

Comparison of T-piece and Pressure Support Ventilation



Weaning from mechanical ventilation is one of the most important challenges in the ICU. The longer the patients remain on the mechanical ventilator, the greater the risk of complications including longer ICU and hospital stay, higher rates of infection and greater mortality.

In some patients, a spontaneous breathing trial (SBT) is conducted to determine if the patient will be able to sustain spontaneous breathing after extubation. The two most common modes of SBT include pressure support ventilation (PSV) or T-piece; the SBT may last anywhere from 30-120 minutes. If the patient is able to tolerate the SBT then they can be extubated. However, it is important to ensure that the patient is not prematurely extubated.

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Over the past few years, several clinical trials have been conducted on SBT with the T piece or PSV but the results remain variable. Some studies have found that the T piece is superior to PSV in determining the likelihood of extubation and weaning from the ventilator. But there are other studies which say otherwise. To add to the confusion, the American Thoracic Society guidelines for weaning recommend PSV based on their interpretation of current evidence.

This study was undertaken to determine the best approach for SBTs. Researchers conducted a systematic review and meta-analysis to clarify the preference of spontaneous breathing trials with either a T piece or pressure supported ventilation in critically ill patients. The researchers collected data from randomised controlled trials that involved adult patients who underwent at least two different SBT. The data reported included primary outcome of successful extubation rate and compared PSV and T piece with clinically relevant secondary outcomes (rate of reintubation, ICU and hospital length of stay, and overall mortality (ICU and hospital)).

The results of this meta-analysis showed no significant difference in extubation rate, rate of reintubation, ICU mortality, hospital mortality, ICU length of stay, and hospital length of stay between the T piece group and the PSV group. The overall conclusion was both T piece and PSV as spontaneous breathing trials have equal success rates of extubation in critically ill patients. There was no difference in any of the secondary outcomes either.

Source: [Critical Care](#)

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