

Supplementary Table S1. HFOV ventilatory settings used in the observation group

Parameter	Initial setting	Adjustment range	Adjustment criteria
Frequency (Hz)	10-15 Hz	10-15 Hz	Adjusted according to chest vibration and blood gas analysis (PaCO ₂)
Mean airway pressure (MAP, cmH ₂ O)	2-5 cmH ₂ O above conventional ventilation level	10-20 cmH ₂ O	Adjusted based on oxygenation status (SaO ₂ , PaO ₂) and chest radiography
Amplitude (ΔP, cmH ₂ O)	20-40 cmH ₂ O	20-50 cmH ₂ O	Titrated to achieve visible chest wall vibration and adequate CO ₂ elimination
Fraction of inspired oxygen (FiO ₂)	0.6-1.0	0.3-1.0	Adjusted to maintain target SaO ₂ and PaO ₂
Inspiratory time (%)	30-50% of oscillatory cycle	30-50%	Maintained according to standard HFOV practice
Ventilation mode	HFOV via endotracheal tube	-	Continuous monitoring in NICU setting
Monitoring frequency	-	Every 15-30 min	Ventilator parameters and oxygen saturation recorded
Blood gas reassessment	-	Every 4-6 h	More frequently if clinically indicated

Note: All HFOV parameters were adjusted according to predefined clinical targets and real-time physiological responses, as described in the Methods section.