

APNEA IN NEWBORNS: EXPANSION IN ICD-10-CM

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APNEA IN NEWBORNS: CLINICAL DETAILS

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APNEA IN NEWBORNS: DEFINED

- Apnea can occur in any newborn child.
- An apneic spell is generally defined as a cessation of breathing for 20 seconds or longer or a shorter pause accompanied by bradycardia (<100 beats per minute), cyanosis, and/or pallor.
- In practice, many apneic events, especially in preterm infants, are shorter than 20 seconds since these briefer pauses tend to result in bradycardia or hypoxemia.

EPIDEMIOLOGY OF APNEA IN PREMATURE NEWBORNS

- Although there is considerable variation in incidence and severity of apnea in premature infants, both are inversely related to gestational age.
- Approximately 50% of infants less than 1500 grams birth weight require either the pharmacologic intervention or ventilatory support for recurrent prolonged apneic episodes.
- The peak incidence occurs between 5 and 7 days of postnatal age.
- Apnea in the premature newborn usually resolves between 34 to 36 weeks postconceptual age.



EPIDEMIOLOGY OF APNEA IN TERM NEWBORNS

- The incidence of apnea and periodic breathing in the term infant has not been adequately determined
- Approximately 50-60% of preterm infants have evidence of apnea:
 - 35% present with central apnea
 - 5-10% with obstructive apnea
 - 15-20% with mixed apnea.
 - Another 30% will have periodic breathing

TYPES OF APNEA

- On the basis of respiratory effort and airflow, apnea may be classified as
 - **Central** (cessation of breathing effort)
 - **Obstructive** (airflow obstruction usually at the pharyngeal level)
 - **Mixed** (a central apnea that is directly followed by an obstructive apnea)
 - **Apnea of prematurity** (developmental disorder caused by immaturity of neurologic and/or mechanical function of the respiratory system)

CENTRAL APNEA

- Central apnea is caused by immature medullary respiratory control centers.
- The specific pathophysiology is not understood completely but appears to involve a number of factors, including abnormal responses to hypoxia and hypercapnia.
- This is the most common type of apnea related to prematurity

OBSTRUCTIVE APNEA

- A pause in alveolar ventilation due to obstruction of airflow within the upper airway, particularly at the level of the pharynx. The pharynx collapses from negative pressure generated during inspiration because the muscles responsible for keeping the airway open are too weak in the premature infant. Once collapsed, mucosal adhesive forces tend to prevent the reopening of the airway during expiration.
- Neck flexion will worsen this form of apnea.

MIXED APNEA

- A combination of central and obstructive apnea
- Specifically, it is a central apnea that is directly followed by an obstructive apnea

APNEA OF PREMATURITY

- Preterm infants have cardiorespiratory events for a variety of reasons and due to their immaturity, they are at risk for apnea, bradycardia, and desaturations from all types of mechanisms
- Because this issue is very common in premature babies, often times the mechanism is not investigated initially and the baby is diagnosed with “apnea of prematurity”
- As preterm infants mature, events generally resolve, yet waiting for this resolution can postpone discharge and increase resource utilization
- The lower the gestational age at birth, the longer it may take for cardiorespiratory events to cease

SLEEP VS NON-SLEEP APNEA

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SLEEP VS NON-SLEEP

- Apnea is a common diagnosis in the NICU as preterm infants are closely monitored using cardiac and apnea monitors. Apnea is diagnosed often using clinical findings and history.
- Sleep apnea is diagnosed based on polysomnography. During this test at least three channels, chest wall movement, airflow documented by CO2 measurement, and oxygenation (generally measure as SpO2), are documented while the infant is awake and asleep. Typically speaking this occurs on older babies.

SLEEP VS NON-SLEEP, CONT.

- The diagnosis of “sleep” apnea is rarely made in newborns, because sleep studies are rarely performed, particularly for premature newborns
- It is important to have unique code sets for “sleep” versus “other” apnea

THANK YOU!
CLINICAL QUESTIONS?

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