



Discharge Guidelines *for* NICU Patients

Introduction

Discharge planning for the infant hospitalized in the Neonatal Intensive Care Unit (NICU) is a multidisciplinary effort that should be initiated soon after the infant is admitted to the NICU and included in the care plan on a daily basis. An individualized approach should be adopted to meet the needs of the various medical and social concerns unique to each patient. Parents or other appointed caregivers should be included in the process with the neonatologists, nurse practitioners, bedside nurses and other multidisciplinary team members involved with the infant's care. When appropriate, input from

the hospital and/or community social service departments, lactation specialists, physical therapists, nutritionists and case managers should be solicited. Special situations may require the expertise of medical and/or surgical sub-specialists and other individuals as deemed necessary.¹

Several broad categories of discharge readiness should be incorporated into the discharge plan that include, but are not limited to, specific medical, family and psychosocial criteria. Published guidelines have identified important components that include: attending to parental education, primary care, ongoing medical

conditions, home care, social support and follow-up care coordination.¹ All of this is aimed at achieving a seamless care transition.

I. Medical Readiness

For the premature infant, specific physiologic parameters to be met prior to safe discharge were identified in a large cohort of NICU patients² that include: maintenance of body temperature fully clothed in an open crib at room temperature (20-25°C or 68-77°F; coordination of suck, swallow, and breathing while taking an adequate feed volume; sustained pattern of weight gain compatible with the post menstrual age (PMA) of the infant; demonstration of maturity and stability in cardiorespiratory function for a specified period of time; oxygenation status: infant is weaned to room air or is stable on portable oxygen;³ ability of family to care for the fragile premature infant must be evaluated and demonstrated.

The criteria above are consistent with previously published guidelines from the American Academy of Pediatrics.¹ ProgenyHealth suggests these parameters in conjunction with other proprietary criteria to assess an infant's clinical stability and preparedness for discharge:

1. Body temperature: The infant has demonstrated adequate maintenance of normal body temperature fully clothed in an open bed with normal ambient room temperature (20–25°C or 68-77°F).¹
2. Feeding/Nutrition: The infant has established competent feeding by breast or bottle without cardiorespiratory compromise. A sustained

pattern of weight gain of sufficient duration has been demonstrated.^{1,4} The infant should be capable of nipple feeding adequate calories in order to maintain desired growth and weight gain. Human milk is desirable and support should be provided to all mothers who wish to breast feed. Hypercaloric feedings may be required and/or supplements as necessary. Lactation consultants or nutrition/feeding specialists will play an important role in this area. One or two days of observation may be necessary for growth restricted or low birth weight infants, whereas near-term babies may require a lesser amount of time. If oral feedings cannot be achieved by 44 weeks PMA, then gavage or gastrostomy tube feedings should be considered as clinically indicated.^{1,4}

3. Cardiorespiratory control: Physiologically mature and stable cardiorespiratory function has been documented for a sufficient duration.^{1,3} Normal oxygen saturation in room air should be documented. If being discharged on oxygen, oximetry readings on home oxygen settings should be documented.
4. Special Testing:
 - Hearing: Audiologic screening should be performed and follow up should be arranged for referrals and/or additional testing as indicated for infants at high risk for hearing loss.⁵
 - Eye exam: Evaluation by a pediatric ophthalmologist should be performed or scheduled according to published guidelines and rigorous outpatient follow up should be arranged for at risk patients who require serial retinal examinations.⁶

The time, date and location of the first post-discharge outpatient ophthalmology appointment should be documented in the hospital chart.⁶

- Car Seat and Car Bed: Per AAP report: “Hospitals should develop protocols to include car safety seat observation before discharge for infants born at less than 37



weeks' gestation. Some hospital protocols include car safety seat observations for infants at risk of obstructive apnea, bradycardia, or oxygen desaturation other than those born at less than 37 weeks' gestation. Examples include infants with hypotonia (e.g., Down syndrome or congenital neuromuscular disorders), infants with micrognathia (Pierre Robin sequence), and infants who have undergone congenital heart surgery”.⁷ Infants with documented oxygen desaturation, apnea, or bradycardia in a semi upright position should travel in a supine or prone position in an FMVSS 213 (Federal Motor Vehicle Safety Standard) approved car bed after an observation period. The AAP clinical report⁷ does not speak to frequency of apnea and bradycardia events or level of oxygen saturation that would lead to use of a car bed; rather the report states “...deemed significant by the treating physician or

hospital policy...”. Specific information regarding currently available car beds can be obtained from several resources.⁷

Other considerations:

1. Jaundice: Though hyperbilirubinemia may not be an issue for the ELBW infant at the time of discharge, near-term and term infants who are discharged while bilirubin values remain elevated may remain at risk for bilirubin encephalopathy. Therefore, use of established nomograms and guidelines for phototherapy and exchange transfusion should assist the clinician with bilirubin determinations as an outpatient. Infants with cholestasis should also be evaluated as clinically indicated and monitored for its resolution.^{8,9}
2. Home Apnea Monitoring: Discontinuation of methylxanthine therapy should be considered by 34 weeks PMA. Discharge of an infant with a home apnea monitor should be arranged for infants who have not demonstrated an apnea free period, who require home oxygen or methylxanthine therapy or who satisfy AAP criteria.¹⁰ Parents and caregivers should receive basic cardiopulmonary support (BCS) and monitor training and if necessary referral to community (BCS) training can be made. It may be worthwhile for caregivers of all infants discharged from the NICU to receive training in choking prevention, BCS and first aid even if a home monitor is not indicated. Periodic monitor downloads should be forwarded to the physician responsible for interpretation and arrangements made with the primary care doctor, family and home care company

regarding continued use of the machine.¹⁰

3. Medications: Medication dosing and administration instructions should be completed and the parent should receive a medication instruction sheet confirmed by the medical and nursing staff. The child should be discharged with an adequate supply of medication until a refill can be obtained from the infant's primary care physician.¹
4. Home Oxygen: Arrangements should be made for the child to be discharged with home oxygen if discharge readiness has otherwise been achieved and other criteria have been met. Follow up with a physician who can assess and monitor the infant's ongoing need for home oxygen should be arranged on a regular basis.^{1, 4}
5. Neurological: Appropriate follow up imaging studies such as cranial ultrasound, CAT or MRI scans should be arranged and referral to a neurologist as clinically indicated. An early intervention referral and appointment in a NICU follow up program should be confirmed for infants requiring these services.¹
6. Subspecialty Care: Follow up appointments with consultants or other subspecialists who have examined or need to assess the child if services were unavailable in the NICU, should be arranged.¹
7. Metabolic Screening: Department of Health mandated screening test results should be reviewed and repeat testing performed as indicated.¹¹
8. Immunizations: Vaccinations should be administered as per AAP guidelines.¹²
9. RSV prevention: Palivizumab should be administered as per AAP guidelines.¹³

10. Sleep Position and Behavior: AAP guidelines regarding supine sleep position in all infants, except under extraordinary circumstances, should be promoted. Use of pacifiers (after establishment of breast feeding) and avoidance of bed sharing should be reinforced. SIDS reduction strategies outlined by the AAP Task Force on SIDS Reduction should be acknowledged.¹⁴
11. Relevant state and local guidelines should be followed related to newborn screening.

II. Family Readiness

1. Home Visits: Home visitation should be arranged as necessary for home assessments and/or outpatient lab testing by a home care nurse. The social status and support network assessment by the social worker should be reviewed and referral to outside social agencies may be indicated for additional input and/or a home environment assessment before discharge. If a home visit is not available then a visit to the primary care physician's office should be arranged.
2. Smoking in the vicinity of the baby or his/her domicile should be strongly discouraged. Referral to smoking quit lines for family members should be considered (1-800-QUIT-NOW/1-800-784-8669 or in Spanish, 1-855-DÉJELO-YA/1-855-335-3569).¹
3. Discharge Teaching: Well baby care instructions should be provided and demonstrated by the caregiver. An "overnight" stay or other extended period of time should ideally be offered to parents of babies who have multiple discharge needs such as home



monitors, oxygen, medications or other social situations that would benefit from such an exercise.¹ Should this be determined to be necessary, scheduling should take place in advance of the proposed discharge date so that hospitalization is not prolonged unnecessarily.

4. **Financial:** Case managers and social workers can assist by arranging appropriate insurance coverage and assessing additional needs of the family such as access to utilities (e.g. water, heat), phone service and transportation.
5. **Psychosocial Support:** Social workers, counselors and chaplains may become involved with the family to provide emotional

or spiritual support. Identification of risk factors for the development of post-partum depression should lead to intervention. Awareness by the parent of “shaken baby syndrome” through handouts or videos should be made available and common frustrations of parenthood should be discussed so that the caregiver can recognize the need to seek help. Referral to outpatient treatment centers or physicians for counseling, drug rehabilitation or any other concerns should be implemented as appropriate. Contact information including caregiver’s names and telephone numbers should be confirmed with the family prior to discharge.¹

III. Community Readiness:

Primary care: A primary care physician should be identified and communication should occur with this physician prior to discharge regarding the infant’s history, treatments and ongoing health care needs. An appointment should be arranged within a reasonable period of time, preferably within 5-7 days of discharge. Follow up should be sooner, within 2-3 days of discharge, for an infant with hyperbilirubinemia or an oxygen requirement. The family should be given the appropriate contact information to reach their primary care physician after discharge. An additional facsimile should be sent to the office that includes a summary of the infant’s current clinical status, followed by a comprehensive discharge summary.¹

Sub-specialty care: If the infant needs sub-specialty follow up, appointments should be

made prior to discharge and noted in the chart. Follow up appointment and notation in the chart is especially crucial for ongoing retinal exams.⁶

IV. Selected References

1. *Clinical Report: Hospital Discharge of the High Risk Neonate. Pediatrics 122 (5): 1119-1126, 2011*
2. *Silber JH et al: Time to Send the Preemie Home? Additional Maturity at Discharge and Subsequent Health Care Costs. Health Services Research 44 (2): 444-462, 2009*
3. *Kemper AR, Mahle WT, Martin GR et al: Strategies for Implementing Screening for Critical Congenital Heart Disease. Pediatrics 128 (5): e1259-e1267, 2011*
4. *AAP Section of Breastfeeding: Breastfeeding and the use of human milk. Pediatrics 105 (3): 650-656, 2000*
5. *Joint Committee on Infant Hearing: Year 2007 Position Statement: Principles and Guidelines for Early Hearing Detection and Intervention Programs. Pediatrics 120 (4): 898-921, 2007*
6. *AAP Section on Ophthalmology, American Academy of Ophthalmology, and the American Academy for Pediatric Ophthalmology and Strabismus. Screening Examination of Premature Infants for Retinopathy of Prematurity. Pediatrics 117 (2): 572-576, 2006*
7. *Bull MJ, Engle WA and the Committee on Injury, Violence and Poison Protection, and the Committee on Fetus and Newborn. Safe Transportation of Preterm and Low Birth Weight Infants at Hospital Discharge. Pediatrics 123 (5): 1424-1429, 2009*
8. *AAP Subcommittee on Hyperbilirubinemia. Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks of Gestation. Pediatrics 114 (1): 297-316, 2004*
9. *Technical Report: Phototherapy to Prevent Severe Neonatal Hyperbilirubinemia in the Newborn Infant 35 or More Weeks of Gestation. VK Bhutani and the Committee on Fetus and Newborn. Pediatrics 128 (4): e1046-e1052, 2011*
10. *AAP Committee on the Fetus and Newborn Policy Statement: Apnea, sudden infant death syndrome and home monitoring. Pediatrics 111 (4): 914-917, 2003*
11. *Newborn Screening Expands: Recommendations for Pediatricians and Medical Homes – Implications for the System. Newborn Screening Authoring Committee. Pediatrics 121 (1): 192-217, 2008*
12. *American Academy of Pediatrics. Pickering LK, Baker CJ, Kimberlin DW, and Long SS. Red Book: Report of the Committee on Infectious Diseases, 29th edition. Elk Grove Village, IL. AAP, 2012*
13. *Committee on Infectious Diseases and Bronchiolitis Guidelines Committee: Updated Guidance for Palivizumab Prophylaxis Among Infants and Young Children at Increased Risk of Hospitalization for Respiratory Syncytial Virus Infection. Pediatrics 134: 415-420, 2014*
14. *Task Force on Infant Sleep Position and Sudden Infant Death Syndrome. Changing Concepts of Sudden Infant Death Syndrome: Implications for Infant Sleeping Environment and Sleep Position. Pediatrics 105 (3): 650-656, 2000*



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ProgenyHealth, Inc.
Phone: 610-832-2001
Fax: 610-832-2002
www.progenyhealth.com
info@progenyhealth.com