

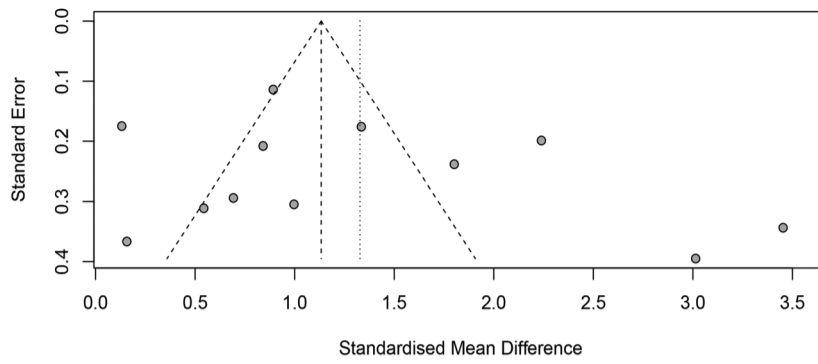
Table S1 Literature search strategy

Search number	Query	Results
PubMed		
#1	"Hyaline Membrane Disease"[tiab] OR "Hyaline Membrane Disease"[mh] OR "neonatal surfactant deficiency"[tiab] OR "surfactant deficiency disease"[tiab] OR "surfactant deficiency disorder"[tiab] OR "surfactant deficiency syndrome"[tiab]	3217
#2	"shock lung"[tiab] OR "lung shock"[tiab] OR ARDS[tiab] OR "respiratory distress syndrome"[tiab] OR "respiration distress syndrome"[tiab] OR "Respiratory Distress Syndrome"[MH]	58390
#3	"Respiratory Depression"[tiab] OR "Ventilatory Depression"[tiab] OR "respiratory failure"[tiab] OR "Respiratory Insufficiency"[MH]	99353
#4	"acute lung injury"[tiab] OR ALI[tiab] OR "acute lung injury" [mh]	8048
#5	thrombomodulin[tiab] OR thrombomodulin[mh]	5347
#6	#1 OR #2 OR #3 OR #4	156893
#7	#6 AND #7	121
Cochrane		
#1	MeSH descriptor: [Thrombomodulin] explode all trees	110
#2	thrombomodulin:ti,ab,kw	396
#3	#1 OR #2	396
#4	MeSH descriptor: [Hyaline Membrane Disease] explode all trees	100
#5	(Hyaline Membrane Disease:ti,ab,kw) OR (Hyaline Membrane Disease*:ti,ab,kw) OR (neonatal surfactant deficiency:ti,ab,kw) OR (surfactant deficiency disease*:ti,ab,kw) OR (surfactant deficiency disorder* :ti,ab,kw) OR (surfactant deficiency syndrome*:ti,ab,kw)	349
#6	#4 OR #5	349
#7	MeSH descriptor: [Respiratory Distress Syndrome] explode all trees	2785
#8	(shock lung:ti,ab,kw) OR (lung shock:ti,ab,kw) OR ARDS:ti,ab,kw OR (respiratory distress syndrome*:ti,ab,kw) OR (respiration distress syndrome*:ti,ab,kw)	8462
#9	#7 OR #8	8553
#10	MeSH descriptor: [Respiratory Insufficiency] explode all trees	3132
#11	(Respiratory Depression:ti,ab,kw) OR (Ventilatory Depression:ti,ab,kw) OR (respiratory failure*:ti,ab,kw)	18922
#12	#10 OR #11	20741
#13	MeSH descriptor: [Acute Lung Injury] explode all trees	587
#14	(acute lung injury:ti,ab,kw) OR ALI:ti,ab,kw	8986
#15	#13 OR #14	8986
#16	#6 OR #9 OR #12 OR #15	33274
#17	#3 AND #16	39
Embase		
#1	'respiratory failure'/exp OR 'lung insufficiency'/exp OR 'respiration deficiency':ab,ti OR 'respiration disturbance':ab,ti OR 'respiration failure*':ab,ti OR 'respiration insufficiency':ab,ti OR 'respiratory deficiency':ab,ti OR 'respiratory disturbance':ab,ti OR 'respiratory dysfunction':ab,ti OR 'respiratory insufficiency':ab,ti OR 'respiratory tract insufficiency':ab,ti OR 'lung failure':ab,ti OR 'pulmonary failure':ab,ti OR 'pulmonary insufficiency':ab,ti	135778
#2	'respiratory distress syndrome'/exp OR 'breathing distress syndrome*':ab,ti OR 'lung distress syndrome*':ab,ti OR 'pulmonary distress syndrome*':ab,ti OR 'respiration distress syndrome*':ab,ti OR 'respiratory distress syndrome*':ab,ti OR 'ards':ab,ti OR 'lung shock':ab,ti OR 'shock lung':ab,ti OR 'lung failure':ab,ti OR 'pulmonary insufficiency':ab,ti	110977
#3	'acute lung injury'/exp OR 'acute lung injury':ab,ti OR 'ali':ab,ti	33800
#4	'hyaline membrane disease'/exp OR 'hyalin membrane disease*':ab,ti OR 'hyalin membrane syndrome*':ab,ti OR 'hyaline membrane pneumonia':ab,ti OR 'neonatal surfactant deficiency':ab,ti OR 'surfactant deficiency disease*':ab,ti OR 'surfactant deficiency disorder*':ab,ti OR 'surfactant deficiency syndrome*':ab,ti	4927
#5	'thrombomodulin'/exp OR thrombomodulin:ab,ti	4914
#6	#1 OR #2 OR #3 OR #4	242963
#7	#5 AND #6	338
Web of science		
#1	TS=(thrombomodulin)	6847
#2	TS=(Hyaline Membrane Disease*) OR TS=(neonatal surfactant deficiency) OR TS=(surfactant deficiency disease*) OR TS=(surfactant deficiency disorder* ) OR TS=(surfactant deficiency syndrome*)	3090
#3	TS=(shock Lung) OR TS=(lung shock) OR TS=ARDS OR TS=(respiratory distress syndrome*)	66415
#4	TS=(Respiratory Insufficiency) OR TS=(Respiratory Depression) OR TS=(Ventilatory Depression) OR TS=(respiratory failure*)	82935
#5	TS=(acute lung injury) OR TS=ALI	49801
#6	#5 OR #4 OR #3 OR #2	167897
#7	#6 AND #1	224

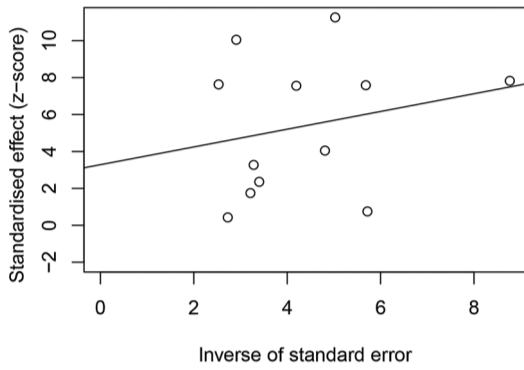
Table S1 (continued)

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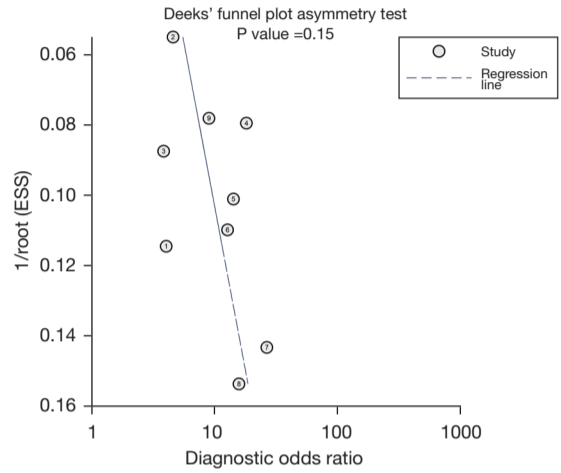
Search number	Query	Results
WanFang database		
#1	AB= 血栓调节蛋白 OR TI= 血栓调节蛋白	1678
#2	AB= 透明膜病 OR TI= 透明膜病 AB= 表面活性物质缺陷 OR TI= 表面活性物质缺陷 OR AB= 表面活性物质缺乏 OR TI= 表面活性物质缺乏	2092
#3	AB= 休克肺 OR TI= 休克肺 OR AB= 肺休克 OR TI= 肺休克 OR AB= 呼吸窘迫综合征 OR TI= 呼吸窘迫综合征	39777
#4	AB= 呼吸功能不全 OR TI= 呼吸功能不全 OR AB= 呼吸抑制 OR TI= 呼吸抑制 OR AB= 通气抑制 OR TI= 通气抑制 OR AB= 呼吸衰竭 OR TI= 呼吸衰竭	73087
#5	AB= 急性肺损伤 OR TI= 急性肺损伤	13864
#6	#5 OR #4 OR #3 OR #2	121674
#7	#6 AND #1	54
VIP database		
#1	AB= 血栓调节蛋白 OR TI= 血栓调节蛋白	1371
#2	R= 透明膜病 OR T= 透明膜病 OR R= 表面活性物质缺陷 OR T= 表面活性物质缺陷 OR R= 表面活性物质缺乏 OR T= 表面活性物质缺乏	1990
#3	R= 休克肺 OR T= 休克肺 OR R= 肺休克 OR T= 肺休克 OR R= 呼吸窘迫综合征 OR T= 呼吸窘迫综合征	22790
#4	R= 呼吸功能不全 OR T= 呼吸功能不全 OR R= 呼吸抑制 OR T= 呼吸抑制 OR R= 通气抑制 OR T= 通气抑制 OR R= 呼吸衰竭 OR T= 呼吸衰竭	60769
#5	R= 急性肺损伤 OR T= 急性肺损伤	11518
#6	#5 OR #4 OR #3 OR #2	92145
#7	#6 AND #1	41
CNKI database		
#1	AB= 血栓调节蛋白 OR TI= 血栓调节蛋白	1687
#2	AB= 透明膜病 OR TI= 透明膜病 AB= 表面活性物质缺陷 OR TI= 表面活性物质缺陷 OR AB= 表面活性物质缺乏 OR TI= 表面活性物质缺乏	2091
#3	AB= 休克肺 OR TI= 休克肺 OR AB= 肺休克 OR TI= 肺休克 OR AB= 呼吸窘迫综合征 OR TI= 呼吸窘迫综合征	23435
#4	AB= 呼吸功能不全 OR TI= 呼吸功能不全 OR AB= 呼吸抑制 OR TI= 呼吸抑制 OR AB= 通气抑制 OR TI= 通气抑制 OR AB= 呼吸衰竭 OR TI= 呼吸衰竭	60312
#5	AB= 急性肺损伤 OR TI= 急性肺损伤	12855
#6	#5 OR #4 OR #3 OR #2	93607
#7	#6 AND #1	49
Chinese Biomedical Literature database		
#1	血栓调节蛋白 [ 标题 ] OR 血栓调节蛋白 [ 摘要 ]	1229
#2	透明膜病 [ 摘要 ] OR 透明膜病 [ 标题 ] 表面活性物质缺陷 [ 摘要 ] OR 表面活性物质缺陷 [ 标题 ] OR 表面活性物质缺乏 [ 摘要 ] OR 表面活性物质缺乏 [ 标题 ]	1655
#3	休克肺 [ 摘要 ] OR 休克肺 [ 标题 ] OR 肺休克 [ 摘要 ] OR 肺休克 [ 标题 ] OR 呼吸窘迫综合征 [ 摘要 ] OR 呼吸窘迫综合征 [ 标题 ]	19618
#4	呼吸功能不全 [ 摘要 ] OR 呼吸功能不全 [ 标题 ] OR 呼吸抑制 [ 摘要 ] OR 呼吸抑制 [ 标题 ] OR 通气抑制 [ 摘要 ] OR 通气抑制 [ 标题 ] OR 呼吸衰竭 [ 摘要 ] OR 呼吸衰竭 [ 标题 ]	49668
#5	急性肺损伤 [ 摘要 ] OR 急性肺损伤 [ 标题 ]	9101
#6	#5 OR #4 OR #3 OR #2	68129
#7	#6 AND #1	25



**Figure S1** The funnel plot of publication bias for SMD (gray dots represent the SMD of studies). SMD, standardised mean difference.



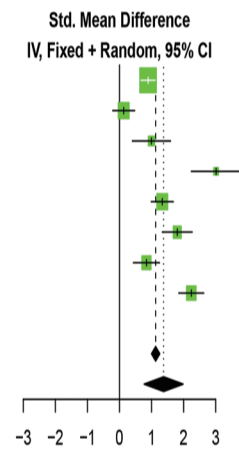
**Figure S2** Effect plot of the Egger test (white dots represent the inverse of standard error of studies).



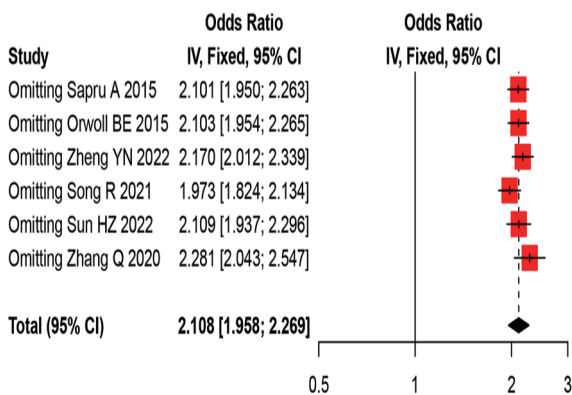
**Figure S3** The funnel plot of publication bias for predictive value. ESS, effective sample sizes.

Study	Non-survivors			Survivors			Weight (common)	Weight (random)	Std. Mean Difference IV, Fixed + Random, 95% CI
	Mean	SD	Total	Mean	SD	Total			
Sapru A 2015	147.000	91.0000	109	89.000	54.0000	340	34.2%	13.2%	0.892 [0.669; 1.116]
Orwoll BE 2015	100.000	63.7000	39	92.000	60.0000	204	14.5%	12.9%	0.132 [-0.211; 0.474]
McClintock D 2008	5.870	3.7400	21	3.230	1.2900	29	4.8%	11.9%	0.997 [0.399; 1.594]
Gando S 2004	16.500	4.3000	26	7.300	1.1000	31	2.8%	11.1%	3.014 [2.240; 3.788]
Zheng YN 2022	113.010	21.5400	72	90.670	11.1900	88	14.4%	12.9%	1.335 [0.990; 1.680]
Song R 2021	142.180	35.1500	39	90.150	24.0900	66	7.8%	12.5%	1.801 [1.334; 2.269]
Sun HZ 2022	122.340	30.5900	44	101.050	20.1200	59	10.3%	12.7%	0.841 [0.434; 1.249]
Zhang Q 2020	141.000	33.0000	70	89.000	12.0000	99	11.2%	12.8%	2.239 [1.849; 2.629]
<b>Total (common effect, 95% CI)</b>			<b>420</b>			<b>916</b>	<b>100.0%</b>	--	<b>1.128 [0.997; 1.258]</b>
<b>Total (random effect, 95% CI)</b>							--	<b>100.0%</b>	<b>1.377 [0.768; 1.986]</b>

Heterogeneity: Tau<sup>2</sup> = 0.7166; Chi<sup>2</sup> = 102.20, df = 7 (P < 0.01); I<sup>2</sup> = 93%



**Figure S4** Forest plot for the association between sTM and ARDS mortality without noncohort studies. sTM, soluble thrombomodulin; CI, confidence interval; OR, odds ratio; ARDS, acute respiratory distress syndrome.



**Figure S5** Forest plot for the sensitivity analysis of the association between sTM and ARDS mortality. sTM, soluble thrombomodulin; CI, confidence interval; OR, odds ratio; ARDS, acute respiratory distress syndrome.