

Table S3. GRADE assessment.

GRADE evaluation. Outcome: VAP incidence

Intervention: subglottic secretion drainage (SSD)

Comparison: not subglottic secretion drainage

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with not SSD	Risk with SSD				
Huang	156 per 1,000	92 per 1,000 (75 to 117)	RR 0.59 (0.48 to 0.75)	2126 (9 RCTs)	⊕⊕○○ LOW	Only two studies had low risk of bias. Results about publication bias were not reported.
Sun	268 per 1,000	145 per 1,000 (123 to 171)	RR 0.54 (0.46 to 0.64)	2052 (13 RCTs)	⊕⊕⊕○ MODERATE	GRADE evaluation in the original SRMA.
Mao	225 per 1,000	124 per 1,000 (108 to 142)	RR 0.55 (0.48 to 0.63)	3544 (20 RCTs)	⊕⊕⊕⊕ HIGH	GRADE evaluation in the original SRMA.
Caroff	215 per 1,000	125 per 1,000 (110 to 144)	RR 0.58 (0.51 to 0.67)	3369 (17 RCTs)	⊕⊕⊕○ MODERATE	Only five studies had low risk of bias.
Frost	173 per 1,000	90 per 1,000 (72 to 112)	RR 0.52 (0.42 to 0.65)	2277 (9 RCTs)	⊕○○○ VERY LOW	I2 value to assess heterogeneity not reported. Risk of bias of included studies not evaluated.
Leasure	249 per 1,000	129 per 1,000 (107 to 159)	RR 0.52 (0.43 to 0.64)	1709 (10 RCTs)	⊕○○○ VERY LOW	Results about risk of bias of included studies not reported. Publication bias was not evaluated.
Wang	172 per 1,000	97 per 1,000 (78 to 119)	RR 0.56 (0.45 to 0.69)	2105 (10 RCTs)	⊕⊕⊕○ MODERATE	Only two studies had low risk of bias.
Muscedere	210 per 1,000	115 per 1,000 (96 to 138)	RR 0.55 (0.46 to 0.66)	2442 (13 RCTs)	⊕⊕⊕○ MODERATE	Only four studies had low risk of bias.
Dezfulian	191 per 1,000	97 per 1,000 (71 to 136)	RR 0.51 (0.37 to 0.71)	896 (5 RCTs)	⊕○○○ VERY LOW	All included studies had moderate risk of bias. I2 value to assess heterogeneity not reported. Publication bias was not evaluated.

Table S3. GRADE assessment.

GRADE evaluation. Outcome: VAP incidence

Intervention: subglottic secretion drainage (SSD)

Comparison: not subglottic secretion drainage

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with not SSD	Risk with SSD				

*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; **RR:** Risk ratio; **SSD:** subglottic secretion drainage; **VAP:** Ventilator associated pneumonia; **SRMA:** Systematic review with meta-analysis.

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

GRADE evaluation. Outcome: Mortality

Intervention: subglottic secretion drainage (SSD)

Comparison: not subglottic secretion drainage

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with not SSD	Risk with SSD				
Sun	177 per 1,000	158 per 1,000 (129 to 193)	RR 0.89 (0.73 to 1.09)	1546 (7 RCTs)	⊕⊕⊕○ MODERATE	GRADE evaluation in the original SRMA.
Mao (ICU)	244 per 1,000	239 per 1,000 (208 to 276)	RR 0.98 (0.85 to 1.13)	2291 (8 RCTs)	⊕⊕⊕⊕ HIGH	GRADE evaluation in the original SRMA.
Mao (hospital)	291 per 1,000	268 per 1,000 (233 to 306)	RR 0.92 (0.80 to 1.05)	1607 (7 RCTs)	⊕⊕⊕⊕ HIGH	GRADE evaluation in the original SRMA.
Caroff	252 per 1,000	234 per 1,000 (212 to 260)	RR 0.93 (0.84 to 1.03)	3232 (14 RCTs)	⊕⊕⊕○ MODERATE	Only five studies had low risk of bias.
Frost (ICU)	309 per 1,000	325 per 1,000 (266 to 396)	RR 1.05 (0.86 to 1.28)	781 (4 RCTs)	⊕○○○ VERY LOW	I2 value to assess heterogeneity not reported. Risk of bias of included studies not evaluated.
Frost (hospital)	206 per 1,000	197 per 1,000 (166 to 230)	RR 0.96 (0.81 to 1.12)	1481 (4 RCTs)	⊕○○○ VERY LOW	I2 value to assess heterogeneity not reported. Risk of bias of included studies not evaluated.
Leasure	290 per 1,000	264 per 1,000 (232 to 304)	RR 0.91 (0.80 to 1.05)	1641 (9 RCTs)	⊕○○○ VERY LOW	Risk of bias of included studies not evaluated. Publication bias was not evaluated.
Wang	221 per 1,000	215 per 1,000 (186 to 248)	RR 0.97 (0.84 to 1.12)	2125 (9 RCTs)	⊕⊕⊕○ MODERATE	Only two studies had low risk of bias.
Muscedere (ICU)	208 per 1,000	210 per 1,000 (177 to 250)	RR 1.01 (0.85 to 1.20)	1662 (6 RCTs)	⊕⊕⊕○ MODERATE	Only three studies had low risk of bias.
Muscedere (hospital)	201 per 1,000	195 per 1,000 (167 to 228)	RR 0.97 (0.83 to 1.13)	1682 (6 RCTs)	⊕⊕⊕○ MODERATE	Only three studies had low risk of bias.

GRADE evaluation. Outcome: Mortality

Intervention: subglottic secretion drainage (SSD)

Comparison: not subglottic secretion drainage

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with not SSD	Risk with SSD				
Dezfulian	163 per 1,000	179 per 1,000 (130 to 228)	RR 1.1 (0.8 to 1.4)	823 (4 RCTs)	⊕○○○ VERY LOW	All included studies had moderate risk of bias. I2 value to assess heterogeneity not reported. Publication bias was not evaluated.

*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; **RR:** Risk ratio; **SRMA:** Systematic review with meta-analysis; **SSD:** Subglottic secretion drainage.

GRADE Working Group grades of evidence

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GRADE evaluation. Outcome: Duration of Mechanical Ventilation

Intervention: subglottic secretion drainage (SSD)

Comparison: not subglottic secretion drainage

Outcomes	Relative effect (95% CI) Risk with SSD	Nº of participants (studies)	Certainty of the evidence (GRADE)	Comments
Sun	The mean in the intervention group was 3.29 days fewer (4.53 fewer to 2.05 fewer)	695 (6 RCTs)	⊕⊕⊕○ MODERATE	GRADE evaluation in the original SRMA.
Mao	The mean in the intervention group was 1.17 days fewer (2.28 fewer to 0.06 fewer)	998 (6 RCTs)	⊕⊕⊕○ MODERATE	GRADE evaluation in the original SRMA.
Caroff	The mean in the intervention group was 0.65 days fewer (1.59 fewer to 0.28 more)	2331 (8 RCTs)	⊕⊕○○ LOW	I2 value greater than 50%. Only five studies had low risk of bias.
Frost	The mean in the intervention group was 1.04 days fewer (2.79 fewer to 0.71 more)	1973 (6 RCTs)	⊕○○○ VERY LOW	Risk of bias not evaluated. I2 value to assess heterogeneity not reported.
Leasure	The mean in the intervention group was 1.47 days fewer (2.27 fewer to 0.67 fewer)	1078 (6 RCTs)	⊕○○○ VERY LOW	Risk of bias not evaluated. Publication bias not evaluated.
Wang	The mean in the intervention group was 1.55 days fewer (2.4 fewer to 0.71 fewer)	852 (5 RCTs)	⊕⊕○○ LOW	I2 value greater than 50%. Only one included study had low risk of bias.
Muscudere	The mean in the intervention group was 1.08 days fewer (2.04 fewer to 0.12 fewer)	2010 (7 RCTs)	⊕⊕⊕○ MODERATE	Only four studies had low risk of bias.

GRADE evaluation. Outcome: Duration of Mechanical Ventilation

Intervention: subglottic secretion drainage (SSD)

Comparison: not subglottic secretion drainage

Outcomes	Relative effect (95% CI) Risk with SSD	N ^o of participants (studies)	Certainty of the evidence (GRADE)	Comments
Dezfulian	The mean in the intervention group was 1.8 days fewer (2.1 fewer to 1.5 fewer)	683 (3 RCTs)	⊕○○○ VERY LOW	All included studies had moderate risk of bias. I2 value to assess heterogeneity not reported. Publication bias was not assessed.

CI: Confidence interval; **SRMA:** Systematic review with meta-analysis; **SSD:** Subglottic secretion drainage.

GRADE Working Group grades of evidence

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GRADE evaluation. Outcome: Length of stay (ICU/hospital)

Intervention: Subglottic secretion drainage (SSD)

Comparison: not SSD

Outcomes	Anticipated absolute effects* (95% CI) Mean difference (MD) with SSD	Nº of participants (studies)	Certainty of the evidence (GRADE)	Comments
Sun (hospital)	The mean of length of ICU/hospital stay in the intervention group was 4,27 days fewer (7,36 fewer to 1,18 fewer)	251 (3 RCTs)	⊕⊕⊕○ MODERATE	GRADE evaluation in the original SRMA.
Mao (hospital)	The mean of length of ICU/hospital stay in the intervention group was 1,44 days fewer (3,93 fewer to 1,04 more)	591 (3 RCTs)	⊕⊕⊕⊕ HIGH	GRADE evaluation in the original SRMA.
Mao (ICU)	The mean of length of ICU/hospital stay in the intervention group was 1,64 days fewer (3,95 fewer to 0,66 more)	932 (4 RCTs)	⊕⊕⊕○ MODERATE	GRADE evaluation in the original SRMA.
Caroff (ICU)	The mean of length of ICU/hospital stay in the intervention group was 1,04 days fewer (2,4 fewer to 0,33 more)	2233 (7 RCTs)	⊕⊕○○ LOW	Only five studies had low risk of bias. I2 value greater than 50%.
Caroff (hospital)	The mean of length of ICU/hospital stay in the intervention group was 0,57 days fewer (2,44 fewer to 1,3 more)	1657 (5 RCTs)	⊕⊕⊕○ MODERATE	Only three studies had low risk of bias
Leasure (hospital)	The mean of length of ICU/hospital stay in the intervention group was 1,41 days fewer (3,97 fewer to 1,15 more)	493 (2 RCTs)	⊕○○○ VERY LOW	Risk of bias of included studies was not evaluated. Publication bias was not evaluated.
Leasure (ICU)	The mean of length of ICU/hospital stay in the intervention group was 1,97 days fewer (3,91 fewer to 0,02 fewer)	987 (5 RCTs)	⊕○○○ VERY LOW	Risk of bias of included studies was not evaluated. Publication bias was not evaluated.
Wang (hospital)	The mean of length of ICU/hospital stay in the intervention group was 1,44 days fewer (3,93 fewer to 1,04 more)	591 (3 RCTs)	⊕⊕⊕○ MODERATE	Only one study had low risk of bias.
Wang (ICU)	The mean of length of ICU/hospital stay in the intervention group was 2,04 days fewer (4,18 fewer to 0,09 more)	744 (4 RCTs)	⊕⊕○○ LOW	I2 value greater than 50%. Only one study had low risk of bias.

GRADE evaluation. Outcome: Length of stay (ICU/hospital)

Intervention: Subglottic secretion drainage (SSD)

Comparison: not SSD

Outcomes	Anticipated absolute effects* (95% CI) Mean difference (MD) with SSD	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
Muscedere (ICU)	The mean of length of ICU/hospital stay in the intervention group was 1,52 days fewer (2,94 fewer to 0,11 fewer)	2010 (7 RCTs)	⊕⊕○○ LOW	I2 value greater than 50%. Only four studies had low risk of bias
Dezfulian (ICU)	The mean of length of ICU/hospital stay in the intervention group was 1,4 days fewer (0,8 more to 2,1 more)	683 (3 RCTs)	⊕○○○ VERY LOW	Publication bias was not evaluated. All included studies had a moderate risk of bias. I2 value to assess heterogeneity not reported.

CI: Confidence interval; SRMA: Systematic review with meta-analysis; SSD: Subglottic secretion drainage; ICU: Intensive Care Unit

GRADE Working Group grades of evidence

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GRADE evaluation. Outcome: Time to VAP

Intervention: Subglottic secretion drainage (SSD)

Comparison: not SSD

Outcomes	Anticipated absolute effects* (95% CI) Mean difference (MD) with SSD	Nº of participants (studies)	Certainty of the evidence (GRADE)	Comments
Mao	The mean of days to onset VAP in the intervention group was 3.92 days more (2.56 more to 5.27 more)	959 (7 RCTs)	⊕⊕⊕○ MODERATE	GRADE evaluation in the original SRMA.
Frost	The mean of days to onset VAP in the intervention group was 2.89 days more (0.09 more to 5.69 more)	2127 (8 RCTs)	⊕○○○ VERY LOW	Risk of bias not evaluated. I2 value to assess heterogeneity not reported
Leasure	The mean of days to onset VAP in the intervention group was 4.04 days more (2.6 more to 5.47 more)	1141 (7 RCTs)	⊕○○○ VERY LOW	Risk of bias of included studies was not evaluated. Publication bias was not evaluated. I2 value >50%
Wang	The mean of days to onset VAP in the intervention group was 2.66 days more (1.06 more to 4.26 more)	1016 (8 RCTs)	⊕⊕○○ LOW	Only two studies had low risk of bias. I2 value >50%
Dezfulian	The mean of days to onset VAP in the intervention group was 3.1 days more (2.7 more to 3.4 more)	746 (4 RCTs)	⊕○○○ VERY LOW	Publication bias was not evaluated. All included studies had a moderate risk of bias. I2 value to assess heterogeneity not reported.

CI: Confidence interval; **SRMA:** Systematic review with meta-analysis; **SSD:** Subglottic secretion drainage; **VAP:** Ventilator-associated pneumonia.

GRADE Working Group grades of evidence

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