Airway Clearance Devices (for North Carolina Only)

Policy Number: CSNCT0700.07
Effective Date: March 1, 2026

➲ Instructions for Use

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Related Policy

- Durable Medical Equipment, Orthotics, Medical Supplies, and Repairs/Replacements (for North Carolina Only)

Application

This Medical Policy only applies to the state of North Carolina.

Coverage Rationale

High Frequency Chest Wall Oscillation System

For medical necessity clinical coverage criteria, refer to the North Carolina Medicaid (Division of Health Benefits) Clinical Coverage Policy, Medical Equipment: 5A-2, Respiratory Equipment and Supplies.

Oscillatory Positive Expiratory Pressure (PEP) Device and Flutter Device

For medical necessity clinical coverage criteria, refer to the North Carolina Medicaid (Division of Health Benefits) Clinical Coverage Policy, Medical Equipment: 5A-2, Respiratory Equipment and Supplies.

Intrapulmonary Percussive Ventilation (IPV) Device

Intrapulmonary percussive ventilation (IPV) devices for home use are considered unproven and not medically necessary.

Medical Records Documentation Used for Reviews

Benefit coverage for health services is determined by the federal, state, or contractual requirements, and applicable laws that may require coverage for a specific service. Medical records documentation may be required to assess whether the member meets the clinical criteria for coverage but does not guarantee coverage of the services requested.

The patient's medical record must contain documentation that fully supports the medical necessity for the requested services. This documentation includes, but is not limited to, relevant medical history, physical examination, and results of pertinent diagnostic tests or procedures. Documentation supporting the medical necessity should be legible, maintained in the patient's medical record, and must be made available upon request.

Applicable Codes

The following list(s) of procedure and/or diagnosis codes is provided for reference purposes only and may not be all inclusive. Listing of a code in this policy does not imply that the service described by the code is a covered or non-covered health service. Benefit coverage for health services is determined by federal, state, or contractual requirements and applicable laws that may require coverage for a specific service. The inclusion of a code does not imply any right to reimbursement or guarantee claim payment. Other Policies and Guidelines may apply.

HCPCS Code	Description
*A7021	Supplies and accessories for lung expansion airway clearance, continuous high frequency oscillation, and nebulization device (e.g., handset, nebulizer kit, biofilter)
A7025	High frequency chest wall oscillation system vest, replacement for use with patient owned equipment, each
A7026	High frequency chest wall oscillation system hose, replacement for use with patient owned equipment, each
*E0469	Lung expansion airway clearance, continuous high frequency oscillation, and nebulization device
*E0481	Intrapulmonary percussive ventilation system and related accessories
E0483	High frequency chest wall oscillation system, with full anterior and/or posterior thoracic region receiving simultaneous external oscillation, includes all accessories and supplies, each

Codes labeled with an asterisk (*) are not on the State of North Carolina Medicaid Fee Schedule and therefore may not be covered by the State of North Carolina Medicaid Program.

Diagnosis Code	Description
A80.0	Acute paralytic poliomyelitis, vaccine-associated
A80.1	Acute paralytic poliomyelitis, wild virus, imported
A80.2	Acute paralytic poliomyelitis, wild virus, indigenous
A80.30	Acute paralytic poliomyelitis, unspecified
A80.39	Other acute paralytic poliomyelitis
A80.4	Acute nonparalytic poliomyelitis
A80.9	Acute poliomyelitis, unspecified
B91	Sequelae of poliomyelitis
E74.02	Pompe disease
E74.4	Disorders of pyruvate metabolism and gluconeogenesis
E84.0	Cystic fibrosis with pulmonary manifestations
E84.9	Cystic fibrosis, unspecified
G12.0	Infantile spinal muscular atrophy, type I [Werdnig-Hoffman]
G12.1	Other inherited spinal muscular atrophy
G12.9	Spinal muscular atrophy, unspecified
G12.21	Amyotrophic lateral sclerosis
G12.22	Progressive bulbar palsy
G12.25	Progressive spinal muscle atrophy
G12.8	Other spinal muscular atrophies and related syndromes
G14	Post-polio syndrome
G35.A	Relapsing-remitting multiple sclerosis
G35.B0	Primary progressive multiple sclerosis, unspecified
G35.B1	Active primary progressive multiple sclerosis
G35.B2	Non-active primary progressive multiple sclerosis
G35.C0	Secondary progressive multiple sclerosis, unspecified
G35.C1	Active secondary progressive multiple sclerosis

Diagnosis Code	Description
G35.C2	Non-active secondary progressive multiple sclerosis
G35.D	Multiple sclerosis, unspecified
G71.00	Muscular dystrophy, unspecified
G71.036	Limb girdle muscular dystrophy due to fukutin related protein dysfunction
G71.11	Myotonic muscular dystrophy
G71.20	Congenital myopathy, unspecified
G71.21	Nemaline myopathy
G71.220	X-linked myotubular myopathy
G71.228	Other centronuclear myopathy
G71.29	Other congenital myopathy
G71.3	Mitochondrial myopathy, not elsewhere classified
G71.8	Other primary disorders of muscles
G72.41	Inclusion body myositis [IBM]
G72.89	Other specified myopathies
G73.1	Lambert-Eaton syndrome in neoplastic disease
G73.3	Myasthenic syndromes in other diseases classified elsewhere
G73.7	Myopathy in diseases classified elsewhere
G80.0	Spastic quadriplegic cerebral palsy
G82.50	Quadriplegia, unspecified
G82.51	Quadriplegia, C1-C4 complete
G82.52	Quadriplegia, C1-C4 incomplete
G82.53	Quadriplegia, C5-C7 complete
G82.54	Quadriplegia, C5-C7 incomplete
J47.0	Bronchiectasis with acute lower respiratory infection
J47.1	Bronchiectasis with (acute) exacerbation
J47.9	Bronchiectasis, uncomplicated
J98.6	Disorders of diaphragm
M33.02	Juvenile dermatomyositis with myopathy
M33.12	Other dermatomyositis with myopathy
M33.22	Polymyositis with myopathy
M33.92	Dermatopolymyositis, unspecified with myopathy
M34.82	Systemic sclerosis with myopathy
M35.03	Sicca syndrome with myopathy
Q33.4	Congenital bronchiectasis
R53.2	Functional quadriplegia
Z99.11	Dependence on respirator [ventilator] status

Description of Services

An IPV is a mechanized form of chest physical therapy, which delivers mini bursts (more than 200 per minute) of respiratory gases to the lungs via a mouthpiece. Its purpose is to mobilize endobronchial secretions and diffuse patchy atelectasis. The patient controls variables such as inspiratory time, delivery rates, and peak pressure. Alternatively, a therapist will do a slapping or clapping of the patient's chest wall.

Intrapulmonary Percussive Ventilation

There is insufficient quality evidence or consistency of findings to support the long-term home use of intrapulmonary percussive ventilation devices (IPV).

In an RCT, Hassan et al. (2024) evaluated the effectiveness of IPV in nonventilated, critically ill participants, focusing on ICU length of stay, oxygenation, and pulmonary complications. A total of 106 participants with respiratory impairment were randomly assigned to either the IPV or conventional physiotherapy group, with both groups receiving two treatment sessions daily. Data from 100 participants were analyzed for outcomes, including ICU length of stay, changes in oxygenation, respiratory rate, and radiological findings. The results showed that the median ICU length of stay was significantly shorter in the IPV group (3.5 days; IQR, 1.9-5.9 days) than the conventional physiotherapy group (5.2 days; IQR, 3.4-9.9 days), with an MD of 1.56 days (95% CI, 1.2-2.1 days; $p = 0.002$). IPV also led to a modest improvement in peripheral oxygen saturation (MD, 0.94%; 95% CI, 0.43%-1.45%; $p < 0.001$) and a reduction in respiratory rate (MD, 2.1 breaths/min; 95% CI, 0.9-3.2 breaths/min; $p < 0.001$). No significant difference was observed in radiological atelectasis scores ($p = 0.65$). The authors concluded that IPV may improve clinical outcomes in critically ill individuals with respiratory impairment by reducing ICU length of stay and respiratory rate, with a small benefit in oxygenation compared with conventional physiotherapy. However, limitations of the study included the single-center design, limited generalizability, and interruptions due to the COVID-19 pandemic, which delayed study completion.

Hassan et al. (2024) conducted a scoping review to assess the clinical application of IPV and identify potential inconsistencies in practice due to limited clinical guidance. The review aimed to summarize the methods and dosages of IPV that were used by clinicians and researchers to support more standardized application. Of 514 studies screened, 25 met the inclusion criteria. The findings revealed variability in both the clinical application and prescribed dosages of IPV. Despite this, common trends were identified and synthesized to assist clinicians in implementing IPV interventions more effectively. The authors noted limitations, including the potential omission of relevant studies and incomplete evidence in included studies, which hindered the development of a comprehensive clinical guideline due to heterogeneity. Nonetheless, they concluded that the summarized IPV application and dosage practices may serve as a useful reference for clinicians and contribute to the future development of standardized clinical practice guidelines.

Hassan et al. (2021b) conducted a retrospective pilot study to evaluate the safety and feasibility of IPV intervention in non-intubated patients who were admitted to an ICU. The medical records of 35 patients were reviewed, including 22 patients who received IPV intervention, and 13 patients who were matched for age, sex, and primary diagnosis and received chest physiotherapy (CPT). The records were audited for feasibility, safety, changes in oxygen saturation, chest x-ray changes, and ICU length of stay. A total of 104 treatment sessions (IPV 65 and CPT 39) were delivered to patients who were admitted with a range of respiratory conditions in critical care. Patients completed 97% of IPV sessions. No major adverse events were reported with IPV intervention. ICU length of stay in the IPV group was 9.6 ±6 days, and in the CPT group, it was 11 ±9 days ($p = 0.59$). Peripheral oxygen saturation before to post intervention was 92% ±4 to 96% ±4 the IPV group and 95% ±4 to 95% ±3 in the CPT group. The authors concluded that application of IPV intervention was feasible and safe in spontaneously breathing non-intubated adult patients in critical care. The study is limited by its retrospective observations. There is a need for an adequately powered RCT to further evaluate the effects of IPV intervention in a non-intubated population in critical care.

Hassan et al. (2021a) performed a systematic review to summarize the evidence of the effectiveness of IPV on ICU of stay and respiratory outcomes in critically ill individuals. A systematic search of IPV in ICUs was performed on five databases from 1979 to 2021. Studies were considered for inclusion if they evaluated the effectiveness of IPV in individuals aged ≥ 16 years who were receiving invasive or non-invasive ventilation or were breathing spontaneously in critical care or high dependency units. Study titles and abstracts were screened, followed by data extraction by a full-text review. Due to a small number of studies and observed heterogeneities in the study methodology and population of individuals, a meta-analysis could not be included in this review. Of 306 identified abstracts, seven studies (630 individuals) met the eligibility criteria. Results of the included studies provide weak evidence to support the effectiveness of IPV in reducing ICU length of stay, improving gas exchange, and reducing respiratory rate. The authors concluded that based on the findings of this review, the evidence to support the role of IPV in reducing ICU length of stay, improving gas exchange, and reducing respiratory rate is weak. The therapeutic value of IPV in airway clearance, preventing pneumonia, and treating pulmonary atelectasis requires further investigation. This study has several limitations. The number of studies retrieved was small (seven). Heterogeneities that resulted from differences in study design, population of individuals, dosage, and frequency of IPV intervention were frequently observed in the included studies. Further, small sample sizes and poor methodological quality introduced some bias and weakened the strength of conclusions of this review. Further investigation is needed before the clinical usefulness of this procedure is proven.

Nicolini et al. (2018) conducted a four-week RCT to determine if adding IPV or high-frequency chest wall oscillation (HFCWO) with the best pharmacological therapy (PT) will provide clinical benefit to individuals with COPD over just CPT. There was a total of 63 participants who were randomized into three groups (20 participants completed the trial in each group): IPV group (treated with PT and IPV), PT group with (treated with PT and HFCWO), and control group (treated with PT alone). The primary outcomes that were measured were the Dyspnea Scale [modified Medical Research Council (mMRC)] and Breathlessness, Cough, and Sputum scale (BCSS), along with daily life activity [COPD Assessment Test (CAT)]. Secondary outcomes measured are pulmonary function testing (PFT), arterial blood gas analysis, and hematological examinations. Individuals in both the IPV and HFCWO group showed marked improvement in dyspnea and mMRC, BCSS and CAT compared to the control group. IPV individuals showed an improvement in BCSS ($p = 0.001$) and CAT ($p = 0.02$) scores in comparison with HFCWO. Both IPV and HFCWO secondary outcomes improved compared with the control group. In the group comparison analysis of the IPV group and HFCWO group variables, there was marked improvement in the IPV group in total lung capacity (TLC) and TLC% ($p = 0.03$), residual volume (RV) and RV% ($p = 0.04$), and diffusing lung capacity monoxide (DLCO), maximal inspiratory pressure (MIP), and maximal lung capacity (MEP, $p = 0.01$). The authors concluded that both IPV and HFCWO can improve lung function, muscular strength, dyspnea and overall health status. and that IPV demonstrated better effectiveness in improving test results in small bronchial airways and alveolar ventilation [RV and diffusing lung capacity monoxide (DLCO)] and muscular strength maximal inspiratory pressure (MIP) and maximal lung capacity (MEP) as well as scores on daily life activity and health status assessment scales (BCSS and CAT) than HFCWO. A multi-center, larger population study with measurement of primary and secondary outcomes over a longer term is needed. Limitations of this study include the single center design, small sample size, and short duration as well as a lack of masking or a sham procedure. Furthermore, the intervention was delivered by a physical therapist; therefore, these findings may not be generalizable to IPV used at home and without professional supervision or for conditions other than COPD.

Reychler et al. (2018) conducted a systematic review to summarize the physiological and clinical effects that are related to the use of IPV as an airway clearance technique (ACT) in chronic obstructive airway diseases. Using predetermined criteria, a search was conducted in PubMed, PEDro, and Scopus online databases. The outcomes of interest included immediate or prolonged physiological effects (e.g., gas exchange, cardiorespiratory parameters, lung function, and mechanics) and clinical effects (e.g., symptoms, adverse effects, length of hospital stay). A total of 109 studies were identified and after further evaluation, 12 studies were included in the review. Of those, one study evaluated individuals with bronchiectasis (n = 22), four studies evaluated individuals with cystic fibrosis (n = 78), and six studies (one study included phase I and two results) evaluated individuals with COPD (n = 178). In individuals with COPD, IPV improved gas exchange during exacerbation and reduced the hospital length of stay however, IPV was no more beneficial than other ACTs when individuals were stable. Two studies reported complications or discomfort with IPV and in another study, two individuals did not tolerate settings with a higher frequency of percussions (1.220 cm H2O-350 c/min and 1.840 cm H2O-350 c/min). In individuals with CF, cardiorespiratory parameters and lung function did not improve with IPV. One study reported mild hemoptysis, which was associated with a respiratory infection. In individuals with bronchiectasis, dyspnea and respiratory frequency improved after one session of IPV; however, there was no difference in sputum dry weight. In individuals with productive bronchiectasis, the immediate efficacy of IPV vs. that of other ACTs did not differ. Minor adverse events (dry throat, nausea, and/or fatigue) were reported in 27% of individuals who were treated with both IPV and chest physical therapy. The authors concluded that the use of IPV as an ACT in chronic obstructive airway diseases is not supported by sufficiently strong evidence to recommend routine use in this patient population.

U.S. Food and Drug Administration (FDA)

This section is to be used for informational purposes only. FDA approval alone is not a basis for coverage.

High-Frequency Chest Wall Compression Devices

High-frequency chest wall compression devices are designed to promote airway clearance and improve bronchial drainage. They are indicated when external chest manipulation is the physician's treatment of choice to enhance mucus transport. Refer to the following website for more information (use product code BYI): https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPMN/pmn.cfm. Accessed October 31, 2024

References

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Hassan A, Milross M, Lai W, et al. Feasibility and safety of intrapulmonary percussive ventilation in spontaneously breathing, non-ventilated patients in critical care: a retrospective pilot study. J Intensive Care Soc. 2021 May;22(2):111-119.

Nicolini A, Grecchi B, Ferrari-Bravo M, et al. Safety and effectiveness of the 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.

North Carolina Medicaid, Division of Health Benefits, Clinical Coverage Policies, Respiratory Equipment and Supplies, 5A-2. Available at: https://medicaid.ncdhhs.gov/5a-2-respiratory-equipment-and-supplies/download?attachment. Accessed December 10, 2025.

Reychler G, Debier E, Contal O, et al. Intrapulmonary percussive ventilation as an airway clearance technique in subjects with chronic obstructive airway diseases. Respir Care. 2018 May;63(5):620-631.

Policy History/Revision Information

Date	Summary of Changes

03/01/2026	**Medical Records Documentation Used for Reviews**
	• Added language to indicate:
	  ○ Benefit coverage for health services is determined by the federal, state, or contractual requirements, and applicable laws that may require coverage for a specific service
	  ○ Medical records documentation may be required to assess whether the member meets the clinical criteria for coverage but does not guarantee coverage of the service requested
	  ○ The patient's medical record must contain documentation that fully supports the medical necessity for the requested services
	  ○ This documentation includes but is not limited to relevant medical history, physical examination, and results of pertinent diagnostic tests or procedures
	  ○ Documentation supporting the medical necessity should be legible, maintained in the patient's medical record, and must be made available upon request
	Supporting Information
	• Updated *Description of Services*, *Clinical Evidence*, and *References* sections to reflect the most current information
	• Archived previous policy version CSNCT0700.06

Instructions for Use

This Medical Policy provides assistance in interpreting UnitedHealthcare standard benefit plans. When deciding coverage, the federal, state or contractual requirements for benefit plan coverage must be referenced as the terms of the federal, state or contractual requirements for benefit plan coverage may differ from the standard benefit plan. In the event of a conflict, the federal, state or contractual requirements for benefit plan coverage govern. Before using this policy, check the federal, state or contractual requirements for benefit plan coverage. UnitedHealthcare reserves the right to modify its Policies and Guidelines as necessary. This Medical Policy is provided for informational purposes. It does not constitute medical advice.

UnitedHealthcare may also use tools developed by third parties, such as the InterQual® criteria, to assist us in administering health benefits. The UnitedHealthcare Medical Policies are intended to be used in connection with the independent professional medical judgment of a qualified health care provider and do not constitute the practice of medicine or medical advice.