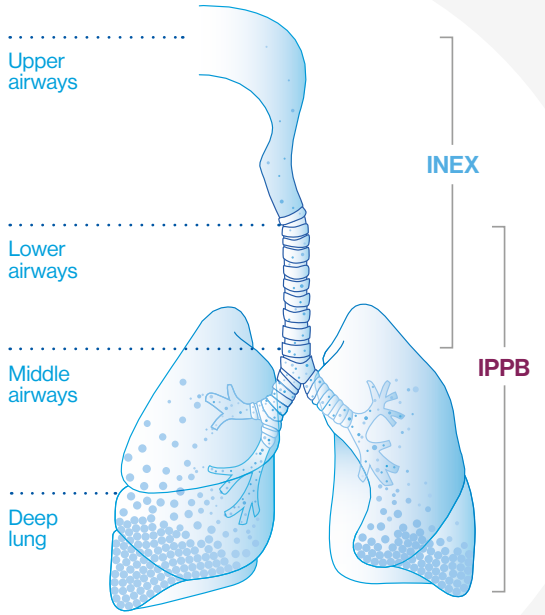
Air Liquide HEALTHCARE

Help with EOVE™-70 Settings

The EOVE™-70 is a versatile device combining complementary treatments

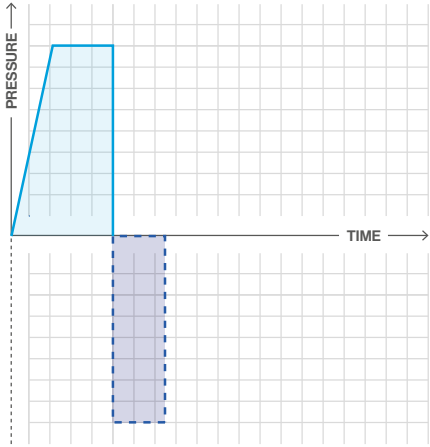


- Proximal clearance
- Optimization and maintenance of respiratory function
- Distal clearance

Mode explanations

INEX

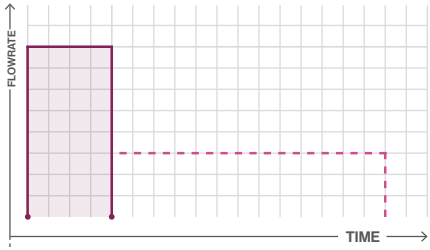
Mechanical in-exsufflation delivers positive pressure, followed very quickly by negative pressure, which assists coughing.



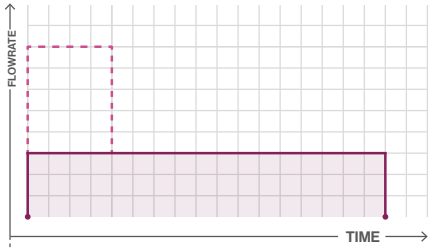
IPPB = Intermittent Positive Pressure Breathing

This *recruitment mode* delivers an air volume beyond the patient's current volume. It enables the patient to reach the inspiratory reserve volume. This improves pre-cough volume and mobilizes the thoracic wall.

The selected flowrate modulates **the inspiratory cycle time**
Two possible options depending on the treatment objective



The **high-flow** setting **effectively delivers** a volume of air over a reduced inspiratory time.



Slow insufflation allows **maximum intake** in all lung areas to reach the inspiratory reserve volume.

Indications and contraindications

Indications INEX

- Peak Cough Flow (PCF) when coughing < 160 L/min
- Congestion
- Thoracic wall diseases
- Any patient with a PCF lower than 270 L/min will benefit from INEX

Indications IPPB

- Low PCR
- Congestion
- Decreased thoracic wall or pulmonary compliance
- Restrictive syndromes
- Forced vital capacity less than 60% of theoretical capacity

General contraindications applicable to both INEX and IPPB

Airway obstruction, hyperinflation, pneumothorax, severe emphysema and recent lobectomy, increased intracranial pressure, altered consciousness, lack of cooperation, severe bulbar palsy, cardiac instability, esophageal fistula, rib fractures.

Settings INEX

Operating modes	**Automatic/Manual**	-	
Inspiratory pressure	**5 to 70 cmH_2O**	-	
Inspiratory time	**0.5 to 5 sec**	-	
Inspiratory slope	**0 to 5**	Speed at which the pressure will be reached: $1/5^{th}$ Ti, $2/5^{th}$ Ti, etc.	
Auto - Trigger	**OFF/1 to 3**	Allows the patient to trigger their cycle	
Pause	**OFF/0.5 to 5 sec**	Pause between expiration and inspiration	
PEEP	**OFF/1 to 20 cmH_2O**	Positive pressure during pause	
Expiratory pressure	**0 to -70 cmH_2O**	-	
Expiratory time	**0.5 to 5 sec**	-	
Oscillations	**Inspiration/Expiration**	**Amplitudes**	OFF/3 levels
		Frequency	OFF/4 to 20 Hz

Settings IPPB

Inspiratory flowrate	**5 to 100 L/min**	Insufflation speed
Inspiratory flowrate	**Continuous flowrate/ Decelerating flowrate**	*Continuous flowrate:* constant flowrate during inspiration *Decelerating flowrate:* flowrate gradually decreases to the target pressure
Inspiratory trigger	**OFF/8 levels**	Allows the patient to trigger their cycle
Maximum pressure	**10 to 50 cmH_2O**	Pressure at which inspiration stops The patient can then exhale
Maximum time	**0.5 to 20 sec**	If the patient has not reached the max pressure at the end of the maximum inspiratory time, the cycle will proceed to expiration Maximum inspiratory phase time
Expiratory slope	**5 levels**	Gradual decrease in expiratory pressure to the set PEEP
PEEP	**OFF/1 to 20 cmH_2O**	Positive pressure during pause

To rinse the circuit, we recommend setting the expiratory slope to 1 and PEEP to 4 cmH_2O.

Starting a session:
define comfort settings

IPPB

Support the patient to inhale a larger volume than their current volume.

Reassure the patient:

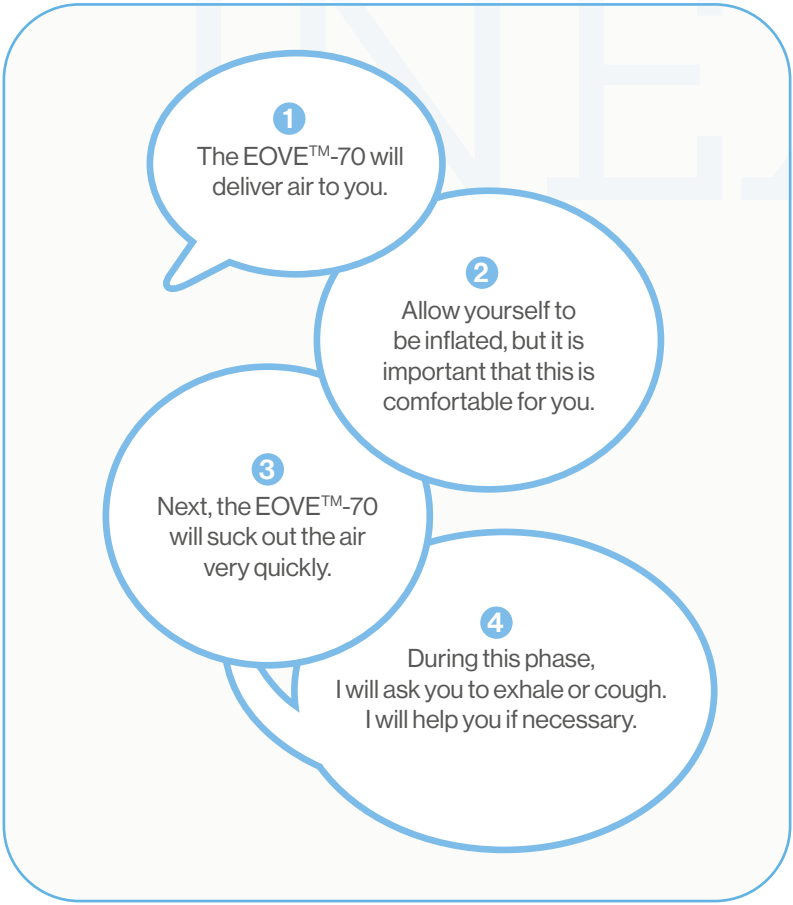
1. As you start breathing in through the mouthpiece, the EOVE™-70 will deliver air to you.
2. Allow yourself to be inflated by the device, **without forcing yourself to breathe in.**
3. When the device stops delivering air, you can exhale.
4. The exercise will take place at your pace: you decide when to start breathing in again.

duration: 5 to 15 min

Starting a session:
setting comfort settings

INEX

Help the patient identify the inspiratory and expiratory phases so that they can synchronize as much as possible.



Installations and recommendations for treatment

Settle the patient into position based on their functional state:
- In a half-seated position in a bed
- Sitting in a chair

Opt for a position where the practitioner can easily apply manual coughing assistance in addition to the instrumental assistance

If necessary, choose a personalized signal with the patient to indicate when to pause the insufflations (e.g. a wink)

Ideally, use a mask that covers the nose and mouth with the INEX function

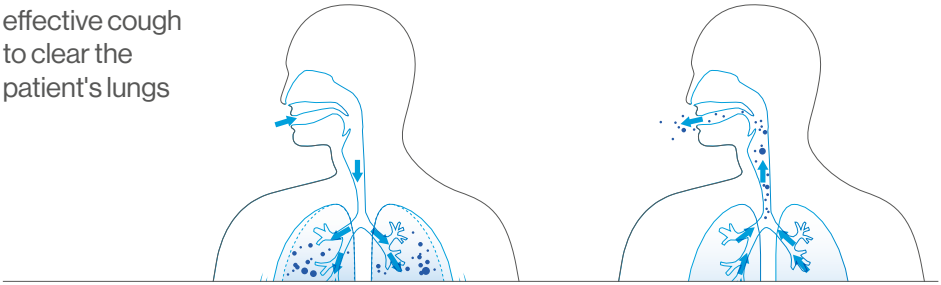
Guide the patient with clear instructions:
- Inhale or inflate
- Cough hard

Proximal clearance

INEX

► Objective

To simulate an effective cough to clear the patient's lungs



Settings

Recommended settings:

Installation settings	
Patient on NIV	**Patient not on NIV**
Initiate at: Pi = PIP + 5 cmH_2O Pe = PIP +10 cmH_2O	Initiate at: Pi = 15 cmH_2O Pe = - 20 cmH_2O
Ti = Te = Ti (NIV) +0.5 s Pause = 1 sec	Ti = Te = 1 sec Pause = 1 sec

Adjustment:

Inspiratory and expiratory pressures and times must be individualized and gradually increased until efficacy is achieved.
The Ti/Te ratio must be adjusted according to the disease and the context.
The Pinsp must be less than the Pexpi.

Dose

Depends on the extent of the congestion, **example:** 1 to 4 times a day; 2 to 5 cycles, pause when the patient needs a break.

Post-treatment clinical assessment

Improvement of the PCF, audible secretions, secretions in the upper airways.

(1) Chatwin, 2020

Proximal clearance
Cough assist

IPPB

► Objective

To increase inspiratory volume to facilitate effective coughing.

IPPB enhances pre-cough volume to facilitate coughing.

High-flow inspiration | Active deep inspiration | Secretion clearance

Settings

Recommended settings:

Flowrate: 30–50 L/min Max pressure: 30 to 40 cmH_2O

Adjustment:

Carried out by the physiotherapist during the session if there is an increase in bronchial hyperactivity:

- The flowrate and pressure must be individualized and gradually increased until a satisfactory pre-cough volume is achieved that enables effective coughing
- PEEP: in the absence of abdominal deficiencies, increase PEEP gradually

Dose

1 to 4 times a day depending on the congestion
Perform 2 to 5 movements followed by a cough; pause when the patient needs a break

Post-treatment clinical assessment

Sputum, displayed volume increased, patient clinical improvement, auscultation.

Target patients

Congested patients with neuromuscular impairment: myopathy, tetraplegia.
Any congested patient whose dyspnea and/or exhaustion makes manual drainage ineffective.

(2) Lacombe et al., 2014, (3) HAS (French National Authority for Health), May 2006

Distal clearance
Mobilize secretions

IPPB

► Objective
To mobilize secretions present in the distal parts of the lung areas.

Low-flow inspiration | Assisted active inspiration | Expiration: secretion movement

Settings

Recommended settings:
Flowrate: 20 to 30 L/min Max pressure: 25 to 35 cmH_2O

Adjustment:
If the pressure is reached too quickly or if the current volume displayed is too low: increase the inspiratory time by decreasing the flowrate and/or by adjusting the pressure gradually

Dose
1 to 4 times a day depending on the extent of the congestion.
Perform 2 to 5 insufflations followed by a cough; pause when the patient needs a break

Post-treatment clinical assessment
Sputum, displayed volume increased, patient clinical improvement, auscultation.

Target patients
Congested patients with neuromuscular impairment: myopathy, tetraplegia
Any congested patient whose dyspnea and/or exhaustion makes manual drainage ineffective.

(4) Arch. Bronconeumol., 2014

Respiratory function optimization
Prevention of ventilation disorders

IPPB

► Objective

To maintain or develop ventilation in hypoventilated lung areas.

Slow inspiration | Assisted active slow inspiration | Posture to maximize inspiration

Settings

Recommended settings:
Flowrate: 10 to 30 L/min Max pressure: 25 to 35 cmH_2O

Adjustment:
Performed according to the mobility observed during auscultation of the hypoventilated area:
- Flowrate: minimum
- Maximum pressure: gradual titration of the pressure in order to optimize the inspired volume

Dose
10 to 30 minutes per day, 5 days a week

Target patients
- Neuromuscular diseases
- Multiple disabilities
- Pre-surgery, post-surgery
- Any patient whose respiratory function is severely decreased, with sustained volume reduction

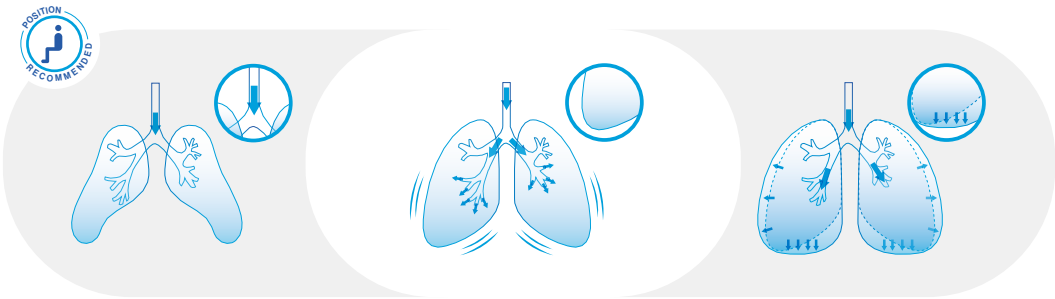
(2) AARC Clinical Practice Guideline, 2003

Respiratory function optimization
Fight restrictions

IPPB

► Objective

To mobilize the chest cavity and let in as much air as possible.



Slow inspiration | Assisted active inspiration | Posture to maximize inspiration

Settings

Recommended settings:
Flowrate: 20 to 35 L/min Max pressure: 30 to 40 cmH_2O

Adjustment:
Depending on the volumes measured:
- Flowrate: increase or decrease depending on how the patient feels
- Max pressure: if resistance is high, do not hesitate to significantly decrease the pressure

Dose
10 to 30 minutes per day, 5 days a week

Target patients
- Neuromuscular diseases
- Multiple disabilities
- Pre-surgery, post-surgery
- Any patient whose respiratory function is severely decreased, with sustained volume reduction

(3) Pediatric Pulmonology, 2006

References

1 Respiratoire, 2014. Comparison of three cough-augmentation techniques in neuromuscular patients: mechanical insufflation combined with manually assisted cough, insufflation-exsufflation alone and insufflation-exsufflation combined with manually assisted cough. Lacombe M1, Del Amo Castrillo L, Boré A, Chapeau D, Horvat E, Vaugier I, Lejaille M, Orlikowski D, Prigent H, Lafaso F.

2 AARC Clinical Practice Guideline. Intermittent Positive Pressure Breathing: 2003 Revision & Update. Sorenson HM, Shelledy DC, AARC.

3 Pediatric Pulmonology, 2006. IPPB-Assisted Coughing in Neuromuscular Disorders. Dohna-Schwake C, Ragette R, Teschler H, Voit T, Melies, U.

4 Arch. Bronconeumol., 2014. Comparison of intermittent positive pressure breathing and temporary positive expiratory pressure in patients with severe chronic obstructive pulmonary disease. Nicolini A1, Mollar E2, Grecchi B3, Landucci N2.

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Air Liquide Healthcare is a global leader in medical gases, home healthcare, hygiene products and specialty healthcare ingredients. Its mission is to provide its customers, throughout the hospital-to-home care pathway, with medical products, specialty ingredients and services that help protect vulnerable lives.

EOVE™-70 provides treatment for patients who are unable to clear their secretions by themselves. It offers an insufflation-exsufflation (INEX) mode and a pressure relieving mode (IPPB — Intermittent Positive Pressure Breathing) for adults and children – Class IIb medical device – CE 0459 – Manufacturer: EOVE™

Read the user manual carefully.
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