RESEARCH ARTICLE

Adherence to AAP Healthy Newborn Discharge Criteria in a Tertiary Care Children's Hospital

Nonie S. Arora, BS,[a] Anne M. Danicek, BS,[b] Rachel R. Osborn, MD,[c] Sarah Q. Fried,[b] Olivia R. Negris, BS,[b] Karson Lychuk,[d] Kerry P. Mychaliska, MD,[c] Maria S. Skoczylas, MD,[c] Kimberly K. Monroe, MD, MS[c]

ABSTRACT

OBJECTIVES: In 2015, the American Academy of Pediatrics (AAP) published an updated consensus statement containing 17 discharge recommendations for healthy term newborn infants. In this study, we identify whether the AAP criteria were met before discharge at a tertiary care academic children's hospital.

METHODS: A stratified random sample of charts from newborns who were discharged between June 1, 2015, and May 31, 2016, was reviewed. Of the 531 charts reviewed, 433 were included in the study. A review of each chart was performed, and data were collected.

RESULTS: Descriptive statistics for our study population ($N = 433$) revealed that all 17 criteria were followed <5% of the time. The following criteria were met 100% of the time: clinical course and physical examination, postcircumcision bleeding, availability of family members or health care providers to address follow-up concerns, anticipatory guidance, first appointment with the physician scheduled or parents knowing how to do so, pulse oximetry screening, and hearing screening. These criteria were met at least 95% to 99% of the time: appropriate vital signs, regular void and stool frequency, appropriate jaundice and sepsis management, and metabolic screening. The following criteria were met 50% to 95% of the time: maternal serologies, hepatitis B vaccination, and social risk factor assessment. Four of the criteria were met <50% of the time: feeding assessment, maternal vaccination, follow-up timing for newborns discharged at <48 hours of life, and car safety-seat assessment.

CONCLUSIONS: Our data reveal that the AAP healthy term newborn discharge recommendations are not consistently followed in our institution.

[a]University of Michigan Medical School and [b]College of Literature, Science, and the Arts, University of Michigan, Ann Arbor, Michigan; [c]Department of Pediatrics and Communicable Diseases, Michigan Medicine, Ann Arbor, Michigan; and [d]College of Arts and Sciences, Loyola University Chicago, Chicago, Illinois

www.hospitalpediatrics.org
DOI:https://doi.org/10.1542/hpeds.2018-0061

Address correspondence to Kimberly K. Monroe, MD, MS, Department of Pediatrics, C.S. Mott Children's Hospital, 1540 E. Medical Center Dr, Ann Arbor, MI 48109. E-mail: monroek@med.umich.edu

HOSPITAL PEDIATRICS (ISSN Numbers: Print, 2154-1663; 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.

Ms Arora created the study concept and design, created a data collection plan, retrieved data, performed the data analysis, wrote the first version of the manuscript, and executed all manuscript edits; Ms Danicek, Ms Fried, Ms Negris, and Ms Lychuk retrieved data, contributed to data analysis, and all manuscript revisions; Dr Mychaliska created the study concept and design and contributed to the data analysis and all manuscript revisions; Dr Skoczylas contributed to study design, the data analysis, and all manuscript revisions; Dr Osborn contributed to manuscript revisions; Dr Monroe supervised all aspects of the study concept and design, the data collection and analysis, and first draft of the manuscript and all revisions; and all authors approved the final manuscript as submitted.

The newborn hospitalization provides health care providers with a critical opportunity to address both the health and social environment of neonates.[1] Serious medical issues frequently arise in the first few days of life, including jaundice, sepsis, and dehydration related to feeding difficulties. Inpatient well-newborn care has significant economic impact, accounting for the greatest portion of spending for children's health care in the United States.[2] In recent decades, the mean length of hospital stay for mothers and infants has decreased from ~4 days in 1970 to <48 hours for most vaginal deliveries.[1,3] Concurrently, increasing medical and technological advancements have added to both the number and complexity of tasks that the health care team addresses during the birth hospitalization.[4–6] Newborns who are discharged within 48 hours of life have been shown to have significantly higher readmission rates,[3,7] and maternally reported lack of preparedness is associated with increased health care use and worse health outcomes in the first weeks after birth.[8] Potentially preventable conditions, including jaundice and feeding problems, were found to account for 75% of early newborn readmissions in a large health care system.[9]

Given the competing stressors of reduced length of stay combined with increasingly complex expectations around newborn discharges, The American Academy of Pediatrics (AAP) released a clinical guideline that recommends that 17 criteria be met before the discharge of a healthy term newborn (Fig 1).[4] To our knowledge, there are no data regarding local or national compliance with these recommendations. Our purpose in this study was to identify the rates of compliance with AAP-recommended discharge criteria for newborns at an tertiary care, academic children's hospital.

- Clinical status:
  - vital signs
  - voiding and/or stooling
  - bleeding at circumcision
  - jaundice
  - sepsis
- Feeding (2 successful feedings)
- Maternal risk factors:
  - maternal serologies
  - vaccinations
  - GBS status
- Newborn screening
  - metabolic
  - hearing
  - pulse oximetry
- Maternal confidence and knowledge
- Car seat safety
- Assessment of social risk factors
- Identification of a medical home
- Timely follow-up

FIGURE 1 AAP clinical guideline recommending 17 criteria be met before the discharge of a healthy term newborn.[4]

METHODS

Study Design

This was a cross-sectional, retrospective study conducted in a large labor and delivery unit with 50 beds at a tertiary medical center. A stratified random sample of 531 newborns who were discharged between June 1, 2015, and May 31, 2016, was identified by dividing calendar days into 2 groups (group 1: Monday through Friday; group 2: Saturday and Sunday) and subsequently selecting 30 weekdays from group 1 and 12 weekend days from group 2 with the use of a random number generator. All charts of newborns who were discharged on selected days from each group were reviewed and included in the study. Exclusion criteria included gestational age <37 weeks, a hospital stay ≥7 days, admission to the newborn ICU, and death during the newborn hospitalization. Sample size was identified by using Wilson confidence intervals (CIs) for proportions with finite population correction ($N = 4574$). Using a sample size of 531 ensured that the margin of error of a 95% CI was no more than 0.04. Demographic information was collected from the University of Michigan C.S. Mott Children's Hospital database for newborns who were delivered between June 2015 and May 2016. This study was granted institutional review board exemption.

Data Collection

To ensure reliability, an identical Excel data entry tool was used by all members of the study team. The tool was validated before the start of the study by having each study team member review the same 10 newborn charts and verifying the interrater reliability of responses.

All relevant data were obtained through review of the electronic medical record (EMR) in the following sections: newborn history and physical examination notes, laboratories, nursing flowsheets, procedure notes, physician flowsheets, lactation consultant notes and flowsheets, social work notes, maternal vaccination history, and discharge summary. Criteria were judged to be met or not met by using a binary approach, and proportions and CIs were reported. Additional information about failure to meet particular criteria were obtained and reported when possible. Criteria requiring medical assessment, including management of jaundice, perinatal hepatitis B virus transmission, newborns being at risk for intraamniotic infection (group B streptococcus [GBS] and chorioamnionitis), and clinical readiness for discharge, were assessed by a pediatric hospitalist. Management of jaundice was assessed by comparing care provided to recommendations from the 2004 AAP hyperbilirubinemia guidelines by using Bilitool.[10] Management of newborns who were born to GBS-positive mothers or mothers with unknown status, hepatitis B vaccination, and immunoglobulin administration were compared with

recommendations in the AAP *Red Book*[11] for GBS and hepatitis B management.[12] For chorioamnionitis, care was compared with our internal clinical practice guidelines, which consisted of a blood culture, initiating ampicillin and/or gentamicin, and observation for 36 hours. The verification that family education was accomplished before newborn discharge was ascertained by interviewing the team lead from each service that provides inpatient care to newborns (pediatrics, family medicine, and outpatient pediatrics) to confirm that all services used standard education materials containing the 13 educational topics outlined in the recommendation and used the same talking points for parent education.

Statistical Analysis

Summary statistics were calculated for each of the 17 independent recommended discharge criteria. CIs were calculated by using the Wilson procedure with a correction for continuity.[13]

RESULTS

Of the 531 charts in the initial sample, 433 were reviewed for all 17 criteria. Of those, 85 were excluded for gestational age, 10 newborns stayed for >7 days, 2 were deceased, and 1 patient was admitted to the NICU. A sample size of 433 ensured that a margin of error of a 95% CI was no more than 0.045. The demographic data of the newborn mothers during the study time period are shown in Table 1.

Descriptive statistics for our study population ($N = 433$) revealed that all 17 criteria were followed <4.2% of the time. Adherence to specific criteria varied widely, and individual rates of compliance with all 17 recommended discharge criteria are summarized in Table 2. The majority of criteria were met at least 95% of the time (10 of 17), with several criteria being fulfilled for 100% of newborn discharges. Criteria that are met between 50% and 95% of the time included maternal serologies, hepatitis B vaccination, and social risk factor assessment. Criteria that were met <50% of the time included complete feeding assessment, maternal vaccination, follow-up timing for newborns discharged at <48 hours of life, and car safety-seat assessment.

DISCUSSION

With the shortening of the newborn delivery stay in recent decades and the increase in the number and complexity of tasks, crucial patient care elements can be missed. In our tertiary care academic children's hospital, the majority of discharge criteria were completed in >95% of all discharges, but there were also areas of consistent failure noted. Although it is difficult to ascertain the degree of influence that each of these individual criteria has on the wellbeing of the infant and overall preparedness of the new parents, it is known that the discharge of newborns who are not medically stable or whose mothers are not psychologically prepared can place the mother, child, and family at risk for further health problems.[14] Previous data have also revealed a reduction in readmissions when an early discharge checklist is consistently used.[15]

For a majority of criteria, >95% compliance was noted. A common theme among many of these criteria is that standard work exists for many of these tasks. For example, for family education after discharge, each patient care team has standard language that is delivered to each patient in the same way. Hearing screening and pulse oximetry screening for critical congenital heart disease are included in the standard order set for all newborns and are ordered automatically. Both tests are required by law in the state of Michigan.[16,17] Hearing screening is performed by staff who focus exclusively on hearing screening and follow guidelines from the state's Early Hearing Detection and Intervention program. This team felt that they were adequately staffed and had sufficient resources to screen every newborn. A certain amount of success is attributable to these standard workflows. There were a few instances of inadequate documentation of voiding and stooling or vital signs; however, deeper investigation of the EMR revealed clear decision-making regarding infants' readiness to be discharged. Some of these failures may have been related to missed documentation, such as the family throwing away a diaper without informing the bedside nurse of its contents.

However, it is also important to note that even in areas of high performance, adherence to the checklist did not prevent readmission. There were 13 readmissions in our study population ($N = 433$) related to hyperbilirubinemia despite 97.9% compliance with a routine bilirubin check at 18 hours of life. None of the readmissions came from the 13 infants who had deficiencies in their bilirubin screening or management. This finding reveals that even with appropriate implementation of a discharge checklist, some readmissions related to bilirubin are likely to occur.

There were items on the recommendation list with low compliance, however, some of which have the potential for serious health outcomes. For example, the review of maternal laboratories related to hepatitis B, syphilis, and HIV is critical and time sensitive. If the laboratories were not performed prenatally or are not readily available at the time of delivery, they ought

TABLE 1 Demographic Information of Newborn Mothers Delivering at University of Michigan C.S. Mott Children's Hospital (June 2015–May 2016)

Characteristics	$N = 4574$, *n* (%)
Age, y	
<25	16.5
25–29	28.4
30–34	35.6
>35	19.4
Marital status	
Married	67.6
Single	29.6
Divorced	1.0
Other	1.9
Race	
White and/or Caucasian	72.5
Black and/or African American	12.6
American Indian and Alaskan native	8.6
Asian American	4.8
Unknown and/or other	0.9
Pacific Islander	0.6
Insurance status	
Blue Cross Blue Shield Association	65.3
Commercial and/or other	28.7
Medicaid	5.2
Medicare	0.8

TABLE 2 How Often Newborn Discharge Criteria Were Met

No.	Abbreviated AAP Healthy Term Newborn Discharge Recommendation	Data Point	Cases for Which Criteria Were Met, *n*/*N*	Cases for Which Criteria Were Met, % (CI)	Details for Cases for Which Criteria Were Not Followed, if Available
1	Clinical course and physical examination do not require continued hospitalization	Lack of hospital readmission within 7 d with identified preventable cause	433/433	100	—
2	Appropriate vital signs within normal range that are stable for the 12 h preceding discharge	Vital signs within expected limits and documented appropriately	421/433	97.2 (95.1–98.5)	Abnormal respiratory rate: 9; abnormal temperature: 3
3	Regular voiding and at least 1 stool	Urine output × 1 in first 24 h and × 2 in second 24 h; stool output at least once	416/433	96.1 (93.7–97.6)	Abnormal void: 17[a]; abnormal stool: 1 (also with abnormal void)
4a	At least 2 successful feedings; documentation of latching, swallowing, and satiety for breastfeeding newborns	Breastfeeding: documentation of LATCH, swallowing, and satiety	6/404[b]	1.5% (0.6–3.4)	—
4b	At least 2 successful feedings: documentation of coordination of sucking, swallowing, and breathing for bottle-feeding newborns	Bottle feeding: documentation of coordination of sucking, swallowing, and breathing	11/98[b]	11.2 (6.0–19.6)	—
5	Minimal postcircumcision bleeding	Documentation of absence of controlled postprocedural bleeding for at least 2 h postprocedure	156/156	100	—
6	Newborn evaluated for jaundice and treated adequately if necessary	Transcutaneous bilirubin at 18 h of life with serum bilirubin, infant blood type, and Coombs as clinically indicated	420/433	97.0 (94.8–98.3)	Undocumented transcutaneous bilirubin levels: 9; poor management: 2 with delayed serum follow-up, 2 without documented infant blood type
7	Newborn evaluated for sepsis and treated adequately if necessary	Documentation of maternal GBS status and treatment status; infant blood cultures, prolonged inpatient monitoring, empirical antibiotics as indicated	429/433	99.1 (97.5–99.7)	Inappropriate management of sepsis risk: 4; 2 with LOS <48 h (stayed 26 and 47 h), 2 should have had blood cultures
8	Maternal laboratory tests for syphilis, hepatitis B, and HIV reviewed	Maternal syphilis, hepatitis B surface antigen, and HIV status documented	390/433	90.1 (86.8–92.6)	Syphilis status unknown: 24 (5.5% [CI 3.7%–8.3%]); hepatitis B status unknown: 2 (0.46% [CI 0.08%–1.8%]). Neither received hepatitis B vaccination in <12 h. HIV status unknown: 36 (8.31% [CI 6.0%–11.4%])
9	Hepatitis B vaccine administered to newborn	Documentation of hepatitis B vaccination and/or immunoglobulin given or declined within clinically indicated time period	363/433 administered; 429/433 offered	83.6 (79.9–87.1) administered; 99.1 (97.5—99.7) offered	Hepatitis B vaccine deferred and/or declined: 66; hepatitis B vaccine order discontinued without documentation of decline: 4
10	Tdap vaccine administered to mother if not given during pregnancy	For mother who did not have Tdap in pregnancy documented, received Tdap in the postpartum period	2/57	3.5 (0.6–13.2)	—
	Influenza vaccine administered to mother during influenza season unless already vaccinated	For October to May: maternal influenza vaccination given to previously unvaccinated mothers	1/77	1.3 (0.07–8.0)	—
11	Newborn metabolic, hearing, and pulse oximetry screenings appropriately completed	Documentation of newborn metabolic screening, hearing screening, and pulse oximetry screening	431/433, 433/433, and 433/433, respectively	99.3, (98.2–99.9), and 100, respectively	Missed metabolic screening: 2 (1 of these infants subsequently had a metabolic screen completed after discharge)

TABLE 2 Continued

No.	Abbreviated AAP Healthy Term Newborn Discharge Recommendation	Data Point	Cases for Which Criteria Were Met, *n*/*N*	Cases for Which Criteria Were Met, % (CI)	Details for Cases for Which Criteria Were Not Followed, if Available
12	Mother given appropriate anticipatory guidance and provided adequate resources for care of the newborn's health	"Discharge talk" documented in discharge summary and/or confirmation with medical team that this occurred	433/433	100	—
13	Appropriate car safety seat obtained and available before hospital discharge; mother demonstrated appropriate positioning and use	Documentation of assessment by certified car safety-seat technicians	18/433	4.2 (2.6–6.6)	—
14	Availability of family members or health care providers to address follow-up concerns, including lactation, jaundice, and dehydration	Provider appointment made or documented that family was aware of how to do so	433/433	100	—
15	First appointment with physician either scheduled or parents know how to do so	Same methodology as criteria 14	433/433	100	Date for physician follow-up appointment; documentation indicated an appointment was scheduled or parents knew how to do so
16	Social risk factors assessed and adequate measures taken if necessary	Documentation of depression screening; domestic violence screening	391/433; 323/433	90.3 (87.0–92.8); 74.6 (70.2–78.6)	—
17	If newborn discharged within 48 h of birth, medical appointment was made within the next 48 h	Date for physician follow-up appointment within 48 h for eligible infants	125/279	44.8 (38.9–50.9)	For newborns discharged within 48 h of birth ($n = 279$), 49 had follow-up >48 h after discharge; for 104, the date of follow-up was unknown

LOS, length of stay; —, not available.

[a] For the void abnormalities, 18.6% of the time, it was documented that the medical team was aware of the abnormality. For the 1 abnormal stool, the medical team did not document that they were aware.

[b] Note that the total *N* exceeds 433 because some newborns were both breastfeeding and bottle feeding.

to be ordered in the immediate postpartum period to allow for prophylaxis or treatment of the affected infant. Pediatricians serve as a safety net to ensure that newborns are not leaving the hospital with potential risk for these infections. Maternal serologies were not always populated in the infant chart and were often not located reliably in 1 area of the maternal chart. These challenges were especially present when the mother had prenatal care outside our institution. The handoff of prenatal information from the obstetrics team to the inpatient pediatrics team could be improved by better EMR interoperability. These EMR challenges likely contributed to our poor compliance with this item, but there are serious quality and safety implications for newborns when these serologies are not available to pediatricians. Having a standardized note template that appropriately pulls in maternal laboratories would aid in solving this problem. In addition, a quality improvement initiative at our hospital has been launched to provide an EMR alert to the outpatient obstetric provider if HIV status is unknown.

Maternal vaccination against pertussis and influenza was another area of poor compliance. Mothers of healthy newborns were given the tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis, adsorbed (Tdap) vaccine (if not vaccinated in pregnancy) only 3.5% of the time. Only 1.3% of mothers who were not previously immunized with the influenza vaccine (30% of our study cohort) were vaccinated during their hospitalization during influenza season (October to May). It is possible that some of the women may have received the vaccine prenatally outside of our institution and this was not reflected in their immunization record, but a majority of delivering mothers received prenatal care at our facility. Although we did not collect readmission data related to pertussis or influenza infection, there is ample evidence that infected adults are a risk to young infants for both of these infections, and offering vaccination is considered to be the standard of care.

An area of underperformance at our institution that we suspect may be troublesome for many newborn units is in the verification of car seat positioning. It is not explicitly stated that a car seat–certified technician is needed for this task to be accomplished; however, in our hospital, car seat assessments are conducted by certified child passenger safety Technicians, a group of individuals who are trained in car safety seats and operate on a parental request basis. As such, there is limited

knowledge surrounding car seat positioning for other staff members, and only 4% of healthy term infants received certified child passenger safety technician consults, likely because this service is on a request basis only. A trained assessment of car seat fit could be 1 of the most important parts of a long-term injury prevention strategy, and at least 95% of infant car safety seats are misused via errors in positioning and/or installation.[18]

Some other areas of low compliance have less compelling associated outcome data in the literature. For example, assessing the effect of a social risk factor assessment is challenging given the host of confounders, but given the screen's ease and low cost, we still felt it should be routinely offered. Simple logic is used to argue that ensuring that every mother has an opportunity to speak with the medical team alone can provide support to an at-risk woman and her newborn. However, the detailed documentation required for a compliant feeding assessment may not be as easy to implement. Given our low overall readmission rate, we suspect that our low numbers regarding the assessment of successful feeding relate to a documentation deficiency and not an actual failing of clinical practice. We are not currently certified as a World Health Organization Baby-Friendly Hospital,[19] but we do comply with all Joint Commission Perinatal Core Measures, including those for breastfeeding. Items such as LATCH (latch, audible swallowing, type of nipple, comfort, and hold) are not included in this requirement, however.[20] It is outside of the scope of our study to attribute a failure to document LATCH scores consistently with feeding outcomes for these newborns, but we have no evidence to suggest that failure to meet this criterion had adverse effects.

We also did not achieve high compliance with discharge follow-up within 48 hours for infants with a short length of stay. AAP guidelines suggest that the appointment be scheduled with a physician or visiting home nurse within the next 48 hours for all infants who are discharged before 48 hours of life.[4] In our institution, every newborn who qualifies for an early discharge also qualifies for a home nurse visit; however, documentation by visiting nurses was unavailable during our study period, so our actual compliance with this guideline was likely higher. Naturally, particular challenges include the difficulty of scheduling appointments when the discharge happens on a weekend and the challenges of determining if and when a follow-up has been scheduled when the patient sees a practitioner outside of our health system. Given these issues, a social worker now reviews the weekend discharges every Monday to determine if a follow-up appointment has been made for newborns who are discharged over the weekend who were at high risk. However, the routine use of these early appointments can stress the outpatient pediatric infrastructure, and their benefit is controversial, with previous data not revealing improvement in outcomes for infants who are seen early.[21] Given the significant morbidity associated with untreated jaundice or hypernatremic dehydration, early follow-up for many infants who are discharged at 24 hours of life is likely indicated.

Our study's major limitation is related to our retrospective data collection from the EMR. We can only know what was documented, which does not necessarily reflect what was actually done. For example, the breastfeeding assessment was determined solely on the basis of lactation and nursing notes, and nursing staff do not formally perform a LATCH score.[20] Therefore, there may have been more successful latches than what we identified in the EMR. Conversely, we assumed that because each service's leadership reported standardized topics and approaches to their discharge education all members of that service adhered to this framework and all families and patients were able to assimilate the education provided. It is possible that an individual provider's discharge talk was less effective.

Finally, we are a tertiary care children's hospital based within an academic institution. Settings with different resources and patient populations may have varying strengths and weaknesses in newborn care. As reported in Table 1, the demographics of the patient population at our tertiary care hospital may limit the generalizability of our data. In addition, a previous study of this population has revealed that mothers have high baseline knowledge regarding newborn care.[22]

CONCLUSIONS

The newborn hospital stay is an opportunity for health care providers to address the health needs of newborns and social risk factors in their environments. Missed opportunities can occur because of the number and complexity of tasks that need to be accomplished in a <48-hour hospitalization. The AAP has published recommended discharge criteria, which we demonstrated were not always entirely accomplished at our institution. Future studies are warranted to determine the clinical significance of the described missed criteria, most notably incomplete feeding assessments and appropriate timing of follow-up appointments, as well as quality reports of sustained improvements.

REFERENCES

1. Danielsen B, Castles AG, Damberg CL, Gould JB. Newborn discharge timing and readmissions: California, 1992-1995. *Pediatrics*. 2000;106(1, pt 1):31–39
2. Bui AL, Dieleman JL, Hamavid H, et al. Spending on children's personal health care in the United States, 1996-2013. *JAMA Pediatr*. 2017;171(2):181–189
3. Farhat R, Rajab M. Length of postnatal hospital stay in healthy newborns and re-hospitalization following early discharge. *N Am J Med Sci*. 2011;3(3): 146–151
4. Benitz WE; Committee on Fetus and Newborn; American Academy of Pediatrics. Hospital stay for healthy term newborn infants. *Pediatrics*. 2015;135(5):948–953
5. American Academy of Pediatrics; Committee on Fetus and Newborn. Hospital stay for healthy term newborns. *Pediatrics*. 2010;125(2):405–409
6. American Academy of Pediatrics; Committee on Fetus and Newborn. Hospital stay for healthy term newborns. *Pediatrics*. 2004;113(5):1434–1436
7. Lain SJ, Roberts CL, Bowen JR, Nassar N. Early discharge of infants and risk of

readmission for jaundice. *Pediatrics*. 2015;135(2):314–321

8. Bernstein HH, Spino C, Lalama CM, Finch SA, Wasserman RC, McCormick MC. Unreadiness for postpartum discharge following healthy term pregnancy: impact on health care use and outcomes. *Acad Pediatr*. 2013;13(1): 27–39
9. Young PC, Korgenski K, Buchi KF. Early readmission of newborns in a large health care system. *Pediatrics*. 2013; 131(5). Available at: www.pediatrics.org/cgi/content/full/131/5/e1538
10. American Academy of Pediatrics; Subcommittee on Hyperbilirubinemia. Management of hyperbilirubinemia in the newborn infant 35 or more weeks of gestation. *Pediatrics*. 2004;114(1): 297–316
11. American Academy of Pediatrics. Hepatitis B. In: Kimberlin DW, Brady MT, Jackson MA, Long SS, eds. *Red Book: 2015 Report of the Committee on Infectious Diseases*. 30th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2015:400–423
12. Verani JR, McGee L, Schrag SJ; Division of Bacterial Diseases; National Center for Immunization and Respiratory Diseases; Centers for Disease Control and Prevention (CDC). Prevention of perinatal group B streptococcal disease–revised guidelines from CDC, 2010. *MMWR Recomm Rep*. 2010;59 (RR–10):1–36
13. Lowry R. The confidence interval of a proportion. Available at: http://vassarstats.net/prop1.html. Accessed August 12, 2018
14. Bernstein HH, Spino C, Finch S, et al. Decision-making for postpartum discharge of 4300 mothers and their healthy infants: the Life Around Newborn Discharge study. *Pediatrics*. 2007;120(2). Available at: www.pediatrics.org/cgi/content/full/120/2/e391
15. Flaster R. Four strategies cut newborn readmissions. *Contemp Pediatr*. 2017; 34(7):10–14
16. Kemper AR, Mahle WT, Martin GR, et al. Strategies for implementing screening for critical congenital heart disease. *Pediatrics*. 2011;128(5). Available at: www.pediatrics.org/cgi/content/full/128/5/e1259
17. Michigan Department of Health and Human Services. The birth hospital's role in newborn hearing screening. 2017. Available at: https://www.michigan.gov/mdhhs/0,5885,7-339-73971_4911_21429-57986–,00.html. Accessed February 18, 2017
18. Hoffman BD, Gallardo AR, Carlson KF. Unsafe from the start: serious misuse of car safety seats at newborn discharge. *J Pediatr*. 2016;171:48–54
19. World Health Organization; UNICEF. *Baby-Friendly Hospital Initiative: Revised, Updated and Expanded for Integrated Care*. Geneva, Switzerland: World Health Organization; 2009
20. Jensen D, Wallace S, Kelsay P. LATCH: a breastfeeding charting system and documentation tool. *J Obstet Gynecol Neonatal Nurs*. 1994;23(1):27–32
21. O'Donnell HC, Colman G, Trachtman RA, Velazco N, Racine AD. Impact of newborn follow-up visit timing on subsequent ED visits and hospital readmissions: an instrumental variable analysis. *Acad Pediatr*. 2014;14(1):84–91
22. Staiman A, Crawford BD, McLain KK, Gattari TB, Mychaliska KP. Evaluating educational needs of parents at newborn discharge: a pilot study. *Hosp Pediatr*. 2016;6(5):310–314