

This guideline is for patients who have a condition requiring application of PEEP.

If a manual ventilation bag is being used to provide ventilation:

- For an adult:
 - Do not attach PEEP during cardiac arrest.
 - Apply PEEP at 5 cmH₂O if the patient has traumatic brain injury (TBI), COPD, asthma or signs of shock.
 - Apply PEEP at 10 cmH₂O for all other conditions.
- For a child:
 - Do not attach PEEP during cardiac arrest.
 - Apply PEEP at 5 cmH₂O for all other conditions.
- For a neonate:
 - Apply PEEP at 5 cmH₂O, including during cardiac arrest.

For an adult with cardiogenic pulmonary oedema if CPAP is indicated but unavailable:

- Apply PEEP at 10 cmH₂O. Focus on ensuring a tight seal with the mask and do not assist the patient's breathing unless it is ineffective.
- Consider increasing PEEP to 15cmH₂O if the patient is not improving.
- Use PEEP with caution if the patient has signs of shock.

Additional information

General principles

- PEEP is not applied to adults and children during CPR because an increase in intrathoracic pressure reduces the blood flow achieved during CPR. If ROSC is achieved it is appropriate to apply PEEP, but this is not an immediate priority.
- PEEP is applied to neonates during CPR because the cause of cardiac arrest is usually respiratory failure and the balance of risk is in favour of improving ventilation, even though this may reduce blood flow achieved during CPR.
- PEEP increases intracranial pressure in patients with TBI by reducing venous return from the brain. In this setting, there is a balance between the benefit of PEEP improving oxygenation and the risk of PEEP increasing intracranial pressure. This is why PEEP is set to 5 cmH₂O for these patients.

The physiological effects of PEEP

- PEEP improves oxygenation and reduces the workload of breathing, via the following physiological effects:
 - The expiratory pressure assists small and medium sized airways to remain open during expiration, reducing lung collapse. Once collapsed, significant additional pressures are required to re-expand them.
 - The positive pressure in the thoracic cavity reduces the preload (filling) of the right ventricle by reducing venous return to the heart.
 - The positive pressure in the thoracic cavity increases the afterload of the right ventricle. This reduces blood flow through lung vessels, reducing the amount of fluid entering the lungs.
 - The expiratory pressure increases the amount of air remaining in the lungs at the end of expiration, (the functional residual capacity) and this causes the lungs to be more expanded. From this more expanded resting position, less work is required for inspiration because of the non-linear compliance of the lungs, particularly when the lungs are wet
- PEEP reduces cardiac output and should be used with caution in patients showing signs of shock. The reduction in cardiac output may be significant in patients with:
 - A clinical condition reducing right ventricular filling, such as hypovolaemia.
 - A clinical condition increasing right ventricular afterload, such as pulmonary embolism.
- Patients with a clinical condition reducing right ventricular filling or increasing right ventricular afterload may benefit from expansion of their intravascular volume. Consider administering 0.9% sodium chloride IV concurrently with application of PEEP.

More Information

Version history

Update: Removed reference to PEEP during transport.

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