AerobiKA®

Oscillating Positive
Expiratory Pressure Device

Executive Study Summary

2026

50 Cited publications.
10 + Studies ongoing and planned.

TRUDELL MEDICAL INTERNATIONAL

Helping people breathe better and live fuller lives.

Study Summary Outline

The Aerobika* Oscillating Positive Expiratory Pressure (OPEP) device is a hand-held, easy-to-use, and drug free device for airway clearance therapy. When a patient exhales through the device, intermittent resistance creates a unique pressure – oscillation dynamic, which expands the airways and helps to mobilize mucus to the upper airways where it can be coughed out. The Aerobika* OPEP device has demonstrated efficacy in managing respiratory conditions such as Chronic Obstructive Pulmonary Disease (COPD), Bronchiectasis, and Cystic Fibrosis, as well as providing benefits as an intervention in post-operative care.

The following sections are included in this summary:

- **Executive Summary**

  Highlighting the critical pieces of evidence that support the clinical efficacy and use of the Aerobika* OPEP device in managing patients with mucus hypersecretion.

SEE THE FULL SUMMARY

Executive Summary

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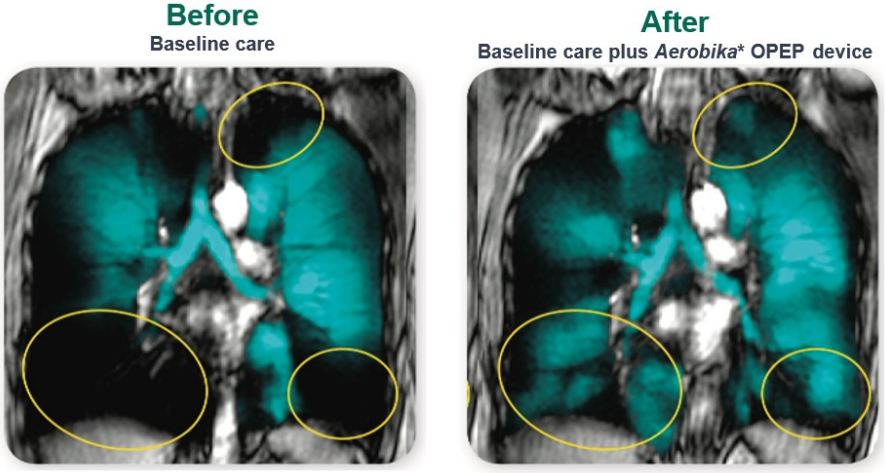
Executive Summary

1 Oscillating Positive Expiratory Pressure in Chronic Obstructive Pulmonary Disease

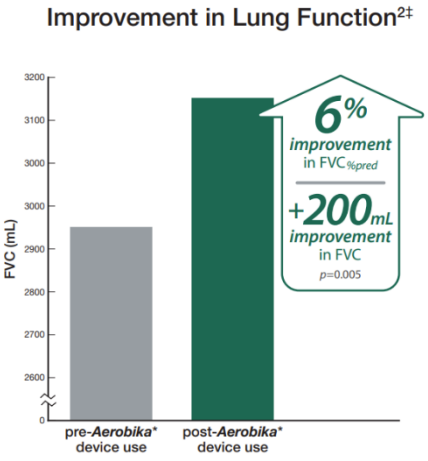
S Svenningsen, GA Paulin, K Sheihk, F Guo, A Hasany, M Kirby, R Etemad-Rezai, DG McCormack, G Parraga. Journal of COPD 2016;13(1):66-74. https://doi.org/10.3109/15412555.2015.1043523

Clinical Study Paper

Evidence-based guidance for the use of airway clearance techniques (ACT) in chronic obstructive pulmonary disease (COPD) is lacking in-part because well-established measurements of pulmonary function such as the forced expiratory volume in 1s (FEV_1) are relatively insensitive to ACT. The objective of this crossover study was to evaluate daily use of an oscillatory positive expiratory pressure (oPEP) device for 21–28 days in COPD patients who were self-identified as sputum-producers or non-sputum-producers. COPD volunteers provided written informed consent to daily oPEP use in a randomized crossover fashion. Participants completed baseline, crossover and study-end pulmonary function tests, St. George's Respiratory Questionnaire (SGRQ), Patient Evaluation Questionnaire (PEQ), Six-Minute Walk Test and ^{3}He magnetic resonance imaging (MRI) for the measurement of ventilation abnormalities using the ventilation defect percent (VDP). Fourteen COPD patients, self-identified as sputum-producers and 13 COPD-non-sputum producers completed the study. Post-oPEP, the PEQ-ease-bringing-up-sputum was improved for sputum-producers (p=0.005) and non-sputum-producers (p=0.04), the magnitude of which was greater for sputum-producers (p=0.03). **There were significant post-oPEP improvements for sputum-producers only for FVC (p=0.01), 6MWD (p=0.04), SGRQ total score (p=0.01) as well as PEQ-patient-global assessment (p=0.02).** Clinically relevant post-oPEP improvements for PEQ-ease-bringing-up-sputum/PEQ-patient-global-assessment/SGRQ/VDP were observed in 8/7/9/6 of 14 sputum-producers and 2/0/3/3 of 13 non-sputum-producers. The post-oPEP change in ^{3}He MRI VDP was related to the change in PEQ-ease-bringing-up-sputum (r=0.65, p=0.0004) and FEV_1 (r=-0.50, p=0.009). In COPD patients with chronic sputum production, PEQ and SGRQ scores, FVC and 6MWD improved post-oPEP. **FEV_1 and PEQ-ease-bringing-up-sputum improvements were related to improved ventilation providing mechanistic evidence to support oPEP use in COPD.**



Teal colour and intensity show areas with gas distribution.
Yellow circles represent areas of greatest change after 3-4 weeks of Aerobika* OPEP device use.
Demonstrated by hyperpolarized ^{3}He magnetic resonance imaging (MRI).



‡ Sputum-producing COPD cohort.

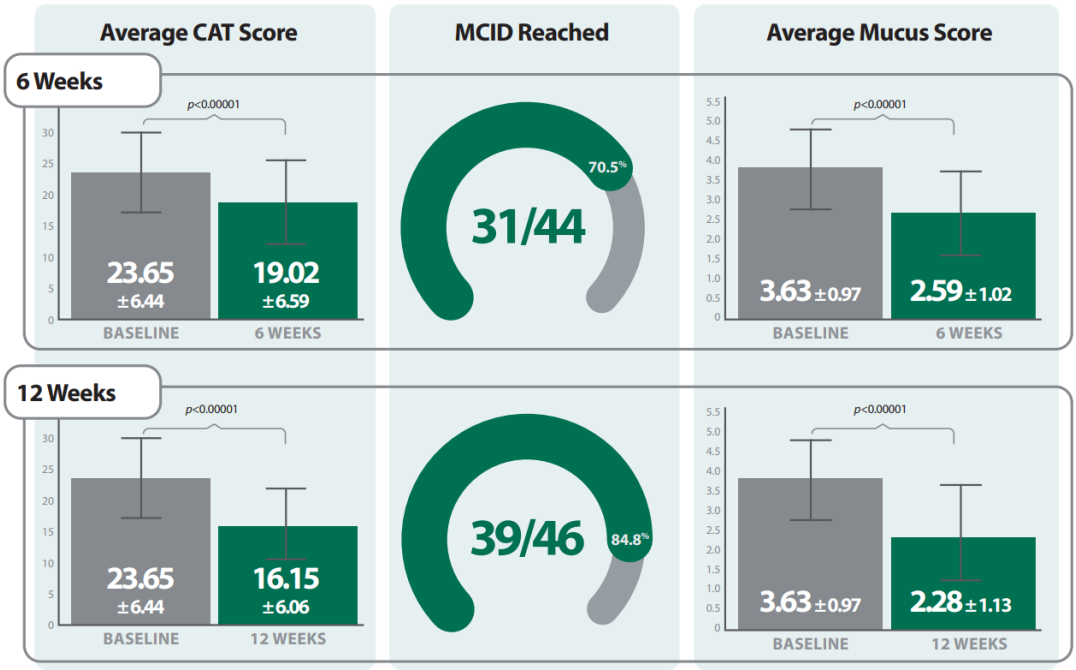
The Aerobika* OPEP device significantly improved lung function in COPD patients.
Use of the Aerobika* device led to a +200mL improvement in FVC.

2 The Impact of an Oscillating Positive Expiratory Pressure Device on Quality of Life in COPD Patients

Poirier, C., Menard, P., Wang, S., & Suggett, J. The impact of an oscillating positive expiratory pressure device on quality of life in COPD patients. 2025 Canadian Respiratory Conference Abstracts. (2025). Canadian Journal of Respiratory, Critical Care, and Sleep Medicine, 9(sup1), S1-S68. https://doi.org/10.1080/24745332.2025.2501877

Clinical Study Poster | *Peer reviewed with journal citation*

Rationale: Clinical benefits of Oscillating Positive Expiratory Pressure (OPEP) devices have been previously demonstrated. This study aimed to provide patient-reported outcomes of OPEP treatment in chronic obstructive pulmonary disease (COPD) patients in Québec, Canada. **Methods:** Recruitment took place across 3 sites in Québec. Included COPD patients had a baseline COPD Assessment Test (CAT) score greater than 10, and a baseline mucus score of 2 or greater for item 2 of the CAT. Aerobika* OPEP (TMI) devices were provided, along with instructions on usage and technique. Patients were to complete at least 2 sessions daily, with each session lasting 10-20 minutes. CAT assessments were collected at the initial baseline visit, and at 6 and 12-week follow-up visits. At the final 12- week visit, patients were also asked whether they would continue to use the device and gave 1 (bad) to 5 (great) ratings on usability and satisfaction. **Results:** Data was analyzed from 46 patients. The average CAT score at 6 weeks was significantly lower compared to baseline (19.02 ± 6.59 vs. 23.65 ± 6.44, p<0.00001), with 31/44 patients (70.5%) reaching the minimum clinically important difference (MCID). CAT scores decreased further at 12 weeks (16.15 ± 6.06), a significant improvement from the 6-week results (*p*=0.0052). MCID was reached by 39/46 patients (84.8%) after 12 weeks of treatment. Average mucus scores at 6 and 12 weeks (2.59 ± 1.02 and 2.28 ± 1.13, respectively) were both significantly lower than the average baseline score (3.63 ± 0.97; p<0.00001 at both 6 and 12 weeks). Regarding device feedback, 43/44 patients (97.7%) would continue to use the device. The proportion of patients that provided 4/5 or 5/5 satisfaction ratings were 40/45 (88.9%), 43/45 (95.6%), and 40/45 (88.9%) for ease of use, quality, and overall satisfaction, respectively. No device-related adverse events were reported.



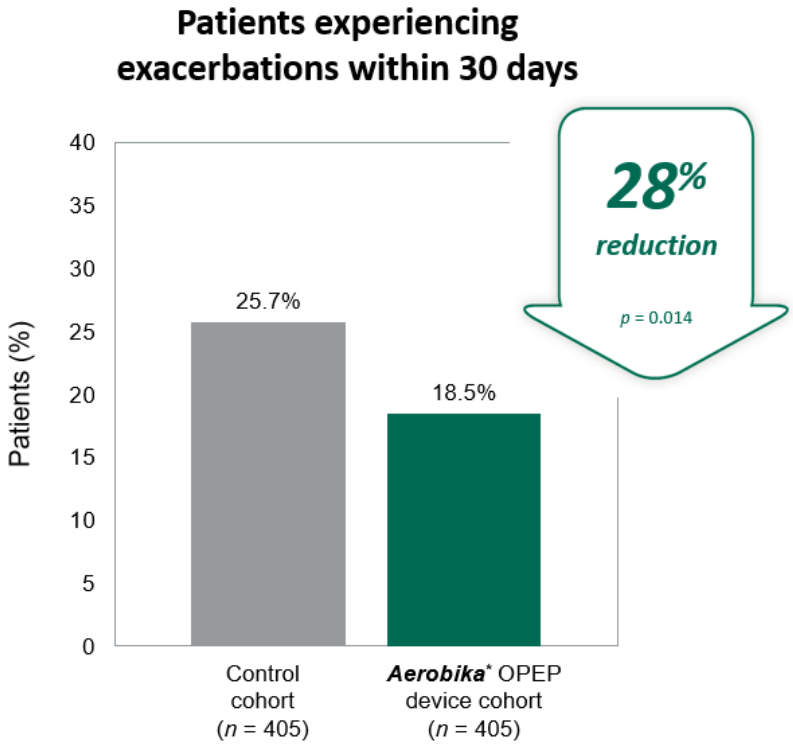
Conclusions: Statistically significant and clinically meaningful improvements were observed following 6- and 12-weeks use of the OPEP intervention. This study supports the use of the Aerobika* OPEP device in conjunction with standard of care therapy in COPD patients to manage symptoms and enhance quality of life. Patient feedback shows high levels of acceptable and perceived value of the device.

3 Real-World Study of 30-Day Exacerbation Outcomes in Chronic Obstructive Pulmonary Disease (COPD) Patients Managed with Aerobika* OPEP

C Burudpakdee, A Seetasith, P Dunne, G Kauffman, B Carlin, D Coppolo, J Suggett. Pulmonary Therapy 2017;3(163);DOI 10.1007/s41030-017-0027-5 (Published online: 06 February 2017). https://doi.org/10.1007/s41030-017-0027-5

Clinical Study Paper

Introduction: Oscillating positive expiratory pressure (OPEP) devices may reduce chronic symptoms in patients with obstructive pulmonary disease (COPD); however, no real-world studies have been performed to evaluate the benefits of these devices. The objective of this study was to measure the rate of early (30-day) moderate-to-severe exacerbations and related costs in COPD patients treated with Aerobika*, an OPEP device, vs. a matched control group in a real-world setting. **Methods:** The study utilized data from the QuintilesIMS' CDM hospital database. COPD patients treated with Aerobika* OPEP between 9/2013 and 8/2015 were propensity score matched to COPD patients who did not use any positive expiratory pressure device. Severe exacerbation was defined as a hospital admission with a diagnosis for chronic bronchitis or COPD. Moderate-to-severe exacerbation was defined as a hospitalization or an ED visit with a diagnosis for chronic bronchitis or COPD. Exacerbations and costs were compared between cohorts at 30 days. A generalized linear model (GLM) was used to estimate the marginal effect of Aerobika* OPEP on the cost of ED visits and hospitalizations due to COPD exacerbations. **Results:** A total of 405 Aerobika* OPEP patients were matched to 405 controls. At 30 days, 18.5% of subjects using the Aerobika* OPEP vs. 25.7% of controls had a moderate-to-severe exacerbation (p=0.014); 13.8% of subjects with Aerobika* OPEP vs. 19.0% of controls had a severe exacerbation (p=0.046). The mean per patient cost of moderate-to-severe exacerbations and severe exacerbations in the Aerobika* OPEP group was significantly lower than controls ($2975 vs. $6065; p=0.008, and $2838 vs. $5871; p=0.009, respectively). In the GLM, the per-patient cost of moderate-to-severe exacerbations in the Aerobika* OPEP group was 34% lower (p=0.012) than the control group.



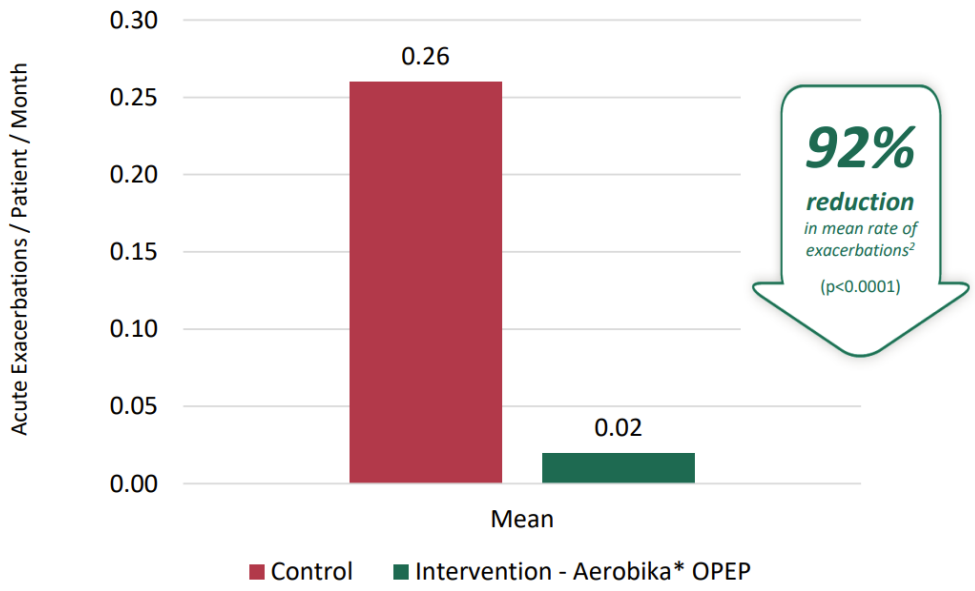
Conclusions: Study findings suggest that using Aerobika* OPEP as part of a treatment regimen may help reduce ED visits, hospital re-admissions and related costs in COPD patients who have a history of exacerbations.

4 Effectiveness of the Use of an Oscillating Positive Expiratory Pressure Device in Bronchiectasis with Frequent Exacerbations: A Single-Arm Pilot Study

Kim SR, Kim SH, Kim GH, Cho JY, Choi H, Lee H, Ra SW, Lee KM, Choe KH, Oh YM, Shin YM, Yang B. Front Med (Lausanne). 2023 May 12;10:1159227. doi: 10.3389/fmed.2023.1159227. PMID: 37250647; PMCID: PMC10213442.

Clinical Study Paper

Introduction: Impaired airway clearance in patients with non-cystic fibrosis bronchiectasis causes frequent bacterial infection, chronic inflammation, and progressive tissue destruction. We aimed to evaluate whether an oscillating positive expiratory pressure (OPEP) device could allow effective sputum expectoration and prevent acute exacerbations in patients with bronchiectasis who had frequent acute exacerbations. **Methods:** This open-label, single-arm, prospective study included 17 patients who experienced three or more acute exacerbations in the past year. We evaluated the prevention of acute exacerbations, subjective symptom improvement, and change in sputum amount during the use of the Aerobika* (Trudell Medical International, London, ON) OPEP device twice daily for 6 months. Each session was defined as 10-20 blows into the device with a few huffs at the end of the session. Patients were doing prior drainage techniques such as active cycle of breathing and autogenic drainage as trained by their physician. Patients were instructed to continue prior methods. **Results:** Of all enrolled patients, only two acute exacerbations occurred during the study period, indicating a significant decrease compared with the number of acute exacerbations before the device use ($p < 0.001$). Additionally, Bronchiectasis Health Questionnaire score changed from 58.7 to 66.6, showing significant improvement over the treatment period ($p<0.001$). The largest sputum volume was observed 3 months after OPEP device use (baseline: 10 ml, 3rd month 25 ml, $p = 0.325$). There were no major adverse events related to the use of OPEP devices.



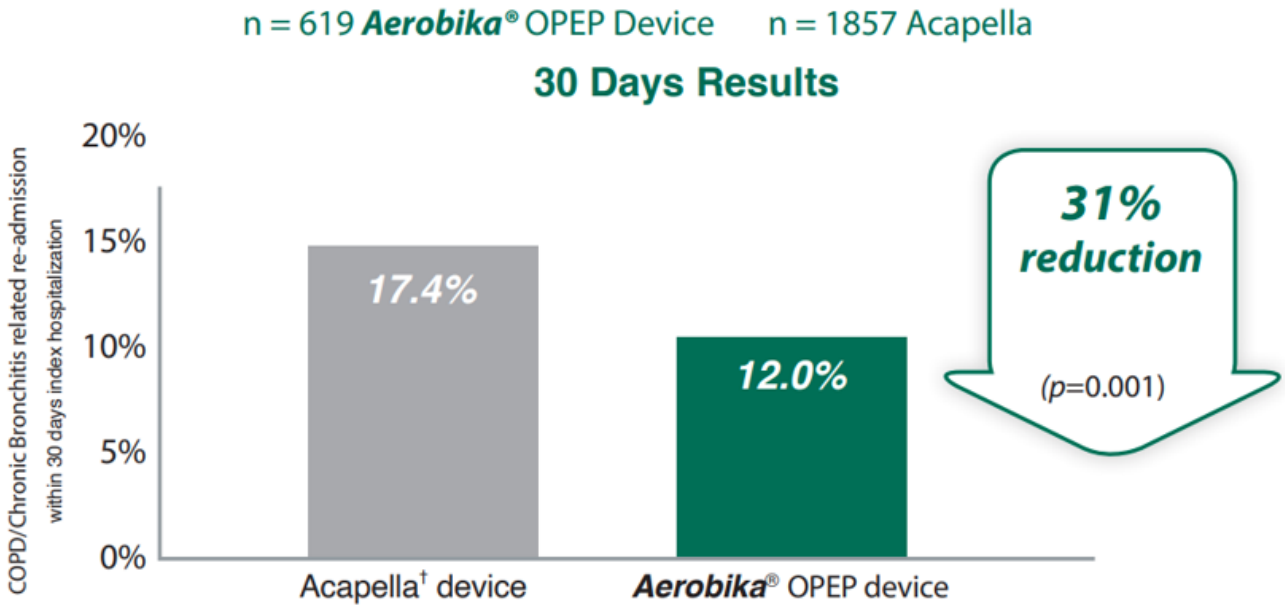
Conclusion: Twice-daily physiotherapy with the OPEP device in patients with bronchiectasis who have frequent exacerbations may facilitate symptomatic improvement and prevention of acute exacerbations without serious adverse events.

5 Impact of Oscillating Positive Expiratory Pressure Device Use on Post-Discharge Hospitalizations: A Retrospective Cohort Study Comparing Patients with COPD or Chronic Bronchitis Using the Aerobika* and Acapella® Devices

Jenny Tse, Keiko Wada, Yi Wang, Dominic Coppolo, Vladimir Kushnarev, Jason Suggett. International Journal of Chronic Obstructive Pulmonary Disease 2020:15 2527–2538 https://www.dovepress.com/impact-of-oscillating-positive-expiratory-pressure-device-use-on-post--peer-reviewed-fulltext-article-COPD

Clinical Study Paper

Background: Managing and preventing disease exacerbations are key goals of COPD care. Oscillating positive expiratory pressure (OPEP) devices have been shown to improve clinical outcomes when added to COPD standard of care. This retrospective database study compared real-world resource use and disease exacerbation among patients with COPD or chronic bronchitis prescribed either of two commonly used OPEP devices. **Patients and Methods:** Patients using the Aerobika* (Trudell Medical International, London, ON, Canada) or Acapella® (Smiths Medical, Wampsville, New York, USA) OPEP device for COPD or chronic bronchitis were identified from hospital claims linked to medical and prescription claims between September 2013 and April 2018; the index date was the first hospital visit with an OPEP device. Severe disease exacerbation, defined as an inpatient visit with a COPD or chronic bronchitis diagnosis, and all-cause healthcare resource utilization over 30 days and 12 months post-discharge were compared in propensity score (PS)-matched Aerobika* device and Acapella device users. **Results:** In total, 619 Aerobika* device and 1857 Acapella device users remained after PS matching. After discharge from the index visit, Aerobika* device users were less likely to have ≥1 severe exacerbation within 30 days (12.0% vs 17.4%, p=0.01) and/or 12 months (39.6% vs 45.3%, p=0.01) and had fewer 12-month severe exacerbations (mean, 0.7 vs 0.9 per patient per year, p=0.01), with significantly longer time to first severe exacerbation than Acapella users (log-rank p=0.01). Aerobika* device users were also less likely to have ≥1 all cause inpatient visit within 30 days (13.9% vs 20.3%, p<0.001) and 12 months (44.9% vs 51.8%, p=0.003) than Acapella users.



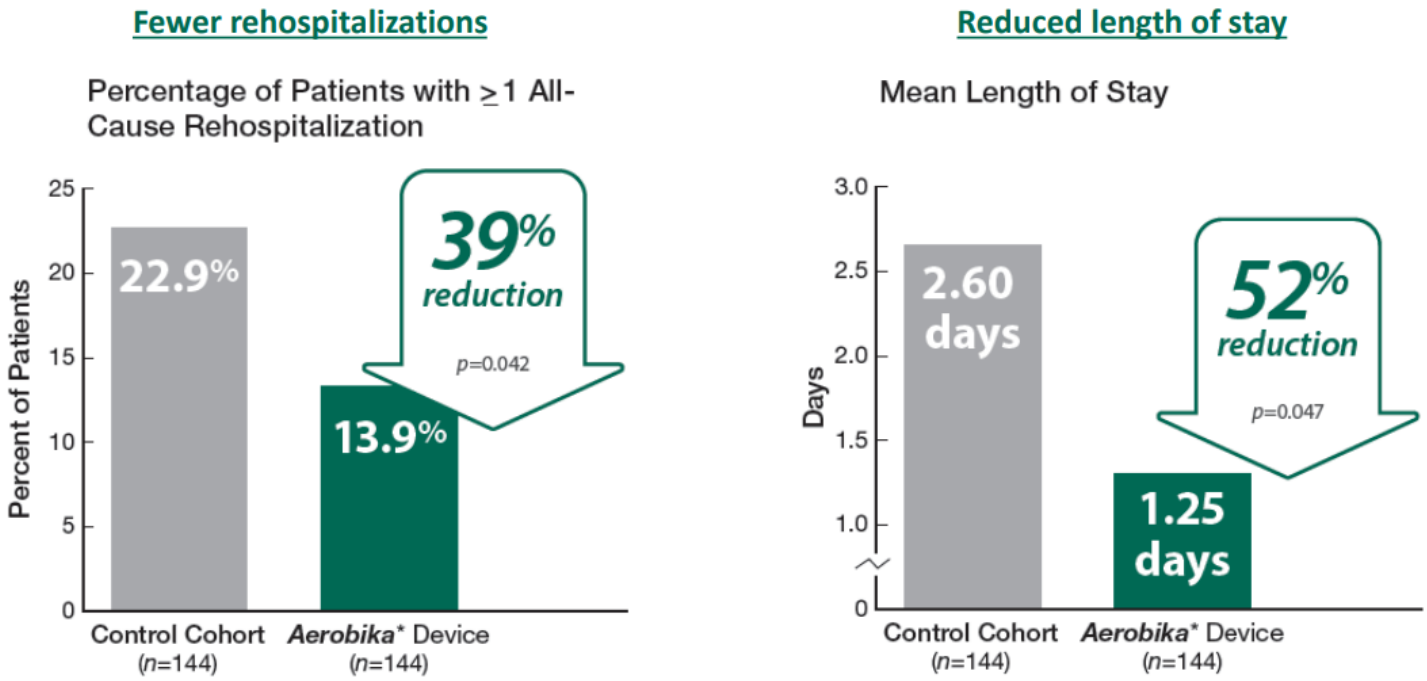
Conclusion: Patients receiving the Aerobika* OPEP device, compared to the Acapella device, had lower rates of subsequent severe disease exacerbation and all-cause inpatient admission. This suggests that Aerobika* OPEP device may be a beneficial add-on to usual care and that OPEP devices may vary in clinical effectiveness.

6 A Real-World Evidence Study Assessing the Impact of Adding the Aerobika* Oscillating Positive Expiratory Pressure Device to Standard of Care Upon Healthcare Resource Utilization and Costs in Post-Operative Patients

Chakkarin Burudpakdee . Aimee M. Near . Huan Huang . Dominic Coppolo . Vladimir Kushnarev . Jason Suggett Pulm Ther 2018. https://doi.org/10.6084/m9.figshare.6188678

Clinical Study Paper

Introduction: The aim of this real-world study was to measure the benefit of the Aerobika* oscillating positive expiratory pressure (OPEP) device when added to standard of care (defined as incentive spirometry [IS]) for post-operative patients. **Methods:** Adults aged ≥ 18 years who were hospitalized for cardiac, thoracic or upper abdominal surgery between 1 September 2013 and 30 April 2017 were identified from IQVIA's Hospital Charge Detail Master (CDM) database; the index date was the date of the first hospitalization for surgery. The control cohort (IS) included patients who had ≥ 1 CDM record within 12 months prior to the index date and ≥ 1 record after discharge, evidence of IS use during index hospitalization and no evidence of use of a PEP or OPEP device at any time during the study period. The Aerobika* OPEP cohort was selected in a similar manner, except that patients were required to have evidence of Aerobika* OPEP use during the index hospitalization. Aerobika* OPEP patients were 1:1 matched to IS patients using propensity score (PS) matching. Hospital readmissions and costs were measured at 30 days post-discharge from the index hospitalization. **Results:** After PS matching, 144 patients were included in each cohort. At 30 days post-discharge, compared to the control (IS) cohort there were significantly fewer patients in the Aerobika* OPEP cohort with ≥ 1 all-cause rehospitalizations (13.9 vs. 22.9%; p = 0.042). The patients in the Aerobika* OPEP cohort also had a shorter mean length of stay (± standard deviation) (1.25 ± 4.04 vs. 2.60 ± 8.24 days; p = 0.047) and lower total unadjusted mean all-cause cost per patient ($3670 ± $13,894 vs. $13,775 ± $84,238; p = 0.057). Adjusted analyses suggested that hospitalization costs were 80% lower for the Aerobika* OPEP cohort versus the IS cohort (p = 0.001).



Conclusion: Our results suggest that the addition of the Aerobika* OPEP device to standard of care (IS) is beneficial in the post-operative setting.

7 Cost-Effectiveness of the Aerobika* Oscillating Positive Expiratory Pressure Device in the Management of Chronic Obstructive Pulmonary Disease Exacerbations in Canada

N.X. Thanh, P. Jacobs, J. Suggett, A. McIvor, A. Kaplan. Canadian Respiratory Journal. Volume 2019, Article ID 9176504, 7 pages, 2019. https://doi.org/10.1155/2019/9176504

Health Economic Paper

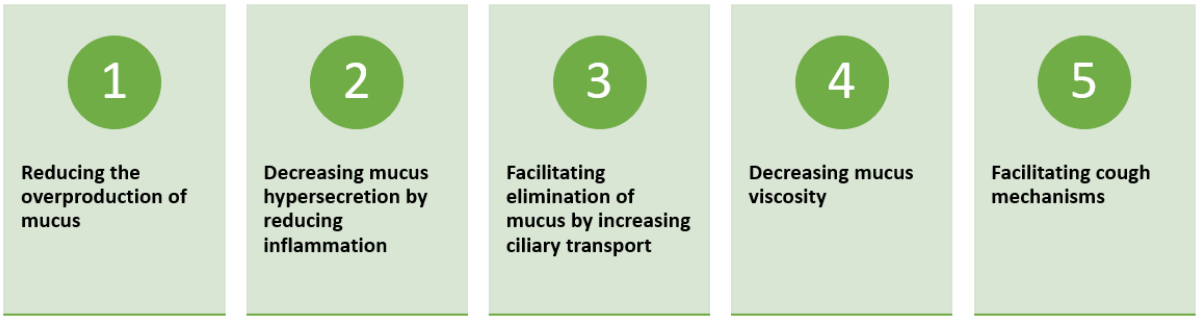
Background: The Aerobika* oscillating positive expiratory pressure (OPEP) device is a hand-held, drug-free medical device that has been shown to improve lung function and improve health-related quality of life in patients with chronic obstructive pulmonary disease (COPD). We estimated the cost-effectiveness of this device among post exacerbation COPD patients in the Canadian healthcare system. **Methods:** We performed a cost-utility analysis using a Markov model to compare both costs and outcome of patients with COPD who had recently experienced an exacerbation between 2 treatment arms: patients who used the Aerobika* device and patients who did not use the Aerobika* device. This cost-utility analysis included costs based on the Alberta healthcare system perspective as these represent Canadian experience. A one-year horizon with 12 monthly cycles was used. **Results:** For a patient after 1 year, the use of the Aerobika* device would save $694 in healthcare costs and produce 0.04 more in quality-adjusted life years (QALYs) in comparison with no positive expiratory pressure (PEP)/OPEP therapy. In other words, the economic outcome of the device was dominant (i.e., more effective and less costly). The probability for this device to be the dominant strategy was 72%. With a willingness to pay (WTP) threshold of $50,000 per QALY gained, the probability for the Aerobika* device to be cost-effective was 77%. **Conclusions:** Given one of the major treatment goals in the GOLD guidelines is to minimize the negative impact of exacerbations and prevent re-exacerbations, the Aerobika* OPEP device should be viewed as a potential component of a treatment strategy to improve symptom control and reduce the risk of re-exacerbations in patients with COPD.

8 Global Strategy for the Diagnosis, Management, and Prevention of COPD: GOLD 2025 Report

Global Initiative for Chronic Obstructive Lung Disease (GOLD): 2025 Report.

Guideline

Management of Mucus Hypersecretion: Treatment goals for patients with chronic bronchitis (CB) include:



Mucus clearance treatments that promote mechanical movement through the airway such as oscillating positive expiratory pressure (OPEP) therapy may improve mucus mobilization, symptoms and quality of life in people with COPD who produce sputum daily or most days. The use of nebulized hypertonic saline for copious mucus has been used in obstructive lung disease and cystic fibrosis with beneficial effects. However, in patients with COPD, current studies are limited, and results are inconsistent.

9 European Respiratory Society Clinical Practice Guideline for the Management of Adult Bronchiectasis

Chalmers JD, Haworth CS, Flume P, et al. European Respiratory Society Clinical Practice Guideline for the Management of Adult Bronchiectasis. Eur Respir J 2025; in press (https://doi.org/10.1183/13993003.01126-2025).

Guideline

Should airway clearance techniques be used (compared to no airway clearance techniques) in adults with bronchiectasis?

Recommendation

We recommend that patients with bronchiectasis should be taught airway clearance techniques (strong recommendation for the intervention, very low certainty of evidence).

- Previous ERS guidelines limited ACTs to patients with chronic productive cough. The current recommendation acknowledges that some patients with a dry cough, particularly those with mucus plugging on chest CT, may benefit from ACTs. Instruction in ACTs may also assist patients during periods of increased symptoms, such as exacerbations.

Justification of Recommendations

ACTs are associated with improved quality of life and symptoms and may reduce exacerbations. Airway clearance is a key component of daily bronchiectasis management. Despite the very low certainty of evidence, the panel issued a strong recommendation based on the following: i) ACTs are self-administered, low-cost, and accessible; ii) Patients widely recognize their benefits; iii) The recommendation was strongly supported by patient representatives. Although adverse effects and harms were not systematically reported or collected, ACTs are widely believed to be safe and low risk of adverse events. These factors outweigh the limitations of the evidence base and highlight a need for broader implementation. Airway clearance is underutilized in clinical practice, and this recommendation should encourage increased uptake among healthcare professionals and policy.

10 British Thoracic Society Guideline for Bronchiectasis in Adults

British Thoracic Society Guideline for Bronchiectasis in Adults. Thorax. Jan 2019, Vol 74. https://www.brit-thoracic.org.uk/document-library/guidelines/bronchiectasis/bts-guideline-for-bronchiectasis-in-adults/

Guideline

Which airway clearance techniques should be taught?

Recommendation: Offer active cycle of breathing techniques or oscillating positive expiratory pressure to individuals with bronchiectasis.

A systematic review evaluated OPEP devices in bronchiectasis. In the seven studies reviewed (*n*=146 patients), OPEP therapy was associated with improvements in sputum expectoration and quality of life measures compared with no treatment. Moreover, they concluded that compared with other ACTs, the effects in terms of sputum expectoration, lung function, gas exchange, and symptoms were equivalent. However, the authors did suggest a greater patient preference for oscillating PEP compared with ACBT with or without Gravity Assisted Positioning (GAP).