared to those in Non-Study Districts for some referral types. WIC participants in Non-Study Districts (30%) were significantly more likely than those in Study Districts (20%) to report referrals to lactation consultants for breastfeeding support (p=0.01). In contrast, WIC participants in Study Districts (7%) were significantly more likely than those in Non-Study Districts (2%) to report referrals to La Leche League for breastfeeding support (p=0.02).

For Study Districts, the most common breastfeeding referral was to the WIC Program (25%) For Non-Study Districts, referrals to lactation consultants were the most common (30%). Breastfeeding referrals appeared to be higher overall in Non-Study (51%) versus Study Districts (43%), but this difference was not statistically significant (Table 32).

Table 30. Self-reported referrals, WIC Moms' Perspective, All Districts

	Baseline (n=514)	Follow-up (n=519)	p-value
Yes, referred to WIC	19%	21%	NS
Yes, referred to lactation consultant	27%	28%	NS
Yes, referred to La Leche League	6%	4%	NS
Yes, referred to other	3%	3%	NS
No, did NOT refer	53%	51%	NS

Table 31. Self-reported referrals, WIC Moms' Perspective, Study Districts Only

	Baseline (n=141)	Follow-up (n=138)	p-value
Yes, referred to WIC	18%	25%	NS
Yes, referred to lactation consultant	20%	20%	NS
Yes, referred to La Leche League	9%	7%	NS
Yes, referred to other	4%	2%	NS
No, did NOT refer	58%	57%	NS

Table 32. Self-reported referral patterns, WIC Moms' Perspective, Follow-up Only

	Baseline (n=138)	Follow-up (n=381)	p-value
Yes, referred to WIC	25%	19%	NS
Yes, referred to lactation consultant	20%	30%	p=0.01
Yes, referred to La Leche League	7%	2%	p=0.02
Yes, referred to other	2%	4%	NS
No, did NOT refer	57%	49%	NS

WIC Can Help Survey: WIC Staff

Methods

Staff members in all of Vermont's District Offices were surveyed in September 2009 at baseline (see Appendix 23 Staff Baseline Survey) and in September 2011 at follow-up (see Appendix 24 Staff Follow-up Survey). Staff was asked to give their perceptions of the WIC program, describe their level of comfort in referring moms for breastfeeding help and rank the importance of 10 "Baby Friendly" practices for breastfeeding success.

For the baseline survey, staff e-mail distribution lists were compared to the most recent organizational charts to verify that all staff on the organizational charts with WIC-related duties received the survey. Staff working in more than one District Office was asked to fill out a survey for each Office. 182 invitation e-mails were sent out; 43 employees had no WIC program role; 124 responses were received for a response rate of 88%. Of these 124, 114 staff reported working with the WIC program 1% or more of work time.

For the follow-up survey, the Director of the WIC Program verified the status of staff in the baseline e-mail list and 119 invitations were sent out in July 2011. An earthquake on August 23, 2011 and Hurricane Irene on August 28, 2011 may have affected our response rate. As of September 19, 2011, we received 91 responses for a response rate of 76%.

Results

The key measures from the Staff survey are in Table 33.

Food packages

Vermont implemented the NEW food package policy change in October 2009. The NEW WIC food package refers to the same food package for both baseline and follow-up surveys. At baseline, staff gave opinions on the new WIC food package based on what they had learned in trainings. By the time of the follow-up survey, staff had up to 2 years of personal experience with the new WIC food package. The new food packages were introduced in October 2009, so staff was familiar with the new food packages through staff training before the baseline survey. Staff valued the new food package more highly than the previous food package: only 46% agreed or strongly agreed that the pre-2009 food package was an incentive to breastfeeding compared to 86% who agreed or strongly agreed that the 2011 food package was an incentive for breastfeeding.

Exclusivity

Nearly all staff agreed with the statement "Feeding only breastmilk builds breastmilk supply." There was no statistical difference between the percentage agreeing/strongly agreeing at baseline (96%) and follow-up (99%).

The percentage of staff agreeing/strongly agreeing with the statement "WIC helps moms meet infant breastfeeding goals" increased slightly from 86% at baseline to 91% at follow-up. The difference was not statistically significant (p=0.07).

WIC program reputation

There was a marked change in the perception of WIC as a supporter of formula. At baseline, 13% of staff agreed/strongly agreed with the statement: "The WIC Program supports formula feeding more than breastfeeding." By the time of follow-up, only 5% of staff agreed/strongly agreed with this statement. The difference was highly statistically significant (p=0.002). One staff member commented: "No matter how much we try to support and encourage moms to breastfeed, including enhanced food packages, the fact that WIC provides free formula is the strongest message we send about formula feeding vs. breastfeeding."

Table 33. WIC As a Breastfeeding Supporter: WIC Staff Perspective

WIC Staff Agree or Strongly Agree…	Baseline 2009	Follow-up 2011	p-value
The NEW WIC food package gives an incentive to breastfeed	86%	--	--
The CURRENT WIC food package gives an incentive to breastfeed	46%	84%	>0.001
Feeding only breastmilk builds breastmilk supply	96%	99%	-
WIC helps moms meet infant breastfeeding goals	86%	91%	0.07
The WIC Program supports formula feeding more than breastfeeding	13%	5%	0.002

WIC Can Help Health Care Provider Surveys (study sites only)

The Vermont Provider Baseline Survey (Appendix 18) was carried out in the Study Districts (Rutland, Middlebury and St. Albans) from February 2011 until November 2011. Completion of the Baseline Surveys was a condition for practices to receive a WIC Detailing Visit. The Follow-up Survey (Appendix 21 Provider Follow-up Survey) was carried out in January 2012. Both surveys measured clinical specialty, years in practice, gender and knowledge, attitudes and beliefs about:

- WIC as supporter of breastfeeding
- Effect of formula supplementation
- How often they refer mothers for breastfeeding support
- Importance of hospital factors for breastfeeding support
- Personal education about breastfeeding medicine
- Breastfeeding training modules completed

The Follow-up Survey also asked for a breastfeeding success story from their practice.

Surveys were designed to be anonymous at the provider level. The baseline surveys were distributed to all MD's in each practice by the office manager. The follow-up surveys were collected via Survey Monkey.

Results

The response rates were 67% (31 of 46 MDs) at baseline and 22% at follow-up (10 of 46 MDs). See Table 34 below for a comparison of key results. The response rate for the follow-up survey was extremely low, despite several reminders, and may have accounted for the lack of statistical significance. If nonrespondents were less favorable to WIC than respondents, the differences between baseline and follow-up might be inflated. It was not possible to get further information from the nonrespondents to rule out possible bias introduced by nonresponse. (Table 34)

Table 34. Health Care Provider Responses: *WIC Can Help* Surveys

	Baseline Feb-Nov 2011 (n=31)	**Follow-up** Jan 2012 (n=10)	**p-value**
Health Care Providers Agree or Strongly Agree. . . .			
The NEW WIC food package gives an incentive to breastfeed	33%	80%	0.02
Feeding only breastmilk builds breastmilk supply	90%	90%	NS
WIC helps moms meet infant breastfeeding goals	53%	80%	NS
I routinely ask pregnant women about their breastfeeding plans	81%	100%	NS
I know where to refer breastfeeding moms for additional support.	84%	100%	NS
I routinely refer breastfeeding moms to appropriate resources.	74%	80%	NS
I spent 1 to 5 hours over the past year keeping up on clinical issues related to breastfeeding.	38%	50%	NS
The WIC Program supports formula feeding more than breastfeeding (Disagree/Strongly Disagree)	60%	70%	NS
Percent of providers correctly identifying 10 of 10 hospital characteristics important for breastfeeding success.	13%	20%	NS
Partnering with WIC helps me support BF mothers in my practice.	45%	80%	NS

Providers responding to the surveys in the Study Districts were well-informed about the importance of exclusive breastfeeding and perhaps less well-informed about hospital-based strategies to help their patients achieve exclusive breastfeeding. Up to half of respondents spent 1 to 5 hours a year keeping up-to-date on breastfeeding clinical issues.

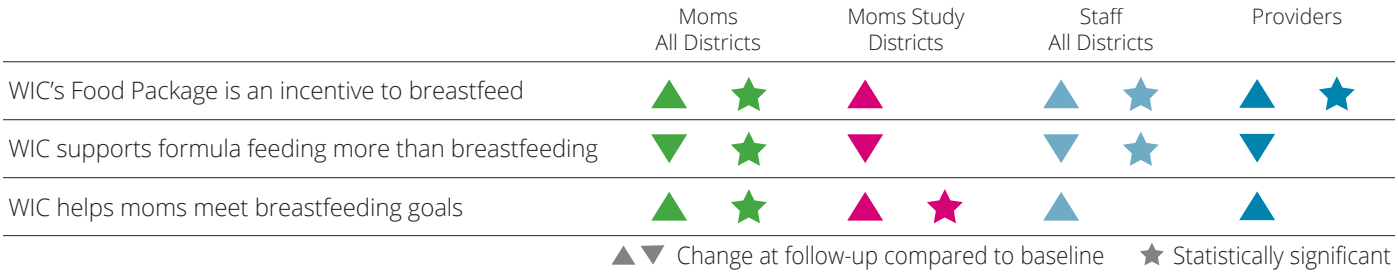
At follow-up, providers were significantly more likely to agree or strongly agree that the WIC food package was a breastfeeding incentive for their patients compared to baseline. Other WIC-related indicators showed increases that were large (more than 30 percentage points) but not statistically significant.

Providers had a high level of confidence in their ability to influence initiation and continuation of breastfeeding. Almost all providers disagreed or strongly disagreed with statements about providers having "little influence." Providers also had a high level of confidence (over 80% at baseline) in their own breastfeeding support skills. In general, providers appeared to rate their own support skills and influence higher than the support available from the WIC Program.

Summary

After the *WIC Can Help* intervention, more respondents saw the new WIC Food Package as an incentive to breastfeed and agreed that WIC helps moms meet infant breastfeeding goals. At follow-up, more saw WIC as valuing breastfeeding and disagreed that WIC supports formula feeding more. Figure 45 summarizes the key survey findings.

Figure 45. *WIC Can Help* Opinion Survey Summary



CHAPTER 6.
Impacts and Recommendations

All three District Offices participating in the *You Can Do It* intervention experienced statistically significant gains in exclusive breastfeeding rates. Mothers who received the upgraded food package benefits for breastfeeding mother/baby pairs, implemented in 2009, also had significantly higher exclusive breastfeeding rates during the first 6 months postpartum. While the food package changes and *You Can Do It* showed positive independent effects on breastfeeding exclusivity and duration, mothers who received both the new WIC food package and the *You Can Do It* intervention showed the highest rates and greatest longevity for exclusive breastfeeding.

Based on our results, we recommend that WIC programs make a concerted effort to support breastfeeding women at multiple levels, including:

1. Within WIC Agencies: Work at all levels of staffing, from clerical to leadership, to ensure that women who want to breastfeed have knowledge, support and confidence.

The core of the *You Can Do It* intervention was screening to identify each mother's individual challenges, and prepare her for successful breastfeeding. Our project used the Breastfeeding Attrition Prediction Tool (BAPT) (Appendix 3) to screen mothers at the initial prenatal WIC certification. All mothers who enrolled in *You Can Do It* completed the BAPT, and while we do not have a comparison group for evaluating the tool independently, based on our study outcomes we strongly recommend that WIC programs provide screening and targeted counseling in the domains of knowledge, support and confidence.

Administering and scoring the BAPT did add some extra minutes to the prenatal clinic appointment and to staff time after the clinic, due to the requirements of the research protocol. WIC certifiers interviewed at the end of the project had mixed opinions about continuing to use the tool. However, these interviews were conducted before the study results were available, and we believe more staff would express favorable opinions had they seen the outcomes. Once the added burden of conducting research and collecting data is removed for local staff, many of the barriers to implementing the project become resolved.

In our study, the BAPT was completed at the first prenatal visit, staff scored it up to a week later, and then mothers received targeted counseling at their second nutrition contact visit. WIC programs certainly could choose to administer and score the BAPT, and provide the targeted counseling, in a single visit.

☑ First trimester/ initial prenatal visit:

Screen mothers for risk of breastfeeding attrition using a validated tool such as the BAPT; educate pregnant women to talk about their breastfeeding goals with family and friends.

"Doing the (BAPT) survey solidified for me that I should take a breastfeeding class, and that I needed more information, help and support."
~ *You Can Do It* Mom

"...I remember it (BAPT tool) asking questions about support. No one in my family breastfed, but I was determined."
~ *You Can Do It* Mom

"I found using the BAPT scores helped guide our approach, both educationally and case management wise. There is so much to say about breastfeeding and so little time in a WIC clinic. Knowing her level of confidence and commitment as well as assessing her view of her social and medical support systems, helped me know where to start. It also helped the mom to prepare to talk about breastfeeding with me. And honestly, it helped to manage follow up plans for both ... to know if she was more or less likely to succeed... For me it was profound because I didn't need to use valuable interview time trying to get to the point. Such a relief to nail it right from the start."
~ WIC Nutritionist, IBCLC

"Make a plan, this is how long, this is my goal."
~ *You Can Do It* Mom

☑ Second trimester/interim prenatal visit:

Provide targeted counseling based on identified risks; educate moms to talk about their breastfeeding goals with their health care providers; assure regular communication and case management for higher risk mothers between WIC certifiers and peer counselors.

"Got to meet moms at Visit B (second trimester), and had more of a connection."
~ WIC Breastfeeding Peer Counselor

"When I went to my second WIC meeting we discussed my survey score and I had a question about how to know if my baby is getting enough. Then she showed me where to find this information in the book." (*Breastfeeding: Keep It Simple* by Amy Spangler, RN, MN, IBCLC).
~ *You Can Do It* Mom

"Having WIC was great – gave me (breastfeeding) information I wasn't getting from other sources. The breastfeeding materials from WIC were helpful"
~ *You Can Do It* Mom

"It was helpful to work with the WIC counselor, just to get her support – being a single mom especially I was feeling in need of a lot of support and the emotional support – so for me, the WIC counselor was that for me – having her there was helpful."
~ *You Can Do It* Mom

Third trimester/group breastfeeding class:

Educate mothers about hospital practices to support breastfeeding; assist them in making an infant feeding plan to share with hospital and birth support people.

"I didn't know I should breastfeed right after birth, and learned about skin-to-skin."
~ *You Can Do It* Mom

"I learned things I didn't know about like skin-to-skin and rooming in."
~ *You Can Do It* Mom

"...I brought the tear-off sheet (infant feeding plan) to the hospital. I had the dad give it to the nurse when I was admitted."
~ *You Can Do It* Mom

"...The paperwork (study materials) helped me create my birth plan..."
~ *You Can Do It* Mom

"This is #1: Confidence: Knowing from the beginning that you are going to breastfeed, going into the hospital planning to breastfeed, telling them you want it."
~ *You Can Do It* Mom

"I was afraid and confident at the same time – I was confident that I could do it."
~ *You Can Do It* Mom

After the new WIC food packages were introduced in Vermont in October 2009, WIC staff in all District Offices had improved perceptions of WIC as a supporter of breastfeeding. In addition, more mothers were exclusively breastfeeding through the first 6 months postpartum after the new food packages were implemented. Staff were trained to market the new WIC food packages to breastfeeding mother/baby pairs, and to health care providers, and we recommend ongoing marketing of this WIC benefit to participants and community partners.

Food package

Prenatally: Educate mothers to call WIC within the first week after birth to report they have had their baby. Postpartum: Train staff to upgrade the food package for exclusively breastfeeding mothers immediately, so moms receive the larger benefit as soon as possible.

"On April 19, Castleton Family Health Center invited the Department of Health to their practice to learn more about the WIC Mother/Baby Breastfeeding Study...Providers enjoyed ...a lunch comprised of foods from the WIC food package. Many staff members were surprised and delighted that the lunch could be replicated with the WIC food package."
~ WIC Nutritionist

"I had no idea about the food packages...and was amazed at what WIC offers."
~ *You Can Do It* Mom

"You get a lot of healthy food when you're breastfeeding!"
~ *You Can Do It* Mom"

"It's a big help for me to have the proper nutrition for my baby and breastfeeding."
~ WIC Mom

"... starting to change my mind (about WIC as a supporter of breastfeeding) with the new food packages and seeing the importance of nutrition for mother. Just learned WIC provides breast pumps for nursing moms."
~ *WIC Can Help* Provider

2. With Providers: Develop relationships with provider practices and cultivate provider champions.

The *WIC Can Help* intervention included detailing visits to OB, family and pediatric providers by local office WIC staff. Visits were held at providers' offices, usually during a lunch hour meeting. WIC staff described the Mother/Baby Breastfeeding Study, used the *WIC Can Help* materials to discuss the benefits of partnering with WIC to support breastfeeding, and reinforced the importance of the physician's role in helping mothers achieve their personal breastfeeding goals. Practices were given the opportunity to request copies of WIC's materials to distribute to their own patients, and professional development reference texts were also offered (See Appendix 20 Order Form for WIC Breastfeeding Resources). Additionally, WIC staff prepared and served a lunch showcasing the foods WIC provides.

After the detailing visit, WIC staff made follow-up contacts to deliver patient and professional development resources and breastfeeding education materials for patients. In our study, health care providers who participated in *WIC Can Help* increased their favorable opinions about WIC. After the intervention, more providers saw WIC as valuing breastfeeding and more agreed that WIC helps moms meet their breastfeeding goals.

☑ **Make detailing visits to providers in your area and form partnerships to strengthen professional support for breastfeeding moms and babies.**

Explain WIC benefits and market WIC's menu of breastfeeding supports including the breastfeeding food packages, peer counseling benefits, breast pumps and more. Encourage referrals to WIC and other community lactation supports by providing practices with print materials that list current resources.

Identify and develop "provider champions", such as advanced practice nurses and IBCLC's, in your medical practices, and partner with them to offer trainings using creditable professional education resources.

" The visits to the health care providers were very good. They validated the role of the Health Department in breastfeeding. They (providers) really seemed to respect our knowledge, and LOVED that we brought lunch made with WIC food."
~ District Office WIC Staff

" I'm getting a lot more referrals (from physicians)...."
~ WIC Breastfeeding Peer Counselor

" ...I feel that I know where to send people (to WIC) if they need help or education."
~ *WIC Can Help* Provider

" Every time we would put these (WIC patient materials) in the waiting room, they would disappear. Then we would replenish, and they'd disappear again."
~ *WIC Can Help* Provider

" The (reference) books are tremendous...all of us use them..."
~ *WIC Can Help* Provider

3. In the Hospital Environment: Assure that all women are aware of maternity care best practices that support breastfeeding.

While our project did not have a specific hospital component, we learned about perceived disparities in breastfeeding support through our review of hospital data and through our interviews with study mothers and physicians, and thus have the following recommendations:

☑ **Review available data sources for differences between WIC and non-WIC mothers,** such as the Pregnancy Risk Assessment and Monitoring System (PRAMS).

☑ **Monitor state and local breastfeeding trends** using WIC administrative data, and monitor your hospitals' progress toward achieving the 10 Steps to successful breastfeeding (Maternity Practices in Infant Nutrition and Care [mPINC]).

☑ **Educate mothers prenatally about hospital practices that support breastfeeding;** assist them in making an infant feeding plan to share with hospital and birth support team; empower moms to advocate for themselves.

" In the hospital, it's nice to have a plan so everyone knows how you want breastfeeding to happen and how you want your breastfeeding experience to be – and to feel comfortable asking questions, and asking for help."
~ *You Can Do It* Mom

" My biggest fear in the hospital was breastfeeding...but once she latched and showed she was successful and that we were doing this together - I was extremely confident."
~ *You Can Do It* Mom

" You have to be...your own advocate."
~ *You Can Do It* Mom

4. **In the Community:** Provide WIC breastfeeding peer counselors.

Our study protocol required WIC peer counselors to call mothers within the first 7 days after birth to administer the Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF) (Appendix 4). Reaching mothers in this time frame was very challenging, and less than one-third of study mothers completed the screening. Most peer counselors interviewed after the project would not recommend continuing to use this tool because of the difficulty reaching mothers within the first week postpartum, and their lack of comfort with using survey tools in their encounters with mothers.

However, for those moms who did receive the screening, the tool appeared to be predictive of exclusive breastfeeding, and may help WIC staff offer individualized and effective counseling and thus impact exclusive breastfeeding duration. The BSES may also help new mothers feel more confident in identifying themselves as exclusively breastfeeding, and help WIC staff prescribe the most appropriate breastfeeding food package. It may be more appropriate for a WIC nutritionist or nurse to administer this type of screening.

First week postpartum:

Encourage that mothers contact WIC for breastfeeding support as soon as they come home from the hospital; screen for risk of early formula introduction using a validated tool such as the BSES; make referrals to community lactation supports, especially WIC breastfeeding peer counselors; upgrade the food package to the exclusive breastfeeding package and add extra foods immediately; schedule postpartum/infant certification appointment in 2-4 weeks.

" ...good to facilitate a conversation... (the phone call) needs to be initiated by the mom, not the peer."
~ WIC Breastfeeding Peer Counselor

" Difficult to administer...strange wording (BSES)."
~ WIC Breastfeeding Peer Counselor

" Asking for help is the biggest thing. With my first, if I had a peer or nurse who could help me, I would have stuck with it."
~ *You Can Do It* Mom

" Having a peer counselor gave me a lot of confidence – 'cause I'd send her a message and she'd get right back to me."
~ *You Can Do It* Mom

" I felt so much support from WIC, my peer counselor, and family and friends."
~ *You Can Do It* Mom

" The peer counselors in our area are doing a great job."
~ *WIC Can Help* Provider

" I felt so much support from WIC, my peer counselor and family and friends...one more person I knew I could talk to if I needed.....Why not get the help from someone that's gone through it...."
~ *You Can Do It* Mom

Knowledge + Support + Confidence = Success

You Can Do It , and WIC Can Help.

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LIST OF APPENDICES