Clinical Policy: NICU Apnea Bradycardia Guidelines

Reference Number: CP.MP.82
Last Review Date: 05/18 Revision Log

See Important Reminder at the end of this policy for important regulatory and legal information.

Description
The purpose of this guideline is to assist with continuing care, discharge planning, and the transition to outpatient and home care of babies affected by ongoing neonatal apnea and bradycardia events. It will also serve as a guideline for the approval of continued stay for Neonatal admissions. The recommendations below are based primarily off of meta-analyses and practice patterns, as there are few controlled trials in this area.

Policy/Discharge Criteria

I. Significant cardiorespiratory events

Demonstrate maturity of respiratory control without episodes of **clinically significant** cardiorespiratory events (apnea and bradycardia) for 5 days prior to discharge, or up to 7 days for preterm infants born at <32 weeks gestation. Clinically significant cardiorespiratory events include any of the following:

A. Apnea ≥ 20 seconds;
B. Apnea < 20 seconds with bradycardia of < 80 beats per minute (may consider using a heart rate decrease > 33.3% below baseline for older, more mature infants or those with a lower baseline heart rate);
C. Apnea < 20 seconds with valid, prolonged oxygen desaturations < 85% (excludes transient oxygen desaturation < 85% unless requiring supplemental oxygen to resolve);
D. Any event (not associated with feedings) that results in bradycardia < 70 beats per minute;
E. Any event requiring stimulation, artificial ventilation (bagging or intubation), or supplemental oxygen support to restore normal breathing, heart rate, and oxygenation.

Note: Cardiorespiratory events associated with feeding are not uncommon in premature infants due to incoordination of sucking, swallowing and breathing. The significance of these events needs to be assessed individually (e.g., severity of bradycardia, degree of desaturation, intervention(s) required, etc.). Episodes associated with oral feedings may not be the same as episodes recorded while sleeping. Parents should be instructed in the technique of identifying feeding problems and correcting them. Infant may be sent home on a cardiorespiratory monitor if he or she is having non-clinically significant, self-limited apnea spells (without color change or severe bradycardia) and not requiring stimulation to breathe again.

II. Caffeine

If caffeine citrate is used, it may often be discontinued by 32 - 34 weeks corrected gestational age (CGA) as long as the infant is not having clinically significant episodes of apnea/bradycardia/desaturation at rest. Caffeine has a relatively long half-life and levels may be therapeutic in preterm infants for as long as 7 days or more after discontinuation. It is appropriate to observe an infant for 7 days after the withdrawal of caffeine but, since the

discontinuation often occurs well before discharge, a "caffeine countdown" should not typically prolong the date of discharge.[1, 6]

III. Home Cardiorespiratory Monitoring

A. Use of home cardiorespiratory monitors should be reserved for infants with ongoing medical conditions that place them at risk for apnea, airway obstruction, or hypoxemia. Such conditions may include:
   1. Pharmacological treatment of respiratory immaturity or continued apnea at term or near-term gestation (apnea of prematurity or apnea of infancy);
   2. Need for home oxygen therapy (may require the need for home pulse oximetry monitoring);
   3. Tracheostomy or other risk of airway obstruction;
   4. Need for other technology associated with cardiorespiratory impairment such as mechanical ventilation;

B. An assessment should be completed to determine which type of home monitoring system is appropriate (pulse oximetry monitor vs. cardiorespiratory monitor);

C. Infants going home with cardiorespiratory monitoring may be discharged prior to being free of clinically significant events for a 5 day period;

D. All parents should be encouraged to attend infant CPR class. If cardiorespiratory monitoring is to be used in the home, infant CPR training is a requirement for discharge;

E. All parents should be encouraged to room-in overnight in order to familiarize themselves with the baby's habits on the monitor the evening before discharge home;

F. An assessment of cardiorespiratory stability in a car seat is recommended prior to discharge for infants born at < 37 weeks gestation or with other risk factors for respiratory compromise (e.g. neuromuscular, orthopedic problems).

Other Considerations

If significant events continue to near-term or longer, then an evaluation for other causes of apnea may be completed. In cases where events appear to be associated with gastro-esophageal reflux, appropriate anti-reflux measures may be indicated. If the institution of anti-reflux measures appears to resolve the issues of bradycardia or apnea, it may not be necessary to keep the infant for additional 5 days of observation.

If nasal cannula airflow is introduced to address apnea/bradycardia events, the infant should be free of clinically significant events for 5 days on the same level of support contemplated for the child's discharge.

Background

Apnea of prematurity is a common condition of premature infants, often closely associated with bradycardia. The condition often results in prolonged lengths of stay in the neonatal intensive care units, as well as considerable parental anxiety. There is little objective evidence to recommend one

The Committee on Fetus and Newborn has defined apnea of prematurity as a cessation of breathing that lasts for at least 20 seconds or is of shorter duration but accompanied by bradycardia, cyanosis or pallor in an infant younger than 37 weeks' gestational age. The majority of preterm infants often cease to have apnea by 37 weeks' post-conceptional age, however

infants born at 24 to 28 weeks gestation have frequently been found to have apnea that persists longer, often to 44 weeks post-conceptional age.

Episodes of bradycardia may be associated with oral feedings and also with apnea events that occur while sleeping. Bradycardia associated with feeding that resolves with interruption of feeding is generally not regarded as a reason to delay discharge. Pathologic bradycardia (not associated with feeding) may be treated with pharmacologic or non-pharmacologic therapy. Non-pharmacologic measures include supplemental oxygen, artificial ventilation and physical stimulation.

When considering pharmacologic treatment, the most common agent used today is caffeine citrate. Loading doses of 20mg/kg have been used based on current references. Because of the relatively long half-life of caffeine citrate, as much as 87 hours in infants of < 33 weeks' gestation, caffeine citrate has been ideal for once a day dosing in most babies. Also, because of the relatively large therapeutic index, the drug has been found to be relatively safe. Maintenance dosing begins 24 hours after the loading dose at 5-8 mg/kg daily. If there is no clinical improvement in the number of significant events, then a caffeine level may be obtained. The therapeutic trough serum concentration is 5 to 25 mg/L.[6]

Reviews, Revisions, and Approvals	Date	Approval Date
Policy created Specialist review – Neonatal Pulmonologist	06/13	06/13
Updated coding indications	05/14	06/14
Reformatted sections with more specific headings called out Added apnea indications to significant respiratory events section Removed section about significant events continuing near term Removed authorization protocol and coding implications section	06/15	06/15
Added under *I* that infants <28 weeks gestation might need a longer event-free period prior to discharge. *I.E.* added heart rate. Added under *III* that parents should be encouraged to room overnight with infant before discharge. Removed "continuous nasogastric feeding" under *III* as cardiorespiratory monitoring would only detect late complications of aspiration. Minor wording changes made throughout policy for clarity. Specialist reviewed.	06/16	06/16
References reviewed and updated. Changed wording in *I* for clarity. Added statement to description that guidelines are based on practice patterns and meta-analyses, due to lack of controlled trials.	06/17	06/17
Revised statement in section I, clarifying "possibly longer" to "up to 7 days". Changed < 28 weeks gestation to < 32 weeks gestation. References reviewed and updated. Replaced in background, "A target level of 10-20ug/ml is sought." with "The therapeutic trough serum concentration is 5 to 25 mg/L" as per UpToDate. Clarified statement under II. Caffeine that siscontinuation of caffeine "often" occurs before discharge. Specialist reviewed- Neonatologist	05/18	05/18

References

1. Alere. Neonatal clinical management guideline. Eighth edition. American Academy of Pediatrics Committee on Fetus and Newborn. Hospital discharge of the high-risk neonate. Pediatrics 2008; 122:1119.3.
2. Darnall RA, Kattwinkel J, Nattie C, Robinson M. Margin of safety for discharge after apnea in preterm infants. *Pediatrics*. 1997; 100:795–801.
3. Eichenwald EC, Abimbola A, Stark AR. Apnea Frequency Persists Beyond Term Gestation in Infants Delivered, at 24 to 28 Weeks. *Pediatrics* 1997; 100:3 354-359.
4. Eichenwald EC and COMMITTEE ON FETUS AND NEWBORN, Apnea of prematurity, *Pediatrics*, originally published online December 1, 2015; DOI: 10.1542/peds.2015-3757
5. Loch SA, Srinivasan L, Escobar GJ. Epidemiology of Apnea and Bradycardia Resolution in Premature Infants. *Pediatrics*. 2011; 182(2):e366-e373.
6. Martin, Richard. Management of apnea of prematurity. In: UpToDate, Kim, ME (Ed), UpToDate, Waltham, MA. Accessed May 14, 2018.
7. National Institutes of Health, Consensus Development Conference on Infantile Apnea and Home Monitoring, Sept 29 to Oct 1, 1986. Pediatrics.1987; 79:292.

Important Reminder

This clinical policy has been developed by appropriately experienced and licensed health care professionals based on a review and consideration of currently available generally accepted standards of medical practice; peer-reviewed medical literature; government agency/program approval status; evidence-based guidelines and positions of leading national health professional organizations; views of physicians practicing in relevant clinical areas affected by this clinical policy; and other available clinical information. The Health Plan makes no representations and accepts no liability with respect to the content of any external information used or relied upon in developing this clinical policy. This clinical policy is consistent with standards of medical practice current at the time that this clinical policy was approved. "Health Plan" means a health plan that has adopted this clinical policy and that is operated or administered, in whole or in part, by Centene Management Company, LLC, or any of such health plan's affiliates, as applicable.

The purpose of this clinical policy is to provide a guide to medical necessity, which is a component of the guidelines used to assist in making coverage decisions and administering benefits. It does not constitute a contract or guarantee regarding payment or results. Coverage decisions and the administration of benefits are subject to all terms, conditions, exclusions and limitations of the coverage documents (e.g., evidence of coverage, certificate of coverage, policy, contract of insurance, etc.), as well as to state and federal requirements and applicable Health Plan-level administrative policies and procedures.

This clinical policy is effective as of the date determined by the Health Plan. The date of posting may not be the effective date of this clinical policy. This clinical policy may be subject to applicable legal and regulatory requirements relating to provider notification. If there is a discrepancy between the effective date of this clinical policy and any applicable legal or regulatory requirement, the requirements of law and regulation shall govern. The Health Plan retains the right to change, amend or withdraw this clinical policy, and additional clinical policies may be developed and adopted as needed, at any time.

This clinical policy does not constitute medical advice, medical treatment or medical care. It is not intended to dictate to providers how to practice medicine. Providers are expected to exercise professional medical judgment in providing the most appropriate care, and are solely responsible for the medical advice and treatment of members. This clinical policy is not intended to recommend treatment for

members. Members should consult with their treating physician in connection with diagnosis and treatment decisions.

Providers referred to in this clinical policy are independent contractors who exercise independent judgment and over whom the Health Plan has no control or right of control. Providers are not agents or employees of the Health Plan.

This clinical policy is the property of the Health Plan. Unauthorized copying, use, and distribution of this clinical policy or any information contained herein are strictly prohibited. Providers, members and their representatives are bound to the terms and conditions expressed herein through the terms of their contracts. Where no such contract exists, providers, members and their representatives agree to be bound by such terms and conditions by providing services to members and/or submitting claims for payment for such services.

Note: For Medicaid members, when state Medicaid coverage provisions conflict with the coverage provisions in this clinical policy, state Medicaid coverage provisions take precedence. Please refer to the state Medicaid manual for any coverage provisions pertaining to this clinical policy.

Note: For Medicare members, to ensure consistency with the Medicare National Coverage Determinations (NCD) and Local Coverage Determinations (LCD), all applicable NCDs, LCDs, and Medicare Coverage Guidelines should be reviewed prior to applying the criteria set forth in this clinical policy. Refer to the CMS website at http://www.cms.gov for additional information.