

Supplementary Table S1. Credibility assessment details

Outcome	P < 10⁻⁶	p<10⁻³	p<0.05	>1000 cases (or >20,000)	Largest component study reported P < 0.05	95% prediction interval excluded the null	I² < 50%	Evidence of small-study effects	Evidence of excess significance bias	Class
Pre-operative factors										
Atrial fibrillation (Transcatheter Aortic Valve Implantation)	No	No	No	No	No	No	Yes	No	No	V
Age (Transcatheter aortic valve implantation)	No	No	No	No	No	No	Yes	No	No	V
Age (Coronary artery bypass)	No	Yes	Yes	Yes	No	No	No	No	No	III
Age (carotid endarterectomy)	No	Yes	Yes	No	No	No	Yes	No	No	IV
APOE4 (cardiac)	No	No	No	No	Yes	No	Yes	No	No	V
APOE4 (non-cardiac)	No	No	No	No	Yes	No	No	No	No	V
Arrhythmia (coronary artery bypass)	No	No	No	No	No	No	Yes	No	No	V
BMI (coronary artery bypass)	No	No	No	No	No	No	Yes	No	No	V

BMI (Transcatheter aortic valve implantation)	No	No	No	No	No	No	Yes	NE	No	V
Cognition: All tests (coronary artery bypass)	No	No	Yes	No	No	No	Yes	No	No	IV
Cognition: MMSE (coronary artery bypass)	No	No	Yes	No	No	No	Yes	NE	No	IV
Cognitive impairment (coronary artery bypass)	No	No	No	No	No	No	Yes	No	No	V
Cognitive impairment (Transcatheter Aortic Valve Implantation)	No	No	No	No	No	No	Yes	NE	No	V
Contralateral stenosis (carotid endarterectomy)	No	No	No	No	No	No	Yes	No	No	V
C-reactive protein	No	No	No	No	No	No	No	No	No	V
C-reactive protein (hip arthroplasty)	No	Yes	Yes	No	No	No	No	No	No	IV
Depression (coronary artery bypass)	No	No	Yes	No	Yes	No	No	No	No	IV
Depression: All tests (coronary artery bypass)	No	No	No	No	No	No	No	No	No	V
Diabetes	No	No	Yes	No	Yes	No	No	No	NE	IV

Diabetes (Transcatheter Aortic Valve Implantation)	No	No	No	No	No	No	Yes	NE	No	V
Diabetes (carotid endarterectomy)	No	No	No	No	Yes	No	Yes	No	No	V
Diabetes (coronary artery bypass)	No	Yes	Yes	Yes	Yes	No	Yes	No	No	III
Dyslipidemia (carotid endarterectomy)	No	No	No	No	No	No	Yes	No	No	V
Dyslipidemia (coronary artery bypass)	No	No	No	No	No	No	Yes	No	No	V
Education	No	Yes	Yes	No	Yes	No	Yes	No	No	IV
Education (coronary artery bypass)	No	Yes	Yes	No	Yes	No	Yes	No	No	IV
Euroscore (coronary artery bypass)	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	IV
Hypercholesterolemia	No	No	No	No	No	No	Yes	No	No	V
Hypertension	No	No	No	Yes	No	No	Yes	No	NE	V
Hypertension (carotid endarterectomy)	No	No	No	Yes	No	No	Yes	No	No	V
Hypertension (Transcatheter Aortic Valve Implantation)	No	No	No	No	No	No	Yes	NE	No	V

Hypertension (coronary artery bypass)	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	IV
Interleukin 1 β (hip arthroplasty)	No	No	Yes	No	No	No	Yes	No	No	IV
Interleukin 6	No	Yes	Yes	No	No	No	Yes	No	No	IV
Interleukin 6 (hip arthroplasty)	No	Yes	Yes	No	Yes	No	Yes	No	No	IV
Kidney injury (coronary artery bypass)	No	No	No	No	No	No	No	No	Yes	V
LVEF% (coronary artery bypass)	No	Yes	Yes	No	Yes	No	No	Yes	No	IV
Male sex (Transcatheter Aortic Valve Implantation)	No	No	No	No	No	No	Yes	NE	No	V
Male sex (carotid endarterectomy)	No	No	No	Yes	No	No	Yes	No	No	V
Male sex (coronary artery bypass)	No	No	No	Yes	No	No	Yes	No	No	V
Obesity	No	No	No	No	No	No	No	No	Yes	V
One kg higher body weight (cardiac)	No	No	No	No	No	No	Yes	NE	No	V
Peripheral vascular disease (coronary artery bypass)	No	No	No	No	No	No	No	No	Yes	V
Pre-operative symptoms (carotid endarterectomy)	No	No	No	No	Yes	No	Yes	No	No	IV

Previous MI <90 days (coronary artery bypass)	No	No	No	No	No	No	Yes	No	No	V
Previous MI history (coronary artery bypass)	No	No	No	No	No	No	Yes	No	No	V
Previous stroke, TIA, CVA (coronary artery bypass)	No	Yes	Yes	No	Yes	No	Yes	No	No	IV
s100b	No	No	Yes	No	Yes	No	No	No	No	IV
S100b (hip arthroplasty)	No	Yes	Yes	No	No	No	Yes	No	No	IV
Smoking current/history (coronary artery bypass)	No	No	No	No	No	No	No	No	No	V
Statin use	No	No	No	No	No	No	Yes	No	No	IV
Statin (carotid endarterectomy)	No	Yes	Yes	No	No	No	Yes	No	No	IV
Stroke/TIA (Transcatheter Aortic Valve Implantation)	No	No	No	No	No	No	Yes	NE	No	V
Tumour Necrosis Factor alpha (hip arthroplasty)	No	Yes	Yes	No	No	No	Yes	No	No	IV
Intraoperative factors										
Aortic cross clamping time	No	Yes	Yes	No	No	No	Yes	No	No	IV

(coronary artery bypass)										
CPB time (coronary artery bypass)	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	IV
Cross-clamping duration (carotid endarterectomy)	No	No	Yes	No	No	No	Yes	Yes	No	IV
Cerebral protection device (Transcatheter Aortic Valve Implantation)	No	No	No	No	No	No	Yes	NE	No	V
Hyperperfusion (carotid endarterectomy)	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	IV
Intubation time (coronary artery bypass)	No	No	No	No	No	No	No	No	No	V
Number of grafts (coronary artery bypass)	No	No	Yes	No	No	No	Yes	Yes	No	IV
Selective shunting placement (carotid endarterectomy)	No	No	No	No	No	No	Yes	No	No	V
Surgery duration (coronary artery bypass)	No	Yes	Yes	No	No	No	Yes	No	No	IV
Total microemboli (coronary artery bypass)	No	No	Yes	No	No	No	Yes	No	No	IV
Post-operative factors										

Arrhythmia (coronary artery bypass)	No	No	Yes	No	Yes	No	Yes	No	No	IV
C-reactive protein (hip arthroplasty)	No	No	No	No	No	No	No	No	No	V
Delirium (coronary artery bypass)	No	Yes	Yes	No	Yes	No	Yes	No	Yes	IV
LOS in ICU (coronary artery bypass)	No	No	No	No	No	No	No	No	No	V
Interleukin 6 (hip arthroplasty)	No	No	No	No	No	No	Yes	No	No	V
Interleukin 1 β (hip arthroplasty)	No	No	No	No	No	No	Yes	No	No	V
Stroke (Transcatheter Aortic Valve Implantation)	No	No	No	No	No	No	Yes	No	No	V
S100b (hip arthroplasty)	No	No	No	No	No	No	Yes	No	No	V
Tumour Necrosis Factor alpha (hip arthroplasty)	No	No	Yes	No	Yes	No	Yes	NE	No	IV

Legend: AF = atrial fibrillation, APOE4 = Apolipoprotein E4, BMI = BMI, CPB = cardiopulmonary bypass, CVA= cerebrovascular accident, ICU = intensive care unit, LOS = length of stay, LVEF% = Left ventricular ejection fraction, MI = myocardial infarction, MMSE =Mini Mental State Examination, S100B = S100 calcium-binding protein B, TIA = Transient ischemic attack

Supplementary Table S2. AMSTAR ratings

	AMSTAR Items*																	
Authors / Reference	Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	TOTAL
Aceto et al. ¹	2019	2	1	2	2	2	2	1	2	2	0	2	0	2	1	2	2	25
Cao et al. ²	2014	2	0	2	1	2	2	1	2	0	0	2	0	0	2	2	2	20
Feinkohl et al. ³	2017	2	1	2	1	0	0	1	2	2	0	2	0	0	2	2	2	19
Feinkohl et al. ⁴	2016	2	0	2	1	0	0	0	2	0	0	2	0	0	2	2	2	15
Feinkohl et al. (2) ⁵	2017	2	1	2	1	0	0	1	2	2	0	2	0	0	2	2	2	19
Feinkohl et al. ⁶	2018	2	1	2	1	0	0	1	2	2	0	2	0	0	2	2	2	19
Feinkohl et al. (3) ⁷	2017	2	0	2	1	0	0	1	1	2	0	1	0	0	2	2	2	16
Fu et al. ⁸	2021	2	0	2	1	2	2	1	1	0	0	2	0	0	2	2	2	19
Ghezzi et al. ⁹	2019	2	0	2	1	2	2	1	1	0	0	2	0	0	2	0	2	17
Greaves et al. ¹⁰	2020	2	2	2	1	2	2	2	1	0	0	2	1	2	2	2	2	25
Liu et al. ¹¹	2018	2	0	2	2	2	2	1	1	0	0	2	0	0	2	2	2	20

1. *Scores for each item are between 0 and 2, where one point is awarded if the study had partial inclusion of methods that reduced bias and two points were awarded for full inclusion of methods to reduce risk of bias.
2. For full description of each individual item, access https://amstar.ca/Amstar_Checklist.php

References

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7. Feinkohl I, Winterer G, Spies CD, Pischon T. Cognitive Reserve and the Risk of Postoperative Cognitive Dysfunction. *Deutsches Arzteblatt international* 2017;114:110-7.
8. Fu C, Lin J, Gong G, Zhong W, Chen H, Luo X. Inflammatory markers in postoperative cognitive dysfunction for patients undergoing total hip arthroplasty: a meta-analysis. *Aging clinical and experimental research* 2021:1-12.
9. Ghezzi ES, Ross TJ, Davis D, Psaltis PJ, Loetscher T, Keage HAD. Meta-Analysis of Prevalence and Risk Factors for Cognitive Decline and Improvement After Transcatheter Aortic Valve Implantation. *The American journal of cardiology* 2020;127:105-12.
10. Greaves D, Psaltis PJ, Davis DHJ, et al. Risk Factors for Delirium and Cognitive Decline Following Coronary Artery Bypass Grafting Surgery: A Systematic Review and Meta-Analysis. *Journal of the American Heart Association* 2020;9:e017275.
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