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A COMMUNICATION STRATEGY TEMPLATE FOR INCREASING PRACTITIONER AND PATIENT KNOWLEDGE TO IMPROVE BREASTFEEDING OUTCOMES

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An abstract of
A Thesis submitted to the Faculty of the
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2015

Abstract

A COMMUNICATION STRATEGY TEMPLATE
FOR INCREASING
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TO IMPROVE BREASTFEEDING OUTCOMES

BY
Lydia Rose Koenig

Breastfeeding is widely understood in public health to be beneficial for both mothers and children. It provides ideal nutrition, decreased risk of disease and natural birth spacing. Recommendations are exclusive breastfeeding for about six months, followed by continued breastfeeding alongside introducing complimentary foods for at least one year. Despite these recommendations, many mothers intending to breastfeed find it difficult to reach these goals due to a variety of barriers that can shorten the duration of breastfeeding.

Significant progress has been made in the United States in increasing the percentage of breastfeeding initiation, but increasing the amount of extended breastfeeding remains a challenge. This is a larger issue in certain locations, minorities, and low-income populations. To address this problem, a supplemental online educational strategy is proposed to extend the reach of current educational programs and provide patients with a guide on how to address breastfeeding barriers they encounter.

The proposed communication strategy is provided as a template that can be targeted to different populations. The program can be adjusted based on needs of the community, and local resources can be incorporated in the information provided. The template includes a review of suggested existing breastfeeding instructional resources to be adapted. Each source was reviewed for strengths and weaknesses, and suggestions for potential changes to the content are provided. Recommendations are also included on program implementation and evaluation methods to assure an effective strategic communication program.

When implemented alongside existing educational programs and resources with support from local partners, this program could provide a consistent and valuable source of information from an already trusted resource (hospitals, community centers, local breastfeeding organizations, or local health departments). Promoted effectively, the resource can provide valuable information to breastfeeding mothers in the community, giving them self-confidence in their ability to breastfeed, advice on how to overcome common problems, and information on who to contact if they find themselves facing trouble.

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FIGURE LEGEND

Chapter 1: Introduction, Problem Statement, Purpose, Goals

Introduction and Rationale

In the public health community, it is widely understood that breastfeeding is beneficial for both infants and mothers. Breast milk provides both ideal nutrition for the child and immunological and anti-inflammatory components that protect the baby from a host of illnesses and diseases at a critical time when they are too young to be immunized. These benefits can also go well beyond early infancy; antibodies continue to be received by the child even through toddler stages, as long as the breastfeeding relationship continues. Breastfeeding has been associated with a lower risk of a variety of childhood illnesses, such as ear infections, respiratory illnesses, and gastro-intestinal problems, as well as reduce the risk of infant and child mortality and may decrease risk of childhood obesity, Type 2 diabetes and asthma. Exclusive and longer duration of breastfeeding is associated with lower risks for breast and ovarian cancer in mothers who have breastfed, and may decrease the risk for postpartum depression, as well as promote faster maternal healing after delivery (Services, 2011). Additionally, exclusive breastfeeding also suppresses hormones, which provides natural birth spacing and leads to slower population growth (Labbok, 2013).

Current recommendations from the American Academy of Pediatrics are "exclusive breastfeeding for about six months, followed by continued breastfeeding as complimentary foods are introduced, with continuation of breastfeeding for one year or longer as mutually desired by mother and infant (Eidelman & Schanler, 2012)." The World Health Organization (WHO) recommends extending that advice for at least two years and initiating breastfeeding within the first hour. Providing breastfeeding on demand is also recommended, as well as avoiding the use of bottles and pacifiers until breastfeeding is established (Organization, 2015). However, despite

these recommendations, many mothers who intend to breastfeed have difficulty reaching their goals due to barriers caused by a lack of knowledge or correct instruction, little to no community/family support, lack of workplace flexibility, difficulties in technique, concern about insufficient milk supply (Services, 2011) or (in rare cases) medical issues in either the infant (such as jaundice or tongue tie) or the mother (such as polycystic ovarian syndrome (PCOS), anatomical problems, medications she is taking or other health issues) that prevent a successful breastfeeding relationship (Bonyata, 2011b).

Healthy People Breastfeeding Objectives. *Healthy People 2020* is a national 10-year agenda put forth each decade since the year 1979 by the Department of Health and Human Services to provide national objectives for improving the health of U.S. citizens, as well as measuring the impact of prevention activities (Services, 2014b). The data from this agenda provides useful information on what areas of breastfeeding education should be targeted. Among the many objectives included, there has been a focus on breastfeeding, with increasing specificity, each decade.

The objectives related to increasing the proportion of infants who are breastfed in *Healthy People 2020* are similar to those in 2010, with increased target objectives, due to success attaining or nearly attaining target levels for each objective. Objective MICH-21 addresses breastfeeding with the following goals:

- Ever breastfed (2006 baseline of 74%, 2020 target of 81.9%),
- Breastfeeding at six months (2006 baseline of 43.5%, 2020 target of 60.6%),
- Breastfeeding at one year (2006 baseline of 22.7%, 2020 target of 34.1%),
- Exclusive breastfeeding through three months (2006 baseline of 33.6%, 2020 target of 46.2%), and

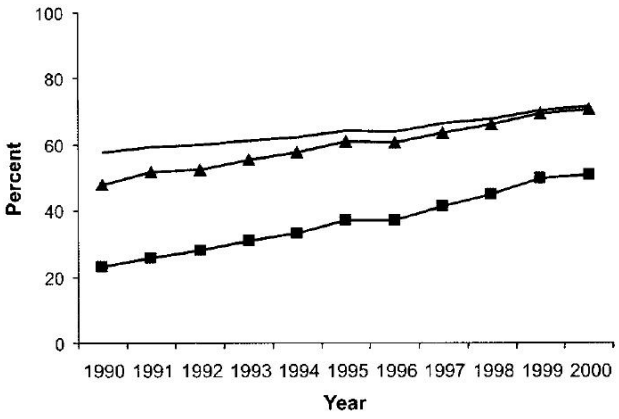
- Exclusive breastfeeding through six months (2006 baseline of 14.1%, 2020 target of 25.5%) (Services, 2014a).

In additional efforts to increase breastfeeding, *Healthy People 2020* also included several objectives which should serve to improve rates of breastfeeding if successful. MICH-22, aims to "increase the proportion of employers that have worksite lactation support programs", which will allow working mothers the ability to maintain their breastfeeding relationship more easily when returning to work. MICH-23 aims to "reduce the proportion of breastfed newborns who receive formula supplementation within the first 2 days of life", which is important as use of supplementation can often lead to decreased maternal breast milk supply. Lastly, MICH-24 aims to "increase the proportion of live births that occur in facilities that provide the recommended care for lactating mothers and their babies". This goal is important as proper support for breastfeeding mothers in early stages can be vital in establishing proper techniques and troubleshooting potential problems that can arise. Early intervention is often key to helping mothers keep an adequate supply and learning the best techniques for breastfeeding (Services, 2014a).

Problem statement

Breastfeeding exclusively and for extended times can be beneficial to the health of mother and child, and can lower the risk of many conditions in older children and their mothers, long after breastfeeding has been discontinued. Significant progress has been made in the United States in increasing the percentages of infants who have ever been breastfed, but increasing the percentage of infants who receive extended and exclusive breastfeeding remains a challenge, especially in certain locations, as well as in minority and low income populations. Figure 1 below is a visualization (from the work of Bentley, Dee and Jensen in 2003) of data between

1990 and 2000 demonstrating trends in the levels of breastfeeding initiation were disproportionately lower in African-American women when compared to those of white and Latina populations.



Trends in U.S. Breastfeeding Initiation, 1990–2000. African-American, ■—■; white, —; Latina, ▲—▲.

Figure 1: African American Women Lag behind in breastfeeding initiation rates (Bentley, Dee, & Jensen, 2003)

Overall, breastfeeding rates have steadily risen in the United States, due to increases in public breastfeeding support, resources from initiatives in a variety of community, hospital, governmental, and internationally-based organizations to improve breastfeeding rates, which in turn improve maternal, infant, and child health. According to the CDC Breastfeeding report card in 2014 (2011 data), the national rate of infants ever breastfed was 79.2%, with breastfeeding at 6 months at 49.4%, breastfeeding at 12 months at 26.7%, and exclusive breastfeeding, at 3 and 6 months, at 40.7% and 18.8% respectively. However, the rate of breastfeeding in the United States varies widely between states/geographical locations (rate of ever breastfeeding in California is reported as the highest, at 92.8%, while the lowest rates appear in more southern states, including the lowest in Louisiana at only 56.9%) (Prevention, 2014). Differing rates of breastfeeding have been shown in differences in socio-demographic and cultural populations.

Breastfeeding initiation is higher among the Hispanic or Latino populations (80.6%), compared to the non-Hispanic black or African American population (58.1%). Low income mothers have an initiation rate of 67.5%, while higher income mothers have a rate of 84.6%, and low income non-Hispanic black mothers initiate breastfeeding at a rate of 37%. Age is also an important factor, as mothers younger than 20 years old breastfeed at a rate of 59.7%, while those older than 30 have a rate of 79.3%. The population least likely to initiate breastfeeding is that of non-Hispanic black mothers younger than 20 years, at a rate of only 30% (Eidelman & Schanler, 2012). Some initiatives seek to address these disparities, such as the Office on Women's Health's "It's Only Natural" campaign designed to help African-American women and their families understand how breastfeeding can improve the health of both mother and baby. The campaign's core components include: key partnerships with a variety of groups (involved with women, infant and children's health, community, faith based and government organizations), a website that provides campaign materials tailored for the target audience, articles and videos, and the development of materials designed to promote breastfeeding to the target African American mother population (Health, 2013).

In 2011, the Surgeon General's "*Call to Action to Support Breastfeeding*" was released. This report sought to address the varying breastfeeding rates across the country caused by the many barriers faced by mothers starting and continuing to breastfeed. According to the Surgeon General, many mothers wanting to breastfeed indicate there are many factors that prevent them from reaching their goals. Among those limiting factors are a lack of support from members of their household and friends, limited to no availability of family members with breastfeeding experience, lack of information from health care providers, limited to no time and privacy at work for breastfeeding or expressing milk, and inability to connect with other breastfeeding

mothers in their communities. The call to action includes ways that families, communities, employers, and health care workers can support breastfeeding mothers and in turn help to increase national breastfeeding rates (Services, 2011).

Many different breastfeeding support groups exist to help mothers have a successful breastfeeding experience in local, national and international capacities. One of the best known and wider reaching groups is the La Leche League International (http://www.llli.org/), although many others exist to provide assistance to mothers who need help or general social support in breastfeeding their children, and most importantly, programs promoting breastfeeding targeted to low income and minority populations (Services, 2011). While these support groups are an excellent resource, many mothers either are not made aware of them or choose not to attend meetings due to a lack of interest or time, location of the gatherings, access to transportation, childcare (especially if mothers have multiple children), or unease in attending meetings in person among people who are unfamiliar. Lack of transportation and free time are essential barriers to breastfeeding mothers who are low income or live in less densely populated areas (Lauwers & Swisher, 2011). For these individuals, a health education strategy would be most effective when not dependent on the physical attendance of mothers who struggle with working, spending time with family, and other time constraints.

Campaigns which promote the support breastfeeding are becoming widespread through the country through media, support groups, and public health offices. Community support groups exist to aid mothers in finding groups to help aid them in having a successful time breastfeeding their children. However, what new mothers often lack the most is time and energy when they have a new child to care for, and for some mothers, seeking out advice from people in the community, face-to-face, is not something they feel would be helpful. In addition, some women

work so many hours during the day, they lack the time outside of work hours to attend face-to-face meetings, or they do not have the way or means to travel to the meeting locations. The reality of the busy lifestyle shared in the United States (and internationally) is that many people are separated from close family in distance, and there may not be enough support from friends if the relationships are not close. They may not feel comfortable discussing their breastfeeding problems with community support groups, or they may not find the advice there as helpful as intended. Additionally, sometimes the stress of becoming a new mother may cause them to want to withdraw from others (whether due to postpartum depression or just the overwhelming feeling of caring for a newborn). Some women do not feel comfortable seeking outside help, and will not turn to existing community support groups, whether due to social anxiety, lack of time, or inability to attend (among many possible reasons). For these women, if they have problems and their healthcare providers fail to provide them with the information they need, the first place they may turn to is online literature or publicly available print media. However, outside of peer-reviewed journals and medical libraries, publicly available health information can be incomplete, misleading, or even incorrect. Even if medical providers do attempt to give advice, many may not have taken the time to thoroughly investigate how to assist in troubleshooting the many challenges faced by mothers when trying to establish breastfeeding with their infants.

There are many potential breastfeeding barriers that should be addressed when a new mother is having difficulties breastfeeding. Some barriers are more easily addressed than others. There can be challenges, some that are related to infant feeding, or others that are related to maternal breastfeeding problems. Some of these potential challenges are described below:

Infant Feeding Problems.

-Unnecessary infant formula supplementation might be addressed by education for both health practitioners and new mothers, and limiting the distribution of

formula samples given to expectant or new mothers to an as-needed basis only (Requejo & Black, 2014). This is especially important for low-income families who are attempting to breastfeed (Tender et al., 2009).

-Infant allergies (such as cow's milk protein allergy), which can cause problems with breastfeeding, are potentially targetable by a medical professional through elimination diets or other avoidance measures (Brill, 2008).

-Poor infant latch can be addressed by consultation with a lactation consultant, who will be able to determine if it is an issue with finding the proper technique, or if it is caused by a case of infant tongue-tie or other medical issues (such as infant illnesses) (Amir, 2014).

-Early oral insults to the baby which can lead to oral aversion can be addressed by a lactation consultant, pediatrician or breastfeeding support group (Marmet, Shell, & Aldana, 2000). Prevention encounter of the oral insult entirely would be ideal but not always realistic.

-Infant reflux or gastroesophageal reflux disease (also known as GERD: a condition present in a small percentage of infants, once thought to be rare, but now understood by pediatricians to be more common (International, 2006)) can cause major challenges to breastfeeding relationships (Bonyata, 2011c). Effective health communication strategies can be vital for mothers of infants experiencing reflux, because the many symptoms can be confusing and lead the mother to discontinue breastfeeding. For babies with reflux, the pain caused by the disorder causes the baby to be uncomfortable while breastfeeding (which can be helped by adjusting feeding position). The child can cry for what appears to be unexplained

reasons, they may immediately regurgitate what was ingested ("spitting up" or vomiting), or refuse to breastfeed entirely because of discomfort (Barmby, 1998). Reflux may also be a symptom of other problems, such as a milk protein allergy, and could potentially be alleviated with a maternal elimination diet (Brill, 2008).

-Colic-Causing foods: some foods such as dairy, caffeine, grains and nuts, spicy or "gassy" foods are thought to cause colicky symptoms in an infant. By tracking the foods that are eaten before periods of fussiness, removing that food from the diet, and then challenging that food a few weeks later to make sure that food was responsible, the symptoms may be relieved. Most babies are only temporarily intolerant to these foods and eventually be reintroduced (Sears, 2013).

-Breastfeeding problems caused by more serious medical complexities, such as inability to latch effectively due to infant prematurity, very low birth weight babies, cleft palate, or other medical conditions are best addressed by medical professionals and board-certified lactation consultants, although the information proposed in this strategy template can still be useful to those facing these complexities.

Maternal Breastfeeding Problems.

-Discomfort or pain during breastfeeding can be addressed though consultation with a lactation consultant, who can assist in determining the source of discomfort. The cause could potentially be poor latch technique, problems with the breast, such as inverted nipple issues or an infection such as mastitis, or other causes, that would be best addressed by a licensed professional (Amir, 2014).

-Dysphoric Milk Ejection Reflex or D-MER: A disorder that is believed to be relatively rare exists that causes mothers to feel intense negative emotions or

dysphoria suddenly before experiencing letdown that dissipates within a few minutes. The response can vary in intensity between individual mothers experiencing the condition (mild, moderate or severe). The specific mechanism is not known, but it has been found that inappropriate dopamine activity occurs when the hormones that cause lactation letdown activate. Treatment varies by the intensity in each individual. For mild or moderate cases of D-MER, sometimes just the knowledge of diagnosis as a medical problem can help manage symptoms more easily. Mothers can log their symptoms, as well as things that help relieve them, and they can use this to consult with their medical provider to help find natural treatments and lifestyle changes that help them cope with their symptoms. For severe cases, medical providers may be able to treat with specific medications that can help stabilize dopamine levels (Heise, 2011).

-Limited breast milk supply has often been stated by many mothers as preventing a successful breastfeeding relationship (Amir, 2014). One factor that could pose a potential problem with maternal breast milk supply maintenance is insulin resistance (Cassar-Uhl, 2014). While it has been identified that high maternal BMI can be a risk factor for delayed onset of lactation (D. J. Chapman & Perez-Escamilla, 1999), insufficient glandular tissue (IGT), insulin resistance, postpartum depression, other maternal illness (such as PCOS), stress, and many other factors could influence the ability of a mother to express breastmilk (Flora, 2014).

Some women may face several breastfeeding barriers at once. These barriers alone can cause disruptions or discontinuation of breastfeeding, but when combined, can make maintaining

a breastfeeding relationship even harder to maintain. As the barriers are often interrelated, mothers without proper guidance and support may feel they have no choice but to discontinue breastfeeding. Because of these complex issues, an effective health communication strategy targeting this population of mothers could have significant impact in increasing the percentage of infants who are breastfed for a longer duration.

Existing interventions have been useful in increasing awareness of the benefits of breastfeeding, and have increased the levels of infants that have ever breastfed. However, the numbers of infants continuing to breastfeed at six months to a year tend to remain low as mothers find daily challenges in maintaining breastfeeding over a longer period. Discovering how to aid these mothers in overcoming the many barriers to breastfeeding should be of top priority for public health. Some mothers may find success if complex breastfeeding issues are more thoroughly addressed. However, while the majority of mothers can overcome the barriers they face, there is a population of mothers who will be unable to exclusively breastfeed their children. Care must be taken to encourage women who are able to breastfeed in any amount (even if they must supplement with another nutrition source), and avoid invalidating or shaming those that truly cannot breastfeed despite their best efforts.

When examining the low percentage of continuation of breastfeeding past the first few months of infant life, an approach needs to be taken to extend the time mothers continue breastfeeding. Current educational strategies may fall short of encouraging mothers who experience low supply during breastfeeding (whether perceived or due to an underlying cause). Mothers may experience frustration or lack of confidence in their ability to continue when there is insufficient information and support conveniently available to them. Additionally, many mothers experience infant related feeding problems, which can make the breastfeeding

relationship even more complex. A supplemental improved online educational strategy is needed to capture a larger population of mothers facing these barriers.

Health Communication Purpose

The purpose of this document is to provide a framework for an online educational strategy/template to provide healthcare providers and lactation educators with a potential new online-based strategy to increase the levels of women who are able to breastfeed past the first few weeks of an infant's life. The strategy proposed will involve, not only examining individual factors causing a barrier to breastfeeding, but also complex, multi-faceted breastfeeding challenges that can reduce the likelihood of breastfeeding on a compounded scale, and how to support mothers who find they are ultimately unable to breastfeed as they had planned.

Hypothesis

Through a targeted health education strategy which seeks to address unique or underutilized approaches and addressing potential compounded breastfeeding problems, healthcare providers and breastfeeding support individuals and organizations can improve breastfeeding support for new mothers, allowing for a longer duration of breastfeeding for more infants.

Significance statement

If an improved approach can be utilized in addressing breastfeeding issues, and the educational strategy proves effective, the numbers of mothers who breastfeed their children for 3 months, 6 months or even a year may increase and potentially meet or exceed goals set by the *Healthy People 2020* Objectives.

Health Communication Goals and Objectives

Overall Goal.

Increase knowledge, awareness, and support of breastfeeding for pregnant and nursing mothers to increase the amount of exclusive and extended breastfeeding.

Goal 1. Provide pregnant and nursing mothers with the knowledge and skills needed for establishing a successful breastfeeding relationship with their children.

Goal 2. Provide nursing mothers access to an unbiased, reliable and accurate guide to overcoming most breastfeeding barriers, and suggestions of resources to consult if barriers cannot be addressed in a self-sufficient manner.

Objectives of the Online Breastfeeding Educational Strategy:

Short term objectives. By the end of one year of program implementation:

- Increase awareness and knowledge among nursing mothers about how to address breastfeeding barriers by 40%.
- Increase awareness and knowledge among healthcare workers, families and community groups about how to help mothers facing breastfeeding barriers by 40%.
- Increase levels of exclusive breastfeeding at three and six months by at least 2%.

Long term objectives. By the end of five years of program implementation:

- Increase awareness and knowledge among nursing mothers about how to address breastfeeding barriers by 80%.
- Increase awareness and knowledge among healthcare workers, families and community groups about how to help mothers facing breastfeeding barriers by 80%.
- Increase levels of exclusive breastfeeding at three months by at least 15% and exclusive breastfeeding at six months by at least 10% among the targeted nursing mother population.
- Increase levels of extended breastfeeding to at least one year among the targeted nursing mother population by at least 5%.

Chapter 2: Audience Analysis

Ethical Dilemmas

When planning a health communication strategy for addressing complex breastfeeding barriers, a serious evaluation of the ethical considerations must be made. In this evaluation, ethical issues both for and against breastfeeding must be addressed, and considered with the basic ethical principles to determine the best approach to developing a communication plan.

Ethically, breastfeeding provides benefits for the child, mother, and the community. Early breastfeeding provides newborns increased immunity in a vulnerable period while their immune system is still naive and developing. This, in turn means less sick time for the infant and the mother (and less medical visits and time off work for families), and also limits disease in schools and other public areas where outbreaks are most common. Breastfeeding also provides benefits to the mother, as draining of the breasts can decrease post-pregnancy healing times, and may also decrease certain risks of diseases such as breast cancer. Breastfeeding also boosts maternal-child bonding through time spent breastfeeding and allowing for skin-to-skin contact that has been shown to be especially beneficial to premature and very young infants. Breast milk is also nutritionally superior to artificial formulas, which can potentially expose the child to unnecessary food additives, sugars, artificial ingredients or empty calories sometimes present in infant formulas.

While breastfeeding seems to be the obvious choice in infant nutrition, ethical considerations must also be evaluated in relationship to circumstances where breastfeeding may not be the best decision for the mother and child. While breastfeeding is natural, it is not always a simple skill to master and maintain. Breastfeeding can be difficult to learn and then maintain

for families, and can consume large amounts of time and effort. Many hospitals are not equipped with the correct amount and type of support needed to help establish breastfeeding relationships. In a time where many families are distant from family support, women often work full time outside the home, and not all facilities support breastfeeding in public, women may not feel comfortable starting or continuing to breastfeed. Workplaces (especially those for lower income populations) often do not supply adequate time off for maternity leave to promote both maternal healing and establishment of breastfeeding. Maintaining breastfeeding when returning to work can also be a difficult and time consuming process which not all mothers can or want to pursue. In some instances, even with the best intentions and efforts to form and continue a breastfeeding relationship, mothers find they are not able to maintain an adequate supply when breastfeeding which can lead to increased stress, frustration, and depression for the mother, and could exacerbate the effects of postpartum depression.

Strategies should be inclusive of breastfeeding mothers, medical professionals, family members, breastfeeding support groups, and institutions such as hospitals, workplaces, and government. A communication plan should be logical and consistent between different information sources to assure the most effective outcomes. Following the concepts of the basic ethical principles, a balance can be maintained in providing support for families that want to breastfeed their children while not pressuring or even causing guilt for those families that decide that breastfeeding is not the right choice for their circumstances.

Nonmaleficence. The principle of nonmaleficence involves an ethical decision that means not causing harm, or causing short term harm to allow the prevention of a much greater harm (Noel-Weiss & Walters, 2006). For breastfeeding education, an example of this kind of principle in play is that breastfeeding can cause nipple pain to new mothers who are developing good latch

techniques and breastfeeding methods. However, after the techniques have been developed this harm can be reduced or eliminated and the benefits of breastfeeding far outweigh some short term pain that can be remedied by instruction or change in methods. This principle is less useful in making ethical decisions where a choice must be made on which is the lesser of two potential harms (Noel-Weiss & Walters, 2006).

Beneficence. The principle of beneficence requires doing the most good, not just preventing harm in nonmaleficence. However, it is not always clear whether an action is really causing good or only preventing harm (Noel-Weiss & Walters, 2006). In the context of breastfeeding, and specifically breastfeeding problems, this is a very important dilemma to consider.

Educators must approach breastfeeding with honesty about the very real difficulties and drawbacks that exist for many mothers who plan to breastfeed. Educational campaigns seek to help mothers learn to breastfeed because of all the benefits that it provides (better health for mother and child, increased bonding, and other benefits as mentioned earlier) which is intended to positively improve health. However, even though breastfeeding problems are quite common, this is not often communicated effectively in official documents. Lack of communication of common problems can leave a woman with a feeling of isolation of being alone in their breastfeeding difficulties. In fact, many campaigns approach breastfeeding education with the idea emphasized that "all women can breastfeed" and often combine this message with statements of how beneficial each day of breastfeeding can be to their baby. These messages can lead to negative implications for the mother in the form of the *labeling* dilemma, such as feelings of failure, not trying hard enough to overcome the barriers they are facing, and not having concern for the health of their child both now and in the future (Tuteur, 2012). Care must be

taken in the tone of the educational materials, as it can lead to the ethical dilemma of *culpability* or causing mothers feelings of guilt (intentional or not) based on the level of success they have in establishing a breastfeeding relationship instead of providing the beneficence intended to assist mothers in learning to breastfeed and overcome problems they may be facing.

Autonomy. The ethical principle of autonomy relates to the respect of the patient's freedom, independence, and self-determination as well as privacy and individual choice. An ethical dilemma that is important to consider for autonomy is *reliability*. A patient's autonomy can be compromised if the recommendations or information they receive from their provider are incorrect, inaccurate, or incomplete. Making a decision without the correct information means a loss of autonomy to make an informed choice. In terms of overcoming breastfeeding barriers, when a mother encounters a problem that she cannot overcome, she may consult a healthcare provider in the form of their doctor, hospital nurses, or a lactation consultant. Many doctors are not formally trained in overcoming difficult breastfeeding problems and, out of concern for the child who may not be gaining weight to their satisfaction, may recommend formula supplementation, when a change in strategy such as new latch position, increasing maternal supply, or considering infant food sensitivities may be a better strategy for overcoming barriers.

Beneficence can lead to conflicts with patient autonomy and would lead to the ethical dilemma of *depriving*, as some interventions in breastfeeding may mean depriving pleasures they find hard to replace. This is especially the case for women who face serious breastfeeding challenges, as overcoming challenges can mean serious commitment and dedication to overcome. For example, if a child has serious issues with infant reflux it can be difficult to determine positioning, medications, or possible dietary restrictions to lessen the child's discomfort. This can cause stress for both mother and child and can deprive mothers of a calming

environment in which to learn how to adjust her life to the new child. For a mother with problems in maintaining adequate supply and for mothers who work outside the home full time and must use a pump during the day it can be very difficult to devote the needed time and dedication to increase emptying of the breasts either through increased direct feedings or pumping. This deprives mothers of large amounts of time, energy, and in the case of working mothers takes valuable time out of the work day to pump. The time needed for breastfeeding to increase supply can be a great disruption in productivity if work needs to be frequently interrupted.

The ethical dilemma of *control* must also be considered in relation to beneficence limiting patient autonomy. Paternalistic regulations to increase levels of breastfeeding can limit a mother's freedom to choose the method of feeding their child that works best for their own family situation. This can be observed in situations where limits of the distribution and marketing of formula are used to encourage higher levels of breastfeeding in healthcare settings. The intention of these regulations is beneficent: to limit the amount of mothers who feel pressure that they cannot provide adequate nutrition through breastfeeding alone and prevent the recommendation from nurses or doctors to supplement with formula with no medical reason. However, there are many factors a mother must take into consideration on how to feed their child. Even if a mother fully intends to breastfeed their child, certain barriers may make things very difficult for her to continue (such as unrelieved pain, low supply, depression, certain medical conditions, lack of adequate time off work to pump or lack of adequate pumping facilities), and each mother should have the right to decide that supplemental or exclusive formula would be a better choice for their family. Conversely, healthcare providers who give formula to an infant either without parental consent or override parental objections may use

professional expertise to justify what they consider beneficence, they could end up causing harm to establishing an adequate supply and will make the breastfeeding relationship more difficult for the family if they must spend time increasing supply lessened by the addition of formula which is known to have a significant impact on the amount of breast milk is produced by the mother (Noel-Weiss & Walters, 2006).

Justice. The ethical principle of justice deals with the concept of fairness. This includes both promoting fairness and preventing unfairness. Dilemmas related to social justice are difficult to address on an individual basis because root causes of social injustice require multilayered interventions as issues are usually of an economic and political systemic nature (Noel-Weiss & Walters, 2006). An important ethical dilemma to consider for this would be *persuasion*, when marketing standards are developed for breast milk substitutes, it must be recognized that breastfeeding is a key health determinant and standards need to maintain the idea that breastfeeding must be protected, promoted and supported. When commercial formula manufacturers advertise their product, the campaign could very easily indicate that their product could provide benefits over breastfeeding when those claims may not be truthful (which is also a consideration in the ethical dilemma of *promises)*.

Two other forms of justice are relative to these ethical considerations. Distributive justice involves the fair distribution of goods and services as well as burdens and responsibilities. Compensatory justice provides compensation if harm is done (Noel-Weiss & Walters, 2006). These principles can create moral dilemmas for development of an ethically sound communication strategy. For example, who should have access to the services of breastfeeding communication specialists (just those in greatest need or the population as a whole)? Who will pay for these services, and how much should be paid? How much time and effort should be

devoted to each patient who requires these services? And very importantly, are there factors that prevent fair treatment of a patient? These questions are important in the construction of a viable and ethically sound communication strategy.

Professional/Patient Relationship. This principle is founded upon the trust relationship and fidelity between healthcare provider and the patient. The important ethical dilemmas to consider include *promises, health as a value, and targeting.* When a patient visits their healthcare provider, there must be a level of trust between them in order for a communication strategy to be useful. If a healthcare provider impresses upon a patient that breastfeeding will automatically assure better health for their child and themselves, these *promises* could cause a breakdown in the trust between them. This breakdown in trust could occur if their child develops an illness that was in no way related to breastfeeding but the family was led to believe that breastfeeding would mean perfect health for their child.

A provider not considering the dilemma of *health as a value* might impress upon a family that "breast is best", and that formula should be avoided because the health of their child is the ultimate in good parenting, but if there are feeding problems and the child must have supplemental formula to obtain adequate nutrition (or if the breastfeeding relationship is not possible or desired for the family), there is a breakdown of trust and fidelity as the parents have feelings of guilt for not being able to adhere to the advice of the provider.

The dilemma of *targeting* is very important in this principle as well. Providers may feel the need to address the disparities between levels of breastfeeding in minority or low income populations, and would feel the need to more aggressively impress upon these families the importance of breastfeeding, while in reality the providers may place misdirected interventions upon individuals instead of underlying causes such as lack of community support, unavailable

facilities for low income workers, or lack of the necessary kinds of support needed to address specific needs of certain populations (such as education provided not available in native language of the families in need of a communication intervention).

Primary Audience: Breastfeeding mothers

Audience Analysis.

A public health campaign targeting new mothers requires very careful attention to the fact that becoming a mother, especially for the first time, is completely life changing and can be overwhelming. When they are pregnant, many mothers decide that they want to attempt to breastfeed their child. There are many challenges that can occur in their attempts to successfully maintain a breastfeeding relationship, and they must have advice that comes from a knowledgeable source on how to overcome these challenges. Because a new mother has so much new stress in her life, information should be provided in a supportive and non-judgmental format as too much pressure will most likely be met with resistance and will ultimately be counter-productive.

According to an Australian study to discover things that new mothers want to know, the most frequently used source of information was printed media, followed by healthcare professionals, prenatal classes and friends. Out of 151 subjects, 27.8% of new mothers expressed needing more information about breastfeeding, they did not feel prepared, did not know what to do, and/or they did not have enough information on how dependent a breastfeeding baby is on the mother. Many new mothers found it difficult to adjust to the lifestyle changes, sleep deprivation, and routine changes. Many expressed the need for more preparation for breastfeeding in prenatal classes (as the classes primarily focused little on what happened after birth) and their discouragement over the differing advice from their midwives. This indicates a

need for a reliable and consistent source of information for mother, both pre-and post- birth, that is readily accessible mothers who are already challenged in routine and lifestyle changes (Barnes et al., 2008).

Cultural Considerations. In addition to the concerns of the state of mind of a new mother faced with many new situations and challenges, the actual cultural background of the mother must also be taken into consideration. In some cultures, breastfeeding is highly regarded and cultural norms mean that family and community support are of utmost importance and the needs of helping mothers have time to care for their child and developing a breastfeeding relationship are paramount. In some countries, mothers are given ample family leave, breastfeeding in public is considered completely ordinary, and extended breastfeeding is not only recommended but expected. However, in other cultures, breastfeeding is less supported by family members and the community. Mothers are not given sufficient time to fully recover from pregnancy and little to no accommodation is made for the time needed to establish a healthy breastfeeding relationship. Maternity leave can be limited and unpaid, and for many middle class and almost all low income families, taking unpaid leave is difficult or even impossible.

According to the Organization for Economic Co-operation and Development (OECD) as well as the Center for Economic Policy and Research (CEPR), exclusive and extended breastfeeding tends to be higher/longer in countries with long periods of parental leave (Development, 2012; Ray, 2008). Maternity leave is vital in the establishment of the breastfeeding relationship (Labbok, 2013), and is directly associated with duration of breastfeeding (Labbok, 2013). Mothers who face either limited or nonexistent maternity leave are much less likely to start breastfeeding at all (Marinelli, Moren, Taylor, & Medicine, 2013). Women with low income are specifically more likely to return to work earlier, and often to jobs

where breastfeeding is very challenging to support due to lack of facilities or break time for breastfeeding directly or breast milk pumping. The minority population is frequently overrepresented in this low income population, which means women in this population are less likely to choose breastfeeding when faced with these barriers (Prevention, 2013).

The United States is one of four nations (out of 182 countries- of 190 studied- mandating guaranteed maternal leave internationally) that does not mandate paid leave for new mothers and the only developed one not to do so. Eight remaining countries lack even guaranteed job-secure unpaid maternity leave (Heymann & Earle, 2010). In the United States, although the Family and Medical Leave Act entitles "eligible employees of covered employers" (companies are exempt if they have less than 50 paid employees and to be eligible employees must be employed for a year at that company and have worked at least 1,250 hours in the last year before taking leave) to take up to twelve weeks of unpaid, job-protected leave (Labor, 1993), a significant portion (over 40%) of the workforce is not eligible and could risk losing their employment if they take too much leave, meaning they no longer have support for their newly expanded families if they lose their jobs (Ludden, 2013). Additionally, more than half of the workforce does not receive any pay while on leave, so many families either face significant financial difficulties or take little to no leave to prevent financial burden (Families, 2013). In 2011, only 11% of private sector and 17% of public workers reported access to employer paid maternity leave. A mother staying home with their children is also usually not an option, as many families either require both parents to work to make ends meet, or the family is a single parent household. In 2011, 47.4% of families had two working parents, and 31.9% of households were headed by single parents (Glynn, 2012). Mothers in the U.S. who work full time outside the home have been shown to be significantly more likely to discontinue breastfeeding before 6 months, compared to those who do not work,

and even when compared to those who work part time, as illustrated in Figure 2 below showing data between 1984 and 2004 from Ryan's article on this topic from 2006 (Ryan, Zhou, & Arensberg, 2006).

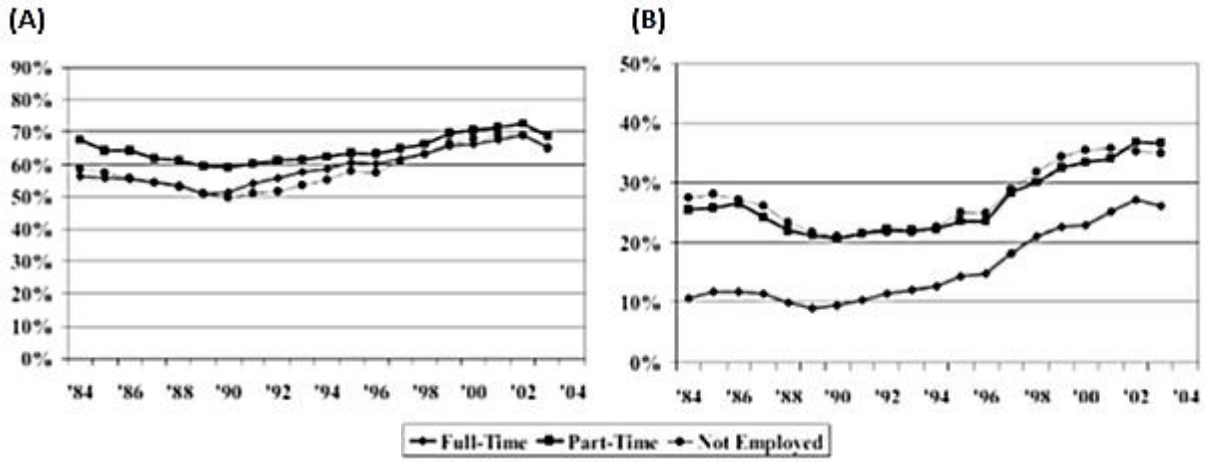


Figure 2: U.S. breastfeeding rates (a) In-hospital breastfeeding rates vs. (b) Breastfeeding at 6 months by employment status 1984-2003 (Ryan et al., 2006).

The best ways for workplaces to support a breastfeeding mother are to allow her ample time to establish breastfeeding and support her by providing facilities and breaks for lactation purposes. Additionally, having childcare options near the workplace that is affordable or even employer provided not only allows for a mother to more easily maintain direct breastfeeding, it also means potentially less time away from work for mothers.

Secondary Audience: Healthcare Educators, and Family members.

Audience Analysis.

Family members: The direct support a mother receives from her family and friends around her is a major factor in how successful she can be in starting and maintaining a breastfeeding relationship with her child. These people are also often involved in both the mother and child's care when away from the healthcare setting, and are the ideal secondary audience to

be involved for this communication strategy. The importance of supporting a mother in her goals to breastfeed her child and their support in helping her to achieve these goals is crucial. The family can be included in a strategy to make the breastfeeding relationship stronger, and be provided with tips on helping her have an easy transition into breastfeeding, with tools that can be used in a quick and effective way (such as helping around the house, offering to help with other aspects of childcare, providing meals or providing company while the mother learns to care for her child in a way that works best for the family.

Healthcare educators: Hospitals, doctor visits, community support groups, and other healthcare settings are ideal settings for teaching and supporting the establishment of a healthy breastfeeding relationship. Healthcare professionals have an opportunity to supplement the health and wellness of their patients by making sure their patients are adequately supported in their attempts at breastfeeding their child. As breastfeeding role models, educators can be key in overcoming barriers a new mother might face and provide an easily accessible source of support when their family support is not enough to overcome the barriers they might face.

While the healthcare setting can often be rushed and overburdened, the benefits of assuring that their patients have the support and information needed to help them breastfeed are essential, and usually can be addressed effectively to potentially avoid later health problems. Messages directed at healthcare providers must aim to instruct mothers on breastfeeding successfully, so they feel confident in their independent breastfeeding skills, and to instruct family members to know the right kind of support to provide. These educators need to be able to address different kinds of populations (languages, income levels, living and working situations, cultural differences, different levels of family support, and ethnicities). Most importantly, educators need to be well trained in best practices in overcoming potential problems mothers

might face in maintaining their breastfeeding without providing vague or inaccurate advice (such as unnecessary formula supplementation or incorrect assessment of the reasons she cannot breastfeed her child).

Cultural Considerations. In any intervention strategy, there is a significant influence on the primary audience by others. The biggest influence that can be targeted in this strategy are the secondary audiences of their surrounding family members (sometimes inclusive of close friends or neighbors), and the healthcare educators which could involve medical providers or community support groups. These populations should be targeted by the campaign in order to promote the effective implementation of the educational intervention. Since the effect of influence of their support system can be a major determination of whether a child is ever breastfed, or if they breastfeed for an extended time, they are likely to be affected by education and advice from both of these sources.

Family members. Family can help a mother form successful breastfeeding habits by allowing her the flexibility to feed their child on demand, by supporting her efforts to breastfeed, by helping reduce the stress of other responsibilities while a routine is established, and by learning easy but effective ways to help the mother feel supported and comfortable while learning to breastfeed. The collection and understanding of the family audiences is necessary. This can help tailor the campaign and communication strategy components. The audience analysis should include demographics, attitudes, beliefs, habits, knowledge, and cultural background.

The age of family members who will be supporting the new mother can be extremely variable, so this will necessitate a wide array of age-related methods (e.g. media use of information and communication for older family members would be most effective as print or

verbal educational materials, while younger populations may be more easily targeted through higher technologically advanced formats such as email, websites, text messages or even phone applications. Socioeconomic status among family members can play a pivotal role, not only due to factors affecting their relationship, amount of time spent with them, and the family structure and function. (Does the mother live with these family members, if not are they within close distance for daily support or is there significant car or air travel required, how connected are they with her in their relationship, and how receptive is the mother to their support of parenting and infant feeding methods). In addition, socioeconomic status affects access to types of educational media and its information (older individuals may not be technologically savvy or have the financial means to access a computer, text messaging or smart phone technology). Educational methods are also a significant component to design of an effective communication strategy because it is related to how family members can aid in helping their family member successfully breastfeed her child. Employment status is related to educational strategies as it affects how to target this population with an educational strategy, as it is unlikely family members may accompany the patient to all healthcare visits, and access to them may depend on phone, email, or communications distributed to them through the mother herself. Marital status will also play a significant role, as single parent versus married households will have a significantly different relationship and role in the mother's relationship with them.

The family's attitudes and beliefs regarding breastfeeding also affect the way they might support the mother who is trying to breastfeed. If the family member is less invested in assuring the mother as she breastfeeds, she could potentially be less supported and might be encouraged to stop trying and switch to an "easier" method of feeding with formula. In addition, if the mother is influenced by family because her mother only formula fed her children or if her other

family members do not have their own experiences breastfeeding for a variety of reasons, it can be difficult for her to know who to turn to for knowledgeable help in her support circle.

Healthcare educators. Mothers often turn to healthcare educators, for both their own health and the health of their child, and can therefore significantly influence the breastfeeding mother as an information authority figure. A knowledgeable healthcare provider can be essential to assure a mother has the necessary information in how to start and continue her breastfeeding relationship with her child. This is especially true if she has little to no family member support (single mothers, family members who live very distantly either geographically or relationship-wise who cannot provide regular support) and she encounters a problem that she cannot figure out how to overcome on her own.

For the same reasons information is needed about the family population, information is needed to understand the audience of the healthcare educators. Because educators have to follow the policies in place at the healthcare or community setting they are involved with, we will take into consideration the policies of these settings as well. This information includes demographic information (especially age), attitudes, beliefs, habits, knowledge, cultural background, and educational programs available.

Educator age can vary widely, from a young educator freshly graduated from their education, to an experienced physician who has their methods strictly in place, to a community breastfeeding education leader who has the personal experience of having their own children and many years of personal counseling experience with their community. Because of this wide age range, simple and widely used approaches to reach educators effectively must be utilized. Habits of educators are important, because they are the authority mothers rely on for help; their actions, words, and attitudes influence them. Educational programs of healthcare and community group

settings can be used to promote breastfeeding, therefore engaging both healthcare administrators and community leaders and individual educational departments could prove to be pivotal in establishing educator priorities in breastfeeding assistance.

Chapter 3: Health Communication Theories

Theoretical Framework

In developing this health education strategy, an ecological perspective can be used to evaluate levels of influence in the problem of women who start to breastfeed but are unable to continue until at least six months. Using a health communication and social marketing planning model (Shealy, Li, Benton-Davis, & Grummer-Strawn, 2005), an educational strategy will be developed that targets several different levels of influence, namely an individual, interpersonal, and community level (Glanz, 2005). The theories this strategy will focus on are the Health Belief Model (HBM) at an individual level, the Social Cognitive Theory at the interpersonal level, and the Diffusion of Innovation Theory on a community level. While the organizational and policy levels have a significant impact in breastfeeding as well, this communication strategy will not focus on those levels of the social ecological framework in order to have a more localized impact. A visualization of the levels of influence in breastfeeding can be seen in Figure 3, from Bentley, Dee and Jensen (Bentley, Dee, & Jensen, 2003).

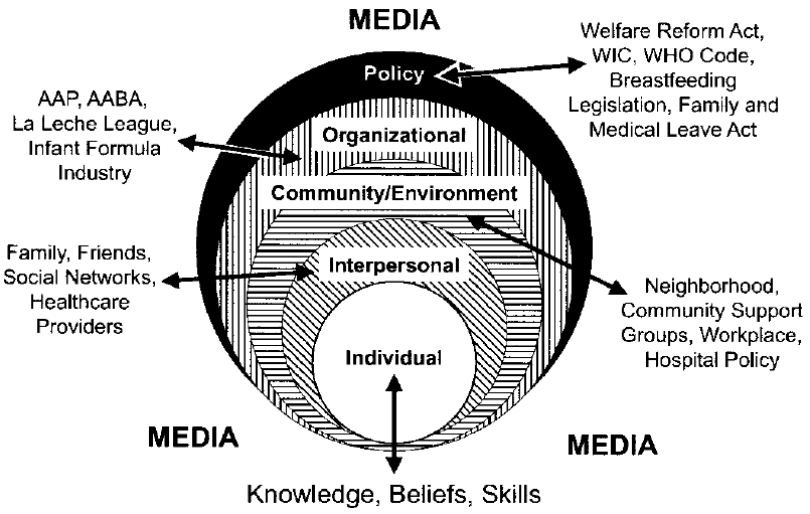


Figure 3: Social Ecological Framework of Breastfeeding (Bentley et al., 2003)

Individual level- Health Belief Model. Many mothers who want to breastfeed are identified, and many report that they begin breastfeeding their children, but after several months many find the issues they face cause them to stop, even when they had planned to breastfeed for longer. On an individual level, the Health Belief Model will be used to develop interventions to determine if any interventions could help these women continue their breastfeeding for a longer time (Glanz, 2005).

The Health Belief Model addresses several factors to influence a new behavior or change an existing one on an individual level. These factors address the individual's perception that they are at risk of a public health problem as well as their perception of how avoiding the public health problem is beneficial. There are six core concepts that are used by this model to influence the individual's decision making process, as shown in Table 1 below (Glanz, 2005).

-Perceived susceptibility. Education should be provided in both pre- and post-natal care to emphasize the importance of breastfeeding for both themselves and the child/children. Additionally, breastfeeding classes should be promoted during the prenatal period to best prepare a mother to be able to breastfeed, as well as to provide potential methods of overcoming barriers they might encounter before they may encounter them (tailored risk information).

Perceived severity. Some mothers may believe that because breastfeeding is a natural process, it will come easily to them without help, and when they encounter problems may identify them as personal failure when they just need guidance or support.

Concept	Definition	Potential Change Strategies
Perceived susceptibility	Beliefs about the chances of getting a condition	Define what population(s) are at risk and their levels of risk Tailor risk information based on an individual's characteristics or behaviors Help the individual develop an accurate perception of his or her own risk
Perceived severity	Beliefs about the seriousness of a condition and its consequences	Specify the consequences of a condition and recommended action
Perceived benefits	Beliefs about the effectiveness of taking action to reduce risk or seriousness	Explain how, where, and when to take action and what the potential positive result will be
Perceived barriers	Believes about the material and psychological costs of taking action	Offer reassurance, incentives, and assistance; correct misinformation
Cues to action	Factors that active "readiness to change"	Provide "how to" information, promote awareness, and employ reminder systems
Self-efficacy	Confidence in one's ability to take action	Provide training and guidance in performing action Use progressive goal setting Give verbal reinforcement Demonstrate desired behaviors

Table 1: Health Belief Model and Encouraging Mothers to Breastfeed (K. Glanz, Rimer, B.K., & National Cancer Institute, 2005)

Perceived barriers. Mothers should be encouraged that there are many options in overcoming barriers to breastfeeding, and with commitment, social support and the correct information most women find they are able to successfully breastfeed their child.

Cues to action. Support to the individual should provide information on how to breastfeed and overcome problems that they may be facing, promote awareness of resources available to them, and provide tools that can facilitate breastfeeding such as reminder systems.

Self-efficacy. With the support that is needed with training and guidance, the majority of mothers can breastfeed their children with confidence. Verbal reinforcement and encouragement is essential in supporting them as well as being around other mothers who are also breastfeeding can aid in self-efficacy.

Intrapersonal Level- Social Cognitive Theory. The environment and social climate that exists for breastfeeding mothers directly influences whether or not a woman will be able to breastfeed their child for the length of time they intend. For the interpersonal level of influence, the Social Cognitive Theory can be used to explain three factors that can influence successful breastfeeding, self-efficacy, goals, and outcome expectancies using the concepts shown in Table 2 below (Glanz, 2005).

Expectations. Healthcare providers can incorporate information on breastfeeding and how it can be beneficial. Families and others in the community can accept breastfeeding as a cultural norm and provide support and encouragement because breastfeeding is beneficial to the health of the community as well as the individual.

Concept	Definition	Application
Expectations	Individual's beliefs about likely results of actions.	Incorporate information about likely results of advised action.
Observational Learning	Individual's beliefs based on observing others like self and/or visible physical results of desired behavior.	Point out others' experience, physical changes; identify role models to emulate.
Behavioral Capability	Knowledge and skills needed to influence behavior.	Provide information and training about action.
Self-Efficacy	Confidence in ability to take action and persist in action.	Point out strengths; use persuasion and encouragement; approach behavior change in small steps.
Reciprocal Determinism	Behavior changes resulting from interaction between person and environment; change is bi-directional.	Involve the individual and relevant others; work to change the environment, if warranted.
Reinforcement	Responses to a person's behavior that increase or decrease the chances of recurrence.	Provide incentives, rewards, praise; encourage self-reward; decrease possibility of negative responses that deter positive changes.

Table 2: Social Cognitive Theory and Intrapersonal Means to Aid Mothers in Breastfeeding (K. Glanz, Rimer, B.K., & National Cancer Institute, 2005)

Observational Learning. When a mother sees others in the community such as family members and friends who are successful in extended breastfeeding, these are role models to emulate. Discovering others who faced challenges with breastfeeding and overcame them are also positive role models to observe.

Behavioral Capability. Finding the right support and information is essential in overcoming barriers to breastfeeding. Without the right guidance, the barriers can seem insurmountable and breastfeeding may be discontinued without need.

Self-Efficacy. Emphasis that any breastfeeding is beneficial can be used as encouragement. Even if supplementation by donor milk or formula must occur, small steps can lead to better success as time progresses.

Reciprocal Determinism. Finding ways to make breastfeeding easier for the mother can be very helpful in establishing breastfeeding, such as allowing mothers to room with the infants in the hospital, helping at home with responsibilities that take away from establishing breastfeeding (such as meal preparation and cleaning) by family and friends, and allowing ample time when returning to work to continue breastfeeding or pumping.

Reinforcement. Praise from family and friends, as well as healthcare providers, can reinforce the mother's persistence in breastfeeding. Facilitating acceptable breastfeeding in public (providing private areas or acceptable nursing in non-private areas) can decrease the possibilities of negative responses that could deter a mother trying to breastfeeding.

Community Level- Diffusion of Innovation Theory. At the community level, the "Diffusion of Innovation Theory" will be utilized to establish among the community of medical providers, hospitals, and the general public, the importance of helping women who experience problems breastfeeding, and that it is vital to maternal and infant health. Key concepts from this theory can be seen in Figure 4 below. Health educational interventions targeting this population will be vital in increasing levels of breastfeeding in the country, which ultimately benefits the general state of public health (Glanz, 2005).

Concept	Definition
Innovation	An idea, object, or practice that is thought to be new by an individual, organization, or community
Communication channels	The means of transmitting the new idea from one person to another
Social system	A group of individuals who together adopt the innovation
Time	How long it takes to adopt the innovation

Figure 4: Concepts in Diffusion of Innovations (K. Glanz, Rimer, B.K., & National Cancer Institute, 2005)

Innovation. Essential to the acceptance of a new education practice is an understanding how an innovation is better than existing methods of education. An innovation in breastfeeding targeting women experiencing complex (but very common) problems through online means at a community directed (hospital initiated) level would be a new route of targeting the patients who need the information in a way they are comfortable accepting it.

Communication channels. Electronic delivery of information is now a widely accepted method of patient education, and as most hospitals have existing websites, it would not be out of the realm of possibility to add additional content to target this audience.

Social system. Information on implementing the new methods could be spread between medical providers and hospitals very easily through conferences, webinars, emails, and direct marketing by organizations that look to support breastfeeding in the communities, such as Le Leche League, the Baby Friendly Hospital Initiative, and health departments.

Time. A reasonable timeline to fully adopt a new system for breastfeeding would be approximately five years from agreement to initiate the program to full implementation and buy-in from all stakeholders in the hospital organization, as information must spread from hospital

administration to staff, including content creators, online administrators, and medical providers to promote the system to their patients that are the target audience.

There are several factors that can affect the speed and extent of an innovation, as displayed in Figure 5 below. Each of these factors will be addressed in the context of breastfeeding education, and how this proposed strategy will be ideal for allowing the diffusion of the innovation.

Attribute	*Key Question*
Relative advantage	Is the innovation better than what it will replace?
Compatibility	Does the innovation fit with the intended audience?
Complexity	Is the innovation easy to use?
Trialability	Can the innovation be tried before making a decision to adopt?
Observability	Are the results of the innovation observable and easily measurable?

Figure 5: Key Attributes Affecting the Speed and Extent of an Innovation's Diffusion (K. Glanz, Rimer, B.K., & National Cancer Institute, 2005)

Relative advantage. The advantage to the proposed initiative would be the successful reach of those patients in need of an alternate means of receiving the targeted information in a method that provides simple and easy access to both local and online resources.

Compatibility. The innovation fits with the intended audiences because the population to be targeted may not have the means, time, or desire to be receptive to the information they need with today's busy lifestyle. However, Internet access is widely available and it is the source most widely turned to for information. Even those who do not have private Internet access in their own home, may access the Internet in publicly-available locations, such as their local libraryor coffee shop. Having the information easy to find on their hospital's website may be the best method of reaching the intended population.

Complexity. This innovation is very easy to use, as many in the target population are already very familiar with the use of computers, and finding information on the Internet. Having this resource would be beneficial as information would seem more credible coming from the hospital facility that they are already familiar and comfortable with.

Trialability. It would be very simple to introduce this new practice on a smaller population through focus groups, emailing the information to a small population, sharing the information with only a small amount of providers, and providing an ample opportunity to make any changes that might need to be made to better serve the population.

Observability. The results would be very easy to observe through both quantitative data (for example, percentage of breastfeeding in hospital, three months, six months and one year) and qualitative data (for example, a targeted online survey by users, focus groups among patients, focus groups among medical providers, and case studies).

Planning Model Theories

The theories to include in a breastfeeding planning model should address the audiences' potentially variable age and knowledge, attitude, and behavior, regarding technology, as well as differences in technology access, socio-economic backgrounds, culture, language, and geographical location, all of which will impact what will be the best method of information delivery. A mixed method approach to disseminate the message to both the primary and secondary audiences can be used, including both social marketing and media advocacy.

Social marketing impacts behavior change by promoting a health benefit using marketing techniques. An audience needs assessment is conducted using consumer research and market analysis. Product, price, place, and promotion (of health behavior change) are the four concepts involved in social marketing, otherwise known as "the four Ps" of marketing. The targeted health behavior (breastfeeding) and the benefits of the health behavior (for example, improved health of

mother and child) are the "products". The "price" refers to the barriers that exist, preventing the adoption of behavior change (encountering complex breastfeeding problems). "Place" in the setting of social marketing indicates accessibility and convenience (if the patient is not able to consult with a health professional or other source of reputable information to address their breastfeeding problems, they may discontinue breastfeeding prematurely). "Promotion" would be the process of communicating with the intended audience (in-person compared to phone or online information delivery) (Glanz, 2005).

Media advocacy involves community partnerships and media sources to raise awareness of health benefits and behaviors (Glanz, 2005). There are four key actions in this strategy: lobbying, public campaigning, media work, and capacity-building. Lobbying involves the identification of key stakeholders to be the target for communication and message promotion. Public campaigning will be used to engage community members and deliver the message. Media work will be used to raise awareness of the campaign and address preexisting attitudes towards the desired behavior change (you can do it, here's how). Lastly, capacity-building empowers the community to continue promoting the campaign and lead to successful change to achieve the program's goals.

Strategic Framework

In the proposed campaign, the strategic framework that will be used involves a public health education strategy known as "The Health Impact Pyramid". This framework for public health action is a "5-tier health impact pyramid", as illustrated in Figure 6. In this approach, addressing socioeconomic determinants are the foundation of creating impact on public health action, followed by interventions that change the context for health (such as providing easily accessible and accurate sources of breastfeeding help and resources), protective interventions

with long-term benefits (e.g. breastfeeding for a greater length of time), direct clinical care, and at the top, counseling and education (Frieden, 2010).

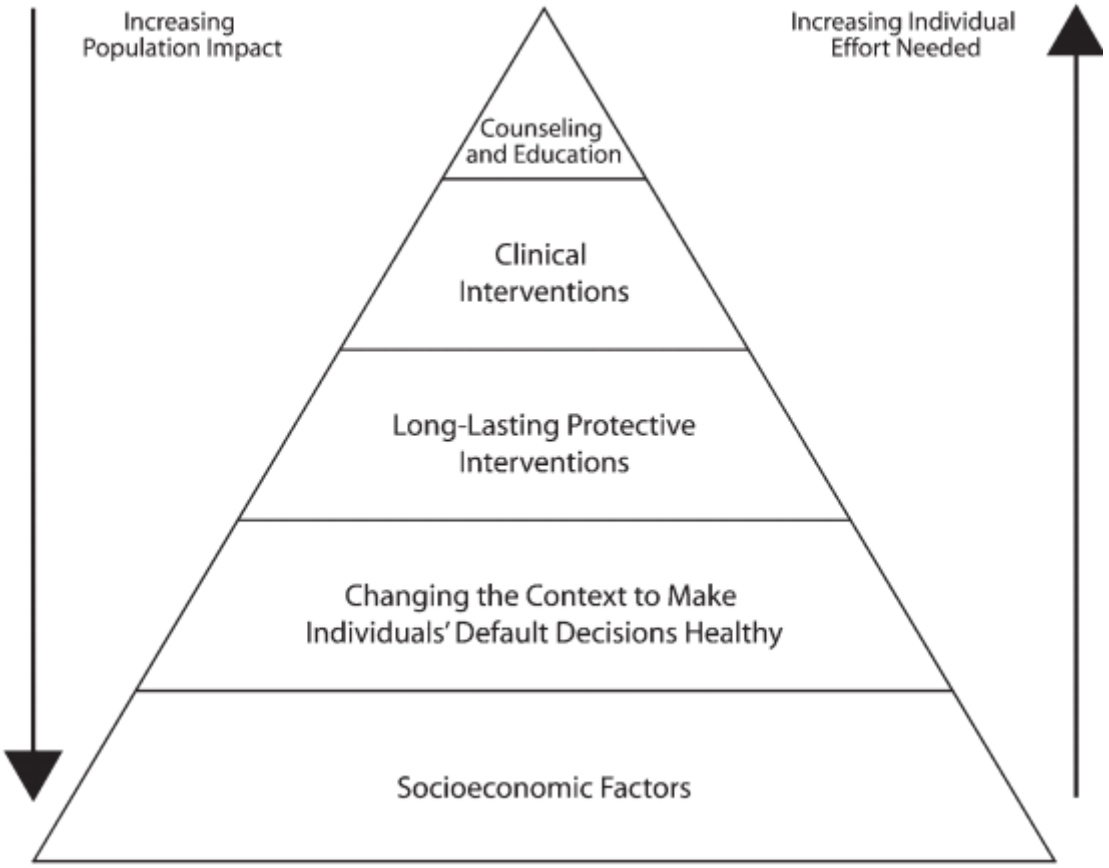


Figure 6: The health impact pyramid as described by Thomas R. Frieden in the American Journal of Public Health (Frieden, 2010).

In the proposed health education campaign, this framework is an ideal approach, as public action and interventions, represented by the base of the pyramid, will have the greatest public health impact and yet will require the least individual effort. Interventions at the top tiers are aimed at making an individual impact, and therefore will achieve only limited impact, unless the interventions become universally and effectively applied. Applications of this structural approach, as it relates to breastfeeding education campaigns, are illustrated in Table 3.

Approaches to Prevention	Breastfeeding Promotion Interventions
Counseling and educational interventions	Lactation consulting Breastfeeding education by medical providers, and breastfeeding support by hospital staff.
Clinical interventions	Addressing infant allergies and sensitivities. Addressing infant latch problems by lactation consultants. Diagnosis of infant or gastroesophageal reflux disease causing feeding issues. Diagnosis of maternal dysphoric milk ejection reflux (D-MER).
Long-lasting protective interventions	Limiting distribution of breast milk substitutes in hospitals and medical providers. Avoiding early pacifier use. Assured good maternal nutrition.
Changing the context	Breastfeeding friendly public facilities. Comfortable areas provided by facilities to nurse in private. Public acceptance of breastfeeding. Greater community support for mothers who chose to breastfeed. Better and easier to find access to accurate and consistent information on how to address barriers.
Socioeconomic factors	Reduced poverty, increased education levels. Guaranteed paid parental leave. Guaranteed breaks provided for expressing breastmilk during work hours. Better access to childcare. Better flexibility of appointment times for working mothers. All hours access to breastfeeding support.

Table 3: Structural Approaches to Health Promotion for Increasing Levels of Breastfeeding

The proposed online education campaign is aimed at addressing the tier of changing the context, as well as providing better and easier to find access to accurate and consistent information on

how to address barriers. It has been observed that individual behavior context changing interventions (tier 2) will provide the most effective public health actions (Frieden, 2010).

Planning Model Framework

The next step is to identify appropriate and effective channels of communication to key audiences. This message must not only be able to reach audiences effectively, but also have the ability to influence them to make behavioral changes. Channel selection must also take into account message delivery costs (both tangible and intangible), message creativity or inventiveness (branding must be able to intrigue the audience), and the appropriateness of the channel selected to meet breastfeeding objectives of the proposed campaign. Audiences key to this breastfeeding campaign have been identified as primary (breastfeeding mothers) and secondary (healthcare educators and family members). The two proposed strategies to be used for reaching both primary and secondary audience of this program will involve the use of social marketing and media advocacy.

Primary Audience.

A social marketing strategy applying "the 4 P's" (Product, Price, Place, and Promotion) will be used to influence the behaviors of breastfeeding mothers who encounter breastfeeding barriers (S. Chapman, 2010).

- The Product will be the success of continued breastfeeding after encountering breastfeeding problems and the peace of mind that comes from continued breastfeeding because the mother is able to provide the best nutrition available for the child (this product could be summarized by the branding slogan "breast is best").
- The Price to emphasize is the monetary and non-monetary costs associated with the behavior. For this breastfeeding intervention, price is a very important factor in

influencing behavior change, as appropriate educational intervention can lead to an easier time breastfeeding for the mother. Being able to breastfeed can potentially mean lower infant feeding costs for her family, as well as better mother and child health. If the "cost" of breastfeeding becomes too high because it is too difficult to overcome breastfeeding barriers the mother will not have the desire to continue breastfeeding and may discontinue out of frustration or inability to overcome the problems they encounter.

- Place refers to physical or the perceived potential access to the product, or where the behavior is performed. This represents the communication channels or messenger used to promote the product. This intervention seeks to utilize several communication channels to promote the product. Interpersonal communication and online educational materials will be the primary channels. Inclusion of other existing channels to promote the campaign could also be used to promote the message, such as inclusion in World Breastfeeding Week information, promotion by WHO or the CDC and inclusion in the Baby-Friendly Hospital Initiative (BFHI) campaign.
- Promotion is the persuasive communication to be used for influencing the desired behavior changes. It involves both the mass media and interpersonal messengers, and regards the persuading the audience that the desired behavior change (product) is possible or even easy (low price) and easily accessible (place it can be accessed).

Online educational materials will be implemented, linked to existing sources of health educational materials on hospital or other healthcare provider web portals. Support information will be included on these web portals including how to access local facilities (lactation consultants, pediatricians, obstetricians, nurse lines) and organizations (mothering support groups in the area, breastfeeding support phone lines, online help forums, ask a doctor and/or

lactation consultant information sessions). Medical providers and community organizations will be asked to promote the online educational material with the use of business cards, pamphlets, magnets, or promotional pens. Mothers should feel encouraged and supported without unreasonable pressure in their efforts to breastfeed by their community and medical providers, and be given consistent messages in support of overcoming the breastfeeding problems they may encounter.

Media advocacy will also be used to build public awareness, stimulating community concern, and mobilizing community resources among the primary audience of breastfeeding mothers. Social media would be a key messenger for this media advocacy, using the channels of hospital social media accounts, online and print community informational materials, and peer-to-peer information sharing such as creating short promotional videos, images, and/or flyers which could be shared between peers, social groups, message boards and email. Local television, radio and print media providers could be involved in the media promotion of the campaign as well.

Secondary Audiences.

The secondary audience of this campaign consists of family members and healthcare educators in the community implementing this strategy. A similar mix of social marketing and media advocacy will be used to change the social determinants of breastfeeding related to family, community and hospital settings. The media advocacy approach will provide the benefits of supporting mothers who attempt to breastfeed. Messages directed to this secondary population will persuade family members and healthcare educators to do whatever necessary to support these mothers in their breastfeeding attempts and make them aware of the family, community and overall societal impact of cost savings. Electronic communication, part of mainstream culture and promotion through social marketing and email campaigns, are an ideal media

advocacy target. Email addresses and social media accounts today are as ubiquitous as addresses and phone numbers in the past, and are a much faster, easier and cost-effective ways to facilitate the promotion of the campaign.

Family members. Family members are the first line of support for mothers trying to breastfeed. The support received from this audience is vital to the success of the breastfeeding relationship, and the message directed at families should match this role. As discussed in the secondary audience analysis, the determinants that affect families' beliefs and attitudes related to breastfeeding will be utilized to tailor the message, appropriate channels and vehicles of communication to families. Families that have similar characteristics, such as demographics, socioeconomic and educational levels are likely to have similar beliefs and attitudes towards breastfeeding, and messages can be catered toward each specific group of parents who exist in a community.

Messages should include a clear call to action and definable benefits for performing that action. Educational and informative messages and promotional information would be designed and delivered for appropriate media based on audience analysis. Families are often active on social media and are often reachable by email, or when they accompany mothers to medical appointments. Collaboration and support by a trusted and respectful expert (a medical provider, the CDC, the local health department or the hospital) would be necessary. This expert would be vital in drawing attention to the cause from a reputable source of information. For example, a healthcare provider can distribute printed information to the family on how best to support a breastfeeding mother, or a social media, email, or even a traditional mail campaign can be used to reach families in a local community to promote helping mothers breastfeed.

Healthcare educators. Healthcare providers and educators will be vital in the delivery of this campaign as they will be the authority of medical information to both breastfeeding mothers and often family members. Healthcare educators can use prenatal and postnatal visits to assure mothers are aware of the campaign by speaking about it directly, providing brochures or promotional materials, and in some cases, including information in their healthcare web information portal or other electronic avenues of patient education. They can also be key in making sure their colleagues and other members of the local community and organizations include the campaign during their interactions with breastfeeding mothers and their families.

Messages should include a clear call to action and definable benefits for performing that action. Healthcare educators will be encouraged to maintain consistency in instruction for mothers they encounter that require help when they have problems breastfeeding. A major concern that has been stated by many mothers has been a lack of information or inconsistency in the advice they sometimes receive from healthcare providers. Targeting hospital administrators for call to action, to increase breastfeeding support in the community, would be ideal as more and more hospitals strive to attain status of being a "Baby-Friendly Hospital". Including this message campaign could be an added component to an already proven successful health promotion movement internationally.

Chapter 4: Health Communication Message Strategy, Implementation and Monitoring

Health Communications Message Strategy

Creative Brief for Breastfeeding Promotion for Mothers Experiencing Complex Breastfeeding Barriers

Target Audience

Primary

- Value the health of themselves, their child and other family members, providing enough nutrition for their children, efficiency, maximum utilization of time and resources, self-reliance, self-respect.
- Aspirations: To provide their child with enough nutrition, to do all that is possible to keep their child (and themselves) healthy, to limit amounts of stress for themselves and the child.

Secondary

- Value the health of the mother and child, efficiency, maximum utilization of time and resources.
- Aspirations: To help maintain the health of mother and child, to provide support to the mother in caring for a new infant, to help the family adjust to caring for the baby, to limit stress experienced by the family.

Objectives

- Help mothers wanting to breastfeed overcome barriers they may face in the process.
- Provide researched and thorough information to mothers seeking information on complex breastfeeding problems they may potentially face without unnecessarily undermining their confidence in their personal abilities.
- Create a guide for mothers new to (or experienced with) breastfeeding that can allow them to address their breastfeeding barriers with an informed perspective to either provide self-help or to provide well informed information of what exactly they could ask for help from their family, community or medical support.
- Persuade family, friends, community members and medical professionals to help mothers experiencing difficulties with time and provide support in their attempts to overcome these barriers, making it a priority even amidst busy time and tight schedules.
- Help family and community recognize that helping mothers breastfeed their baby can boost child health in the vulnerable period of their life, which can contribute to maternal and family health, limit absenteeism, and ultimately benefit the state of public health in general.
- At the same time, deliver the message that some breastfeeding barriers are difficult or impossible to address, and formula feeding does not equate maternal failure because the child is still being fed adequately.

Barriers

- Overcoming breastfeeding problems can be a difficult, stressful, and frustrating process, and due to the lifestyle changes the family has already faced just having a new baby present can make it too difficult to spend time, money, and/or effort to overcome them.

- When mothers do not have an adequate support system, they may not have the freedom to pursue the solutions to some common barriers, even those that could be relatively easily addressed.
- If the information of how to overcome breastfeeding barriers is unavailable (either because it is difficult to find, other misleading information is given, or the mother does not know where to turn) the barriers cannot be addressed, especially if the source of breastfeeding complications is not realized correctly.
- Different populations or even individuals may have different challenges (language barriers, different values, different priorities and aspirations, medical conditions, medications, different life challenges that could inhibit breastfeeding in unexpected ways).

Key Message

- It is likely that I can overcome my breastfeeding barriers with the right information, persistence, and support.

Support Statements

- Barriers make establishing or maintaining breastfeeding challenging, but many women with problems like mine have found ways to exclusively breastfeed even with complex problems.
- Learning what breastfeeding barriers I face is the best way to start overcoming them.
- I may need to seek outside help to face these barriers, and if I do not find help with the first attempt, there are other resources I can turn to.
- Surrounding myself with supportive family, friends, and supportive community groups can help me overcome these difficulties.
- My breastfeeding problems may be difficult or impossible to overcome; if I am not able to breastfeed or I have to supplement breastfeeding, I should not feel guilt as I am still providing my child with the correct nutrition.

Tone

- Engaging, Empowering, Supportive, Encouraging, Credible, Informative

Communication Channels

- Informational websites, online or printable pamphlets, instructional videos, interactive online quizzes, online message boards, blog articles from local resources (doctors, lactation consultants, community lactation leaders, public health professionals), resource lists of local breastfeeding supportive professionals and community support groups.

Openings

- Pre- and post-natal OB visits, pediatrician visits, lactation consultant visits, hospital stay pre- and post-birth, links from websites of healthcare professionals and hospitals, in-person and online mother and breastfeeding support groups.

Creative Considerations

- Literacy, primary language and reading level must be population appropriate.
- Simple navigation, easy to read and understand.
- Must be encouraging, engaging, and informational without being critical or condescending.

Tailoring Existing Materials on Overcoming Breastfeeding Barriers and Establishing an Effective Breastfeeding Relationship

When designing educational materials, a comparison of advantages and disadvantages of developing new material versus tailoring existing materials should be conducted. There were many sources of information found for guidance on resolving issues related to breastfeeding in peer-reviewed literature, publicly available printed media, published books, and online sources. Consistency, accessibility, reliability, accuracy, and helpfulness are quite variable among these sources of information, although all have their share of useful information. By combining sources of information into a complete, useful, and easily accessible source of information, a more complete and useful educational source can be created and be made adaptable for various populations to be targeted. The cost, time, and other resources that would be required for developing new material cannot compete with the resources needed to compile and adapt existing material. The strategy recommended would be to tailor existing materials for this educational campaign.

Identifying Materials and Templates for Adaption

The following is a compilation of some of the existing reputable online breastfeeding education information sources widely available through publicly accessible sources. Those listed fit some of the desired breastfeeding instruction that would be useful in this online educational campaign. Each information source was evaluated for available features and analyzed for how the material may be improved. Specific focus on adaptation comments include how the content might be improved to better serve women who face complex problems.

Breastfeeding Educational Source: Office on Women's Health, U.S. Department of Health and Human Services. Breastfeeding. http://www.womenshealth.gov/breastfeeding/index.html (Last accessed October 2, 2015).

Features of the Content:

- Available in English and Spanish.
- Reputable information source: Government Agency for Women's Health.
- On main page, addresses both the benefits of breastfeeding and the emphasis that breastfeeding is a personal decision, and people should not be made to feel guilty if they cannot or choose not to do it.
- Q&A on importance of breastfeeding
- Q&A on learning breastfeeding
- Troubleshooting Section: "Common Breastfeeding Challenges": videos with breastfeeding advice, and common challenges with suggestions to overcome them.
- Pumping and breast milk storage information
- Q&A on breastfeeding and everyday life including nutrition, exercise, stress, and medication information.
- Available ePublications listed and available for download:
    - "Breastfeeding fact sheet" which is a Q&A list of commonly asked questions about breastfeeding.
    - "Your Guide to Breastfeeding", a 24 page paperback pamphlet published January 20, 2011. Easy to understand, well designed, thorough explanation including several articles including: the basics of breastfeeding including importance, finding support, and preparation, common challenges breastfeeding troubleshooting, and other tools a pregnant or nursing mother may find useful. Publications available branded "for all women," and "for African American Women," content the same except different pictures. Older versions from 2006

are available in Spanish, Chinese, and branded for "American Indian and Alaska Native Women".

    - Newest publication out of date by at least 4 years; stated that a new publication will be available in 2015 as of October 2015 which is almost the end of the year.

- Links to other resources:
    - "It's Only Natural" campaign targeted to African American populations. http://www.womenshealth.gov/itsonlynatural/?from=breastfeeding
    - "Supporting Nursing Moms at Work: Employer Solutions" http://www.womenshealth.gov/breastfeeding/employer-solutions/index.html
    - Many other reputable outside sources of information including the CDC, La Leche League and KellyMom.

Adaptation comments: Only four of the most common breastfeeding positions are suggested (cradle hold, cross-cradle hold, clutch or football hold, and side lying positions). Other holds such as "natural or laid back breastfeeding" and "straddle hold" instructions which can be useful should be included and especially suggested in the sections for breastfeeding a reflux baby as these positions may cause least discomfort for baby and mother. Listing other resources to turn to for troubleshooting problems would be beneficial. Key to the impact of this publication will be providers having the material available to their patients or providing the location of the publication on the Internet, as well as having it linked to the hospital/medical provider's website for health education. Timing of providing this essential information is key as well, mothers should receive it far before they are due to give birth to give ample time to read and prepare as suggested.

Information on the challenges section of the website, while potentially helpful, do not include certain suggestions that may help in facing breastfeeding challenges, such as facing multiple complex challenges at the same time, or potential causes of certain problems such as medical conditions or medications that may induce a low milk supply. This source of information is a valuable resource but may not provide enough of the answers that some women facing breastfeeding challenges may need, especially in vulnerable, underserved populations. This should be the main focus of adaptation and include elements of other educational resources to create an even better resource for breastfeeding mothers. Locally available resource information would also be a valuable addition to the information provided by medical staff.

Breastfeeding Educational Source: U.S. Department of Health and Human Services, healthfinder.gov: Breastfeed Your Baby: The Basics. *http://www.healthfinder.gov/HealthTopics/Category/pregnancy/getting-ready-for-your-baby/breastfeed-your-baby#the-basics_1* (Last accessed October 10, 2015).

Features of the Content:

- Available in English and Spanish.
- Reputable information source: Government Agency for Health and Human Services. Information stated to be adapted from materials from the Office on Women's Health and the Health Resources and Services Administration.
- Content kept reasonably up-to-date. "Content last updated on**:** July 10, 2015."
- Link provided to page on "learning to breastfeed", "pumping and breastmilk storage," "common breastfeeding challenges", and "breastfeeding and everyday life" from womenshealth.gov page, as well as a link to a page explaining a women's rights for breastfeeding at work (http://www.dol.gov/whd/regs/compliance/whdfs73.htm)

- Links provided explaining the kind of support for breastfeeding that is covered under the Affordable Care Act (https://www.healthcare.gov/coverage/breast-feeding-benefits/). Health insurance plans must provide breastfeeding support, counseling, and equipment. It must also cover the cost of buying or renting a breast pump. Also included is a link to other preventative services covered by the act (including vaccinations and contraceptives). The link also provided for WIC program information for governmental nutrition support for mother and infant (http://www.fns.usda.gov/wic/frequently-asked-questions-about-wic).
- List of answers to frequently asked breastfeeding questions, and tips on establishing breastfeeding such as frequency, using skin contact, and asking for help. Includes advice on consulting the baby's doctor or nurse about making sure the baby gets enough vitamin D.
- Link to an additional page from Healthfinder.gov on quick tips for eating healthy while breastfeeding.
- "Find More Resources" link provides a page with a series of links with more information on breastfeeding. All information sources are reputable, other governmental sources, La Leche League, or the International Lactation Consultant Association.

Adaptation comments: This educational site is very similar to the site from womenshealth.gov (which makes logical sense as the source is two departments of the same organization). The women's health site is more instructive, and this page references many of the same pages on that site, but the organization is a bit different and may work better in some situations as it has a more question/answer structure which some women may find more useful.

Explaining what type of contraceptive is recommended and safe to use for breastfeeding would be useful information to include so the patient may go to their healthcare provider with an educated request for breastfeeding. In the adaptation, it should be noted that while some hormonal contraceptives are safe during breastfeeding they may cause problems with milk production in some women (Bonyata, 2011a). Progestin only contraceptives are the most recommended as they are thought to have the least effect on milk production, although some anecdotal evidence has shown some women may have lactation effects with hormone containing IUD insertion (Center, 2011). The timing of hormonal contraception start has a significant impact on the duration of breastfeeding, and it is recommended to delay hormonal intrauterine device contraception use until 6-8 weeks postpartum (Chen, Reeves, Creinin, & Schwarz, 2011).

While the link to the healthfinder.gov page on quick tips for eating healthy while breastfeeding may be considered helpful, there was a link to a choosemyplate.gov breastfeeding page that was incorrect. Additionally, the page does not give potentially useful information on nutrition if a child has allergies, reflux problems or food sensitivities that could potentially be helped with a change in a mother's nutrition. The information from this page is also a bit old, last stated update was December 31, 2014.

In the "Find More Resources" section of the site, review dates listed are often several years old (2011-2013), which could lead to outdated information. The information in the links provided answer many questions but contain a lot of information for a new mother who is already overwhelmed may not be able to search through efficiently enough to troubleshoot the problems she is facing effectively. Literacy level of some of the provided links may also be above what is ideal for the general population. Additionally, some of the provided links no

longer work and should be updated because broken informational links are not helpful to a mother needing help and support.

***Breastfeeding Educational Source*:** Breastfeeding Positions for Newborns http://breastfeeding.support/breastfeeding-positions-for-newborns/ (Last accessed October 10, 2015).

Features of the Content:

- Website is a page maintained by an International Board Certified Lactation Consultant and mother, but is independent of any official organization.
- Excellent images and descriptions of a variety of breastfeeding positions. (Examples of this can be seen in Figure 7).
- Some images display breastfeeding with use of a supplemental nursing system.

Figure 7: Two positions featured and explained that are not covered in the healthfinder.gov information that could be very beneficial to mothers trying to breastfeed. Images from the article "Breastfeeding Positions for Newborns" (Pearson-Glaze, 2015).

Adaptation comments: The explanations and images depicting variations on breastfeeding holds will be useful for mothers who experience challenges in breastfeeding when other common positions are not working for their needs. The examples that show the use of supplemental nursing systems for feeding also help to normalize the use of these devices for encouraging a longer duration of breastfeeding and helping to increase milk supply. This page could be adapted to be included in a site similar to the womenshealth.gov page to include more options for breastfeeding positioning help to mothers of infants.

***Breastfeeding Educational Source*:** Attaching Your Baby at the Breast (video) http://globalhealthmedia.org/portfolio-items/attaching-your-baby-at-the-breast/?portfolioID=5623 (Last accessed October 10, 2015).

Features of the Content:

- Excellent information on the correct latch method for infants.
- Excellent visualization of why good latch position is necessary for the success of breastfeeding. See an image of this below in Figure 8.

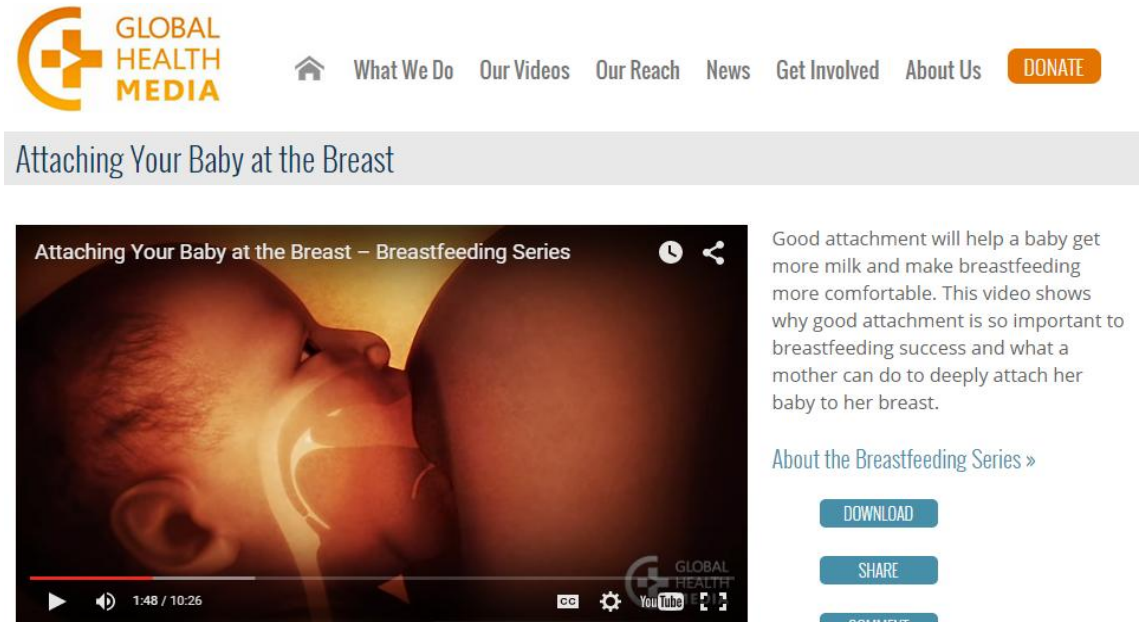


Figure 8: Screen capture of breastfeeding visualization from Global Health Media website.

- Culturally sensitive showing many different mother and child ethnicities and cultures.
- Clear representation of how to line up baby's ear, body and hips during breastfeeding.
- Good troubleshooting information on how the latch may be incorrect and could lead to less milk production from the breasts, and pain during breastfeeding.

Adaptation comments: A video with clear visualization such as this would be an excellent addition to an educational website on breastfeeding to allow mothers to find out why they may not be latching correctly, the impact of a good latch on the success of breastfeeding. Welcome additions would be including information on latching infants who are fussy (possibly because of reflux or other complications) in different positions in order to keep the infant more upright and comfortable during breastfeeding sessions as well as provide more comfort or flexibility to the mother.

Breastfeeding Educational Source: Amir, Lisa. Clinical Review: Managing common breastfeeding problems in the community. BMJ 2014;348:g2954 http://www.bmj.com/content/348/bmj.g2954 (Published 12 May 2014) (Amir, 2014)

Features of the Content:

- Found two most common problems encountered were nipple and breast pain and low (or perceived low) milk supply. As many women seek help from their healthcare provider, the article's purpose is to provide medical practitioners with solutions to manage common problems associated with breastfeeding. While this is aimed at practitioners, this information could be useful to provide to mothers as well so they can consult with their medical provider more effectively.

- Video that accompanies the article has an excellent demonstration of reclined breastfeeding, which can be helpful for women who have trouble with other breastfeeding positions.
- Focused on making the breastfeeding experience a comfortable one.
- Common causes of breast and nipple pain with management information included: mastitis, feeding problems, nipple damage, herpes simplex, dermatitis, fungal infection, and nipple vasospasm.
- Includes a section that has tips for good breastfeeding attachment, including "common pitfalls".
- Provides possible explanations to why women might have low milk supply and common management methods to address it. Causes can include insufficient glandular tissue, abnormal hormonal levels, and the failure to stimulate milk production effectively by regular removal of milk from the breasts. Key to establishing supply is early skin-to-skin contact between the mother and her baby, and early and regular milk expression maximizes milk production and the duration of exclusive breastfeeding (Amir, 2014).
- Information is provided about mothers using medicines while breastfeeding. Most are compatible with breastfeeding save for radioactive compounds and anticancer drugs, but the safety can be checked on websites dedicated to the topic such as LactMed.
- **Tips for non-specialists**: the success of breastfeeding is the responsibility of their health providers to help them achieve successful breastfeeding without the need to stop because of real or perceived low milk supply.
- Additional educational resources provided:

- *For **healthcare professionals***: links include LactMed, Academy of Breastfeeding Medicine, Royal Women's Hospital, Melbourne (clinical guidelines for breastfeeding problems), and resources on the safe use of drugs during pregnancy and breastfeeding.
- *For patients*: links include free websites that do not require registration such as websites with breastfeeding support articles and videos of real mother stories on their experiences with breastfeeding, common problems and how they overcame them, all from reputable sources of information.

Adaptation comments: Materials comparable to this article should be supplied to all medical professionals who interact with breastfeeding mothers. Additionally, more language appropriate materials covering this information should be easily accessible and easy to find for new mothers so they may more effectively ask for help when needed from their medical providers.

Breastfeeding Educational Source: Kelly Mom: Breastfeeding http://kellymom.com/category/bf/ (Last accessed October 10, 2015).

Features of the Content:

- Website containing a series of evidence-based breastfeeding and parenting articles compiled by a lactation consultant Kelly Bonyata, BS, IBCLC. Articles are copyrighted by the author and cannot be used without permission, but links to the site may be provided. Contains many articles with good, evidence based advice that could be referred to in link form potentially.
- For advice on real or perceived low milk supply:
    - Low Supply: http://kellymom.com/hot-topics/low-supply/ Page provides information on how to determine if milk supply is actually low and what signs do

NOT indicate low supply. Provides a link (http://kellymom.com/bf/got-milk/supply-worries/enough-milk/) to help determine if the infant is getting enough milk in the first six weeks. Explains who to contact when low supply is suspected (the child's doctor if the infant is not gaining enough) and potential causes of low supply to address.

- Calculating how much pumped milk an infant needs: http://kellymom.com/bf/pumpingmoms/pumping/milkcalc/ Contains a useful tool to calculate how much milk an exclusively breastfed baby need per feeding based on the estimated average amount received per day between 1 and 6 months.
- Tips pumping breastmilk and increasing the amount of breastmilk yields: http://kellymom.com/bf/got-milk/supply-worries/pumping_decrease/ Explains what is "normal" and gives advice on how to increase the amount during pumping times.
- Reverse Cycling: http://kellymom.com/bf/normal/reverse-cycling/ explains how some breastfed babies who are regularly separated from their mothers tend to breastfeed more when they are with their mother and drink less when they are separated.
- Growth Spurts: http://kellymom.com/hot-topics/growth-spurts/ Explains what a growth spurt is, how often they occur in the first year, and how to handle breastfeeding during these times.

- Contains advice for fussiness while breastfeeding:
  - Dealing with Fussy Babies: http://kellymom.com/parenting/parenting-faq/fussy-evening/ gives advice on how to handle a baby who fusses, especially in the

evenings and possible explanations why this behavior is common and completely normal.

  - Fussy while nursing: http://kellymom.com/hot-topics/fussy-while-nursing/ provides some explanation a tips on determining the cause of the infant being fussy during nursing and offers information or links to information on dealing with specific problems.

- Addressing Spitting Up & Reflux in the Breastfed Baby:
  - Spitting up, reflux and the breastfed baby http://kellymom.com/hot-topics/reflux/ explains the potential reasons behind spitting up in infants and how to determine if an infant spitting up should be cause for concern or just a normal occurrence in an otherwise healthy infant. The article also describes symptoms and advice for breastfeeding a child who experiences reflux (GERD). It also explains how to minimize spitting up if a child experiences reflux. It is noted that a significant amount of reflux cases in a year can be attributed to allergies, a large part of these being occurrences of cow's milk protein allergies in infants. Because of this, it is recommended that allergies should be suspected in all cases of reflux, and a link is provided to dealing with infants with a food sensitivity.
  - Dairy and other food sensitivities in the breastfed baby http://kellymom.com/health/baby-health/food-sensitivity/ goes into detail on determining if a food allergy or sensitivity exists in comparison to normal fussiness. Explains the most common food sensitivities and how to determine the offending food with an elimination diet for the mother. Because dairy sensitivity is the most common in breastfed infants, a section is devoted to distinguishing

between lactose intolerance and sensitivity to cow's milk proteins and what can be done if a cow's milk sensitivity exists.

- Tongue Tie Information
    - Breastfeeding a baby with tongue or lip tie: http://kellymom.com/health/baby-health/bfhelp-tonguetie/ this page does not specifically provide its own content of information on how to handle breastfeeding with a tongue or lip tie, but provides a diverse list of links of reputable information sources to learn more about the topic.
- Maternal Issues Information:
    - How does a mother's diet affect her milk?
        - http://kellymom.com/nutrition/mothers-diet/mom-diet/ explains the basic facts on maternal nutrition and how her eating can affect breastfeeding. Emphasizes that most foods do not need to be avoided completely while breastfeeding although certain foods should be eaten in moderation, and if a food sensitivity exists it may be helpful to limit or eliminate the allergens from her diet.
        - Frequently asked questions about specific foods: http://kellymom.com/nutrition/mothers-diet/mom-foods/ This page contains a list of common foods mothers are often concerned about eating while breastfeeding, and information is provided on why most if not all foods are safe to eat for the nursing mother (although some may be better eaten only in moderation such as caffeine or alcohol).

- Hypoplasia/Insufficient Glandular Tissue: http://kellymom.com/bf/got-milk/supply-worries/insufficient-glandular-tissue/ provides an explanation of what this disorder is, how to recognize it and why it might occur. Also describes how best to cope when not able to make enough milk or alternatives to breastfeeding such as supplementing and then breastfeeding or using a supplemental nursing system (SNS) to provide the closeness and breast stimulation for giving the child the amount of breastmilk that the mother can provide even if they are unable to exclusively breastfeed.

Adaptation comments: While this material is copyrighted and cannot be used unlike the governmental educational resources, the vast scope of materials covered is a good example of how to comprehensively address questions and breastfeeding challenges, and material with similar topic materials could be created, or direct links to this website's articles could be referred to for information (ideally with permission of the site creator).

Low supply: While the low supply resources are an excellent source of information, not much emphasis is placed on what happens if the common tips on overcoming insufficient supply do not help increase supply to needed levels. In some instances, a mother may not be able to overcome her supply issues or she may not have the time or resources to fully devote to addressing the breastfeeding barriers she is facing. The article seems to infer that it is always possible to increase milk supply, however in certain cases this may be very difficult and sometimes not possible for mothers to handle (such as a mother with health issues or an infant with jaundice or tongue tie). This should be addressed during adaptation of the information provided.

Fussiness: The information provided is very useful and should be helpful to new mothers but significant emphasis (on the entire website) is placed on not supplementing an infant with formula. However, while this can be useful advice, there are many mothers advised by healthcare providers to supplement their infants such as infants who are born premature, have lost more than 10% of their birth weight or infants who had to be kept in an intensive care unit (NICU) for a certain amount of time. It would be useful to provide more information directed to mothers in these situations.

Spitting up and Reflux: Information on dealing with complex issues would be beneficial to add for mothers dealing with several issues at once (such as facing low supply after an infant faced reflux problems and had many difficulties nursing).

Tongue/Lip Tie: It would be useful to provide some general information on what a tongue or lip tie can mean for breastfed infants, and what to do if an infant is suspected to have one (visiting a lactation consultant or possibly the child's pediatrician to verify suspicions would be the first step, as well as what the provider may suggest if they agree.)

Maternal Issues: Excellent information and resources are provided on maternal diet and information similar to this would be beneficial with targeted lactation educational material. The information provided on hypoplasia/insufficient glandular tissue is excellent and similar information should be provided to mothers attempting to nurse who have ruled out all other breastfeeding barriers, as some mothers are just not able to breastfeed as planned. Especially excellent is the list of characteristics found in mothers found to have lower milk output such as appearance of the breasts or the lack of changes in breast tissue during pregnancy or postpartum.

Breastfeeding Educational Source: Cho A, Kelsberg G, Safranek S. When should you treat tongue-tie in a newborn? Journal of Family Practice, 59(12) 2010: 712a-712b.

https://mospace.umsystem.edu/xmlui/bitstream/handle/10355/10320/WhenTreatTongueTie.pdf?sequence=1&isAllowed=y (Cho, Kelsberg, & Safranek, 2010).

Features of the Content:

- Peer-reviewed article on the treatment of tongue-tie in a newborn and how it can help with overcoming breastfeeding problems.
- Provides evidence-based answers on instances to treat tongue tie. While tongue tie in infants does not in-and-of-itself warrant treatment with surgical intervention, if breastfeeding problems exist, the surgery can help make breastfeeding easier (Cho et al., 2010).

Adaptation comments: In a more language-appropriate format, information on whether tongue tie should be addressed in a breastfeeding infant should be included among the information for mothers encountering breastfeeding difficulties, as many mothers are concerned whether their infant's feeding troubles are the result of anatomical problems if the infant has difficulties latching.

Breastfeeding Educational Source: Insulin resistance and lactation insufficiency: FAQ http://dianaibclc.com/2014/05/06/insulin-resistance-and-lactation-insufficiency-faq/ (Last accessed October 10, 2015).

Features of the Content:

- Well referenced article containing frequently asked questions about insulin resistance and lactation insufficiency and how they relate.
- Article written by a certified lactation consultant who specializes in the topic and has published a book on the topic as well.
- Describes the potential relationship of maternal BMI and delayed onset of lactation.

- Describes how to determine if you are insulin resistant, and the steps that can be taken if insulin resistance is suspected or diagnosed.
- Describes ways to address insulin resistance by eating a healthy diet and getting sufficient amounts of exercise which are the most recommended interventions for insulin resistance or pre-diabetes. Also describes two medications that may potentially be prescribed by a medical professional if a formal diagnosis is made.

Adaptation comments: Information similar to this may be useful to include as insulin resistance, pre-diabetes and diabetes are very common problems among the general population and may provide useful information to mothers to determine the source of their lactation problems and could be useful advice to mothers who the information applies to.

Breastfeeding Educational Source: Mothers Overcoming Breastfeeding Issues http://www.mobimotherhood.org/ (Last accessed October 10, 2015).

Features of the Content:

- Non-profit organization website with information specifically targeted to women facing problems overcoming breastfeeding issues.
- Website has information on many breastfeeding issues that a mother may face, and provides information on how to manage these challenges in a helpful, nonjudgmental and supportive manner.
- Website also has a connected breastfeeding support group, which could be useful for mothers who are facing problems could join and find support, especially if they are unable to find support in their local setting, cannot make in person support group meetings due to time or transportation, or have social anxiety and do not feel comfortable around people they do not know.

Adaptation comments: Having a targeted support group is an excellent idea for mothers facing complex breastfeeding challenges. Local hospitals or state health departments could include a portion of their breastfeeding education support for some variety of support group or message board for mothers to ask their peers for help, which could develop more local assistance outside of normal routes such as La Leche League or other mother's support groups which may not be ideal for all individuals.

Deciding on Changes to Make

- Decisions for changes and modifications will be guided by the objectives and the specific needs of the population being targeted. Changes will also take into account methods to address barriers. Providing instructions on locating locally available resources for the target populations is specifically recommended, as local resources may be the best source of breastfeeding help, and not all resources may be easily located by patients.
- One possibility is making a version of a "troubleshooting guide" for breastfeeding mothers so they can do a self-test of their breastfeeding problems so they may approach their healthcare providers from a well-informed position, or even find solutions to their breastfeeding barriers without the need to approach a professional if they are easily overcome through commonly known solutions.

Completing the Necessary Changes

- Modified materials combining materials from existing materials can be made by a creative team to suit the needs of the population to be addressed.

Pretesting the Adapted Materials

- To pretest the adapted materials, focus groups can be comprised of audiences recruited from a variety of sources such as birthing classes, healthcare provider conferences, or mother/

breastfeeding support groups. These focus groups will access the materials and provide feedback on the content, usability, and helpfulness. Any needed changes can be decided upon from this feedback. This is a cost effective and logistically optimal way to evaluate the message and format effectiveness.

Producing the Revised Materials

- After the pretesting of the materials, revised materials may be designed to incorporate results obtained from the focus groups. The materials can then be used for distribution according to the channels described in the next section.

Retesting

- Similar focus groups can be used to those in pretesting, comprised of audiences in birthing classes, healthcare providers, and mother/breastfeeding support groups. If possible, participants from the original focus groups could be recruited to determine if the changes have improved the material and how the changes are accepted, as well as any input from the group after they had an extended period away from the material to see if there was any material they would appreciate being included that was not in the original version. Again, the focus groups will access the materials and provide feedback on the content, usability, and helpfulness of the educational resources. Final changes can be made after the retesting, and further iterations can be made until a suitable version is reached.

Channel Matrix

- *Message Delivery Methods:* Brochures, business cards with educational website address, word of mouth, posters with links, email, links from hospital and clinic websites.
    - The educational website itself could include:
        - Informational websites,

        - Online or printable pamphlets,
        - Instructional videos,
        - Interactive online quizzes,
        - Online message boards or support groups,
        - Blog articles from local resources (doctors, lactation consultants, community lactation leaders, public health professionals),
        - Resource lists of local breastfeeding supportive professionals and community support groups,
        - Branding: “Give Breastfeeding Its Best Chance” or “Feeding Your New Child, a Guide to Help Troubleshoot Breastfeeding”
- *Message Delivery Locations:* Medical practitioner's direct contact with patients can be used to increase awareness of the location of the information online.
    - Brochures and/or business cards can be distributed to breastfeeding patients,
    - Posters can be made visible in offices (with links and potentially QRcodes for easy access with smartphones), patient rooms, hospitals, and other locations that new mothers might frequent such as retail locations and infant care centers.
- *Role of Partners*
    - To increase the amount of exclusive and overall breastfeeding in the community, breastfeeding educators should seek partnerships with potential funders and associations who have a vested interest in the promotion of breastfeeding to increase the health of their patients, community members, and overall public health. Due to the nature of the local support goals of the campaign, the range of partnerships can vary between corporate levels, community leaders and support

organizations, hospital and individual practice levels, as well as support of the child care giving communities especially in underserved and vulnerable populations. Identifying the right partners is critical for any educational campaign, and should be chosen carefully, especially with a sensitive audience that is difficult to effectively reach and target such as with maternal and child health.

- Corporate partners: Infant product manufacturers, maternity clothing stores, breast pump creators, parenting and motherhood magazines, maternity and child clothing stores, department stores carrying mother and child supplies can all provide the information to reach the educational website and also provide funding for its initial development and maintenance in exchange for a small mention of company endorsement for mutual benefit to the campaign and corporate partners.
- Community leaders and support organization partners: mother support groups, child activity groups, community health organizations and departments, and local libraries or other community centers can have the information available to their patrons as their purpose is to serve the needs of their community members and spreading this information would be beneficial to the community as a whole.
- Hospital level and individual practice partners: these partners can assure the information reaches the patients they serve and also assure that the information they are providing their patient directly is consistent with the information they find when using the online educational resources to avoid

confusion and mistrust of either medical providers or the educational resources themselves.

- Child caregiver partners: can be supportive of breastfeeding mothers in their goals to breastfeed their child even when they must be separated. Can provide the link to the educational resources to the mothers they interact with as well as be familiar themselves with the information in order to help the families they interact with maintain better health which will be beneficial for all parties involved.

Working with a variety of organizations is an essential component in developing a successful campaign. The noted partners could be essential in the promotion of helping more mothers who intend to breastfeed be successful in their attempts and allow them to find the assistance they need in a format that is the most available and convenient to them.

Implementation and Monitoring

Implementation and monitoring will be very variable depending on the needs of the individual campaign, geographical location, and cultural setting of the community for which it serves. Ideally, the campaign will emphasize maximum participation from breastfeeding mothers in the targeted community, as well as being flexible for changes that may need to be made and ease of training for the healthcare educators involved in the program. Effective communication between healthcare educators and medical professionals will be essential so as to give consistent patient education on how best to establish and maintain a breastfeeding relationship. Monitoring of the program will aid in this, key figures should schedule regular (monthly or bi-monthly in the beginning, and then every six months as appropriate) campaign tracking information meetings to

assure the program is producing the desired outcomes and to discuss any needed changes that need to be made to the individual program.

Produce and Disseminate

The dissemination plan for this campaign will also be very dependent on the location and audience of the local campaign, as well as the target audience of the dissemination plan depending on stakeholder buy in as appropriate for the community. The dissemination plan may involve the local government (community leaders or local departments of health, community facilities such as local libraries), non-governmental organizations (NGOs) such as hospitals, non-profit organizations, childcare facilities, and breastfeeding support groups, and the private sector such as local businesses, schools, and local employers, as well as local media can be involved with the development of the dissemination plan and should be coordinated appropriately.

Train trainers and field workers

Appropriate, timely, and consistent training should be provided to all trainers and the field workers who will be participating in the campaign. Training should be planned for all levels of individuals needing to be train. Training of trainers is first and foremost to this step, and assuring the provision of continued opportunities for more training. After this, the foundation of institutional capacity and teamwork both within the program of health educators and the partners involved such as hospitals and medical teams should be implemented to assure compliance of the implementation of the new educational campaign. Individual skill development is essential to the program, as field workers cannot effectively implement the program without knowing the vital skills involved such as basic healthcare educational concepts (checking for audience literacy level appropriateness, for example)

Mobilize key participants

Key participants should be fully aware of the information, results, and credit involved with the implementation of the program. If a component of the program needs to be changed due to new information or research becoming available, this should be shared with the partners, allies and communities who have a vested information in the new breastfeeding education program changes within the community. If the program causes the rates of breastfeeding in the target population to rise or fall, this is information important to share to maintain stakeholder interest and participation in the program.

Manage and monitor program

The program should be evaluated for the success or failure of the program outputs to ensure quality and consistency. Participation in the program should also be monitored, if a maximum target population is not utilizing the educational resources, the channels may need to be reevaluated for that particular community (if patients are not visiting the site after being referred to directly by their medical providers, perhaps an email campaign or community event could be used to better promote the information available). This can be monitored by tracking site statistics and direct feedback provided by individual users as well as anonymous surveys and focus groups. Outputs can also be monitored in general by observing any increases in the target population's breastfeeding success when compared to pre-program levels.

Adjust program based on monitoring

Any information obtained with the program monitoring can be used to alter the program as needed, which is one of the key benefits to a localized approach to this variety of educational campaign. Because each community is differently composed and has different needs, what works

for one community may not work for others. A rural community of Hispanic origin may be targeted very differently to an urban population of African American individuals, which can be vastly different to a community of Alaskan native populations and the variability within the communities can also require different needs depending on family status, socioeconomic level, language, and working status of mothers. Each program may be fine-tuned for the individual targeted population needed, and multiple approaches are also possible through online education and the sharing of resources and results between programs.

Chapter 5: Health Communication Evaluation Plan and Conclusions

Health Communication Evaluation Plan

After the implementation of the online educational program, an evaluation plan is essential to the overall success of the project. An evaluation of this program should effectively measure how effective the educational material is in helping mothers in their path to overcoming breastfeeding barriers, and ultimately increasing the overall success of mothers who intend to breastfeed. Not only should the evaluation measure whether the program is effective or not, it should also provide an explanation as to why the program is providing that outcome. Evaluation plans should also include what effects individual components (such as message delivery, articles, message boards, or interactive components of the educational program) have on different audiences (mothers, families, medical practitioners). In addition, the evaluation can measure the outcomes of the educational program during and after the implementation to determine if the program is providing measurable results. If the desired outcome of increased breastfeeding does not occur, the evaluation can help guide future program improvements.

Evaluation and Replanning

A sound program evaluation can stimulate beneficial program improvements and redesign. These changes could include clarifying a confusing article, reorganizing a component of the educational page to allow for easier understanding or adding new content from more up to date research or other evidence based findings. The program evaluation can also guide how to plan for how to plan for future funding allocation, and provide stakeholders with specific reporting to support advocacy of the program, and motivate potential participants in fundraising by showing positive program impacts.

A major component of any evaluation is program monitoring to assure that desired outcomes and impact are being achieved during the process. Monitoring will allow for the diagnosis of problems, and the correction of issues during program execution, or may even suggest a different approach entirely, if the program does not show the desired results that were intended.

Types of Evaluation

In order to provide a true picture of the impact of the project, it is proposed to include two types of evaluation, both an outcome and impact evaluation. The outcome evaluation will analyze the knowledge and attitudes of the target population and determine the knowledge-based benefits or shortcomings of program implementation. The impact evaluation will allow direct measurement of possible impacts on actual behaviors by measuring how the goals of the program are or are not achieved through the impact of awareness and education of both patients/families and practitioners. Additionally, if the evaluation demonstrates that knowledge and attitudes have a positive outcome through the evaluation of the program, yet the impact evaluation does not show positive behavioral results, other contributing factors can be examined. An example of how this could be used would be finding different approaches to overcoming certain breastfeeding barriers that are causing breastfeeding rates to remain low in a certain population (perhaps the community has a high rate of premature or very low birth rate infants and the solution may be greater access to professional lactation consultants in the post-natal period to improve outcomes rather than targeting an educational campaign). Examples of evaluation questions, data sources, possible collection methods, and the strengths and limitations of these methods are indicated for both outcome and impact evaluations in Table 4.

Evaluation Question	Data Source	Data Collection Method	Strengths/Limitations of Method
Outcome Evaluation			
What changes in breastfeeding awareness and knowledge did the mothers experience?	Mothers	Surveys (online) Interviews, Focus groups	Strengths: Multiple methods give more detailed data; Interactive component Limitations: Lack of participation (mother time is limited)
What changes in breastfeeding attitudes and beliefs did mothers experience?	Healthcare providers and educators, Family members	Surveys (online) Interviews, Focus groups	Similar as above
What changes in success of breastfeeding can be observed among new mothers in this population?	Healthcare providers and educators, Family members	Surveys (paper, online, phone) Interviews	Similar as above
How successful do you feel breastfeeding has been in your experience?	Mothers	Surveys (paper, online, phone) Interviews, focus groups	Similar as above
What changes in breastfeeding awareness and knowledge did the healthcare providers, educators, and family members experience?	Healthcare providers and educators, Family members	Surveys (paper, online, phone) Interviews, focus groups	Similar as above
What changes in breastfeeding attitudes and beliefs did healthcare providers, educators, and family members experience?	Healthcare providers and educators, Family members	Surveys (paper, online, phone) Interviews, focus groups	Similar as above
What messages were most relevant for increasing breastfeeding awareness and knowledge for mothers in this population?	Mothers, Healthcare providers and educators, Family members	Surveys (paper, online, phone) Interviews, focus groups	Similar as above
What messages were most relevant for motivating mothers to breastfeed in this population?	Mothers, Healthcare providers and educators, Family members	Surveys (paper, online, phone) Interviews, focus groups	Similar as above
What channels were most relevant for reaching breastfeeding mothers in this population?	Healthcare providers and educators	Surveys (paper, online, phone) Interviews, focus	Similar as above

Evaluation Question	Data Source	Data Collection Method	Strengths/Limitations of Method
		groups	
What channels were most relevant for reaching Healthcare providers and educators, Family members?	Mothers, Healthcare providers and educators, Family members	Surveys (paper, online, phone) Interviews, focus groups, Notes and checklists for observations	Similar as above
What are the barriers in reaching mothers in this population?	Mothers, Healthcare providers and educators, Family members	Surveys (paper, online, phone) Interviews, focus groups	Similar as above
What are the barriers in reaching Healthcare providers and educators, Family members in this population?	Mothers, Healthcare providers and educators, Family members	Surveys (paper, online, phone) Interviews, focus groups	Similar as above
Impact Evaluation			
Was there a change in amounts of successful initiation of breastfeeding in this population?	Hospital and provider records, Mothers direct report	Surveys (paper, online, phone) Hospital records	Similar as above, In addition, objective data from hospital records
Was there a change in amounts of successful continuation of breastfeeding at 3 months in this population?	Medical records, Mothers and families direct report	Surveys (paper, online, phone) patient records	Similar as above
Was there a change in amounts of successful continuation of breastfeeding at 6 months in this population?	Medical records, Mothers and families direct report	Surveys (paper, online, phone) patient records	Similar as above
Was there a change in amounts of successful continuation of breastfeeding at 1 year in this population?	Medical records, Mothers and families direct report	Surveys (paper, online, phone) patient records	Similar as above
Was the change in levels of successful breastfeeding in this population (observed or recorded) similar or bigger in the next year?	Healthcare providers and educators	Hospital and medical records, direct provider reporting	Similar as above, In addition, objective data from hospital records

Table 4: Evaluation Elements

Framework for Program Evaluation

- Baseline assessment: In the targeted population, a baseline assessment is critical for determining pre-program knowledge, attitudes, and behaviors, as well as existing experience with breastfeeding such as breastfeeding previous children, being among family or friends who have breastfed their children, and pre-existing conceptions (breastfeeding is too difficult, or if I cannot breastfeed, I must be doing something wrong, or my breastfeeding problems are too difficult to overcome easily). As this is an online educational strategy, the majority of evaluation data collection can be obtained through anonymous online surveys but an evaluation component can also be included in populations where focus groups, pen-and-paper or phone surveys are more reasonable (maybe in low income populations where Internet access is limited or patients are more at ease with phone or in-person assessments). Important data to collect will include:
    - Knowledge of the importance of breastfeeding
    - Type of support available to the breastfeeding mother, including family and friends, supplies such as pumps and lactation support, workplace or home flexibility to be able to breastfeed, and whether the mother will be going back to work during the breastfeeding stages.
    - Baseline breastfeeding levels of initiation as well as the population statistics of exclusive breastfeeding at 3 and 6 months and breastfeeding of any kind at 3, 6 and 12 months.
    - Costs (ability to devote time to establishing and maintaining breastfeeding, complications such as health problems or other situations, lack of support of either family or workplace to breastfeed their child, for examples).

- Interim assessment: Interim evaluation assessments are vital especially in early stages of program implementation to troubleshoot areas of education which need improvement or clarification, or areas that are not addressed when it is needed. In addition to evaluation of the same parameters at baseline, data collected can also include life changes that could affect the impacts or outcomes of the program, or any questions that the population would like to have covered that were not in program implementation.
- Monitoring: Monitoring the implementation of the planned campaign activities will be necessary to ensure that the messages are reaching their intended audiences. A well-designed monitoring system can provide information that can allow program reorientation and provide improvements needed to make the program more effective. This information can also include supplemental periodic user-surveys that can aid in gauging the reach of the program through the implemented communication channels. Audiences can report if the information from the program was received as intended and how helpful they found the education materials in their goals of overcoming breastfeeding barriers and their success in breastfeeding, as well as feedback from providers detailing how useful their patients found the educational program in their breastfeeding attempts, and if their patients were able to successfully continue to breastfeed. Although the outcome evaluation gauging knowledge of participants does not prove successful behavior change, it is a general indicator of progress.
- Logic Model for assessment: The figure below (Figure 9) is a general logic model that can be used for assessment for this program.

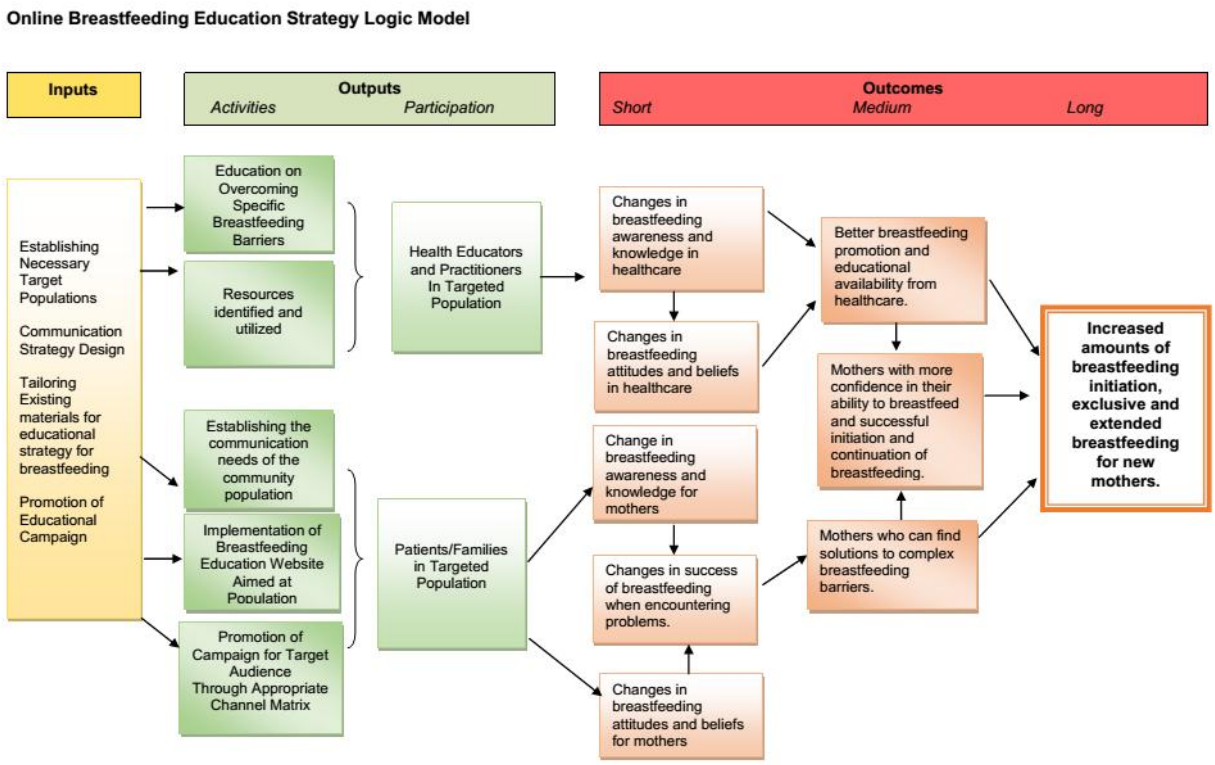


Figure 9: Online Breastfeeding Education Strategy Logic Model

Analysis of Data and Interpretation

Once evaluation data has been received, systematic analysis of the quantitative and qualitative data can be evaluated using appropriate statistical techniques and qualitative data analysis methods. Analysis methods can be customizable to the needs of the specific program depending on individual community goals and specific breastfeeding barrier targets (low income populations may have different needs than populations in a community of higher income, Spanish speaking, Hispanic immigrants, or that of Native American populations, and evaluations can be customizable to each individual population).

Data Dissemination

Once the evaluation has been gathered and interpreted, key stakeholders can be informed of the programs' impact and outcomes, whether they are in line with the program's goals or not.

Partners, allies, the media and funding agencies should also be included in the data dissemination, providing different formats of reporting that are appropriate for each audience.

Determine Future Needs

Following data dissemination, stakeholder input, and data from the analysis of the outcome and impact evaluations, will be used to improve the program's approach.

Revise/redesign program

Results of the evaluation process, as well as stakeholder, partners, and other relevant parties, can also be used as feedback for improving future iterations of educational campaigns for breastfeeding educational strategies.

Conclusions

This template provides a multi-faceted educational strategy, with the addition of a supplemental online educational component. This supplemental program is meant to add to, and not replace, existing breastfeeding promoting initiatives. Adding a comprehensive educational resource could be essential in improving extended breastfeeding outcomes for populations that need additional information outside of the care they receive from their providers. Overcoming breastfeeding barriers takes support from families, practitioners and community, and must be addressed using social ecologic perspectives. In line with this, educational resources must be easily accessible, thorough, easy to navigate and understand, and culturally and literacy level appropriate.

In this strategy, local resources are essential to success of the program. The program implementation is intended to provide patient knowledge and self-efficacy, and not to be used in place of expert advice. The strategy would be best suited in hospital settings so appropriate local contacts can be included. Local or state health departments might also consider utilizing this template and including appropriate sources for the community.

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