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# Evaluation of a Practice-Development Initiative to Improve Breastfeeding Rates

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## ABSTRACT

The benefits of breastfeeding for infant, mother, family, and community are well recognized, and increasing breastfeeding rates is considered an important health-promotion strategy. Improving breastfeeding knowledge and practice among individuals caring for breastfeeding women is considered an important aspect of this strategy. The practice-development initiative described in this article aimed to improve hospital-based breastfeeding rates through the implementation of The Ten Steps to Successful Breastfeeding. The initiative included the development and implementation of an education program aimed at changing and improving breastfeeding practices. The program was evaluated in three ways: changes in breastfeeding rates at hospital discharge; client preparation for breastfeeding and satisfaction during the postnatal period; and staff knowledge and skills.

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Breastfeeding is the optimal method of infant feeding and confers a number of health and social benefits (House of Representatives Standing Committee on Health and Ageing, 2007). For example, in a review of the benefits of breastfeeding, Ip et al. (2007) found that a history of breastfeeding is associated with a reduction in the risk of acute otitis media, nonspecific gastroenteritis, severe lower respiratory tract infections, atopic dermatitis, asthma, obesity, and diabetes. Maternal outcomes of breastfeeding include a reduced incidence of type 2 diabetes and breast and ovarian cancer (Ip et al., 2007), as well as reduction in hypertension, hyper-

lipidemia, and cardiovascular disease (Schwarz et al., 2009). Recent research suggests that breastfeeding improves cardiovascular health in children and may reduce risk later in life (Khan et al., 2009). Evidence available in systematic reviews suggests that breastfeeding may have long-term benefits in lower mean blood pressure and total cholesterol (Horta, Bahl, Martines, & Victoria, 2007). In terms of parenting experiences, findings suggest that breastfeeding may have a positive impact on parenting (Gutman, Brown, & Akerman, 2009).

Despite a recognition of the benefits of breastfeeding, strategies to improve long-term breastfeeding

rates over time have had varied results. Australian data from 2004–2005 suggests that although breastfeeding initiation is high (92%), exclusive breastfeeding declines thereafter, with 71% of babies breastfeeding at 1 month of age, 56% at 3 months, and only 14% at 6 months (Australian Institute of Family Studies, 2008).

A number of factors influence a woman's decision to breastfeed and her ability to continue breastfeeding during her infant's first year. Factors such as socioeconomic status (Donath & Amir, 2000), low level of maternal education, and father's occupational status, as well as having a cesarean birth and infant admission to special care nursery are cited as having a negative impact on breastfeeding (Scott, Landers, Hughes, & Binns, 2001).

Hector, King, Webb, and Heywood (2005) suggest that factors within the hospital and health service environment may influence breastfeeding decisions and outcomes. Such factors include breastfeeding policies and practices that facilitate, or impede, early and unrestricted feeding, provision of information for women during pregnancy and during the postnatal period, rooming in, demand feeding, and restricted use of dummies and teats. These practices, outlined in the Ten Steps to Successful Breastfeeding (World Health Organization & UNICEF, 1989) are modifiable practices that improve both breastfeeding initiation rates and potentially the length of exclusive breastfeeding by limiting clinical problems during the early postnatal period and by providing ongoing support for the breastfeeding woman and her family.

### THE BABY-FRIENDLY HOSPITAL INITIATIVE PRINCIPLES

The Baby-Friendly Hospital Initiative is a joint World Health Organization and UNICEF initiative aimed at increasing breastfeeding rates through improvement in health-care practices. The initiative was launched in 1991 and is based on the Ten Steps to Successful Breastfeeding (detailed in Table 1). The initiative has been accepted and promoted in Australia, with a growing number of hospitals achieving Baby-Friendly accreditation.

Findings from early studies indicate that implementing the Ten Steps shows demonstrable effects


in increasing the rate of breastfeeding initiation and duration (Gau, 2004; Kramer & Kakuma, 2003; Philipp, Malone, Cimo, & Merewood, 2003). In their analysis of breastfeeding initiation and prevalence in maternity units with Baby-Friendly status, Bartington, Griffiths, Tate, and Dezateux (2006) suggest that mothers giving birth in accredited maternity units are more likely to initiate breastfeeding. In Brazilian research, Coutinho, de Lira, de Carvalho, and Ashworth (2005) found a significant increase in exclusive breastfeeding rates in Baby-Friendly hospitals.

In a systematic review, Dyson, McCormick, and Renfrew (2006) identified a number of practices, many of which are included in the Ten Steps, that are important to breastfeeding success. These practices include providing skilled peer or professional breastfeeding support, preventing provision of hospital discharge packs containing formula information and samples, allowing unrestricted feeding from birth onwards, allowing unrestricted mother-baby contact from birth, and avoiding supplementary feeding.

The focus of the practice-development initiative described in this article was to increase the breastfeeding rate at discharge from hospital in a regional health service district in Queensland, Australia. The initiative was based on implementing the Ten Steps, facilitated by an education and support program for staff. To evaluate the initiative, data were collected from staff and clients prior to and following the educational program. Breastfeeding rates were evaluated prior to and following the initiative, as well as 1 year following the completion of the project.

### THE PRACTICE-DEVELOPMENT INITIATIVE

A practice-development approach was chosen as a model for our project because of the principles underpinning this approach: The health team works collaboratively to improve practice, the client is the focus for all activities, and there is a process of reflection on practice (Fitzgerald & Solman, 2003). The context for the initiative was a health-service district situated in a rapidly growing regional area of South East Queensland. Two maternity units are located within the health-service district. In 2007–2008, the birth rate in the district was 2,792 infants. The key to the practice-development initiative was the development of a sustainable educational and support program led by clinicians. The program aimed to influence cultural and practice changes in order to improve education and care for breastfeeding women, with a view to increasing breastfeeding rates. Key program features included the following elements:

 For more information about the World Health Organization and UNICEF's Baby-Friendly Hospital Initiative, see [www.unicef.org/programme/breastfeeding/baby.htm](http://www.unicef.org/programme/breastfeeding/baby.htm)

The Baby-Friendly Hospital Initiative is a joint World Health Organization and UNICEF initiative aimed at increasing breastfeeding rates through improvement in health-care practices.

TABLE 1

**The Ten Steps to Successful Breastfeeding, Developed by the World Health Organization and UNICEF**

Every facility providing maternity services and care for newborn infants should:

1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within half an hour of birth.
5. Show mothers how to breastfeed, and how to maintain lactation even if they should be separated from their infants.
6. Give newborn infants no food or drink other than breast milk, unless medically indicated.
7. Practice rooming-in—that is, allow mothers and infants to remain together—24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.

Note: Source: World Health Organization & UNICEF. (1989). *Protecting, promoting and supporting breastfeeding: The special role of maternity services*. Geneva, Switzerland: World Health Organization. Also, retrieved from <http://www.unicef.org/newsline/tensteps.htm>

- Collaboration with clinicians and employment of local facilitators to develop the program and act as resource people.
- Adoption of a breastfeeding policy based on the Ten Steps.
- A variety of ongoing educational opportunities, which valued the experience and knowledge of clinicians.
- An iterative program of workshops and education sessions emphasizing practices included in the Ten Steps.

In addition, a number of environmental changes were made. For example, visual material depicting positive breastfeeding messages was displayed, and to ensure compliance with the World Health Organization's (1981) International Code of Marketing of Breast-milk Substitutes, all material that promoted artificial formula was removed from the environment.

### EVALUATION METHODOLOGY

The program was evaluated in terms of staff knowledge, attitudes, and skills related to breastfeeding and the Baby-Friendly Hospital Initiative; client perceptions of preparation for breastfeeding and satisfaction with the postnatal hospital experience; and breastfeeding rates at hospital discharge. Ethical approval for the study was sought from the university, health-service district, and funding agency.

### DATA COLLECTION AND PROCEDURE

#### *Breastfeeding Rates*

Baseline breastfeeding rates were determined through a retrospective chart audit prior to the implementation of the program. In total, 317 client

charts (representing all births for a 1-month period) were audited to determine breastfeeding rates at hospital discharge. To determine postprogram breastfeeding rates, prospective breastfeeding data were collected from 275 mothers over a 2-month period. To determine the sustainability of improvements in breastfeeding rates at hospital discharge, perinatal data from July 2007 to end of June 2008 were analyzed. Breastfeeding definitions used in the study included the following:

- Exclusive breastfeeding – Infant receives no food or drink other than breastmilk.
- Breastfeeding – Infant is breastfeeding, but has received other food or drink.
- Formula feeding – Infant is being fed formula.

#### *Midwives and Child-Health Nurses*

Prior to the implementation of the program, all staff working with breastfeeding women were invited to complete the survey. This initial total sample included midwives, child-health nurses, medical officers, and enrolled nurses. The sample totaled 213 staff, with a 60% return rate ( $n = 127$ ). However, midwives and child-health nurses were the primary target group for the initiative, and to ensure consistency between preprogram and postprogram data, only surveys completed by midwives and child-health nurses ( $n = 101$ ) were included in the analysis. Following the program, 175 surveys were distributed to midwives and child-health nurses only, with a 50% response rate ( $n = 87$ ).

#### *Clients*

To evaluate client knowledge and satisfaction, a pre-program survey and a postprogram survey were conducted. A convenience sample of 223 women

completed the preprogram survey, while 161 completed the postprogram survey. Clients were recruited in the postnatal period prior to hospital discharge.

### Survey Development

The staff survey was developed based on the literature and existing tools. Content and face validity was established through piloting and revision with a group of experienced clinicians. The survey was comprised of four sections: demographic information; knowledge of breastfeeding (20 items); confidence with providing breastfeeding support (eight items); and practices related to the Baby-Friendly Hospital Initiative (11 items). Responses to the knowledge of breastfeeding section were based on a 5-point Likert scale, with options of *strongly disagree* (1) to *strongly agree* (5) responses to knowledge questions. Responses to practices related to the Baby-Friendly Hospital Initiative were based on a 5-point Likert scale, with options of *never* (1) to *always* (5) responses to questions relating to breastfeeding practice. In terms of confidence with providing breastfeeding support, participants were asked to rate their confidence in terms of eight practices, from *not confident* (1) to *very confident* (5). The eight practices were initiating breastfeeding, promoting breastfeeding, assisting with breastfeeding problems, assessing breastfeeding, teaching breastmilk expression, teaching positioning and attachment, facilitating breastfeeding the preterm infant, and facilitating skin-to-skin contact.

The client survey included three sections. The first section addressed demographic information. The second section was comprised of nine items related to perception of preparation for breastfeeding. The third section was comprised of nine items about satisfaction with the postnatal hospital experience, including three questions adapted from the Maternal Perceptions of Support Questionnaire (Bernaix, 2000).

### Data Analysis

Data were entered into SPSS analytical software for management, cleaning, and analysis. Demographic

data were analyzed using descriptive statistics. For comparison of survey findings before and after the program, an independent samples *t*-test was used.

## RESULTS

### Breastfeeding Rates

Because the project aimed to improve breastfeeding rates, data were collected prior to the implementation of the program and following completion of the second survey. Prior to the implementation of the program, a retrospective chart audit was undertaken, with 317 charts being audited. In this audit, 55% of babies were exclusively breastfeeding at hospital discharge, 22% were classified as breastfeeding (some formula or other fluid given), and 22% were formula-feeding.

Following the educational program, prospective breastfeeding data were collected over a 2-month period from 275 mothers at hospital discharge. Of this group, 64% were exclusively breastfeeding at hospital discharge, 15.3% were breastfeeding, and 19.3% formula-feeding.

Postprogram breastfeeding rates from July 2007 to December 2008, which were determined through perinatal data centrally collected by the health service, indicated 74.5% of infants were exclusively breastfeeding at hospital discharge, 13.4% were breastfeeding but had other fluids, and 14.2% were formula-feeding. Comparisons of breastfeeding rates are provided in Table 2.

### Midwives and Child-Health Nurses Survey

No significant differences were evident in the demographics of the preprogram and postprogram staff survey groups. Members in the preprogram group were aged 28–67 years old (mean = 44.39 years); members in the postprogram group were aged 24–61 years old (mean = 41.35 years). The majority of participants in both groups were employed part-time (86% in the preprogram group; 74% in the postprogram group).

An independent-samples *t*-test was used to examine differences between the preprogram and

TABLE 2  
Infant Feeding Status at Hospital Discharge

Infant Feeding Status	Preprogram – Chart Audit	Postprogram – Snapshot	Postprogram, Perinatal Data July 2007 – December 2008
Exclusively breastfeeding	55%	64%	74.5%
Breastfeeding and other fluid	22%	15.3%	13.4%
Formula-feeding, only	22%	19.3%	14.2%

postprogram groups. In terms of breastfeeding knowledge and skills, participants were asked to respond to 20 statements, from *strongly disagree* (1) to *strongly agree* (5), with a possible score range of 20–100. The preprogram group (mean = 76.08, *SD* = 5.56) scored similarly to the postprogram group (mean = 77.24, *SD* = 5.80), with no significant differences between groups ( $t(185) = -1.395, p = .165$ ). In terms of confidence with providing breastfeeding support, participants were asked to rate their confidence on a 5-point scale from *not confident* (1) to *very confident* (5), with a possible maximum score of 40. For this section of the survey, preprogram scores (mean = 34.49, *SD* = 5.39) were similar to postprogram scores (mean = 34.57, *SD* = 5.26), with no significant differences between the two groups ( $t(186) = -.102, p = .919$ ). In terms of practices related to the Baby-Friendly Hospital Initiative, postprogram scores (mean = 42.38, *SD* = 4.58) were significantly higher than preprogram scores (mean = 37.68, *SD* = 8.40) ( $t(186) = -4.840, p = .000$ ).

The extent to which participants reported “frequently” or “always” following recommended breastfeeding practices increased after they attended the educational program. Two practices did not change: recommending nipple shields and recommending feeding supplements. These practices were not common prior to the program. In terms of the way supplementary feeds were given to infants, there was a decrease in the use of bottle-feeding (23.8% before the program and 11.5% after the pro-

gram) with an increase in the use of other methods (cup-feeding, syringe-feeding, and finger-feeding). A comparison of the rates of preprogram and postprogram practices is provided in Table 3.

#### Client Survey

Participants in the preprogram and postprogram surveys shared similar demographic characteristics. Preprogram participants ranged in ages from 15–43 years old (mean = 28.34 years); postprogram participants ranged in ages from 16–39 years old (mean = 26.75 years). The majority of participants in both groups were currently employed (63% in the preprogram group, 61% in the postprogram group). Among the preprogram participants, 47.5% reported their recent birth experience was their first baby, while 43.5% of the postprogram participants reported having their first baby.

Participants’ scores on their responses to questions about their preparation for breastfeeding revealed significant differences between the preprogram and postprogram groups. The postprogram group recorded a higher mean score (maximum score 45) on the items related to preparation for breastfeeding (mean = 34.05, *SD* = 7.9) than the preprogram group (mean 29.27, *SD* = 10.741), with a significant difference between the two groups ( $t(378) = -4.976, p = .000$ ). Similarly, in terms of their satisfaction with the postnatal hospital experience, the postprogram group had a higher mean score (mean = 36.19, *SD* = 4.9) than the preprogram group (mean = 33.90, *SD* = 5.182), with

TABLE 3  
Breastfeeding Practices Before and After Program Implementation

Breastfeeding Practice	Preprogram	Postprogram
	Extent to which the practice was frequently or always incorporated	Extent to which the practice was frequently or always incorporated
Providing pregnant women with breastfeeding information	67.4%	79.3%
Considering breastfeeding intention when planning pain relief in labor	30.7%	49.4%
Assisting mothers and babies to have skin-to-skin contact	77.2%	95.4%
Assisting mothers with the first breastfeed	81.2%	94.1%
Teaching mothers to position and attach the infant for feeding	96%	100%
Teaching mothers to express breastmilk	78.2%	86.2%
Discouraging dummy use	62.4%	67.8%
Advising mothers to avoid bottles and teats	80.2%	87.3%
Referring women to community support services	88.1%	93.1%

a significant difference between the two groups ( $t(378) = -4.375, p = .000$ ).

## DISCUSSION

Findings from our evaluation of the practice-development initiative indicate that the introduction of the initiative's educational program, together with ongoing support and policy change, increased breastfeeding rates over time. In terms of staff knowledge and confidence, no significant changes occurred after implementing the program, with an initial satisfactory level of knowledge and confidence among staff. However, in terms of practices related to breastfeeding, a significant difference occurred, indicating that despite initial reasonable knowledge and confidence, the program facilitated the development and implementation of breastfeeding practices more in line with practices recommended in the Ten Steps. Results of the client survey indicate that the program not only improved breastfeeding information provided to women but also increased women's satisfaction with their post-natal hospital experience.

Educational programs have been shown to improve breastfeeding rates and staff beliefs about breastfeeding (Martens, 2000). However, a review of educational and evidenced-based practice interventions with health professionals indicates the evidence is insufficient to recommend any one particular strategy to improve breastfeeding (Renfrew et al., 2007). The practice-development initiative reported in this article had a significant influence in supporting changes in hospital practices related to breastfeeding and, in the longer term, increasing the breastfeeding rate at hospital discharge.

In terms of study design and sampling, our evaluation included limitations. For example, no control group was included, and the participants in both the client and staff surveys were drawn from a convenience, rather than a random, sample. The length of time required to implement the educational program and practice changes, as well as the staff mobility and part-time employment, contributed to the problems of evaluation design, in that a robust con-

trolled trial was not possible or appropriate. Even so, the evaluation was positive, and the practice changes have been sustained, evidenced by the continuing change in breastfeeding rates. In addition, since the project was implemented, one hospital has been accredited as a Baby-Friendly hospital.

## IMPLICATIONS FOR PRACTICE

Although education alone may improve breastfeeding knowledge, skills, and practices, a practice-development approach—which acknowledges and values local expertise and is collaborative and empowering—may lead to more sustainable breastfeeding outcomes in hospitals and health-care centers. Findings from the present study add to the growing literature related to improving breastfeeding rates; most importantly, they describe a collaborative methodology, grounded in practice, that may be more effective than a directed approach. For childbirth educators supporting and preparing women for birth and breastfeeding, the findings confirm the importance and effectiveness of breastfeeding education in the antenatal period, in that women's knowledge and preparation for breastfeeding can be improved, and that an integrated program of education and practice change can improve breastfeeding rates.

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Although education alone may improve breastfeeding knowledge, skills, and practices, a practice-development approach—which acknowledges and values local expertise and is collaborative and empowering—may lead to more sustainable breastfeeding outcomes.

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