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Defining Lactation Acuity to Improve Patient Safety and Outcomes

Rebecca Mannel, BS, IBCLC, FILCA

Abstract

While substantial evidence exists identifying risks factors associated with premature weaning from breastfeeding, there are no previously published definitions of patient acuity in the lactation field. This article defines evidence-based levels of lactation acuity based on maternal and infant characteristics. Patient acuity, matching severity of illness to intensity of care required, is an important determinant of patient safety and outcomes. It is often used as part of a patient classification system to determine staffing needs and acceptable workloads in health care settings. As acuity increases, more resources, including more skilled clinicians, are needed to provide optimal care. Developing an evidence-based definition of lactation acuity can help to standardize terminology, more effectively distribute health care staff resources, encourage research to verify the validity and reliability of lactation acuity, and potentially improve breastfeeding initiation and duration rates. *J Hum Lact.* 27(2):163-170.

Keywords: lactation, acuity, patient safety, staffing, breastfeeding practices

Breastfeeding duration rates in the United States continue to lag well behind current recommendations. Some 43% of US infants are breastfeeding to any degree at the age of 6 months, and only 13% meet the recommended 6 months of exclusive breastfeeding.¹ By 12 months, less than 23% are still breastfeeding. While many factors affect these rates, one issue that has recently been studied more closely is the quality of care received by breastfeeding mothers and babies during their hospital stay. The US Centers for Disease Control and Prevention (CDC)'s initial survey of hospital practices that affect breastfeeding—the Maternity Practices in Infant Nutrition and Care survey—indicates

that suboptimal care is often provided in US hospitals, with an average score of 63 out of 100.² While substantial research has been published defining evidence-based lactation and breastfeeding care,³⁻¹² the survey results highlight the broad gap between available evidence and the quality of care currently being provided. As noted by the CDC, “new mothers rarely request care different from that offered them by health professionals”^{3(p1)} leaving them vulnerable to hospital care that can adversely affect their ability to successfully breastfeed their infants.

The goal of this article is to narrow the gap between evidence-based best practice and actual care by defining the concept of patient acuity as it relates to lactation and breastfeeding. Despite numerous patient acuity tools and patient classification systems currently in use in many areas of health care, none exist related to lactation or breastfeeding.¹³⁻¹⁹ The acuity definitions proposed here relate increasing maternal-infant lactation acuity to risk of poor breastfeeding outcomes—that is, premature weaning. Thus, as the lactation acuity level increases for a mother-baby couplet, the risk of premature weaning also increases.

The US Institute of Medicine (IOM), in its focus on patient safety, proposed 6 elements of health care in need of improvement: safety, effectiveness, patient centeredness, timeliness, efficiency, and equity.^{20,21} Acuity

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scoring systems have been used to address many of these elements.¹³ Blegen et al cited patient acuity as the “driver of patient outcomes.”²² The US Agency for Healthcare Research and Quality stated, “Patient acuity is a concept that is very important to patient safety.”²³ In a 2009 article entitled “Patient Acuity: A Concept Analysis,” Brennan and Daly reviewed several literature databases for articles related to acuity from 1974 to 2008.^{24(p1119)} They defined acuity as “a measure of the severity of illness of the patient and the intensity of nursing care that patient requires” and suggested a way to categorize acuity based on key attributes: patient-related, provider-related, and system-related. This article categorizes lactation acuity according to Brennan and Daly’s definitions and relates its potential impact to the IOM’s patient safety goals in directing an optimal plan of care for breastfeeding couples.

The Institutional Review Board of the University of Oklahoma Health Sciences Center reviewed this project and determined that it is not human subjects research and does not need board approval.

Lactation Acuity Levels

Higher-acuity breastfeeding patients require higher skill and knowledge levels of the practitioner, indicating referral to an International Board Certified Lactation Consultant (IBCLC) or a Registered Lactation Consultant (RLC).^{*} The concept of lactation acuity was initially developed and implemented by Oklahoma University Medical Center’s Lactation Service.²⁵ The center’s lactation acuity levels were later reviewed and revised by the HCA Healthcare Lactation Consultant Workgroup and implemented in several HCA hospitals in 2010 (see Table 1).²⁶ These acuity levels are based on the potential for increased risk of poor maternal-infant outcomes, including premature weaning. They do not determine the amount of time that might be spent to provide lactation support. Multiple risk factors and hospital practices can increase acuity level. For example, any healthy term infant who has received 2 or more supplemental feedings of formula by bottle, regardless of the reason, has an increased risk of weaning by 7 to 10 days of age.²⁷⁻²⁹ DiGirolamo demonstrated that suboptimal hospital practices increase the risk of weaning before 6 weeks by 13-fold.³⁰

^{*}International Board Certified Lactation Consultants are also registered lactation consultants as defined by the International Board of Lactation Consultant Examiners. See the registry at <http://www.iblce.org>. For the purposes of this article, RLC will be used.

Patient-Related Acuity: Timeliness and Equity

Patient-related acuity attributes include onset, time sensitivity, and severity of the illness or physiologic state. While the initial onset of lactation occurs during pregnancy, the onset of breastfeeding occurs after delivery and depends on the physical status of 2 patients: mother and baby. The successful transition to sustained lactation is extremely time sensitive and vulnerable to factors both maternal (eg, physiology, delivery complications) and environmental (eg, separation of mother and baby, delayed initiation of breastfeeding or milk expression).³⁻¹² The initiation of breastfeeding is also time sensitive and vulnerable to factors that are maternal (eg, delivery mode, maternal knowledge, psychological/abuse issues), infant (eg, physical status of baby, birth trauma), and environmental (eg, opportunity to latch within first hour, skin-to-skin time, separation of healthy mother-baby couples, routine formula supplementation).³⁻¹² Lactation is a sensitive physiologic state, and its long-term maintenance depends on the action of breastfeeding or continued milk removal. Breastfeeding, or the ability of a mother to feed her baby her own milk, is also very sensitive and dependent on continued adequate maternal lactation and an effectively breastfeeding baby.

The IOM’s safety goal of timeliness is achieved when the time-sensitive elements of lactation and breastfeeding are appropriately addressed by the health care team. A mother who needs help with milk expression because her baby is in the neonatal intensive care unit (NICU) cannot wait days or even hours.^{8,42} A baby who is not latching also cannot wait hours for assistance. In both these examples, adverse outcomes can occur for both mother and baby. The mother can become painfully engorged, leading to increased risk of impaired milk production and mastitis, while the baby is at risk of inadequate intake and increased risk of hypoglycemia or hyperbilirubinemia.^{8,65,67} If the mother’s milk is not available, her infant in the NICU will likely receive artificial formulas, which increases the risk of necrotizing enterocolitis.⁷⁴

The IOM goal of equity involves care that is impartial and free from bias. All mothers and babies should receive access to the same quality perinatal care during their hospital stay. Privately insured mothers who are better educated about breastfeeding may insist on seeing an RLC regardless of any risk factors or difficulty with breastfeeding. Less knowledgeable mothers who are more likely to be Medicaid recipients or participants

Table 1. Lactation Acuity Levels^a

Acuity level 1	Level 1 acuity patients can be cared for by nursing staff that have basic breastfeeding knowledge and competency. ³¹⁻³³
Maternal characteristics	<ul style="list-style-type: none"> Basic breastfeeding education, routine management Latch/milk transfer appear optimal Maternal decision to routinely supplement Maternal decision to pump and feed expressed breast milk Maternal indecision regarding breastfeeding Mother can latch baby with minimal assistance Multiparous mother with healthy-term baby and prior breastfeeding experience
Acuity level 2	Level 2 acuity patients should be cared for by Registered Lactation Consultant staff as soon as possible, or referral made to Registered Lactation Consultants in the community. Early follow-up after discharge is critical. ³³⁻⁴¹
Maternal characteristics	<ul style="list-style-type: none"> Antepartum admission with increased risk of preterm delivery^{37,38,42} Caesarean section delivery^{12,43,44} Delayed breastfeeding initiation (defined as after 1 hour with routine vaginal delivery and after 2 hours with routine cesarean section)^{2,3,43} Maternal acute illnesses/conditions (eg, preeclampsia, cardiomyopathy, postpartum depression, postpartum hemorrhage)³⁸⁻⁴⁰ Maternal age (mother < 18 years or > 35 years)^{40,41} Maternal chronic conditions (eg, rheumatoid arthritis, systemic lupus erythematosus, hypertension, cancer, history of gastric bypass, obesity)^{38,45,46} Maternal cognitive impairment (eg, mental retardation, Down syndrome, autism)^{38,41} Maternal endocrine disorders (eg, polycystic ovary syndrome, infertility, thyroid disorders, diabetes)³⁸⁻⁴⁰ Maternal medication concerns⁴⁷ Maternal physical disability (eg, paraplegic, cerebral palsy, visual impairment, psychiatric)^{38,40} Maternal readmission (eg, breastfeeding well established, noncritical issues)^{38,40} Maternal request⁴⁸ Multiparous mother with history of breastfeeding difficulty^{37,38} Primiparous mother or first-time breastfeeding mother with healthy-term baby^{49,50} Social/cultural issues (eg, communication barriers, domestic/sexual abuse)^{41,51,52}
Infant characteristics	<ul style="list-style-type: none"> Consistent LATCH score < 6 at day of discharge^{53,54} Breastfeeding Assessment Score ≤ 5^{27,28} Latch difficulties (eg, pain)^{37-41,55} Infant readmission (breastfeeding well established, noncritical issues)^{38,40} Newborn birth trauma (eg, cephalohematoma, shoulder dystocia)^{12,56} Suboptimal/inadequate milk transfer leading to medical recommendation to supplement^{5,37,57}
Acuity level 3	Level 3 acuity patients need to be cared for by Registered Lactation Consultant staff while in hospital. These patients will require in-depth assessment and ongoing management. Early follow-up after discharge is critical. ³³⁻⁴¹
Maternal characteristics	<ul style="list-style-type: none"> Abscess/mastitis^{37,58} High maternal anxiety^{38,48} Induced lactation^{5,38,40} Maternal breast conditions (eg, breast/nipple anomalies, glandular insufficiency, history of breast surgery)^{8,38,56} Maternal illness/surgery^{38,40,59} Maternal readmission (breastfeeding not well established and/or critical issues)^{38,40} Pathologic engorgement^{8,60}
Infant characteristics	<ul style="list-style-type: none"> High-risk infant on mother-baby unit (eg, late preterm, small/large for gestational age, multiples)^{5,8,61-63} Hyperbilirubinemia⁶⁴⁻⁶⁶ Hypoglycemia⁶⁷ Infant admission to neonatal intensive care^{42,68} Infant congenital anomalies^{38,69,70} Infant illness/surgery^{8,38} Infant oral/motor dysfunction (eg, tight frenulum, hypotonia/hypertonia)⁷⁰⁻⁷² Infant readmission (breastfeeding not well established and/or critical issues)^{38,40,41} Infant weight loss > 7% of birth weight before discharge^{8,73}

^aAcuity levels can change on the basis of assessment by the Registered Lactation Consultant or other health care team members.

in the US Department of Agriculture Women, Infants and Children's Supplemental Nutrition Program are not as likely to request assistance from their nurses, even when experiencing difficulty with breastfeeding.^{75,76} Some hospital administrators direct their RLC

staff to first see mothers who have requested a lactation consult without regard to lactation acuity. Thus, hospital policy may place couplets who are at greatest risk of premature weaning low on the priority list.⁷⁷ Preterm babies admitted to the NICU may not be able to breast-

feed directly for weeks or months. These high-acuity babies and their mothers need continued lactation support throughout the hospital stay, yet many NICUs have no RLCs on staff.^{1,78} Education about pumping to provide milk for a preterm infant is typically initiated by mother-baby nursing staff and/or RLCs while the mother is on the mother-baby unit. Unfortunately, there is often little to no lactation support available to help the mother when it is time to initiate direct breastfeeding in the NICU.⁷⁸

Provider-Related Acuity: Safety and Patient-Centeredness

Provider-related acuity attributes include the intensity or level of difficulty of care required. All mother-baby couplets require some degree of care related to breastfeeding. Healthy couplets typically require less intense care than do couplets where one or both patients have risk factors that might affect successful breastfeeding or lactation. All US hospitals provide nursing care to mothers and babies in the perinatal setting.² Not all US hospitals provide skilled lactation care or have RLCs on staff.¹ Bedside perinatal and pediatric nurses should have competency to provide basic lactation and breastfeeding care in low-acuity situations.^{12,31,32} In higher-acuity situations, where risk factors for premature weaning are present, the intensity of care and the need for specialized breastfeeding knowledge indicate the need for lactation support provided by an RLC.³³⁻³⁶ Advances in the fields of reproductive endocrinology/infertility, general obstetrics and neonatology have made it possible for women to conceive who would have previously remained childless and for more infants to survive preterm births. The increasing numbers of these potentially higher-acuity couplets require an increase in the availability of skilled lactation care from bedside nurses and RLCs.

The potential for meeting the IOM goal of patient safety is increased by defining lactation acuity and then matching resources to acuity. When hospital staff and administrators recognize the risks involved in failing to provide adequate support for high-acuity lactation situations, they can make better decisions about resources for lactation support. Risk management departments may question the liability of failing to provide needed services or providing care by staff lacking appropriate training and skills.¹²⁻¹⁴ Data from the Oklahoma University Medical Center's lactation program in 2006 showed that 75% of lactation consults

could be considered high acuity whereas 25% were defined as "maternal knowledge deficit."⁷⁹ The late preterm infant on the mother-baby unit who "looks" like a term baby is at greater risk of ineffective breastfeeding in the first few days.⁶¹⁻⁶³ In an effort to encourage exclusive breastfeeding, staff may "wait and see" how the baby does and end up with a jaundiced baby needing phototherapy or even transfer to the NICU.⁶⁵ The mother having difficulty latching her baby may be given a nipple shield by well-meaning nursing staff and discharged without adequate follow-up or instructions to pump her breasts until adequate milk transfer to the baby is evident. Both these patients are potential readmissions to the hospital.^{80,81}

Patient-centeredness means the patient and family are involved in the patient's care. Mothers trust the health care system and assume that the support and information they receive is accurate.³ They are more likely to blame themselves, rather than the health care system, when they do not meet their breastfeeding goals.⁸²⁻⁸⁵ A mother's decision to breastfeed needs to be supported with care that is optimal and routine, not an exception. All healthy babies should be placed skin to skin after birth; mothers should not have to ask, sometimes repeatedly, for this opportunity. Early identification of mothers and babies at greater risk of premature weaning enables staff to proactively intervene. They can help the mother develop a plan of care that she can follow to improve her chance of successful lactation and breastfeeding. Mothers who receive anticipatory guidance are more likely to identify early signs of poor feeding and contact appropriate resources after discharge.^{3,86}

System-Related Acuity: Efficiency and Effectiveness

System-related acuity aligns efficiency and effectiveness with the resources needed to provide optimal care, and it can be used to predict staffing needs. In the current health care environment, many hospital risk management teams focus on best practices in an effort to bridge the quality gap and improve outcomes.¹⁵ Factors shown to contribute to potentially hazardous care delivery include inadequate staff orientation and training, staff working outside their scope of practice, lack of adequate clinical and educational support systems, poor communication, and ineffective teamwork.^{15,87}

Numerous articles have been published demonstrating adverse health outcomes when suboptimal care is

provided to breastfeeding mothers and babies.^{73,80,81,88} The Baby-Friendly Hospital Initiative defines optimal breastfeeding care for healthy mother-baby couplets and minimum requirements for staff education.¹¹ As lactation acuity increases, however, access to RLCs is important in preventing adverse health outcomes. Staffing perinatal units based on lactation acuity in addition to other patient classifications can help to balance the workload between nursing staff and RLC staff.

Nursing burnout can occur when higher patient acuity is not considered in staffing decisions.¹³ Staffing ratios for laboring patients are 1:1 (registered nurse: patients).⁸⁹ Assigning a less-experienced nurse 2 high-acuity laboring patients increases nursing stress, risk of burnout, and poor outcomes. RLC burnout can occur in similar situations. While limited research has been published related to lactation staffing,⁷⁹ an unpublished survey of Philadelphia hospitals demonstrated the lack of guidance in providing this level of care.⁹⁰ In 2003, RLC staffing in the birthing hospitals in Philadelphia ranged from 1:22 000 (full-time position:births) to 1:800. In 2003, only 60% of these hospitals provided RLC services, and by 2009, this figure had declined to 50%. When no RLCs are available, then the resources to provide optimal lactation care become quite limited, stressing the existing nursing staff even more and increasing the risk of adverse outcomes.⁹¹

Defining lactation acuity can improve effectiveness of patient care, another IOM goal. As the CDC's Maternity Practices in Infant Nutrition and Care survey indicated, lactation care in US hospitals is quite variable, and the majority of perinatal nursing staff have not had sufficient training to provide optimal care.² Using a consistent definition of lactation acuity across hospital systems could lead to more consistent benchmarking of care and identification of best practices that lead to improved breastfeeding outcomes. Hospital administrators and the IOM may recognize the potential for improved efficiency of care that can result from identifying lactation acuity.²⁵ While many couplets are discharged suboptimally breastfeeding and most before breastfeeding is well established, others may require longer hospital stays or readmission because of lactation-related adverse outcomes.^{1,63,73,80,81,92} Identifying these risk factors as early as possible can improve outcomes.

Limitations

Limitations of many patient classification systems include their complexity and the time required to complete them, their lack of credibility with staff, and their focus

on tasks rather than the knowledge and skill of the practitioner.²³ The lactation acuity levels defined here are simple and quick to complete and are focused on need for more skilled lactation support rather than tasks. A similar version of these acuity levels has been in use at the Oklahoma University Medical Center for 3 years with demonstrated credibility with lactation staff.²⁵ These acuity levels are designed to identify risk factors and classify patients on the basis of their need for lactation support. Future research is needed to demonstrate the validity and reliability of these lactation acuity definitions.

Summary

Defining lactation acuity can help to improve several elements of patient safety as defined by the IOM. Efficiency and effectiveness of care increase when appropriate resources are directed to breastfeeding patients.³³ Matching lactation acuity with appropriate resources can result in better utilization of staff, more timely patient-focused care, and an increase in exclusive breastfeeding at discharge, one of the Joint Commission's new voluntary perinatal core measures.⁹³ Research is needed to validate the expected improvement in breastfeeding outcomes—including exclusive breastfeeding at hospital discharge and increased duration of breastfeeding—when acuity levels are used to provide appropriate lactation support.

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References

- Centers for Disease Control and Prevention. Breastfeeding: data and statistics. <http://www.cdc.gov/breastfeeding/data/index.htm>.
- Centers for Disease Control and Prevention. Breastfeeding-related maternity practices at hospitals and birth centers, United States, 2007. *MMWR Morb Mortal Wkly Rep*. 2008;57:621-625. <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5723a1.htm>.
- Shealy KR, Li R, Benton-Davis S, Grummer-Strawn LM. *The CDC Guide to Breastfeeding Interventions, 2005*. Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention.
- Gartner LM, Morton J, Lawrence RA, et al. American Academy of Pediatrics policy statement: Breastfeeding and the use of human milk. *Pediatrics*. 2005;115:496-506.
- American Academy of Family Physicians. Position paper: family physicians supporting breastfeeding. <http://www.aafp.org/online/en/home/policy/policies/b/breastfeedingpositionpaper.html>. Published 2009.
- American College of Obstetricians and Gynecologists. Breastfeeding: maternal and infant aspects clinical review. <http://www.acog.org/departments/underserved/clinicalReviewv12i1s.pdf>. Published 2007.

7. American Public Health Association. A call to action on breastfeeding: a fundamental public health issue. <http://www.apha.org/advocacy/policy/policysearch/default.htm?id=1360>. Published 2007.
8. International Lactation Consultant Association. *Clinical Guidelines for the Establishment of Exclusive Breastfeeding*. Rockville, MD: Maternal & Child Health Bureau; 2005.
9. EU Project on Promotion of Breastfeeding in Europe. *Protection, Promotion and Support of Breastfeeding in Europe: A Blueprint for Action*. Luxembourg, Belgium: European Commission, Directorate Public Health & Risk Assessment; 2004. http://ec.europa.eu/health/ph_projects/2002/promotion/tp_promotion_2002_frep_18_en.pdf.
10. World Health Organization. *The Global Strategy for Infant and Young Child Feeding*. Geneva, Switzerland: World Health Organization; 2003.
11. World Health Organization, Division of Child Health and Development. *Evidence for the Ten Steps to Successful Breastfeeding*. Geneva, Switzerland: World Health Organization; 1998.
12. Labbok M, Taylor E. Achieving Exclusive Breastfeeding in the United States: Findings and Recommendations. Washington, DC: United States Breastfeeding Committee; 2008. <http://www.usbreastfeeding.org/AboutUs/PublicationsPositionStatements/tabid/70/Default.aspx>.
13. Marcin JP, Pollack MM. Review of the acuity scoring systems for the pediatric intensive care unit and their use in quality improvement. *J Intern Care Med*. 2007;22:131-140.
14. Harper K, McCully C. Acuity systems dialogue and patient classification system essentials. *Nurs Adm Q*. 2007;31:284-299.
15. Rischbieth A. Matching nurse skill with patient acuity in the intensive care units: a risk management mandate. *J Nurs Manag*. 2006;14:397-404.
16. Dexter F, Wachtel RE, Epstein RH. Impact of average patient acuity on staffing of the phase I PACU. *J Perianesth Nurs*. 2006;21:303-310.
17. Lovett RB, Wagner L, McMillan S. Validity and reliability of a pediatric hematology oncology patient acuity tool. *J Pediatr Oncol Nurs*. 1991;8:122-130.
18. Bland B, Wish K. Census and length of stay related to patient acuity, and the possible impact on staffing. *J Am Diet Assoc*. 2009;99:A125.
19. Paterson WG, Depew WT, Paré P, et al; Canadian Association of Gastroenterology Wait Time Consensus Group. Canadian consensus on medically acceptable wait times for digestive care. *Can J Gastroenterol*. 2006;20(6):411-423.
20. Institute of Medicine. To err is human: building a safer healthcare system. Consensus report. <http://www.iom.edu/Reports/1999/To-Err-is-Human-Building-A-Safer-Health-System.aspx>. Published November 1999.
21. Institute of Medicine. Crossing the quality chasm: a new health system for the 21st century. Consensus report. <http://www.iom.edu/Reports/2001/Crossing-the-Quality-Chasm-A-New-Health-System-for-the-21st-Century.aspx>. Published March 2001.
22. Blegen MA, Goode CJ, Reed L. Nurse staffing and patient outcomes. *Nurs Resour*. 1998;47:43-50.
23. Jennings, B. Patient acuity. *Patient Safety and Quality: An Evidence-Based Handbook for Nurses* [Pub No. 08-0043]. Rockville, MD: Agency for Healthcare Research & Quality; 2008:chap 23. <http://www.ahrq.gov/qual/nursesbdbk>.
24. Brennan CW, Daly BJ. Patient acuity: a concept analysis. *J Adv Nurs*. 2009;65:1114-1126.
25. Mannel R. Lactation rounds: a system to improve hospital productivity. *J Hum Lact*. 2010;26:393-398.
26. Mannel R. Defining lactation acuity to improve patient safety and outcomes [oral presentation]. International Lactation Consultant Association annual conference, San Antonio, TX, July 2010.
27. Hall RT, Mercer AM, Teasley SL, et al. A breastfeeding assessment score to evaluate the risk for cessation of breastfeeding by 7-10 days of age. *J Pediatr*. 2002;141:659-664.
28. Mercer AM, Teasley SL, Hopkinson J, et al. Evaluation of a breastfeeding assessment score in a diverse population. *J Hum Lact*. 2010;26:42-48.
29. Wright CM, Parkinson K, Scott J. Breast-feeding in a UK urban context: who breast-feeds, for how long and does it matter? *Public Health Nutr*. 2006;9:686-691.
30. DiGirolamo AM, Grummer-Strawn LM, Fein SB. Effect of maternity-care practices on breastfeeding. *Pediatrics*. 2008;122(suppl 2):S43-S49.
31. United States Breastfeeding Committee. Core Competencies in Breastfeeding Care for All Health Professionals. Washington, DC: United States Breastfeeding Committee; 2009. <http://www.usbreastfeeding.org/AboutUs/PublicationsPositionStatements/tabid/70/Default.aspx>.
32. Association of Women's Health, Obstetric and Neonatal Nurses. Position statement: breastfeeding. http://www.awhonn.org/awhonn/content.do?name=02_PracticeResources%2F2C1_Breastfeeding.htm. Published 2007.
33. Bartick M, Stuebe A, Shealy KR, Walker M, Grummer-Strawn LM. Closing the quality gap: promoting evidence-based breastfeeding care in the hospital. *Pediatrics*. 2009;124:e793-e802.
34. International Board of Lactation Consultant Examiners, International Lactation Consultant Association. Clinical competencies for IBCLC practice. <http://www.iblce.org/documents/ClinicalCompetenciesforIBCLCPractice.pdf>. Published 2010.
35. International Board of Lactation Consultant Examiners. Scope of practice for International Board Certified Lactation Consultants (IBCLCs). <http://www.iblce.org/documents/IBCLCSOP0308.pdf>. Published 2008.
36. International Lactation Consultant Association. Standards of practice for International Board Certified Lactation Consultants. <http://www.ilca.org/files/resources/Standards-of-Practice-web.pdf>. Published 2006.
37. Wambach K, Campbell SH, Gill SL, et al. Clinical lactation practice: 20 years of evidence. *J Hum Lact*. 2005;21:245-258.
38. Mannel R, Martens P, Walker M. *Core Curriculum for Lactation Consultant Practice*. 2nd ed. Sudbury, MA: Jones & Bartlett; 2008.
39. Lawrence RA, Lawrence RM. *Breastfeeding: A Guide for the Medical Profession*. 6th ed. Philadelphia PA: Elsevier Mosby; 2005.
40. Riordan J, Wambach K. *Breastfeeding and Human Lactation*. 4th ed. Sudbury, MA: Jones & Bartlett Publishers, 2010.
41. Lauwers J, Swisher A. *Counseling the Nursing Mother*. 5th ed. Sudbury, MA: Jones & Bartlett; 2011.
42. Castrucci BC, Hoover KL, Lim S, Maus KC. Availability of lactation counseling services influences breastfeeding among infants admitted to neonatal intensive care units. *Am J Health Promot*. 2007;21:410-415.
43. Rowe-Murray HJ, Fisher JR. Baby Friendly hospital practices: cesarean section is a persistent barrier to early initiation of breastfeeding. *Birth*. 2002;29:124-131.
44. Clifford TJ, Campbell MK, Speechley KN, Gorodzinsky F. Factors influencing full breastfeeding in a southwestern Ontario community: assessments at 1 week and at 6 months postpartum. *J Hum Lact*. 2006;22:292-304.
45. Katz K, Nilsson I, Rasmussen K. Danish health care providers' perception of breastfeeding difficulty experienced by women who are obese, have large breasts, or both. *J Hum Lact*. 2010;26:138-147.
46. Hilson JA, Rasmussen KM, Kjolhede CL. Excessive weight gain during pregnancy is associated with earlier termination of breast-feeding among white women. *J Nutr*. 2006;136:140-146.
47. Hale, T. *Medications and Mother's Milk*. 14th ed. Amarillo, TX: Hale Publishing LP; 2010.
48. Academy of Breastfeeding Medicine Protocol Committee. ABM clinical protocol #5: peripartum breastfeeding management for the healthy mother and infant at term. Revision, June 2008. *Breastfeeding Med*. 2007;2:129-132.
49. Matias SL, Nommsen-Rivers LA, Creed-Kanashiro H, Dewey KG. Risk factors for early lactation problems among Peruvian primiparous mothers. *Matern Child Nutr*. 2010;6:120-133.

50. Nommsen-Rivers LA, Chantry CJ, Peerson JM, Cohen RJ, Dewey KG. Delayed onset of lactogenesis among first-time mothers is related to maternal obesity and factors associated with ineffective breastfeeding. *Am J Clin Nutr*. 2010;92:574-584.
51. Scott JA, Landers MC, Hughes RM, Binns CW. Psychosocial factors associated with the abandonment of breastfeeding prior to hospital discharge. *J Hum Lact*. 2001;17:24-30.
52. Petrova A, Hegyi T, Mehta R. Maternal race/ethnicity and one month exclusive breastfeeding in association with the in-hospital feeding modality. *Breastfeed Med*. 2007;2:92-98.
53. Kumar SP, Mooney R, Wieser LJ, Havstad S. The LATCH scoring system and prediction of breastfeeding duration. *J Hum Lact*. 2006;22:391-397.
54. Riordan J, Bibb D, Miller M, Rawlins T. Predicting breastfeeding duration using the LATCH breastfeeding assessment tool. *J Hum Lact*. 2001;17:20-23.
55. Cernadas JM, Noceda G, Barrera L, Martinez AM, Garsd A. Maternal and perinatal factors influencing the duration of exclusive breastfeeding during the first 6 months of life. *J Hum Lact*. 2003;19:136-144.
56. Wilson-Clay B, Hoover K. *The Breastfeeding Atlas*. 4th ed. Austin, TX: LactNews Press; 2008.
57. Academy of Breastfeeding Medicine Protocol Committee. ABM clinical protocol #3: hospital guidelines for the use of supplementary feedings in the healthy term breastfed newborn. *Breastfeeding Med*. 2009;4:175-182.
58. Academy of Breastfeeding Medicine Protocol Committee. ABM clinical protocol #4: mastitis. *Breastfeeding Med*. 2008;3:177-180.
59. Academy of Breastfeeding Medicine Protocol Committee. ABM clinical protocol #15: analgesia and anesthesia for the breastfeeding mother. *Breastfeeding Med*. 2006;1:271-277.
60. Academy of Breastfeeding Medicine Protocol Committee. ABM clinical protocol #20: engorgement. *Breastfeeding Med*. 2009;4: 111-113.
61. Academy of Breastfeeding Medicine Protocol Committee. ABM Clinical Protocol #10: Breastfeeding the Near-Term Infant (35-37 Weeks Gestation). New Rochelle, NY: Academy of Breastfeeding Medicine; 2004. <http://www.bfmed.org/Resources/Protocols.aspx>.
62. Ahmed AH. Role of the pediatric nurse practitioner in promoting breastfeeding for late preterm infants in primary care settings. *J Pediatr Health Care*. 2010;24:116-122.
63. Cleaveland K. Feeding challenges in the late preterm infant. *Neonatal Netw*. 2010;29:37-41.
64. Stark AR, Lannon CM. Systems changes to prevent severe hyperbilirubinemia and promote breastfeeding: pilot approaches. *J Perinatol*. 2009;29(suppl 1):S53-S57.
65. American Academy of Pediatrics. Clinical practice guideline: management of hyperbilirubinemia in the newborn infant 35 or more weeks of gestation. *Pediatrics*. 2006;114:297-316.
66. Johnson L, Bhutani VK, Karp K, et al. Clinical report from the pilot USA Kernicterus Registry (1992 to 2004). *J Perinatol*. 2009;29(suppl 1): S25-S45.
67. Academy of Breastfeeding Medicine Protocol Committee. ABM clinical protocol #1: guidelines for glucose monitoring and treatment of hypoglycemia in breastfed neonates. *Breastfeeding Med*. 2006;1: 178-184.
68. Academy of Breastfeeding Medicine Protocol Committee. ABM Clinical Protocol #12: Transitioning the Breastfeeding/Breastmilk-Fed Premature Infant From the Neonatal Intensive Care Unit to Home. New Rochelle, NY: Academy of Breastfeeding Medicine; 2004. <http://www.bfmed.org/Resources/Protocols.aspx>
69. Academy of Breastfeeding Medicine Protocol Committee. ABM clinical protocol #17: guidelines for breastfeeding infants with cleft lip, cleft palate or cleft lip and palate. *Breastfeeding Med*. 2007;2: 243-250.
70. Wall V, Glass R. Mandibular asymmetry and breastfeeding problems: experience from 11 cases. *J Hum Lact*. 2006;22:328.
71. Academy of Breastfeeding Medicine Protocol Committee. ABM Clinical Protocol #11: Guidelines for the Evaluation and Management of Neonatal Ankyloglossia and Its Complications in the Breastfeeding Infant. New Rochelle, NY: Academy of Breastfeeding Medicine; 2004. <http://www.bfmed.org/Resources/Protocols.aspx>.
72. Academy of Breastfeeding Medicine Protocol Committee. ABM clinical protocol #16: breastfeeding the hypotonic infant. *Breastfeeding Med*. 2007;2:112-118.
73. Dewey KG, Nommsen-Rivers LA, Heinig MJ, et al. Risk factors for suboptimal infant breastfeeding behavior, delayed onset of lactation and excess neonatal weight loss. *Pediatrics*. 2003;112:607-619.
74. Stuebe A. The risks of not breastfeeding for mothers and infants. *Rev Obstet Gynecol*. 2009;2:222-231.
75. Castrucci BC, Hoover KL, Lim S, Maus KC. A comparison of breastfeeding rates in an urban birth cohort among women delivering infants at hospitals that employ and do not employ lactation consultants. *J Public Health Manag Pract*. 2006;12:578-585.
76. Hurley KM, Black MM, Papas MA, Quigg AM. Variation in breastfeeding behaviours, perceptions, and experiences by race/ethnicity among a low-income statewide sample of Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) participants in the United States. *Matern Child Nutr*. 2008;4:95-105.
77. HCA Healthcare. [Personal communication]. Lactation Consultant Workgroup, 2009.
78. International Lactation Consultant Association, NICU Special Interest Group. International meeting, 2010, San Antonio, TX.
79. Mannel R, Mannel R. Staffing for hospital lactation programs: recommendations from a tertiary care teaching hospital. *J Hum Lact*. 2006; 22:409-417.
80. Rodriguez M, Mannel R, Frye D. Failure to latch [serial online]. <http://webmm.ahrq.gov/case.aspx?caseID=183>. Published September 2008.
81. Mannel R. Could this happen at your hospital? *Risk Watch Newsletter*. Nashville, TN: Health Care Indemnity Inc; October 2008. (Available upon request: Rebecca-mannel@ouhsc.edu.)
82. Declercq E, Lobbok M, Sakala C, O'Hara M. Hospital practices and women's likelihood of fulfilling their intention to exclusively breastfeed. *J Public Health*. 2009;99:929-935.
83. Mzingo JN, Davis MW, Droppelman PG, Merideth A. "It wasn't working": Women's experiences with short-term breastfeeding. *MCN Am J Matern Child Nurs*. 2000;25:120-126.
84. Kaufman L, Deenadayalan S, Karpati A. Breastfeeding ambivalence among low-income African American and Puerto Rican women in north and central Brooklyn. *Matern Child Health J*. 2010;14:696-704.
85. Lobbok, M. Exploration of guilt among mothers who do not breastfeed: the physician's role. *J Hum Lact*. 2008;24:80-84.
86. Bonuck KA, Trombley M, Freeman K, McKee D. Randomized, controlled trial of a prenatal and postnatal lactation consultant intervention on duration and intensity of breastfeeding up to 12 months. *Pediatrics*. 2005;116:1413-1426.
87. Oelke ND, White D, Besner J, et al. Nursing workforce utilization: an examination of facilitators and barriers on scope of practice. *Nurs Leadersh (Tor Ont)*. 2008;21:58-71.
88. Ladomenou F, Kafatos A, Galanakis E. Risk factors related to intention to breastfeed, early weaning and suboptimal duration of breastfeeding. *Acta Paediatr*. 2007;96:1441-1444.
89. Association of Women's Health, Obstetrics and Neonatal Nursing. Guidelines for Professional Registered Nurse Staffing for Perinatal Units. 2010. www.awhonn.org.

90. Hoover K. [Personal communication]. Invited speaker for oral presentation on access to professional lactation care. A Call to Action Expert Panel on Breastfeeding, Office on Women's Health, April 2009, Washington, DC.
91. Kane RL, Shamlivan T, Mueller C, Duval S, Wilt T. *Nursing Staffing and Quality of Patient Care* [Pub No. 07-E005]. Rockville, MD: Agency for Healthcare Research & Quality; March 2007.
92. Caglar MK, Ozer I, Altugan FS. Risk factors for excess weight loss and hypernatremia in exclusively breast-fed infants. *Braz J Med Biol Res.* 2006;39:539-544.
93. Joint Commission. Specifications manual for Joint Commission national quality measures. <http://manual.jointcommission.org/releases/TJC2010B/MIF0170.html>. Published September 2010.