

# Second Opinion

## Your respiratory questions answered...

### Question

What are PEP and IMT devices?

### Answer

(Oscillating) Positive expiratory pressure devices (PEP) and Inspiratory muscle trainers (IMT) are both types of medical devices which deliver evidenced-based treatment to support airway clearance (PEP) and strengthening of the body's inspiratory respiratory muscles to facilitate easier breathing (IMT). They are most commonly used by physiotherapists who would issue devices (where funded) to appropriate patients. For example, (Oscillating) PEPs for sputum clearance would often be provided to bronchiectasis patients and IMT often to patients post-pulmonary rehabilitation (PR). Some PEPs are on the national formulary although have not been adopted on to local formularies in all areas because, compared with the evidence for other medicines, they have a lower evidence grading (probably due to medical devices never being the subject of such large studies to acquire more robust evidence).

Devices range substantially in price from £15 to over £100.

If a patient enquires about the devices, you would want to be sure of the reason they are considering purchasing:

- If it is for breathlessness and fitness, then PR should ideally have been completed first as the evidence shows IMTs help to maintain benefits of PR but are not a substitute, and adding as an adjunct to a PR programme does not give additional gains over PR alone (Charususin et al, 2018).
- If the purpose is for sputum clearance, you would expect the patient to have had a one-to-one consultation with a respiratory physiotherapist first as a number of basic treatment options should have been considered (such as the importance of good hydration, humidification, the Active Cycle of Breathing Technique (ACBT) and positioning before resorting to a device). Other treatment options should also be considered to best fit the patient's requirements and lifestyle. Additionally,

many devices do not provide the patient with a clear treatment plan and often say something like 'use as advised by your physiotherapist' or 'use after seeking advice from a qualified medical professional'. Consulting with a respiratory physiotherapist would allow treatment to be individually tailored and the patient may even be able to receive the required device without charge.

Examples of device manufacturers (others available)

- PEP: Pari-PEP, Respironics threshold PEP, Astra PEP
- Oscillating PEP: Flutter, Acapella, Aerobika, RC-Cornet
- IMT: Respironics, Powerbreathe
- IMT and Oscillating PEP: Aerosure

Contraindications to their use are shown in the table.

(Oscillating) PEP (relative)	IMT	Combined
<ul style="list-style-type: none"> <li>• Recent upper GI or thoracic surgery/trauma</li> <li>• Recent dental, head, neck, ENT surgery/trauma</li> <li>• ICP &gt;20 mmHg</li> <li>• Untreated pneumothorax</li> <li>• Sinusitis</li> <li>• Acute respiratory exacerbation</li> <li>• Active haemoptysis</li> <li>• Epistaxis</li> <li>• Neuromuscular weakness</li> <li>• Haemodynamic instability including severe right-sided heart failure with hypotension</li> <li>• Ear drum rupture</li> <li>• Nausea</li> </ul>	<ul style="list-style-type: none"> <li>• Ruptured ear drum</li> <li>• Worsening heart failure</li> <li>• History of spontaneous pneumothorax or recent traumatic pneumothorax not yet healed</li> <li>• Marked osteoporosis with history of rib fracture</li> <li>• Desaturation during or after IMT</li> <li>• Asthma patients with low symptom perception and frequent exacerbations</li> </ul>	<p>As over plus:</p> <ul style="list-style-type: none"> <li>• Epilepsy</li> <li>• Pulmonary embolism</li> <li>• Oesophageal varices</li> <li>• Rib fractures</li> <li>• Pregnancy</li> </ul>

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#### Further information

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