Acute respiratory distress syndrome (ARDS) continues to be associated with a high mortality rate, ranging from 26% to 28% (1,2). Many survivors experience long-term complications following discharge from hospital (3). Early randomized controlled trials (RCTs) investigating the use of high-frequency oscillatory ventilation (HFOV) in ARDS compared conventional mechanical ventilation (CV) with HFOV. Although these trials showed a potential reduction in mortality with HFOV, the strategies that were used in the CV protocols are not currently considered to be lung protective (4,5). In addition, small sample sizes were used in these trials (6,7), which may have impacted the generalizability of the results to a broader ARDS population, and introduced potential misrepresentation and bias. Recently, a larger RCT of HFOV versus CV for early ARDS was conducted, and results contrasted those of earlier trials showing that HFOV failed to improve mortality in ARDS (8). These results now cause critical care clinicians caring for ARDS patients to question what modality of mechanical ventilation to use during the late phase of ARDS.

The Oscillation for Acute Respiratory Distress Syndrome (ARDS) Trial: Early (OSCILLATE) trial was undertaken to evaluate the effect of early institution of HFOV on all-cause mortality in adults with moderate to severe ARDS. The study involved a multicentre RCT in five countries (Canada, United States, Chile, Saudi Arabia and India), engaging 39 intensive care units with the goal of enrolling a larger target sample size and using a more lung-protective strategy than previous trials (8). To date, the OSCILLATE trial is the sole RCT of HFOV in ARDS that has enrolled a large number of patients and provided up-to-date, protocolized lung-protective ventilation. The pilot phase of the trial was conducted from July 2007 to June 2008, and the main trial from July 2009 to August 2012. Five hundred forty-eight of the planned 1200 patients were randomly assigned to receive either HFOV following a lung-protective protocol of high set frequency coupled with a prescribed high maximum power and lung recruitment manoeuvres (8-11), or CV using a lung-protective strategy of low tidal volume, high positive end-expiratory pressure and lung-recruitment manoeuvres modelled after the experimental arm of the Lung Open Ventilation Study (12). On recommendation of the data monitoring committee, the trial was stopped early because interim analysis revealed no decrease in mortality with HFOV – and perhaps a tendency toward harm.

Because the OSCILLATE trial compared two mechanical ventilation strategies, involvement of and reliance on respiratory therapists (RTs) was of utmost value. However, undertaking the strict protocols outlined by the OSCILLATE trial rather than the usual local HFOV or CV policy/protocol posed implications. Before starting the OSCILLATE trial pilot, the principal investigators questioned whether trial protocols would be similar to centres’ usual practices in the HFOV arm of the trial. A self-reporting survey was e-mailed to charge from hospital (3). Early randomized controlled trials (RCTs) investigating the use of high-frequency oscillatory ventilation (HFOV) in ARDS compared conventional mechanical ventilation (CV) with HFOV. Although these trials showed a potential reduction in mortality with HFOV, the strategies that were used in the CV protocols are not currently considered to be lung protective (4,5). In addition, small sample sizes were used in these trials (6,7), which may have impacted the generalizability of the results to a broader ARDS population, and introduced potential misrepresentation and bias. Recently, a larger RCT of HFOV versus CV for early ARDS was conducted, and results contrasted those of earlier trials showing that HFOV failed to improve mortality in ARDS (8). These results now cause critical care clinicians caring for ARDS patients to question what modality of mechanical ventilation to use during the late phase of ARDS.

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The OSCILLATE trial: implications for respiratory therapists then and now

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Can J Respir Ther Vol 50 No 3 Autumn 2014
REFERENCES

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