Supplementary Material

Table 1s. Search strategy

Figure 1s. Forest plot of 30-day mortality by subdividing the studies by the type of ECMO. The fixed-effect model exhibited an OR of 0.87 (95%CI 0.79 – 0.95); the random-effects model showed an OR of 0.76 (95%CI 0.37 – 1.59). Since the confidence interval crosses the unit, the difference was not statistically significant. We considered only the random-effect model since the high between-study inconsistency found (64.6%).

Figure 2s. Forest plot of 30-day mortality by subdividing the studies by the type of cannulation. The fixed-effect model exhibited an OR of 0.87 (95%CI 0.79 – 0.95); the random-effects model showed an OR of 0.76 (95%CI 0.37 – 1.59). Since the confidence interval crosses the unit, the difference was not statistically significant. We considered only the random-effect model since the high between-study inconsistency found (64.6%).

Figure 3s. Analysis of 30-day mortality according to the use of anti-fungal agents for prophylaxis. The fixed-effect model exhibited an OR of 0.87 (95%CI 0.79 – 0.95); the random-effects model showed an OR of 0.76 (95%CI 0.37 – 1.59). Since the confidence interval crosses the unit, the difference was not statistically significant. We considered only the random-effect model since the high between-study inconsistency found (64.6%).

Forest 4s. Forest plot of nosocomial infections rate by subdividing the studies by the type of ECMO. The fixed-effect model exhibited an OR of 0.81 (95%Cl 0.71 – 0.92); the random-effects model showed an OR of 0.70 (95%Cl 0.31 – 1.58). We considered only the fixed-effect model since the quite low between-study inconsistency found (35.9%).

Figure 5s. Forest plot of nosocomial infections rate by subdividing the studies by the type of cannulation. The fixed-effect model exhibited an OR of 0.81 (95%Cl 0.71 – 0.92); the random-effects model showed an OR of 0.70 (95%Cl 0.31 – 1.58). We considered only the fixed-effect model since the quite low between-study inconsistency found (35.9%).

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Library	Query	Records
PubMed	(("antibiotic prophylaxis" OR "antibiotic prevention" OR "preventive antibiotic" OR "chemoprophylaxis") AND ("extracorporeal membrane oxygenation" OR "ECMO" OR "venous-arterial extracorporeal membrane oxygenation" OR "VA-ECMO" OR "VA ECMO" OR "VA_ECMO" OR "ECLS")) AND (randomized controlled trial[pt] OR controlled clinical trial[pt] OR randomized controlled trials[mh] OR random allocation[mh] OR double-blind method[mh] OR single-blind method[mh] OR clinical trial[pt] OR clinical trials[mh] OR (clinical trial[tw] OR ((singl*[tw] OR doubl*[tw] OR trebl*[tw] OR tripl*[tw]) AND (mask*[tw] OR blind[tw])) OR (latin square[tw]) OR placebos[mh] OR placebo*[tw] OR random*[tw] OR research design[mh:noexp] OR follow-up studies[mh] OR prospective studies[mh] OR cross-over studies[mh] OR control*[tw] OR prospectiv*[tw] OR volunteer*[tw]) NOT (animal[mh] NOT human[mh]) NOT (comment[pt] OR editorial[pt] OR meta-analysis[pt] OR practice-guideline[pt] OR review[pt]))	15
Scopus	(TITLE-ABS-KEY (antibiotic AND prophylaxis) AND TITLE-ABS-KEY (va AND ecmo) OR TITLE-ABS-KEY (ecmo AND extracorporeal AND membrane AND oxygenation) OR TITLE-ABS-KEY (ecmo) OR TITLE-ABS-KEY (ecmo AND complications) AND NOT TITLE-ABS-KEY (case AND report) AND NOT TITLE-ABS-KEY (review AND article) AND NOT TITLE-ABS-KEY (animal AND model) AND NOT TITLE-ABS-KEY (review AND literature) AND NOT TITLE-ABS-KEY (systematic AND review))	45
CINHAL	https://web.p.ebscohost.com/ehost/breadbox/search?term=%28MH%20%22Life%20Support%20Care%22%29%20OR% 20%28MH%20%22Extracorporeal%20Membrane%20Oxygenation%22%29%20OR%20%28MH%20%22Oxygenators%2C %20Membrane%22%29%20OR%20%28MH%20%22Extracorporeal%20Carbon%20Dioxide%20Removal%22%29%20OR %20%28MH%20%22Advanced%20Cardiac%20Life%20Support%22%29%20OR%20%28MH%20%22Pediatric%20Advan ced%20Life%20Support%22%29%20OR%20%28MH%20%22Antibiotic%20Prophylaxis%22%29&sid=797c0b7e-2927- 47e9-96d9-6536cb05f430%40redis&vid=9	18
References	/	3

Figure 1s Forest plot of 30-day mortality by subdividing the studies by the type of ECMO. The fixed-effect model exhibited an OR of 0.87 (95%CI 0.79 – 0.95); the random-effects model showed an OR of 0.76 (95%CI 0.37 – 1.59). Since the confidence interval crosses the unit, the difference was not statistically significant. We considered only the random-effect model since the high between-study inconsistency found (64.6%).

Study	Experin Events	nental Total	Co Events	ontrol Total	Odds Ratio	OR	95%-C	Weight (common)	Weight (random)	
Type = ns Tagami 2016 Kondo 2021 Common effect model Random effects model Heterogeneity: $l^2 = 81\%$, τ^2	47 2060 ² = 0.1705	108 3650 3758 5, <i>p</i> = 0.	66 2182	105 3650 3755		0.46 0.87 0.86 0.67	[0.26; 0.79] [0.79; 0.96] [0.78; 0.94] [0.01; 38.66]	3.7% 92.2% 95.8%	24.6% 38.0% 62.6%	
Type = mixed Shah 2021 Kishk 2018 Common effect model Random effects model Heterogeneity: $J^2 = 52\%$, τ^2	96 37 ² = 0.2614	206 85 291 , p = 0.	55 7 15	131 11 142		1.21 0.44 1.08 0.88	[0.78; 1.88] [0.12; 1.62] [0.71; 1.64] [0.00; 325.18]	3.5% 0.7% 4.2%	28.2% 9.2% 37.4%	
Type = VV Ucar 2023		24		26				0.0%	0.0%	
Common effect model Random effects model		4073		3923		0.87 0.76	[0.79; 0.95] [0.37; 1.59]	100.0%	100.0%	
Heterogeneity: $I^2 = 65\%$, $\tau^2 = 0.1372$, $p = 0.04$ Test for subgroup differences (common effect): $\chi_1^2 = 1.16$, df = 1 ($p = 0.28$) Test for subgroup differences (random effects): $\chi_1^2 = 0.25$, df = 1 ($p = 0.62$)										

Figure 2s. Forest plot of 30-day mortality by subdividing the studies by the type of cannulation. The fixed-effect model exhibited an OR of 0.87 (95%CI 0.79 – 0.95); the random-effects model showed an OR of 0.76 (95%CI 0.37 – 1.59). Since the confidence interval crosses the unit, the difference was not statistically significant. We considered only the random-effect model since the high between-study inconsistency found (64.6%).

	Experim	nental	Co	ontrol				Weight	Weight
Study	Events	Total	Events	Total	Odds Ratio	OR	95%-CI	(common)	(random)
Cannulation_technique	e = ns								
Tagami 2016	47	108	66	105		0.46	[0.26; 0.79]	3.7%	24.6%
Kondo 2021	2060	3650	2182	3650	±	0.87	[0.79; 0.96]	92.2%	38.0%
Kishk 2018	37	85	7	11		0.44	[0.12; 1.62]	0.7%	9.2%
Common effect model		3843		3766	\ 	0.85	[0.78; 0.93]	96.5%	
Random effects model						0.66	[0.25; 1.78]		71.8%
Heterogeneity: $I^2 = 68\%$, τ^2	² = 0.0876	i, p = 0.	.04						
Cannulation_technique	e = mixe	d							
Shah 2021	96	206	55	131	<u>i</u>	1.21	[0.78; 1.88]	3.5%	28.2%
Cannulation_technique	e = LL								
Ucar 2023	•	24		26				0.0%	0.0%
Common offect model		4072		2022		0.07	10 70. 0 051	400.00/	
Common effects model		4073		3923		0.87		100.0%	
Random effects model						0.76	[0.37, 1.59]	•	100.0%
Heterogeneity: $l^2 = 65\% \tau^2$	$2^{2} = 0.1372$	n = 0	04		02 05 1 2 5				
Test for subgroup difference	ces (com	$\mu = 0$	$x^2 = 2$	2 26 df	= 1 (n = 0.13)				
Test for subgroup difference	ces (rando	m effe	$(x_1) = x_1^2 = x_2^2$	3.46 df	= 1 (n = 0.06)				
rest for subgroup uncrent			$\lambda_{10}, \lambda_{1} = 1$	5.40, ui					

Figure 3s. Analysis of 30-day mortality according to the use of anti-fungal agents for prophylaxis. The fixed-effect model exhibited an OR of 0.87 (95%CI 0.79 – 0.95); the random-effects model showed an OR of 0.76 (95%CI 0.37 – 1.59). Since the confidence interval crosses the unit, the difference was not statistically significant. We considered only the random-effect model since the high between-study inconsistency found (64.6%).

	Experin	nental	C	ontrol			Weight	Weight		
Study	Events	Total	Events	Total	Odds Ratio OF	95%-CI	(common)	(random)		
Anti_fungal = ns										
Tagami 2016	47	108	66	105		6 [0.26; 0.79]	3.7%	24.6%		
Ucar 2023		24		26			0.0%	0.0%		
Anti fungal = no										
Kondo 2021	2060	3650	2182	3650	+ 0.87	[0.79; 0.96]	92.2%	38.0%		
Kishk 2018	37	85	7	11	0.44	[0.12; 1.62]	0.7%	9.2%		
Common effect model		3735		3661	♦ 0.87	<mark>[0.79; 0.95]</mark>	92.9%			
Random effects model					0.85	5 [0.20; 3.70]	-	47.2%		
Heterogeneity: $I^2 = 5\%$, τ^2	= 0.0114,	p = 0.3	31							
Anti_fungal = yes										
Shah 2021	96	206	55	131	1.2	[0.78; 1.88]	3.5%	28.2%		
Common effect model		4073		3923	0.87	[0.79; 0.95]	100.0%			
Random effects model						5 [0.37; 1.59]	•	100.0%		
Heterogeneity: $l^2 = 65\%$, $\tau^2 = 0.1372$, $p = 0.04$ Test for subgroup differences (common effect): $\chi_2^2 = 7.43$, df = 2 ($p = 0.02$)										

Test for subgroup differences (random effects): $\chi_2^2 = 7.37$, df = 2 (p = 0.03)

Forest 4s. Forest plot of nosocomial infections rate by subdividing the studies by the type of ECMO. The fixed-effect model exhibited an OR of 0.81 (95%Cl 0.71 – 0.92); the random-effects model showed an OR of 0.70 (95%Cl 0.31 – 1.58). We considered only the fixed-effect model since the quite low between-study inconsistency found (35.9%).

Study	Experin Events	nental Total	Co Events	ontrol Total	Odds Ratio	OR	95%-CI	Weight (common)	Weight (random)	
Type = ns Tagami 2016 Kondo 2021	471	108 3650	559	105 3650		0.82	[0.72; 0.94]	0.0% 92.3%	0.0% 46.8%	
Shah 2021 Kishk 2018 Common effect model Random effects model Heterogeneity: $I^2 = 6\%$, τ^2	36 31 = 0.0158,	206 85 291 <i>p</i> = 0.3	23 6	131 11 142		0.99 0.48 0.88 0.86	[0.56; 1.77] [0.13; 1.70] [0.52; 1.48] [0.02; 33.38]	4.4% 1.3% 5.7%	29.2% 11.6% - 40.9%	
Type = VV Ucar 2023	11	24	20	26		0.25	[0.08; 0.86]	2.0%	12.4%	
Common effect model Random effects model		4073		3923		0.81 0.70	[0.71; 0.92] [0.32; 1.57]	100.0%	100.0%	
Heterogeneity: $I^2 = 36\%$, $\tau^2 = 0.1321$, $p = 0.20$ Test for subgroup differences (common effect): $\chi_2^2 = 3.62$, df = 2 ($p = 0.16$) 10										

Test for subgroup differences (random effects): χ_2^2 = 3.58, df = 2 (*p* = 0.17)

Forest 5s. Forest plot of nosocomial infections rate by subdividing the studies by the type of cannulation. The fixed-effect model exhibited an OR of 0.81 (95%Cl 0.71 – 0.92); the random-effects model showed an OR of 0.70 (95%Cl 0.31 – 1.58). We considered only the fixed-effect model since the quite low between-study inconsistency found (35.9%).

Study	Experin Events	nental Total	Co Events	ontrol Total	Odds Ratio	OR	95%-CI	Weight (common)	Weight (random)	
Cannulation_technique Tagami 2016 Kondo 2021 Kishk 2018 Common effect model Random effects model Heterogeneity: $l^2 = 0\%$, τ^2	e = ns 471 31 = 0, p = 0	108 3650 85 3843 .41	559 6	105 3650 11 3766		0.82 0.48 0.81 0.81	[0.72; 0.94] [0.13; 1.70] [0.71; 0.93] [0.40; 1.65]	0.0% 92.3% 1.3% 93.6%	0.0% 46.8% 11.6% 58.4%	
Cannulation_technique Shah 2021	e = mixe 36	d 206	23	131		0.99	[0.56; 1.77]	4.4%	29.2%	
Cannulation_technique Ucar 2023	e = LL 11	24	20	26		0.25	[0.08; 0.86]	2.0%	12.4%	
Common effect model Random effects model		4073		3923		0.81 0.70	[0.71; 0.92] [0.32; 1.57]	100.0%	100.0%	
Heterogeneity: $l^2 = 36\%$, $\tau^2 = 0.1321$, $p = 0.20$ Test for subgroup differences (common effect): $\chi_2^2 = 3.99$, df = 2 ($p = 0.14$) Test for subgroup differences (random effects): $\chi_2^2 = 3.99$, df = 2 ($p = 0.14$)										

Figure 6s. Analysis of nosocomial infections rate according to the use of anti-fungal agents for prophylaxis. The fixed-effect model exhibited an OR of 0.81 (95%CI 0.71 – 0.92); the random-effects model showed an OR of 0.70 (95%CI 0.31 – 1.58). We considered only the fixed-effect model since the quite low between-study inconsistency found (35.9%).

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Study	Events	Total	Events	Total	Odds Ratio	OR	95%-CI	(common)	(random)
Anti_fungal = ns									
Tagami 2016		108		105				0.0%	0.0%
Ucar 2023	11	24	20	26).25	[0.08; 0.86]	2.0%	12.4%
Anti fungal = no									
Kondo 2021	471	3650	559	3650	÷ (0.82	[0.72; 0.94]	92.3%	46.8%
Kishk 2018	31	85	6	11	(0.48	[0.13; 1.70]	1.3%	11.6%
Common effect model		3735		3661	•).81	[0.71; 0.93]	93.6%	
Random effects model						0.81	[0.40; 1.65]		58.4%
Heterogeneity: $I^2 = 0\%$, τ^2	= 0, <i>p</i> = 0	.41							
Anti_fungal = yes									
Shah 2021	36	206	23	131		0.99	[0.56; 1.77]	4.4%	29.2%
Common effect model Random effects model		4073		3923).81).70	[0.71; 0.92] [0.32; 1.57]	100.0%	100.0%
Heterogeneity: $I^2 = 36\%$. τ^2	² = 0.1321	p = 0	.20		0.1 0.5 1 2 10				
Test for subgroup difference	ces (comn	non effe	ect): $\chi_{2}^{2} = 3$	3.99, df	= 2 (p = 0.14)				
Test for subgroup difference	es (rando	om effe	ots): $\chi_2^2 = 3$	3.99, df	= 2(p = 0.14)				