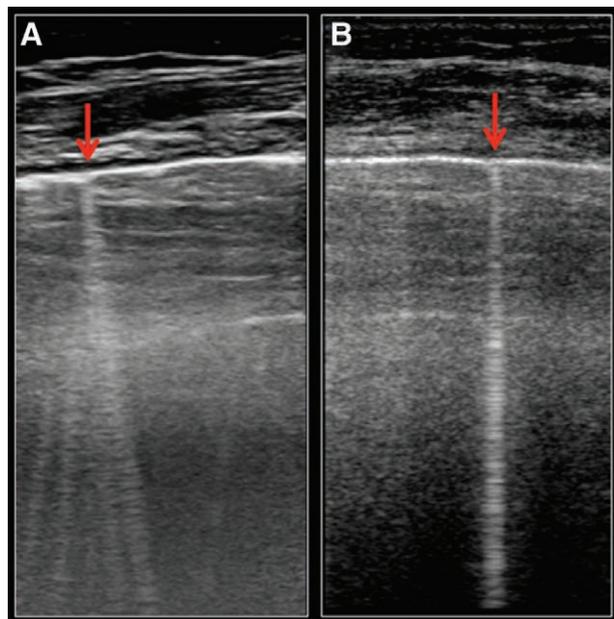


# B-lines Visualization and Lung Aeration Assessment

## Mind the Ultrasound Machine Setting

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Artifacts are important signs in lung ultrasound and provide information on the underlying lung density.<sup>1</sup> A-lines are horizontal reverberation artifacts; B-lines are vertical hyperchoic laser-shaped artifacts. In the differential diagnosis of acute respiratory failure,<sup>2</sup> three or more B-lines per scan define a B-pattern and suggest cardiogenic edema while ruling out chronic pulmonary obstructive disease decompensation and pneumothorax.<sup>2</sup> Moreover, the number of B-lines progressively increases with lung density<sup>1</sup>: a B-lines reduction indicates good response to antibiotics in ventilator-associated pneumonia or to positive end-expiratory pressure trial in adult respiratory distress syndrome; an increase in B-lines after fluid resuscitation is an early sign of overload.<sup>3</sup> A correct visualization of B-lines and their number is therefore essential.

In Panel A, multiple B-lines are visualized in transversal scan; this B-pattern corresponds to moderate loss of aeration.<sup>1</sup> Also see Video 1 (Supplemental Digital Content 1, <http://links.lww.com/ALN/B816>). However, all the B-lines here derive from the same pleural point and are

oblique; this suggests that the machine setting is not adequate. In this modern ultrasound machine, artifact-erasing software and harmonics are active: these settings improve real-image visualization but can affect lung ultrasound by altering artifact visualization. In Panel B, the same scan is examined with no harmonics and no artifact-erasing software: a single straight B-line is visualized; this corresponds to normal aeration.<sup>1</sup> Also see Video 2 (Supplemental Digital Content 2, <http://links.lww.com/ALN/B817>).

Modern machines are perfectly suitable for lung ultrasound,<sup>1-3</sup> but a dedicated setting is useful and may be requested of manufacturers. We suggest setting a depth of 6 to 8 cm, placing a single focus on the pleural line, and abolishing artifact-erasing software and harmonics.

### Competing Interests

The authors declare no competing interests.

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