Appendix 2: Characteristics of randomized trials of prone versus supine positioning for mechanical ventilation included in our systematic review

Study	Patient population*†	Details of prone ventilation‡	General mechanical ventilation and cointerventions (both groups)	Concealment of patient assignment	Unplanned crossovers (assigned group)§	Trial ended early
Leal et al[1]	16 patients at 1 centre who had acute respiratory distress syndrome (ratio of partial pressure of oxygen to inspired fraction of oxygen < 150 mm Hg and lung injury score[14] > 2.5); time from diagnosis to enrolment ≤ 24 h	24 h (fixed duration)	No information on ventilation parameters No high-frequency oscillation or nitric oxide	Sealed opaque envelopes (sequentially numbered)	None	No
Gattinoni et al[2]	304 patients older than 15 yr at 30 centres who had acute lung injury (ratio of partial pressure of oxygen to inspired fraction of oxygen ≤ 200/300 mm Hg with positive end-expiratory pressure ≥ 5/10 cm H_2O)	Abdomen restrained; planned duration ≥ 6 h/d for up to 10 d if hypoxemia criteria met; actual duration 7.0 (SD 1.8) h/d for 4.7 d; 4.6 (SD 0.9) people required per turn; 10 (SD 12) min per turn	1994 American–European mechanical ventilation guidelines[15,16] Baseline tidal volume 10.3 (SD 2.8) mL/kg predicted body weight and positive end-expiratory pressure 9.6 (SD 3.1) cm H_2O Little change in tidal volume or positive end-expiratory pressure over 10 d	Central (randomization independent of centre enrolling patients)	12/152 (supine)	Yes (slow enrolment)
Beuret et al[3]	53 adults at 1 centre who had a Glasgow coma score < 9 and needed mechanical ventilation; 7 of 21 patients with hypoxemia (ratio of partial pressure of oxygen to inspired fraction of oxygen ≤ 300 mm Hg) had acute lung injury or acute respiratory distress syndrome; time from intubation to diagnosis ≤ 24 h	Planned duration 4 h/d until patient sitting up in chair; actual duration 6.0 (SD 3.6) d	Initial tidal volume 10 mL/kg body weight, then adjusted to keep partial pressure of carbon dioxide 35–40 mm Hg Initial positive end-expiratory pressure 5 cm H_2O, increased for hypoxemia Pressure support weaning in both groups	Sealed opaque envelopes	1/12 (prone); 1/9 (supine)	Yes (slow enrolment)

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Watanabe et al[4]	16 adults at 1 centre who had hypoxemia (ratio of partial pressure of oxygen to inspired fraction of oxygen ≤ 200 mm Hg) after 5 d of mechanical ventilation postesophagectomy	6 h/d for 4 d (fixed duration); 6 people required per turn	Tidal volume and respiratory rate adjusted to keep partial pressure of carbon dioxide 35–45 mm Hg Standard criteria for initiating weaning All patients paralyzed No high-frequency oscillation or nitric oxide during intervention period	No (alternate allocation)	None	Not reported
Gaillard et al[5]	16 patients at 1 centre who had "direct acute lung injury" (no further details provided)	12 h/d for 2 d (fixed duration)	Tidal volume 6–8 mL/kg body weight Positive end-expiratory pressure set at 2 cm H_2O above lower inflection point of pressure-volume curve	Not reported	None	Not reported
Guerin et al[6]	802 adults at 21 centres who had acute hypoxemic respiratory failure (ratio of partial pressure of oxygen to inspired fraction of oxygen ≤ 300 mm Hg), including acute lung injury and acute respiratory distress syndrome (*n* = 413), cardiogenic pulmonary edema (*n* = 56), other¶	Planned duration ≥ 8 h/d until clinical improvement criteria met; actual duration 8.6 (SD 6.6) h for 4.1 (SD 4.7) d; abdomen restrained	No ventilation protocol Mean tidal volume 8.1-8.7 mL/kg body weight and mean positive end-expiratory pressure 7.2-7.8 cm H_2O over first 7 d Weaning protocol	Sealed opaque envelopes (sequentially numbered)	176/417 (prone); 81/385 (supine)	No
Curley et al[7]	102 children at 7 centres who had acute lung injury; time from diagnosis to enrolment ≤ 48 h	Planned duration 20 h/d until extubation readiness criteria met; actual duration 18 (SD 4) h for 4 d (range 1–7 d); 2-4 people required per turn; abdomen unrestrained	Tidal volume 6 mL/kg body weight Positive end-expiratory pressure and inspired fraction of oxygen adjusted according to chart Positive end-expiratory pressure 7.4 (SD 2.5) cm H_2O during trial Protocols for high-frequency oscillation, weaning and sedation	Sealed opaque envelopes (sequentially numbered)	4/51 (prone)	Yes (statistical stopping rule for futility met)

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Papazian et al[8]	26 adults at 1 centre who had acute respiratory distress syndrome (ratio of partial pressure of oxygen to inspired fraction of oxygen < 150 mm Hg with positive end-expiratory pressure ≥ 5 cm H_2O); time from diagnosis to enrolment ≤ 24 h	12 h (fixed duration); abdomen unrestrained	All patients received high frequency oscillation and paralysis during 12-h study period No nitric oxide or steroids	Sealed opaque envelopes	None	No
Voggenreiter et al[9]	40 adults at 2 centres who had traumatic injury with acute lung injury (ratio of partial pressure of oxygen to inspired fraction of oxygen ≤ 300 mm Hg with positive end-expiratory pressure ≥ 5 cm H_2O) and persistent hypoxemia; time from diagnosis to enrolment about 1–2 d	Planned duration 8–23 h/d until oxygenation improvement criteria met; actual duration 11 (SD 5) h for 7 (SD 4) d	Tidal volume 6–8 mL/kg body weight and peak inspiratory pressure < 35 cm H_2O Suggestion for positive end-expiratory pressure adjustment Baseline positive end-expiratory pressure 12 (SD 4) cm H_2O and similar during trial Sedation similar, trend to more days of paralysis in prone group No nitric oxide	Central (randomization independent of centre enrolling patients)	None	Not reported
Mancebo et al[10]	142 adults at 13 centres who had acute respiratory distress syndrome with diffuse bilateral infiltrates on chest radiograph; time from meeting inclusion criteria to enrolment ≤ 48 h	Planned duration 20 h/d until "weaning oxygenation threshold" met; actual duration mean 17 h/d for 10.1 (SD 10.3) d; ~5 persons took ~5–10 min per turn; abdomen restrained	Maximum tidal volume 10 mL/kg and positive end-expiratory pressure 10-15 cm H_2O, both adjusted to plateau pressure ≤ 35–40 cm H_2O Mean positive end-expiratory pressure 7–12 cm H_2O during trial Weaning protocol No nitric oxide or steroids Sedation and paralysis similar between groups	Sealed opaque envelopes (sequentially numbered)	5/62 (supine)	Yes (slow enrolment)

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Demory et al[11]	28 adults at 1 centre who had acute respiratory distress syndrome (ratio of partial pressure of oxygen to inspired fraction of oxygen < 150 mm Hg, positive end-expiratory pressure ≥ 5 cm H_2O); time from diagnosis to enrolment ≤ 24 h	12 h (fixed duration)	Tidal volume 6–7 mL/kg body weight and plateau pressure ≤ 35 cm H_2O while in prone position Positive end-expiratory pressure adjusted according to chart All patients received paralysis during study period and high-frequency oscillation while supine for 12 h after study period No nitric oxide or steroids	Sealed opaque envelopes	None	Not reported
Ibrahim et al[12]	24 children** at 1 centre who had acute hypoxemic respiratory failure (ratio of partial pressure of oxygen to inspired fraction of oxygen ≤ 200 mm Hg); median 24 h (range 10–60 h) of mechanical ventilation before enrolment	20 h (fixed duration); abdomen unrestrained	Tidal volume 5-10 mL/kg body weight Positive end-expiratory pressure not described All patients received nitric oxide for 20 h	No (alternate allocation)	None	Not reported
Chan et al[13]	22 adults at 1 centre who had acute respiratory distress syndrome (ratio of partial pressure of oxygen to inspired fraction of oxygen ≤ 200 mm Hg) because of community-acquired pneumonia; time from diagnosis to enrolment ≤ 72 h	Planned duration ≥ 72 h (continuous) in prone position until oxygenation improvement criteria met; actual duration 4.4 (SD 2.8) d	Protocol with tidal volume 6–8 mL/kg body weight and positive end-expiratory pressure adjusted according to inspired fraction of oxygen No high-frequency oscillation or nitric oxide	No (entire randomization table visible to person enrolling patients in advance)[17,18]	None	Yes (slow enrolment due to outbreak of severe acute respiratory syndrome)

Note: SD = standard deviation.
*Mortality evaluated for all assigned patients (in trials reporting this outcome) except for 11/802 (4 assigned to prone, 7 assigned to supine; of these 11 patients, 9 were withdrawn from the study and 2 were lost to follow-up) patients in Guerin et al,[6] 1/101 (assigned to supine) in Curley et al,[7] and 6/142 (4 assigned to prone, 2 assigned to supine) in Mancebo et al.[10]
†Unless otherwise specified, patients with acute lung injury or acute respiratory distress syndrome met the American–European consensus definition.[19] In 3 trials[8,11,12] patients were also randomized to a third group. In our analyses of these trials, we included 2 groups: the treatment group and the control group, which differed only by the application of mechanical ventilation in the prone position.
‡We note abdominal position (unrestrained, using cushions to support abdomen above bed surface, or restrained by direct contact with bed) and personnel and time required for turning procedures where reported.
§Crossovers are listed as number of patients crossing over/number of patients initially assigned to treatment group.
¶Other (not mutually exclusive) causes of acute hypoxemic respiratory failure included pneumonia, shock, aspiration, septic shock, acute on chronic respiratory failure, coma, postoperative state and nonpulmonary sepsis.
**Two children were withdrawn from the trial and did not have oxygenation measured.

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