

Integrating Quality Improvement and Translational Research Models to Increase Exclusive Breastfeeding

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ABSTRACT

Exclusive breastfeeding (EBF), a perinatal core measure, is associated with a longer duration of breastfeeding. The purpose of this quality improvement project was to increase the percent of healthy term singleton newborns who were exclusively breastfed at an academic medical center in the Midwest. Implementation of skin-to-skin contact between mother and newborn immediately following birth resulted in an increase in the percent of healthy term singleton newborns who were EBF from 55% to 64%.

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The Institute for Healthcare Improvement's triple aim focuses on better care, better health, and lower costs (Berwick, Nolan, & Whittington, 2008). Breastfeeding is consistent with this triple aim as it is associated with numerous health benefits for mothers and infants, such as lower rates of infections, allergies, and diabetes for infants and less diabetes, arthritis, and certain types of cancers for mothers. It is estimated that as much as \$13 million per year could be saved if 90% of mothers breastfed exclusively for only 6 months (American Academy of Pediatrics [AAP], 2012). Although evidence-based practices for supporting breastfeeding have been in the literature for more than two decades, in 2009, only 3.5% of hospitals in the United States (Centers for Disease Control and Prevention [CDC], 2011) had implemented the 10 key practices for successful breastfeeding identified by the World Health Organization in 1991 (World Health Organization [WHO], 1998). Exclusive breastfeeding (EBF), giving the infant only breast milk and no other food or drink unless medically indicated during the birth hospital stay (WHO, 1998), is one of the key practices that have been supported by leading health care organizations for 20 years (AAP, 1997, 2012; WHO, 1998).

Recently, in the United States there have been two additional catalysts for change to increase EBF. The U.S. Department of Health and Human Services revised the Healthy People 2020 objectives to include reducing supplementation of breastfed infants in the hospital (U.S. Department of Health and Human Services, 2013) and The Joint Commission (2012) announced that effective 2014 exclusive breastfeeding would be one of five mandatory perinatal core measures for hospitals with 1100 or more births per year.

Researchers have examined the relationships among hospital practices and breastfeeding outcomes. The hospital practice of exclusive breastfeeding has been associated with two outcomes: increased duration of breastfeeding (Alikasifoğlu et al., 2001; Dabritz, Hinton, & Babb, 2010; Holmes, Auinger, & Howard, 2011; Moore, Anderson, Bergman, & Dowswell, 2012; Murray, Ricketts, & Dellaport, 2007; Tarrant et al., 2011) and mothers' achievement of their breastfeeding goals (DiGirolamo, Grummer-Strawn, & Fein, 2008; Perrine, Scanlon, Li, Odom, & Grummer-Strawn, 2012). The challenge for hospital administrators is to identify and implement practices that promote exclusive breastfeeding

Exclusive breastfeeding is one of the five mandatory perinatal core measures that became effective January 2014 for hospitals with 1100 or more births per year.

during the birth hospitalization. The practice of skin-to-skin contact (SSC) between mother and infant immediately after birth shows promise. In a study by Marin Gabriel et al. (2010), 84.7% of mothers and infants who had SSC at birth were exclusively breastfeeding at hospital discharge as compared to 70% of those who did not receive SSC at birth ($p = .01$). Mellin et al. (2012) compared the percentage of EBF before and after implementation of SSC at two hospitals and found significant increases in EBF in both settings. In another study, Bramson et al. (2010) found a dose-related response when comparing the odds of EBF in mothers and infants with SSC based on the duration of SSC in minutes. The odds ratio of EBF was 1.55 for women and infants with 1 to 15 minutes of SSC (95% confidence interval [CI]), 1.84 for women and infants who experienced SSC for 16 to 30 minutes (95% CI), 2.56 for women and infants who had 31 to 59 minutes of SSC (95% CI), and 2.96 for women and infants who had SSC for more than one hour after the infant's birth (95% CI).

The purpose of this quality improvement project was to increase the percent of newborns fed breast milk exclusively during the birth hospitalization. This project was conducted over a 12-month period from January through December 2013 at a large academic medical center in the Midwest.

Methods

Conceptual Framework

Clinical quality improvement efforts have benefited from integrating quality improvement methods with evidence-based practice models (Seidl & Newhouse, 2012). Levin et al. (2010) developed the evidence-based practice improvement (EBPI) model integrating an evidence-based practice model with the quality improvement methodology of Plan, Do, Check, Act (PDCA). Implementation research has led to models specific to dissemination of evidence-based practice; however, to date, there are no published models integrating quality improvement with this research methodology. For this project, literature was searched for a model integrating quality improvement methods with implementation research models. A Medline and CINAHL search was conducted using

key words *evidence-based practice nursing, quality improvement, and implementation research*. In addition, publications citing Seidl and Newhouse (2012) and Levin et al. (2010) were identified through SCOPUS, but they did not include any additional articles integrating quality improvement models with evidence-based practice or implementation research models than those previously cited.

The conceptual framework for this project was an integration of the Six Sigma Define, Measure, Analyze, Improve, and Control (DMAIC) quality improvement methodology (Snee, 2007) and Titler and Everett's (2001) translational research model (Figure 1). DMAIC is the quality improvement model for our organization. The Titler and Everett model is based upon Rogers' (2003) diffusion of innovation model and has been effectively applied to implementation of various evidence-based practices including management of acute pain in older hip fracture patients (Titler et al., 2009) and pressure ulcer prevention (Tschannen, Talsma, Gombert, & Mowry, 2011). According to the models, adoption of an innovation is influenced by characteristics of the innovation, methods of communicating the practice change, users of the innovation, and the social system in which it is to be implemented. The translational research model fits during the improvement phase of the DMAIC process.

Quality Improvement Team

The Institutional Review Board at the University of Nebraska Medical Center approved the quality improvement project and waived participant consent. The quality improvement team consisted of three stakeholder groups: the women's services quality committee, the women's services unit-based council, and the lactation consultants (LCs). Members of these groups included staff nurses, LCs, a nurse manager, an associate nurse manager, a nurse educator, a pediatrician, a neonatologist, a perinatologist, and a clinical quality coordinator. A modified Delphi approach was used to obtain input from these stakeholder groups without requiring a meeting specific to this project. The quality coordinator attended all group meetings and was the communication conduit and primary coordinator for this quality improvement project. The stakeholder groups worked through the DMAIC process to analyze factors associated with lack of exclusive breastfeeding at our hospital and to further identify, plan, and implement actions to improve exclusive breastfeeding outcomes.

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