

CQ 17-2 ICU-AW 予防に神経筋電気刺激を行うか？

検索データベース

- MEDLINE (PubMed/Ovid)
- CENTRAL
- 医学中央雑誌
- その他 ()

検索式とヒット数

PubMed search strategy (検索日 2019年4月21日)

#1	(Sepsis[Mesh] OR "Shock, Septic"[Mesh] OR sepsis [tiab] OR (septic[tiab] AND shock[tiab]))	175149
#2	"Systemic inflammatory Response Syndrome"[mh] OR "systemic inflammatory response syndrome"[tiab] OR SIRS[tiab]	123692
#3	"Multiple Organ Failure"[mh] OR "organ failure"[tiab] OR "organ dysfunction"[tiab]	31431
#4	("Critical illness"[mh] OR "Critical Care" [mh] OR "Intensive Care Units"[mh] OR stressed [tiab] OR "critically ill"[tiab] OR "critical care"[tiab] OR "intensive care"[tiab])	262187
#5	"Electric Stimulation"[mh] OR "Electric Stimulation Therapy"[mh] OR "electrical muscle stimulation"[tiab] OR "neuromuscular electrical stimulation"[tiab] OR "electrical neuromuscular stimulation"[tiab] OR "electric stimulation"[tiab] OR "electric stimulation therapy"[tiab]	199243
#6	(randomized controlled trial[pt] OR controlled clinical trial[pt] OR randomized[tiab] OR placebo[tiab] OR drug therapy[sh] OR randomly[tiab] OR trial[tiab] OR groups[tiab] NOT (animals [mh] NOT humans [mh]))	3884262
#7	(#1 OR #2 OR #3 OR #4) AND #5 AND #6	294

CENTRAL search strategy (検索日 2019年4月24日)

#1	MeSH descriptor: [Sepsis] explode all trees	3998
#2	MeSH descriptor: [Shock, Septic] explode all trees	771
#3	(sepsis):ti,ab,kw	10248

#4	(septic):ti,ab,kw	4108
#5	(shock):ti,ab,kw	9214
#6	#4AND#5	2738
#7	#1OR#2OR#3OR#6	12972
#8	MeSH descriptor: [Systemic Inflammatory Response Syndrome] explode all tree	4328
#9	(systemic inflammatory response syndrome):ti,ab,kw	1020
#10	(SIRS):ti,ab,kw	676
#11	#8OR#9OR#10	5437
#12	MeSH descriptor: [Multiple Organ Failure] explode all trees	384
#13	(organ failure):ti,ab,kw	5601
#14	(organ dysfunction):ti,ab,kw	2529
#15	#12OR#13OR#14	7056
#16	MeSH descriptor: [Critical Illness] explode all trees	1845
#17	MeSH descriptor: [Critical Care] explode all trees	1918
#18	MeSH descriptor: [Intensive Care Units] explode all trees	3260
#19	(stressed):ti,ab,kw	958
#20	(critically ill):ti,ab,kw	5980
#21	(critical care):ti,ab,kw	8789
#22	(intensive care):ti,ab,kw	25082
#23	#16OR#17OR#18OR#19OR#20OR#21OR#22	33471
#24	MeSH descriptor: [Electric Stimulation] explode all trees	1880
#25	MeSH descriptor: [Electric Stimulation Therapy] explode all trees	6302
#26	(electrical muscle stimulation):ti,ab,kw	2179
#27	(neuromuscular electrical stimulation):ti,ab,kw	930
#28	("electrical neuromuscular stimulation"):ti,ab,kw	21
#29	("electric stimulation"):ti,ab,kw	3745
#30	("electric stimulation therapy"):ti,ab,kw	1754
#31	#24OR#25OR#26OR#27OR#28OR#29OR#30	9986
#32	(#7OR#11OR#15OR#23)AND#31	259

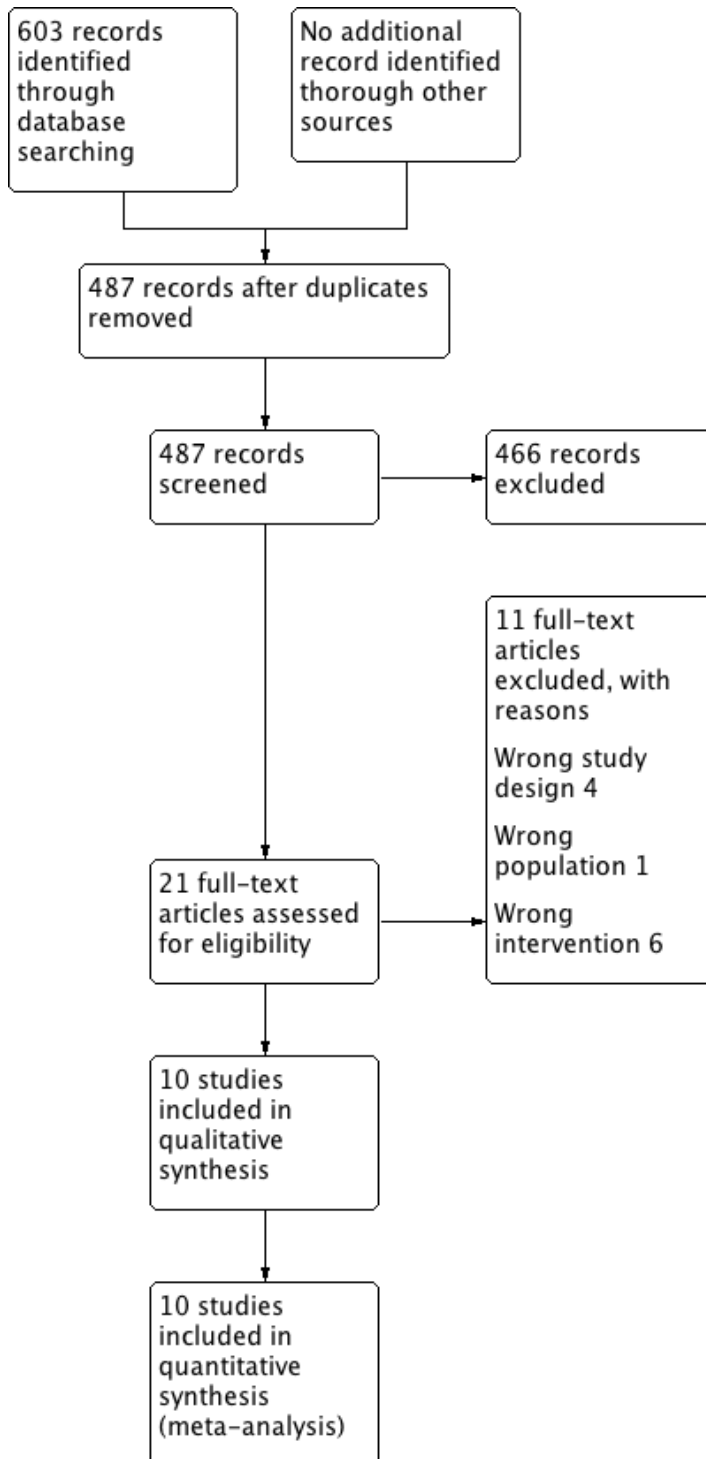
*検索結果に Cochrane Reviews が 10 件あり、Trials 自体の結果は 249 件

医学中央雑誌 search strategy (検索日 2019 年 4 月 22 日)








#1	((敗血症/TH or 敗血症/TA)) and (PT=会議録除く)	22405
#2	((全身性炎症性反応症候群/TH or 全身性炎症性反応症候群/TA or SIRS/TA)) and (PT=会議録除く)	17555

#3	((多臓器不全/TH or 多臓器不全/TA or MOF/TA)) and (PT=会議録除く)	7425
#4	((危篤/TH or 危篤/TA)) and (PT=会議録除く)	150
#5	((クリティカルケア/TH or クリティカルケア/TA)) and (PT=会議録除く)	6056
#6	((ICU/TH or ICU/TA)) and (PT=会議録除く)	45475
#7	#1 OR #2 OR #3 OR #4 OR #5 OR #6	77100
#8	((経皮的電気刺激/TH or 経皮的電気刺激/TA)) and (PT=会議録除く)	1418
#9	((電気刺激療法/TH or 電気刺激療法/TA)) and (PT=会議録除く)	18065
#10	(電気筋刺激/TA) and (PT=会議録除く)	3
#11	(神経筋電気刺激/TA) and (PT=会議録除く)	102
#12	#8 OR #9 OR #10 OR #11	18136
#13	ランダム化比較試験/TH or 準ランダム化比較試験/TH or ランダム化/AL or 無作為化/AL or 比較試験/AL or 臨床試験/AL or プラセボ/AL or 対照 /AL or コントロール/AL or 臨床研究/AL	301704
#14	#7 AND #12 AND #13	60

PRISMA フロー図



Risk of Bias サマリー (Primary outcome: ICU-AW の発症)

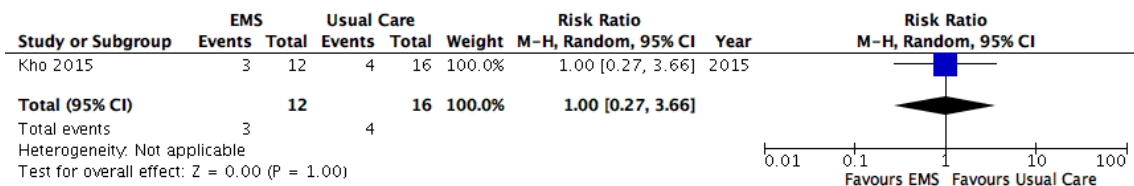
Kho 2015							
	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias

Risk of Bias サマリー (全体)

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Abu-Khaber 2013	●	?	●	●	●	?	●
Akar 2017	?	?	●	●	●	?	●
Gerovasili 2009	●	?	●	●	●	●	●
Gruther 2010							
Kho 2015	●	●	●	●	●	●	●
Koutsoumpa 2018	?	?	●	●	●	?	●
Ojima 2017	?	?	●	●	●	●	●
Routsi 2010	●	?	●	●	●	●	●
Santos 2018	●	●	●	●	●	?	●
Shen 2017	?	?	●	●	●	●	●

フォレストプロット

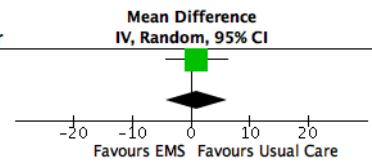
アウトカム① ICU 退室時の ICU-AW 発症率



アウトカム② ICU 退室時の Medical research council (MRC)

Study or Subgroup	EMS			Usual Care			Weight	Mean Difference IV, Random, 95% CI	Year
	Mean	SD	Total	Mean	SD	Total			
Kho 2015	49	6	12	48	8	16	100.0%	1.00 [-4.19, 6.19]	2015
Total (95% CI)			12			16	100.0%	1.00 [-4.19, 6.19]	

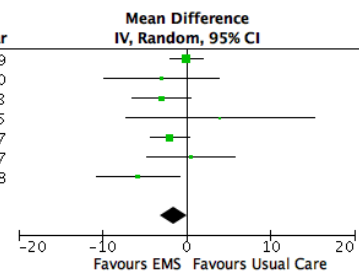
Heterogeneity: Not applicable
Test for overall effect: $Z = 0.38$ ($P = 0.71$)



アウトカム③ 人工呼吸器装着日数(*days of intubation)

Study or Subgroup	EMS			Usual Care			Weight	Mean Difference IV, Random, 95% CI	Year
	Mean	SD	Total	Mean	SD	Total			
Gerovasili 2009	9	2	13	9	3	12	33.1%	0.00 [-2.02, 2.02]	2009
Routsi 2010	7	9.75	24	10	15.25	28	4.9%	-3.00 [-9.86, 3.86]	2010
Abu-Khabber 2013	9.01	8.01	40	11.97	8.07	40	15.6%	-2.96 [-6.48, 0.56]	2013
Kho 2015	20	18	16	16	15	18	1.9%	4.00 [-7.22, 15.22]	2015
Akar 2017	2	0.5	10	4	3.75	10	27.8%	-2.00 [-4.34, 0.34]	2017
Shen 2017	6.5	3.7	18	6	6.67	7	8.0%	0.50 [-4.73, 5.73]	2017
Santos 2018	9	7	11	14.8	5.4	15	8.8%	-5.80 [-10.76, -0.84]	2018
Total (95% CI)			132			130	100.0%	-1.56 [-3.12, 0.01]	

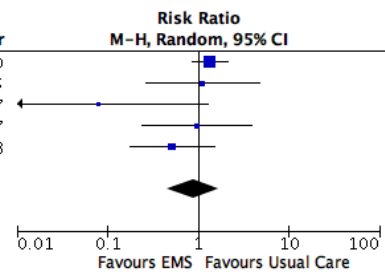
Heterogeneity: $\tau^2 = 0.87$; $\text{Chi}^2 = 7.49$, $\text{df} = 6$ ($P = 0.28$); $I^2 = 20\%$
Test for overall effect: $Z = 1.95$ ($P = 0.05$)



アウトカム④ 院内死亡

Study or Subgroup	EMS		Usual Care		Weight	Risk Ratio M-H, Random, 95% CI	Year
	Events	Total	Events	Total			
Routsi 2010	28	68	22	72	43.0%	1.35 [0.86, 2.11]	2010
Kho 2015	3	16	3	18	14.6%	1.13 [0.26, 4.80]	2015
Ojima 2017	0	14	5	12	4.9%	0.08 [0.00, 1.29]	2017
Shen 2017	5	18	2	7	15.6%	0.97 [0.24, 3.90]	2017
Santos 2018	3	11	8	15	21.8%	0.51 [0.17, 1.50]	2018
Total (95% CI)		127		124	100.0%	0.88 [0.46, 1.68]	

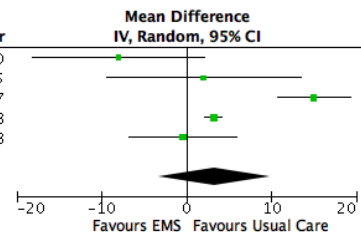
Total events: EMS 39, Usual Care 40
Heterogeneity: $\tau^2 = 0.20$; $\text{Chi}^2 = 6.53$, $\text{df} = 4$ ($P = 0.16$); $I^2 = 39\%$
Test for overall effect: $Z = 0.39$ ($P = 0.69$)



アウトカム⑤ ICU 滞在期間

Study or Subgroup	EMS			Usual Care			Weight	Mean Difference IV, Random, 95% CI	Year
	Mean	SD	Total	Mean	SD	Total			
Routsi 2010	14	14.5	24	22	22.5	28	16.0%	-8.00 [-18.15, 2.15]	2010
Kho 2015	22	17	16	20	17	18	14.5%	2.00 [-9.45, 13.45]	2015
Akar 2017	20	6.5	10	5	2.5	10	23.2%	15.00 [10.68, 19.32]	2017
Koutsoumpa 2018	30.47	2.24	38	27.28	2.52	42	25.6%	3.19 [2.15, 4.23]	2018
Santos 2018	13.8	6.9	11	14.2	9.7	15	20.7%	-0.40 [-6.78, 5.98]	2018
Total (95% CI)			99			113	100.0%	3.23 [-3.35, 9.81]	

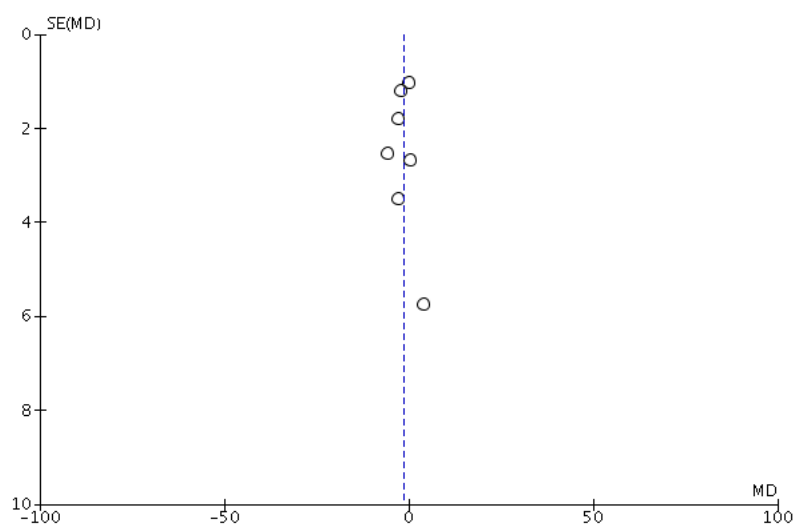
Heterogeneity: $\tau^2 = 43.72$; $\text{Chi}^2 = 33.99$, $\text{df} = 4$ ($P < 0.00001$); $I^2 = 88\%$
Test for overall effect: $Z = 0.96$ ($P = 0.34$)



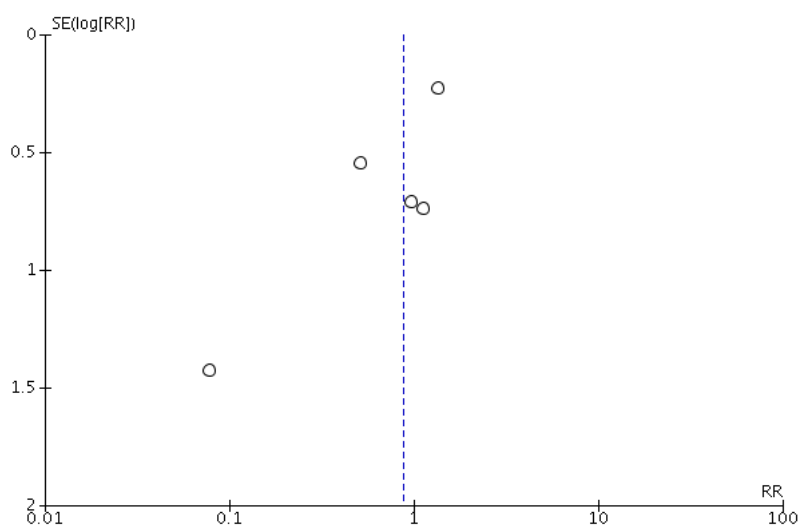
ファンネルプロット

複数 RCT がある Outcome のみ

アウトカム③ 人工呼吸器装着日数(*days of intubation)



アウトカム④ 院内死亡



アウトカム⑤ ICU 滞在期間

