The vPEP® is a handheld OPEP device for lung expansion and promotes secretion clearance. vPEP® creates oscillating positive expiratory pressure when the patient exhales through the device, helping to loosen and remove bronchial secretions associated with:
- Pulmonary emphysema
- Chronic Obstructive Pulmonary Disease (COPD)
- Atelectasis
- Chronic Bronchitis
- Bronchiectasis
- Cystic Fibrosis
- Asthma
- Nonproductive cough
- Smoker’s cough

vPEP® Features and Benefits:
- Compact design
- Proven superior PEF/PIF ratio\(^1\), expiratory flow bias\(^2\), and flow amplitude\(^1\)
- Study\(^1\) indicates superior performance in secretion clearance across ALL breath sizes, even low breath volumes
- Easily adjustable resistance
- Ergonomic design
- Easy assembly and cleaning with 4 parts, helping to reduce risk of infection
- Ideal for use in the home or hospital
Performance Measures of OPEP Devices
Flow amplitude, expiratory pressure and the relationship of peak expiratory flow to peak inspiratory flow represent the primary mechanisms of action for airway clearance devices.

Flow Amplitude
The flow amplitude (along with the frequency) determines the quality of oscillations, which are thought to indicate the degree to which a device reduces mucoviscosity. In a published clinical study, the vPEP showed superior flow amplitude compared to two competitive device across four inspiratory times as seen in Chart 1.

Expiratory Pressure
This mean expiratory pressure is important in moving air behind obstructions through collateral ventilation channels. In this published study, there were significant differences in mean expiratory pressure between the vPEP and two competitive devices across four inspiratory times. Chart 2 summarizes mean expiratory pressure for the three devices and shows the superiority of the vPEP.

PEF/PIF Ratio
One of the primary factors for effective secretion clearance is the ratio of peak expiratory flowrate (PEF) to peak inspiratory flow rate (PIF). In order to move mucus cephalad, the PEF must exceed PIF, creating an expiratory flow bias.

In the published study, the vPEP produced the highest mean PEF/PIF ratio across all four inspiratory times compared to two competitive products. See Chart 3 for a summary of the PEF/PIF ratios for the three devices.
The superior expiratory flow bias of the vPEP was also demonstrated across both high and low resistance in a previously published study\(^2\) across five tidal volumes.

Chart 4 shows representative flow-volume loops for the three devices captured at an inspiratory time of 4 seconds, expiratory time of 4 seconds, and a tidal volume of 1200 ml. The red arrow shows the greater flow amplitude for the vPEP.

The study\(^1\) suggested that instead of focusing exclusively on the pressure created by an OPEP device, an alternative approach might be to focus on the PEF/PIF ratios and the expiratory flow bias they produce. Keep in mind that just as in a cough, it is actually short bursts of increased expiratory air flow that help move secretions up the airway.\(^3\)

**Conclusion:**

The study found that expiratory flow bias, which occurs when peak expiratory flow exceeds peak inspiratory flow, is a key driver behind moving secretions up the airway, whereas flow amplitude chops secretions up. The vPEP had superior expiratory flow bias compared to competitors in the study.

**Slow Breaths In**

In all three devices, as inspiratory time was increased, there was an absolute increase in the PEF/PIF ratio. The greatest mean percent change in PEF/PIF occurred when inspiratory time was increased from 2 seconds to 4 seconds,\(^1\) confirming the clinical recommendations for patients to take slow deep breaths.

The vPEP and all D R Burton OPEP devices feature instructions for use that emphasize the patient to take in very slow deep breaths, deeper than normal.
vPEP® Specifications:

- vPEP® item # 510, 1 case of 10 each
- vPEP® item # 510-6, 6 cases of 10 each
- vPEP® item # 510-12, 12 cases of 10 each
- 22mm fitting
- Cleaning-only 4 simple parts
- Drain port
- Adjustable resistance
- PVC free
- Not manufactured from latex natural rubber
- Washable
- Can be cold sterilized with isopropyl alcohol or hydrogen peroxide

Rx only. Single patient, multi use. Do not share or use on multiple patients.