

Airway Clearance Techniques: Positive Expiratory Pressure

Airway Clearance Techniques (ACTs) are an essential part of management for people with CF. Performing regular airway clearance helps loosen the thick sticky mucus from the airways.

What is Positive Expiratory Pressure?

Positive Expiratory Pressure (PEP) is a technique which involves actively breathing out against a resistance to increase airflow and keep airways open. PEP helps get air behind mucus, pushing it towards the mouth where it can be cleared. PEP can be used for babies who have floppy airways or as an independent technique as children get older.

There are lots of different types of PEP including bottle PEP, mouthpiece PEP, oscillating PEP and PEP mask. Your CF physiotherapist will choose the appropriate PEP device and resistance for you.

Bottle PEP

Bottle PEP or bubble PEP uses water to provide resistance to the breath out. It is often used to transition between Modified Postural Drainage and percussion and a PEP device in young children.

Mouthpiece PEP

Mouthpiece PEP is a device with a mouthpiece and one-way valve system that creates resistance on expiration. It can be combined with inhalation therapy (saline and hypertonic saline nebulisation) to streamline therapy.

Oscillating PEP

Oscillating or vibrating PEP provides variable resistance to combine positive pressure with airway vibrations. These vibrations assist to move mucus from the surface of the airways.

PEP mask

PEP mask therapy uses a close-fitting face mask with a one-way

valve to provide resistance to the breath out. Different sized resistors can be used in the one-way valve to vary the pressure created on expiration. PEP mask can be used in babies if needed.

PEP routine

Each PEP routine will be different and should always be taught by a CF specialist physiotherapist. In older children and adults, PEP is usually taught in an upright sitting position with elbows supported, and will involve a cycle of consecutive breaths into the device, followed by huffing and coughing.

PEP mask therapy for infants and small children will be different for each child but generally will involve normal breathing on the mask for a length of time rather than a set number of breaths.

Cleaning your PEP device

PEP devices should be cleaned after each use by disassembling and washing in warm, soapy water. Equipment should then be rinsed under running water and left to air dry before storing.

Useful Resources

- Cleaning video <https://vimeo.com/176915729>
- Bronchiectasis Toolbox
<http://bronchiectasis.com.au/physiotherapy/techniques/positive-expiratory-pressure-therapy>
- Airway Clearance Techniques Factsheet
<https://www.cfwa.org.au/wp-content/uploads/2017/12/CF-Fact-Airway-Clearance-Techniques.pdf>
- Autogenic Drainage Factsheet
<https://www.cfwa.org.au/wp-content/uploads/2017/12/CF-Fact-Autogenic-Drainage.pdf>
- Huff and Cough Factsheet <https://www.cfwa.org.au/wp-content/uploads/2017/12/CF-Fact-Huff-and-Cough.pdf>
- MPD and Percussion Factsheet
<https://www.cfwa.org.au/wp-content/uploads/2017/12/CF-Fact-MPD-and-Percussion.pdf>
- Nebulisers Factsheet <https://www.cfwa.org.au/wp-content/uploads/2017/12/CF-Fact-Nebulisers.pdf>

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