



# CIGNA MEDICAL COVERAGE POLICY

The following Coverage Policy applies to all health benefit plans administered by CIGNA Companies including plans formerly administered by Great-West Healthcare, which is now a part of CIGNA.

**Subject Home Apnea Monitoring for Infants**

**Effective Date ..... 3/15/2011**  
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**Coverage Policy Number ..... 0060**

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## Hyperlink to Related Coverage Policies

### INSTRUCTIONS FOR USE

Coverage Policies are intended to provide guidance in interpreting certain **standard** CIGNA HealthCare benefit plans. Please note, the terms of a customer's particular benefit plan document [Group Service Agreement (GSA), Evidence of Coverage, Certificate of Coverage, Summary Plan Description (SPD) or similar plan document] may differ significantly from the standard benefit plans upon which these Coverage Policies are based. For example, a customer's benefit plan document may contain a specific exclusion related to a topic addressed in a Coverage Policy. In the event of a conflict, a customer's benefit plan document **always supercedes** the information in the Coverage Policies. In the absence of a controlling federal or state coverage mandate, benefits are ultimately determined by the terms of the applicable benefit plan document. Coverage determinations in each specific instance require consideration of 1) the terms of the applicable benefit plan document in effect on the date of service; 2) any applicable laws/regulations; 3) any relevant collateral source materials including Coverage Policies and; 4) the specific facts of the particular situation. Coverage Policies relate exclusively to the administration of health benefit plans. Coverage Policies are not recommendations for treatment and should never be used as treatment guidelines. Proprietary information of CIGNA. Copyright ©2011 CIGNA

## Coverage Policy

Coverage for a home apnea monitor is subject to the terms, conditions and limitations of the applicable benefit plan's Durable Medical Equipment (DME) benefit and schedule of copayments. Please refer to the applicable benefit plan document to determine benefit availability and the terms, conditions and limitations of coverage.

If coverage is available for a home apnea monitor, the following conditions of coverage apply.

CIGNA covers home apnea monitoring for infants as medically necessary when ANY of the following criteria is met:

- Premature infant with history of apnea accompanied by bradycardia or oxygen desaturation (cyanosis). Coverage will be provided until 43 weeks postmenstrual age\*, or two months after the last documented event.
- Infant who has experienced an apparent life-threatening event (ALTE), defined as some combination of the following: central or obstructive apnea; color change; marked change in muscle tone (i.e., flaccid or hypotonic); and/or choking or gagging. Coverage will be provided for up to three months following the ALTE.
- Infant with confirmed diagnosis of pertussis. Coverage will be provided for up to one month following the diagnosis.

- Infant with a tracheostomy or anatomic abnormalities increasing vulnerability to airway compromise.
- Infant with neurologic or metabolic disorders affecting respiratory control.
- Infant with chronic lung disease (i.e., bronchopulmonary dysplasia).
- Infant who requires supplemental oxygen, continuous positive airway pressure (CPAP), or mechanical ventilation.

\*Postmenstrual age is defined by the American Academy of Pediatrics as the time elapsed between the first day of the mother's last menstrual period and birth (gestational age) plus the time elapsed after birth (chronological age).

**CIGNA does not cover home apnea monitoring for any other indication, including the prevention of sudden infant death syndrome (SIDS), because it is considered experimental, investigational or unproven.**

## General Background

Apnea of infancy is an unexplained episode of cessation of breathing for 20 seconds or longer, or a shorter respiratory pause associated with bradycardia, cyanosis, pallor, and/or marked hypotonia. Apnea of prematurity is defined as sudden cessation of breathing for 15-20 seconds in an infant less than 37 weeks' gestational age, accompanied by bradycardia and oxygen desaturation. Home cardiorespiratory monitoring may be indicated for infants with certain factors that increase the risk of sudden death in order to allow rapid recognition of apnea, airway obstruction, respiratory failure, interruption of supplemental oxygen supply, or failure of mechanical respiratory support (American Academy of Pediatrics [AAP] Policy Statement, 2003).

An apparent life-threatening event (ALTE) is defined as an episode that is frightening to the observer and is characterized by some combination of apnea (central or occasionally obstructive), color change (usually cyanotic or pallid but occasionally erythematous or plethoric), marked change in muscle tone (usually marked limpness), choking or gagging. An ALTE is not a specific diagnosis. The history and physical examination may reveal the etiology of the event. Diagnostic possibilities include gastrointestinal, neurologic, and infectious disorders, including bronchiolitis, pertussis, and respiratory syncytial virus (RSV) (Silvestri, 2008)

Sudden infant death syndrome (SIDS) is the sudden death of an infant under one year of age which is unexplained after a thorough investigation that includes an autopsy, review of the clinical history, and examination of the death scene. Continuous cardiorespiratory monitoring was first suggested during the 1970s as a means to reduce the incidence of SIDS, and was expanded in the 1980s, based on the theory that prolonged apnea and bradycardia indicated susceptibility to SIDS and were a precursor to the terminal event. Multiple studies have failed to validate this theory, however. There is no evidence that the presence of apnea and/or bradycardia identifies a group at increased risk of SIDS, that home monitoring can provide warning in time for intervention to prevent sudden death, or that intervention would be successful in preventing unexpected death. It has been suggested that home apnea monitoring may be reasonable for SIDS siblings, despite the lack of evidence demonstrating benefit, in order to reduce parents' anxiety. All caregivers, however, require training in observation techniques, operation of the monitor, and infant cardiopulmonary resuscitation and stimulation methods. Each time an alarm occurs, the parent or caregiver must investigate, turning on lights and evaluating the infant's status, and false alarms are frequent. Home monitoring therefore may actually impose substantial stress on families.

When home apnea monitoring is initiated, a specific plan for periodic review and termination of monitoring is recommended. The risk of apnea of prematurity decreases with time, ceasing at approximately 43 weeks postmenstrual age. Postmenstrual age is defined as the time elapsed between the first day of the last menstrual period and birth (gestational age) plus the time elapsed after birth (chronological age). The American Academy of Pediatrics (2003) recommends home apnea monitoring for apnea of prematurity be limited to approximately 43 weeks postmenstrual age, or after the cessation of extreme episodes. Monitoring of infants who have

experienced an ALTE is usually discontinued following two to three months with no significant event. Short term monitoring may be indicated for infants with pertussis. Home apnea monitoring may also be provided infants who are technology dependent, have neurologic or metabolic disorders effecting respiratory control, and infants with chronic lung disease. The duration of monitoring is determined by the infant's clinical status.

### **Literature Review**

The Collaborative Home Infant Monitoring (CHIME) Study group began a four-year longitudinal cohort study in 1992 to test the theory that preterm infants, siblings of infants who had died of SIDS, and infants who had experienced an apparent life threatening event (ALTE) had a greater risk of cardiorespiratory events than healthy term infants (Ramanathan, et al., 2001). This study demonstrated that conventional cardiorespiratory events were common in both preterm and healthy term infants. Extreme events were common only in preterm infants, and the timing indicated that these events were not immediate precursors of SIDS. Extreme events were defined as: apnea of at least 30 seconds; heart rate less than 60 for at least 10 seconds if less than 44 weeks postconceptual age; or, if at least 44 weeks postconceptual age, heart rate less than 50 for at least 10 seconds. These events had disappeared by the time the infants reached a postconceptual age of 43 weeks. The peak for SIDS occurrence is well beyond this age for both preterm and full-term infants. This study also concluded that most extreme events included at least three obstructed breaths, which would have been missed by the transthoracic impedance monitors most commonly used.

Esani et al. (2008) conducted a retrospective review of data from the CHIME study to compare the risk factors for ALTE with published risk factors for SIDS in order to determine if ALTEs are significantly related to SIDS. The following risk factors were analyzed: male predominance, gestational age, low birth weight, very low birth weight, incidence of small for gestational age (SGA), age at the event, multiparity, maternal age, and smoking. Population-based SIDS studies with more than 100 deaths and a focus on pertinent risk factors were evaluated for comparison. Four characteristics were clearly similar in the ALTE and SIDS cohorts: maternal smoking, percent male, gestational age, and very low birth weight. Several characteristics in ALTE CHIME patients differed from the established SIDS risk factors. ALTE peaked during the first two months, while SIDS peaked at between two and four months. The age of ALTE mothers correlated with normal population distribution, while the age of SIDS mothers was disproportionately younger. Fewer CHIME infants were low birth-weight compared to SIDS infants, and SGA status was normal at birth in infants with an ALTE but elevated in those with SIDS. The authors stated that, although a number of risk factors for ALTEs are similar to those of SIDS, the differences warrant a separate focus on ALTEs.

Hoppenbrouwers et al. (2008) conducted a retrospective review of CHIME data to test the hypothesis that there is a lack of correlation between extreme events and SIDS. The authors also tested the hypothesis that if conventional events are normal, their numbers should increase once a circadian decrease in breathing rate is established, and the number of events should decrease with maternal smoking. Extreme events were defined as 1) apnea persisting for at least 30 seconds, 2) heart rate < 60 for at least 10 seconds in infants < 44 weeks postmenstrual age (PMA), or 3) heart rate < 50 for at least 10 seconds in infants ≥44 weeks PMA. Conventional events were defined as 1) apnea persisting for at least 20 seconds, 2) heart rate < 60 for at least 5 seconds or <80 for 15 seconds in infants < 44 weeks PMA, or 3) heart rate < 50 for at least 5 seconds or < 60 for at least 15 seconds in infants ≥44 weeks PMA. Oxygen desaturation can accompany either of these events. Extreme events were not associated with any known SIDS risk factors, and occurred less often during the early morning, a time when infants tend to be at higher risk of SIDS. Healthy term infants had significantly fewer of these events, but these differences disappeared after 43 weeks PMA, well before the peak SIDS incidence.

The results also supported the authors' second hypothesis. Conventional events did increase when breathing rates begin to decline during the night as an expression of circadian modulation. Maternal smoking during pregnancy, which would be expected to result in increased infant respiratory rate due to mild hypoxia, was associated with a decrease in conventional events in both young and older infants. The authors concluded that neither extreme nor conventional events were associated with primary epidemiologic risk factors for SIDS, supporting the hypothesis that they are not immediate precursors of or causally related to SIDS.

Al-Kindy et al. conducted a retrospective cohort study to determine whether known risk factors for cardiopulmonary illnesses would help identify infants who would experience extreme events during an admission for an ALTE, or later at home. Events were classified as extreme using the criteria established in the CHIME study (above). Of 625 patients admitted for ALTE between 1996 and 2006, 46 (7.4%) had extreme events recorded, usually occurring within 24 hours of admission. Upper respiratory tract infection was the most

frequent diagnosis (n=30). Factors that increased the likelihood of an extreme event were post-conceptual age of < 43 weeks (5.2 –fold), premature birth (6.3-fold), and upper respiratory tract infection symptoms (11.2-fold). Seven infants had extreme events recorded post-discharge using home monitoring (four with upper respiratory tract infection); all seven of these infants had experienced extreme events while hospitalized. Pertussis was diagnosed in two of these infants; and four infants had a recurrence of events with an upper respiratory tract infection, including one with respiratory syncytial virus (RSV).

### **Professional Societies/Organizations**

In 1992, the American Academy of Pediatrics (AAP) recommended that infants be laid down in a nonprone position as a strategy to reduce the risk of SIDS. The “Back to Sleep” program was initiated in 1994 under the leadership of the National Institute of Child Health and Human Development and as a joint effort of the U.S. Public Health Service, the AAP, the SIDS Alliance, and the Association of SIDS and Infant Mortality Programs.

According to the AAP Task Force on Sudden Infant Death Syndrome policy statement, *The Changing Concept of Sudden Infant Death Syndrome: Diagnostic Coding Shifts, Controversies Regarding the Sleeping Environment, and New Variables to Consider in Reducing Risk* (2005), there has been a consistent decrease in the rate of SIDS since 1992, consistent with a steady decrease in the prone sleeping rate. In 1992, the SIDS rate in the U.S. was 1.20 deaths per 1000 live births. In 2001, the SIDS rate was 0.56 deaths per 1000 live births, a decrease of 53% over ten years. The rate remained constant in 2002 at 0.57 deaths per 1000 live births. Postneonatal mortality rates of several other causes of sudden unexpected infant death increased significantly between 1999 and 2001, however. The AAP policy statement suggests that some deaths previously classified as SIDS are now being classified in other categories.

Risk factors associated with SIDS, in addition to side or prone sleeping, include soft sleep surfaces, loose bedding, overheating, maternal smoking, and bed or couch sharing, especially with multiple bed sharers or when a bed-sharer has consumed alcohol or is overtired. The risk of bed-sharing increases based on the duration of bed-sharing during the night. Other factors consistently identified as risk factors for SIDS include late or no prenatal care, young maternal age, preterm birth and/or low birth weight, and male gender. SIDS rates two to three times the national average are found in black and American Indian/Alaska native children. The 2005 AAP statement includes a recommendation to consider offering a pacifier at naptime and bedtime because, although the mechanism is not known, the reduced risk of SIDS associated with pacifier use is compelling.

The AAP SIDS Task Force 2005 policy statement reiterates the recommendation made in 1985 and 2000 regarding home apnea monitoring, stating,

“Do not use home monitors as a strategy to reduce the risk of SIDS. Electronic respiratory and cardiac monitors are available to detect cardiorespiratory arrest and may be of value for home monitoring of selected infants who are deemed to have extreme cardiorespiratory instability. However, there is no evidence that use of such home monitors decreases the incidence of SIDS.”

According to the AAP policy statement, *Apnea, Sudden infant Death Syndrome, and Home Monitoring* (2003), home cardiorespiratory monitoring may be warranted for the following groups of infants, not because of increased risk of SIDS but because of other factors that increase the risk of sudden death:

- Premature infant with history of apnea accompanied by bradycardia or oxygen desaturation (cyanosis). The use of home cardiorespiratory monitoring should be limited to approximately 43 weeks postmenstrual age or after the cessation of extreme episodes, whichever comes last
- Infant who has experienced an ALTE, defined as some combination of the following:
  - central or obstructive apnea
  - color change
  - marked change in muscle tone (i.e., flaccid or hypotonic)
  - choking or gagging
- Infant with a tracheostomy or anatomic abnormalities increasing vulnerability to airway compromise

- Infant with neurologic or metabolic disorders affecting respiratory control
- Infant with chronic lung disease (bronchopulmonary dysplasia), particularly when supplemental oxygen, continuous positive airway pressure (CPAP) or mechanical ventilation is required

If monitoring is recommended, the monitor should be equipped with an event recorder. Parents should be advised that home monitoring has not been proven to prevent sudden unexpected infant death and should be made aware of the proven practices to reduce the risk of SIDS. These practices include supine sleeping, safe sleeping environments and elimination of exposure to tobacco smoke both before and after birth.

### Summary

The American Academy of Pediatrics Task Force on Sudden Infant Death Syndrome (SIDS) 2005 policy statement reiterates the earlier recommendations that home monitors should not be used as a strategy to reduce the risk of SIDS. There is insufficient evidence that home monitoring for apnea and/or bradycardia impacts the incidence of SIDS or that the presence of apnea and/or bradycardia in an infant is an identifier for increased risk of SIDS. In addition, there is insufficient evidence that home monitoring provides warning in time for intervention or that intervention would be successful in preventing SIDS. Home cardiorespiratory monitoring may be warranted for specific groups of infants, not because of increased risk of SIDS but because of other factors that increase the risk of sudden death.

### Coding/Billing Information

**Note:** This list of codes may not be all-inclusive.

**Covered when medically necessary:**

CPT <sup>®</sup> * Codes	Description
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, physician review, interpretation, and preparation of a report
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

HCPCS Codes	Description
E0618	Apnea monitor, without recording feature
E0619	Apnea monitor, with recording feature

ICD-9-CM Diagnosis Codes	Description
033.0–033.8	Whooping cough
277.9	Unspecified disorder of metabolism
748.0-748.8	Congenital anomalies of respiratory system
769	Respiratory distress syndrome
770.7	Chronic respiratory disease arising in the perinatal period
770.81	Primary apnea of newborn
770.82	Other apnea of newborn
770.83	Cyanotic attacks of newborn
770.84	Respiratory failure of newborn
770.87	Respiratory arrest of newborn

779.81	Neonatal bradycardia
799.82	Apparent life threatening event in infant
V44.0	Tracheostomy
V46.11	Dependence on respirator, status
V46.2	Other dependence on machines and devices; Supplemental oxygen

**\*Current Procedural Terminology (CPT®) ©2010 American Medical Association: Chicago, IL.**

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## Policy History

<b>Pre-Merger Organizations</b>	<b>Last Review Date</b>	<b>Policy Number</b>	<b>Title</b>
CIGNA HealthCare	03/15/2007	0060	Home Apnea Monitoring for Infants

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