Volume guarantee ventilation	Delivers a predetermined volume of gas using an inspiratory pressure that varies according to the infant's lung compliance (often used in conjunction with SIMV)	Volume guarantee ventilator with flow sensor; ET tube
Alternative Methods		
High-frequency oscillation (HFO)	Application of high-frequency, low-volume, sine-wave flow oscillations to airway at rates between 480 and 1200 breaths/min	Variable-speed piston pump (or loudspeaker, fluidic oscillator); ET tube
High-frequency jet ventilation (HFJV)	Uses a separate, parallel, low-compliant circuit and injector port to deliver small pulses or jets of fresh gas deep into airway at rates between 250 and 900 breaths/min	May be used alone or with low-rate IMV; ET tube

*Also referred to as *conventional ventilation* (vs. high-frequency ventilation [HFV]).

ET, Endotracheal tube.

Prevention

The most successful approach to prevention of RDS is prevention of preterm delivery, especially in elective early delivery and cesarean section. Improved methods for assessing the maturity of the fetal lung by amniocentesis, although not a routine procedure, allow a reasonable prediction of adequate surfactant formation. Because estimation of a delivery date can be miscalculated by as much as 1 month, such tests are particularly valuable when scheduling an elective cesarean section. The combination of maternal steroid administration before delivery and surfactant administration postnatally seems to have a synergistic effect on neonatal lungs, with the net result being a decrease in infant mortality, decreased incidence of intraventricular hemorrhage, fewer pulmonary air leaks, and fewer problems with pulmonary interstitial emphysema and RDS (Warren and Anderson, 2009).

Prognosis

RDS is a self-limiting disease. Before the use of surfactant, infants typically experienced a period of deterioration (≈48 hours) and, in the absence of complications, improved by 72 hours. Often heralded by the onset of diuresis, this improvement was attributed primarily to increased production and greater availability of surfactant. With the administration of surfactant, lung compliance begins to improve almost immediately, resulting in lower oxygen