

HFOV Management
East Bay Newborn Specialists Guideline
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Indications for HFOV:

- HFOV is indicated for patients with severe restrictive disease where high PIP on conventional ventilation would place the infant at risk for lung injury
- HFOV is effective in ventilating patients with pulmonary hypoplasia
- HFOV may be superior to conventional ventilation in VLBW infants at high risk of developing BPD on conventional ventilation

Initial HFOV settings:

- Inspiratory time (T_{insp}) 33%
- Mean airway pressure (mPaw) at least 20% greater than patient was receiving on conventional ventilation.
- Mean airway pressure limit should be “flow-limited” to 2-4 cmH₂O above Paw (Too high a bias flow can cause inadvertent gas trapping.) Set bias flow normally should be 8 –12 lpm.
- Frequency 6-10 Hertz, depending on patient size (lower frequency for larger patients or for more non-uniform disease)
- Amplitude (ΔP) adjusted based on physical examination and/or TCM

Adjusting Paw based on lung inflation:

- CXR is not a particularly good measure of lung inflation. However, it can provide a crude estimate of significant over- or under-inflation.
- Ventilator settings which can contribute to over-inflation include air trapping (frequency is too high) or excess mPaw
- To recruit atelectatic lungs, increase mPaw, usually by 10-20%
- To decrease over-inflation, decrease mPaw, usually by 10-20%
- For persistent over-inflation, consider a trial of lower Frequency – change in 1-2 Hz increments

Adjusting HFOV settings based on FIO₂

As in conventional ventilation, oxygenation is primarily dependent on mean airway pressure (mPaw)

- Assuming acceptable lung inflation, adjust Paw based on FIO₂
 - FIO₂ > 0.40, increase mPaw by 10% increments until FIO₂ no longer decreases
 - FIO₂ < 0.3, decrease mPaw by 10% increments until FIO₂ increases, or until mPaw low enough to extubate – remember to decrease HFJV PIP as needed to maintain adequate delta P for ventilation
- If FIO₂ changes by 0.2, repeat a CXR to evaluate lung inflation.

Adjusting HFOV settings based on pH and/or PaCO₂

CO₂ exchange is primarily dependent on Delta P. Note that decreasing Frequency will lead to an increase in delivered Delta P.

- Make a 10% change in Delta P to achieve an approximately 5-10 mm Hg change in PaCO₂
- Make a 20% change in Delta P to achieve a larger change in PaCO₂