



**Women's and Children's Health Policy Center
Johns Hopkins University**

**Strengthen the Evidence for
Maternal and Child Health Programs**

**National Performance Measure 4 Breastfeeding
Evidence Review
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EXECUTIVE SUMMARY

Breastfeeding is one of the fifteen Maternal and Child Health National Performance Measures (NPMs) for the State Title V Maternal and Child Health (MCH) Services Block Grant program. The goal of this NPM is to increase the percentage of infants who are ever breastfed and the percentage of infants who are breastfed exclusively through 6 months.

Fifty-nine peer-reviewed sources and one gray literature source (e.g. technical reports supported by data) met study inclusion criteria and informed the review. These sources described interventions that targeted patients, providers/practices, communities, as well as those implemented on the state/national level. Examples of each intervention that met evidence rating criteria are shown below. The outcome column indicates whether the intervention was shown to impact breastfeeding initiation, exclusivity at 6 months, or both.

Target Audience	Intervention	Example	Evidence Rating	Outcome
Patient	Lactation Consultant	Telephone-based prenatal + postnatal support	Moderate Evidence	Initiation & Exclusivity
	Peer Counselor	Prenatal education during clinic visits + postpartum home visits	Moderate Evidence	Initiation
	Group Education	Small group education + discussion led by a parent educator	Mixed Evidence	Initiation & Exclusivity
	Home Visits by Other Professional*	Research assistant home visit	Moderate Evidence	Initiation & Exclusivity
Provider/ Practice	Provider Training Only	Lectures + panel discussions for maternity ward professionals	—	—
	Hospital Policies	Increased length of stay policy	Mixed Evidence	Initiation
State/ National	Family Leave, Workplace Policies, State Laws	Employer-provided break time + private space to breastfeed	—	—
	WIC Food Package Change	Enhanced package with greater monetary value for fully breastfeeding women	Mixed Evidence	Initiation

— indicates insufficient number of studies to assign evidence rating or outcome

* professional other than lactation consultant or peer counselor

Four key findings emerged:

1. Lactation consultant interventions and home visits provided by professionals (other than lactation consultants or peer counselors) appear to be effective for increasing both breastfeeding initiation and exclusivity at 6 months.
2. Peer counselor interventions appear to be effective and are more likely to influence initiation than exclusivity at 6 months.
3. There is less clear evidence to support the WIC food package change, group education, or hospital policies.
4. There is insufficient evidence of the effectiveness for provider training and for family leave, workplace policies, and state laws on breastfeeding initiation and exclusivity at 6 months.

This evidence review categorized interventions along an evidence continuum from Evidence Against (least favorable) to Scientifically Rigorous (most favorable). *Moderate Evidence* was identified for lactation consultants, peer counselors, and for home visits by other professionals. Group education, hospital policies, and the WIC food package change were rated as *Mixed Evidence*. In this review, provider training only and family leave, workplace policies, and state laws were not assigned evidence ratings due to the limited number of studies assessing these strategies.

This review was limited to studies assessing strategies to impact breastfeeding initiation and exclusivity through 6 months, using the American Academy of Pediatrics' definition of exclusivity. This definition specifies no other food or liquid consumption before 6 months. Furthermore, the majority of peer-reviewed articles measured initiation only, which limits generalizability of the recommended interventions for Title V programs aiming to achieve

improved rates of exclusive breastfeeding at 6 months in their state. Only 6 studies assessed interventions that supported mothers up to 6 months postpartum. Further research should assess the effectiveness of strategies to support breastfeeding mothers during the first 6 months postpartum in order to achieve the NPM of exclusivity at 6 months. Additionally, understanding the impact of state, federal, and workplace policies on breastfeeding initiation and exclusivity at 6 months requires investment of resources to support rigorous evaluations. Enhancing improvement for NPM 4 is likely to require continued collaboration with an array of community providers who serve pregnant women and families with infants.

ACKNOWLEDGMENTS

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INTRODUCTION*

Strengthen the Evidence Base for Maternal and Child Health (MCH) Programs is a Health Resources and Services Administration (HRSA)-funded initiative that aims to support states in their development of evidence-based or evidence-informed strategies to promote the health and well-being of MCH populations in the United States. This initiative, carried out through a partnership among Johns Hopkins Women's and Children's Health Policy Center, the Association of Maternal and Child Health Programs, and Welch Library at Johns Hopkins, was undertaken to facilitate implementation of the transformed MCH Title V Block Grant Program.

One goal of the Strengthen the Evidence project is to conduct reviews that provide evidence of the effectiveness of possible strategies to address the National Performance Measures (NPMs) selected for the 5-year cycle of the Title V MCH Services Block Grant, beginning in fiscal year 2016. States are charged to select eight NPMs and incorporate evidence-based or evidence-informed strategies in order to achieve improvement for each NPM selected.

BACKGROUND

Breastfeeding, NPM 4, is one of the fifteen MCH NPMs. Fifty states and jurisdictions selected NPM 4, including American Samoa, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Federated States of Micronesia, Florida, Georgia, Guam, Hawaii, Idaho, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Marshall Islands, Massachusetts, Michigan, Minnesota, Mississippi, Montana, Nebraska, Nevada, New Jersey, New Mexico, North Carolina, North Dakota, Northern Mariana Islands, Ohio, Oklahoma, Oregon, Palau, Pennsylvania, Puerto Rico, Rhode Island, South Carolina, Texas, Utah, Vermont, Virginia, Virgin Islands, Washington, Washington D.C., West Virginia, Wisconsin, and Wyoming.¹ The goal for NPM 4

* The language used in the Introduction section was crafted by the Strengthen the Evidence team and is consistent across all evidence reviews within this project.

Breastfeeding is to increase the percentage of infants who are ever breastfed and the percentage of infants who are exclusively breastfed at 6 months of age.²

Data from the National Immunization Survey (NIS) are used to monitor progress toward this goal by providing national estimates of the percentage of U.S. children who were ever breastfed and the percentage who were exclusively breastfed through 6 months of age.³ The NIS definitions for initiation and exclusivity are consistent with recommendations by the American Academy of Pediatrics (AAP). The AAP defines initiation as ever breastfed and exclusivity as an infant's consumption of breastmilk without the addition of any solids or liquids, except for vitamins, minerals, and medications.⁴ Healthy People 2020 set targets for breastfeeding initiation and exclusivity through 6 months of age at 81.9% and 25.5%, respectively. Baseline data collected from the 2007-09 NIS, among infants born in 2006, indicated that 74.0% of infants were ever breastfed or fed breast milk and 14.1% were breastfed exclusively with no introduction of complementary foods through 6 months.⁵ The 2015-16 NIS, among infants born in 2014, reported that 82.5% of infants ever breastfed and 24.9% of infants were exclusively breastfed through 6 months. Additional state-level information for infants born in 2014 indicates that the percentages for initiation and exclusivity varied considerably across states.⁶ Although around 60% of all states were meeting the goal for initiation, only about 40% were meeting the goal for exclusivity at 6 months. Differences in achieving the NPM across states suggest room for improvement.

Breastfeeding is an important public health concern because of its association with positive infant and maternal health outcomes. Positive infant health outcomes associated with breastfeeding include reduced gastrointestinal tract infections in infancy,⁷⁻⁹ reduced upper and lower respiratory tract infections in infancy,⁷ reduced rashes in infancy (including atopic eczema

and infectious and noninfectious noneczematous rashes),⁸ reduced risk of SIDS,¹⁰ and reduced risk of childhood leukemia.¹¹ Positive maternal outcomes reported in the literature are reduced risk of breast cancer,¹² ovarian cancer,¹³ and type 2 diabetes.¹⁴

The United States first signed the *Innocenti Declaration on the Protection, Promotion and Support of Breastfeeding* in 1990.¹⁵ This declaration states the importance of government coordination of national breastfeeding activities, insurance of maternity services adherence to best practices to support breastfeeding, action taken on the *International Code of Marketing of Breast-Milk Substitutes* and legislation enacted to protect breastfeeding among working women.

In 2011, the U.S. Department of Health and Human Services released the *Surgeon General's Call to Action to Support Breastfeeding*.¹⁶ This call to action described the benefits of and disparities and barriers to breastfeeding, and put forth recommendations on how various individuals and organizations can support breastfeeding. A total of 20 recommended actions were generated for mothers and families, communities, health care settings, employment, research and surveillance, and public health infrastructure.

Several health organizations provide recommendations related to infant feeding. In their 2012 policy statement, *Breastfeeding and the Use of Human Milk*, AAP reaffirmed the recommendation that infants be exclusively breastfed for about 6 months.¹⁷ AAP also recommends that breastfeeding continue thereafter along with introduction of complementary foods through one year of age or longer as desired by both mother and infant. These recommendations were consistent with those previously disseminated by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF).¹⁸

The United States Preventive Services Task Force recently released an updated systematic review focused on primary care interventions to support breastfeeding in developed

countries.¹⁹ The review included 52 studies focused on the impact of primary care interventions on breastfeeding initiation, duration, and exclusivity. Individual-level support and education interventions were found to be associated with a significantly higher likelihood of any and exclusive breastfeeding for less than 3 months and from 3 to less than 6 months and for exclusive breastfeeding specifically at 6 months. Limited and mixed evidence was found for systems-level interventions including Baby Friendly Hospital Initiative (BFHI) accreditation, minimizing the separation of mother and infant following delivery, or delayed use of pacifiers. The authors suggested that implementation of the individual steps of the BFHI, rather than accreditation per se, influences breastfeeding rates.

Although there are a number of previously published reviews of strategies to increase breastfeeding, they were not tailored to guide Title V MCH Block Grant efforts of states related to breastfeeding. To support states and jurisdictions in their strategies to promote breastfeeding initiation and exclusivity at 6 months, the current review synthesizes evidence regarding breastfeeding interventions implemented in relevant settings including hospitals, the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) clinics, childcare centers, workplaces, or through technology.

METHODS

Studies were identified for review by searching the PubMed, CINAHL Plus, PsycINFO, and Cochrane Library online databases. Search strategies varied across databases because of differences in controlled vocabulary, indexing, and syntax. Table 1 shows the detailed search strategy used for each database. The three concepts of breastfeeding, intervention setting, and evaluation were used to build each search strategy. A library specialist (informationist) was consulted to select appropriate databases and to ensure completeness of the search strategies.

The following inclusion criteria were used:

- 1) The study was empirical and assessed interventions aimed at increasing the percentage of infants who were ever breastfed or who were exclusively breastfed through 6 months of age. Exclusive breastfeeding was defined as an infant's consumption of only breastmilk with no additional fluids (including water) or foods, except for vitamins, minerals, and medications through 6 months of age.⁴ Interventions that used proxy measures (e.g., exclusive breastfeeding at hospital discharge) or measures of partial breastfeeding were excluded from our review.
- 2) The study described interventions that fell under the purview of Title V, as determined by the authors and reviewers.
- 3) The study focused on interventions that were applicable to the general population of mothers and infants, regardless of mode of delivery. Studies were excluded if they focused on high-risk mothers or infants (e.g., mothers with opiate addiction, preterm or low birth weight infants).
- 4) At a minimum, the study included a control and intervention group, an appropriate comparison group, or a pretest-posttest design to assess intervention effectiveness.
- 5) The study was conducted in the United States, Canada, Australia, or Western Europe.
- 6) The study was published in English.
- 7) The study was published in a peer-reviewed journal.
- 8) The study was published between 01/01/1990 and 02/17/2017.

The results of the search of each database were systematically evaluated for relevant studies. Duplicates were removed before beginning title screening. The title of each article was reviewed, and if it appeared related to NPM 4, the abstract was then screened. If the abstract did

not indicate whether the study met the inclusion criteria or the abstract was not available, full-text of the article was reviewed. All articles remaining after title and abstract screening were retrieved for detailed full-text review to assess their eligibility for inclusion in the current review. In addition, the reference lists of previously published reviews were examined to identify potential articles to be included in the current review.²⁰⁻⁴⁸ In addition to peer-reviewed literature, one gray literature source informed the review: the 2016 Home Visiting Collaborative Improvement and Innovation Network (HV CoIIN) webinar.⁴⁹ A 2015 article by Mackrain et al. provided additional information on the HV CoIIN study characteristics and intervention description.⁵⁰

The lead author (SG) extracted relevant data about study characteristics (setting, sample, and design); intervention (components, time of implementation, data collection period); definitions, measures, and data sources for assessing breastfeeding; and study results. Results were extracted separately for breastfeeding initiation and exclusivity through 6 months. The study team met regularly to review interim extractions and resolve questions about studies. Interventions were characterized by target audience: patient, provider/practice, community, and state/federal.

Studies were categorized into eight groups based on their primary intervention: “Lactation Consultant,” “Peer Counselor,” “Group Education,” “Home Visits by Other Professional” (other than lactation consultant or peer counselor), “Provider Training Only,” “Hospital Policies,” “Family Leave, Workplace Policies, State Law,” and “WIC Food Package Change.”

An evidence continuum was used to assess evidence-informed interventions that aligned with criteria for each category of the continuum. The Robert Wood Johnson *What Works for*

Health evidence ratings were adapted to create our evidence continuum tailored for the Strengthen the Evidence project.⁵¹ Evidence rating categories included: *Evidence Against*, *Mixed Evidence*, *Emerging Evidence*, *Expert Opinion*, *Moderate Evidence*, and *Scientifically Rigorous*. Strategies that are characterized by *Emerging Evidence* or more favorable ratings are considered evidence-informed. Table 2 shows the detailed evidence rating criteria which include both study type and study results for each rating.

Interventions identified through evaluation of the peer-reviewed literature were placed along the evidence continuum. Assignment to the continuum required that a specific intervention category was evaluated in four or more peer-reviewed studies. In addition, interventions that were evaluated in three peer-reviewed studies with expert opinion from gray literature were also assigned an evidence rating and placed on the evidence continuum. Interventions that were evaluated in three peer-reviewed studies without expert opinion from gray literature were neither assigned an evidence rating, nor placed on the evidence continuum. A team of four project members individually assigned ratings to each intervention category; ratings were compared and discrepancies were discussed until consensus was reached.

RESULTS

Search Results

Searches in the PubMed, CINAHL Plus, PsycINFO, and Cochrane Library databases were performed on February 17, 2017. The systematic review identified 5,432 records. Searches in PubMed, CINAHL Plus, PsycINFO, and Cochrane Library yielded 3,178, 1,546, 419, and 289 records, respectively. An additional 19 articles were identified from searching reference lists of previously published review articles^{20-25,26-32,33-48} and through expert consultation.⁵²

Title and abstract screening was conducted for 4,112 records after 1,339 duplicates were removed from the 5,451 total records. During title and abstract review, 3,766 records were excluded. Three-hundred and forty-six articles were assessed for full-text eligibility and 287 were excluded due to failure to meet all inclusion criteria. Reasons for study exclusion included: not an evaluation of an intervention; outcomes of interest were not measured; and appropriate comparison group was not included. Fifty-nine records from 58 articles (one article included 2 separate studies) qualified for the current review. A total of 60 sources were included in this review, combining the 59 peer-reviewed studies with one gray literature source. Figure 1 displays the flow chart for the study selection process.

Characteristics of Studies Reviewed

The 59 peer-reviewed studies in this review varied in setting, sample, design, data source, definitions of breastfeeding, type of intervention, and outcomes assessed. Table 3 reports the detailed characteristics of the studies. Of the 59 studies, 20 were randomized controlled trials⁵³⁻⁷¹; 8 were cluster randomized trials⁷²⁻⁷⁹; 28 were quasi-experimental studies (14 pretest-posttest design⁸⁰⁻⁹³; 9 nonequivalent control group design⁹⁴⁻¹⁰²; 2 pretest-posttest time-lagged non-equivalent control group design^{103,104}; 1 pragmatic cluster design¹⁰⁵; 1 interrupted time series analysis design¹⁰⁶; and 1 pretest-posttest non-equivalent control group design¹⁰⁷) and 3 were time trend analyses¹⁰⁸⁻¹¹⁰. In terms of setting, 36 studies were conducted in the United States,^{53,55-57,59-61,64-66,69-72,82-90,92,93,95-98,101,102,106,108-110} 16 in Europe,^{54,58,63,68,73-79,81,91,103-105} 6 in Australia,^{62,67,94,99,100,107} and 1 in Canada.⁸⁰

Table 4 describes the measures, their definitions, and data sources used to determine breastfeeding initiation or exclusivity. Definitions for initiation and exclusivity are listed as described by each individual study. Data sources across studies varied; 40 studies assessed

breastfeeding through self-report by mothers,^{55-65,67,68,70,72-74,76-78,80,81,86,87,89,94,95,97-105,107} 15 used medical records or other administrative data,^{54,66,69,75,79,82-84,88,90,91,93,96,106,110} 2 used self-report verified through medical record review,^{53,108} and 2 used national survey data based on maternal self-report.^{85,109}

Intervention Components

Table 5 gives a detailed description of the intervention(s) implemented in each study. It also describes the comparison group for each study. Table 6 specifies the intervention components from each study and is organized by implementation level. Studies were grouped by strategy or intervention. “Lactation Consultant,” “Peer Counselor,” “Group Education,” “Home Visits by Other Professional,” “Provider Training Only,” “Hospital Policies,” “Family Leave, Workplace Policies, State Laws,” and “WIC Food Package Change” included 9, 11, 5, 5, 3, 8, 3, and 5 studies respectively.

Patient-level interventions included “Lactation Consultant,” “Peer Counselor,” “Group Education,” and “Home Visits by Other Professional.” Most lactation consultant interventions were provided through prenatal or postpartum hospital visits, home visits, telephone support, or a combination.^{55-58,77,82,99} One study⁹⁴ offered lactation consultant support via webcam. Lactation consultants were International Board Certified Lactation Consultants,^{55,56,58,82} Certified Lactation Consultants,⁹⁴ or not specified.^{57,77,99} Peer counselor interventions were mainly offered through a combination of in-hospital postpartum visits, home visits, and telephone support.^{53,59,70,72,76,79,95,96,98} Peer counselor services were often offered through WIC and available during WIC visits.^{70,72,95,101,102} Studies implementing group education included educational sessions led by a lay health worker, health educator or health care professional and took place in the hospital or at a community venue.^{61,62,75,100,107} Studies implementing home visits by other

professionals (not lactation consultant or peer counselor) included one-on-one prenatal or postpartum visits by a research assistant or other trained visitor such as a community support worker⁶⁸ or Healthy Steps specialist.⁶⁵ These interventions focused on practical and psychosocial aspects of breastfeeding, and some were not specific to breastfeeding alone.

Interventions implemented on the provider/practice level included “Provider Training Only” and “Hospital Policies.” Provider training included lectures, discussions, and interactive exercises.^{73,84,91} Studies implementing hospital policies varied by type. Examples included changes in postpartum delivery stays,^{81,106} and minimizing maternal-infant separation for women undergoing Cesarean deliveries.⁶⁹ Three of these studies established or modified hospital policies as part of the BFHI accreditation process.^{83,104,110}

“Family Leave, Workplace Policies, State Laws” and the “WIC Food Package Change” were the interventions assessed on a state/national level. Examples of family leave, workplace policies, and state laws included maternity leave mandates^{80,86} and employer-provided break time.⁸⁵ The studies in the WIC food package change category evaluated the impact of the enhanced WIC food package for breastfeeding mothers and infants.^{87,89,92,108,109} Twelve sources (11 peer-reviewed studies plus the gray literature source) did not include one of these strategies and were categorized as “Other.”

Summary of Study Results

Study results are presented in detail in Table 7. Results for both breastfeeding initiation and exclusivity at 6 months are reported in this review. Outcome measures varied across articles, though the majority of studies focused on increasing breastfeeding initiation. Thirty-seven studies only measured breastfeeding initiation, 11 measured only exclusivity at 6 months, and 11 measured both breastfeeding initiation and exclusivity at 6 months. The studies in Tables 7 and 8

are organized by the Intervention Components groups described above. Table 8 summarizes the overall study findings.

Patient-level interventions that appear effective in increasing breastfeeding initiation and exclusivity at 6 months are “Lactation Consultant,” “Peer Counselor,” and “Home Visits by Other Professional.” Of the 9 studies evaluating lactation consultant interventions, 5 showed favorable outcomes.^{56-58,82,94} Of these 5 studies, 3 only measured exclusivity at 6 months and 2 measured breastfeeding initiation, suggesting that supporting mothers through lactation consultant interventions may impact both initiation and exclusivity at 6 months. In addition, 7 of the 11 studies implementing peer counselor interventions showed favorable results.^{53,70,72,95,96,98,101} All 7 studies (and 8 of the total 11) measured breastfeeding initiation only. Home visits by other professionals (not peer counselors or lactation consultants) also appear effective. Three of the 5 studies showed favorable results;^{65,74,78} One study measured breastfeeding initiation only, one measured exclusivity at 6 months only, and one measured both initiation and exclusivity.

The evidence of effectiveness for “Group Education,” “WIC Food Package Change,” and “Hospital Policies” is less clear. Of the 5 studies implementing group education, 2 showed favorable outcomes.^{100,107} Similarly, 2 of the 5 peer-reviewed studies evaluating the WIC food package change showed favorable results.^{87,108} All 5 studies measured breastfeeding initiation, with one study also measuring exclusive breastfeeding at 6 months. Furthermore, 4 of the 8 studies implementing hospital policies showed favorable results.^{81,88,90,110} All 4 studies (and 7 of the 8 total) measured breastfeeding initiation only.

Additional gray literature provided results from the HV CoIIN that showed improvement in participating sites for both breastfeeding initiation and exclusivity at 6 months.⁴⁹ This source

is the only one describing a quality improvement initiative using evidence-based home visiting; it, accordingly, could not be rated or placed on the continuum.

Three studies each addressed “Provider Training Only” and “Family Leave, Workplace Policies, and State Laws.” Conclusions cannot be drawn from the limited number of studies focusing on these interventions.

Evidence Rating & Evidence Continuum

Assignment of evidence ratings was based on the synthesis of study results for the 59 studies (Tables 7 and 8) and one gray literature source assessing strategies to increase both breastfeeding initiation and exclusivity at 6 months. We did not differentiate the findings for these two measures, although the majority came from the 37 studies on strategies to increase initiation only. Based on the evidence ratings criteria, “Lactation Consultant,” “Peer Counselor,” and “Home Visits by Other Professionals” were rated as *Moderate Evidence*. The strategies “Group Education,” “Hospital Policies,” and “WIC Food Package Change” were rated as *Mixed Evidence*.

IMPLICATIONS

The vast majority of states and jurisdictions selected the Breastfeeding NPM as a programmatic focus for the current 5-year cycle of the Title V MCH Services Block Grant. The purpose of this review was to provide information about evidence-based and evidence-informed interventions to increase the percentage of infants who were ever breastfed or who were breastfed exclusively through 6 months of age. The evidence ratings are based largely on findings from the literature on strategies to increase the rates of breastfeeding initiation.

The findings from this review suggest that interventions provided by lactation consultants and peer counselors appear to be effective for increasing breastfeeding initiation and exclusivity

at 6 months. Peer counselor interventions are more likely to affect initiation while lactation consultants are more likely to impact exclusivity at 6 months. Home visits provided by professionals other than lactation consultants and peer counselors also appear to be effective. These home visits appear to have a similar effect on breastfeeding initiation and exclusivity at 6 months. Group education interventions and hospital policies to support breastfeeding appear to be somewhat effective. The impact of group education appears to be similar for both breastfeeding outcomes. Hospital policies are understandably more likely to impact breastfeeding initiation, as these policies affect women during the postpartum hospital stay. Although two hospital policy studies implemented all ten steps of the BFHI, the community outreach component was not a focus.

The WIC food package change had inconsistent effects on breastfeeding outcomes. The 2009 package revision focused on increasing access to healthy food and beverages, improving dietary intake, and promoting breastfeeding among WIC participants. The food package change aimed to provide incentives for women to breastfeed by increasing the amount of food and length of time that the exclusive breastfeeding package was available, and decreasing the amount of formula in the partial breastfeeding package.¹¹¹ The results of a recent systematic review did not show consistently favorable results for breastfeeding initiation and duration. However, the enhanced food package positively affected participants' dietary intake as well as the availability of healthy food and beverages.³⁷ These findings suggest that more or enhanced targeted support for breastfeeding may be needed to sustain exclusive breastfeeding for 6 months, as suggested by the results for lactation consultation and peer counseling.

A major strength of this evidence review is that it focused specifically on interventions and intervention settings within the scope of Title V. Studies evaluating the effectiveness of state

and national policies were included since Title V partners with diverse stakeholders to assure families have access to resources to promote breastfeeding. There are, however, several limitations. The review was limited to studies assessing strategies to impact breastfeeding initiation and exclusivity through 6 months, using the AAP's definition of exclusivity. This definition specifies no other food or liquid consumption before 6 months.⁴ Studies with interventions to increase breastfeeding duration for less than 6 months and those measuring less than exclusive breastfeeding were excluded, limiting our ability to comment on the impact of these interventions on other breastfeeding behaviors. Second, 37 of the 59 peer-reviewed articles measured initiation only, also limiting generalizability of the recommended interventions for Title V programs aimed at increasing exclusive breastfeeding in their state. Only 6 studies^{55,58,60,95,96,99} (all implemented on the individual-level) evaluated interventions that supported mothers up to 6 months postpartum.

The ability to compare and synthesize studies was also limited due to variation in study setting, sample, and design. Finally, search results were screened and interpreted by one reviewer; nevertheless, a consistent protocol (as described in the methods) was followed, and concerns were addressed by the entire study team.

Several other strategies that did not have an adequate number of studies to be plotted on our continuum may be effective in promoting breastfeeding. Many states are using quality improvement to impact breastfeeding behaviors. The HRSA/MCHB funded HV CoIIN engages teams from local home visiting service agencies across Maternal, Infant, and Early Childhood Home Visiting Program grantees to implement quality improvement practices and track specific aims by topic area.¹¹² The CoIIN for breastfeeding includes 11 local implementing agencies across 6 states and has shown improvement among participating states in both breastfeeding

initiation rates and rates of exclusive breastfeeding at 6 months.⁴⁹ The one quality improvement intervention in our review evaluated Best Fed Beginnings, a Centers for Disease Control and Prevention-funded initiative to increase the number of BFHI designated hospitals and improve breastfeeding outcomes.⁸³ Results from this initiative nearly doubled the number of BFHI hospitals in the United States and increased overall breastfeeding and exclusive breastfeeding during the hospital stay.

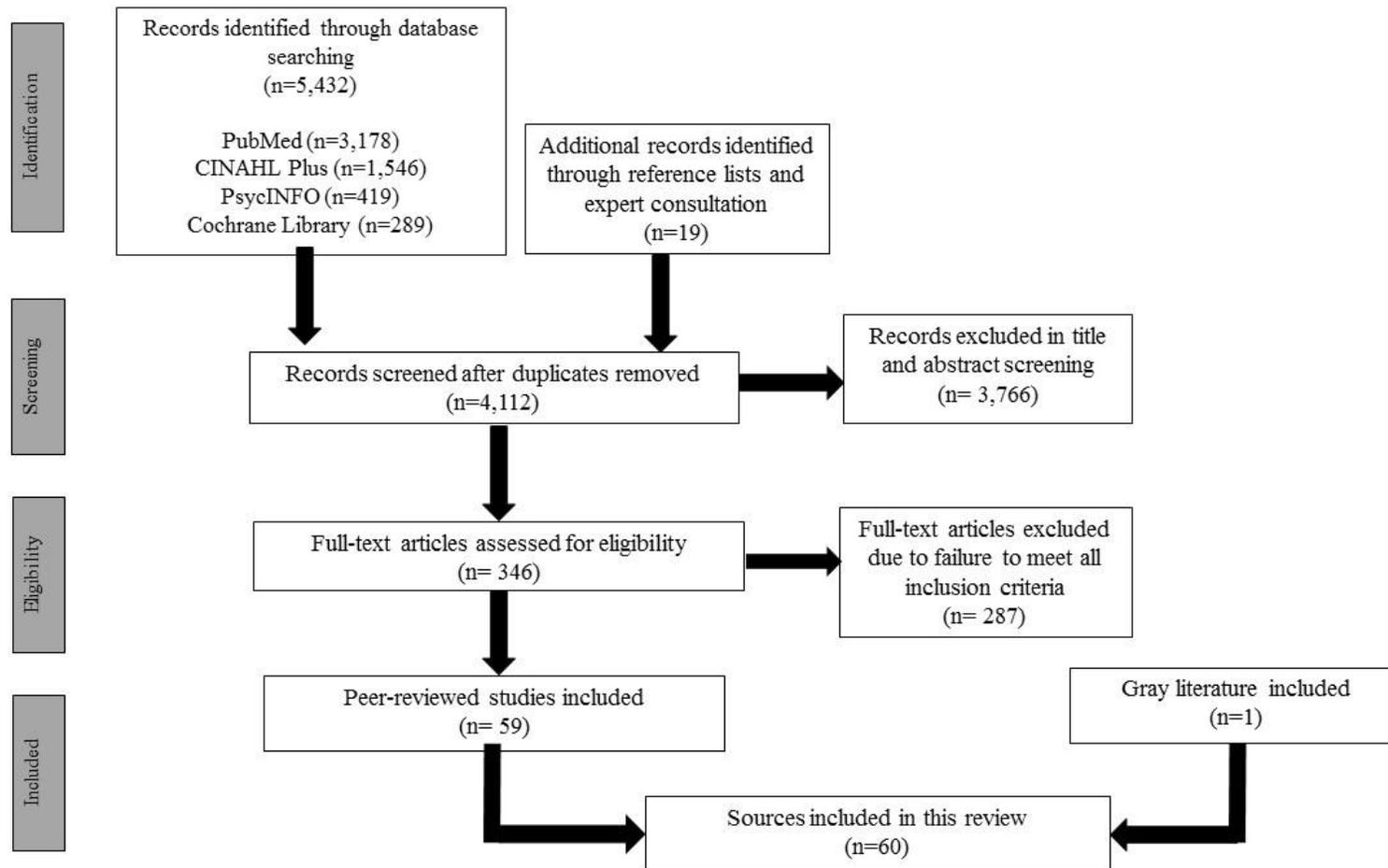
Three articles evaluated interventions specific to BFHI accreditation in order to impact breastfeeding.^{83,104,110} These evaluations had mixed findings with regard to breastfeeding outcomes. Since establishment of hospital policies to support breastfeeding is a key component of the BFHI, hospital policies and BFHI were combined into one category; studies examining hospital policies had more favorable outcomes than those assessing BFHI as a single strategy. This finding is consistent with the results of the recent United States Preventive Services Task Force systematic review, which suggested that implementation of the individual BFHI steps are more likely to impact breastfeeding behaviors than BFHI accreditation per se.¹⁹

The findings from this review indicate various evidence-based/informed interventions on the individual and provider/practice-level that state Title V programs may consider implementing. Many of these interventions would be undertaken in collaboration with stakeholders who serve families with infants. It also highlighted the lack of evaluation of interventions which provide mothers with postpartum breastfeeding support long enough to affect the NPM of exclusivity at 6 months. It is critical to provide mothers with breastfeeding support well after delivery, if exclusive rates of breastfeeding at 6 months are to be achieved. Understanding the impact of state, federal, and workplace policies on breastfeeding initiation and exclusivity at 6 months requires investment of resources to support rigorous evaluations.

Exclusive breastfeeding at 6 months is consistent with AAP and WHO policies and our review focused on interventions consistent with the NPM. It is possible that strategies that are effective in achieving exclusivity for shorter durations also may contribute to exclusivity at 6 months. However, empirical studies are needed to fully evaluate such strategies.

FIGURES & TABLES

Figure 1. Flow Chart of the Review Process and Results.¹



¹ Bonuck et al. (2014) describes the evaluation of two randomized controlled trials and is counted as two records.

Figure 2. Evidence Continuum.

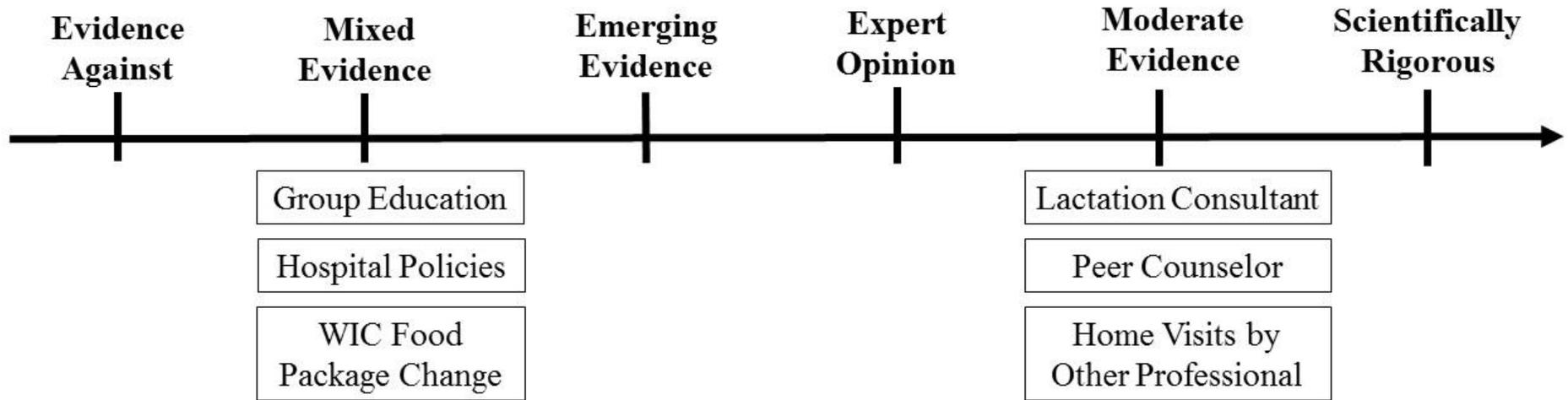


Table 1. Detailed Search Strategies.

Database	Search Strategies
PubMed	<p>#1: "Breast Feeding"[Mesh] OR "Lactation"[Mesh] OR "Milk, Human"[Mesh] OR breastfe*[tw] OR breast fe*[tw] OR breastmilk[tw] OR "breast milk"[tw]</p> <p># 2: "Hospitals"[Mesh] OR "Postnatal Care"[Mesh] OR "Child Day Care Centers"[Mesh] OR "Women, Working"[Mesh] OR "Workplace"[Mesh] OR "Employment"[Mesh] OR "Parental Leave"[Mesh] OR "Text Messaging"[Mesh] OR "Internet"[Mesh] OR "Social Media"[Mesh] OR "Social Marketing"[Mesh] OR "Food Assistance"[Mesh] OR "Telemedicine"[Mesh] OR hospital practice*[tw] OR baby friendly[tw] OR BFHI[tw] OR ("ten steps"[tw] AND breastfeeding[tw]) OR "breastfeeding friendly"[tw] OR "nursery care"[tw] OR "maternity care"[tw] OR childcare[tw] OR "child care"[tw] OR daycare[tw] OR "day care"[tw] OR workplace[tw] OR "work place"[tw] OR employ*[tw] OR "parental leave"[tw] OR "maternal leave"[tw] OR technolog*[tw] OR internet[tw] OR text messag*[tw] OR SMS[tw] OR "short message service"[tw] OR ehealth[tw] OR "e health"[tw] OR "social media"[tw] OR "social marketing"[tw] OR WIC[tw] OR "special supplemental nutrition program"[tw] OR "women, infants, and children"[tw] OR telemedicine[tw] OR "tele medicine"[tw] OR telehealth[tw] OR "tele health"[tw] OR mhealth[tw] OR "mobile health"[tw]</p> <p>#3: "Program Evaluation"[Mesh] OR "Health Promotion"[Mesh] OR "Social Control Policies"[Mesh] OR "Quality Improvement"[Mesh] OR "Guideline Adherence"[Mesh] OR "Evidence-Based Medicine"[Mesh] OR evaluat*[tw] OR health promoti*[tw] OR campaign*[tw] OR effective*[tw] OR efficac*[tw] OR intervention*[tw] OR strateg*[tw] OR polic*[tw] OR quality improvement*[tw] OR "best practice"[tw] OR "gold standard"[tw] OR "evidence based"[tw] OR implement*[tw] OR postimplement*[tw]</p> <p>#1 AND #2 AND #3</p>
CINAHL Plus	<p>S1: (MH "Breast Feeding+") OR (MH "Lactation") OR (MH "Milk, Human") OR TI(breastfed* OR "breast fe*" OR breastmilk OR "breast milk") OR AB(breastfed* OR "breast fe*" OR breastmilk OR "breast milk")</p> <p>S2: (MH "Hospitals+") OR (MH "Postnatal Care+") OR (MH "Child Day Care") OR (MH "Women, Working+") OR (MH "Work Environment") OR (MH "Employment") OR (MH "Parental Leave") OR (MH "Text Messaging") OR (MH "Internet+") OR (MH "Social Media") OR (MH "Social Marketing") OR (MH "Food Assistance") OR (MH "Telehealth+") OR (MH "Telemedicine+") OR TI((hospital practice*) OR "baby friendly" OR BFHI OR (ten steps W3 breastfeeding) OR "breastfeeding friendly" OR "nursery care" OR "maternity care" OR childcare OR "child care" OR daycare OR "day care" OR workplace* OR "work place" OR employ* OR "parental leave" OR "maternal leave" OR technolog* OR internet OR "text messag*" OR SMS OR "short message service" OR ehealth OR "e health" OR "social media" OR "social marketing" OR WIC OR "special supplemental nutrition program" OR "women, infants, and children" OR telemedicine OR "tele medicine" OR telehealth OR "tele health" OR mhealth OR "mobile health") OR AB((hospital practice*) OR "baby friendly" OR BFHI OR (ten steps W3 breastfeeding) OR "breastfeeding friendly" OR "nursery care" OR "maternity care" OR childcare OR "child care" OR daycare OR "day care" OR workplace* OR "work place" OR employ* OR "parental leave" OR "maternal leave" OR technolog* OR internet OR "text messag*" OR SMS OR "short message service" OR ehealth OR "e health" OR "social media" OR "social marketing" OR WIC OR "special supplemental nutrition program" OR "women, infants, and children" OR telemedicine OR "tele medicine" OR telehealth OR "tele health" OR mhealth OR "mobile health")</p> <p>S3: (MH "Program Evaluation") OR (MH "Health Promotion+") OR (MH "Public Policy+") OR (MH "Organizational Policies+") OR (MH "Quality Improvement+") OR (MH "Guideline Adherence") OR (MH "Medical Practice, Evidence-Based") OR TI(evaluat* OR (health W1 promoti*) OR campaign* OR effective* OR efficac* OR intervention* OR strateg* OR polic* OR (quality W2 improvement*) OR "best practice" OR "gold standard" OR "evidence based" OR implement* OR postimplement*) OR AB(evaluat* OR (health W1 promoti*) OR campaign* OR effective* OR efficac* OR intervention* OR strateg* OR polic* OR (quality W2 improvement*) OR "best practice" OR "gold standard" OR "evidence based" OR implement* OR postimplement*)</p> <p>S1 AND S2 AND S3</p>
PsycINFO	<p>S1: (DE "Breast Feeding" OR DE "Lactation") OR TI(breastfed* OR "breast fe*" OR breastmilk OR "breast milk") OR AB(breastfed* OR "breast fe*" OR breastmilk OR "breast milk") OR KW(breastfed* OR "breast fe*" OR breastmilk OR "breast milk")</p>

	<p>S2: (DE "Hospitals" OR DE "Child Day Care" OR DE "Working Women" OR DE "Workplace Intervention" OR DE "Employment Status" OR DE "Parental Occupation" OR DE "Text Messaging" OR DE "Internet" OR DE "Social Media" OR DE "Online Social Networks" OR DE "Social Marketing" OR DE "Telemedicine") OR TI((hospital practice*) OR "baby friendly" OR BFHI OR (ten steps W3 breastfeeding) OR "breastfeeding friendly" OR "nursery care" OR "maternity care" OR childcare OR "child care" OR daycare OR "day care" OR workplace* OR "work place" OR employ* OR "parental leave" OR "maternal leave" OR technolog* OR internet OR "text messag*" OR SMS OR "short message service" OR ehealth OR "e health" OR "social media" OR "social marketing" OR WIC OR "special supplemental nutrition program" OR "women, infants, and children" OR telemedicine OR "tele medicine" OR telehealth OR "tele health" OR mhealth OR "mobile health") OR AB((hospital practice*) OR "baby friendly" OR BFHI OR (ten steps W3 breastfeeding) OR "breastfeeding friendly" OR "nursery care" OR "maternity care" OR childcare OR "child care" OR daycare OR "day care" OR workplace* OR "work place" OR employ* OR "parental leave" OR "maternal leave" OR technolog* OR internet OR "text messag*" OR SMS OR "short message service" OR ehealth OR "e health" OR "social media" OR "social marketing" OR WIC OR "special supplemental nutrition program" OR "women, infants, and children" OR telemedicine OR "tele medicine" OR telehealth OR "tele health" OR mhealth OR "mobile health") OR KW((hospital practice*) OR "baby friendly" OR BFHI OR (ten steps W3 breastfeeding) OR "breastfeeding friendly" OR "nursery care" OR "maternity care" OR childcare OR "child care" OR daycare OR "day care" OR workplace* OR "work place" OR employ* OR "parental leave" OR "maternal leave" OR technolog* OR internet OR "text messag*" OR SMS OR "short message service" OR ehealth OR "e health" OR "social media" OR "social marketing" OR WIC OR "special supplemental nutrition program" OR "women, infants, and children" OR telemedicine OR "tele medicine" OR telehealth OR "tele health" OR mhealth OR "mobile health")</p> <p>S3: (DE "Program Evaluation" OR DE "Evaluation" OR DE "Health Promotion" OR DE "Organizational Structure" OR DE "Intervention" OR DE "Workplace Intervention" OR DE "Evidence Based Practice") OR TI(evaluat* OR (health W1 promoti*) OR campaign* OR effective* OR efficac* OR intervention* OR strateg* OR polic* OR (quality W2 improvement*) OR "best practice" OR "gold standard" OR "evidence based" OR implement* OR postimplement*) OR AB(evaluat* OR (health W1 promoti*) OR campaign* OR effective* OR efficac* OR intervention* OR strateg* OR polic* OR (quality W2 improvement*) OR "best practice" OR "gold standard" OR "evidence based" OR implement* OR postimplement*) OR KW(evaluat* OR (health W1 promoti*) OR campaign* OR effective* OR efficac* OR intervention* OR strateg* OR polic* OR (quality W2 improvement*) OR "best practice" OR "gold standard" OR "evidence based" OR implement* OR postimplement*)</p> <p>S1 AND S2 AND S3</p>
<p>Cochrane</p>	<p>#1 MeSH descriptor: [Breast Feeding] explode all trees</p> <p>#2 MeSH descriptor: [Lactation] explode all trees</p> <p>#3 MeSH descriptor: [Milk, Human] explode all trees</p> <p>#4 (breastfe* or (breast next fe*) or breastmilk or (breast next milk)):ti,ab,kw</p> <p>#5 #1 or #2 or #3 or #4</p> <p>#6 MeSH descriptor: [Hospitals] explode all trees</p> <p>#7 MeSH descriptor: [Postnatal Care] explode all trees</p> <p>#8 MeSH descriptor: [Child Day Care Centers] explode all trees</p> <p>#9 MeSH descriptor: [Women, Working] explode all trees</p> <p>#10 MeSH descriptor: [Workplace] explode all trees</p> <p>#11 MeSH descriptor: [Employment] explode all trees</p> <p>#12 MeSH descriptor: [Parental Leave] explode all trees</p> <p>#13 MeSH descriptor: [Text Messaging] explode all trees</p> <p>#14 MeSH descriptor: [Internet] explode all trees</p> <p>#15 MeSH descriptor: [Social Media] explode all trees</p> <p>#16 MeSH descriptor: [Social Marketing] explode all trees</p> <p>#17 MeSH descriptor: [Food Assistance] explode all trees</p> <p>#18 ((hospital next practice*) or "baby friendly" or BFHI or (ten steps near/3 breastfeeding) or "breastfeeding friendly" or "nursery care" or</p>

	"maternity care" or childcare or "child care" or daycare or "day care" or workplace* or "work place" or employ* or "parental leave" or "maternal leave" or technolog* or internet or "text messag*" or SMS or "short message service" or ehealth or "e health" or "social media" or "social marketing" or WIC or "special supplemental nutrition program" or "women, infants, and children" or telemedicine or "tele medicine" or telehealth or "tele health" or mhealth or "mobile health"):ti,ab,kw
#19	#6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18
#20	MeSH descriptor: [Program Evaluation] explode all trees
#21	MeSH descriptor: [Health Promotion] explode all trees
#22	MeSH descriptor: [Social Control Policies] explode all trees
#23	MeSH descriptor: [Quality Improvement] explode all trees
#24	MeSH descriptor: [Guideline Adherence] explode all trees
#25	MeSH descriptor: [Evidence-Based Medicine] explode all trees
#26	(evaluat* or (health near/1 promotion*) or campaign* or effective* or efficac* or intervention* or strateg* or polic* or (quality near/2 improvement*)):ti,ab,kw
#27	#20 or #21 or #22 or #23 or #24 or #25 or #26
#28	#5 and #19 and #27

Table 2. Evidence Rating Criteria.

Evidence Rating	Evidence Criteria: Type	Evidence Criteria: Study Results
Scientifically Rigorous	<ul style="list-style-type: none"> • Peer-reviewed study results are drawn only from: <ul style="list-style-type: none"> ○ Randomized controlled trials, and/ or ○ Quasi-experimental studies with pre-post measures and control groups 	<ul style="list-style-type: none"> • Preponderance of studies have statistically significant favorable findings
Moderate Evidence	<ul style="list-style-type: none"> • Peer-reviewed study results are drawn from a mix of: <ul style="list-style-type: none"> ○ Randomized controlled trials ○ Quasi-experimental studies with pre-post measures and control groups ○ Quasi-experimental studies with pre-post measures without control groups ○ Time trend analyses 	<ul style="list-style-type: none"> • Preponderance of studies have statistically significant favorable findings
Expert Opinion	<ul style="list-style-type: none"> • Gray literature 	<ul style="list-style-type: none"> • Experts deem the intervention as favorable based on scientific review
Emerging Evidence	<ul style="list-style-type: none"> • Peer-reviewed study results are drawn from a mix of: <ul style="list-style-type: none"> ○ Randomized controlled trials ○ Quasi-experimental studies with pre-post measures and control groups ○ Quasi-experimental studies with pre-post measures without control groups ○ Time trend analyses ○ Cohort studies 	<ul style="list-style-type: none"> • Studies with a close-to-evenly distributed mix of statistically significant favorable and not significant findings • Only cohort studies with preponderance of statistically significant favorable findings
	<ul style="list-style-type: none"> • Gray literature 	<ul style="list-style-type: none"> • Experts deem the intervention as favorable
Mixed Evidence	<ul style="list-style-type: none"> • Peer-reviewed study results are drawn from a mix of: <ul style="list-style-type: none"> ○ Randomized controlled trials ○ Quasi-experimental studies with pre-post measures and control groups ○ Quasi-experimental studies with pre-post measures without control groups ○ Time trend analyses ○ Cohort studies 	<ul style="list-style-type: none"> • Studies with a close-to-evenly distributed mix of statistically significant favorable, unfavorable, and/ or not significant findings
	<ul style="list-style-type: none"> • Gray literature 	<ul style="list-style-type: none"> • Experts deem the intervention as having mixed evidence
Evidence Against	<ul style="list-style-type: none"> • Peer-reviewed study results are drawn from a mix of: <ul style="list-style-type: none"> ○ Randomized controlled trials ○ Quasi-experimental studies with pre-post measures and control groups ○ Quasi-experimental studies with pre-post measures without control groups ○ Time trend analyses ○ Cohort studies 	<ul style="list-style-type: none"> • Preponderance of studies do not have statistically significant findings or have statistically significant unfavorable findings
	<ul style="list-style-type: none"> • Gray literature 	<ul style="list-style-type: none"> • Experts deem the intervention as being ineffective or unfavorable

Table 3. Study Characteristics.¹

Study	Country	Setting	Study Sample		Study Design
			Target Sample	Sample Size ²	
Anderson et al. (2005)	US	3 clinic teams providing prenatal care at the Women's Ambulatory Health Services Clinic of Hartford Hospital (CT)	<p>First stage: Recruited mothers attending the prenatal clinic on mornings of 4 predetermined weekdays who were ≥ 18 years old, ≤ 32 weeks gestational age (GA), healthy, and did not have medical conditions likely to impair successful breastfeeding</p> <p>Second stage: Recruited mothers considering breastfeeding who planned to deliver at Hartford Hospital, and to stay in the area for three months after delivery, living in a household earning $< 185\%$ of the federal poverty level, and available to be contacted via telephone.</p> <p>Third stage (Postpartum): Recruited mothers free of any medical condition that would prevent her from exclusively breastfeeding with newborns at least 36 weeks GA, weighing ≥ 2500 gm, with no complications requiring treatment in the NICU, and Apgar scores of ≥ 6 at 1 and 5 minutes.</p>	<p>Randomized</p> <ul style="list-style-type: none"> • Intervention (n=90) • Control (n=92) <p>Stage 3 Screening After Delivery</p> <ul style="list-style-type: none"> • Intervention (n=77) • Control (n=85) 	RCT
Baerug et al. (2016)	Norway	54 municipalities in six counties (Østfold, Vestfold, Nord-Trøndelag, Hordaland, Telemark, Finnmark)	Mothers with infants ≥ 5 months old at the time of survey, who lived in the study area and had given birth to a singleton infant at ≥ 37 weeks GA with a birth weight ≥ 2000 gm	<p>Intervention (n=1051/990)³</p> <p>Control (n=981/916)</p>	Pragmatic cluster quasi-experimental
Baker & Milligan (2008)	Canada	National	Children born between 1998-2001 or 2000-2003 who were in	N/A ⁴	QE: pretest-posttest

Study	Country	Setting	Study Sample		Study Design
			Target Sample	Sample Size ²	
			two-parent families and did not live in Quebec		
Begley et al. (2011)	Ireland	Our Lady of Lourdes Hospital in Drogheda and Cavan General Hospital in Cavan	Women assessed at booking clinic at ≤ 24 weeks GA between 16-39 years of age, had ≤ 5 previous children, ≥ 152 cm in height, had a BMI between 18 and 29, did not have certain medical obstetrical or gynecological medical histories, were not current drug misusers, did not smoke ≥ 20 cigarettes per day, and did not have a latex allergy	Intervention (n=1101) Control (n=552)	RCT
Bick et al. (2012)	England	Large maternity unit in the south of England	Women on the postnatal ward who were >16 years old, able to speak and read English, and who had not experienced a stillbirth or neonatal death	Pretest (n=751/741) ³ Posttest (n=725/725)	QE: pretest-posttest
Bonuck et al. (2006)	US	2 urban community health centers in the Bronx, NY	Women who were ≤ 24 weeks GA, spoke English or Spanish, had a twin or singleton birth, and who did not have medical or obstetric complications or long-term use of medications incompatible with breastfeeding	Randomized • Intervention (n=188) • Control (n=194) 26-Week Follow-Up • Intervention (n=115) • Control (n=136)	RCT
Bonuck et al. (2014)	US	Urban, prenatal clinic in the Bronx, NY	Women who spoke English or Spanish, ≥ 18 years old, in the first or second trimester of a singleton pregnancy, without risk factors for a premature birth or maternal/infant condition that would prevent or complicate breastfeeding	Best Infant Nutrition for Good Outcomes (BINGO) • Lactation Consultant (LC) (n=77/73) • Electronically Prompted (EP) Guidance by Prenatal Care provider (n=236/223) • LC + EP (n=238/226) • Control (n=77/73)	RCT
	US	Urban, prenatal clinic in the Bronx, NY	Women who spoke English or Spanish, ≥ 18 years old, in the first or second trimester of a singleton pregnancy, without risk	Provider Approaches to Improved Rates of Infant Nutrition and Growth (PAIRINGS)	RCT

Study	Country	Setting	Study Sample		Study Design
			Target Sample	Sample Size ²	
			factors for a premature birth or maternal/infant condition that would prevent or complicate breastfeeding	Baseline <ul style="list-style-type: none"> • LC + EP (n=129/124) • Control (n=133/130) 	
Brent et al. (1995)	US	Maternal-Infant Lactation Center of Pittsburgh (PA)	Women attending the prenatal clinic of The Mercy Hospital of Pittsburgh, English-speaking, and nulliparous	Intervention (n=51) Control (n=57)	RCT
Carlsen et al. (2013)	Denmark	Hvidovre Hospital in Copenhagen, Denmark	Women who had previously participated in the Treatment of Obese Pregnant Women study, were <38 years old postpartum, with singleton, healthy infants born at term	Randomized <ul style="list-style-type: none"> • Intervention (n=108) • Control (n=118) 1,3,6-Month Follow-Up <ul style="list-style-type: none"> • Intervention (n=105) • Control (n=102) 	RCT
Cattaneo et al. (2016)	Italy	18 Local Health Authorities (LHAs) in 9 regions of Italy	Women living in the area covered by LHA, with infants > 2000g, who spoke Italian, English, French, or Spanish (or who had a relative who spoke these languages), and without a postpartum condition that required admission to the NICU	Early Intervention Group ⁵ <ul style="list-style-type: none"> • Enrolled (n=2846) • 12-month follow-up (n=2474) Late Intervention Group <ul style="list-style-type: none"> • Enrolled (n=2248) • 12-month follow-up (n=1931) 	QE: pretest-posttest time-lagged non-equivalent control group
Cattaneo & Buzzetti (2001)	Italy	8 hospitals (3 general hospitals and 1 teaching hospital in southern Italy, 3 general hospitals and 1 teaching hospital in central and northern Italy)	Women with healthy infants > 2000g	Group 1 <ul style="list-style-type: none"> • Phase 1 (n=529) • Phase 2 (n=515) • Phase 3 (n=516) Group 2 <ul style="list-style-type: none"> • Phase 1 (n=483) • Phase 2 (n=342) • Phase 3 (n=284) 	QE: pretest-posttest time-lagged non-equivalent control group
Caulfield et al. (1998)	US	4 WIC clinics in Baltimore, MD	WIC eligible African American women starting prenatal care < 24 GA, with a singleton pregnancy, planning to keep the baby and stay in the clinic's catchment area	<ul style="list-style-type: none"> • Video (n=64) • Peer Counselor (n=55) • Video + Peer Counselor (n=66) • Control (n=57) 	Cluster RCT
Chapman et al. (2013)	US	Hartford Hospital in Hartford, CT	Pregnant women ≥ 18 years, with prepregnancy BMI ≥ 27, ≤ 36	Randomized <ul style="list-style-type: none"> • Intervention (n=76) 	RCT

Study	Country	Setting	Study Sample		Study Design
			Target Sample	Sample Size ²	
			weeks GA, singleton pregnancy, without medical conditions that may interfere with breastfeeding, ≤ 185% federal poverty level, planning to stay in the area for 6 months, and considering breastfeeding	<ul style="list-style-type: none"> • Control (n=78) 6-Month Follow-Up <ul style="list-style-type: none"> • Intervention (n=55) • Control (n=53) 	
Chiasson et al. (2013)	US	New York State (NYS)	Mothers of infants and children through 4 years enrolled in the NYS WIC program between July 1, 2008-December 31, 2008	Pre-Implementation <ul style="list-style-type: none"> • July-Dec 2008 (n=179,929) During and Post-Implementation <ul style="list-style-type: none"> • Jan-Jun 2009 (n=186,451) • July-Dec 2009 (n=188,622) • Jan-Jun 2010 (n=186,663) • July-Dec 2010 (n=186,012) • Jan-Jun 2011 (n=184,262) • July-Dec 2011 (n=183,656) 	Time trend analysis
Corriveau et al. (2013)	US	2 locations (1 suburban, 1 rural) of a single practice in northern VA	Women with healthy, singleton births of ≥ 37 GA, who entered the practice within the first week of birth and returned for health maintenance visits at 2, 4, and 6 months	Pre-Intervention (n=376) Post-Intervention (n=381)	QE: pretest-posttest
Efrat et al. (2015)	US	5 community health clinics in Los Angeles County, CA	Women who were 26-34 weeks GA, insured by Medicaid, Hispanic, available via telephone, and not assigned to a WIC peer counselor	3 rd Trimester <ul style="list-style-type: none"> • Intervention (n=128) • Control (n=125) 72-Hour Follow-Up <ul style="list-style-type: none"> • Intervention (n=81) • Control (n=87) 6-Month Follow-Up <ul style="list-style-type: none"> • Intervention (n=62) • Control (n=55) 	RCT
Ekstrom et al. (2012)	Sweden	10 municipalities in southwest Sweden	First time, Swedish-speaking mothers with singleton, healthy, full-term births delivered spontaneously, by vacuum extraction, or by cesarean section, and who had been cared for by a healthcare professional in one of 10 municipalities	3 Days Postpartum ³ <ul style="list-style-type: none"> • Intervention (n=206/172) • Control Group A (n=162/148) • Control Group B (n=172/160) 	Cluster RCT

Study	Country	Setting	Study Sample		Study Design
			Target Sample	Sample Size ²	
Feldman-Winter et al. (2017)	US	90 hospitals from 3 geographic regions	Hospitals with low breastfeeding rates, readiness for change, establishment of a Baby-Friendly/breastfeeding steering committee, data about socio-demographic characteristics of population served, geographic location based on regions with low breastfeeding rates and BFHI accreditation, commitment of senior leadership, and experience with quality improvement methods	Intervention (N=89) N=hospitals	QE: pretest-posttest
Finch & Daniel (2002)	US	Western NY	Women participating in WIC who spoke English, were pregnant, and HIV negative	Intervention (n=30/19) ³ Control (n=30/29)	RCT
Forster et al. (2004)	Australia	Royal Women's Hospital in Melbourne	Women who were public patients, having a first child, between 16-24 weeks GA when recruited, and able to speak, read, and write English	Randomized <ul style="list-style-type: none"> • Practical Skills (n=327) • Attitudes (n=327) • Control (n=328) 6-Month Follow-Up <ul style="list-style-type: none"> • Practical Skills (n=297) • Attitudes (n=293) • Control (n=299) 	RCT
Giglia et al. (2015)	Australia	Western Australia	Women who delivered an infant without serious illness, could read and understand English, and lived in a regional area in western Australia ⁶	Intervention (n=207) Control (n=207)	QE: non-equivalent control group
Gijsbers et al. (2005)	Netherlands	Southeastern region of the Netherlands	Women < 7 months pregnant who had at least one first-degree relative with asthma	Randomized <ul style="list-style-type: none"> • Intervention (n=58) • Control (n=55) 6-Month Follow-Up <ul style="list-style-type: none"> • Intervention (n=44) • Control (n=45) 	Cluster RCT
Graffy et al. (2004)	England	32 general practices in London and south Essex	Women 28-36 GA who were considering breastfeeding, had	Intervention (n=336)	RCT

Study	Country	Setting	Study Sample		Study Design
			Target Sample	Sample Size ²	
			not breastfed a previous child for 6 weeks, English-speaking, and planned to live in area until at least 4 months after the birth	Control (n=336)	
Gross et al. (2009)	US	19 WIC clinics in MD	Women with infants newly certified in the Maryland WIC program from Jan 1, 2007-Jun 30, 2007	Lactation Consultant (n=4527) Peer Counselor (n=8747) Control (n=5515)	QE: non-equivalent control group
Grossman et al. (2009)	US	4 MA hospitals	Women with infants born 3-5 months before the intervention and women with infants born 2-4 months after the intervention ⁷	Preintervention (n=668) Postintervention (n=679)	QE: pretest-posttest
Haider et al. (2014)	US	5 counties in MI	Women with available Medicaid claims data, recruited prenatally	Intervention (n=274) Control (n=572)	QE: non-equivalent control group
Hawkins et al. (2013)	US	National	All mothers at 4 months postpartum	2000 (n=30,899) 2008 (n=36,512)	QE: pretest-posttest
Hildebrand et al. (2014)	US	4 WIC clinics in Chickasaw Nation, OK	Parents and caregivers who were pregnant or had a child ≤ 3 years old	Intervention (n=846) Control (n=807)	QE: non-equivalent control group
Hoddinott et al. (2009)	Scotland	14 clusters of general practices	Clusters of general practices that collected breastfeeding data through the Child Health Surveillance Program of the National Health Service Scotland from Oct 2002 forward	Intervention (n=7) Control (n=7) N=Clusters	Pragmatic cluster RCT
Howell et al. (2014)	US	Large tertiary hospital in New York City, NY	Black and Latina women ≥ 18 years old, who had infants with birthweights ≥ 2500 gm and 5-minute Apgar scores ≥ 7	Randomized • Intervention (n=270) • Control (n=270) 6-Month Follow-Up • Intervention (n=214) • Control (n=209)	RCT
Huang & Yang (2015)	US	National	Healthy women ≥ 18 years old at prenatal questionnaire administration, with full or nearly full-term singleton birth weighing ≥ 5 lbs	Wave 1, 1993 (n=704) Wave 2, 2005-2006 (n=1324)	QE: pretest-posttest

Study	Country	Setting	Study Sample		Study Design
			Target Sample	Sample Size ²	
Johnston et al. (2006)	US	Integrated delivery system in the Pacific Northwest	Pregnant women <22 weeks GA at enrollment, <45 years old, English speaking, and planning to attend a study clinic for pediatric care	Healthy Steps (HS) only (n=117) HS + PrePare (n=122) Control (n=104)	RCT
Jolly et al. (2012)	England	Primary Care Trust (PCT) health district in Birmingham	All pregnant women registered with a general practice within the PCT, with an approximate due date between Feb 1, 2007 – July 31, 2007	<ul style="list-style-type: none"> • Intervention (n=33) • Control (n=33) N=clinics Randomized <ul style="list-style-type: none"> • Intervention (n=1267) • Control (n=1457) 6-Month Follow-Up <ul style="list-style-type: none"> • Intervention (n=271) • Control (n=301) N=women	Cluster RCT
Joyce & Reeder (2015)	US	National	Intervention: women who participated in WIC during pregnancy Control: women not on WIC during pregnancy of similar socioeconomic status	N/A ⁸	Time trend analysis
Kellams et al. (2016)	US	University of Virginia Health System and the Virginia Commonwealth University Health System	Women 24-41 weeks GA, income ≤185% FPL, English-speaking, with a singleton pregnancy, and no known contraindication to breastfeeding	Intervention (n=249/174) ³ Control (n=248/172)	RCT
Kistin et al. (1994)	US	The Perinatal Center at Cook County Hospital in Chicago, IL	Women planning to deliver at Cook County Hospital, English or Spanish speaking, who were planning to breastfeed and had requested a peer counselor	Intervention (n=59) Control (n=43)	QE: non-equivalent control group
Kools et al. (2005)	Netherlands	10 maternity and child health centers within home health care organizations in Limburg	Pregnant women who applied for maternity care in one of the participating centers who gave birth to infants ≥2000 g	<ul style="list-style-type: none"> • Intervention (n=5) • Control (n=5) N=clinics <ul style="list-style-type: none"> • Intervention (n=371) • Control (n=330) 	Cluster RCT

Study	Country	Setting	Study Sample		Study Design
			Target Sample	Sample Size ²	
				N=women	
Kronborg et al. (2007)	Denmark	22 municipalities in Western Denmark	All mothers living within the 22 municipalities with singleton birth at ≥ 37 weeks GA	Randomized <ul style="list-style-type: none"> • Intervention (n=780) • Control (n=815) 6-Month Follow-Up ⁹ <ul style="list-style-type: none"> • Intervention (n=766) • Control (n=815) 	Cluster RCT
Langellier et al. (2014)	US	Los Angeles County, CA	Mothers participating in WIC who spoke English or Spanish	2005 (n=1772) 2008 (n=1598) 2011 (n=1650)	QE: pretest-posttest
Lawlor-Smith et al. (1997)	Australia	A general practice in Happy Valley, Adelaide	Pregnant patients registered in the practice	Intervention (n=119) Control (n=168)	QE: non-equivalent control group
MacArthur et al. (2009)	England	Prenatal clinics	Women registered with practices in the primary care trust	<ul style="list-style-type: none"> • Intervention (n=33) • Control (n=33) N=practice clusters <ul style="list-style-type: none"> • Intervention (n=1083) • Control (n=1315) N=women	Cluster RCT
Mackrain et al. (2015)	US	Maternal, Infant, and Early Childhood Home Visiting Programs within FL, MI, OH, PA, RI, VA, WI	Prenatal to age 3 children and families	<ul style="list-style-type: none"> • Phase I – 11 local teams (n\approx1074) • Phase II – 9 sites (n\approx873) N=families per month	Quality improvement time series design
Madden et al. (2003)	US	Harvard Vanguard Medical Associates (HVMA), which includes 14 health centers in eastern MA	HVMA/Harvard Pilgrim Health Care (HPHC) mother-infant pairs between Oct 1990-March 1998	Total (n=20,366) N=mother-infant pairs	QE: interrupted time series analysis
McDonald et al. (2010)	Australia	King Edward Memorial Hospital (KEMH), Perth, Western Australia	Women who gave birth at KEMH who intended to breastfeed	Randomized <ul style="list-style-type: none"> • Intervention (n=425) • Control (n=424) 6-Month Follow-Up <ul style="list-style-type: none"> • Intervention (n=393) 	RCT

Study	Country	Setting	Study Sample		Study Design
			Target Sample	Sample Size ²	
				<ul style="list-style-type: none"> • Control (n=389) 	
Meedya et al. (2014)	Australia	Tertiary hospital in South Western Sydney Area Health Services	Nulliparous women ≥ 19 years old with basic English literacy	Enrolled <ul style="list-style-type: none"> • Intervention (n=172) • Control (n=194) 6-Month Follow-Up <ul style="list-style-type: none"> • Intervention (n=149) • Control (n=189) 	QE: pretest-posttest non-equivalent control group
Morrell et al. (2000) ¹⁰	England	University teaching hospital and women's homes	Women ≥ 17 years old who delivered a live baby and lived in the area served by community midwives	Randomized <ul style="list-style-type: none"> • Intervention (n=311) • Control (n=312) 6-Month Follow-Up <ul style="list-style-type: none"> • Intervention (n=260) • Control (n=233) 	RCT
Nolan & Lawrence (2009)	US	Acute care community hospital labor/delivery/recovery/postpartum unit	Women with a live, singleton fetus with no pre-existing special needs scheduled for a planned, repeat cesarean delivery	Intervention (n=25) Control (n=25)	RCT
Philipp et al. (2001) & Philipp et al. (2003)	US	Boston Medical Center	Infants admitted to the newborn service at Boston Medical Center for 1995, 1998, and 1999	1995 (n=200) 1998 (n=200) 1999 (n=200)	Time trend analysis
Preer et al. (2013)	US	Boston Medical Center	Infants admitted to the well infant nurse and eligible for breastfeeding	Preintervention (n=348) Postintervention (n=354)	QE: pretest-posttest
Reat et al. (2015)	US	WIC clinic in south central TX	Spanish and English-speaking caregivers of infants and toddlers	2009 (n=84) 2011 (n=112)	QE: pretest-posttest
Rossiter (1994)	Australia	Western and South Western Sydney, New South Wales	Vietnamese women who were at least 12 weeks pregnant	Intervention (n=108) Control (n=86)	QE: non-equivalent control group
Sciacca et al. (1995)	US	2 WIC clinics in Flagstaff, AZ	Primiparous women with an expected due date between May and Dec 1992	Intervention (n=26) Control (n=26)	QE: non-equivalent control group
Shaw & Kaczorowski (1999)	US	9 health departments in West Tennessee	Women between 6 weeks and 6 months postpartum who registered antepartum for WIC at one of the participating health departments	Intervention (n=156) Control (n=135)	QE: non-equivalent control group

Study	Country	Setting	Study Sample		Study Design
			Target Sample	Sample Size ²	
Srinivas et al. (2015)	US	Westown Physician Center in Cleveland, OH	Women ≥ 18 years old who were ≥ 28 weeks GA, English speaking, without any diagnoses that would prohibit them from breastfeeding	Intervention (n=50) Control (n=53)	RCT
Strauch et al. (2016)	US	Large hospital with a separate wing for labor and delivery	Women ≥ 18 years old at delivery who gave birth between 2013 and 2014	Total (n=500)	QE: pretest-posttest
Vittoz et al. (2004)	France	Level 3 maternity ward of a French teaching hospital	Women with no severe illnesses contraindicating breastfeeding who gave birth to a healthy singleton infant at ≥ 37 weeks GA and ≥ 2500 g	Preintervention (n=169) Postintervention (n=178)	QE: pretest-posttest
Wilde et al. (2012)	US	17 local WIC agencies in 10 states (CA, FL, GA, ID, IL, MN, RI, TN, TX & UT)	All mothers with infants 0-5 months before and after intervention implementation	Months 1-2 – preintervention (n=17,597) Months 5-12 – postintervention (n=62,427)	QE: pretest-posttest
Wolfberg et al. (2004)	US	Johns Hopkins Hospital in Baltimore, MD	Women who sought prenatal care at the resident and faculty practices	Intervention (n=27) Control (n=32)	RCT
Wright et al. (1997)	US	Shiprock, NM	All mothers with infants born at the Shiprock hospital	Preintervention (n=988) Postintervention (n=870)	QE: pretest-posttest

¹ Abbreviations used in this table: RCT (randomized controlled trial); QE (quasi-experimental study)

² N denotes number of women unless stated otherwise.

³ Sample size format (n=x/x) indicates the allocation and analysis sample sizes respectively

⁴ Sample obtained from the Canadian Community Health Survey

⁵ Sample size breakdown obtained from Appendix A1; available at <http://dx.doi.org/10.1136/bmjopen-2015-010232>

⁶ Sample information obtained from Cox K, Giglia R, Zhao Y, Binns, CW. Factors associated with exclusive breastfeeding at hospital discharge in rural western Australia. *J Hum Lac.* 2014.

⁷ Due to its smaller size, in Hospital C, all medical records from 5 months preintervention and 7 months post intervention were pulled

⁸ Sample obtained from 3 national datasets

⁹ Sample calculated by author (SG)

¹⁰ Full report: Morrell CJ, Spiby H, Stewart P, Walters S, Morgan A. Costs and benefits of community postnatal support workers: a randomized controlled trial. *Health Technol Assess.* 2000;4(6):1-100.

Table 4. Data Sources, Definitions, & Outcome Measures.

Study	Data Source	Breastfeeding Definitions	Outcome Measures
Anderson et al. (2005)	Medical records and mother self-report	<ul style="list-style-type: none"> • Initiation not defined 	<ul style="list-style-type: none"> • Initiation
Baerug et al. (2016)	Mother self-report	<ul style="list-style-type: none"> • Exclusive: only given breastmilk 	<ul style="list-style-type: none"> • 6 month exclusivity
Baker & Milligan (2008)	Canadian Community Health Survey; Mother self-report	<ul style="list-style-type: none"> • Incidence: ever breastfed 	<ul style="list-style-type: none"> • Initiation (Incidence)
Begley et al. (2011)	Medical record review	<ul style="list-style-type: none"> • Initiation not defined 	<ul style="list-style-type: none"> • Initiation
Bick et al. (2012)	Mother self-report	<ul style="list-style-type: none"> • Initiation not defined 	<ul style="list-style-type: none"> • Initiation
Bonuck et al. (2006)	Mother self-report	<ul style="list-style-type: none"> • Exclusive: no artificial milk or solids (no assessment of water, other liquids, or vitamin drops) 	<ul style="list-style-type: none"> • 6 month exclusivity (26 weeks)
Bonuck et al. (2014)	Mother self-report	<ul style="list-style-type: none"> • Initiation: ever breastfeed or fed breastmilk • Exclusive: feeding only breastmilk or vitamin supplements, with no water, juice, formula, or solid foods 	<ul style="list-style-type: none"> • Initiation • 6 month exclusivity
	Mother self-report		
Brent et al. (1995)	Mother self-report	<ul style="list-style-type: none"> • Initiation: any human milk feeding 	<ul style="list-style-type: none"> • Initiation
Carlsen et al. (2013)	Mother self-report	<ul style="list-style-type: none"> • Exclusive: breastfeeding only supplemented with vitamins, mineral supplements, and water 	<ul style="list-style-type: none"> • 6 month exclusivity (180 days)
Cattaneo et al. (2016)	Mother self-report	<ul style="list-style-type: none"> • Exclusivity not defined; World Health Organization (WHO), United Nations Children’s Fund, and American Academy of Pediatrics standards referenced 	<ul style="list-style-type: none"> • 6 month exclusivity
Cattaneo & Buzzetti (2001)	Mother self-report	<ul style="list-style-type: none"> • Exclusive: no other foods or fluids 	<ul style="list-style-type: none"> • 6 month exclusivity
Caulfield et al. (1998)	Mother self-report	<ul style="list-style-type: none"> • Initiation: ever putting the infant to the breast 	<ul style="list-style-type: none"> • Initiation
Chapman et al. (2013)	Mother self-report	<ul style="list-style-type: none"> • Initiation not defined • Exclusive: no water, formula, juice, tea, or any other solids/liquids 	<ul style="list-style-type: none"> • Initiation • 6 month exclusivity
Chiasson et al. (2013)	New York State WIC Statewide Information System; Mother self-report	<ul style="list-style-type: none"> • Initiation: ever breastfed or fed breastmilk 	<ul style="list-style-type: none"> • Initiation
Corriveau et al. (2013)	Medical record review	<ul style="list-style-type: none"> • Exclusive: breastmilk (including milk expressed) and any drops, vitamins, or medicines 	<ul style="list-style-type: none"> • 6 month exclusivity

Study	Data Source	Breastfeeding Definitions	Outcome Measures
Efrat et al. (2015)	Mother self-report	<ul style="list-style-type: none"> • Initiation not defined • Exclusive: only breastmilk, no water, formula, folk remedies or other foods 	<ul style="list-style-type: none"> • Initiation • 6 month exclusivity
Ekstrom et al. (2012)	Mother self-report	<ul style="list-style-type: none"> • Initiation: first breastfeeding session postpartum 	<ul style="list-style-type: none"> • Initiation
Feldman-Winter et al. (2017)	Medical record review	<ul style="list-style-type: none"> • Overall breastfeeding: any breast milk from the mother during the hospital stay 	<ul style="list-style-type: none"> • Initiation
Finch & Daniel (2002)	Mother self-report	<ul style="list-style-type: none"> • Initiation not defined 	<ul style="list-style-type: none"> • Initiation
Forster et al. (2004)	Mother self-report	<ul style="list-style-type: none"> • Initiation: measured by breastfeeding status at 2-4 days after birth • Exclusive: only breastmilk, either breast or expressed, no solids 	<ul style="list-style-type: none"> • Initiation • 6 month exclusivity
Giglia et al. (2015)	Mother self-report	<ul style="list-style-type: none"> • Exclusivity not defined; WHO terms and definitions referenced 	<ul style="list-style-type: none"> • 6 month exclusivity (26 weeks)
Gijsbers et al. (2005)	Mother self-report	<ul style="list-style-type: none"> • Exclusive: no other types of milk or solids, except vitamins and minerals 	<ul style="list-style-type: none"> • 6 month exclusivity
Graffy et al. (2004)	Mother self-report	<ul style="list-style-type: none"> • Initiation: any breastfeeding at birth 	<ul style="list-style-type: none"> • Initiation
Gross et al. (2009)	Mother self-report	<ul style="list-style-type: none"> • Initiation: currently breastfeeding (exclusively or partially) at the time of infant certification or had ever breastfed prior to certification 	<ul style="list-style-type: none"> • Initiation
Grossman et al. (2009)	Medical record review	<ul style="list-style-type: none"> • Initiation: received any breastmilk in the hospital 	<ul style="list-style-type: none"> • Initiation
Haider et al. (2014)	State administrative data, including WIC, Medicaid, and Vital Records	<ul style="list-style-type: none"> • Initiation: breastfeeding at birth 	<ul style="list-style-type: none"> • Initiation
Hawkins et al. (2013)	Pregnancy Risk Assessment Monitoring System (PRAMS)	<ul style="list-style-type: none"> • Initiation: ever breastfed or pumped breastmilk 	<ul style="list-style-type: none"> • Initiation
Hildebrand et al. (2014)	Mother self-report	<ul style="list-style-type: none"> • Initiation: ever breastfed 	<ul style="list-style-type: none"> • Initiation
Hoddinott et al. (2009)	Child Health Surveillance Programme	<ul style="list-style-type: none"> • Initiation: any breastfeeding at birth 	<ul style="list-style-type: none"> • Initiation
Howell et al. (2014)	Mother self-report	<ul style="list-style-type: none"> • Exclusive: breastmilk only 	<ul style="list-style-type: none"> • 6 month exclusivity
Huang & Yang (2015)	Mother self-report from the Infant Feeding Practices Study	<ul style="list-style-type: none"> • Exclusive: only breastmilk, without any other food or liquid 	<ul style="list-style-type: none"> • 6 month exclusivity
Johnston et al. (2006)	Mother self-report	<ul style="list-style-type: none"> • Initiation not defined 	<ul style="list-style-type: none"> • Initiation
Jolly et al. (2012)	Mother self-report	<ul style="list-style-type: none"> • Exclusive: absence of any artificial milk feeding 	<ul style="list-style-type: none"> • 6 month exclusivity

Study	Data Source	Breastfeeding Definitions	Outcome Measures
Joyce & Reeder (2015)	PRAMS, National Immunization Survey and the Pediatric Nutrition Surveillance System	<ul style="list-style-type: none"> • Initiation: ever breastfed 	<ul style="list-style-type: none"> • Initiation
Kellams et al. (2016)	Medical record review	<ul style="list-style-type: none"> • Initiation not defined 	<ul style="list-style-type: none"> • Initiation
Kistin et al. (1994)	Mother self-report	<ul style="list-style-type: none"> • Initiation: ever breastfed 	<ul style="list-style-type: none"> • Initiation
Kools et al. (2005)	Mother self-report	<ul style="list-style-type: none"> • Initiation: any breastfeeding at birth 	<ul style="list-style-type: none"> • Initiation
Kronborg et al. (2007)	Mother self-report	<ul style="list-style-type: none"> • Exclusive: breastmilk only 	<ul style="list-style-type: none"> • 6 month exclusivity
Langellier et al. (2014)	Mother self-report	<ul style="list-style-type: none"> • Initiation: ever breastfed • Exclusive: no in-hospital supplementation, breastfeeding duration of at least 6 months, no supplement before 6 months 	<ul style="list-style-type: none"> • Initiation • 6 month exclusivity
Lawlor-Smith et al. (1997)	Mother self-report	<ul style="list-style-type: none"> • Initiation not defined 	<ul style="list-style-type: none"> • Initiation • 6 month exclusivity
MacArthur et al. (2009)	Medical record review	<ul style="list-style-type: none"> • Initiation: breastfed at delivery or by discharge 	<ul style="list-style-type: none"> • Initiation
HV CoIIN BF Measures Instructions	Local team data registries	<ul style="list-style-type: none"> • Initiation: ever fed breastmilk • Exclusivity: only breastmilk, either expressed or directly at the breast. No other liquids or solids, including water, formula, juice, cow's milk, sugar water, or baby food – except for drops/syrups of vitamins, minerals, or medicines 	<ul style="list-style-type: none"> • Initiation • 6 month exclusivity
Madden et al. (2003)	Harvard Vanguard Medical Associates Automated Medical Records System	<ul style="list-style-type: none"> • Initiation not defined 	<ul style="list-style-type: none"> • Initiation
McDonald et al. (2010)	Mother self-report	<ul style="list-style-type: none"> • Exclusive: breastmilk is only source of nutrition; no other liquids or solids 	<ul style="list-style-type: none"> • 6 month exclusivity
Meedya et al. (2014)	Mother self-report	<ul style="list-style-type: none"> • Exclusivity not defined 	<ul style="list-style-type: none"> • 6 month exclusivity
Morrell et al. (2000)	Mother self-report	<ul style="list-style-type: none"> • Exclusivity not defined 	<ul style="list-style-type: none"> • 6 month exclusivity
Nolan & Lawrence (2009)	Observation at birth and medical records at discharge	<ul style="list-style-type: none"> • Initiation: observed breastfeeding at birth 	<ul style="list-style-type: none"> • Initiation
Philipp et al. (2001) & Philipp et al. (2003)	Medical record review	<ul style="list-style-type: none"> • Initiation: any breastmilk during hospital stay 	<ul style="list-style-type: none"> • Initiation
Preer et al. (2013)	Medical record review	<ul style="list-style-type: none"> • Initiation: breastfed at least once 	<ul style="list-style-type: none"> • Initiation
Reat et al. (2015)	Mother self-report	<ul style="list-style-type: none"> • Initiation not defined 	<ul style="list-style-type: none"> • Initiation
Rossiter (1994)	Mother self-report	<ul style="list-style-type: none"> • Initiation not defined 	<ul style="list-style-type: none"> • Initiation
Sciacca et al. (1995)	Mother self-report	<ul style="list-style-type: none"> • Initiation: ever breastfed 	<ul style="list-style-type: none"> • Initiation

Study	Data Source	Breastfeeding Definitions	Outcome Measures
Shaw & Kaczorowski (1999)	Mother self-report	<ul style="list-style-type: none"> • Initiation: any attempt at breastfeeding 	<ul style="list-style-type: none"> • Initiation
Srinivas et al. (2015)	Mother self-report	<ul style="list-style-type: none"> • Initiation: any attempt at breastfeeding • Exclusive: only breastfeeding or breastmilk since birth 	<ul style="list-style-type: none"> • Initiation • 6 month exclusivity
Strauch et al. (2016)	Medical record review	<ul style="list-style-type: none"> • Initiation: breastfeeding at least once during hospital stay 	<ul style="list-style-type: none"> • Initiation
Vittoz et al. (2004)	Medical record review	<ul style="list-style-type: none"> • Initiation: breastfeeding at least once during hospital stay 	<ul style="list-style-type: none"> • Initiation
Wilde et al. (2012)	Mother self-report	<ul style="list-style-type: none"> • Initiation: ever breastfed 	<ul style="list-style-type: none"> • Initiation
Wolfberg et al. (2004)	Mother self-report	<ul style="list-style-type: none"> • Initiation: breastfed immediately after delivery 	<ul style="list-style-type: none"> • Initiation
Wright et al. (1997)	Medical record review	<ul style="list-style-type: none"> • Initiation not defined 	<ul style="list-style-type: none"> • Initiation

Table 5. Intervention Description.

Study	Comparison Group ¹	Description of Intervention	Intervention Implementation	Data Collection
Anderson et al. (2005)	Conventional prenatal breastfeeding education, hands-on breastfeeding	Peer counseling <ul style="list-style-type: none"> • Three prenatal home visits with opportunity to watch breastfeeding video • Daily in-hospital visits during postpartum hospitalization 	Jan 2003-Jul 2004	Follow-up: during postpartum hospitalization
Baerug et al. (2016)	No intervention (continued provision of routine health services)	Adaptation of Baby-friendly Hospital Initiative in community health services <ul style="list-style-type: none"> • Manual on how to become Baby-friendly and supervision by public health nurses • Mapping of breastfeeding practices by public health nurses • Self-appraisal questionnaire by staff • Development of written breastfeeding policy and training program for staff • Designation as Baby-friendly community health centre upon approval of breastfeeding policy by Norwegian National Advisory Unit on Breastfeeding 	Dec 9, 2009-May 7, 2012	Baseline: Dec 2009 Final follow-up: Aug 2013 Data collected throughout yearly cycles
Baker & Milligan (2008)	Pre-reform: 15 weeks paid benefits for mothers plus 10 weeks of benefits that could be split between mother and father	Increase in maternity leave mandates <ul style="list-style-type: none"> • Additional 25 weeks of benefits that could be split between mother and father (35 total for mother/father, 50 potentially available for mother) • Reduction in number of required hours of employment for eligibility (700 pre-reform, 600 post-reform) 	Policy impacted children born Dec 31, 2000 and later	Pre-reform: ~1998-2001 Post-reform: ~2000-2003
Begley et al. (2011)	Standard prenatal care provided by obstetricians (or general practitioner) with support by medical team and midwives	Midwife-led care <ul style="list-style-type: none"> • Prenatal & intrapartum care by small group of midwives, with transfer to standard care if complications arose • Postnatal care in midwife-led unit up to 2 days 	Jul 2004- Jun 2007	Time of chart review not specified
Bick et al. (2012)	N/A	Practice and policy change in a maternity unit <ul style="list-style-type: none"> • Stakeholder interviews, focus groups, and process mapping • Revision of maternal and neonatal postnatal records • Longer stays on delivery suite to encourage skin to skin contact and breastfeeding initiation 	2008-2009	Baseline: Jan-Jun 2008 Follow-up: Apr-Sep 2009

		<ul style="list-style-type: none"> New sources of information for parents introduced onto the wards (e.g., practical infant care demonstrations) <ul style="list-style-type: none"> Revision of postnatal information booklet Eighteen half-day workshops for staff (midwives and maternity support workers) to introduce and discuss newly implemented processes 		
Bonuck et al. (2006)	Routine prenatal education classes or no intervention (depending on where the participant received care)	Lactation consultant <ul style="list-style-type: none"> Two prenatal visits and at least one postpartum visit (either at the hospital or in the home) Telephone support up to 12 months postpartum 	Aug 1, 2000-Nov 30, 2002	Follow-up: 6 months after birth
Bonuck et al. (2014)	Usual care (no explicit breastfeeding promotion or support)	Best Infant Nutrition for Good Outcomes (BINGO) <ul style="list-style-type: none"> Group 1: electronic prompts (EP) for providers during 5 prenatal visits to promote breastfeeding Group 2: lactation consultant (LC) (2 prenatal sessions, one hospital visit, regular phone calls through 3 months postpartum, optional home visits), provision of nursing bras and breast pumps upon request Group 3: LC + EP 	Feb 2008-Jun 2010	Follow-up: 1,3,6 months after birth, until Sep 2011
	Usual care	Provider Approaches to Improved Rates of Infant Nutrition and Growth Study (PAIRINGS) <ul style="list-style-type: none"> LC + EP 	Feb 2008-Jun 2010	Follow-up: 1,3,6 months after birth, until Sep 2011
Brent et al. (1995)	Usual care	Lactation consultant <ul style="list-style-type: none"> Between 2-4 prenatal education sessions Follow-up during daily delivery rounds Professional education for nursing and medical staff 	Dates not specified	Follow-up: 48 hours after discharge
Carlsen et al. (2013)	Usual care (hospital support; home visits by health visitor or midwife for 18 months after birth)	Telephone-based support by lactation consultant <ul style="list-style-type: none"> Minimum of 9 phone consultations during the first 6 months after birth 	Beginning ~Jul 2012	Follow-up: 6 months after birth
Cattaneo et al. (2016)	No intervention	Baby Friendly Community Initiative in local health authorities (adaptation of the Baby Friendly Hospital Initiative) <ul style="list-style-type: none"> Implementation of written breastfeeding policy approved by local health authority management in all non-hospital-based health facilities 	~2009-2013 ²	Baseline: Sep 2009 Follow-up: 3,6,12 months after birth

		<ul style="list-style-type: none"> • Training of all staff (e.g., health and social workers) • Creation of breastfeeding-friendly environments within health centers and other community/public places • Implementation of breastfeeding-friendly day care and work places • Promotion of communication between healthcare staff and community groups (e.g., mother to mother and peer support groups) 		
Cattaneo & Buzzetti (2001)	N/A	<p>Baby Friendly Hospital Initiative</p> <ul style="list-style-type: none"> • UNICEF 18-hour course (training of trainers followed by training of health workers) • Additional two-hour session from World Health Organization's (WHO) 40-hour course • Seventeen classroom sessions, 3 clinical practices, references, glossary, and appendix • Baby Friendly Hospital Initiative tool for assessment 	Jun 1996-Jun 1998	Follow-up: at hospital discharge, 3 and 6 months after birth
Caulfield et al. (1998)	Usual Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) services	<ul style="list-style-type: none"> • Clinic 1: video <ul style="list-style-type: none"> ○ Motivational video followed by a discussion with WIC service provider ○ Posters and pamphlets in office • Clinic 2: peer counseling <ul style="list-style-type: none"> ○ One-on-one and group support sessions during pregnancy, either at WIC clinic, at home, or by phone ○ Clinic 3: video + peer counseling 	Apr 1992-Jan 1994	Follow-up: 7-10 days, 4 and 16 weeks after birth
Chapman et al. (2013)	Standard care (prenatal breastfeeding education during clinic appointments, written materials, access to hospital "warm line" after discharge)	<p>Peer counseling</p> <ul style="list-style-type: none"> • Access to 3 prenatal visits, daily in-hospital visits after delivery, telephone support, up to 11 home visits postpartum • Breast pump and breastfeeding sling 	May 2006-Mar 2010	Follow-up: 2 weeks postpartum and monthly up to 6 months
Chiasson et al. (2013)	N/A	<p>WIC food package change</p> <ul style="list-style-type: none"> • Addition of fruits, vegetables, and grains and reduction in allotments of some dairy products and juice 	Implemented Jan 5, 2009	<p>Preintervention: Jul-Dec 2008</p> <p>Postintervention: Jul-Dec 2011</p>
Corriveau et al. (2013)	N/A	<p>Breastfeeding clinical protocol</p> <ul style="list-style-type: none"> • Staff training in American Academy of Pediatrics (AAP)/WHO-approved breastfeeding curriculum 	Dec 2009-Sep 2010	<p>Preintervention: 2008</p> <p>Postintervention: Sep 2010-Jun 2011</p>

		<ul style="list-style-type: none"> • On site lactation consultant support for providers and mothers <ul style="list-style-type: none"> ○ Additional telephone support available after birth • Written office policy • Data tracking through improved electronic medical record (EMR) template 		
Efrat et al. (2015)	Routine breastfeeding education and support offered by the Northeast Valley Health Corporation	<p>Telephone-based support</p> <ul style="list-style-type: none"> • Phone calls prenatally and up to 6 months postpartum by lactation educators (research assistants) 	Jul 2011-Jul 2012	Follow-up: 72 hours, 1, 3 and 6 months after birth
Ekstrom et al. (2012)	No intervention	<p>Training program for midwives and postnatal nurses</p> <ul style="list-style-type: none"> • Lectures and discussions 	Sep 1999-Mar 2000	Follow-up: 3 days, 3 months, and 9 months postpartum
Feldman-Winter et al. (2017)	N/A	<p>Best Fed Beginnings</p> <ul style="list-style-type: none"> • Plan-Do-Study-Act cycles linked to each of the Ten Steps to Successful Breastfeeding to enable hospitals to earn Baby-Friendly designation • Ongoing provider education and training through face-to-face learning sessions and webinars • Access to web-based platform with resources and monthly improvement data • Collaboration between hospital staff, parent partners, and community representatives 	Jul 2012-Aug 2014	Data collected monthly throughout the intervention period
Finch & Daniel (2002)	Usual prenatal education	<ul style="list-style-type: none"> • Small group breastfeeding education by trained counselor 	Dates not specified	Follow-up: at WIC infant enrollment
Forster et al. (2004)	Standard care (access to breastfeeding education sessions, lactation consultant support; peer support; postnatal midwife home visit)	<p>Group breastfeeding education taught by midwives and a community educator</p> <ul style="list-style-type: none"> • Group 1: practical skills (single 1.5 hour session) <ul style="list-style-type: none"> ○ Teaching aids to facilitate practical breastfeeding skills; partners not included • Group 2: attitudes (2 1-hour sessions) <ul style="list-style-type: none"> ○ Focus on changing attitudes to breastfeeding; partners encouraged to join 	May 1999-Aug 2001	Follow-up: in hospital and 6 months after birth
Giglia et al. (2015)	Website that redirected mothers to sites with parenting and infant feeding information	<p>Study website</p> <ul style="list-style-type: none"> • Access to website with option to post on discussion board and talk to other participants via email • Lactation consultant available via webcam 	Recruitment: Mar 2010-Dec 2011 with follow-up until 12 months after birth	Follow-up: hospital discharge, 4, 10, 16, 26, 32, 40, and 52 weeks after birth

Gijsbers et al. (2005)	Usual care	Home visits by research assistant <ul style="list-style-type: none"> • Two prenatal and one postpartum visit 	Recruitment: Mar 2002-Mar 2003 with 6-month follow up	Follow-up: 6 months after birth
Graffy et al. (2004)	Usual care	Home visits by accredited counselor <ul style="list-style-type: none"> • One prenatal visit with optional postnatal telephone support or additional home visits 	Recruitment: Apr 1995-Aug 1998 with follow-up until 4 months after birth	Follow-up: 6 weeks and 4 months after birth
Gross et al. (2009)	<ul style="list-style-type: none"> • Standard care: breastfeeding information delivered by trained staff (e.g., nutritionists, nurses) • Lactation consultant: standard care + access to lactation consultant within WIC agency 	Peer counseling <ul style="list-style-type: none"> • Solely focused on breastfeeding education and support (in contrast to lactation consultants, whose main job may be a nutritionist or certifier) • Telephone support pre and postnatally 	Implemented in 2004	Jan 1-Jun 30,2007
Grossman et al. (2009)	N/A	Project HELP (Hospital Education in Lactation Practices) <ul style="list-style-type: none"> • Three 4-hour provider education sessions taught by public health professionals and perinatal clinicians 	Mar 31,2005-Apr 24, 2006	Preintervention: 3-5 months prior to implementation Postintervention: 2-4 months after intervention
Haider et al. (2014)	No intervention	Breastfeeding Initiative (BFI) – peer counseling <ul style="list-style-type: none"> • Home visits and telephone support both pre and postnatally 	Program implemented in 1993	Follow-up: timing not specified, state administrative data was used
Hawkins et al. (2013)	N/A	State breastfeeding laws <ul style="list-style-type: none"> • Employer-provided break time and private space for breastfeeding employees • Permission to breastfeed in any public or private space 	Law implemented at any time between 2000-2008	2000-2008
Hildebrand et al. (2014)	WIC services provided through traditional model	WIC services provided through influence model <ul style="list-style-type: none"> • Six “principles of influence” informed physical and social environment of WIC • Liking (warm welcome to client, sit knee to knee instead of behind a desk active listening), reciprocity (offer clients water and comfortable chairs, show respect), scarcity (“frame loss” of not taking desired action), consensus (breastfeeding pictures of mothers in community, personal testimonies to overcoming breastfeeding barriers), authority (colorful scrubs for staff, breastfeeding information in colorful/fun format), consistency (client pledge card with 	Implemented Feb 2010	Preintervention: Feb 1-Mar 16, 2010 Postintervention: Aug 1-Sep 30, 2010

		commitment to breastfeeding, “We Choose to Breastfeed” bulletin board with client photos)		
Hoddinott et al. (2009)	<ul style="list-style-type: none"> Control localities: usual care with no new breastfeeding group activity External control localities: no intervention 	<p>Breastfeeding group policy</p> <ul style="list-style-type: none"> Addition of at least two new breastfeeding groups added to each locality Steering group meetings every 6-8 weeks Weekly group meetings for women only (pregnant and breastfeeding) facilitated by a health professional 	Policy implemented in 2004	<p>Preintervention: Oct 1, 2002-Sep 30, 2004</p> <p>Postintervention: Feb 1, 2005-Jan 31, 2007</p>
Howell et al. (2014)	List of community resources and 2-week call	<ul style="list-style-type: none"> In-hospital one to one educational session led by a social worker Education pamphlet and summary sheet Phone call 2 weeks post-delivery to assess patient needs 	2009-2010	Follow-up: 2 weeks, 3 weeks, 3 months and 6 months after birth
Huang & Yang (2015)	N/A	<p>California paid family leave</p> <ul style="list-style-type: none"> Up to 6 weeks of partially (55%) paid family leave 	Law enacted July 1, 2004	<p>Preintervention: Feb-Oct 1993</p> <p>Postintervention: Jun 2005-Mar 2006</p>
Johnston et al. (2006)	Usual care	<ul style="list-style-type: none"> Group 1: Healthy Steps (HS) <ul style="list-style-type: none"> Postnatal home visits, developmental advice, telephone support Group 2: HS + PrepPare (PP) <ul style="list-style-type: none"> Three prenatal home visits Targeted risk factor screening and treatment 	Jul 20, 1998-Nov 7, 2003	Follow-up: 30 months after birth
Jolly et al. (2012)	Routine maternity care (community prenatal and postnatal midwife care, including some home visits)	<p>Peer support</p> <ul style="list-style-type: none"> Two prenatal support sessions, at least one in the home Contact and optional home visit 24-48 hours after discharge, needs-based support available by telephone or additional home visit 	Aug 1, 2007-Apr 30, 2008	Follow-up: 10-14 days and 6 months after birth
Joyce & Reeder (2015)	N/A	<p>WIC food package change</p> <ul style="list-style-type: none"> Enhanced package with greater monetary value for fully breastfeeding women Restriction on amount of formula available to infants within the first month Exclusively breastfed infants eligible to receive prepared infant fruits, vegetables and baby food meats 	Implemented in 2009	Monthly between 2008-2009 (depending on data source)
Kellams et al. (2016)	20-minute video on nutrition during pregnancy	25-minute breastfeeding education video during a prenatal visit	2009-2012	Follow-up: after delivery (timing not specified)

Kistin et al. (1994)	No intervention	Peer counseling <ul style="list-style-type: none"> • Contact by telephone before delivery and after until breastfeeding was established, with calls every 1-2 weeks for the next 2 months and on an as needed basis after that 	1989	Follow-up: at hospital discharge and up to 12 weeks after birth
Kools et al. (2005)	No intervention	<ul style="list-style-type: none"> • Prenatal home visit by maternity nurse • Lactation consultant available 24-hours/day by fax (with home visits if needed) • Mother's booklet with description of the health counseling model used in this intervention and discussion of barriers to breastfeeding 	Dec 2000-Dec 2002	Follow-up: at birth and 3 months after birth
Kronborg et al. (2007)	Usual practice (one or more visits by health visitor)	1-3 home visits within the first 5 weeks after birth focused on practical aspects of breastfeeding, informed by psychosocial education concepts	Feb-Jul 2004	Follow-up: continuously through 6 months after birth
Langellier et al. (2014)	N/A	WIC food package change <ul style="list-style-type: none"> • Double the quantity of infant fruits and vegetables for infants who are fully breastfed compared to partially breastfed or fully formula fed infants • Increased amounts of canned fish, milk, cheese, eggs, fruits and vegetables for fully breastfeeding mothers • Food for fully and partially breastfeeding mothers through 1 year compared to 6 months for fully formula feeding mothers 	Implemented in Oct 2009	Preintervention: 2005 & 2008 Postintervention: 2011
Lawlor-Smith et al. (1997)	Usual care	Lactation consultant support <ul style="list-style-type: none"> • First contact with mother either via telephone or in-hospital during postpartum stay, regular contact for 6 months • 12 hr/day availability by telephone, home or clinic visits 	Sep 1992-Sep 1993	Baseline: Sep 1992 Follow-up: 6 months after birth
MacArthur et al. (2009)	Usual prenatal care by midwives	Peer support <ul style="list-style-type: none"> • Three prenatal support sessions, at least one in the woman's home 	Feb 1-Jul 31, 2007	Follow-up: in-hospital or at discharge
Mackrain et al. (2015)	N/A	Home Visiting Collaborative Improvement and Innovation Network Breastfeeding Initiation and Support project <ul style="list-style-type: none"> • Practice improvement using shared AIM, data evaluation, Plan-Do-Study-Act rapid-cycle change quality improvement framework (Breakthrough series and Model for Improvement) <ul style="list-style-type: none"> ○ Training and ongoing coaching on quality improvement methods 	Phase I: May 2014–Aug 2015 Phase II: Nov 2015–Aug 2016	Continuous throughout Phase I and Phase II

		<ul style="list-style-type: none"> ○ Driver diagram of recommended changes ○ Infant feeding support resources ○ Collaboration amongst sites ○ Monthly educational and peer-to-peer conference learning calls; three in-person learning sessions per phase; ongoing virtual support and feedback 		
Madden et al. (2003)	N/A	<p>Reduced Obstetrical Length of Stay program (ROLOS)</p> <ul style="list-style-type: none"> ● Established a single overnight postpartum hospital stay as the standard ● Increased prenatal preparation and social risk identification ● Improved clinical discharge criteria ● Nurse home visit within 47 hours after discharge <p>Massachusetts “minimum stay” mandate</p> <ul style="list-style-type: none"> ● Established a minimum maternity stay of 48-hours after birth, shorter stays allowed with mothers’ consent and optional home visit 	<p>ROLOS: fall of 1994</p> <p>Minimum coverage mandate: Feb 1996</p>	Oct 1990-Mar 1998
McDonald et al. (2010)	Usual care (one or more standard home visits by a midwife + breastfeeding promotional literature and access to in-house videos on breastfeeding)	<p>Extended midwifery support program</p> <ul style="list-style-type: none"> ● Standard breastfeeding educational materials ● Individualized support session in hospital room ● Telephone calls twice weekly and weekly home visits until 6 weeks after birth 	Mar 2000-Apr 2001	Follow-up: 2 and 6 months after birth
Meedya et al. (2014)	Standard maternity care	<p>Milky Way program</p> <ul style="list-style-type: none"> ● Group sessions beginning in the second trimester, led by a lactation consultant ● Distribution of materials including a breastfeeding calendar, DVDs, and motivational postcards ● Two postpartum phone consultations 	Jul 2010-Apr 2012	Follow-up: 1, 4 and 6 months after birth
Morrell et al. (2000)	Standard care including optional postpartum home visits by community midwives	Up to 10 home visits by a community support worker in the first 28 days after birth	Oct 1996-May 1998	Follow-up: 6 weeks and 6 months after birth
Nolan & Lawrence (2009)	Standard care by obstetric unit nurses	<p>Nursing intervention protocol to minimize maternal-infant separation (NIMS) for women undergoing elective, repeat Cesarean deliveries</p> <ul style="list-style-type: none"> ● Changes to the intra- and postoperative environment to maintain maternal-infant spatial distance and clear maternal visualization of infant (e.g., infant wrapped in 	Dates not specified	Follow-up: at birth and at hospital discharge

		preheated blankets and taken immediately to mother, direct cheek to cheek skin contact, <8ft between mother and infant during entire intraoperative period)		
Philipp et al. (2001) & Philipp et al. (2003)	N/A	Baby Friendly Hospital Initiative <ul style="list-style-type: none"> Implementation of all 10 Steps to Successful Breastfeeding, apart from having infants initiate breastfeeding within 1 hour of birth (step 4) and paying for all formula at fair market price (step 6) 	1998	Baseline: 1995 During: 1998 Follow-up: 1999
Preer et al. (2013)	Infant bath 2 hours after birth	Hospital protocol delaying infant bath <ul style="list-style-type: none"> Bath given 12 hours after birth by nurse or patient care assistant Parent participation and skin to skin contact with infant under dry blankets after bath 	Implemented May 1, 2010	Baseline: Nov 2009-Apr 2010 Follow-up: May 1-Oct 31, 2010
Reat et al. (2015)	N/A	WIC food package change <ul style="list-style-type: none"> Enhanced package for breastfeeding mothers and infants Addition of fruits, vegetables, and iron rich foods to infants around 6 months <ul style="list-style-type: none"> Increased allotment of baby food fruits/vegetables plus baby food meats for fully breastfeeding mothers; increased value intended to incentivize mothers to breastfeed Elimination of juice and cereal for infants 4-6 months 	Implemented in 2009	Preintervention: 2009 Postintervention: 2011
Rossiter (1994)	Breastfeeding and childbirth pamphlets	Small group breastfeeding education program <ul style="list-style-type: none"> 25-minute video followed by small group discussion led by parenthood educators and a Vietnamese health interpreter Designed with social, cultural, and language considerations 	May 1991-Sep 1992	Follow-up: 1 week, 4 and 6 months after birth
Sciacca et al. (1995)	Prenatal Childbirth Preparation Series (5 session educational series), promotion of WIC breast-pump rental program, infant shirts with a breastfeeding message, promotional posters, Bosom Buddy Program (peer	Incentives for women and their partners upon completion of each program component <ul style="list-style-type: none"> Expectant Couple Breastfeeding Class <ul style="list-style-type: none"> One 2-hour class; gift bag with baby powder, diapers, lotion, breast pads, baby wipes, coupons and a breast pump for women; tickets to football game for partners Prenatal Childbirth Preparation Series <ul style="list-style-type: none"> Five class series; at least one incentive for couples attending at least 3 sessions: coupon for 	May-Dec 1992	Follow-up: 2 weeks, 6 weeks, and 3 months after birth

	support), optional 15-minute breastfeeding group classes	<p>free haircut, lunch or breakfast, clothing store gift certificate, infant carrier, video coupons or stuffed animals</p> <ul style="list-style-type: none"> • Bosom Buddy Program <ul style="list-style-type: none"> ○ Automatic assignment of a peer counselor and incentive (baby wipes) to encourage women to contact them within 2 days of birth 		
Shaw & Kaczorowski (1999)	Standard WIC services	<p>West Tennessee Peer Counselor Program</p> <ul style="list-style-type: none"> • Access to peer support during WIC visits, at least once prior to delivery 	Dec 1996-Mar 1997	Follow-up: at health department visit following hospital discharge
Srinivas et al. (2015)	Access to in-hospital lactation consultants and outpatient support from clinic pediatricians and WIC nutritionist	<p>Peer counseling</p> <ul style="list-style-type: none"> • Clinic visits or telephone contact with mother between 28 weeks GA and 1 week before delivery, additional contact 3-5 days after delivery, weekly to 1 month, every 2 weeks up to 3 months, and once at 4 months 	Jan 2011-Jun 2012	Follow-up: at birth, 1, and 6 months
Strauch et al. (2016)	N/A	Required hospital documentation of perinatal care measures to The Joint Commission, including exclusive breastfeeding	Implemented Jan 1, 2014	Preintervention: 2013 Postintervention: 2014
Vittoz et al. (2004)	N/A	<p>Training program for maternity ward professionals</p> <ul style="list-style-type: none"> • Lectures, panel discussions, interactive exercises, educational materials 	Early 1998-early 2000 (24 months)	Preintervention: 1997 Postintervention: 2000
Wilde et al. (2012)	N/A	<p>WIC food package change</p> <ul style="list-style-type: none"> • Enhanced package with greater monetary value for fully breastfeeding women • Limited amount of formula in the partial breastfeeding package within first month • Further limitation of formula at 1-5 months after birth • Mother's food benefits end at 6 months after birth with full formula package vs 1 year for partial breastfeeding package 	Implemented in Oct 2009	Preintervention: 1-2 months before implementation Postintervention: 5-12 months after implementation
Wolfberg et al. (2004)	General parenting skills class for fathers	<p>Breastfeeding education for fathers</p> <ul style="list-style-type: none"> • Group sessions every 2 weeks led by a classroom facilitator • Videos about breastfeeding and informal discussion 	Mar 2001-Aug 2002	Follow-up: 2,4, and 8 weeks after birth

Wright et al. (1997)	N/A	<p>Navajo Breastfeeding Intervention Program</p> <ul style="list-style-type: none"> • Health care system level <ul style="list-style-type: none"> ○ Conference for health professionals ○ Policy changes (e.g., phasing out of formula in discharge packs, scheduling breastfeeding discussions during prenatal visits) • Community level <ul style="list-style-type: none"> ○ Radio and billboard marketing ○ Distribution of infant t-shirt to babies who hadn't been given formula by 6 weeks • Individual level <ul style="list-style-type: none"> ○ In-hospital video and brochure ○ Foster Grandparent program, linking elderly volunteers with new mothers 	Jul 1991-Jun 1992	<p>Preintervention: Jun 1, 1990-May 30, 1991</p> <p>Postintervention: Sep 24-1991-Sep 24, 1992</p>
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¹ “No intervention” refers to the comparison group not having received an intervention. “N/A” (not applicable) refers to quasi-experimental studies with pretest-posttest designs.

² Dates and methods obtained from Macaluso A, Bettinelli ME, Chapin EM, et al. A controlled study on baby-friendly communities in Italy: methods and baseline data. *Breastfeeding Med.* 2013;8:198-204.

Table 6. Intervention Components.

Study	Patients										Providers/Practices					Communities		State/National		
	Lactation Consultant	Peer counselor	Midwife	Educational materials	Group education	Other education	Partner-level intervention	Home visits	Telephone support	Incentives	Provision of breastfeeding item	Provider training	Baby Friendly Hospital Initiative	Quality improvement	Hospital policies	Other	Community health services policy	Other	Family leave, workplace policies, state laws	WIC food package change
Lactation Consultant (n=9)																				
Bonuck et al. (2006)	X							X	X											
Bonuck et al. (2014)	X							X	X	X						X				
	X							X	X							X				
Brent et al. (1995)	X										X									
Carlsen et al. (2013)	X								X											
Corriveau et al. (2013)	X								X					X	X					
Giglia et al. (2015)	X			X																
Kools et al. (2005)	X			X				X												
Lawlor-Smith et al. (1997)	X							X	X											
Peer Counselor (n=11)																				
Anderson et al. (2005)		X		X				X												
Caulfield et al. (1998)		X		X	X			X	X											
Chapman et al. (2013)		X						X	X	X										
Gross et al. (2009)		X							X											
Haider et al. (2014)		X						X	X											
Jolly et al. (2012)		X						X	X											
Kistin et al. (1994)		X							X											
MacArthur et al. (2009)		X						X												
Sciacca et al. (1995)		X			X					X										

Study	Patients										Providers/Practices				Communities		State/National			
	Lactation Consultant	Peer counselor	Midwife	Educational materials	Group education	Other education	Partner-level intervention	Home visits	Telephone support	Incentives	Provision of breastfeeding item	Provider training	Baby Friendly Hospital Initiative	Quality improvement	Hospital policies	Other	Community health services policy	Other	Family leave, workplace policies, state laws	WIC food package change
Shaw & Kaczorowski (1999)		X																		
Srinivas et al. (2015)		X						X												
Group Education (n=5)																				
Finch & Daniel (2002)					X															
Forster et al. (2004)			X		X															
Hoddinott et al. (2009)					X												X			
Meedy et al. (2014)	X			X	X			X												
Rossiter (1994)				X	X															
Home Visits by Other Professional (n=5)																				
Gijsbers et al. (2005)							X													
Graffy et al. (2004)							X	X												
Johnston et al. (2006)							X	X												
Kronborg et al. (2007)							X													
Morrell et al. (2000)							X													
Provider Training Only (n=3)																				
Ekstrom et al. (2012)											X									
Grossman et al. (2009)											X									
Vittoz et al. (2004)											X									
Hospital Policies (n=8)																				
Bick et al. (2012)											X			X						
Cattaneo & Buzzetti (2001)											X	X		X						
Feldman-Winter et al. (2017)											X	X	X	X						
Madden et al. (2003)														X						
Nolan & Lawrence (2009)														X						
Philipp et al. (2001) & Philipp et al. (2003)												X		X						

Study	Patients										Providers/Practices				Communities		State/National			
	Lactation Consultant	Peer counselor	Midwife	Educational materials	Group education	Other education	Partner-level intervention	Home visits	Telephone support	Incentives	Provision of breastfeeding item	Provider training	Baby Friendly Hospital Initiative	Quality improvement	Hospital policies	Other	Community health services policy	Other	Family leave, workplace policies, state laws	WIC food package change
Preer et al. (2013)														X						
Strauch et al. (2016)														X						
Family Leave, Workplace Policies, State Laws (n=3)																				
Baker & Milligan (2008)																			X	
Hawkins et al. (2013)																			X	
Huang & Yang (2015)																			X	
WIC Food Package Change (n=5)																				
Chiasson et al. (2013)																				X
Joyce & Reeder (2015)																				X
Langellier et al. (2014)																				X
Reat et al. (2015)																				X
Wilde et al. (2012)																				X
Other (n=11)																				
Baerug et al. (2016)																	X			
Begley et al. (2011)		X																		
Cattaneo et al. (2016)											X			X			X			
Efrat et al. (2015)								X												
Hildebrand et al. (2014)																		X		
Howell et al. (2014)			X			X		X												
Kellams et al. (2016)			X																	
Mackrain et al. (2015)								X					X							
McDonald et al. (2010)		X	X					X	X											
Wolfberg et al. (2004)			X			X														
Wright et al. (1997)			X		X					X	X			X	X		X			

Table 7. Study Results.

Study	Initiation	Exclusivity
Lactation Counselor		
Bonuck et al. (2006)		<ul style="list-style-type: none"> • Non-significant difference in exclusive breastfeeding (p=0.37) between groups at 26 weeks
Bonuck et al. (2014) ¹	<ul style="list-style-type: none"> • Unadjusted odds of breastfeeding initiation higher in the lactation consultant + electronically prompted (LC + EP) group vs usual care (OR=3.29; 95% CI: 1.03-10.48) • No significant difference in initiation between other intervention groups and usual care group 	<ul style="list-style-type: none"> • No significant difference in the percentage of mothers exclusively breastfeeding at 6 months in any of the intervention groups compared to usual care
	<ul style="list-style-type: none"> • No significant difference in breastfeeding initiation between intervention and control groups 	<ul style="list-style-type: none"> • No significant difference in the percentage of mothers exclusively breastfeeding at 6 months in any of the intervention groups compared to usual care
Brent et al. (1995)	<ul style="list-style-type: none"> • Incidence of breastfeeding in the hospital was 61% in the intervention group vs 32% in the control group (RR=1.90; 95% CI: 1.55-7.29; p=.002) 	
Carlsen et al. (2013)		<ul style="list-style-type: none"> • Rates of exclusive breastfeeding differed significantly between the intervention and control groups, from birth to 180 days postpartum (p=.032)
Corriveau et al. (2013)		<ul style="list-style-type: none"> • Significantly higher percentage of exclusive breastfeeding at 6 months postintervention compared to preintervention (~35% vs ~25%; p<.01)
Giglia et al. (2015)		<ul style="list-style-type: none"> • Significantly higher percentage of women exclusively breastfeeding at 6 months in the intervention group compared to control group (p=.01)
Kools et al. (2005)	<ul style="list-style-type: none"> • No significant difference in breastfeeding at birth between intervention and control groups (OR=.84; 95% CI: .61-1.16) 	
Lawlor-Smith et al. (1997)	<ul style="list-style-type: none"> • No significant differences in breastfeeding initiation between intervention and control group (93.4% vs 94.6%) 	
Peer Counselor		
Anderson et al. (2005)	<ul style="list-style-type: none"> • Significantly more mothers in the control group had not initiated breastfeeding compared to mothers in the intervention group (RR= 2.48; 95% CI: 1.04-5.90) 	
Caulfield et al. (1998)	<ul style="list-style-type: none"> • Significant differences in the percentage of women initiating breastfeeding in the video (50%), peer counselor (62%), and video + peer counselor (52%) groups vs control group (26%) 	
Chapman et al. (2013)	<ul style="list-style-type: none"> • No significant group differences in breastfeeding initiation rates 	<ul style="list-style-type: none"> • No significant group differences in rates of exclusive breastfeeding at 6 months

Gross et al. (2009)	<ul style="list-style-type: none"> Significantly greater odds of breastfeeding initiation in the peer counselor group compared to the control group (OR=1.27, 95% CI: 1.18-1.37) but not in the lactation consultant group vs control group (OR=1.04, 95% CI: .96-1.14) 	
Haider et al. (2014)	<ul style="list-style-type: none"> Significantly higher means of breastfeeding in intervention group (68.6%) compared to control group (49.3%) (p=.038) 	
Jolly et al. (2012)		<ul style="list-style-type: none"> No significant difference in exclusive breastfeeding at 6 months between the intervention and control group (17.8% vs 19.6%)
Kistin et al. (1994)	<ul style="list-style-type: none"> Significantly higher percentage of breastfeeding initiation between intervention and control group (93% vs 70%, p<.05) 	
MacArthur et al. (2009)	<ul style="list-style-type: none"> No significant differences in breastfeeding initiation between intervention and control group (69% vs 68%) 	
Sciacca et al. (1995) ²	<ul style="list-style-type: none"> Significantly more women in the intervention group had ever breastfed (100%) compared to the control group (82.7%) 	
Shaw & Kaczorowski (1999)	<ul style="list-style-type: none"> Significantly higher percentage of breastfeeding initiation between intervention and control group (53% vs 33%, p<.01) 	
Srinivas et al. (2015)	<ul style="list-style-type: none"> No significant difference in breastfeeding initiation between intervention and control group (86% vs 77%, p=.34) 	<ul style="list-style-type: none"> No significant difference in exclusive breastfeeding at 6 months between the intervention and control group (2% vs 4%, p=.51)
Group Education		
Finch & Daniel (2002)	<ul style="list-style-type: none"> No differences in breastfeeding initiation between groups 	
Forster et al. (2004)	<ul style="list-style-type: none"> No differences in breastfeeding initiation between groups (96.7%, 94.5%, 95.8% in practical skills, attitudes, and control group, respectively) 	<ul style="list-style-type: none"> No significant differences in exclusive breastfeeding at 6 months between groups (8.8%, 8.5%, 7.4% in practical skills, attitudes, and control group, respectively)
Hoddinott et al. (2009)	<ul style="list-style-type: none"> No significant differences in rates of breastfeeding at birth from preintervention to post intervention (p=.58) 	
Meedya et al. (2014)		<ul style="list-style-type: none"> Significantly more women exclusively breastfeeding at 6 months in the intervention group compared to control group (p=.045)
Rossiter (1994)	<ul style="list-style-type: none"> Significant difference in number of women who initiated breastfeeding between the intervention and control group (p<.001) 	
Home Visits by Other Professional		
Gijsbers et al. (2005) ³		<ul style="list-style-type: none"> Significantly higher percentage of exclusive breastfeeding at 6 months in the intervention group compared to control group (48% vs 27%; p=.03)
Graffy et al. (2004)	<ul style="list-style-type: none"> No differences in breastfeeding initiation between intervention and control groups (95% vs 96%; RR=.99, 95% CI: .84-1.16, p=.44) 	

Johnston et al. (2006)	<ul style="list-style-type: none"> Significantly more women in the intervention group (Healthy Steps only and Healthy Steps + PrePare) initiated breastfeeding compared to the control group (RR=1.06; 95% CI: 1.00-1.11) 	
Kronborg et al. (2007) ¹		<ul style="list-style-type: none"> Significantly higher percentage of exclusive breastfeeding at 26 weeks in the intervention group compared to control group (7.7% vs 4.9%, p<.05)
Morrell et al. (2000)		<ul style="list-style-type: none"> No significant differences in women who breastfed only in the intervention group compared to control group (p=.86)
Provider Training Only		
Ekstrom et al. (2012)	<ul style="list-style-type: none"> No differences in breastfeeding initiation between groups 	
Grossman et al. (2009)	<ul style="list-style-type: none"> Significantly higher combined rates of breastfeeding initiation at all hospitals postintervention (64.7%) vs preintervention (58.5%) (p=.02) 	
Vittoz et al. (2004)	<ul style="list-style-type: none"> No significant changes in breastfeeding initiation from preintervention to postintervention (77.5% vs 82.6%, p=.24) 	
Hospital Policies		
Bick et al. (2012)	Significant difference in initiation rates between pretest and posttest (OR: 1.439, 95% CI 1.00-2.07, p=0.05)	
Cattaneo & Buzzetti (2001)		<ul style="list-style-type: none"> No statistically significant differences in both groups, before and after training, of exclusive breastfeeding at 6 months
Feldman-Winter et al. (2017)	<ul style="list-style-type: none"> No significant difference in overall breastfeeding between pretest and posttest (79% to 83%; t=1.93, p=.057) 	
Madden et al. (2003)	<ul style="list-style-type: none"> Rate of breastfeeding increased over time, from 70.1% in the fourth quarter of 1990 to 81.9% in the first quarter of 1998, but there was no change after either intervention 	
Nolan & Lawrence (2009) ¹	<ul style="list-style-type: none"> No significant differences in breastfeeding initiation between intervention and control group (80% vs 60%) 	
Philipp et al. (2001) & Philipp et al. (2003) ⁴	<ul style="list-style-type: none"> Breastfeeding initiation rates increased significantly from 58% in 1995, to 77.5% in 1998, to 86.5% in 1999 (p<.001) 	
Preer et al. (2013)	<ul style="list-style-type: none"> Significantly higher odds of breastfeeding initiation postintervention (adjusted OR=2.66; 95% CI: 1.29-5.46) 	
Strauch et al. (2016)	<ul style="list-style-type: none"> Significantly higher odds of breastfeeding initiation postintervention (adjusted OR=2.07; p<.001) 	
Family Leave, Workplace Policies, State Laws		
Baker & Milligan (2008)	<ul style="list-style-type: none"> No significant difference in the incidence of breastfeeding before and after the policy reform 	

Hawkins et al. (2013)	<ul style="list-style-type: none"> Initiation was 1.7% higher in states with laws that provided employees with break time and private space for breastfeeding (p=.01) 	
Huang & Yang (2015) ¹	<ul style="list-style-type: none"> Breastfeeding initiation rates significantly increased from preintervention (64.6%) to postintervention (74.2%) (p<.05) 	<ul style="list-style-type: none"> Significant increase in exclusive breastfeeding at 6 months from preintervention (1.3%) to postintervention (3.6%)
WIC Food Package Change		
Chiasson et al. (2013) ¹	<ul style="list-style-type: none"> Significant increase in breastfeeding initiation between July-Dec 2008 (72.2%) and July-Dec 2011 (77.5%) (p<.05) 	
Joyce & Reeder (2015)	<ul style="list-style-type: none"> No statistically significant trends in breastfeeding after implementation of the new WIC food package 	
Langellier et al. (2014)	<ul style="list-style-type: none"> Significantly higher odds of initiating breastfeeding postintervention (OR=2.16; 95% CI: 1.69-2.76) 	<ul style="list-style-type: none"> Significant higher odds of exclusively breastfeeding at 6 months after new food package was introduced (OR=3.08; 95% CI: 2.27-4.18)
Reat et al. (2015)	<ul style="list-style-type: none"> No significant changes in breastfeeding initiation from preintervention to postintervention (81.7% vs 88.4%) 	
Wilde et al. (2012)	<ul style="list-style-type: none"> No change in breastfeeding initiation from preintervention to postintervention (65.5% vs 65.1%, p=.58) 	
Other		
Baerug et al. (2016)		<ul style="list-style-type: none"> Significantly more mothers exclusively breastfeeding at 6 months in the intervention than control group (adjusted OR= 1.33, 95% CI: 1.02-1.75, p=0.03)
Begley et al. (2011)	<ul style="list-style-type: none"> No significant difference in breastfeeding initiation between intervention and control groups (RR=0.97, 95% CI: 0.89-1.06) 	
Cattaneo et al. (2016)		<ul style="list-style-type: none"> No statistically significant differences in adjusted rates of exclusive breastfeeding between groups and rounds of data collection
Efrat et al. (2015)	<ul style="list-style-type: none"> No differences in breastfeeding initiation between groups 	<ul style="list-style-type: none"> No significant differences in exclusive breastfeeding at 6 months between groups
Hildebrand et al. (2014)	<ul style="list-style-type: none"> Women in the intervention group were 1.5 times more likely to initiate breastfeeding than women in the control group (95% CI: 1.2-1.9, p<.01) 	
Howell et al. (2014)		<ul style="list-style-type: none"> No significant difference in exclusive breastfeeding at 6 months between the intervention and control group (7% vs 4%)
HV CoIIN Webinar	<ul style="list-style-type: none"> Increase in percentage of women initiating breastfeeding in Phase I and Phase II from 47% (baseline mean) to 61% 	<ul style="list-style-type: none"> Shift in mean percentage of infants breastfed exclusively to 6 months at end of Phase I (~6-9%)

Kellams et al. (2016)	<ul style="list-style-type: none"> No significant differences in odds of breastfeeding between intervention and control groups (adjusted OR = 1.05) 	
McDonald et al. (2010)		<ul style="list-style-type: none"> No significant difference in exclusive breastfeeding at 6 months between the intervention and control group (17.5% vs 16.6%, adjusted RR=1.04; 95% CI: .78-1.40)
Wolfberg et al. (2004)	<ul style="list-style-type: none"> Significantly more mothers whose partners attended breastfeeding class initiated breastfeeding (74% vs 41%, p=.02) 	
Wright et al. (1997)	<ul style="list-style-type: none"> Breastfeeding initiation rates significantly increased from preintervention (71.1%) to postintervention (81.1%) (>.00001) 	

¹ Results for the BINGO intervention are first, followed by results for PAIRINGS

² Statistical significance of this result based on a one-tailed fisher's exact test calculated by the authors (SG & DS)

³ Article located through Mesters I, Gijsbers B, Bartholomew K, Knotnerus JA, Van Schayck OC. Social cognitive changes resulting from an effective breastfeeding education program. *Breastfeed Med.* 2013;8(1):23-30

⁴ Additional article looks at whether breastfeeding rates were sustained: Philipp BL, Malone KL, Cimo S, Merewood A. Sustained breastfeeding rates at a US baby-friendly hospital. *Pediatrics.* 2003;112(3 Pt 1):e234-6.

Table 8. Summary of Study Results.¹

Study	Initiation	Exclusivity
Lactation Consultant		
Bonuck et al. (2006)		ns
Bonuck et al. (2014) ²	+	ns
	ns	ns
Brent et al. (1995)	+	
Carlsen et al. (2013)		+
Corriveau et al. (2013)		+
Giglia et al. (2015)		+
Kools et al. (2005)	ns	
Lawlor-Smith et al. (1997)	ns	
Peer Counselor		
Anderson et al. (2005)	+	
Caulfield et al. (1998)	+	
Chapman et al. (2013)	ns	ns
Gross et al. (2009)	+	
Haider et al. (2014)	+	
Jolly et al. (2012)		ns
Kistin et al. (1994)	+	
MacArthur et al. (2009)	ns	
Sciacca et al. (1995)	+	
Shaw & Kaczorowski (1999)	+	
Srinivas et al. (2015)	ns	ns
Group Education		
Finch & Daniel (2002)	ns	
Forster et al. (2004)	ns	ns
Hoddinott et al. (2009)	ns	
Meedya et al. (2014)		+
Rossiter (1994)	+	
Home Visits by Other Professional		
Gijsbers et al. (2005)		+
Graffy et al. (2004)	ns	
Johnston et al. (2006)	+	
Kronborg et al. (2007)	ns	+
Morrell et al. (2000)		ns
Provider Training Only		
Ekstrom et al. (2012)	ns	

Study	Initiation	Exclusivity
Grossman et al. (2009)	+	
Vittoz et al. (2004)	ns	
Hospital Policies		
Bick et al. (2012)	+	
Cattaneo & Buzzetti (2001)		ns
Feldman-Winter et al. (2017)	ns	
Madden et al. (2003)	ns	
Nolan & Lawrence (2009)	ns	
Philipp et al. (2001) & Philipp et al. (2003)	+	
Preer et al. (2013)	+	
Strauch et al. (2016)	+	
Family Leave, Workplace Policies, State Laws		
Baker & Milligan (2008)	ns	
Hawkins et al. (2013)	+	
Huang & Yang (2015)	+	+
WIC Food Package Change		
Chiasson et al. (2013)	+	
Joyce & Reeder (2015)	ns	
Langellier et al. (2014)	+	+
Reat et al. (2015)	ns	
Wilde et al. (2012)	ns	
Other		
Baerug et al. (2016)		+
Begley et al. (2011)	ns	
Cattaneo et al. (2016)		ns
Efrat et al. (2015)	ns	ns
Hildebrand et al. (2014)	+	
Howell et al. (2014)		ns
HV CoIIN Webinar	+	+
Kellams et al. (2016)	ns	
McDonald et al. (2010)		ns
Wolfberg et al. (2004)	+	
Wright et al. (1997)	+	

¹ “+” refers to statistically significant favorable outcomes ($p < .05$); “ns” refers to non-significant outcomes ($p \geq .05$)

² Results for the BINGO intervention are first, followed by results for PAIRINGS

REFERENCES

1. National Performance Measure distribution. U.S. Department of Health and Human Services website. <https://mchb.tvisdata.hrsa.gov/PrioritiesAndMeasures/NPMDistribution>. Accessed January 8, 2018.
2. Kogan MD, Dykton C, Hirai AH, et al. A new performance measurement system for maternal and child health in the United States. *Matern Child Health J.* 2015;19(5):945-957.
3. Healthy People 2020 topics & objectives: maternal, infant, and child health. Office of Disease Prevention and Health Promotion website. <https://www.healthypeople.gov/2020/topics-objectives/topic/maternal-infant-and-child-health/objectives>. Accessed January 8, 2018.
4. Gartner LM, Morton J, Lawrence RA, et al. Breastfeeding and the use of human milk. *Pediatrics.* 2005;115(2):496-506.
5. Breastfeeding among U.S. children born 2002–2014, CDC National Immunization Survey. Centers for Disease Control and Prevention website. https://www.cdc.gov/breastfeeding/data/nis_data/results.html Updated December 1, 2017. Accessed January 8, 2018.
6. Nutrition, physical activity, and obesity: data, trends and maps. Centers for Disease Control and Prevention website. <https://www.cdc.gov/nccdphp/dnpao/data-trends-maps/> Updated May 8, 2017. Accessed January 8, 2018.
7. Duijts L, Jaddoe VW, Hofman A, Moll HA. Prolonged and exclusive breastfeeding reduces the risk of infectious diseases in infancy. *Pediatrics.* 2010;126(1):e18-e25.
8. Kramer MS, Chalmers B, Hodnett ED, et al. Promotion of Breastfeeding Intervention Trial (PROBIT): a randomized trial in the Republic of Belarus. *JAMA.* 2001;285(4):413-476.
9. Kramer MS, Guo T, Platt RW, et al. Infant growth and health outcomes associated with 3 compared with 6 mo of exclusive breastfeeding. *Am J Clin Nutr.* 2003;78:291-295.
10. Alm B, Wennergren G, Mollborg P, Lagercrantz H. Breastfeeding and dummy use have a protective effect on sudden infant death syndrome. *Acta Paediatr.* 2016;105:31-38.
11. Amitay E, Kelnan-Boker L. Breastfeeding and childhood leukemia incidence: a meta-analysis and systematic review. *JAMA Paediatr.* 2015;169(6):e1-e9.
12. Zhou Y, Chen J, Li Q, Huang W, Lan H, Jiang H. Association between breastfeeding and breast cancer risk: evidence from a meta-analysis. *Breastfeed Med.* 2015;10(3):175-182.
13. Li D, Du C, Zhang Z, et al. Breastfeeding and ovarian cancer risk: a systematic review and meta-analysis of 40 epidemiological studies. *Asian Pac J Cancer Prev.* 2014;15(12):4829-4837.
14. Aune D, Norat T, Romundstad P, Vatten LJ. Breastfeeding and the maternal risk of type 2 diabetes: a systematic review and dose-response meta-analysis of cohort studies. *Nutr Metab Cardiovasc Dis.* 2014;24(2):107-115.
15. United Nation's Children Fund, World Health Organization. Innocenti Declaration on the Protection, Promotion and Support of Breastfeeding. Florence, Italy 1990.
16. Office of the Surgeon General. Centers for Disease Control and Prevention; Office on Women's Health. The Surgeon General's Call to Action to Support Breastfeeding. Rockville (MD): Office of the Surgeon General; 2011. Message from the Secretary, U.S. Department of Health and Human Services.
17. American Academy of Pediatrics. Breastfeeding and the use of human milk. *Pediatrics.* 2012;129(3):e827-841.
18. Infant and young child feeding: Fact sheet. World Health Organization website. <http://www.who.int/mediacentre/factsheets/fs342/en/> Updated July 2017. Accessed January 8, 2018.
19. Patnode CD, Henninger ML, Senger CA, Perdue LA, Whitlock EP. Primary Care Interventions to Support Breastfeeding: Updated Systematic Review for the US Preventive Services Task Force. Evidence Synthesis No. 143. ed. Rockville, MD: Agency for Healthcare Research and Quality; 2016.

20. Chapman DJ, Perez-Escamilla R. Breastfeeding among minority women: moving from risk factors to interventions. *Adv Nutr*. 2012;3(1):95-104.
21. de Oliveira MI, Camacho LA, Tedstone A. Extending breastfeeding duration through primary care: a systematic review of prenatal and postnatal interventions. *J Hum Lact*. 2001;17(4):326-43.
22. Dennis C, Kingston D. A systematic review of telephone support for women during pregnancy and the early postpartum period. *J Obstet Gynecol Neonatal Nurs*. 2008;37(3):301-314.
23. Hannula L, Kaunonen M, Tarkka M. A systematic review of professional support interventions for breastfeeding. *J Clin Nurs*. 2008;17(9):1132-1143.
24. Ibanez G, de Saint Michel C, Denantes M, Saurel-Cubizolles MJ, Ringa V, Magnier AM. Systematic review and meta-analysis of randomized controlled trials evaluating primary care-based interventions to promote breastfeeding in low-income women. *Fam Pract*. 2012(29):245-254.
25. Ingram L, MacArthur C, Khan K, Deeks JJ. Effect of antenatal peer support on breastfeeding initiation: a systematic review. *CMAJ*. 2010;182(16):1739-1746.
26. Jones KM, Power ML, Queenan JT, Schulkin J. Racial and ethnic disparities in breastfeeding. *Breastfeed Med*. 2015;10(4):186-196.
27. Kaunonen M, Hannula L, Tarkka M. A systematic review of peer support interventions for breastfeeding. *J Clin Nurs*. 2012;21(13-14):1943-1954.
28. Lau Y, Htun TP, Tam WS, Klainin-Yobas P. Efficacy of e-technologies in improving breastfeeding outcomes among perinatal women: a meta-analysis. *Matern Child Nutr*. 2016;12(3):381-401.
29. Lavender T, Richens Y, Milan SJ, D. SRM, Dowswell T. Telephone support for women during pregnancy and the first six weeks postpartum. *Cochrane Database Syst Rev*. 2013;(7).
30. Lumbiganon P, Martis R, Laopaiboon M, Festin MR, Hakimi M. Antenatal breastfeeding education for increasing breastfeeding duration. *Cochrane Database Syst Rev*. 2016;12.
31. Lumbiganon P, Martis R, Laopaiboon M, Festin MR, Ho JJ, Hakimi M. Antenatal breastfeeding education for increasing breastfeeding duration. *Cochrane Database Syst Rev*. 2012;(9).
32. Moran VH, Morgan H, Rothnie K, et al. Incentives to promote breastfeeding: A systematic review. *Pediatrics*. 2015;135(3):e687-e702.
33. Pate B. A systematic review of the effectiveness of breastfeeding intervention delivery methods. *J Obstet Gynecol Neonatal Nurs*. 2009;38(6):642-653.
34. Patel S, Patel S. The effectiveness of lactation consultants and lactation counselors on breastfeeding outcomes. *J Hum Lact*. 2016;32(3):530-541.
35. Perez-Escamilla R, Hromi-Fiedler A, Vega-Lopez S, Bermudez-Millan A, Segura-Perez S. Impact of peer nutrition education on dietary behaviors and health outcomes among Latinos: a systematic literature review. *J Nutr Educ Behav*. 2008;40(4):208-225.
36. Sandall J, Soltani H, Gates S, Shennan A, Devane D. Midwife-led continuity models versus other models of care for childbearing women. *Cochrane Database Syst Rev*. 2016;4:Cd004667.
37. Schultz DJ, Byker Shanks C, Houghtaling B. The impact of the 2009 Special Supplemental Nutrition Program for Women, Infants, and Children food package revisions on participants: a systematic review. *J Acad Nutr Diet*. 2015;115(11):1832-1846.
38. da Silva EP, de Lima RT, Osorio MM. Impact of educational strategies in low-risk prenatal care: systematic review of randomized clinical trials. *Cien Saude Colet*. 2016;21(9):2935-2948.
39. Sipsma HL, Jones KL, Cole-Lewis H. Breastfeeding among adolescent mothers: a systematic review of interventions from high-income countries. *J Hum Lact*. 2015;31(2):221-229.
40. Spencer BS, Grassley JS. African American women and breastfeeding: an integrative literature review. *Health Care Women Int*. 2013;34(7):607-625.
41. Spiby H, McCormick F, Wallace L, Renfrew MJ, D'Souza L, Dyson L. A systematic review of education and evidence-based practice interventions with health professionals and breast feeding counsellors on duration of breast feeding. *Midwifery*. 2009;25(1):50-61.

42. Staehelin K, Berteau PC, Stutz EZ. Length of maternity leave and health of mother and child--a review. *Int J Public Health*. 2007;52(4):202-209.
43. Stevens J, Schmied V, Burns E, Dahlen H. Immediate or early skin-to-skin contact after a Caesarean section: a review of the literature. *Matern Child Nutr*. 2014;10(4):456-473.
44. Taylor YJ, Nies MA. Measuring the impact and outcomes of maternal child health federal programs. *Matern Child Health J*. 2013;17(5):886-896.
45. Thurman SE, Allen PJ. Integrating lactation consultants into primary health care services: are lactation consultants affecting breastfeeding success? *Pediatr Nurs*. 2008;34(5):419-425.
46. Watkins A, Dodgson J. Breastfeeding educational interventions for health professionals: a synthesis of intervention studies. *J Spec Pediatr Nurs*. 2010;15(3):223-232.
47. Wong KL, Tarrant M, Lok KY. Group versus individual professional antenatal breastfeeding education for extending breastfeeding duration and exclusivity: a systematic review. *J Hum Lact*. 2015;31(3):354-366.
48. Wouk K, Lara-Cinisomo S, Stuebe A, Poole C, Petrick JL, McKenney KM. Clinical interventions to promote breastfeeding by Latinas: a meta-analysis. *Pediatrics*. 2016;137(1):e1-e15.
49. HV CoIIN Webinar. September 6, 2016.
https://edc.adobeconnect.com/a1002235226/p7o7kllg3u5/?OWASP_CSRFTOKEN=73e73fc867c15818b336c25ed9ebcab2f0462283daf56e44f66b1aec335166b3&proto=true. Accessed January 8, 2018.
50. Mackrain M, Fitzgerald E, Fogerty S, Martin J, O'Connor R, Arbour M. The HV CoIIN: implementing quality improvement to achieve breakthrough change in exclusive breastfeeding rates within MIECHV home visiting. MIECHV TACC, June 2015.
51. The Robert Wood Johnson *What Works for Health* Project. County Health Rankings website. <http://www.countyhealthrankings.org/roadmaps/what-works-for-health/our-ratings>. Accessed January 8, 2018.
52. Centers for Disease Control and Prevention. *The CDC Worksite Health ScoreCard: An Assessment Tool for Employers to Prevent Heart Disease, Stroke, and Related Health Conditions*. Atlanta: US Department of Health and Human Services; 2014.
53. Anderson AK, Damio G, Young S, Chapman DJ, Perez-Escamilla R. A randomized trial assessing the efficacy of peer counseling on exclusive breastfeeding in a predominantly Latina low-income community. *Arch Pediatr Adolesc Med*. 2005;159:836-841.
54. Begley C, Devane D, Clarke M, et al. Comparison of midwife-led and consultant-led care of healthy women at low risk of childbirth complications in the Republic of Ireland: a randomised trial. *BMC Pregnancy Childbirth*. 2011;11:85.
55. Bonuck K, Freeman K, Trombley M. Randomized controlled trial of a prenatal and postnatal lactation consultant intervention on infant health care use. *Arch Pediatr Adolesc Med*. 2006;160(9):953-960.
56. Bonuck K, Stuebe A, Barnett J, Labbok MH, Fletcher J, Bernstein PS. Effect of primary care intervention on breastfeeding duration and intensity. *Am J Public Health*. 2014;104(S1):S119-127.
57. Brent NB, Redd B, Dworetz A, D'Amico F, Greenberg J. Breast-feeding in a low-income population: program to increase incidence and duration. *Arch Pediatr Adolesc Med*. 1995;149:798-803.
58. Carlsen E, Kyhnaeb A, Renault K, Cortes D, Michaelsen K, Pryds O. Telephone-based support prolongs breastfeeding duration in obese women: a randomized trial. *Am J Clin Nutr*. 2013;98(5):1226-1232.
59. Chapman D, Morel K, Bermúdez-Millán A, Young S, Damio G, Pérez-Escamilla R. Breastfeeding education and support trial for overweight and obese women: a randomized trial. *Pediatrics*. 2013;131(1):e162-170.

60. Efrat MW, Esparza S, Mendelson SG, Lane CJ. The effect of lactation educators implementing a telephone-based intervention among low-income Hispanics: a randomised trial. *Health Educ J*. 2015;74(4):424-441.
61. Finch C, Daniel EL. Breastfeeding education program with incentives increases exclusive breastfeeding among urban WIC participants. *J Am Diet Assoc*. 2002;102(7):981-984.
62. Forster D, McLachlan H, Lumley J, Beanland C, Waldenström U, Amir L. Two mid-pregnancy interventions to increase the initiation and duration of breastfeeding: a randomized controlled trial. *Birth*. 2004;31(3):176-182.
63. Graffy J, Taylor J, Williams A, Eldridge S. Randomised controlled trial of support from volunteer counsellors for mothers considering breast feeding. *BMJ*. 2004;328(7430):26.
64. Howell EA, Bodnar-Deren S, Balbierz A, Parides M, Bickell N. An intervention to extend breastfeeding among black and Latina mothers after delivery. *Am J Obstet Gynecol*. 2014;239:e1-e5.
65. Johnston B, Huebner C, Anderson M, Tyll L, Thompson R. Healthy steps in an integrated delivery system: child and parent outcomes at 30 months. *Arch Pediatr Adolesc Med*. 2006;160(8):793-800.
66. Kellams AL, Gurka KK, Hornsby PP, et al. The impact of a prenatal education video on rates of breastfeeding initiation and exclusivity during the newborn hospital stay in a low-income population. *J Hum Lact*. 2016;32(1):152-159.
67. McDonald S, Henderson J, Faulkner S, Evans S, Hagan R. Effect of an extended midwifery postnatal support programme on the duration of breast feeding: a randomised controlled trial. *Midwifery*. 2010;26(1):88-100.
68. Morrell C, Spiby H, Stewart P, Walters S, Morgan A. Costs and effectiveness of community postnatal support workers: randomised controlled trial. *BMJ*. 2000;321(7261):593-598.
69. Nolan A, Lawrence C. A pilot study of a nursing intervention protocol to minimize maternal-infant separation after Cesarean birth. *J Obstet Gynecol Neonatal Nurs*. 2009;38(4):430-442.
70. Srinivas GL, Benson M, Worley S, Schulte E. A clinic-based breastfeeding peer counselor intervention in an urban, low-income population: interaction with breastfeeding attitude. *J Hum Lact*. 2015;31(1):120-128.
71. Wolfberg A, Michels K, Shields WD, O'Campo P, Bronner Y, Bienstock J. Dads as breastfeeding advocates: results from a randomized controlled trial of an educational intervention. *Am J Obstet Gynecol*. 2004;191:708-712.
72. Caulfield L, Gross S, Bentley M, et al. WIC-based interventions to promote breastfeeding among African-American Women in Baltimore: effects on breastfeeding initiation and continuation. *J Hum Lact*. 1998;14(1):15-22.
73. Ekstrom A, Kylberg E, Nissen E. A process-oriented breastfeeding training program for healthcare professionals to promote breastfeeding: an intervention study. *Breastfeed Med*. 2012;7(2):85-92.
74. Gijsbers B, Mesters I, Knottnerus JA, Kester ADM, Schayck CP. The success of an educational program to promote exclusive breastfeeding for 6 months in families with a history of asthma: a randomized controlled trial. *Pediatr Asthma Allergy Immunol*. 2005;19(4):214-222.
75. Hoddinott P, Britten J, Prescott GM, Tappin D, Ludbrook A, Godden D. Effectiveness of policy to provide breastfeeding groups (BIG) for pregnant and breastfeeding mothers in primary care: cluster randomised controlled trial. *BMJ*. 2009;338:1-10.
76. Jolly K, Ingram L, Freemantle N, et al. Effect of a peer support service on breast-feeding continuation in the UK: a randomised controlled trial. *Midwifery*. 2012;28(6):740-745.
77. Kools EJ, Thijs C, Kester ADM, van der Brandt PA, de Vries H. A breast-feeding promotion and support program a randomized trial in the Netherlands. *Prev Med*. 2005;40:60-70.
78. Kronborg H, Vaeth M, Olsen J, Iversen L, Harder I. Effect of early postnatal breastfeeding support: a cluster-randomized community based trial. *Acta Paediatr*. 2007;96(7):1064-1070.

79. MacArthur C, Jolly K, Ingram L, et al. Antenatal peer support workers and initiation of breast feeding: cluster randomised controlled trial. *BMJ*. 2009;338:1-7.
80. Baker M, Milligan K. Maternal employment, breastfeeding, and health: evidence from maternity leave mandates. *J Health Econ*. 2008;27(4):871-887.
81. Bick D, Murrells T, Weavers A, Rose V, Wray J, Beake S. Revising acute care systems and processes to improve breastfeeding and maternal postnatal health: a pre and post intervention study in one English maternity unit. *BMC Pregnancy Childbirth*. 2012;12(1):41-41.
82. Corriveau SK, Drake EE, Kellams AL, Rovnyak VG. Evaluation of an office protocol to increase exclusivity of breastfeeding. *Pediatrics*. 2013;131(5):942-950.
83. Feldman-Winter L, Ustianov J, Anastasio J, et al. Best Fed Beginnings: a nationwide quality improvement initiative to increase breastfeeding. *Pediatrics*. 2017;140(1):e1-e9.
84. Grossman X, Chaudhuri J, Feldman-Winter L, et al. Hospital Education in Lactation Practices (Project HELP): does clinician education affect breastfeeding initiation and exclusivity in the hospital? *Birth*. 2009;36(1):54-59.
85. Hawkins SS, Stern AD, Gillman MW. Do state breastfeeding laws in the USA promote breast feeding? *J Epidemiol Community Health*. 2013;67(3):250-256.
86. Huang R, Yang M. Paid maternity leave and breastfeeding practice before and after California's implementation of the nation's first paid family leave program. *Econ Hum Biol*. 2015;16:45-59.
87. Langellier BA, Chaparro MP, Wang MC, Koleilat M, Whaley SE. The new food package and breastfeeding outcomes among women, infants, and children participants in Los Angeles county. *Am J Public Health*. 2014;104(S1):S112-118.
88. Preer G, Pisegna JM, Cook JT, Henri AM, Philipp BL. Delaying the bath and in-hospital breastfeeding rates. *Breastfeed Med*. 2013;8(6):485-490.
89. Reat AM, Crixell SH, Friedman BJ, Von Bank JA. Comparison of food intake among infants and toddlers participating in a south central Texas WIC program reveals some improvements after WIC package changes. *Matern Child Health J*. 2015;19(8):1834-1841.
90. Strauch J, Rohrer JE, Refaat A. Increased hospital documentation requirements may not increase breastfeeding among first-time mothers. *J Eval in Clin Pract*. 2016;22(2):194-199.
91. Vittoz JP, Labarere J, Castell M, Durand M, Pons JC. Effect of a training program for maternity ward professionals on duration of breastfeeding. *Birth*. 2004;31(4):302-307.
92. Wilde P, Wolf A, Fernandes M, Collins A. Food-package assignments and breastfeeding initiation before and after a change in the Special Supplemental Nutrition Program for Women, Infants, and Children. *Am J Clin Nutr*. 2012;96(3):560-566.
93. Wright AL, Naylor A, Wester R, Bauer M, Sutcliffe E. Using cultural knowledge in health promotion: breastfeeding among the Navajo. *Health Educ Behav*. 1997;24(5):625-639.
94. Giglia R, Cox K, Zhao Y, Binns C. Exclusive breastfeeding increased by an internet intervention. *Breastfeed Med*. 2015;10(1):20-25.
95. Gross SM, Resnik AK, Cross-Barnet C, Nanda JP, Augustyn M, Paige DM. The differential impact of WIC peer counseling programs on breastfeeding initiation across the state of Maryland. *J Hum Lact*. 2009;25(4):435-443.
96. Haider SJ, Chang LV, Bolton TA, Gold JG, Olson BH. An evaluation of the effects of a breastfeeding support program on health outcomes. *Health Serv Res*. 2014;49(6):2017-2034.
97. Hildebrand DA, McCarthy P, Tipton D, Merriman C, Schrank M, Newport M. Innovative use of influential prenatal counseling may improve breastfeeding initiation rates among WIC participants. *J Nutr Educ Behav*. 2014;46(6):458-466.
98. Kistin N, Abramson R, Dublin P. Effect of peer counselors on breastfeeding initiation, exclusivity, and duration among low-income women. *J Hum Lact*. 1994;10(1):11-15.
99. Lawlor-Smith C, McIntyre E, Bruce J. Effective breastfeeding support in a general practice. *Aust Fam Physician*. 1997;26(5):573-580.
100. Rossiter JC. The effect of a culture-specific education program to promote breastfeeding among Vietnamese women in Sydney. *Int J Nurs Stud*. 1994;31(4):369-379.

101. Sciacca J, Phipps B, Dube D, Ratliff M. Influences on breast-feeding by lower-income women: an incentive-based, partner-supported educational program. *J Am Diet Assoc.* 1995;95(3):323-328.
102. Shaw E, Kaczorowski J. The effect of a peer counseling program on breastfeeding initiation and longevity in a low-income rural population. *J Hum Lact.* 1999;15(1):19-25.
103. Cattaneo A, Bettinelli M, Chapin E, et al. Effectiveness of the Baby Friendly Community Initiative in Italy: a non-randomised controlled study. *BMJ Open.* 2016;6(5).
104. Cattaneo A, Buzzetti R. Effect on rates of breast feeding of training for the baby friendly hospital initiative. *BMJ.* 2001;323(7325):1358-1362.
105. Baerug A, Langsrud O, Loland B, Tufte E, Tylleskar T, Fretheim A. Effectiveness of Baby-friendly community health services on exclusive breastfeeding and maternal satisfaction: a pragmatic trial. *Matern Child Nutr.* 2016;12(3):428-439..
106. Madden JM, Soumerai SB, Lieu TA, Mandl KD, Zhang F, Ross-Degnan D. Effects on breastfeeding of changes in maternity length-of-stay policy in a large health maintenance organization. *Pediatrics.* 2003;111(3):519-524.
107. Meedya S, Fahy K, Yoxall J, Parratt J. Increasing breastfeeding rates to six months among nulliparous women: a quasi-experimental study. *Midwifery.* 2014;30:e137-e144.
108. Chiasson MA, Findley SE, Sekhobo JP, et al. Changing WIC changes what children eat. *Obesity.* 2013;21(7):1423-1429.
109. Joyce T, Reeder J. Changes in breastfeeding among WIC participants following implementation of the new food package. *Matern Child Health J.* 2015;19(4):868-876.
110. Philipp BL, Merewood A, Miller LW, et al. Baby-Friendly Hospital Initiative improves breastfeeding initiation rates in a US hospital setting. *Pediatrics.* 2001;108(3):677-681.
111. U.S. Department of Agriculture Food and Nutrition Service. Special Supplemental Nutrition Program for Women, Infants and Children (WIC): Revisions in the WIC Food Package; Final Rule. Washington, DC: 2014. US Government Printing Office.
112. Project description and overview. HV CoIIN website. <http://hv-coiin.edc.org/about> Accessed January 8, 2018.