



High Frequency Chest Wall Oscillation (HFCWO)

Medical Coverage Policy

Utilization *ALERT*

- Prior to use of this MCP for evaluation of medical necessity, benefit coverage MUST be verified in the member's EOC or benefit document.
- For Medicare members, please refer to CMS guidelines through Medicare Coverage Database requirements.
- If, after searching the Medicare Coverage Database, no NCD/LCD/LCA is found, please use this KP-MAS Medical Coverage Policy for coverage guidelines for Medicare members.

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- I. Service: High Frequency Chest Wall Oscillation (HFCWO) Device and Airway Oscillating Devices
 - II. Specialty: Pulmonary Medicine
 - III. High Frequency Chest Wall Oscillation (HFCWO) Device

A. Clinical Indications for HFCWO Referral

HFCWO is considered medically necessary when **ALL** of the following criteria are met.

1. A confirmed diagnosis of any of the following:
 - a. **Cystic fibrosis**
 - b. **Immotile cilia syndrome (also known as primary ciliary dyskinesia)**
 - c. **Bronchiectasis**
When diagnosis is confirmed by a high resolution, spiral, or standard CT scan and characterized by:
 - ii. Daily productive cough for at least 6 continuous months; or
 - iii. Frequent (i.e., more than 2/year) exacerbations requiring antibiotic therapy.
 - Chronic bronchitis and chronic obstructive pulmonary disease (COPD) without a confirmed diagnosis of bronchiectasis does not meet this criterion.
 - d. **One of the following neuromuscular diseases:**
 - i. Post-polio syndrome;
 - ii. Acid maltase deficiency;
 - iii. Anterior horn cell disease;
 - iv. Multiple sclerosis;
 - v. Quadriplegia;
 - vi. Hereditary muscular dystrophy;
 - vii. Spinal muscular dystrophy;
 - viii. Myotonic disorders;
 - ix. Other Myopathies; or
 - x. Paralysis of the diaphragm



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2. There is documentation of failure, intolerance, or contraindication to effectively clear retained mucous in the airway with standard or less intensive treatments (such as chest physiotherapy, mucolytic agents, postural drainage, mechanical modalities i.e., exsufflation devices);
 3. There is no absolute contraindication for external manipulation of the thorax including absence of the following:
 - a. Active hemorrhage with hemodynamic instability;
 - b. Injury to the head and/or neck that has not yet been stabilized; or
 - c. Acute respiratory distress or failure.
 4. The patient has adequate physiological cough reflex *and*
 5. The device is FDA approved or has not been recalled by FDA.
- B. HFCWO device is considered *not* medically necessary for any condition not listed in section III, A due to insufficient evidence of efficacy for these indications or their effectiveness has not been established.**
- C. Continuation of HCFWO Treatment**
1. Re-authorization of HFCWO is medically necessary if the member meets all the criteria for the base device with documentation of favorable outcome from HFCWO prior to treatment extension.
 2. Approval to continue with HFCWO treatment will be denied as *not* reasonable and necessary if all the criteria for HFCWO are not met.
- D. Contraindications and Exclusions**
- HFCWO is contraindicated for the following conditions:
1. Chest wall pain;
 2. Lung contusion;
 3. Rib fractures;
 4. Acute bronchospasm;
 5. Suspected pulmonary tuberculosis;
 6. Osteomyelitis of the ribs;
 7. Osteoporosis;
 8. Osteogenesis imperfecta or other brittle bone disease(s);
 9. Coagulopathy;
 10. Subcutaneous emphysema;
 11. Recent abdominal surgery;
 12. Recent gastrostomy tube placement;
 13. Recent spinal anesthesia or epidural spinal infusion;
 14. Recent placement of indwelling venous catheter in the chest wall;
 15. Intravenous access to an indwelling venous catheter unless the site like portacath is covered with padding;
 16. Recently placed transvenous or subcutaneous pacemaker or any implanted device in the chest



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- or chest wall; and
17. Open wounds, skin infection or burns of the thorax.
 18. Recent skin grafting to the chest/thorax; and
 19. Recent esophageal surgery

E. HFCWO is considered investigational or experimental and not covered:

1. For other conditions & lung diseases, including but not limited to chronic obstructive pulmonary disease (COPD) and chronic bronchitis without a diagnosis of bronchiectasis;
2. As an adjunct to chest physical therapy;
3. The HFCWO and mechanical insufflation device are used at the same time; and
4. The HFCWO device has not received FDA approval specific to its indication;

IV. Oscillatory Positive Expiratory Pressure Devices (e.g., Flutter valve and Acapella)

A. Clinical Indications for Referral

An airway oscillating device is considered medically necessary in the presence of **ALL** of the following:

1. A confirmed diagnosis of any of the following that require assisted mucus clearance:
 - a. Cystic fibrosis (CF);
 - b. Immotile cilia syndrome (primary ciliary dyskinesia)
 - c. Bronchiectasis;
 - d. Chronic Bronchitis;
 - e. Asthma; or
 - f. Chronic Obstructive Pulmonary Disease (COPD);
2. Recurrence of hypersecretory lung disease exacerbation

B. Exclusions/Limitations

An oscillatory positive expiratory pressure device is considered *not* medically necessary for any other condition not listed in section IV; A due to insufficient evidence of efficacy.

V. Benefits

The DME coverage of these devices is determined by the member specific benefit plan and any applicable laws to cover specific services.

References

1. Nicolini A, Cardini F, Landucci N, Lanata S, Ferrari-Bravo M, Barlascini C. Effectiveness of treatment with high-frequency chest wall oscillation in patients with bronchiectasis. *BMC Pulm Med.* 2013 Apr 4; 13:21. DOI:10.1186/1471-2466-13-21. Accessed 06/03/2019.
<https://bmcpulmmed.biomedcentral.com/articles/10.1186/1471-2466-13-21>
2. Nicolini A, Grecchi B, Ferrari-Bravo M, Barlascini C. Safety and effectiveness of high-frequency chest wall oscillation vs intrapulmonary percussive ventilation in patients with severe COPD. *Int J Chron Obstruct Pulmon Dis.* 2018 Feb 16; 13:617-625. DOI: 10.2147/COPD.S145440. eCollection 2018. Accessed 06/03/2019.
<https://www.dovepress.com/safety-and-effectiveness-of-the-high-frequency-chest-wall-oscillation--peer-reviewed-article-COPD>
3. Lee AL, Burge AT, Holland AE. Airway clearance techniques for bronchiectasis. *Cochrane Database Syst Rev.* 2015 Nov 23;(11):CD008351. DOI: 10.1002/14651858.CD008351.pub3. Accessed 06/03/2019. <https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD008351.pub3/epdf/full>
4. Wilson LM, Morrison L, Robinson KA. Airway clearance techniques for cystic fibrosis: an overview of Cochrane systematic reviews. *Cochrane Database Syst Rev.* 2019 Jan 24;1:CD011231. DOI: 10.1002/14651858.CD011231.pub2. Accessed 06/03/2019.
<https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD011231.pub2/full>
5. Morrison L, Milroy S. Oscillating devices for airway clearance in people with cystic fibrosis. *Cochrane Database of Systematic Reviews* 2017, Issue 5. Art. No.: CD006842. DOI: 10.1002/14651858.CD006842.pub4. Accessed 06/03/2019.
<https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD006842.pub4/full>
6. O'Sullivan KJ, Collins L, McGrath D, Linnane B, O'Sullivan L, Dunne CP. Oscillating Positive Expiratory Pressure Therapy May Be Performed Poorly by Children With Cystic Fibrosis. *Respir Care.* 2019 Apr;64(4):398-405. DOI: 10.4187/respcare.06329. Accessed 06/03/2019.
<https://www.ncbi.nlm.nih.gov/pubmed/30944227>
7. Center for Medicare and Medicaid Services (CMS). Local Coverage Article: High Frequency Chest Wall Oscillation Devices - Policy Article (A52494) Contractor: Noridian Healthcare Solutions, LLC. Revision effective date: 01/01/2019. Accessed 06/04/2019
<https://www.cms.gov/medicare-coverage-database/details/article-details.aspx?articleId=52494&ver=23&NCDId=190&ncdver=2&SearchType=Advanced&CoverageSelection=Both&NCSSelection=NCD&ArticleType=Ed%7cKey%7cSAD%7cFAQ&PolicyType=Final&s=%7c5%7c6%7c66%7c67%7c44&KeyWord=Durable+Medical+Equipment&KeyWordLookUp=Doc&KeyWordSearchType=And&kq=true&bc=IAAAACAAAAAA&>
8. Noah Lechtzin, Lisa F. Wolfe, and Kevin D. Frick. The Impact of High-Frequency Chest Wall Oscillation on Healthcare Use in Patients with Neuromuscular Diseases. *Annals American Thoracic Society (ATS)* Volume 13 Number 6| pp 904–909 June 2016. Accessed 06/04/2019
<https://www.atsjournals.org/doi/pdf/10.1513/AnnalsATS.201509-597OC>
9. Taghreed S. Farag1, Mariam EL-Syed. Utility of vest high frequency chest wall oscillation device

versus flutter device in acute exacerbation of chronic obstructive pulmonary disease. *International Journal of Research in Medical Sciences.* Int J Res Med Sci. 2018 Jan;6(1):1-9. DOI: 10.18203/2320-6012.ijrms20175703. Accessed 06/04/2019
<https://www.researchgate.net/publication/322033696>

10. Nicolini A, Grecchi B, Banfi P. Effectiveness of two high frequency chest wall oscillation techniques in patients with bronchiectasis: a randomized controlled preliminary study. *Panminerva Med.* 2020 Mar 19. doi: 10.23736/S0031-0808.20.03735-0. PMID: 32192317
<https://www.minervamedica.it/en/journals/panminerva-medica/article.php?cod=R41Y9999N00A20031901>
11. Leemans G, Belmans D, Van Holsbeke C, Becker B, Vissers D, Ides K, Verhulst S, Van Hoorenbeeck K. The effectiveness of a mobile high-frequency chest wall oscillation (HFCWO) device for airway clearance. *Pediatr Pulmonol.* 2020 Apr 22. doi: 10.1002/ppul.24784. PMID: 32320537
[https://www.ncbi.nlm.nih.gov/pubmed/?term=The+effectiveness+of+a+mobile+high-frequency+chest+wall+oscillation+\(HFCWO\)+device+for+airway+clearance](https://www.ncbi.nlm.nih.gov/pubmed/?term=The+effectiveness+of+a+mobile+high-frequency+chest+wall+oscillation+(HFCWO)+device+for+airway+clearance).
12. Franks LJ, Walsh JR, Hall K, Jacuinde G, Yerkovich S, Morris NR. Comparing the Performance Characteristics of Different Positive Expiratory Pressure Devices. *Respir Care.* 2019 Apr;64(4):434-444. doi: 10.4187/respcare.06410. Epub 2019 Jan 22. PMID:30670668
<http://rc.rcjournal.com/content/respcare/64/4/434.full.pdf>
13. Poncin W, Reyhler G, Liistro M, Liistro G. Comparison of 6 Oscillatory Positive Expiratory Pressure Devices During Active Expiratory Flow. *Respir Care.* 2020 Apr;65(4):492-499. doi: 10.4187/respcare.07271. Epub 2019 Nov 19. PMID: 31744866
<https://www.ncbi.nlm.nih.gov/pubmed/?term=Comparison+of+6+Oscillatory+Positive+Expiratory+Pressure+Devices+During+Active+Expiratory+Flow>
14. Morgan SE, Mosakowski S, Giles BL, Naureckas E, Tung A. Variability in expiratory flow requirements among oscillatory positive expiratory pressure. *Can J Respir Ther.* 2020 Mar 4;56:7-10. doi: 10.29390/cjrt-2019-025. eCollection 2019. PMID: 32181326
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC55957/pdf/cjrt-2019-025.pdf>
15. Nicolini,Antonello; Grecchi,Bruna; Ferrari-Bravo,Maura; Barlascini,Cornelius. Safety and effectiveness of the high-frequency chest wall oscillation vs intrapulmonary percussive ventilation in patients with severe COPD. *International Journal of Chronic Obstructive Pulmonary Disease (COPD)* Vol Volume 13, Pp 617-625 (2018); Dove Press, 2018. Language: English.
16. National Institute of Neurologic Disorders and Stroke (NINDS). Inflammatory myopathies fact sheet. National Institutes of Health (NIH) Publication No. 11-5321. [NINDS Web site]. 03/16/2020. Available at <https://www.ninds.nih.gov/Disorders/Patient-Caregiver-Education/Fact-Sheets/Inflammatory-Myopathies-Fact-Sheet>. Accessed 07/20/2021
17. Belli, S., Prince, I., Savio, G., Paracchini, E., Cattaneo, D., Bianchi, M., Masocco, F., Bellanti, M. T., & Balbi, B. (2021). Airway Clearance Techniques: The Right Choice for the Right Patient. *Frontiers in medicine*, 8, 544826. <https://doi.org/10.3389/fmed.2021.544826>. Accessed 07/20/2021
18. McIlwaine, M., Button, B., & Nevitt, S. J. (2019). Positive expiratory pressure physiotherapy for airway clearance in people with cystic fibrosis. *The Cochrane database of systematic reviews*, 2019(11), CD003147. <https://doi.org/10.1002/14651858.CD003147.pub5> . Accessed 07/20/2021

19. Iranpour, R., Armanian, A. M., Abedi, A. R., & Farajzadegan, Z. (2019). Nasal high-frequency oscillatory ventilation (nHFOV) versus nasal continuous positive airway pressure (NCPAP) as an initial therapy for respiratory distress syndrome (RDS) in preterm and near-term infants. *BMJ paediatrics open*, 3(1), e000443. <https://doi.org/10.1136/bmipo-2019-000443>. Accessed 07/20/2021
20. Malakian, A., Bashirnezhadkhabaz, S., Aramesh, M. R., & Dehdashtian, M. (2020). Noninvasive high-frequency oscillatory ventilation versus nasal continuous positive airway pressure in preterm infants with respiratory distress syndrome: a randomized controlled trial. *The journal of maternal-fetal & neonatal medicine: the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians*, 33(15), 2601–2607. <https://doi.org/10.1080/14767058.2018.1555810>.
Accessed 07/20/2021
21. U.S. Centers for Medicare and Medicaid Services (CMS). Medicare Coverage Database. Local Coverage Article: High Frequency Chest Wall Oscillation Devices - Policy Article (A52494). Accessed 07/20/2021 <https://www.cms.gov/medicare-coverage-database/details/article-details.aspx?articleId=52494>
22. Erdeve, O., Okulu, E., Tunc, G., Celik, Y., Kayacan, U., Cetinkaya, M., Buyukkale, G., Ozkan, H., Koksal, N., Satar, M., Akcali, M., Aygun, C., Ozkiraz, S., Zubarioglu, U., Unal, S., Turgut, H., Mert, K., Gokmen, T., Akcan, B., Atasay, B., ... Rescue-HFOV Trial Group (2019). An observational, prospective, multicenter study on rescue high-frequency oscillatory ventilation in neonates failing with conventional ventilation. *PloS one*, 14(6), e0217768. <https://doi.org/10.1371/journal.pone.0217768>
23. Hsu, J. F., Yang, M. C., Chu, S. M., Yang, L. Y., Chiang, M. C., Lai, M. Y., Huang, H. R., Pan, Y. B., Fu, R. H., & Tsai, M. H. (2021). Therapeutic effects and outcomes of rescue high-frequency oscillatory ventilation for premature infants with severe refractory respiratory failure. *Scientific reports*, 11(1), 8471. <https://doi.org/10.1038/s41598-021-88231-6>
24. Center for Medicare and Medicaid Services (CMS). Local Coverage Determination: High Frequency Chest Wall Oscillation Devices (L33785) Contractor: CGS Administrators, LLC. Revision effective date: 10/01/2022. Accessed 06/22/2023
<https://www.cms.gov/medicare-coverage-database/view/lcd.aspx?lcdid=33785&ver=40&=>
25. MCG 27th edition. Copyright 2023 MCG Health, LLC. High Frequency Chest Compression Device, ACG: A-0356 (AC). Accessed 06/21/2022
26. Leemans, G., Belmans, D., Van Holsbeke, C., Becker, B., Vissers, D., Ides, K., Verhulst, S., & Van Hoorenbeeck, K. (2020). The effectiveness of a mobile high-frequency chest wall oscillation (HFCWO) device for airway clearance. *Pediatric pulmonology*, 55(8), 1984–1992.
<https://doi.org/10.1002/ppul.24784>



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Approval History

Effective June 01, 2016, state filing is no longer required per Maryland House Bill HB 798 – Health Insurance – Reporting

Date approved by RUMC*	Date of Implementation
08/28/2019	08/28/2019
10/29/2019	10/29/2019
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*The Regional Utilization Management Committee received delegated authority in 2011 to review and approve designated Utilization Management and Medical Coverage Policies by the Regional Quality Improvement Committee.

Note: Kaiser Permanente Mid-Atlantic States (KPMAS) include referral and authorization criteria to support primary care and specialty care practitioners, as appropriate, in caring for members with selected conditions. Medical Coverage Policies are not intended or designed as a substitute for the reasonable exercise of independent clinical judgment by a practitioner in any particular set of circumstances for an individual member.

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