Anthem

Clinical UM Guideline

Subject: Infant Home Apnea Monitors
Guideline #: CG-DME-08
Status: Reviewed

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Description

This document addresses the use of apnea (cardiorespiratory) monitors for use in the home to monitor both respiratory and heart rates on infants. An alarm will sound if there is respiratory cessation (apnea) beyond a predetermined time limit (for example, 20 seconds), or if the heart rate falls below a preset rate (bradycardia).

Clinical Indications

Medically Necessary:

Home cardiorespiratory (that is, apnea) monitoring is considered **medically necessary** in any of the following infants:

A. Those who have experienced a brief resolved unexplained event (BRUE). If monitored due to BRUE, use of an apnea monitor is considered **medically necessary** until event free for 2 to 3 months.
B. Those with tracheostomies or anatomic abnormalities of the face, tongue, jaw or airway that make them vulnerable to airway compromise.*
C. Those with neurologic or metabolic disorders affecting respiratory control.*
D. Those with chronic lung disease (such as, bronchopulmonary dysplasia), particularly those requiring supplemental oxygen; continuous positive airway pressure; or mechanical ventilation.*
E. Those with apnea of prematurity, defined as sudden cessation of breathing that lasts for at least 20 seconds or is accompanied by bradycardia (heart rate less than 80 beats per minute) or oxygen (O_2) desaturation (O_2 saturation less than 90% or cyanosis) in an infant with early home discharge prior to term (38 weeks). Continued use is considered medically necessary up to 43 weeks postmenstrual age or event free for 2 weeks, whichever comes later.
F. Those discharged home on a schedule of weaning narcotics.*
G. Those with bradycardia on caffeine, theophylline, or similar agents, until event free for 2 weeks off medication.
H. Those with diagnosis of pertussis, with positive cultures. If monitored for pertussis, use of a monitor is considered medically necessary for up to one month post diagnosis.
I. Those with diagnosis of gastroesophageal reflux disease (GERD) that results in apnea (at least 20 seconds), bradycardia (heart rate less than 80 beats per minute), or oxygen desaturation (O_2 saturation less than 90% or cyanosis), until event free for 6 weeks.

***Note:** See Duration section below.

Other considerations:

1. The home monitor should be equipped with an event recorder.
2. The physician should establish a specific plan for periodic review and termination of the home monitor before initiating therapy.

Note: Short-term monitoring to assist the family transition to home may be indicated in some cases following a previous sibling death from sudden infant death syndrome (SIDS) or following a particularly complex and protracted neonatal hospital course.

Not Medically Necessary:

Home apnea monitoring is considered **not medically necessary** for infants who do not meet the medically necessary criteria listed above.

Duration

Duration:

- Infant apnea monitors are usually considered **medically necessary** for approximately 3 months except for specific conditions listed above.
- Continued use of an apnea monitor is considered medically necessary, even when infants become 12 months old during the course of a specified medically necessary duration of use.
- Apnea monitoring beyond 12 months old requires physician documentation supporting the continuation of monitoring.

Coding

The following codes for treatments and procedures applicable to this document are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

When services may be Medically Necessary when criteria are met:

CPT	
94774	Pediatric home apnea monitoring event recording including respiratory rate, pattern and heart rate per 30-day period of time; includes monitor attachment, download of data, review, interpretation, and preparation of a report by a physician or other qualified health care professional
94775	Pediatric home apnea monitoring event recording including respiratory rate, pattern and heart rate per 30-day period of time; monitor attachment only (includes hook-up, initiation of recording and disconnection)

94776	Pediatric home apnea monitoring event recording including respiratory rate, pattern and heart rate per 30-day period of time; monitoring, download of information, receipt of transmission(s) and analyses by computer only
94777	Pediatric home apnea monitoring event recording including respiratory rate, pattern and heart rate per 30-day period of time; review, interpretation and preparation of report only by a physician or other qualified health care professional

HCPCS

E0619	Apnea monitor, with recording feature

ICD-10 Diagnosis

All diagnoses

When services are Not Medically Necessary:
For the procedure codes listed above when criteria are not met.

When services are also Not Medically Necessary:

HCPCS

E0618	Apnea monitor, without recording feature

ICD-10 Diagnosis

All diagnoses

Discussion/General Information

Infant home apnea monitors were designed with the purpose of protecting infants by identifying central apnea or bradycardia and signaling for parental intervention to prevent death (Halbower, 2008). Data recording devices are used with the monitor so the health care provider can study the event. The U.S. Food and Drug Administration (FDA, 2002) 510K premarket review process for class II devices defines apnea monitors as:

> A complete system intended to alarm primarily upon the cessation of breathing timed from the last detected breath. The apnea monitor also includes indirect methods of apnea detection, such as monitoring of heart rate and other physiological parameters linked to the presence or absence of adequate respiration.

The American Academy of Pediatrics (AAP) policy statement regarding SIDS and home sleeping environments (reaffirmed 2005) identified infants who could benefit from home monitoring, not because of an increased risk of SIDS, but because of other factors that increase the risk of sudden death. These infants include those that have:

- experienced an apparent life threatening event [ALTE (renamed and redefined as brief resolved unexplained event (BRUE) in the AAP 2016 clinical practice guideline)]
- tracheostomies or anatomic abnormalities that make them vulnerable to airway compromise
- neurologic or metabolic disorders affecting respiratory control
- chronic lung disease (for example, bronchopulmonary dysplasia), particularly those requiring supplemental oxygen; continuous positive airway pressure; or mechanical ventilation.

In the 2022 update of recommendations for apnea monitors as a strategy to reduce SIDS, the AAP policy notes,

> Do not use home cardiorespiratory monitors as a strategy to reduce the risk of SIDS. The use of cardiorespiratory monitors has not been documented to decrease the incidence of SIDS. These devices are sometimes prescribed for use at home to detect apnea or bradycardia and, when pulse oximetry is used, decreases in oxyhemoglobin saturation for infants at risk of these conditions, including some preterm infants with an unusually prolonged course of recurrent, extreme apnea. In addition, routine in-hospital cardiorespiratory monitoring before discharge from the hospital has not been shown to detect infants at risk of SIDS. There are no data that other commercial devices that are designed to monitor infant vital signs reduce the risk of SIDS.

The 2022 AAP policy further notes that there is a concern that use of home cardiorespiratory monitors may cause a sense of complacency and decreased adherence to AAP safe sleep guidelines in parents and caregivers.

The AAP clinical practice guideline (Tieder, 2016) addresses the evaluation of *lower-risk infants* who have experienced ALTEs. The AAP Subcommittee on Apparent Life Threatening Events committee recommends replacing the term ALTE with BRUE. AAP defines BRUE as:

> An event occurring in an infant < 1 year of age when the observer reports a sudden, brief*, and now resolved episode of ≥ 1 of the following:
>
> - cyanosis or pallor
> - absent, decreased, or irregular breathing
> - marked change in tone (hyper or hypotonia)
> - altered level of responsiveness
>
> Moreover, clinicians should diagnose a BRUE only when there is no explanation for a qualifying event after conducting an appropriate history and physical examination
>
> * By consensus, the subcommittee established < 1 minute as the upper limit of a "brief event," understanding that objective, verifiable measurements were rarely, if ever, available.

The authors note that the use of BRUE, which uses more objective, specific defining criteria, and excludes symptomatic infants (such as those with fever or respiratory events), allows for a more precise diagnosis to “prevent the overuse of medical interventions by helping clinicians distinguish infants with lower risk”. In order to be designated as lower risk, the following criteria need to be met:

- Age > 60 days
- Prematurity: gestational age ≥ 32 weeks and post-conceptional age ≥ 45 weeks
- First BRUE (no previous BRUE ever and not occurring in clusters)
- Duration of event < 1 minute
- No CPR required by trained medical provider

- No concerning historical features
- No concerning physical examination findings

In those infants classified as lower risk, the AAP does not recommend the use of home cardiorespiratory monitoring, noting "Clinicians Should Not Initiate Home Cardiorespiratory Monitoring in Infants Presenting with a Lower-Risk BRUE (Grade B, Moderate Recommendation)." While AAP does not recommend the use of home cardiorespiratory monitoring, it is noted this recommendation may result in missing an infant with recurrent central apnea or cardiac arrhythmias. In those infants determined to be higher risk, the guideline notes, "Although it is beyond the scope of this clinical practice guideline, future research may show that home monitoring (cardiorespiratory and/or oximetry) is appropriate for some infants with higher-risk BRUE."

It is recognized that the later sibling(s) of an infant who died of SIDS presents a unique emotional and clinical dilemma. Many clinicians suggest monitoring such infants until they are 1 month older than the age at which the sibling died, and remain event free. Although such use is not directly supported by specific evidence in the peer reviewed medical literature, it may be impossible to preclude monitoring if one or more siblings has died of SIDS. Short-term monitoring to assist the family transition to home may be indicated in some cases following a previous sibling death from SIDS or following a particularly complex and protracted neonatal hospital course.

Types of Apnea

There are three types of infantile apnea: central, obstructive, and mixed.

Central Apnea: Central apnea is characterized by complete cessation of respiratory efforts on the monitor and is usually related to central nervous system injury, very premature infants in whom the respiratory center in the brain is immature, depressant medications (for example, narcotics, sedatives), or metabolic conditions (for example, hypoglycemia). The chest is still and no air passes through the nose or mouth.

Obstructive Apnea: A common type of apnea in children, obstructive apnea is caused by an obstruction of the airway (such as enlarged tonsils and adenoids) and is most likely to happen during sleep when the soft tissue at the back of the throat is most relaxed. In obstructive apnea, there is no airflow below the glottis though the monitor will continue to demonstrate breathing movements. The chest is moving, but no air passes through the nose or mouth. Infant home monitoring may identify heart rate changes that can accompany episodes of obstructive apnea.

Mixed Apnea: Mixed apnea is a combination of central and obstructive apnea and is seen particularly in infants or young children who have abnormal control of breathing. Mixed apnea may occur when a child is awake or asleep.

Monitors that are equipped with an event recorder are able to capture and store data surrounding significant events, such as heart rate and rhythm abnormalities, for later analysis by a physician. If home cardiorespiratory monitoring is prescribed, the monitor should be equipped with an event recorder. Information from the monitor can be used to distinguish the type of apnea and allow for a distinct treatment plan based on the etiology.

References

Peer Reviewed Publications:

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2. Halbower AC. Pediatric home apnea monitors: coding, billing, and updated prescribing information for practice management. Chest. 2008; 134(2):425-429.
3. Hoppenbrouwers T, Hodgman JE, Ramanathan A, Dorey F. Extreme and conventional cardiorespiratory events and epidemiologic risk factors for SIDS. J Pediatr. 2008; 152(5):636-641.
4. Jobe AH. What do home monitors contribute to the SIDS problem? JAMA. 2001; 285(17):2244-2245.
5. Lorch SA, Srinivasan L, Escobar GJ. Epidemiology of apnea and bradycardia resolution in premature infants. Pediatrics. 2011; 128(2):e366-e373.
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7. Ramanathan R, Corwin MJ, Hunt CE, et al. Cardiorespiratory events recorded on home monitors: comparison of healthy infants with those at increased risk for SIDS. JAMA. 2001; 285(17):2199-2207.
8. Silvestri JM. Indications for home apnea monitoring (or not). Clin Perinatol. 2009; 36(1):87-99.
9. Strehle EM, Gray WK, Gopisetti S, et al. Can home monitoring reduce mortality in infants at increased risk of sudden infant death syndrome? A systematic review. Acta Paediatr. 2012; 101(1):8-13.

Government Agency, Medical Society, and Other Authoritative Publications:

1. American Academy of Pediatrics. Committee on Fetus and Newborn. Hospital discharge of the high-risk neonate. Pediatrics. 2008; 122(5):1119-1126.
2. American Academy of Pediatrics. Task Force on Sudden Infant Death Syndrome. The changing concept of Sudden Infant Death Syndrome: diagnostic coding shifts, controversies regarding the sleeping environment, and new variables to consider in reducing risk. Policy Statement. Pediatrics. 2005; 116(5):1245-1255.
3. American Academy of Pediatrics. Task Force on Sudden Infant Death Syndrome. SIDS and other sleep-related infant deaths: Updated 2016 Recommendations for a Safe Infant Sleeping Environment. Pediatrics. 2016; 138(5): e20162938
4. Eichenwald EC; Committee on Fetus and Newborn. Clinical report guidance for the clinician in rendering pediatric care. Apnea of Prematurity Jan 2016. Pediatrics. 2016; 137(1):e20153757.
5. Moon RY, Carlin RF, Hand I; Task Force on Sudden Infant Death Syndrome and the Committee on Fetus and Newborn. Sleep-related infant deaths: Updated 2022 recommendations for reducing infant deaths in the sleep environment. Pediatrics. 2022;150(1):e2022057990.
6. Tieder JS, Bonkowsky JL, Etzel RA, et al.; Subcommittee on Apparent Life Threatening Events. Brief resolved unexplained events (formerly apparent life-threatening events) and evaluation of lower-risk infants. Pediatrics. 2016; 137(5).

Websites for Additional Information

1. American Academy of Pediatrics (AAP).
    - Choosing Wisely. Home Apnea Monitors for SIDs. July 2014. Available at:https://www.choosingwisely.org/patient-resources/home-apnea-monitors-for-sids/. Accessed on March 13, 2023.
    - The Truth about Home Apnea Monitors for SIDs. Last updated August 22, 2017. Available at: https://www.healthychildren.org/English/ages-stages/baby/sleep/Pages/Home-Apnea-Monitors-for-SIDs.aspx.

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2. Medline Plus. Home apnea monitor use-infants. Reviewed August 10, 2021. Available at: https://medlineplus.gov/ency/patientinstructions/000755.htm. Accessed on March 13, 2023.
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History

Status	Date	Action
Reviewed	05/11/2023	Medical Policy & Technology Assessment Committee (MPTAC) review. Updated Discussion and Websites sections.
Reviewed	05/12/2022	MPTAC review. Updated Discussion and Websites sections.
Reviewed	05/13/2021	MPTAC review. Updated References and Websites sections. Reformatted Coding section.
Reviewed	05/14/2020	MPTAC review. Updated References and Websites sections.
Revised	06/06/2019	MPTAC review. Revised medically necessary criteria regarding chronic lung disease example bronchopulmonary dysplasia from “that is” to “such as”. Updated Discussion and References sections.
Reviewed	07/26/2018	MPTAC review. Updated References and Websites sections.
	05/02/2018	The document header wording updated from “Current Effective Date” to “Publish Date.”
Reviewed	08/03/2017	MPTAC review. Updated References and Websites sections.
Revised	08/04/2016	MPTAC review. Revised criteria #1 from ALTE to BRUE to reflect updated term. Updated Discussion, References, Websites and Index sections. Updated formatting in Clinical Indications section. Removed ICD-9 codes from Coding section.
Revised	08/06/2015	MPTAC review. Clarified criteria- spelled out abbreviation “i.e.” Updated Discussion and References sections.
Reviewed	08/14/2014	MPTAC review.
Reviewed	08/08/2013	MPTAC review. Added Web Site section.
Reviewed	08/09/2012	MPTAC review. Updated Discussion and References.
Reviewed	08/18/2011	MPTAC review. Updated Coding, Discussion and References.
Reviewed	08/19/2010	MPTAC review. Discussion and references updated.
Reviewed	08/27/2009	MPTAC review. Discussion and references updated. Place of service section deleted. Coding section updated with 10/01/2009 ICD-9 changes.
Reviewed	08/28/2008	MPTAC review. Description, discussion, and references updated.
Revised	08/23/2007	MPTAC review. Clarified continued use of monitor for apnea of prematurity. Clarified Not Medically Necessary statement. References updated.
	01/01/2007	Updated coding section with 01/01/2007 CPT/HCPCS changes.
Reviewed	09/14/2006	MPTAC review. References and coding updated.
Revised	09/22/2005	MPTAC review. Revision based on Pre-merger Anthem and Pre-merger WellPoint Harmonization.

Pre-Merger Organizations	Last Review Date	Document Number	Title
Anthem BCBS	06/25/2005	Memo 102 Coverage Guidelines (S.E. Region)	Sudden Infant Death Syndrome (SIDS) Monitors
WellPoint Health Networks, Inc.	07/14/2004	Clinical Guideline	Infant Home Apnea Monitor

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