



# Journal club

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## WEANING STRATEGIES

Weaning from mechanical ventilation (MV) is challenging period in the recovery from respiratory failure and weaning places a significant burden on healthcare resources. To date, standardised protocols on the best timing and specific steps for weaning from MV are lacking. Pham and colleagues conducted a multicentre (481 ICUs) prospective observational cohort study in 50 countries, named “WEAN SAFE” (Lancet Respir Med, 2023;11(5):465–476) to clarify current practises and outcomes of the weaning process in patients requiring invasive MV for at least 2 days. The most striking finding was that only 3817 (65.0%) out of 5869 enrolled patients were successfully weaned at day 90. The median time to achieve eligibility criteria for weaning (PEEP < 10 cmH<sub>2</sub>O, FiO<sub>2</sub> < 0.5, no or low doses of vasopressors and no paralyzing agents) to the first weaning attempt was 1 day (IQR 0–4). By contrast, there was a delay of 5 or more days in 1013 individuals (22.4%), which was independently associated with subsequent weaning failure. Additionally, according to a sensitivity analysis excluding patients with neurological impairment, the authors reported that sedation at the time of weaning readiness was strongly associated with weaning failure. Unsurprisingly, this study shows great heterogeneity in the management of weaning between centres. Furthermore, the researchers emphasise the importance of addressing clinician-modifiable factors, such as sedation or time until first weaning attempt, to prevent weaning failure as these were significantly associated with patient’ prognosis.

## PRACTICAL IMPLICATIONS OF SOMATIC POINTS FOR COUGH

Some patients with chronic cough are susceptible to mechanical stimulation of specific areas of the neck and upper trunk, to which they respond with an urge-to-cough or overt coughing, likely due to a sensory dysregulation. LAVORINI and colleagues investigated the prevalence of chronic cough and outcomes related to somatic points for cough (SPC) responsiveness in an unselected population of 317 chronic coughers. In a 6 month cohort observational study (EclinicalMedicine, 2023;57:101869), patients were asked to rate the intensity of their discomfort

(“cough score”) using a modified Borg Scale (0–9). Stimulation of SPCs provoked cough or urge-to-cough in 169 (53%) subjects (SPC+). They were mostly female (79.3%) and had higher cough score than non-responsive patients (SPC-) at baseline ( $p < 0.01$ ). At visit 2, cough score decreased ( $p < 0.01$ ) in all participants (SPC+: from  $5.70 \pm 1.4$  to  $3.43 \pm 1.9$ ; SPC-: from  $5.01 \pm 1.5$  to  $2.74 \pm 1.7$ ). However, reduction in cough score was more pronounced in the SPC- group than in SPC+ patients, in whom the cough score remained relatively stable from the second visit to the end of the follow-up. Interestingly, in terms of response to symptom-driven treatment, the authors reported the highest prevalence of non-responsive patients in the SPC+ group. Therefore, they concluded that the detection of SPCs might contribute to early identification of patients unresponsive or poorly responsive to symptom-driven cough treatments.

## BREATHING ON AWAKE PRONE POSITION

Conflicting data has led to much debate on the effects of the awake prone position (APP). Hence, to clarify the physiological effects of APP on gas exchanges, Grieco and colleagues conducted an observational trial in 15 patients (Critical Care, (2023), 27:315) with acute hypoxemic respiratory failure who were oxygenated with high-flow nasal cannula (HFNC). Patients were tested with a series of physiological measurements during a precise HFNC schedule: 1 hour in supine, 2 hour in prone and 1 hour in supine. The analysis showed that blood oxygenation improved in 13 out 15 patients after 2 hour in prone position (mean difference 45 mmHg (95% CI 23 to 68),  $p = 0.002$ ). However, this effect disappeared when returning to supine position. Compared with the supine position, APP resulted in a decrease in respiratory rate (24 breaths/min (22–26) vs 27 (26–30),  $p = 0.05$ ), but increased inspiratory effort ( $\Delta$ PES) (12 cmH<sub>2</sub>O (11–13) vs 9 (8–12),  $p = 0.04$ ) with no effect on transpulmonary driving pressure ( $\Delta$ PL), tidal volume (VT), quasistatic lung compliance and PaCO<sub>2</sub>. These effects could be due to the positional increase in airway resistance and the prolonged expiratory time in prone position. Another notable finding was that APP increased end-expiratory lung impedance (EELI) (3887 arbitrary units (3414–8547) vs 1456 (959–2420),  $p = 0.002$ ), reflecting greater recruitment of dorsal lung regions.

The authors demonstrated that APP optimises the distribution of ventilation, resulting in a temporary improvement in oxygenation. However, considering that increased inspiratory effort is one of the main determinants of self-induced lung injury (SILI), caution is needed on the use of APP in this subgroup of patients.

## SURVIVAL FROM THE PATIENT’S PERSPECTIVE

Survivorship exerts a greater impact on certain patients struggling with critical illness than mere survival. Therefore, Taran and colleagues conducted a secondary analysis of the RECOVER cohort study (JAMA, 2023;6 (3):e233265), to examine whether the “DAAH90” (days alive and at home at day 90), an attractive patient-centred outcome, predicts long-term functional outcomes in mechanically ventilated patients. Functional outcomes were assessed in 463 participants using variables such as the “Functional Independence Measure” (FIM), the “6MWT”, the “MRC”, and the “36-Item Short Form Health Survey physical component summary” (SF-36 PCS). Results showed that, in the baseline cohort, factors such as higher Charlson Comorbidity Index (CCI), higher APACHE II score, longer mechanical ventilation or ICU admission were independently associated with lower DAAH90. In addition, among survivors at day 90, spending fewer days at home was associated with higher mortality 1 year after ICU admission (tertile 1 vs tertile 3: adjusted HR (HR), 0.18 (95% CI, 0.07 to 0.43);  $p < 0.001$ ). Furthermore, when dividing DAAH90 into tertiles, spending fewer days at home was associated with worse functional outcomes of lower 6MWT, MRC, and SF-36 scores at 3, 6, and 12 months. The authors encourage the use of DAAH90 in future clinical trials due to its correlation with long-term functional status and survival after critical illness.

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