



# Dyspnoea and respiratory muscle ultrasound to predict extubation failure

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**Respiratory muscle ultrasound and dyspnoea intensity early after extubation predict extubation failure** <https://bit.ly/39Uqo9o>

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## Abstract

**Background** This study investigated dyspnoea intensity and respiratory muscle ultrasound early after extubation to predict extubation failure.

**Methods** The study was conducted prospectively in two intensive care units in France and Canada. Patients intubated for at least 48 h were studied within 2 h after an extubation following a successful spontaneous breathing trial. Dyspnoea was evaluated by a dyspnoea visual analogue scale (Dyspnoea-VAS) ranging from 0 to 10 and the Intensive Care Respiratory Distress Observational Scale (IC-RDOS). The ultrasound thickening fraction of the parasternal intercostal and the diaphragm was measured; limb muscle strength was evaluated using the Medical Research Council (MRC) score (range 0–60).

**Results** Extubation failure occurred in 21 out of 122 enrolled patients (17%). The median (interquartile range (IQR)) Dyspnoea-VAS and IC-RDOS were higher in patients with extubation failure *versus* success: 7 (4–9) *versus* 3 (1–5) ( $p < 0.001$ ) and 3.7 (1.8–5.8) *versus* 1.7 (1.5–2.1) ( $p < 0.001$ ), respectively. The median (IQR) ratio of parasternal intercostal muscle to diaphragm thickening fraction was significantly higher and MRC was lower in patients with extubation failure compared with extubation success: 0.9 (0.4–2.1) *versus* 0.3 (0.2–0.5) ( $p < 0.001$ ) and 45 (36–50) *versus* 52 (44–60) ( $p = 0.012$ ), respectively. The thickening fraction of the parasternal intercostal and its ratio to diaphragm thickening showed the highest area under the receiver operating characteristic curve (AUC) for an early prediction of extubation failure (0.81). AUCs of Dyspnoea-VAS and IC-RDOS reached 0.78 and 0.74, respectively.

**Conclusions** Respiratory muscle ultrasound and dyspnoea measured within 2 h after extubation predict subsequent extubation failure.

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