Supplementary Material 1. Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) Summary of Finding Tables

KQ 1. In critically ill patients who ventilated, dose applying mechanical ventilation weaning protocol increase the success rate of ventilator weaning?

Outcome	Anticipated absolute effects[a] (95% CI)		Relative effect (95% CI)	No. of participants (studies)	Certainty of the evidence (GRADE)[b]
	Risk without weaning protocol	Risk with weaning protocol			
• Unsuccessful weaning					
RCT	188/1,000	177/1,000 (136 to 226)	RR 0.93 (0.73 to 1.20)	1,036 (6 RCTs)	⨁⨁⨁◯ Moderate
Before & after study	176/1,000	132/1,000 (90 to 194)	RR 0.75 (0.51 to 1.10)	2,228 (7 before & after studies)	⨁◯◯◯ Very lowa
Before & after study (sensitivity analysis)	141/1,000	118/1,000 (92 to 152)	RR 0.84 (0.65 to 1.08)	1,497 (6 before & after studies)	⨁⨁◯◯ Low
• MV duration					
RCT (hr)	The mean MV duration was 137.69 hours.	MD 39.26 lower (62.81 lower to 15.71 higher)	MD −25.34 (−42.29 to −8.38)	1,000 (5 RCTs)	⨁⨁⨁◯ Moderate
Before & after study (day)	The mean MV duration was 10.90 days.	MD 2.22 lower (3.15 lower to 1.29 higher)	MD −2.35 (−4.10 to −0.60)	2878 (8 before & after studies)	⨁◯◯◯ Very low[a]
Before & after study (sensitivity analysis)	The mean MV duration was 11.65 days.	MD 3.12 lower (4.29 lower to 1.96 higher)	MD −2.31 (−2.99 to −1.63)	2,147 (7 before & after studies)	⨁⨁◯◯ Low
• Weaning time					
RCT (hr)	The mean weaning time was 80.25 hours.	MD 47.30 lower (69.24 lower to 25.36 higher)	MD −38.60 (−69.20 to −7.99)	302 (3 RCTs)	⨁⨁◯◯ Low[b]
Before & after study (day)	The mean weaning time was 4.76 days.	MD 1.54 lower (2.76 lower to 0.34 higher)	MD −1.63 (−3.55 to 0.29)	657 (3 before & after studies)	⨁⨁◯◯ Low
• Ventilator-associated pneumonia incidence					
RCT	277/1,000	216/1,000 (166 to 283)	RR 0.78 (0.60 to 1.02)	479 (2 RCTs)	⨁⨁◯◯ Low
Before & after study	136/1,000	73/1,000 (54 to 101)	RR 0.54 (0.40 to 0.74)	1454 (4 before & after studies)	⨁⨁◯◯ Low
• ICU LOS (day)					
RCT	The mean ICU LOS was 13.8 days.	MD 3.24 lower (5.33 lower to 1.16 higher)	MD −1.49 (−2.65 to −0.33)	601 (4 RCTs)	⨁⨁⨁◯ Moderate
Before & after study	The mean ICU LOS was 18.53 days.	MD 4.80 lower (6.51 lower to 3.10 higher)	MD −3.50 (−6.23 to −0.77)	1834 (6 before & after studies)	⨁◯◯◯ Very lowc
Before & after study (sensitivity analysis)	The mean ICU LOS was 16.74 days.	MD 3.97 lower (6.36 lower to 1.59 higher)	MD −2.56 (−3.82 to −1.30)	616 (4 before & after studies)	⨁⨁◯◯ Low
• ICU mortality					
RCT	248/1,000	206/1,000 (146 to 290)	RR 0.83 (0.59 to 1.17)	443 (2 RCTs)	⨁⨁◯◯ Low
Before & after study	132/1,000	75/1,000 (55 to 102)	RR 0.57 (0.42 to 0.77)	1,632 (5 before & after studies)	⨁⨁◯◯ Low
RCT (hr)	The mean weaning time was 80.25 hours.	MD 47.30 lower (69.24 lower to 25.36 higher)	MD −38.60 (−69.20 to −7.99)	302 (3 RCTs)	⨁⨁◯◯ Low[b]
Before & after study (day)	The mean weaning time was 4.76 days.	MD 1.54 lower (2.76 lower to 0.34 higher)	MD −1.63 (−3.55 to 0.29)	657 (3 before & after studies)	⨁⨁◯◯ Low
• Ventilator-associated pneumonia incidence					
RCT	277/1,000	216/1,000 (166 to 283)	RR 0.78 (0.60 to 1.02)	479 (2 RCTs)	⨁⨁◯◯ Low
Before & after study	136/1,000	73/1,000 (54 to 101)	RR 0.54 (0.40 to 0.74)	1454 (4 before & after studies)	⨁⨁◯◯ Low
• ICU LOS (day)					
RCT	The mean ICU LOS was 13.8 days.	MD 3.24 lower (5.33 lower to 1.16 higher)	MD −1.49 (−2.65 to −0.33)	601 (4 RCTs)	⨁⨁⨁◯ Moderate
Before & after study	The mean ICU LOS was 18.53 days.	MD 4.80 lower (6.51 lower to 3.10 higher)	MD −3.50 (−6.23 to −0.77)	1,834 (6 before & after studies)	⨁◯◯◯ Very low[c]

Before & after study (sensitivity analysis)	The mean ICU LOS was 16.74 days.	MD 3.97 lower (6.36 lower to 1.59 higher)	MD −2.56 (−3.82 to −1.30)	616 (4 before & after studies)	⨁⨁◯◯ Low
• ICU mortality					
RCT	248/1,000	206/1,000 (146 to 290)	RR 0.83 (0.59 to 1.17)	443 (2 RCTs)	⨁⨁◯◯ Low
Before & after study	132/1,000	75/1,000 (55 to 102)	RR 0.57 (0.42 to 0.77)	1,632 (5 before & after studies)	⨁⨁◯◯ Low

GRADE Working Group grades of evidence: High certainty: we are very confident that the true effect lies close to that of the estimate of the effect; Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different; Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect; Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.
CI: confidence interval; RCT: randomized controlled trial; RR: risk ratio; MV: mechanical ventilation; MD: mean difference; ICU: intensive care unit; LOS: length of stay.
a) The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI); b) These alphabetical grades express the certainty of evidence and aid clinicians in evaluating evidence and making treatment decisions for patients. Superscript a represents very high certainty. This is determined after evaluating factors such as study design, consistency of results, and potential biases. A signifies a very high level of confidence and certainty. Superscript b indicates high certainty. While slightly lower than A, it still denotes a high level of confidence. Superscript c represents moderate certainty. Used when there is some uncertainty in the evidence.

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KQ 2-1. Is pressure support ventilation (PSV) recommended over the T-piece during spontaneous breathing trial (SBT) in adult patients receiving mechanical ventilation?

Outcome	Anticipated absolute effects[a] (95% CI)		Relative effect (95% CI)	No. of participants (studies)	Certainty of the evidence (GRADE)[b]	Comments
	Risk with T-piece	Risk with PSV				
Successful extubation/ weaning (RCTs)	685/1,000	691/1,000 (643 to 746)	RR 1.01 (0.94 to 1.09)	3,864 (11 RCTs)	⨁⨁◯◯ Low[a,b]	
Successful extubation/ weaning (non-RCTs)	733/1,000	770/1,000 (689 to 865)	RR 1.05 (0.94 to 1.18)	1,424 (3 Observational studies)	⨁◯◯◯ Very low[b,c]	
Reintubation (RCTs)	144/1,000	142/1,000 (118 to 172)	RR 0.99 (0.82 to 1.20)	3,058 (9 RCTs)	⨁⨁⨁◯ Moderate[a]	
Reintubation (non-RCTs)	132/1,000	142/1,000 (107 to 188)	RR 1.08 (0.81 to 1.43)	1,218 (3 observational studies)	⨁◯◯◯ Very lowc,[d]	
Hospital mortality (RCTs)	122/1,000	118/1,000 (84 to 167)	RR 0.97 (0.69 to 1.37)	2,329 (5 RCTs)	⨁⨁◯◯ Low[a,d]	
Hospital mortality (non-RCTs)	219/1,000	180/1,000 (145 to 223)	RR 0.82 (0.66 to 1.02)	1,424 (3 observational studies)	⨁◯◯◯ Very low[c,d]	
ICU mortality (RCTs)	77/1,000	66/1,000 (49 to 86)	RR 0.85 (0.64 to 1.11)	2,718 (4 RCTs)	⨁⨁◯◯ Low[a,d]	
ICU mortality (non-RCTs)	93/1,000	80/1,000 (57 to 113)	RR 0.86 (0.61 to 1.22)	1,424 (3 observational studies)	⨁◯◯◯ Very low[c,d]	
Hospital LOS (RCTs)	The mean hospital LOS (RCTs) was 21.8 days	MD 0.88 days higher (0.51 lower to 2.27 higher)	-	1,785 (3 RCTs)	⨁⨁⨁◯ Moderate[a]	
Hospital LOS (non-RCTs)	The mean hospital LOS (non-RCTs) was 25.0 days	MD 1.18 days lower (3.34 lower to 0.97 higher)	-	1,276 (2 observational studies)	⨁◯◯◯ Very low[c]	
ICU LOS (RCTs)	The mean ICU LOS (RCTs) was 9.3 days.	MD 0.06 days lower (0.86 lower to 0.74 higher)	-	2,743 (4 RCTs)	⨁⨁⨁◯ Moderate[a]	
ICU LOS (non-RCTs)	The mean ICU LOS (non-RCTs) was 10.1 days	MD 0.16 days lower (0.68 lower to 0.36 higher)	-	1,276 (2 observational studies)	⨁◯◯◯ Very low[c]	

GRADE Working Group grades of evidence: Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different; Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect; Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

CI: confidence interval; RCT: randomized controlled trial; RR: risk ratio; ICU: intensive care unit; LOS: length of stay; MD: mean difference.

a) The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI); b) These alphabetical grades express the certainty of evidence and aid clinicians in evaluating evidence and making treatment decisions for patients. Superscript a represents very high certainty. This is determined after evaluating factors such as study design, consistency of results, and potential biases. A signifies a very high level of confidence and certainty. Superscript b indicates high certainty. While slightly lower than A, it still denotes a high level of confidence. Superscript c represents moderate certainty. Used when there is some uncertainty in the evidence. Superscript d indicates low certainty. Signifies low confidence and minimal certainty in the results.

KQ 2-2. Is pressure support ventilation (PSV) recommended over the T-piece during spontaneous breathing trial (SBT) in adult patients at high risk of extubation failure?

Outcome	Anticipated absolute effects[a] (95% CI)		Relative effect (95% CI)	No. of participants (studies)	Certainty of the evidence (GRADE)[b]	Comments
	Risk with T-piece	Risk with PSV				
Successful extubation/ weaning (RCTs)	636/1,000	661/1,000 (572 to 763)	RR 1.04 (0.90 to 1.20)	1,220 (5 RCTs)	⨁⨁⨁⨁ Very low[a,b,c]	
Successful extubation/ weaning (non-RCTs)	583/1,000	606/1,000 (449 to 821)	RR 1.04 (0.77 to 1.41)	707 (2 observational studies)	⨁⨁⨁⨁ Very low[b,c,d]	
Reintubation (RCTs)	147/1,000	161/1,000 (124 to 209)	RR 1.09 (0.84 to 1.42)	1,200 (4 RCTs)	⨁⨁⨁⨁ Low[a,c]	
Reintubation (non-RCTs)	102/1,000	134/1,000 (82 to 220)	RR 1.32 (0.81 to 2.16)	501 (2 observational studies)	⨁⨁⨁⨁ Very low[c,d]	
Hospital mortality (RCTs)	133/1,000	267/1,000 (89 to 792)	RR 2.00 (0.67 to 5.94)	60 (1 RCT)	⨁⨁⨁⨁ Low[a,c]	
Hospital mortality (non-RCTs)	170/1,000	144/1,000 (100 to 205)	RR 0.85 (0.59 to 1.21)	707 (2 observational studies)	⨁⨁⨁⨁ Very low[c,d]	
ICU mortality (RCTs)	79/1,000	73/1,000 (49 to 112)	RR 0.93 (0.62 to 1.42)	1,092 (3 RCTs)	⨁⨁⨁⨁ Low[a,c]	
ICU mortality (non-RCTs)	87/1,000	62/1,000 (37 to 106)	RR 0.71 (0.42 to 1.21)	707 (2 observational studies)	⨁⨁⨁⨁ Very low[c,d]	
Hospital LOS (non-RCTs)	The mean hospital LOS (non-RCTs) was 26.2 days	MD 1.9 days lower (4.67 lower to 0.87 higher)	-	707 (2 observational studies)	⨁⨁⨁⨁ Very low[d]	
ICU LOS (RCTs)	The mean ICU LOS (RCTs) was 11.1 days	MD 0.91 days lower (2.69 lower to 0.88 higher)	-	1081 (3 RCTs)	⨁⨁⨁⨁ Low[a,c]	
ICU LOS (non-RCTs)	The mean ICU LOS (non-RCTs) was 12.8 days	MD 0.84 days lower (2.14 lower to 0.46 higher)	-	707 (2 observational studies)	⨁⨁⨁⨁ Very low[d]	

GRADE Working Group grades of evidence: Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect; Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

CI: confidence interval; RCT: randomized controlled trial; RR: risk ratio; ICU: intensive care unit; LOS: length of stay; MD: mean difference.

a) The risk in the intervention group (and its 95% confidence interval) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI); b) These alphabetical grades express the certainty of evidence and aid clinicians in evaluating evidence and making treatment decisions for patients. Superscript a represents very high certainty. This is determined after evaluating factors such as study design, consistency of results, and potential biases. A signifies a very high level of confidence and certainty. Superscript b indicates high certainty. While slightly lower than A, it still denotes a high level of confidence. Superscript c represents moderate certainty. Used when there is some uncertainty in the evidence. Superscript d indicates low certainty. Signifies low confidence and minimal certainty in the results.

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KQ 3. Is a cuff leak test recommended before extubation of mechanically ventilated patients?

Outcome	Anticipated absolute effects[a] (95% CI)		Relative effect (95% CI)	No. of participants (studies)	Certainty of the evidence (GRADE)[b]
	Risk without cuff leak test	Risk with cuff leak test			
Post-extubation stridor	45/1,000	158/1,000 (98 to 246))	OR 4.01 (2.31 to 6.96)	1,355 (6 observational study)	⨁⨁◯◯ Low[a]
Reintubation	131/1,000	180/1,000 (65 to 499)	RR 1.38 (0.50 to 3.82)	282 (3 observational study)	⨁◯◯◯ Very low[a,b]

GRADE Working Group grades of evidence: Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect; Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.
CI: confidence interval; OR: odds ratio; RR: risk ratio.
a) The risk in the intervention group (and its 95% confidence interval) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI); b) These alphabetical grades express the certainty of evidence and aid clinicians in evaluating evidence and making treatment decisions for patients. Superscript a represents very high certainty. This is determined after evaluating factors such as study design, consistency of results, and potential biases. A signifies a very high level of confidence and certainty. Superscript b indicates high certainty. While slightly lower than A, it still denotes a high level of confidence.

KQ 4. Is steroids recommended before extubation in mechanically ventilated patients with a failed cuff leak test?

Outcome	Anticipated absolute effects[a] (95% CI)		Relative effect (95% CI)	No of participants (studies)	Certainty of the evidence (GRADE)[b]
	Risk without steroid	Risk with steroid			
Post-extubation stridor	321/1,000	119/1,000 (77 to 183)	RR 0.37 (0.24 to 0.57)	371 (4 RCTs)	⨁⨁⨁⨁ High
Reintubation	179/1,000	52/1,000 (27 to 100)	RR 0.69 (0.48 to 0.99)	371 (4 RCTs)	⨁⨁⨁⨁ High
Duration of intubation	The mean duration of intubation was 0	MD 0.91 higher (3.47 lower to 5.29 higher)		243 (3 RCTs)	⨁⨁◯◯ Low[a]

GRADE Working Group grades of evidence: High certainty: we are very confident that the true effect lies close to that of the estimate of the effect; Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
CI: confidence interval; RR: risk ratio; RCT: randomized controlled trial; MD: mean difference.
a) The risk in the intervention group (and its 95% confidence interval) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI); b) These alphabetical grades express the certainty of evidence and aid clinicians in evaluating evidence and making treatment decisions for patients. Superscript a represents very high certainty. This is determined after evaluating factors such as study design, consistency of results, and potential biases. A signifies a very high level of confidence and certainty.

KQ 5. Is it recommended to compute the Rapid Shallow Breathing Index (RSBI) before extubating mechanically ventilated adult patients?

Outcomes	№ of participants (studies) Follow-up	Certainty of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with [comparison]	Risk difference with [intervention]
successful weaning	296 (4 observational studies)	⨁◯◯◯ Very low			Huo 2021, Compared with RSBI, weaning index (WI) shows a better value in predicting weaning, Kuo 2006 RSBI of SBT termination is predictor of successful weaning. Souza 2015 RSBI in PSV is enough accuracy in predicting weaning outcome. Tu 2018 RSBI was 85.48 ± 11.559 for successful extubation group
Extubation success	1232 (5 observational studies)	⨁◯◯◯ Very low			Ebstain 1995, RSBI (<100) : extubation success 70 extubation failure 14, Frutos-Vivar 2006, reintubation: RSBI (OR, 1.009 per unit; 95% CI, 1.003 to 1.015), Danaga 2008, RSBI a sensitivity of 20% and a specificity of 95% for extubation failure, Segal 2009, ercent change of RSBI predicted successful extubation even when initial values were >105

GRADE Working Group grades of evidence: Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.
CI: confidence interval.

KQ 6. Is inspiratory muscle training (IMT) recommended for critically ill adult patients on mechanical ventilation?

Outcome	Anticipated absolute effects[a] (95% CI)		Relative effect (95% CI)	No. of participants (studies)	Certainty of the evidence (GRADE)
	Risk without IMT	Risk with IMT			
• Unsuccessful weaning					
RCT	415/1,000	253/1,000 (187 to 353)	RR 0.61 (0.45 to 0.85)	321 (4 RCTs)	⨁⨁◯◯ Low
• Mechanical ventilation duration (day)					
RCT	The mean MV duration was 36.92 days.	MD 23.62 lower (34.98 lower to 12.27 higher)	MD −16.07 (−46.65 to 14.52)	94 (2 RCTs)	⨁⨁◯◯ Low
• Weaning time (hr)					
RCT	The mean weaning time was 30.17 hours.	MD 6.70 lower (18.64 lower to 5.25 higher)	MD −9.65 (−25.42 to 6.99)	179 (3 RCTs)	⨁⨁◯◯ Low
• PIMax change					
RCT	The PImax change was −5.40.	MD −12.94 lower (15.78 lower to 10.10 higher)	MD −12.12 (−19/11 to −5.13)	300 (4 RCTs)	⨁⨁◯◯ Low

GRADE Working Group grades of evidence: Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
CI: confidence interval; RCT: randomized controlled trial; RR: risk ratio; MD: mean difference; PIMax: maximum pressure limit.
a) The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).

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KQ 7. Is early physical rehabilitation recommended for critically ill patients on mechanical ventilation?

Outcome	Anticipated absolute effects[a] (95% CI)		Relative effect (95% CI)	No. of participants (studies)	Certainty of the evidence (GRADE)[b]
	Risk without early rehabilitation	Risk with early rehabilitation			
• ICU LOS (day)					
RCT	The mean ICU LOS was 15.23 days.	MD 3.12 lower (5.03 lower to 1.22 higher)	MD −3.42 (−6.31 to −0.53)	350 (4 RCTs)	⨁⨁◯◯ Lowa
RCT (sensitivity analysis)	The mean ICU LOS was 13.94 days.	MD 1.65 lower (4.28 lower to 0.98 higher)	MD −2.18 (−3.69 to −0.67)	224 (3 RCTs)	⨁⨁◯◯ Low
Before & after study / prospective cohort study	The mean ICU LOS was 14.35 days.	MD 1.69 lower (4.20 lower to 0.83 higher)	MD 0.16 (−6.94 to 6.81)	279 (1 before & after study, 1 prospective cohort study)	⨁◯◯◯ Very low
• MV duration (day)					
RCT	The mean MV duration was 9.37 days.	MD 3.19 lower (4.14 lower to 2.25 higher)	MD −3.04 (−4.98 to −1.10)	350 (4 RCTs)	⨁⨁◯◯ Lowa
RCT (sensitivity analysis)	The mean MV duration was 7.46 days.	MD 2.15 lower (3.16 lower to 1.15 higher)	MD −2.07 (−2.92 to −1.22)	224 (3 RCTs)	⨁⨁◯◯ Low
Before & after study / Prospective cohort study	The mean MV duration was 11.95 days.	MD 2.77 lower	MD −2.29	279 (1 before & after study, 1 prospective cohort study)	⨁◯◯◯

GRADE Working Group grades of evidence: Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect; Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

CI: confidence interval; ICU: intensive care unit; LOS: length of stay; RCT: randomized controlled trial; MD: mean difference; MV: mechanical ventilation.

a) The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI); b) These alphabetical grades express the certainty of evidence and aid clinicians in evaluating evidence and making treatment decisions for patients. Superscript a represents very high certainty. This is determined after evaluating factors such as study design, consistency of results, and potential biases. A signifies a very high level of confidence and certainty.

KQ 8-1. Is a high-flow nasal cannula (HFNC) recommended over conventional oxygen therapy (COT) for adult patients undergoing planned extubation?

Outcome	Anticipated absolute effects[a] (95% CI)		Relative effect (95% CI)	No. of participants (studies)	Certainty of the evidence (GRADE)[b]
	Risk with COT	Risk with HFNC			
Respiratory failure	291/1,000	143/1,000 (114 to 178)	RR 0.49 (0.39 to 0.61)	1,631 (8 RCTs)	⨁⨁⨁◯ Moderate[a]
Reintubation	112/1,000	53/1,000 (32 to 85)	RR 0.47 (0.29 to 0.76)	1,367 (8 RCTs)	⨁⨁⨁◯ Moderate[a]
Hospital Mortality	36/1,000	32/1,000 (19 to 55)	RR 0.90 (0.52 to 1.54)	1,546 (7 RCTs)	⨁⨁⨁◯ Moderate[a]
ICU mortality	12/1,000	13/1,000 (4 to 49)	RR 1.14 (0.31 to 4.17)	716 (3 RCTs)	⨁⨁⨁⨁ High
Ventilator-associated pneumonia	47/1,000	25/1,000 (11 to 59)	RR 0.53 (0.23 to 1.25)	637 (2 RCT)	⨁⨁⨁◯ Moderate[b]
ICU LOS	The mean ICU LOS was 0.	MD 0.1 higher (0.03 lower to 0.23 higher)	-	1,468 (8 RCTs)	⨁⨁⨁⨁ High
Hospital LOS	The mean hospital LOS was 0.	MD 0.29 lower (1.03 lower to 0.45 higher)	-	1,318 (6 RCTSs)	⨁⨁⨁⨁ High

GRADE Working Group grades of evidence: High certainty: we are very confident that the true effect lies close to that of the estimate of the effect; Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

CI: confidence interval; RR: risk ratio; RCT: randomized controlled trial; ICU: intensive care unit; LOS: length of stay; MD: mean difference.

a) The risk in the intervention group (and its 95% confidence interval) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI); b) These alphabetical grades express the certainty of evidence and aid clinicians in evaluating evidence and making treatment decisions for patients. Superscript a represents very high certainty. This is determined after evaluating factors such as study design, consistency of results, and potential biases. A signifies a very high level of confidence and certainty. Superscript b indicates high certainty. While slightly lower than A, it still denotes a high level of confidence.

KQ 8-2. Is non-invasive ventilation (NIV) recommended over conventional oxygen therapy for adult patients undergoing planned extubation?

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)
	Risk with conventional oxygen therapy	Risk with NIV			
Respiratory failure after extubation	320 per 1,000	**99 per 1,000** (51 to 198)	**RR 0.31** (0.16 to 0.62)	1064 (7 RCTs)	⨁⨁⨁◯ Moderate[a,b,c]
Reintubation	188 per 1,000	**119 per 1,000** (83 to 169)	**RR 0.63** (0.44 to 0.90)	1238 (10 RCTs)	⨁⨁⨁◯ Moderate[a,b]
ICU mortality	83 per 1,000	**55 per 1,000** (29 to 104)	**RR 0.66** (0.35 to 1.25)	1103 (7 RCTs)	⨁⨁⨁◯ Moderate[a,b,d]
Hospital mortality	202 per 1,000	**156 per 1,000** (87 to 281)	**RR 0.77** (0.43 to 1.39)	503 (5 RCTs)	⨁⨁⨁◯ Moderate[e]
ICU LOS	The mean ICU LOS was **0**	MD **2.17 lower** (4.86 lower to 0.52 higher)	→	833 (9 RCTs)	⨁⨁◯◯ Low[a,b,f,g]
Hospital LOS	The mean hospital LOS was **0**	MD **1.03 lower** (3.45 lower to 1.39 higher)	→	602 (6 RCTs)	⨁⨁◯◯ Low[a,j]
Hospital LOS after extubation	The mean hospital LOS after extubation was **0**	MD **0.99 lower** (2.25 lower to 0.27 higher)	→	98 (2 RCTs)	⨁◯◯◯ Very low[a,k,l]

***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: confidence interval; **MD:** mean difference; **RR:** risk ratio

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KQ 8-3. Is high-flow nasal cannula (HFNC) recommended over non-invasive ventilation (NIV) for successful weaning in adult patients undergoing planned extubation?

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)
	Risk with NIV	Risk with HFNC			
Mortality	58 per 1,000	**66 per 1,000** (51 to 85)	**RR 1.14** (0.88 to 1.47)	3484 (5 RCTs)	⨁⨁⨁◯ Moderate[a]
Re-intubation	155 per 1,000	**152 per 1,000** (122 to 191)	**RR 0.98** (0.79 to 1.23)	1682 (5 RCTs)	⨁⨁⨁◯ Moderate[a]
Treatment failure	194 per 1,000	**201 per 1,000** (167 to 242)	**RR 1.04** (0.86 to 1.25)	1682 (5 RCTs)	⨁⨁⨁◯ Moderate[a]
Skin damage	123 per 1,000	**62 per 1,000** (37 to 100)	**RR 0.50** (0.30 to 0.81)	767 (4 RCTs)	⨁⨁⨁⨁ High

CI: confidence interval; RR: risk ratio; RCT: randomized controlled trial.

KQ 9. Is early tracheostomy be performed for successful weaning from mechanical ventilation in adult patients?

Outcome	Anticipated absolute effects[a] (95% CI)		Relative effect (95% CI)	No. of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with Late Tracheostomy	Risk with Early Tracheostomy				
Duration of mechanical ventilation	The mean duration of mechanical ventilation was 16.2 day.	MD 3.16 day lower (11.47 lower to 5.15 higher)	-	396 (3 RCTs)	⨁⨁⨁⨁ High	Early tracheostomy does not reduce the duration of mechanical ventilation.
ICU stay	The mean ICU Stay was 20.8 day.	MD 5.8 day lower (12.8 lower to 1.2 higher)	-	396 (3 RCTs)	⨁⨁⨁⨁ High	Early tracheostomy does not reduce the LOS in the ICU
Hospital mortality	289/1,000	249/1,000 (214 to 292)	RR 0.86 (0.74 to 1.01)	1,597 (7 RCTs)	⨁⨁⨁⨁ High	Early tracheostomy does not reduce hospital mortality.

GRADE Working Group grades of evidence: High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
CI: confidence interval; MD: mean difference; RCT: randomized controlled trial; RR: risk ratio; ICU: intensive care unit; LOS: length of stay.
a) The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).