

Supplementary Online Content

Bibas L, Peretz-Larochelle M, Adhikari NK, et al. Association of surrogate decision-making interventions for critically ill adults with patient, family, and resource use outcomes: a systematic review and meta-analysis. *JAMA Netw Open*. 2019;2(7):e197229. doi:10.1001/jamanetworkopen.2019.7229

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eReferences.

This supplementary material has been provided by the authors to give readers additional information about their work.

eTable1. Medline (Ovid) search strategy

#	Searches
1	exp Advance Directives/ and Decision Making/
2	Advance Care Planning/
3	Living Wills/
4	Proxy/
5	Third-Party Consent/
6	Presumed Consent/
7	Patient Preference/ and Decision Making/
8	exp Family/ and Decision Making/
9	Critically ill/ and Decision Making/
10	Terminally Ill/ and Decision Making/
11	Caregivers/ and Decision Making/
12	Legal Guardians/ and Decision Making/
13	Moral Obligation/ and Decision Making/
14	Personal Satisfaction/ and Decision Making/
15	Advance? Care Planning.mp.
16	Advance? Care Directive?.mp.
17	(alternate? adj3 (decision-mak* or consent*)).mp.
18	(alternative?? adj3 (decision-mak* or consent*)).mp.
19	((carer? or caregiver? or care-giver?) adj3 (decision-mak* or consent*)).mp.
20	((family or families) adj3 (decision-mak* or consent*)).mp.
21	(guardian* adj3 (decision-mak* or consent*)).mp.
22	((proxy or proxies) adj3 (decision-mak* or consent*)).mp.
23	(relative? adj3 (decision-mak* or consent*)).mp.
24	(spous??? adj3 (decision-mak* or consent*)).mp.
25	(substitute? adj3 (decision-mak* or consent*)).mp.
26	(surrogate? adj3 (decision-mak* or consent*)).mp.
27	(third party?? adj2 (decision-mak* or consent*)).mp.
28	((family or families or carer? or caregiver? or care-giver? or guardian* or proxy or proxies or representative? or spous???) adj3 (share or shares or shared or sharing) adj2 (decision-mak* or consent?)).mp.
29	(consent adj2 board?).mp.
30	decisional surrogate?.mp.
31	(decision-making adj2 representative?).mp.
32	(health* adj2 (proxy or proxies)).mp.
33	("living will" or "living wills").mp.
34	substitute health-care decision*.mp.
35	substitute healthcare decision*.mp.

36	(surrogacy and (decision* adj3 authorit*)).mp.
37	surrogate consenter?.mp.
38	(surrogate and (decision* adj3 authorit*)).mp.
39	third party decision*.mp.
40	"power? of attorney".mp.
41	(patient?? adj1 agent?).mp.
42	(patient? adj2 (proxy or proxies)).mp.
43	(patient?? adj2 (surrogate? or surrogacy)).mp.
44	attorney for personal.mp.
45	attorney-in-fact.mp.
46	public guardian?.mp.
47	public trustee?.mp.
48	or/1-47 [Substitute Decision Makers & related terms]
49	exp randomized controlled trial/ [MeSH]
50	exp randomized controlled trials as topic/ [MeSH]
51	randomized controlled trial.pt.
52	(random* adj10 (study or studies or trial?)).mp,kw.
53	Random Allocation/
54	doubleblind*.mp.
55	Double-Blind Method/
56	((single or double or triple or treble) adj6 (blind* or mask* or conceal* or allocat*)).mp,kw.
57	exp Meta-Analysis/
58	meta-analysis as topic/
59	meta-analysis.pt.
60	(meta-anal* or metanal* or metaanal*).mp,kw.
61	metareview*.mp,kw.
62	meta-review*.mp,kw.
63	(systematic adj4 (review or reviews or overview or overviews)).mp,kw.
64	(umbrella adj3 review?).mp,kw.
65	or/49-64 [RCTs or SRs or MAs]
66	48 and 65 [Substitute Decision Makers + RCTs /SRs/MAs]
67	limit 66 to (english or french)
68	remove duplicates from 67

1 **eTable 2.** Risk of Bias Assessment Using the Cochrane Risk of Bias Tool for Randomized Controlled Trials

First Author & year	Random Sequence Generation	Allocation Concealment	Blinding of participants and researchers	Blinding of outcome assessment	Incomplete outcome data	Selective reporting
Andereck ¹ 2014	Low	Unclear	High	Unclear	Low	High
Azoulay ² 2002	Low	Low	High	Low	Low	Low
Carson ³ 2016	Low	Unclear	High	Low	Unclear	Low
Cheung ⁴ 2010	Low	Low	High	Unclear	High	Low
Connors ⁵ 1995	High	Unclear	High	Low	Low	Low
Curtis ⁶ 2011	Low	Unclear	High	Unclear	Low	Low
Curtis ⁷ 2016	Unclear	Low	High	Unclear	Low	Low
Lautrette ⁸ 2007	Low	Low	High	Low	Low	Low
Schneiderman ⁹ 2000	Unclear	Unclear	High	Unclear	Low	Low
Schneiderman ¹⁰ 2003	Low	Low	High	Low	Low	Low
Torke ¹¹ 2016	Low	Low	High	Unclear	High	Low
White ¹² 2018	Low	Unclear	High	Low	Low	Low
Wilson ¹³ 2015	Low	Low	High	Low	Low	Low

2

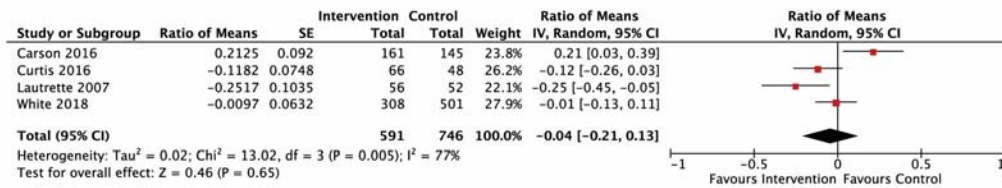
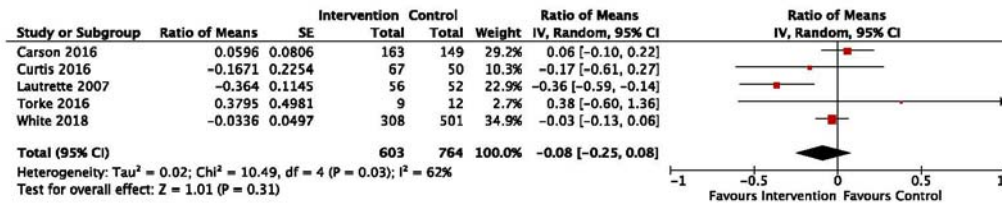
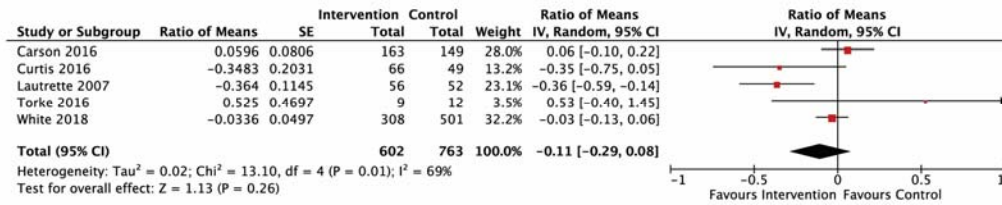
eTable 3: Summary of individual trial results

Category	First Author (year)	Patient-Related	SDM-Related	Resource-Utilization
Healthcare professional	Connors (1995) ⁵	Hospital/6m mortality: ND Composite of ICU LOS, MV or comatose: ND Satisfaction with care: ND Documentation of DNR: ND Discussion about CPR: ND	Satisfaction with care: ND Discussion about CPR: ND	Hospital resources: ND
	Curtis (2011) ⁶	ICU LOS: ND DNR orders: ND WLST: ND	Satisfaction with care: ND Quality of death: ND	Palliative care team consultation: ND
	Curtis (2016) ⁷	ICU/Hospital mortality: ND ICU LOS: ND but shorter amongst decedents (7.7d vs 28.5d) Hospital LOS: Reduced (24.1d v 32.6d) WLST among deceased: ND Time to WLST among deceased: Reduced (7.2d v 16.5d)	Depression: Decreased symptoms at 6 months (ND at 3 months) Anxiety and PTSD at 3 and 6 months: ND	ICU and hospital costs: Decreased, especially among decedents
	Lautrette (2007) ⁸	Mortality: ND ICU LOS: ND WLST: Reduction in MV (27% v 14%), Vasopressors (51% v 30%) but ND in dialysis	Depression, anxiety, PTSD: Reduction at 3 months Conflict between staff and family: ND	NA
	Torke (2016) ¹¹	NA	Depression, anxiety, PTSD at 6-8 weeks: ND Decision conflict/regret: ND	NA
	White (2018) ¹²	In-hospital mortality: Increased Six-month mortality: ND Reduced ICU LOS 6.7d v 7.4d Reduced hospital LOS: 10.4d v 13.5d Independent living: ND	Depression, anxiety, PTSD at 6 months: ND Improved quality of communication with intervention	Mean cost of intervention: \$170 per patient
Ethics	Andereck (2014) ¹	Mortality: ND ICU and hospital LOS: ND Length of MV: ND Artificial nutrition: ND	Quality of care: ND	Cost of hospital stay: ND

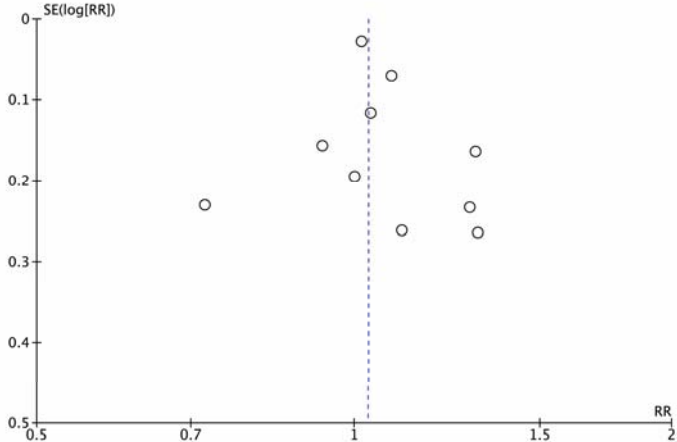
	Schneiderman (2000) ⁹	Mortality: ND CPR/MV/DNR order: ND ICU LOS in all: ND Amongst decedents, reduced ICU LOS (4.2d v 13.2d), MV (3.7d v 11.4d), artificial nutrition (4.1d v 12.0d)	Intervention was regarded favourably	NA
	Schneiderman (2003) ¹⁰	Mortality: ND ICU/Hospital LOS/MV in all: ND Amongst decedents, reduction in hospital LOS (-2.95 d), ICU LOS (-1.44d), MV (-1.7d)	Intervention was deemed helpful	NA
Palliative care	Carson (2016) ³	Hospital and 90d mortality: ND ICU/Hospital LOS: ND Length of MV: ND	PTSD at 3 months: Increased Anxiety/Depression at 3 months: ND Satisfaction: ND Quality of communication: ND Discussion of patient preferences: ND	NA
	Cheung (2010) ⁴	Mortality: ND ICU/Hospital LOS: ND	Satisfaction: ND	Number of medical teams involved: ND
Media	Azoulay (2002) ²	Mortality: ND ICU LOS: ND	Comprehension: Improved Satisfaction: ND Anxiety/Depression at 3-5 days: ND	NA
	Wilson (2015) ¹³	CPR knowledge: improved Resuscitation preferences: ND Documented change in code status: ND Utilization of CPR or MV: ND	Comprehension of CPR and other options: improved	NA

Abbreviations: CPR = cardio-pulmonary resuscitation; d = days; LOS = length of stay; MV = mechanical ventilation; ICU = intensive care unit; NA = not assessed; ND = no difference; WLST = withdrawal of life-sustaining therapies.

eFigure 1. Forest plots for psychological comorbidities in family members, including (A) depression, (B) anxiety, and (C) PTSD.



eFigure 2. Funnel plot for all-cause mortality.



eReferences.

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