Key Differences Between HFJV and HFOV:

Aspect	High-Frequency Jet Ventilation (HFJV)	High-Frequency Oscillatory Ventilation (HFOV)
Mode of Ventilation	HFJV delivers small, rapid bursts of gas directly into the trachea via a special jet injector.	HFOV uses a diaphragm or piston to deliver oscillatory breaths around a set mean airway pressure.
Mechanism of Gas Delivery	- **Jet Pulses**: HFJV provides brief, high-pressure bursts of gas directly into the lungs. The exhalation is passive due to the natural recoil of the lungs.	- **Oscillations**: HFOV generates active oscillations at high frequencies, creating small tidal volumes around a set mean airway pressure, with active inspiration and expiration.
Typical Respiratory Rates	**240 - 660 breaths per minute** (BPM)	**Hertz 8-15= 180 - 900 cycles per minute**
Tidal Volume	- Very small tidal volumes, often much smaller than the anatomical dead space.	- Even smaller tidal volumes than HFJV, often around 1-3 mL/kg, significantly less than the anatomical dead space.
Control of Ventilation	- Ventilation is mainly controlled by adjusting PIP and rate.	- Ventilation is controlled by adjusting amplitude (power) and frequency of oscillations.
Control of Oxygenation	- Primarily managed by adjusting FiO_2 and PEEP. PIP can also influence oxygenation indirectly.	- Managed by adjusting FiO_2 and mean airway pressure (MAP).
Exhalation Process	- Passive exhalation due to lung recoil after each jet pulse.	- Active exhalation facilitated by the oscillatory mechanism, which actively pulls air out of the lungs.
Typical Clinical Applications	- Used in cases of persistent pulmonary hypertension, air leak syndromes, and post-surgical recovery.	- Often used for severe respiratory distress syndrome meconium aspiration syndrome
Advantages	- Effective at minimizing lung injury by reducing the likelihood of volutrauma and barotrauma. - Can be used with a background conventional ventilator to provide PEEP and occasional conventional breaths.	- Provides excellent oxygenation and CO_2 removal in severe lung disease by maintaining consistent lung volume and reducing atelectrauma.
Disadvantages	- Requires specialized equipment and expertise. - Monitoring and adjusting can be more complex due to the nature of jet pulses.	- Higher risk of air trapping and volutrauma if not properly managed. - Requires careful adjustment of mean airway pressure to avoid overdistension.
Patient Monitoring	- Continuous monitoring of servo pressure, blood gases, and clinical status is crucial.	- Continuous monitoring of amplitude, MAP, blood gases, and chest oscillations is essential.