

# The Utilization of High Flow Oxygen to Administer Inhaled Pulmonary Vasodilators in Post-Operative Left Ventricular Assist Patient Population to Facilitate Extubation

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## Introduction

- Left ventricular assist device (LVAD) is an implanted mechanical circulatory support device utilized in patients with heart failure to enhance left ventricular function.
- Epoprostenol is a potent pulmonary vasodilator when delivered in inhaled form.
- High Flow Nasal Cannula can provide effective delivery of Epoprostenol.

## Cardiac Function and LVAD

- With successful implantation of the LVAD, the right ventricle must increase work to match the left ventricular function.
- The utilization of Epoprostenol in the post LVAD patient has been beneficial in reducing right ventricular afterload by dilating the pulmonary vasculature.<sup>1</sup>

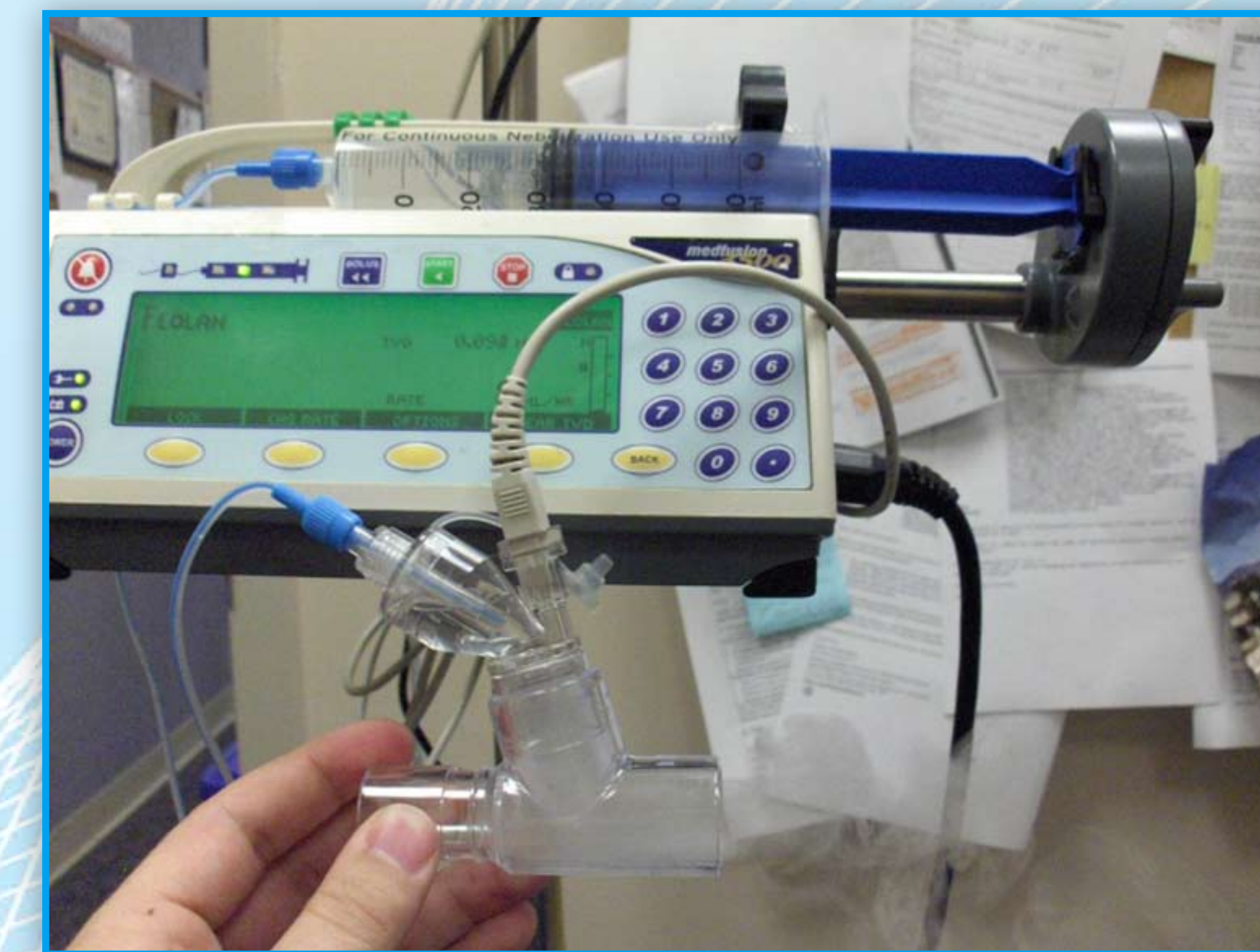
## Methods

- Historically, LVAD patients required mechanical ventilation in order to administer nebulized Epoprostenol for twelve to twenty hours post surgery.
- Often patients required unnecessary sedation and other interventions to maintain ventilation despite stable gas exchange and pulmonary mechanics.
- To address the issue of prolonged ventilation, patients who have stable gas exchange, hemodynamic status, and pulmonary mechanics were extubated and placed on high flow oxygen (HFO)\* to complete the remaining administration of nebulized Epoprostenol.
- Nebulization was provided by the Aeroneb\*\* placed prior to the humidifier (FP 850) via the Optiflow.<sup>2,3</sup>

## High Flow Nasal Cannula Epoprostenol Administration



\*Optiflow  
Fisher-Paykel  
Auckland, New Zealand



\*\*Aeroneb Aeroneb  
Galway, Ireland

## Results

Compared to historical data the ventilatory duration of the LVAD patients was reduced by 9.7 hours without any noted complications. (Table 1)

Table 1					
	Ventricular Duration Mean	Re-intubation	Age Range	Epoprostenol Hours	High Flow Oxygen Hours
Pre-HFO (n=10)	16.6 hours	1/10	72-75 years	24 hours	0
Post-HFO (n=9)	6.9 hours*	0/9	67-73 years	24 hours	28 hours

\* p<.05

## Discussion

- Epoprostenol is utilized as a prophylactic therapy post LVAD procedure.
- High Flow Oxygen appears to provide a safe alternative delivery method for Epoprostenol administration and facilitates ventilatory liberation.
- More research needs to be conducted to determine true cause and effect of this intervention.

## Conclusion

- Based on our clinical data high flow oxygen is a feasible option for providing the administration of an inhaled pulmonary vasodilator in order to facilitate ventilatory liberation.
- It is a safe and effective means for providing administration of nebulized pulmonary vasodilators.
- More research needs to be conducted in this method of aerosol therapy delivery.

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