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

Risa E. Bochner, MD, a Robyn Kuroki, MD, b Karen Lui, MD, c Christopher J. Russell, MD, MS, d Elia Rackovsky, MD, e Laura Piper, MD, f Kathryn Ban, MD, f Katharine Yang, MD, g Purnima Mandal, MD, h Liza Mackintosh, MD, b Christine B. Mirzaian, MD, MPH, b Elissa Gross, DO, MPH

ABSTRACT

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 $\chi^2$ 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.

www.hospitalpediatrics.org
DOI: https://doi.org/10.1542/hpeds.2019-0199
Copyright © 2020 by the American Academy of Pediatrics
Address correspondence to Risa E. Bochner, MD, Department of Pediatrics, Kings County Hospital Center, 451 Clarkson Ave, B Building, Office B6104, Brooklyn, NY 11203. E-mail: risa.bochner@downstate.edu
HOSPITAL PEDIATRICS (ISSN Numbers: Print, 2154-1653; Online, 2154-1671).
FINANCIAL DISCLOSURE: The authors have indicated they have no financial relationships relevant to this article to disclose.
FUNDING: No external funding.

POTENTIAL CONFLICT OF INTEREST: The authors have indicated they have no potential conflicts of interest to disclose.

Dr Bochner conceptualized and designed the study, collected data, and drafted the initial manuscript; Dr Gross conceptualized and designed the study and collected data; Drs Kuroki and Lui coordinated and supervised data collection and collected data; Drs Rackovsky, Piper, Ban, Yang, Mandal, Mackintosh, and Mirzaian collected data; Dr Russell conducted the statistical analysis; and all authors reviewed and revised the manuscript, approved the final manuscript as submitted, and agree to be accountable for all aspects of the work.
There are many health and economic benefits to breastfeeding. 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. Additionally, studies have shown an association between hospitalization of breastfed infants and weaning. Posthospitalization may be because of a real or perceived lack of support from medical providers 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. In 1 study, mothers 12 weeks postpartum were less likely to discontinue breastfeeding as well as result in a lower milk supply. Another reason for weaning posthospitalization may be because of a real or perceived lack of support from medical providers while their infants are hospitalized. It is known that various stressors can lead to early cessation of breastfeeding as well as result in a lower milk supply. Another reason for weaning posthospitalization may be because of a real or perceived lack of support from medical providers 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. In 1 study, mothers 12 weeks postpartum were less likely to discontinue breastfeeding if their clinician encouraged continued breastfeeding. 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 specialist 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 582-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 convenience sample of pediatric nurses, residents, and inpatient attending pediatricians who provide care to infants subsequent to their birth hospitalizations were eligible to participate. Providers were identified by discussion with the charge nurses, residency program supervisors, and pediatric hospitalist or general pediatric division representatives at each institution. Potential participants were approached by study investigators when study personnel were available and consented to complete the survey. Providers were excluded if they were temporarily rotating on the units and self-excluded if they did not take care of infants <1 year of age. Once consented, providers were asked to answer 24 questions on a paper survey.

Measures
A written questionnaire (Supplemental Information) consisting of 24 questions was developed with questions modeled after the Infant Feeding Practices Study II and the Maternity Practices in Infant Nutrition and Care surveys. 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 nonnormally 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 pumps to breastfeeding mothers when compared with both nurses and attending physicians (P < .001). Attending physicians and nurses 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.

**RESULTS**

**Demographics of Survey Participants**

Out of 1097 eligible providers, 361 (33%) providers (133 nurses, 166 residents, and 62 pediatric attending physicians) consented and completed the survey. These participants represent 21% of eligible attending providers. All providers who were approached agreed to participate in the study. Of 361 respondents, 119 (33%) had >5 years of experience working at a children’s hospital, and 106 (42%) reported that they or a partner have breastfed a child (Table 1). Approximately one-third of resident participants came from each postgraduate year (PGY) (53 [34%] PGY 1; 54 [35%] PGY 2; 46 [30%] PGY 3).

**Breastfeeding Practices**

The median (IQR) responses to the survey questions on provider practices by provider type are presented in Table 2 along with results of significance testing. Providers “always” ask their patients about feeding preference, and this did not vary by provider type (P = .32). Nurses and attending physicians were more likely to record feeding preferences compared with residents (P = .01). Similarly, resident physicians were less likely to offer breast pumps to breastfeeding mothers when compared with both nurses and attending physicians (P < .001). Attending physicians and nurses 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 1** Hospital and Provider Demographics

<table>
<thead>
<tr>
<th>Location</th>
<th>Nurses (N = 133), n (%)</th>
<th>Residents (N = 166), 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 (65)</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.19 One study revealed improvement in LATCH scores when pediatric residents were taught how to counsel mothers using the LATCH tool.20 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.21 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.22 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,23 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.22 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 Goldschmidt24 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.25,26 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.26 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 Initiative27 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>
<tbody>
<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

We thank the providers at Children's Hospital at Montefiore, Children's Hospital Los Angeles, and Texas Children's Hospital for their participation in the study.

REFERENCES


15. Centers for Disease Control and Prevention. Questionnaires: breastfeeding and infant feeding practices: Infant Feeding Practices Study II and its year six follow-up. Available at:


27. Baby-Friendly USA. Baby-Friendly USA. Available at: https://www.babyfriendlyusa.org/. Accessed May 28, 2018

Variations in Care for Breastfed Infants Admitted to US Children's Hospitals: A Multicenter Survey of Inpatient Providers
Risa E. Bochner, Robyn Kuroki, Karen Lui, Christopher J. Russell, Elia Rackovsky, Laura Piper, Kathryn Ban, Katharine Yang, Purnima Mandal, Liza Mackintosh, Christine B. Mirzaian and Elissa Gross

*Hospital Pediatrics* originally published online December 11, 2019;

<table>
<thead>
<tr>
<th>Updated Information &amp; Services</th>
<th>including high resolution figures, can be found at: <a href="http://hosppeds.aappublications.org/content/early/2019/12/09/hpeds.2019-0199">http://hosppeds.aappublications.org/content/early/2019/12/09/hpeds.2019-0199</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplementary Material</td>
<td>Supplementary material can be found at: <a href="http://hosppeds.aappublications.org/content/suppl/2019/12/09/hpeds.2019-0199.DCSupplemental">http://hosppeds.aappublications.org/content/suppl/2019/12/09/hpeds.2019-0199.DCSupplemental</a></td>
</tr>
<tr>
<td>References</td>
<td>This article cites 19 articles, 5 of which you can access for free at: <a href="http://hosppeds.aappublications.org/content/early/2019/12/09/hpeds.2019-0199#BIBL">http://hosppeds.aappublications.org/content/early/2019/12/09/hpeds.2019-0199#BIBL</a></td>
</tr>
<tr>
<td>Subspecialty Collections</td>
<td>This article, along with others on similar topics, appears in the following collection(s): Breastfeeding <a href="http://www.hosppeds.aappublications.org/cgi/collection/breastfeeding_sub">http://www.hosppeds.aappublications.org/cgi/collection/breastfeeding_sub</a> Hospital Medicine <a href="http://www.hosppeds.aappublications.org/cgi/collection/hospital_medicine_sub">http://www.hosppeds.aappublications.org/cgi/collection/hospital_medicine_sub</a> Nutrition <a href="http://www.hosppeds.aappublications.org/cgi/collection/nutrition_sub">http://www.hosppeds.aappublications.org/cgi/collection/nutrition_sub</a></td>
</tr>
<tr>
<td>Permissions &amp; Licensing</td>
<td>Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at: <a href="http://hosppeds.aappublications.org/site/misc/Permissions.xhtml">http://hosppeds.aappublications.org/site/misc/Permissions.xhtml</a></td>
</tr>
<tr>
<td>Reprints</td>
<td>Information about ordering reprints can be found online: <a href="http://www.hosppeds.aappublications.org/site/misc/reprints.xhtml">http://www.hosppeds.aappublications.org/site/misc/reprints.xhtml</a></td>
</tr>
</tbody>
</table>
Variations in Care for Breastfed Infants Admitted to US Children's Hospitals: A Multicenter Survey of Inpatient Providers
Risa E. Bochner, Robyn Kuroki, Karen Lui, Christopher J. Russell, Elia Rackovsky, Laura Piper, Kathryn Ban, Katharine Yang, Purnima Mandal, Liza Mackintosh, Christine B. Mirzaian and Elissa Gross

*Hospital Pediatrics* originally published online December 11, 2019;

The online version of this article, along with updated information and services, is located on the World Wide Web at:

http://hosppeds.aappublications.org/content/early/2019/12/09/hpeds.2019-0199

Data Supplement at:

http://hosppeds.aappublications.org/content/suppl/2019/12/09/hpeds.2019-0199.DCSupplemental