



Weaning – Liberation Answers

1) C

The agreed upon criteria to initiate a SBT are:

- Improvement or resolution of the underlying cause of respiratory failure
- Adequate gas exchange defined as:
 - PaO₂ > 60 mmHg with an FiO₂ of < 0.4 (PaO₂/FiO₂>150), SpO₂ >90%
- pH > 7.25-7.30
- PEEP < 7 cm H₂O
- Hemodynamic stability (low dose vasopressor medication e.g. norepinephrine at dose < 0.1mcg/kg/min)
- Able to initiate an inspiratory effort
- Easily arousable patient with minimal sedation requirements
- Temperature < 38° or > 35 C °
- Heart rate < 120 beats/min – at baseline
- Systolic blood pressure > 90 or < 180 mmHg
- Suctioning: Not required > every 2 hours. Moderate amount of secretions. Secretion consistency should be thin-moderate.

2) B

Spontaneous breathing trial has been shown to be the best predictor of readiness of extubation if done correctly and monitored closely. A 30 minute duration is equally as effective as 120 minutes.

3) A

The RSBI is used to predict the likelihood of successful weaning from mechanical ventilation. It helps clinicians determine if a patient can sustain spontaneous breathing without the need for mechanical assistance but does not assess the patients' effort during the SBT.

All the other maneuvers test the patients' inspiratory effort non invasively and without the need for esophageal balloon to test the work of breathing.

4) C

The ratio of respiratory rate / tidal volume (L/min) < 105 has shown the best sensitivity and specificity for readiness to wean.

Sensitivity: The sensitivity of the RSBI for predicting successful weaning is typically reported to be around 0.97 (97%). This means that the RSBI is quite good at identifying patients who are likely to succeed in weaning from mechanical ventilation when the RSBI is below the threshold of 105 breaths/min/L.

Specificity: The specificity of the RSBI is generally lower, often reported to be around 0.64 (64%). This means that while the RSBI is effective at predicting success, it is less accurate at predicting failure. A higher RSBI (above 105) doesn't always mean the patient will fail weaning, leading to some false positives

5) D

The P0.1, or the occlusion pressure at 0.1 seconds, is a measure of the inspiratory drive, reflecting the respiratory center's output and the effort to initiate a breath. It is often used in conjunction with other parameters to assess a patient's readiness for extubation.

P0.1 Level as a Predictor of Successful Extubation:

A P0.1 value between 1 to 3.5 cmH₂O has been found to be associated with successful extubation.

Specifically, $P0.1 \leq 6$ cmH₂O is generally considered to indicate an adequate respiratory drive without excessive effort, which correlates with successful extubation.

A $P0.1 < 1$ cmH₂O may indicate inadequate respiratory drive, while $P0.1 > 6$ cmH₂O could suggest excessive respiratory effort, which may lead to fatigue and failure of the extubation process.

6) F

SBT can be performed using T-piece (no support) or other positive pressure modes like PSV, SIMV, CPAP. Other modes like ASV, PAV, NAVA, Smart care, even APRV using specific criteria and parameters for each mode.

7) B

Despite this is a common criterion for extubation, there are inconsistency in the literature about what is the level of GCS or awareness that need to be mandated for successful extubation.

8) A

Extubation directly to NIV or HFOT have shown better outcomes and less re-intubation in high risk patients: Age >65, Obesity with BMI > 30 Kg/m², COPD/CHF, upper airway obstruction with stridor, weak cough, failure than more than 1 SBT, mechanical ventilation > 2 weeks.

9) F

As above

10) C

The best step after failing the SBT is to return the patient back to full mechanical support to allow resting the patient and the inspiratory muscles. This has to go hand in hand with investigation of why did the patient fail the SBT.

Resting the patient at least 24 hours after the failure allows the respiratory muscles to rest and recover and be ready for another SBT if deemed appropriate.