

RESEARCH ARTICLE

Ohio First Steps for Healthy Babies: A Program Supporting Breastfeeding Practices in Ohio Birthing Hospitals

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Submitted February 7, 2020 Accepted April 19, 2020

ABSTRACT

Background: Ohio First Steps for Healthy Babies (First Steps) is a free, voluntary statewide designation program coadministered by the Ohio Department of Health and the Ohio Hospital Association that promotes breastfeeding-supportive maternity practices aligned with the Baby-Friendly Hospital Initiative (BFHI).

Materials and Methods: We examined Ohio birthing hospitals' participation in First Steps, and changes in breastfeeding rates at hospital discharge, over the first 12 quarters of the program (July 15, 2015, to July 14, 2018) for all 110 licensed Ohio birthing hospitals. The 81 (73.6%) that achieved at least 1 step over the study period (designated as First Steps hospitals) were compared to the 29 non-First Steps hospitals, and the 17 that began participation at First Steps startup (July 15, 2015) were identified for additional analysis. Changes in breastfeeding rates were examined using a mixed effects multivariate regression model.

Results: Breastfeeding increased significantly over the program period from 73.8% to 76.7% (mean 0.19% per quarter, $p = .0002$), but without a significant difference in breastfeeding rates between First Steps and non-First Steps hospitals. However, in a pre- and post-program analysis for the 17 hospitals that began participation at First Steps startup (excluding an additional 6 hospitals with BFHI designation), number of quarters in the program, number of steps completed, and number of births in 2015 were significantly associated with breastfeeding rates. Hospitals that completed at least 2 steps every 5 quarters in the First Steps program increased breastfeeding when compared to those not participating in the program.

Conclusion: These encouraging results provide a formal evaluation of a best practices BFHI-modelled statewide program.

Keywords: Birthing hospitals; Breastfeeding protection, promotion and support; Maternity practices; Perinatal care; Program evaluation; Baby-friendly hospital initiative

INTRODUCTION

Exclusive breastfeeding through 6 months of age, followed by addition of complementary feeds and continued breastfeeding as long as the breastfeeding dyad desires, is recommended by numerous professional organizations.¹⁻³ The multiple health benefits of breastfeeding for mothers, children, and society demonstrate a "dose-response," and benefits increase with greater duration and exclusivity of breastfeeding.^{4,5} Optimal breastfeeding practices lead to lower risk of infection-related and all-cause mortality for

infants, reduced risk of sudden infant death syndrome, and reduced maternal risk for breast and ovarian cancer, type 2 diabetes, and cardiovascular diseases.^{4,5} The Department of Health and Human Services national health practices benchmarking goals (Healthy People 2020) include specific breastfeeding goals for initiation, and exclusivity at 3 and 6 months of 81.9%, 46.2%, and 25.5%, respectively.⁶ Although Ohio's rates of 81.9%, 44.4%, and 23.7%, respectively, were encouraging,⁷ Ohio's overarching goal is to go beyond Healthy People 2020 breastfeeding goals.



The Centers for Disease Control and Prevention (CDC) Guide to Strategies to Support Breastfeeding Mothers and Babies identifies breastfeeding-supportive maternity care practices as a key strategy.⁸ These evidence-based practices align with the Ten Steps of the Baby-Friendly Hospital Initiative (BFHI), which are: 1) have a written breastfeeding policy that is routinely communicated to all health care staff; 2) train all health care staff in the skills necessary to implement this policy; 3) inform all pregnant women about the benefits and management of breastfeeding; 4) help mothers initiate breastfeeding within 1 hour of birth; 5) show mothers how to breastfeed and how to maintain lactation even if they are separated from their infants; 6) give infants no food or drink other than breast milk, unless medically indicated; 7) practice rooming-in (allow mothers and infants to remain together 24 hours a day); 8) encourage breastfeeding on demand; 9) give no pacifiers or artificial nipples to breastfeeding infants; and 10) foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or birth center.⁹ Implementation of the Ten Steps, either individually or in any combination as a “bundle,” is associated with improved breastfeeding outcomes, specifically increased rates of breastfeeding initiation, continuation, and exclusivity.⁹⁻¹⁴ A systematic review similarly documented a “dose-response” improvement in breastfeeding initiation, exclusivity, and duration with implementation of the Ten Steps.¹⁵ We acknowledge controversy regarding aspects of the BFHI designation process, with concern expressed by some for need for additional policies and procedures to promote infant safety and maternal choice in Baby-Friendly designated hospitals;^{16,17} both point and counterpoint arguments are available.^{15,18} We remain in full support of BFHI designation, but emphasize here that while Ohio First Steps is modelled on the BFHI Ten Steps, it differs meaningfully in requirements and implementation.

Public health efforts to increase the number of hospitals incorporating BFHI-aligned practices have included national initiatives, including “Best Fed Beginnings,” Communities and Hospitals Advancing Maternity Practices and the EMPOWER Breastfeeding Initiative,¹⁹⁻²¹ that enroll individual hospitals in collaborative work to support BFHI designation; state-based quality improvement groups which include selected hospitals working together to improve breastfeeding-supportive maternity practices;^{22,23} and initiatives modelled on the Carolina Global Breastfeeding Institute Program, in which state partners collaborate to improve maternity practices statewide.

Several national initiatives¹⁹⁻²² and state-based quality improvement initiatives^{23,24} have successfully implemented breastfeeding supportive maternity practices, but only 1 publication describes a statewide collaborative like First Steps.²⁵ The New Hampshire Ten Steps to Successful Breastfeeding Collaborative, led by 2 academic physicians, held workshops open to all 20 New Hampshire birthing hospitals, with a successful increase in step attainment.²⁵ The Ohio First Steps program differs from New Hampshire’s in that

Ohio’s First Steps is led by the Ohio Department of Health (ODH) and the Ohio Hospital Association (OHA) in collaboration with multiple stakeholders, and Ohio is a more diverse and larger state with over 100 accredited birthing hospitals. We aim here to describe the program and evaluate its impact on statewide breastfeeding rates.

METHODS

Setting and Design

This work was conducted in the state of Ohio. In 2014, ODH led a 5-year CDC-funded “Ohio Chronic Disease Collaborative” strategic initiative which, relevant here, introduced a hospital “best practices” designation program. Partners included ODH, OHA, the Ohio Breastfeeding Alliance (an arm of United States Breastfeeding Committee), the Ohio Lactation Consultants Association, the American Academy of Pediatrics, and individual lactation providers. The ODH launched the program in 2015 modelled on the Carolina Global Breastfeeding Institute’s program, “North Carolina Division of Public Health Maternity Center Breastfeeding-Friendly Designation,” which offers recognition to North Carolina birthing hospitals for achieving practices that “protect, promote, and support breastfeeding” analogous to the Ten Steps of the Baby-Friendly Hospital Initiative.²⁶ The Carolina Institute provided coaching and technical support for Ohio’s “First Steps for Healthy Babies,” referred to below as Ohio First Steps.²⁷

This research involved a retrospective case series conducted as a quasi-experimental program evaluation. We aimed to compare birthing hospitals participating versus those not participating in Ohio First Steps activities and designation.

Participants

All licensed birthing hospitals in Ohio were included in the evaluation. Hospitals were considered the unit of participation.

Procedures

The Ohio First Steps Program is run collaboratively. The ODH and OHA representatives share administrative duties for Ohio First Steps, and all Ohio birthing hospitals receive regular program communications.²⁷ Birthing hospitals can earn up to 5 stars, 1 for each 2 steps achieved, and can choose the order and number of steps they tackle. Hospitals can apply multiple times as they implement new steps. A designation team made up of stakeholders and ODH and OHA representatives meets monthly and reviews applications quarterly. Hospitals with BFHI designation at application are automatically awarded 5 stars. (Information on date of step implementation is not available, so it is possible that some non-BFHI designated hospitals had already implemented steps prior to the Ohio First Steps program.) Ohio First Steps is not intended to take the place of BFHI designation or provide designation coaching.

Ohio First Steps kicked off with a webinar and statewide training: ODH partnered with the University of Louisville Center for Women



and Infants (University of Louisville Hospital) to hold 21 “train the trainer” sessions for postdelivery skin-to-skin, attended by 92 Ohio hospitals. A program website was created in 2015, and posting of free additional resources available to all Ohio birthing hospitals is ongoing (**Figure 1**). In 2018, 19 “train the trainer” skills labs in support of step 2 (maternity staff training) were held with 80 Ohio hospitals participating; a free online step 2 staff training (with CEUs) was adapted and posted in 2018.²⁸ Ohio First Steps funding sources have included ODH, block grants to ODH, OHA and the Association of State and Territorial Health Officials grants.²⁹

Measures and Outcomes

Birth certificate data from January 15, 2012, through July 14, 2018, were obtained from the ODH Bureau of Vital Statistics. This includes the program period (July 15, 2015, through July 14, 2018) and the baseline period, the quarter prior to the first applications (April 15, 2015, through July 14, 2015). Additionally, data from January 15, 2012, through April 14, 2014, (pre-program period) were used in analysis done on the first 17 hospitals that applied for recognition (see below). The birth certificate includes a unique identifier for birth facility and records whether the infant is being breastfed at hospital discharge. We utilized the “breastfed at discharge” variable as a proxy for breastfeeding initiation in order to calculate quarterly rates at the hospital level and better measure the effects of the Ohio First Steps program. “Breastfed at discharge” includes both exclusively breastfed infants and those receiving any breast milk at discharge, as per the relevant Joint Commission Perinatal Core Measure data collected at that time. Seven facilities exempt from licensing, such as freestanding birthing centers, were excluded from the analysis.

There were 438 896 live births at the 110 licensed birth facilities during the program period (April 15, 2015, through July 14, 2018). A total of 2818 births were excluded because “breastfed at discharge” was marked as unknown. Additionally, multiple gestation

births, infants who died prior to discharge, infants who were transferred to neonatal intensive care unit or another facility, and mothers who were transferred were excluded (n = 32 679). These mother-infant dyads were excluded because breastfeeding at discharge could not have been reliably assessed. This left a sample size of 403 399 births.

A separate analysis of 17 hospitals that entered the program in the first quarter (explained in more detail below) was completed using data from January 15, 2012, through July 14, 2018. During that time period, there were a total of 146 693 live births at the 17 hospitals, of which 3951 were excluded due to missing information on breastfeeding at discharge. An additional 1078 births were excluded because they were multiple gestation, infants who died prior to discharge, infants who were transferred to neonatal intensive care unit or another facility, or mothers who were transferred. This left a sample size of 141 664 for this part of the study. For each included hospital, average maternal age, percent of mothers with a college education, percent of births covered by Medicaid, percent of births to non-Hispanic black mothers, and number of births (grouped into 5 categories, ≤249, 250-499, 500-999, 1000-1999 and ≥2000) were extracted from 2015 data.

Number of steps completed (0 to 10), number of quarters in program (0 to 12), obstetrical service level, BFHI designation status,⁹ and micropolitan versus metropolitan location for each hospital were linked to the hospital level vital statistics variables described above. Participation was defined as making formal application for recognition through Ohio First Steps and achieving at least 1 step by April 2018. As noted above, date of step implementation was not available. Therefore, the assumption was made that steps were achieved in the quarter prior to the submitted application. Obstetrical level of service was defined per Ohio Administrative Code §3701-7: in summary, level 1 includes basic care, level 2 includes specialty care, and level 3 includes subspecialty care, with full cri-

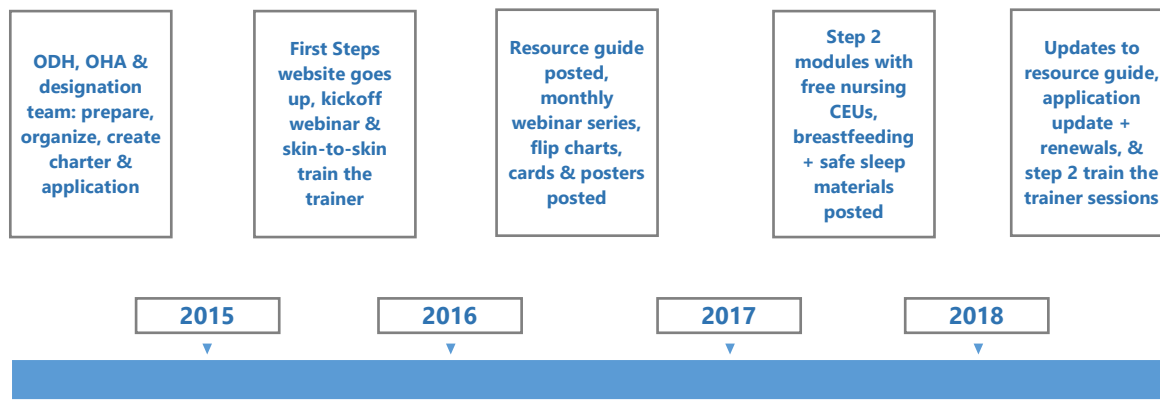


Figure 1. Timeline for First Steps Program: Startup Through First Three Years



teria as per the referenced code.³⁰ Micropolitan and metropolitan location were defined by the county they are located in as in section 3.1.1 of the Medicare Advantage Network Adequacy Criteria Guidance.³¹ There were no licensed birthing hospitals in rural counties.

Statistical Analysis

For Ohio First Steps hospitals, defined as those Ohio birthing hospitals who applied for and achieved any steps, the number of steps achieved and number of quarters of participation during the program period were determined. The most and least frequently achieved steps were identified. Six hospitals closed during the program period. For these hospitals, number of steps and quarters of participation are as of the quarter they closed. Additionally, the total number of Ohio birthing hospitals (including both First Steps and non-First Steps hospitals) utilizing any Ohio First Steps trainings, resources, or educational offerings was summarized by count.

There were 3 separate analyses conducted. First, breastfeeding (BF) rates for all maternity hospitals in Ohio during the baseline and program periods were examined to determine if there was a significant increase in BF rates over time at the state level. The average rate for breastfeeding at discharge in Ohio was calculated using all live births (exclusions noted above) that took place at the 110 birthing hospitals included in the study. A Poisson regression was used to model the trend in numbers of infants breastfed at discharge over the program period (measured in quarters) with an offset term, the logarithm of the number of live births.

Second, a mixed effects multivariable regression model with hospitals as the random effect was used to compare changes in quarterly BF rates between First Steps hospitals and non-First Steps hospitals. The fixed effects considered in the regression model are detailed below.

Third, a cohort of First Steps hospitals that joined the program in the first quarter (July 15 to October 14, 2015) were identified for additional analysis to examine the effect of First Steps. This cohort included 17 hospitals. In the first quarter, there were 23 participating hospitals, but 6 of those had previously achieved BFHI designation and, thus, were excluded to prevent bias since they would have already been practicing the Ten Steps to Successful Breastfeeding prior to the Ohio First Steps program. For the 17 hospital cohort, BF rates in the program period were compared to BF rates in a pre-program period of 13 quarters (January 15, 2012, to April 14, 2015, with the first quarter January 15 to April 14, 2012, used as baseline for the pre-program period). A mixed effects multivariable regression model with hospitals as the random effect was used to determine if the program had an effect on quarterly breastfeeding rates in a pre- and post-program analysis above a baseline quarter (the first quarter of the pre-program period and the first quarter of the program period, etc.). A log transformation of standardized breastfeeding rates above the baseline quarter

was modeled. Supplemental Material Table 1 defines the time period of each of the pre- and post-quarters.

The following fixed effects were considered in the multivariate regression model of breastfeeding rates: time measured in quarter of a year, a dichotomous variable designating the quarter as pre-program or post-program, obstetrical service level of the hospital (3 levels), the number of quarters the hospital has been in the program (for pre-program quarters this variable equals 0 and for post-program quarters it increases by 1 each quarter), the number of steps in the Ohio First Steps program that the hospital has completed (for pre-program quarters this variable equals 0 and for post-program quarters it equals cumulative number of steps achieved), average maternal age by hospital in 2015, percent of mothers at hospital with a college education in 2015, percent of mothers with Medicaid insurance at each hospital in 2015, percent of non-Hispanic black mothers at each hospital in 2015, number of births at each hospital in 2015, number of births by hospital in 2015 (by 5 levels described above), hospital location in a metropolitan or micropolitan area (as defined above). Quarter of application was used as a proxy for step implementation due to lack of information on specific dates. Therefore, all pre-program quarters were set to 0, SAS version 9.4 (SAS Institute) was used for all statistical analyses, and *P* values < 0.05 were considered statistically significant.

RESULTS

Hospital participation

At program initiation, Ohio had 110 licensed birthing hospitals. Of these, 103 (93.6%) attended an Ohio First Steps training or used Ohio First Steps materials. During the program period, 81 Ohio birthing hospitals (73.6%) achieved at least 1 step and were therefore defined as a First Steps hospital. First Steps hospitals achieved a mean of 6.0 steps per hospital. Of First Steps hospitals, step 2 (“train all health care staff...”) and step 6 (“give infants no food or drink other than breast milk...”) were least frequently achieved, respectively (39.5% and 40.7%). Step 10 (“foster the establishment of...support groups...”) and step 8 (“encourage breastfeeding on demand”) were most frequently achieved, respectively (87.7% and 90.1%). Characteristics of First Steps and non-First Steps hospitals (**Table 1**) and the number of hospitals achieving each step (**Table 2**) are presented. The number of stars, which is achievement of any 2 steps, and the number of quarters in the First Steps program for First Steps hospitals are presented in Supplemental Material Table 2.

Breastfeeding Rates at Discharge

For the first analysis, combining all birthing hospitals, there was a significant increase in the number of infants breastfed at hospital discharge by quarter over the program period (coefficient for quarter = 0.0025, *P* < 0.0001). The increase in the proportion of infants breastfed at discharge by quarter in Ohio is shown graphically in **Figure 2**. However, for the second analysis, there was no

**Table 1. Hospital Characteristics by Ohio First Steps Program Participation**

	First Steps hospitals^a	Non-First Steps hospitals
Hospital descriptors	(N = 81), n (%)	(N = 29), n (%)
Baby-friendly USA designation ^{b, c}	5 (6)	0 (0)
Level of obstetrical care ^{b, d, e}		
Level 1 - Basic care	37 (46)	20 (69)
Level 2 - Specialty care	24 (30)	4 (14)
Level 3 - Subspecialty care	18 (22)	5 (17)
Annual live deliveries (2015)		
≤ 249	5 (6)	7 (24)
250-499	15 (18)	7 (24)
500-999	33 (41)	9 (31)
1 000-1 999	13 (16)	3 (1)
≥ 2 000	15 (18)	3 (10)
County type		
Metropolitan county	69 (85)	21 (72)
Micropolitan county	12 (15)	8 (28)
Maternal descriptors	(N = 94,791), n (%)	(N = 24,952), n (%)
College education of mothers ^f	29 401 (31.0)	7 373 (29.5)
Medicaid births ^f	37 298 (39.3)	10 316 (41.3)
Non-Hispanic black births ^f	15 908 (16.8)	3 770 (15.1)
Maternal age, mean ^f	27.9 years	27.8 years

^a First Steps hospitals are hospitals that have achieved at least 1 step by April 2018.

^b Current as of July 2015

^c Per Baby-Friendly USA <https://www.babyfriendlyusa.org/about/>

^d Obstetrical levels of care are defined per Ohio Administrative Code §3701-7, summary descriptor provided here with full definition available in the Ohio Administrative Code as referenced.

^e Level of obstetrical care was not available for 2 of the hospitals; 1 of which achieved First Steps recognition and 1 that did not.

^f Among births that took place in 2015

Table 2. Participating Ohio First Steps Hospitals: Number of Hospitals Achieving Each Step

Specific steps achieved^a	Hospitals achieving (N=81), n (%)
1. Written policy regarding breastfeeding	63 (77.8)
2. Train staff in breastfeeding policy elements	32 (39.5)
3. Inform pregnant women about breastfeeding	49 (60.5)
4. Help mothers initiate breastfeeding within 1 hour	63 (77.8)
5. Show mothers how to maintain breastfeeding even if separated from the infant	45 (55.6)
6. Give infants breast milk only unless medically indicated otherwise	33 (40.7)
7. Full rooming in	51 (63.0)
8. Encourage breastfeeding on demand	73 (90.1)
9. Avoid pacifiers for breastfeeding infants	45 (55.6)
10. Foster breastfeeding support groups for post-discharge and refer to these	71 (87.7)

^a Step descriptions are truncated summaries for table purposes.



statistically significant difference in rates of breastfeeding at discharge between First Steps hospitals (81 hospitals) and non-First Steps hospitals (29 hospitals).

Multivariate Analysis with Respect to Breastfeeding and Program Participation at Startup

In analysis of the 17 hospital cohort that joined the Ohio First Steps program in the first quarter, the following fixed effects were found to be significantly associated with breastfeeding rates in a mixed effects multivariate regression model; time measured in quarter of a year (coefficient = 0.0026, P value = 0.0016), the number of quarters the hospital has been in the program (coefficient = -0.004, P value= 0.0067), the number of steps in the program that the hospital has completed (coefficient = 0.0104, P value < 0.0001), and the number of births at the hospital in 2015 (coefficient = 0.000025, P value = 0.046). The coefficients show that breastfeeding rates increased over time. All other fixed effects were not significantly associated with breastfeeding rates at discharge. *Specifically, hospitals that completed at least 2 steps every 5 quarters in the Ohio First Steps program increased breastfeeding when compared to not participating in the Ohio First Steps program (pre-program quarters).*

DISCUSSION

Ohio First Steps for Healthy Babies is a statewide collaborative established in 2015 to protect and promote breastfeeding via ma-

ternity care practices modelled on the BFHI Ten Steps. Most licensed Ohio birthing hospitals (93.6%) have participated in Ohio First Steps trainings or used Ohio First Steps materials; 81 hospitals (73.6% of the 110 licensed maternity facilities) applied for and received Ohio First Steps designation as of July 14, 2018. Overall, Ohio breastfeeding rates increased significantly over the program period. Although there was not a significant overall difference in breastfeeding rates by Ohio First Steps participation over this period, there was an increase in breastfeeding rates in a subanalysis for the 17 hospitals (not already BFHI designated) that began Ohio First Steps participation when the program started (July 2015). Hospitals that complete at least 2 steps every 5 quarters in the program increased breastfeeding rates when compared to not participating in the program (pre-program quarters). We believe this is the first formal evaluation of a 10 step-modelled statewide public health supported breastfeeding program, which many states have begun.²⁹

The only other statewide initiative to report on results of a BFHI Ten Steps-modelled program is The New Hampshire Ten Steps to Successful Breastfeeding Collaborative. This initiative was led by 2 academic physicians who conducted a statewide needs assessment, followed by 2 workshops open to all 20 New Hampshire birthing hospitals and focusing on 6 of the 10 steps found most in need of improvement. Follow-up analysis 3 years later documented increased step attainment among the 6 “intensive collaborating

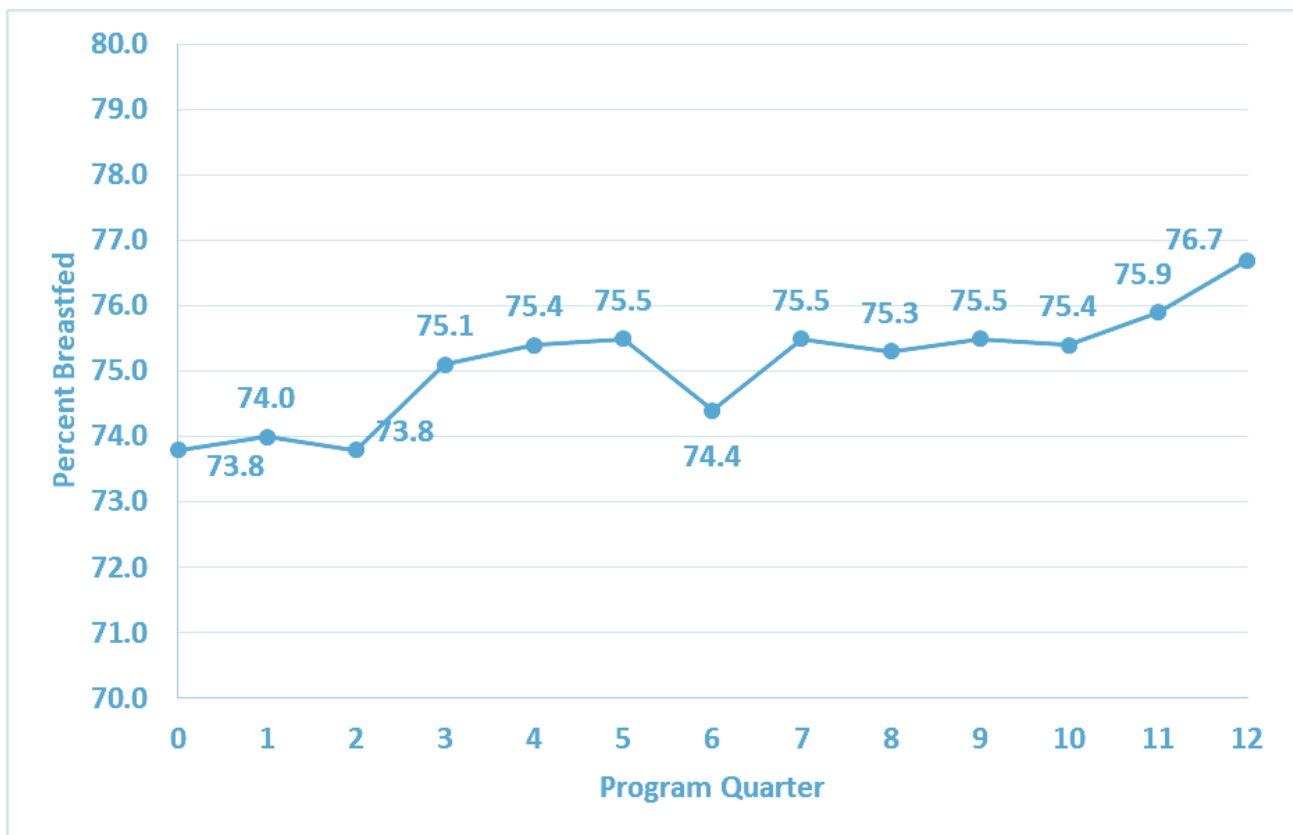


Figure 2. Percent of Infants Breastfed at Discharge by Quarter, Ohio 2015 – 2018



hospitals” and the 4 hospitals working toward BFHI designation.²⁵ Here we also provide a 3 year follow-up, and also note that a subgroup of birthing hospitals (the 17 with participation from program start up) had notable improvements in attainment of breastfeeding-supportive birthing hospital practices. However, Ohio First Steps differs in that it is a public health-led initiative that includes more than 100 birthing hospitals in a larger and more diverse state, focuses on surrogate achievements for all of the 10 steps, and is an ongoing program.

Evidence supports the positive impact on breastfeeding initiation, duration and exclusivity of the BFHI Ten Steps maternity practices.¹³⁻¹⁵ Recent studies including a systematic review showed a dose response between the number of BFHI steps to which women are exposed and the likelihood of better breastfeeding outcomes.¹³⁻¹⁵ In this study, we evaluated the influence of Ohio First Steps on breastfeeding initiation only, and utilized as a proxy the “breastfed at discharge” variable, which includes exclusive and any breastfeeding, because this was the most reliable measure of statewide breastfeeding outcomes available. Controversies related to BFHI designation, including calls for additional policies related to infant safety and maternal choice, appear to relate to the rigorous nature of the BFHI designation process. Ohio First Steps, and other state programs such as the Texas Ten Step Program, which similarly provide designation for breastfeeding-supportive birthing hospital practices, are modelled on the Ten Steps of the BFHI, but offer flexibility and less laborious verification. We emphasize that BFHI designation is an intensively monitored and highly specific process, and the work of Ohio First Steps, and any effects it has on Ohio’s birthing hospitals, cannot be directly compared. Ohio First Steps does not conduct hospital visits and is not intended to substitute for the rigorous designation program of Baby-Friendly USA.

Although Ohio’s rate of breastfeeding at hospital discharge increased significantly over the program period, we did not demonstrate a direct effect of the First Steps program on this outcome. Study limitations are several. First, the majority of other national and state proctored programs aimed at increasing breastfeeding-supportive maternity practices enrolled program-selected hospitals.^{16,20,21} Hospitals willing to engage in facility-changing quality improvement work are appropriately self-selected for initiative, expertise, leadership, and hospital administration support. This approach differs from that of Ohio First Steps, which seeks to “lift” maternity practices of all Ohio hospitals by making tools, technical support, and trainings widely available and free, with designation recognition the main visible incentive. Second, the broad availability of First Steps resources, in use by 93.6% of all Ohio maternity hospitals, may have “diluted” the impact of First Steps. Demonstration of an effect among the first 17 First Steps hospitals is aligned with this “dilution” of impact over time, with increasing program visibility and exposure. Additionally, we did not collect information about breastfeeding-supportive maternity practices among

nonparticipating hospitals, and therefore cannot measure any broader impact of Ohio First Steps to support this contention. Third, the Ohio First Steps program was not run as a controlled clinical trial with intervention arms for ethical and pragmatic reasons, and this makes program evaluation challenging. We lack information on initiation date of breastfeeding-supportive maternity practices (“steps”) and, therefore, we had to assume steps were implemented in the quarter prior to applying for First Steps recognition. It is possible that non-BFHI designated hospitals had steps in place prior to the start of the Ohio First Steps program which could have influenced the results reported here. While all Ohio birthing hospitals had the opportunity to engage with Ohio First Steps at the beginning of the program, we can only assess participation of those that applied for and achieved steps. Therefore, given this analytic assumption, we cannot determine whether the significant positive change in Ohio breastfeeding rates is due to Ohio First Steps, or to other local and national initiatives. Fourth, for consistency within the analysis presented here, birth certificate breastfeeding was used. While a major statewide program to improve the quality and fidelity of retrieval and reporting of perinatal breastfeeding data to the electronic birth certificate (Integrated Perinatal Health Information System-IPHIS), preceded and ran concurrently with Ohio First Steps, we acknowledge data accuracy as a potential issue.

The main strength of this study is that it is the first comprehensive evaluation of a state-based public health-supported 10 step-modelled breastfeeding program for maternity hospitals. In contrast to the statewide initiative in New Hampshire, Ohio First Steps is supported by state resources (ODH and OHA) and includes multiple stakeholders beyond academic institutions, with ongoing outreach to all birthing hospitals, and continued development of new resources and trainings. The analysis used breastfeeding rates from the Ohio Department of Health, Bureau of Vital Statistics birth certificates and took a rigorous approach to examination of this data. Ohio is a large and demographically diverse state with over 100 maternity hospitals, and, thus, results may be generalizable to other similar programs and states.

Improvement is ongoing in the Ohio First Steps program. Hospitals now must resubmit their endorsement of continuing adherence to steps previously achieved after 3 years. While Ohio First Steps applications initially accepted estimates for step performance measures, with coaching and new data collection tools, measures now must include at least 15 chart reviews or 5 maternal interviews per question.

PUBLIC HEALTH IMPLICATIONS

The main policy implication of this work is that it supports continuation of the Ohio First Steps model, in which a statewide public health-administered 10 steps-based program disseminates best practices breastfeeding-supportive maternity care. Our results suggest consideration of several future initiatives. A “Next Steps”



initiative is being organized, with plans to enroll self-selected birthing hospitals in a data collaborative with monthly webinars, data and best practices sharing, specific step coaching, and availability of confidential benchmarking reports. Since step 2 (“train all health care staff...”) and step 6 (“give infants no food or drink other than breast milk...”) were least frequently achieved, Ohio First Steps created free training for step 2 (<https://www.train.org/odh/welcome> [courses 1079957 and 1087379]), which has already been used by over 1100 participants, and now has the opportunity to consider strategies to further support and promote breastfeeding exclusivity (step 6). The Ohio First Steps designation team is dedicated to ongoing quality improvement for the First Steps program.

The main aim of sharing the work of Ohio’s First Steps for Healthy Babies is to inform advancements of national best practices. Although there was no overall difference in breastfeeding rates by Ohio First Steps participation over the program period, there was an increase in breastfeeding rates for the 17 hospitals (not already BFHI designated) that began First Steps participation when the program started. We believe this is the first formal evaluation of a 10 step-modelled statewide public health supported breastfeeding program.

ACKNOWLEDGMENTS

Thank you to the following individuals whose contributions to all aspects of the First Steps program during the program period were invaluable: Jennifer Foster, BSN, RN, IBCLC; Libby Svoboda, MED, BSN, RN IBCLC, FACCE; Laura Knisley, MSN, APRN, LD, FNP, IBCLC, CDE, RD; and Julie Ware, MD, MPH, IBCLC. Thank you to Connie Bish, PhD, MPH (Centers for Disease Control and Prevention) for her thoughtful review of the manuscript. No additional funding was received to support this work and none of the authors have a conflict of interest to report. Preliminary findings, not including the multivariable analyses and associated conclusions, were presented at the American Academy of Pediatrics National Conference and Exhibition meeting, November 2 to 5, 2018. The findings and conclusions in this article are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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SUPPLEMENTAL MATERIAL

Supplemental Table 1. Ohio First Steps: Pre-Program and Post-Program Period Dates

Supplemental Table 2. Number of Steps Achieved and Number of Quarters of Participation Among Participating Ohio First Steps Hospitals

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