

Idiopathic apnea, a disease of premature infants, appears in the absence of any other identifiable disease states during the first week of life and usually resolves by 36–40 weeks of post-conceptual age (gestational age at birth + postnatal age). The premature infant's process of regulating respiration is especially vulnerable to apnea. Preterm infants respond paradoxically to hypoxia by developing apnea rather than by increasing respirations as in mature infants. Poor tone of the laryngeal muscles also may lead to collapse of the upper airway, causing obstruction. Isolated obstructive apnea also may occur as a result of flexion or extreme lateral positioning of the premature infant's head, which obstructs the soft trachea.

Treatment of apnea of prematurity involves administration of oxygen to hypoxic infants, transfusion of anemic infants, and physical cutaneous stimulation for infants with mild apnea. Methylxanthines (caffeine or theophylline) are the mainstay of pharmacologic treatment of apnea. Xanthine therapy increases minute ventilation, improves the carbon dioxide sensitivity, decreases hypoxic depression of breathing, enhances diaphragmatic activity, and decreases periodic breathing. Treatment usually is initiated with a loading dose followed by maintenance therapy. High-flow nasal cannula therapy and nasal CPAP of 4–6 cm H₂O also are effective and relatively safe methods of treating obstructive or mixed apneas; they may work by stimulating the infant and splinting the upper airway. CPAP also probably increases functional residual capacity, improving oxygenation.

PEARLS FOR PRACTITIONERS

See *Fetal and Neonatal Medicine: Pearls for Practitioners* at the end of this section.