Variations in Care for Breastfed Infants Admitted to US Children’s Hospitals: A Multicenter Survey of Inpatient Providers

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BACKGROUND: Studies have revealed an association between hospitalization of breastfed infants and weaning posthospitalization. It is unknown what steps inpatient providers at children’s hospitals are currently taking to support breastfeeding mothers of hospitalized infants, their comfort providing breastfeeding counseling, and what training they receive.

METHODS: We conducted a multicenter survey study of pediatric providers who care for infants hospitalized at 3 urban, tertiary-care children’s hospitals over a 12-month period. A convenience sample of nurses, residents, and attending physicians agreed to participate. Participants completed a 24-question questionnaire addressing provider practices, comfort with breastfeeding counseling, and previous breastfeeding education. Data were summarized as medians (interquartile ranges) and frequencies (percentages). Kruskal-Wallis and χ² tests were used to compare between provider types.

RESULTS: A total of 361 out of 1097 (33%) eligible providers completed the survey: 133 (21%) nurses, 166 (45%) residents, and 62 (63%) attending physicians. Provider practices varied by provider type. We observed a general trend that providers do not routinely review breastfeeding techniques, directly observe feeds, or use standardized breastfeeding assessment tools. Residents and attending physicians were more likely than nurses to feel comfortable with breastfeeding counseling (P = .02). Residents were more likely than nurses and attending physicians to have received breastfeeding education in the last 3 years (P < .001).

CONCLUSIONS: Practices, comfort, and previous education varied by provider type. There was a general pattern that providers do not routinely perform certain practices. Further studies are needed to determine if inpatient provider practices affect weaning posthospitalization and if inpatient quality improvement initiatives will help mothers continue breastfeeding posthospitalization.
There are many health and economic benefits to breastfeeding.12 Although these benefits are widely documented, women and infant dyads encounter barriers to breastfeeding both before and after breastfeeding has been established. These barriers include lack of knowledge, social norms, poor family and social support, lactation problems, employment, maternal or infant illness, and barriers to health services.3,4 Additionally, studies have shown an association between hospitalization of breastfed infants and weaning lactation problems, employment, maternal normative norms, poor family and social support, and previous breastfeeding education. These lactation problems, employment, maternal normative norms, poor family and social support, and previous breastfeeding education for nurses while their infants are hospitalized. It is known that a support system is needed for successful breastfeeding continuation. This support system ranges from a mother’s personal partner to health care providers.10–13 In 1 study, mothers 12 weeks postpartum were less likely to discontinue breastfeeding if their clinician encouraged continued breastfeeding.12 Additionally, the resources offered to mothers of hospitalized infants may influence maternal breastfeeding after discharge, especially when the mother is unable to place the child to the breast. In the NICU setting, resources such as breast pump availability, privacy to breastfeed, a place to store breast milk, and access to a lactation specialist14 play a role in continued breastfeeding after discharge.

It is not known what steps inpatient providers at children’s hospitals are currently taking to support breastfeeding mothers of hospitalized infants, whether they feel comfortable providing breastfeeding counseling to mothers who have questions or concerns, and what breastfeeding education they receive. Our purpose in this article is to describe and compare between provider types how medical providers support mothers of breastfed infants who are hospitalized subsequent to the birth hospitalization, provider comfort with breastfeeding counseling, and previous breastfeeding education. We hypothesized that there would be variability in provider comfort with breastfeeding counseling, services and resources for the breastfeeding mother, and previous breastfeeding education for providers.

METHODS

Study Design

We conducted a multicenter survey study of pediatric providers at 3 US children’s hospitals from January 2017 to December 2017. Institution 1 is a 142-bed children’s hospital located in the northeastern United States with 85 residents in its pediatric residency program and a birthing hospital with the Baby-Friendly designation. There are several pediatric inpatient floor nurses who are certified lactation consultants who, when available, will provide informal lactation support. Institution 2 is a 361-bed freestanding children’s hospital located in the western United States with 94 residents in its pediatric residency program. There is a lactation consultant available on request. Institution 3 is a 592-bed children’s hospital located in southcentral United States with 188 residents in its pediatric residency program and a birthing hospital with a Baby-Friendly designation. There is a lactation consultant available on request.

The institutional review board at each institution approved the study protocol. A written questionnaire (Supplemental Information) consisting of 24 questions was developed with questions modeled after the Infant Feeding Practices Study II15 and the Maternity Practices in Infant Nutrition and Care surveys.16 All questions were in a multiple-choice format. Providers were asked on a 5-point Likert scale how often they perform different practices associated with breastfeeding (ask about feeding preference, record feeding preference, offer breast pumps, review breastfeeding techniques, directly observe a feed, and use a standardized tool to assess breastfeeding effectiveness) with 0 being never and 4 being always. Providers were also asked on a 5-point Likert scale their agreement with the statement, “I feel comfortable providing breastfeeding counseling to my patients,” with 0 being strongly disagree and 4 being strongly agree. Additionally, providers were asked how many hours they spent receiving breastfeeding education in the last 3 years. Information about providers, including their length of time working at a children’s hospital, job title, and previous experience personally breastfeeding a child or having a partner breastfeed a child, was also collected. The survey was tested for readability by using the Flesch-Kincaid grade-level scale and was written on a ninth-grade reading level. The survey required ∼5 to 10 minutes to complete.

Statistical Analysis

Data were analyzed by using SPSS version 24 (IBM SPSS Statistics, IBM Corporation). Demographic information was presented as frequencies and percentages. Because the distributions of answers were non-normally distributed, Likert-scale questions pertaining to provider practices and comfort with breastfeeding counseling were summarized as medians and interquartile ranges (IQRs). For these variables, the Kruskal-Wallis test was used to compare between provider types. Responses to providers’ previous education were
physicians were less likely to offer breast
feeding preferences compared with
attending physicians were more likely to
review breastfeeding techniques with
breastfeeding mothers compared with
residents (P < .001). Nurses reported a
higher tendency of observing a feed
compared with residents and attending
physicians (P < .001). The median response
for all provider types was “never” when
asked if they use a standardized tool (eg,
latch, audible swallowing, type of nipple,
comfort, and hold (LATCH)) to assess
breastfeeding effectiveness.

Provider Comfort
The median (IQR) responses to the survey
questions on provider comfort with
breastfeeding counseling by provider type
are also presented in Table 2 along with
results of significance testing. Residents
and attending physicians were more likely
than nurses to agree with the statement,
“i feel comfortable providing breastfeeding
counseling” (P = .02).

Provider Education
Of the 361 respondents, 52 (42%) nurses
and 24 (39%) attending physicians reported
receiving no breastfeeding education in the
last 3 years compared with 160 (94%)
residents who responded that they had
received education. This difference was
statistically significant (P < .001).

DISCUSSION
In this multicenter survey study of
>300 providers at 3 US children’s hospitals,
we found significant variation in provider
breastfeeding practices, comfort, and
previous education by provider type.
Additionally, we observed a general pattern
across all provider types that certain
practices such as reviewing breastfeeding
techniques, directly observing feeds, and
using standardized tools to assess
breastfeeding effectiveness are not
routinely completed. The impact of these
practices on breastfeeding cessation
posthospitalization is unknown. However, it
is well documented that when breastfeeding
support is offered to women, the duration
and exclusivity of breastfeeding is
increased. Moreover, face-to-face
support has been shown to be beneficial
in women who are exclusively
breastfeeding.

The inpatient setting is an opportunity for
providers to offer face-to-face support. For
example, inpatient providers can be taught
to directly observe feeds and use
standardized breastfeeding assessment
tools. At the 3 institutions studied,
standardized breastfeeding assessment
tools are not routinely being used in the
inpatient setting and are not integrated into
the electronic medical records. This may
explain low reported use of these tools and
is an area for potential improvement. One
such tool that may be integrated into the
electronic medical record is the LATCH tool.
This tool was established to help identify
interventions needed for successful
breastfeeding and to facilitate a standard
way to chart. It has been shown to predict
duration and exclusivity. The LATCH tool

<table>
<thead>
<tr>
<th>Location</th>
<th>Nurses (N = 133, n (%))</th>
<th>Residents (N = 168, n (%))</th>
<th>Attending Physicians (N = 62, n (%))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital 1</td>
<td>60 (45)</td>
<td>78 (47)</td>
<td>11 (17)</td>
</tr>
<tr>
<td>Hospital 2</td>
<td>31 (23)</td>
<td>40 (24)</td>
<td>19 (31)</td>
</tr>
<tr>
<td>Hospital 3</td>
<td>42 (32)</td>
<td>48 (30)</td>
<td>32 (52)</td>
</tr>
<tr>
<td>Length of time working at a children’s hospital*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;1 y</td>
<td>8 (6)</td>
<td>57 (34)</td>
<td>3 (5)</td>
</tr>
<tr>
<td>1–4 y</td>
<td>46 (35)</td>
<td>108 (65)</td>
<td>20 (32)</td>
</tr>
<tr>
<td>&gt;5 y</td>
<td>79 (59)</td>
<td>0 (0)</td>
<td>39 (63)</td>
</tr>
<tr>
<td>Previous experience breastfeeding a child or having a partner breastfeed a child</td>
<td>58 (44)</td>
<td>12 (7)</td>
<td>36 (58)</td>
</tr>
</tbody>
</table>

* For residents, length of time working at a children’s hospital was <1 y for residents in their PGY 1 and 1 to 4 y for those in their PGY 2 to 3.
uses a 0 to 10 scoring system and looks at 5 domains: latch, audible swallowing, type of nipple, comfort, and hold, for which a practitioner gives 0 to 3 points in each domain. One study revealed improvement in LATCH scores when pediatric residents were taught how to counsel mothers using the LATCH tool. Further investigation is needed to determine if integrating a tool like LATCH into inpatient provider practices will have an impact on weaning posthospitalization.

The inpatient setting is also an opportunity for providers to be educated about breastfeeding. Studies in the outpatient setting have indicated that educating providers improves breastfeeding knowledge, practice patterns, and confidence in breastfeeding management and increases exclusive breastfeeding in their patients. In our study, previous breastfeeding education varied by provider type, with residents more likely than nurses and attending physicians to have received any breastfeeding education in the last 3 years. Residents who rotate through the newborn nursery, NICU, and outpatient continuity clinics are likely to have had some form of breastfeeding education in these settings. This is true especially for residency programs associated with Baby-Friendly birthing hospitals because training of health care professionals is 1 of the requirements for the Baby-Friendly designation. These reasons are likely why we saw a higher percentage of residents reporting breastfeeding education compared with the other provider types. Although maternity nurses at Baby-Friendly institutions are required to have a minimum of 15 hours of breastfeeding training and 5 hours of supervised clinical experience, the inpatient pediatric nurses at the 3 included institutions do not also work in the nursery, so they are not subject to this requirement. Interestingly, although residents reported receiving more breastfeeding education than nurses and attending physicians, they were less likely to record feeding preference, offer breast pumps, review breastfeeding techniques, and directly observe feeds. This finding suggests that breastfeeding education for residents may not be adequate to prepare them with the tools necessary to support breastfeeding mothers in the inpatient setting. Further studies are needed to explore the relationship between previous breastfeeding education and provider practices and to determine the optimal type and timing of breastfeeding training for inpatient providers (eg, online courses, in-person didactics, hands-on training, and supervised clinical experiences).

In our study, comfort with breastfeeding counseling also varied significantly by provider type. Notably, although nurses were more likely than physicians to report practices such as observing a feed and reviewing breastfeeding techniques, they were less likely to report feeling comfortable with breastfeeding counseling. The significance of this finding is unknown. Provider attitudes, culture, and personal experience with breastfeeding all influence how they counsel with regard to breastfeeding. Further investigation is needed to evaluate why some inpatient providers are more comfortable than others with breastfeeding counseling and its impact on breastfeeding mothers and their infants during hospitalization.

Until evidence-based practices to support breastfeeding in children's hospitals are developed and validated, the findings in this study, as well as clinical guidelines established in other environments, can be used as a starting point to inform clinical guidelines to support hospitalized breastfed infants. In the nursing literature, some protocols already exist for caring for hospitalized breastfed infants. In 2006, Spatz and Goldschmidt developed a nursing clinical pathway with the goal of "maintaining breastfeeding while returning the infant to a state of health." The protocol targets infants at high risk for breastfeeding failure and prompts nurses to follow a series of steps for obtaining a breastfeeding history and offering support. One of the benefits of this pathway is that it can be implemented by any trained bedside provider. The American Academy of Pediatrics and the Academy of Breastfeeding Medicine have also published guidelines to help promote and support breastfeeding during the first year of life in the outpatient setting. For example, the American Academy of Pediatrics recommends that pediatric practices provide appropriate educational resources to parents as well as community resources for breastfeeding mothers and their infants. Hospitals that care for infants may also have these resources available to support breastfeeding mothers and their infants during their hospitalization. Additionally, the Baby-Friendly Hospital Initiative is a model of how to successfully create a framework for hospital staff to support and promote breastfeeding. For example, having a written breastfeeding policy, 1 of the Ten Steps to Successful

### TABLE 2 Provider Practices and Comfort With Breastfeeding Counseling by Provider Type

<table>
<thead>
<tr>
<th>Question</th>
<th>Nurses (N = 133)</th>
<th>Residents (N = 166)</th>
<th>Attending Physicians (N = 62)</th>
<th>P</th>
</tr>
</thead>
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<tr>
<td>Ask about feeding preference</td>
<td>4.0 (4.0–4.0)</td>
<td>4.0 (3.0–4.0)</td>
<td>4.0 (4.0–4.0)</td>
<td>.32</td>
</tr>
<tr>
<td>Record feeding preference</td>
<td>4.0 (3.0–4.0)</td>
<td>3.0 (3.0–4.0)</td>
<td>4.0 (3.0–4.0)</td>
<td>.01</td>
</tr>
<tr>
<td>Offer breast pumps</td>
<td>4.0 (3.0–4.0)</td>
<td>2.0 (1.0–3.0)</td>
<td>3.5 (2.0–4.0)</td>
<td>.001</td>
</tr>
<tr>
<td>Review breastfeeding techniques</td>
<td>2.0 (1.0–3.0)</td>
<td>1.0 (1.0–2.0)</td>
<td>2.0 (1.0–2.0)</td>
<td>.001</td>
</tr>
<tr>
<td>Directly observe feed</td>
<td>2.0 (1.0–2.5)</td>
<td>1.0 (0.0–1.0)</td>
<td>1.0 (1.0–2.0)</td>
<td>.001</td>
</tr>
<tr>
<td>Use standardized tool (eg, LATCH)</td>
<td>0.0 (0.0–1.0)</td>
<td>0.0 (0.0–0.0)</td>
<td>0.0 (0.0–0.0)</td>
<td>—</td>
</tr>
<tr>
<td>Comfortable offering breastfeeding counseling</td>
<td>2.0 (1.0–3.0)</td>
<td>3.0 (2.0–3.0)</td>
<td>3.0 (2.0–3.0)</td>
<td>.02</td>
</tr>
</tbody>
</table>

Values presented are median (IQR). Scale: 0 (never) to 4 (always). —, not applicable.
Breastfeeding endorsed by the Baby-Friendly Hospital Initiative, is likely transferrable to caring for infants in children’s hospitals.

Our study had several limitations. We used a convenience sample of providers recruited at times when the investigators were available. Our capture rate was only 33% of eligible providers (21% of eligible nurses, 45% of eligible residents, and 63% of eligible attending physicians). This can bias our results because our sample may not be representative of the inpatient provider population. Residents were surveyed at different times throughout the year, which may have influenced their exposure to breastfeeding education and inpatient floor experience. Our questionnaire relied on provider memory of their practices and previous education, and we did not include a reference time frame for the recall (eg, the last 30 days). This can introduce recall bias if memory of breastfeeding practices and previous education varies systematically by provider type. Additionally, our questionnaire responses were self-reported. This may introduce social desirability bias in which respondents answer in a manner that will be viewed favorably by others rather than report actual behavior. We tried to minimize social desirability bias by using written paper surveys and not recording any identifying information. We did not use a validated questionnaire because we did not find 1 applicable to inpatient providers in children’s hospitals. However, some questions were modified from validated questionnaires used to survey mothers and birthing hospitals. Additionally, all 3 hospitals included in the analysis are urban, tertiary-care children’s hospitals. This may bias the results by not including providers who care for infants at primary or secondary facilities. At the institutions included in our study, nurses who work on the inpatient pediatric floors do not also work in the nursery. However, we understand that this may not be the case in all hospital settings, which may limit the generalizability of the results. We also did not ask about previous experience working in the nursery or NICU, so we could not assess whether this impacts comfort with breastfeeding counseling.

CONCLUSIONS
Provider practices, comfort with breastfeeding counseling, and previous breastfeeding education varied by provider type. Additionally, we found that providers do not routinely review breastfeeding techniques, directly observe feeds, or use standardized breastfeeding assessment tools. Further studies are needed to determine the impact of these practices on breastfeeding cessation posthospitalization and if quality improvement interventions focused on increasing provider use of these practices will help mothers continue to breastfeed after a hospitalization.

Acknowledgments
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