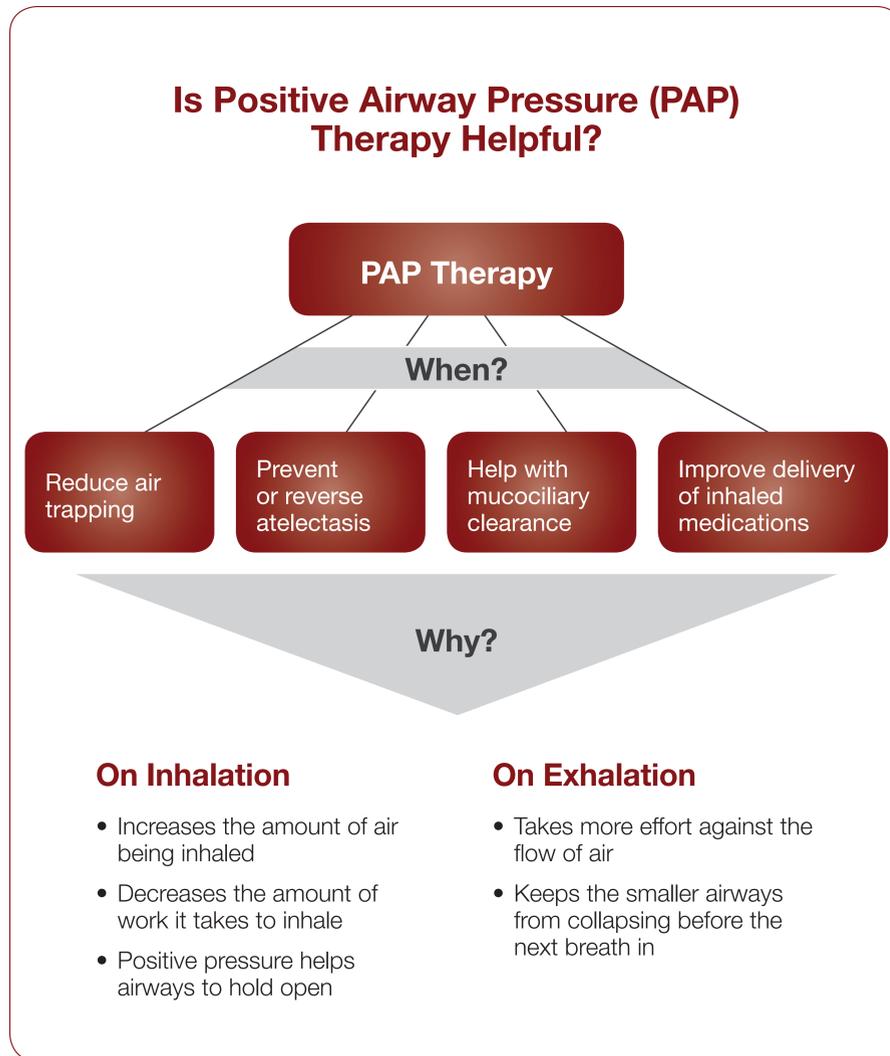


Effect of Increasing Gas Flow and Resulting Increase in Peak Expiratory Pressure from a New Positive Airway Pressure Device

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RATIONALE

- The **VersaPAP**[®] Positive Airway Pressure device is a handheld respiratory device used to prevent or treat atelectasis and improve oxygenation in the acute setting.
- The device operates by augmenting the input flow of oxygen or air such that positive pressure is maintained throughout the entire breathing cycle.
- By providing a larger volume and flow of air less effort is required by the patient compared to unsupported inspiration. However, little is known about the level of pressure changes on exhalation when the device is being used.



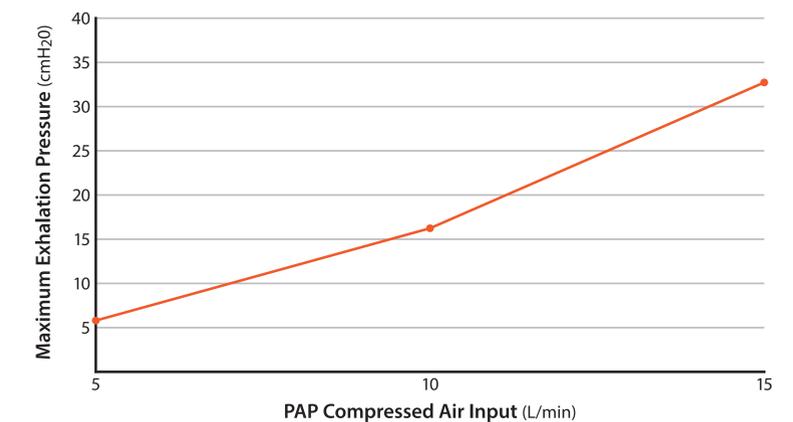
METHODS

- To examine the effects of changing gas flow on Peak Expiratory Pressure (PEP) tidal breathing was performed using the **VersaPAP**[®] device ($n = 10$) attached to a breathing simulator (ASL5000, IngMar Medical) with flows of 5, 10 and 15L/min added to the device.
- The breathing simulator was programmed to create a simulated adult tidal pattern of 770 mL tidal volume, 12 breaths per min (bpm) and an Inspiratory:Expiratory ratio of 1:2.
- Peak pressures were measured at the mouthpiece of the device.

RESULTS

- When gas flow was increased, there were significant, approximately linear, increases in PEP, with every 5 L/min increase in additional gas flow.

Mean Peak Exhalation Pressure from **VersaPAP[®] Devices Operated with Adult Simulated Breathing Pattern**



CONCLUSIONS

- This study has shown there is a relatively linear association of airway pressures with increase in gas flow when using the device over the gas flows investigated.
- The **VersaPAP**[®] device could be considered to provide short-term positive pressure support to a patient if there was no direct access to the use of non-invasive mechanical ventilation.

