

## HFJV I-time and Rate

For years, the default setting on the Life Pulse On-time (I-time) of 0.02 sec was the standard value for all patients. We did not recommend changing I-time. Over the past few years, we have learned from clinicians like you that changing HFJV I-Time can be advantageous, depending upon a patient's pathophysiology and the pathogenesis of the disease or disorder. Below are recommendations for adjusting I-time during HFJV with the Life Pulse.

### Rationale:

- Some patients have longer inspiratory time constants
  - They may benefit from a small increase in tidal volume delivered for a slightly longer period of time
- Since lengthening I-time will shorten Expiratory Time, lower HFJV rates may be necessary in order to maintain adequate I:E ratios (>1:4).
- Patients demonstrating hyperinflation may benefit from lower HFJV rates.
- Changing Rate during HFJV does not change inspiratory time nor tidal volume; I-time is a set value, not a percentage of the I:E cycle.

### Application:

- Longer HFJV I-time can be considered once you have established that increasing HFJV PIP (>35 cm H<sub>2</sub>O) is ineffective for controlling PaCO<sub>2</sub> and all other settings have been optimized.
- Lower HFJV Rates can be considered when hyperinflation is a concern or during the weaning stage in order to stimulate a patient's spontaneous breathing.

### Clinical Considerations:

- Raise On-time in increments of 0.004 to 0.006
  - For example, raise from 0.020 to 0.024 or 0.026, to a maximum of 0.034, depending upon PaCO<sub>2</sub> concerns
- The expiratory time constant must also be considered
  - Lower HFJV rate to maintain an I:E ratio of 1:4 or greater if gas trapping occurs
    - 420 bpm ↑ I-time to 0.026 = I:E of 1:4.4
    - ↓ 360 bpm with I-time to 0.026 = I:E of 1:5.3
- Raising I-time may also result in a slight improvement in oxygenation (creates slightly more MAP, or results from improved ventilation)

For more information on time constants and ventilator settings, view a lecture from Prof. Jane Pillow on the Bunnell website: <http://www.bunl.com/hall-of-fame-lectures.html>