bunnell

gentle ventilation

LifePulse® High Frequency Jet Ventilator Pocket Guide

www.bunl.com
800-800-HFJV (4358)
24-Hour Support

Recommendations include only general guidelines and may not apply to all situations. Each patient should be managed individually and may require more advanced adjustments.

Pre-Use Testing

The LifePulse should pass **two** tests to ensure proper operation. Perform the System Test **and** the Operational Test using a test lung prior to starting the LifePulse on a patient.

System Test:

1. Attach the LifePort Adapter to ET tube to a test lung while the conventional port is open to air
2. Press SYSTEM TEST (or TEST) button
3. Verify the LifePulse runs through the test sequence and returns to Standby mode with an audible (and visual in 204) alarm.
4. Press AUDIO PAUSED (or SILENCE) to cancel the alarm.
5. Perform the Operational Test

Operational Test:

1. Press ENTER to activate the default settings (PIP: 20, Rate: 420, I-time: 0.02) while attached to the test lung.
2. Verify that the READY indicator illuminates, and the monitored PIP reaches the set PIP, and PEEP is 0.0 +/- 1.0 cmH_2O when no PEEP is supplied by the conventional ventilator.

HFJV I-time

Recently clinicians have shared changing HFJV I-time can be advantageous, depending on a patient's pathophysiology and the pathogenesis of the disease or disorder.

Rationale:

- Some patients have longer inspiratory time constants, therefore they may benefit from a small increase in tidal volume delivered over a slightly longer period of time.

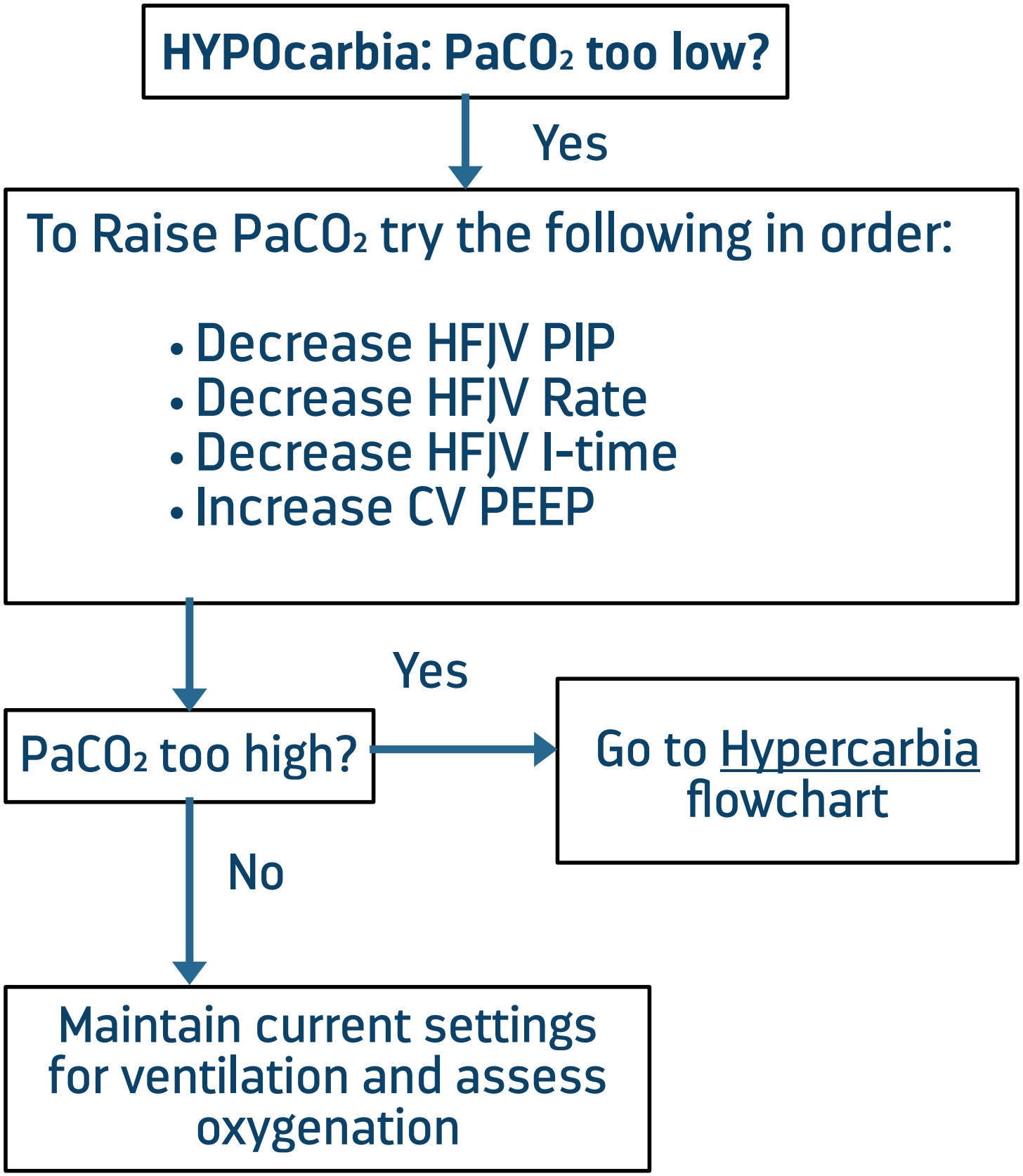
Application:

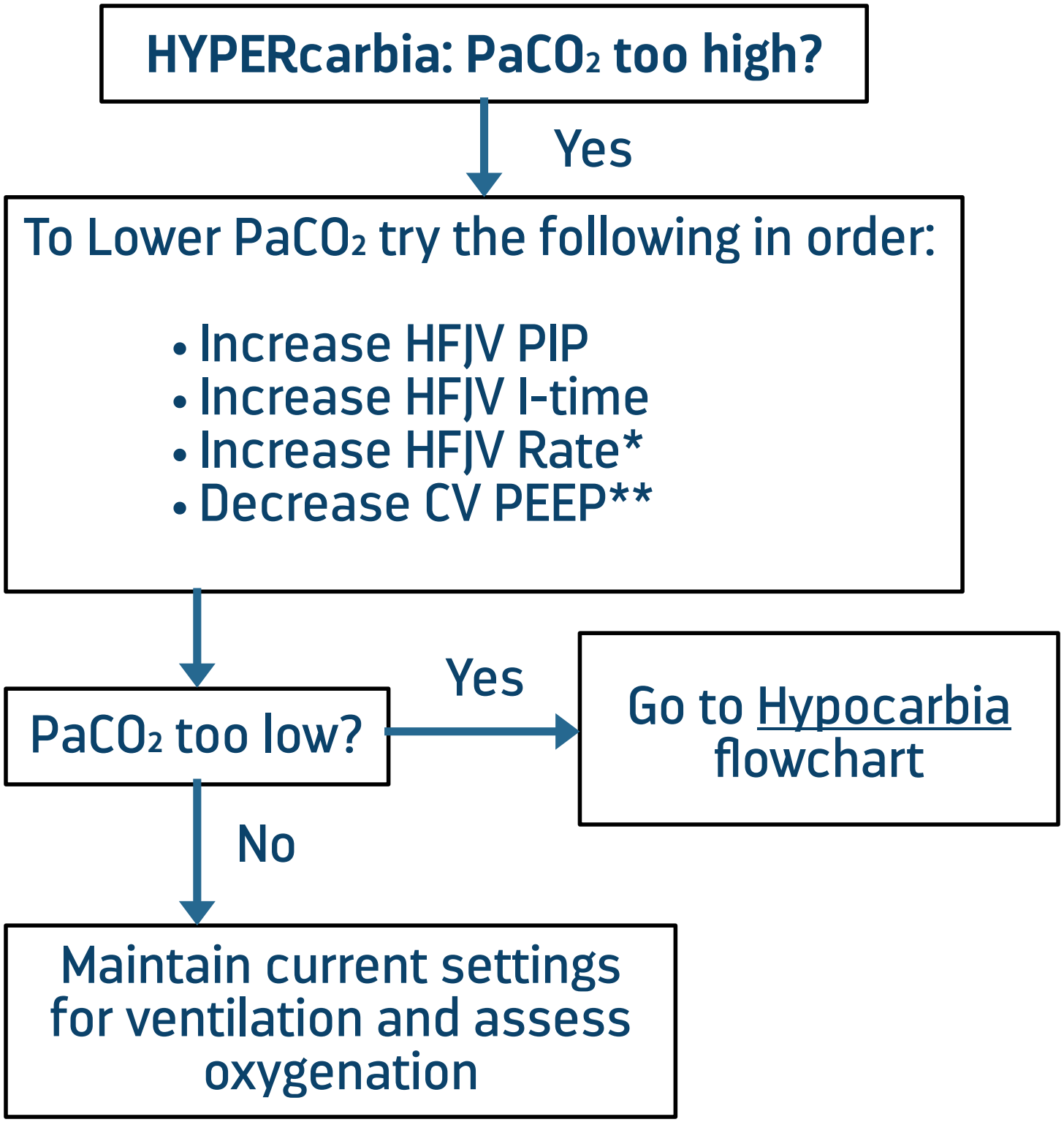
- Longer HFJV I-time can be considered once you have established that increasing HFJV PIP (generally >35 cmH_2O) is ineffective for controlling PCO_2 and all other settings have been optimized.

Clinical Considerations:

- Raise I-time in increments of 0.004 to 0.006 seconds
- The expiratory time constant must also be considered and you may have to lower HFJV rate to maintain an I:E ratio if gas trapping occurs
- Raising I-time may also result in a slight improvement in Oxygenation. (creates slightly more MAP, or results from improved ventilation)

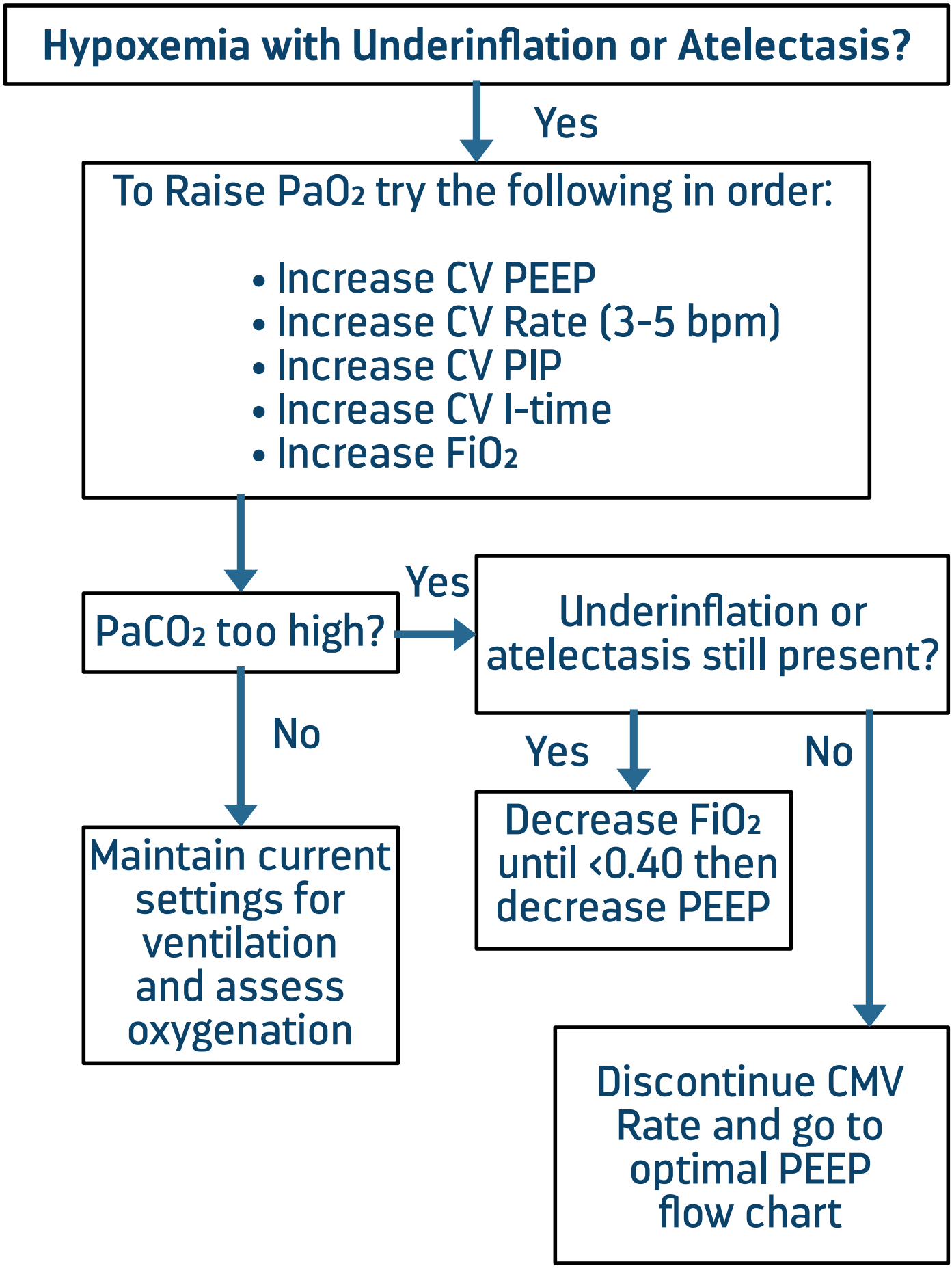
SETTING	WHEN TO RAISE	WHEN TO LOWER
HFJV PIP *Establish ΔP*	To ↓CO_2	To ↑CO_2
HFJV Rate	To ↓CO_2 <u>only with</u> low compliance	• Evidence of hyperinflation to extend expiratory time • To ↑CO_2 when weaning
HFJV I-time	To ↓CO_2 *When jet PIP ineffective*	To ↑CO_2 when weaning
CMV PEEP	To ↑MAP for oxygenation	• Compromised C.O. • Adequate oxygenation and FiO_2 < 0.40 • Hyperinflation due to hypercompliance
CMV Rate	• To Reverse atelectasis • To ↑MAP with compromised C.O. • To offset significant A/B spells	• Evidence of air leaks • Resolved atelectasis • Evidence of hyperinflation
CMV PIP	• To reverse atelectasis • To↑MAP	• Evidence of air leaks • Resolved atelectasis •Evidence of hyperinflation
CMV I-time	• To reverse atelectasis • To ↑MAP • To ↓CMV PIP	• Resolved atelectasis • Evidence of hyperinflation

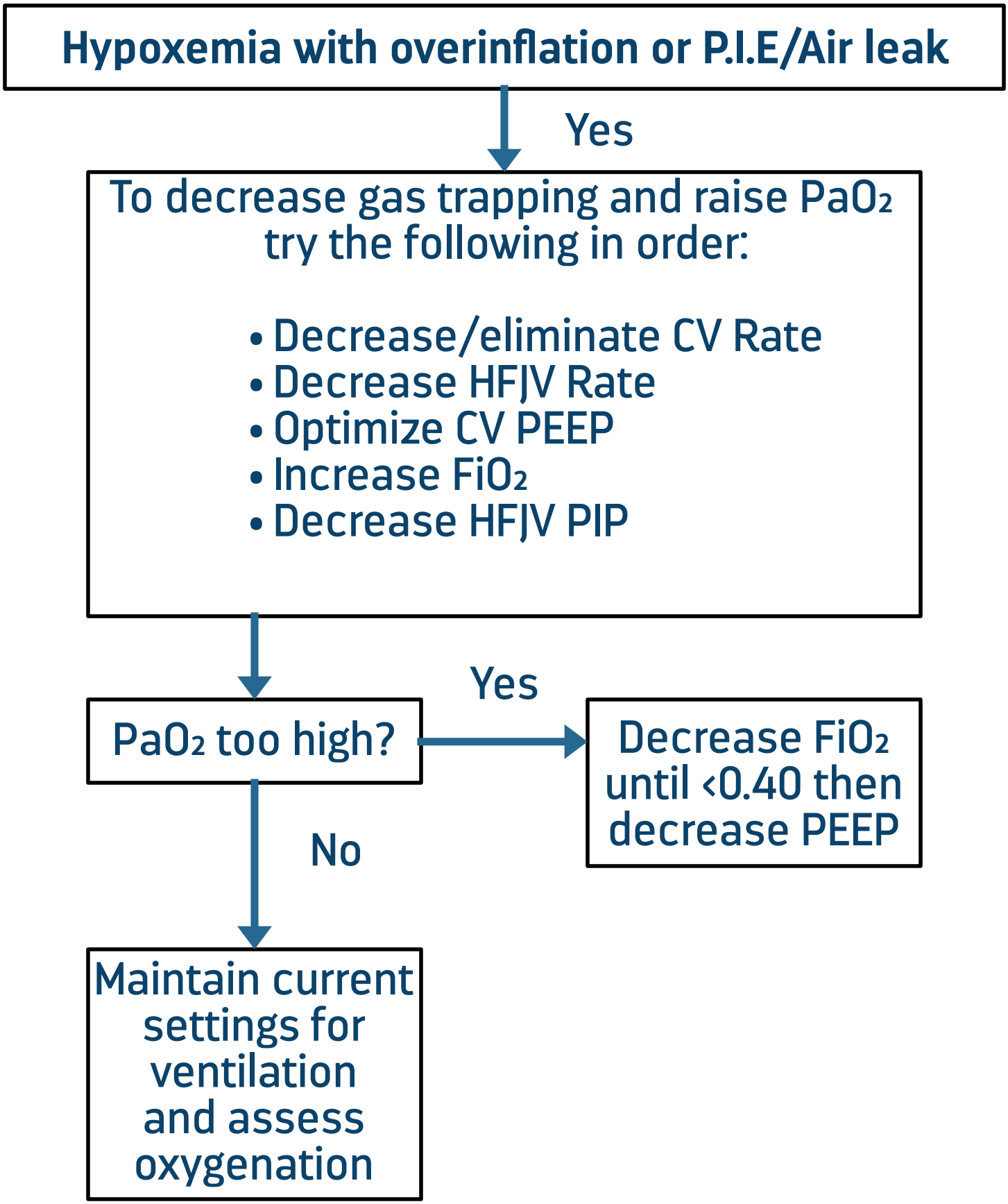

HYPOcarbia: PaCO2 too low?
Yes
To Raise PaCO2 try the following in order:
• Decrease HFJV PIP
• Decrease HFJV Rate
• Decrease HFJV I-time
• Increase CV PEEP
Yes
PaCO2 too high?
Go to Hypercarbia flowchart
No
Maintain current settings for ventilation and assess oxygenation



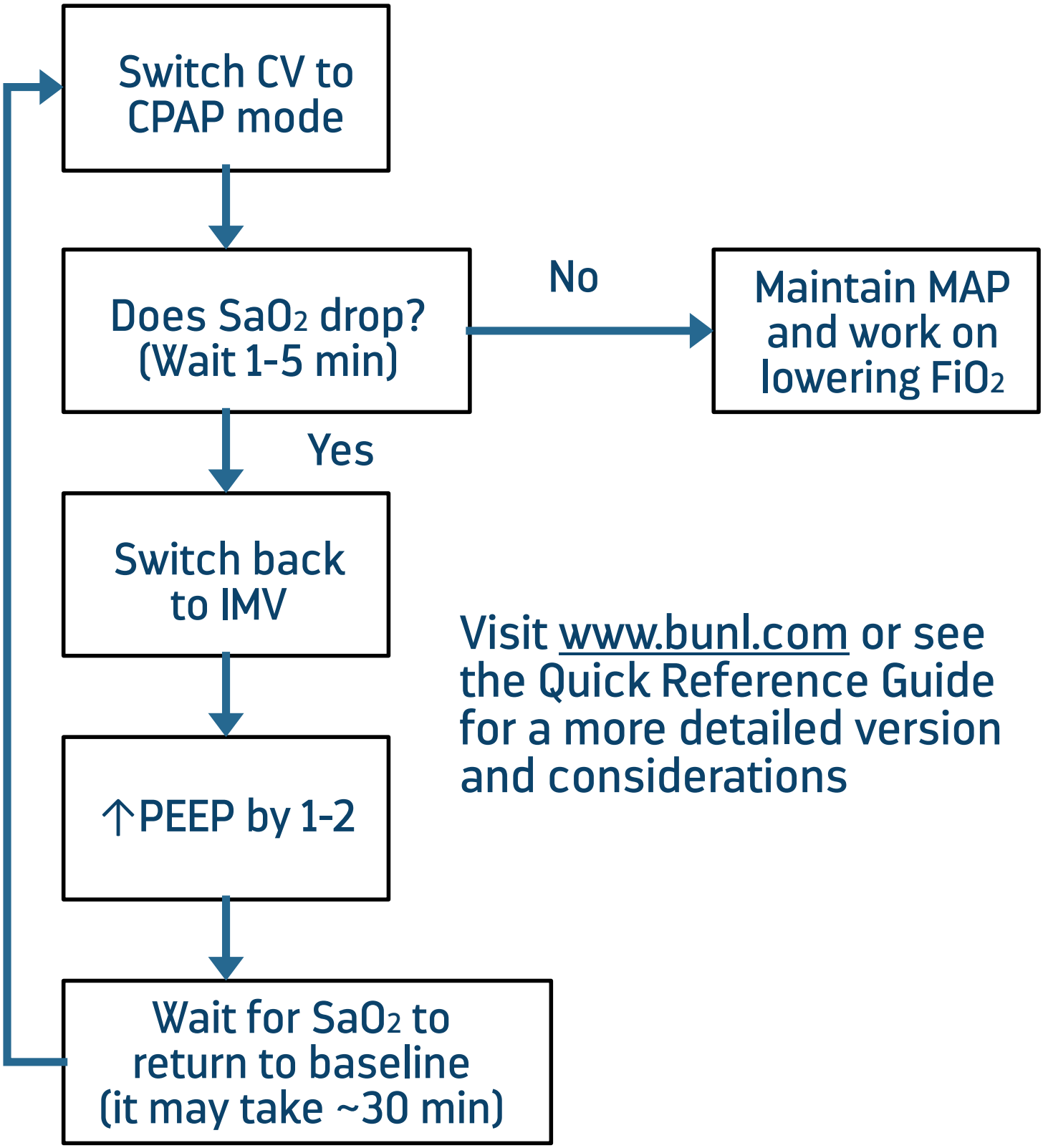
*Increasing HFJV Rate increases minute ventilation. However, *if lungs are hyperinflated, decreasing HFJV rate may lower $PaCO_2$ by increasing exhalation time.*

**Decreasing CV PEEP increases delta pressure and lowers $PaCO_2$, but will also lower MAP, which may lower PaO_2


Hypoxemia with Underinflation or Atelectasis?
Yes
To Raise PaO_2 try the following in order:
• Increase CV PEEP
• Increase CV Rate (3-5 bpm)
• Increase CV PIP
• Increase CV I-time
• Increase FiO_2
$PaCO_2$ too high?
Yes
Underinflation or atelectasis still present?
No
Maintain current settings for ventilation and assess oxygenation
Yes
No
Decrease FiO_2 until <0.40 then decrease PEEP
Discontinue CMV Rate and go to optimal PEEP flow chart


Hypoxemia with overinflation or P.I.E/Air leak
Yes
To decrease gas trapping and raise PaO2 try the following in order:
• Decrease/eliminate CV Rate
• Decrease HFJV Rate
• Optimize CV PEEP
• Increase FiO2
• Decrease HFJV PIP
PaO2 too high?
Yes
Decrease FiO2 until <0.40 then decrease PEEP
No
Maintain current settings for ventilation and assess oxygenation

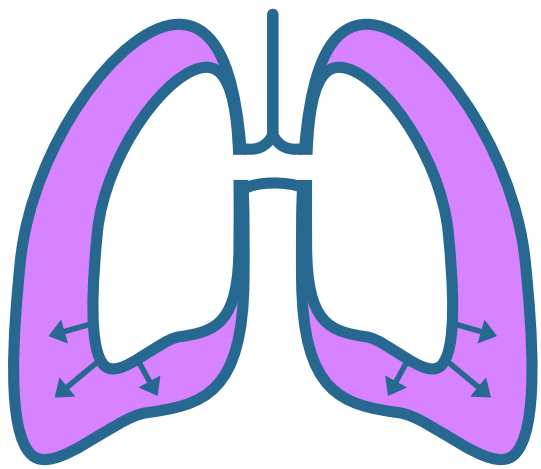
Finding Optimal PEEP



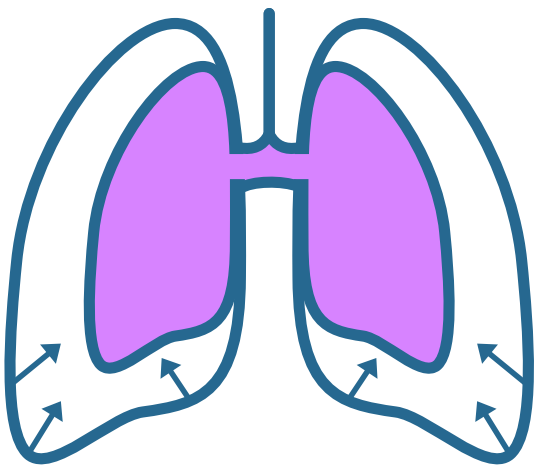
Visit www.bunl.com or see the Quick Reference Guide for a more detailed version and considerations

SERVO

Servo is the driving pressure automatically regulated to maintain Jet PIP. Servo changes as lung volume and mechanics change. Once stable blood gases are achieved and baseline value is determined servo pressure should be trended and maintained.



Increased Servo
- Improved Compliance
- Less Airway Resistance
- Increased ETT Leak
- Condensation in the Pressure Line
- Cracked LifePort Adapter
- Leaks in Jet or CMV System
- Increase in Pulmonary Air Leaks



Decreased Servo
- Worsening Compliance
- Increased Airway Resistance
- Kinked or Obstructed ETT
- Right Mainstem ETT
- Kinked or Obstructed Jet Circuit
- Tension Pneumothorax

Notes

Bunnell sets the standard for Gentle Ventilation through the support of dedicated healthcare professionals and the use of LifePulse High Frequency Jet Ventilator.

Customers are supported 24/7/365 through the Bunnell hotline offering clinical and technical support along with providing emergent rental and delivery of our life-saving products.

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info@bunl.com
436 Lawndale Dr.
Salt Lake City, UT
84115

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For 24-Hour Support

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