Name of Policy:	**CoughAssist device**
Policy Number:	3364-136-04-11
Department:	Pulmonary Services
Approving Officer:	Senior Hospital Administrator
Responsible Agent:	Director, Pulmonary Services
Scope:	The University of Toledo Medical Center Pulmonary Services Department

THE UNIVERSITY OF TOLEDO MEDICAL CENTER

Effective Date: June 1, 2023

Initial Effective Date: 11/1/2018

_____ New policy proposal	_____ Minor/technical revision of existing policy
_____ Major revision of existing policy	__x__ Reaffirmation of existing policy

(A) Policy Statement

The CoughAssist device provides deep inflation of the lungs followed by a forced exhalation of air aimed at removing secretions from the airways of the lungs. Initiation of the CoughAssist device will be determined as outlined in the Therapist Driven Protocols or by direct physician order.

(B) Purpose of Policy

For use with patients unable to effectively cough or clear secretions due to reduced peak expiratory flow.

Indications: Those who might benefit from the use of the CoughAssist include patients with an ineffective cough due to muscular dystrophy, myasthenia gravis, poliomyelitis, or other neurologic disorder with some paralysis of the respiratory muscles, such as spinal cord injury. It may also be used to treat ineffective cough due to other bronchopulmonary diseases, such as emphysema, cystic fibrosis, and bronchiectasis. CoughAssist is effective for both tracheostomy and noninvasively ventilated patients.

Contraindications:

- Any patient with a history of bullous emphysema
- Susceptibility to pneumothorax or pneumomediastinum
- Recent barotraumas

(C) Procedure

Attach the CoughAssist patient circuit to the CoughAssist output, including a bacteria filter, smooth-bore tubing, and an appropriate interface (mask, mouthpiece, or trach adapter). When used with a trach, attach directly to an in-line suction catheter. Select mode of therapy between Manual and Automatic.

Manual Mode

Used for initial acclimation and for titrating pressures/times before Automatic mode.

- Power on and select “Settings” button. Select Manual mode on the display. Set the initial device pressures. Begin with inspiratory pressures between +10 to +15 cmH2O and expiratory pressures between -10 to -15 cmH2O to allow introduction to the device. Set device inhale flow to the low setting. Press the “Finish” button.

- Press the “Therapy” button to start treatment. Start with a single cough cycle to allow for acclimation to the device. A cough cycle is one inspiration, one expiration, and then a pause, if needed. Move the Manual switch to the inhale position and hold for 2 to 3 seconds. Immediately move the Manual switch to the exhale position and hold for 1 to 2 seconds, then release the switch to the neutral position.

- Continue with several cough cycles, 3 to 6 for pediatric patients and 4 to 6 for adults, in a session. If desired, a pause of 2 to 5 seconds between cough cycles may be used. Return patient to normal oxygen or ventilation during rest periods. Perform at least 3 to 5 sessions for pediatric patients and 4 to 6 for adults for each treatment or as patient tolerates.

- Gradually increase the inspiratory and expiratory pressures. Adjust inhale flow, if needed, for patient comfort. Continually monitor the patient for comfort and tolerance. Positive pressure levels can be established by evaluation of chest wall expansion and auscultation for bilateral air entry. The displayed tidal volumes may be used to titrate inspiratory pressure levels to achieve adequate inspired volumes. The displayed values for peak cough flows may also be used to titrate expiratory pressure levels and to coach patient effort. Inspiratory and expiratory pressures of up to +/- 40 cmH2O show the best results and are generally well tolerated.

Automatic Mode

Provides a timing feature that will automatically trigger to inspiration and cycle to expiration instead of manually moving the switch. Inhale and exhale times entered into the device will replace manually moving the switch. Cough-Trak is a feature in the Automatic mode that will synchronize inhalation with patient effort.

- Select Automatic mode on the display. Select the Cough-Trak On/Off setting. If pressures, times, and flows were titrated using the Manual method, use those final values as starting values for the Automatic mode. If titrating in Automatic mode, use the same initial settings as the Manual mode and adjust for patient comfort and tolerance. If Cough-Trak is enabled, therapy will start as soon as the patient initiates a breath.
- Press the “Therapy” button to begin. Therapy will start automatically if Couth-Trak is turned off. If Cough-Trak is enabled, therapy will start as soon as the patient initiates a breath.
- Press “Standby” if therapy needs to be paused and patient returned to their normal oxygen or ventilation settings.
- Adjustments to therapy can be made from the “Settings” screen while in “Standby” or “Therapy” mode.

Treatment Length and Process

A cough cycle is composed of one inspiration, expiration, and pause phase. A standard sequence consists of 3 to 6 consecutive cough cycles for pediatric patients and 4 to 6 consecutive cough cycles for adults, followed by a rest period of 30 seconds if needed. Patients should be returned to their normal oxygen or ventilator settings during the rest period, if necessary. Sequences can be repeated 3 to 6 times if needed to clear secretions.

Suction equipment should be available as needed.

Use With a Tracheostomy

Higher exhale pressures may be required to overcome the increased resistance of a tracheostomy or ETT. If the trach tube is cuffed, it is advised to have the cuff inflated to protect against secretions.

Therapy Completion

After therapy is completed, disconnect the patient circuit along with bacteria filter and interface and place in patient setup bag. Leave in the patient’s room for next therapy. The CoughAssist device’s exterior surface should be cleaned before and after each patient use with either a clean cloth dampened with water and a mild detergent, 70% Isopropyl alcohol, or 10% Chlorine bleach solution.

The air filter should be cleaned by washing it in warm water with a mild detergent. Rinse thoroughly to remove all detergent residue. The filter should be replaced with a new one every six months.

Related Documents:

Bach JR, Ishikawa Y, Kim H. Prevention of pulmonary morbidity for patients with Duchenne Muscular Dystrophy. Chest 1997;112:1024-1028.

Fauroux B. et al. Physiological benefits of mechanical insufflation-exsufflation in children with neuromuscular diseases. Chest 2008;133:161-168.

CoughAssist Users Guide. J.H. Emerson Co.

Miske, Laura J., et al. Use of mechanical in-exsufflator in pediatric patients with neuromuscular disease and impaired cough. Chest 2004;125:1406-1412.

Bach JR. Mechanical insufflation-exsufflation comparison of peak expiratory flow with manually assisted and unassisted coughing techniques. Chest 1993;104:1553-1562.

Reference: Philips Respironics CoughAssist T70 user manual.

Approved by:		**Review/Revision Date:** 11/01/2018 08/01/2023
/s/ Michael Taylor Director, Pulmonary Services	06/22/2023 Date	
/s/ Shahnaz Rehman, M.D. Medical Director	08/01/2023 Date	
/s/ Russell Smith Senior Hospital Administrator	06/29/2023 Date	
Review/Revision Completed By: *Director, Pulmonary Services*		**Next Review Date: June 1, 2026**
Policies Superseded by This Policy:		

It is the responsibility of the reader to verify with the responsible agent that this is the most current version of the policy.