Clinical Policy: NICU Apnea Bradycardia Guidelines

Reference Number: WNC.CP.164 Coding Implications
Last Review Date: 03/23 Revision Log

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

Note: 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.

Description

The purpose of this guideline is to assist with continuity care, discharge planning, and the transition to outpatient and home care of infants 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 meta-analyses and practice patterns, as there are few random controlled trials in this area.

Guidelines

Infants may be considered ready for discharge from inpatient care for cardiorespiratory events or caffeine administration when meeting the guidelines in I, as applicable.

I. Discharge from inpatient care for significant cardiorespiratory events, **all of the following**:
   A. Infant demonstrates maturity of respiratory control and **one** of the following:
      1. Infant has had **no clinically significant** cardiorespiratory events (apnea and bradycardia) for 5 to 7 days prior to discharge, **all** of the following:
         a. No apnea ≥ 20 seconds;
         b. No 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. No apnea < 20 seconds with valid, prolonged oxygen desaturations < 85% (excludes transient oxygen desaturation < 85% unless requiring supplemental oxygen to resolve);
         d. No bradycardia < 70 beats per minute (unrelated to feedings);
         e. No events requiring stimulation, artificial ventilation (bagging or intubation), or supplemental oxygen support to restore normal breathing, heart rate, and oxygenation;
      2. Significant events (as defined in I.A.1.) continue to near-term or longer and **all** of the following:
         a. Cardiorespiratory events appear, after evaluation for potential causes of apnea, to be associated with gastro-esophageal reflux;
         b. Appropriate anti-reflux measures appear to resolve bradycardia or apnea (note: 5 days of observation may not be required in this case);
      3. The infant is having non-clinically significant, self-limited apnea spells (without color change or severe bradycardia) and **all** of the following:
         a. Does not require stimulation to breathe again;
         b. Will be discharged to home with a cardiorespiratory monitor;
         c. There has not been a clinically significant cardiorespiratory event (defined in I.A.1) for 3-7 days prior to discharge;

   d. Parents or caregivers have demonstrated proficiency in managing the cardiorespiratory monitor, providing stimulation, and completed infant CPR training;

B. If nasal cannula airflow is introduced to address apnea/bradycardia events, the infant should be free of clinically significant events (defined in I.A.1) for 5 to 7 days on the same level of support contemplated for the infant's discharge;
C. Infant has not received caffeine citrate for at least 7 days prior to planned discharge;
D. Infant has no additional condition(s) requiring inpatient care;

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 **should be evaluated on an individual basis** (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.

Note: 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.[1-4, 6]

Note: 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).

Note: Parents or caregivers are encouraged to attend an infant CPR class.

Background

Apnea of prematurity is a common condition of premature infants, often closely associated with bradycardia.[4,7] The condition often results in prolonged lengths of stay in the neonatal intensive care units, as well as considerable parental anxiety. . Each infant admitted to the NICU undergoes a unique hospital experience based upon their gestational age with discharge heavily dependent upon, at a minimum, the attainment of physiological maturity.[14]

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. Most cases are resolved by 37 weeks' post-conceptional age;, however infants born at 24 to 28 weeks gestation frequently have been found to have apnea that persists longer, often to 44 weeks post-conceptional age.[4]

Episodes of bradycardia may be associated with oral feedings and also with apnea events that occur while sleeping.[7] Bradycardia associated with feeding that resolves with interruption of feeding is generally not regarded as a reason to delay discharge.[4,10] Pathologic bradycardia (not associated with feeding) may be treated with pharmacologic or non-pharmacologic therapy.

Nonpharmacologic measures include supplemental oxygen, artificial ventilation and physical stimulation.[7]

Methylxanthine therapy, typically theophylline or caffeine, is the primary pharmacologic treatment for apnea of prematurity. Despite both agents having similar efficacy for decreasing episodes of apnea and bradycardia, results from a meta-analysis of five small trials of 108 infants noted considerably reduced adverse reactions with caffeine use versus theophylline use. Caffeine is recommended for infants with apnea of prematurity as an alternative to theophylline or supportive care alone.7 Caffeine citrate has a mean half-life of approximately 100 hours with some variation noted relative to gestational age at birth and chronological age.14 Because of its relatively long half-life in infants of < 33 weeks' gestation, caffeine citrate has been ideal for once per day dosing in most infants. Also, because of the relatively large therapeutic index, the drug has been considered relatively safe. Maintenance dosing begins 24 hours after the loading dose at 5-10 mg/kg daily. Routine drug levels are not necessary unless there are signs of caffeine toxicity, such as tachycardia.7,15 Infants who fail to respond to caffeine therapy might require intubation, mechanical ventilation, or nasal intermittent positive pressure ventilation (NIPPV).7

Cardiorespiratory home monitoring is indicated when an infant has an ongoing medical condition that increases risk for apnea, airway obstruction, or hypoxemia. Such conditions include, but are not limited to, the following:

- Persistent apnea of prematurity or apnea of infancy
- Chronic lung disease (e.g., bronchopulmonary dysplasia), especially those requiring supplemental oxygen, positive airway pressure, or mechanical ventilatory support
- Congenital myasthenic syndromes
- Tracheostomy or other airway abnormalities.[12]

Coding Implications

This clinical policy references Current Procedural Terminology (CPT®). CPT® is a registered trademark of the American Medical Association. All CPT codes and descriptions are copyrighted 2020, American Medical Association. All rights reserved. CPT codes and CPT descriptions are from the current manuals and those included herein are not intended to be all-inclusive and are included for informational purposes only. Codes referenced in this clinical policy are for informational purposes only. Inclusion or exclusion of any codes does not guarantee coverage. Providers should reference the most up-to-date sources of professional coding guidance prior to the submission of claims for reimbursement of covered services.

CPT®* Codes	Description
No applicable codes.	

HCPCS ®* Codes	Description
No applicable codes.	

ICD-10-CM Diagnosis Codes that Support Coverage Criteria

+ Indicates a code(s) requiring an additional character

ICD-10-CM Code	Description
No applicable codes.	

Reviews, Revisions, and Approvals	Reviewed Date	Approval Date
Original approval date	03/21	06/21
References reviewed and updated.	05/22	08/22
In I.A.1, changed requirement for no clinically significant events before discharge from "5" to "5-7" days. Expanded criteria I.A.3.c. into two criteria points by adding criteria I.A.3.d. Changed "child's" to "infant's" in criteria I.B. Reworded criteria former criteria I.E, now I.D., for clarity. Moved criteria I.E. and I.F. to notes section. Minor rewording in description, original notes, and background with no clinical significance,	03/23	

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. doi:10.1542/peds.100.5.795
3. Eichenwald EC, Aina 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; Committee on Fetus and Newborn. American Academy of Pediatrics. Apnea of prematurity. *Pediatrics*, 2016;137(1):10.1542/peds.2015-3757.; DOI: 10.1542/peds.2015-3757
5. Johns Hopkins HealthCare LLC. Optum Neonatal Clinical Management Guidelines Summary: Optum Neonatal Clinical Management Guidelines 9th Edition.
6. Loch SA, Srinivasan L, Escobar GJ. Epidemiology of Apnea and Bradycardia Resolution in Premature Infants. *Pediatrics*. 2011; 128(2):e366-e373. doi:10.1542/peds.2010-1567
7. Martin, R. Management of apnea of prematurity. UpToDate. www.uptodate.com. Updated May 21, 2020. Accessed April 11, 2022..
8. National Institutes of Health, Consensus Development Conference on Infantile Apnea and Home Monitoring, Sept 29 to Oct 1, 1986. *Pediatrics*.1987; 79:292.
9. Chandrasekharan P1, Rawat M, Reynolds AM, Phillips K, Lakshminrusimha S. Apnea, bradycardia and desaturation spells in premature infants: impact of a protocol for the duration of 'spell-free' observation on interprovider variability and readmission rates. *J Perinatol*. 2018;38(1):86-91. doi:10.1038/jp.2017.174.
10. Jeffries AL and Canadian Paediatric Society, Fetus and Newborn Committee. Going home: Facilitating discharge of the preterm infant. *Paediatr Child Health*. 2014; 19(1): 31–42.
11. Bodamer OA. Neuromuscular junction disorders in newborns and infants. UpToDate. www.uptodate.com. Updated September 20, 2021. Accessed April 11, 2022..
12. Cowin MJ. Use of home cardiorespiratory monitors in infants. www.uptodate.com. Updated February 16, 2021. Accessed April 11, 2022.Smith, VC, Stewart, J. Discharge planning for high-risk newborns. UpToDate. www.uptodate.com. Updated July 20, 2021.

Accessed April 11, 2022. Anderson N, Narvey M; Canadian Paediatric Society, Fetus and Newborn Committee. Discharge of the preterm infant position paper. Posted March 4, 2022. Accessed at https://cps.ca/documents/position/discharge-planning-of-the-preterm-infant. Accessed April 11, 2022.

13. Long JY, Guo HL, He X, et al. Caffeine for the Pharmacological Treatment of Apnea of Prematurity in the NICU: Dose Selection Conundrum, Therapeutic Drug Monitoring and Genetic Factors. *Front Pharmacol*. 2021;12:681842. Published 2021 Jul 26. doi:10.3389/fphar.2021.681842
14.
15.

North Carolina Guidance

Eligibility Requirements

a. An eligible beneficiary shall be enrolled in the NC Medicaid Program (Medicaid is NC Medicaid program, unless context clearly indicates otherwise);
a. Provider(s) shall verify each Medicaid beneficiary's eligibility each time a service is rendered.
b. The Medicaid beneficiary may have service restrictions due to their eligibility category that would make them ineligible for this service.

EPSDT Special Provision: Exception to Policy Limitations for a Medicaid Beneficiary under 21 Years of Age

a. 42 U.S.C. § 1396d(r) [1905(r) of the Social Security Act]

Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) is a federal Medicaid requirement that requires the state Medicaid agency to cover services, products, or procedures for Medicaid beneficiary under 21 years of age if the service is medically necessary health care to correct or ameliorate a defect, physical or mental illness, or a condition [health problem] identified through a screening examination (includes any evaluation by a physician or other licensed practitioner).

This means EPSDT covers most of the medical or remedial care a child needs to improve or maintain his or her health in the best condition possible, compensate for a health problem, prevent it from worsening, or prevent the development of additional health problems.

Medically necessary services will be provided in the most economic mode, as long as the treatment made available is similarly efficacious to the service requested by the beneficiary's physician, therapist, or other licensed practitioner; the determination process does not delay the delivery of the needed service; and the determination does not limit the beneficiary's right to a free choice of providers.

EPSDT does not require the state Medicaid agency to provide any service, product or procedure:

1. that is unsafe, ineffective, or experimental or investigational.
2. that is not medical in nature or not generally recognized as an accepted method of medical practice or treatment.

Service limitations on scope, amount, duration, frequency, location of service, and other specific criteria described in clinical coverage policies may be exceeded or may not apply as long as the provider's documentation shows that the requested service is medically necessary "to correct or ameliorate a defect, physical or mental illness, or a condition" [health problem]; that is, provider documentation shows how the service, product, or procedure meets all EPSDT criteria, including to correct or improve or maintain the beneficiary's health in the best condition possible, compensate for a health problem, prevent it from worsening, or prevent the development of additional health problems.

EPSDT and Prior Approval Requirements

1. If the service, product, or procedure requires prior approval, the fact that the beneficiary is under 21 years of age does NOT eliminate the requirement for prior approval.
2. **IMPORTANT ADDITIONAL INFORMATION** about EPSDT and prior approval is found in the *NCTracks Provider Claims and Billing Assistance Guide*, and on the EPSDT provider page. The Web addresses are specified below:

NCTracks Provider Claims and Billing Assistance Guide:
https://www.nctracks.nc.gov/content/public/providers/provider-manuals.html
EPSDT provider page: https://medicaid.ncdhhs.gov/

Provider(s) Eligible to Bill for the Procedure, Product, or Service
To be eligible to bill for the procedure, product, or service related to this policy, the provider(s) shall:

a. meet Medicaid qualifications for participation;
b. have a current and signed Department of Health and Human Services (DHHS) Provider Administrative Participation Agreement; and
c. bill only for procedures, products, and services that are within the scope of their clinical practice, as defined by the appropriate licensing entity.

Compliance
Provider(s) shall comply with the following in effect at the time the service is rendered:

a. All applicable agreements, federal, state and local laws and regulations including the Health Insurance Portability and Accountability Act (HIPAA) and record retention requirements; and
b. All NC Medicaid's clinical (medical) coverage policies, guidelines, policies, provider manuals, implementation updates, and bulletins published by the Centers for Medicare and Medicaid Services (CMS), DHHS, DHHS division(s) or fiscal contractor(s).

Claims-Related Information
Provider(s) shall comply with the NC Tracks Provider Claims and Billing Assistance Guide, Medicaid bulletins, fee schedules, NC Medicaid's clinical coverage policies and any other relevant documents for specific coverage and reimbursement for Medicaid:

a. Claim Type - as applicable to the service provided:
Professional (CMS-1500/837P transaction)
Institutional (UB-04/837I transaction)

Unless directed otherwise, Institutional Claims must be billed according to the National Uniform Billing Guidelines. All claims must comply with National Coding Guidelines.

b. International Classification of Diseases and Related Health Problems, Tenth Revisions, Clinical Modification (ICD-10-CM) and Procedural Coding System (PCS) - Provider(s) shall report the ICD-10-CM and Procedural Coding System (PCS) to the highest level of specificity that supports medical necessity. Provider(s) shall use the current ICD-10 edition and any subsequent editions in effect at the time of service. Provider(s) shall refer to the applicable edition for code description, as it is no longer documented in the policy.
c. Code(s) - Provider(s) shall report the most specific billing code that accurately and completely describes the procedure, product or service provided. Provider(s) shall use the Current Procedural Terminology (CPT), Health Care Procedure Coding System (HCPCS), and UB-04 Data Specifications Manual (for a complete listing of valid revenue codes) and any subsequent editions in effect at the time of service. Provider(s) shall refer to the applicable edition for the code description, as it is no longer documented in the policy. If no such specific CPT or HCPCS code exists, then the provider(s) shall report the procedure, product or service using the appropriate unlisted procedure or service code.
   Unlisted Procedure or Service
   CPT: The provider(s) shall refer to and comply with the Instructions for Use of the CPT Codebook, Unlisted Procedure or Service, and Special Report as documented in the current CPT in effect at the time of service.
   HCPCS: The provider(s) shall refer to and comply with the Instructions For Use of HCPCS National Level II codes, Unlisted Procedure or Service and Special Report as documented in the current HCPCS edition in effect at the time of service
d. Modifiers - Providers shall follow applicable modifier guidelines.
e. Billing Units - Provider(s) shall report the appropriate code(s) used which determines the billing unit(s).
f. Co-payments -
   For Medicaid refer to Medicaid State Plan:
   https://medicaid.ncdhhs.gov/get-involved/nc-health-choice-state-plan

g. Reimbursement - Provider(s) shall bill their usual and customary charges. For a schedule of rates, refer to: https://medicaid.ncdhhs.gov/.

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/enrollees. This clinical policy is not intended to recommend treatment for members/enrollees. Members/enrollees should consult with their treating physician in connection with diagnosis and treatment decisions.

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