

# **SUPPLEMENTAL MATERIAL**

## Data S1.

### Quality Assessment Tool

#### Critical Appraisal Checklist for Cohort Studies & Studies Reporting Prevalence Data

This checklist and scoring instructions, was developed for the purpose of our meta-analysis using checklists created by the Joanna Briggs Institute <sup>21, 22</sup>.

2 points: Sufficiently fulfilled

1 point: Partially fulfilled or unclear

0 points: Unfulfilled or not reported

	2	1	0
1. Were the study participants and the setting described in detail (i.e., sample size, sex proportion, age, recruitment hospital)?			
2. Were valid and reliable methods used for the identification of the condition (i.e., cognitive decline or delirium)?*			
3. Was the condition measured in a standard, reliable way for all participants (i.e., were the assessors who administered the measures adequately trained)? If there was more than one assessor, were they similar in ability/experience?*			
4. Were appropriate procedures in place to minimise attrition?			
5. Was the follow-up time reported?			
6. Was follow up complete, and if not, were the reasons to loss to follow-up described (i.e., was there a clear and justifiable description of why participants dropped out or were excluded from the analysis)?			
Notes:			

\*For studies that reported data for more than one outcome (i.e., cognitive impairment and delirium) the point scheme was relative to all outcomes. That is, a study would only score 2 on these items if all outcomes/conditions were identified using valid and reliable tests (item 2), in a valid and reliable manner (item 3).

**Overall Appraisal Grade: /12**

## Scoring Instructions

### **1. Were the study participants and the setting described in detail (i.e., sample size, sex proportion, age, recruitment hospital)?**

The study sample should be described in sufficient detail so that other researchers can determine if it is comparable to the population of interest to them. That is, did the researchers provide details on sample size, sex proportion, age and hospital recruited from for either the total sample at baseline, or the sample of participants included in the analyses?

- 2 = All details reported
- 1 = Some details reported
- 0 = No details reported

### **2. Were valid and reliable methods used for the identification of the condition (i.e., cognitive impairment or delirium)?**

Here we are looking for measurement or classification bias. Many health problems are not easily diagnosed or defined and some measures may not be capable of including or excluding appropriate levels or stages of the health problem. If the outcomes were assessed based on existing definitions or diagnostic criteria, then the answer to this question is likely to be yes. If the outcomes were assessed using observer reported, or self-reported scales, the risk of over- or under-reporting is increased, and objectivity is compromised. Importantly, determine if the measurement tools used were validated instruments as this has a significant impact on outcome assessment validity.

Studies that reported only delirium data were assigned 2 points for this item if they used a standardized cognition or delirium assessment, and 1 point if they used a recognized criteria or guidelines (e.g., the Society of Thoracic Surgeons (STS) definition or The Diagnostic and Statistical Manual of Mental Disorders criteria.

- 2 = All measures were standardized and validated
- 1 = Some measures were standardized and validated
- 0 = No measures were standardized and validated

### **3. Was the condition measured in a standard, reliable way for all participants (i.e., were the assessors who administered the measures adequately trained)? If there was more than one assessor, were they similar in ability/experience?**

Were those involved in collecting data trained or educated in the use of the instrument/s? If there was more than one data collector, were they similar in terms of level of education, and clinical or research experience. Overall, was the condition measured in the same way for all participants?

- 2 = The paper states that the assessor or assessors were trained. If the assessors were stated to be psychologists, neuropsychologists or psychometrists it was assumed they were adequately trained.
- 1 = Researchers mention that the tests were administered by assessors/investigators but do not mention their experience or training
- 0 = No clear statement of who conducted the assessments

#### **4. Were appropriate procedures in place to minimize attrition?**

Appropriate measures for minimizing attrition are systematic contact strategies (e.g., contacting participants three times; by letter, phone and email). A procedure would be considered inappropriate if it was not systematic (e.g., letting participants contact them, and therefore relying on their motivation).

If there was only one follow-up time that was <10 days and a strategy for minimizing attrition was not mentioned, the study was still assigned 2 points as the strategy was assumed not to be necessary (i.e., the patients were still in hospital). Also, studies that reported only delirium data were assigned 2 points using this same rationale, as the patients are assumed to still be in hospital during the delirium assessments.

- 2 = Studies that utilized a systematic contact strategy that was explicit and would be thought to lead to greater retention at follow-up, or N/A.
- 1 = Procedure mentioned (e.g., called participants) but not clear if the contact process was thorough
- 0 = No strategy mentioned

#### **5. Was the follow up time reported?**

The time points for follow-up assessments should be clearly stated. Studies with multiple follow-up assessments were assigned 2 points for this item if all follow-up time points were clearly and precisely stated, 1 point if some of the time-points were clearly and precisely stated, or all time-points were stated, but inexactly (e.g., “6 weeks”).

- 2 = When the participant were likely to be out of hospital at time of assessment, studies that reported a mean and SD of the number of days/months for all follow-ups were assigned 2 points. If the follow-up time was likely to be when the patient was in hospital (e.g., 3 days) it was assumed that this was a precise value and the study was awarded 2 points.
- 1 = Studies that report a vague/inexact follow-up time (e.g., 6 months), which is likely to have varied between participants, for some or all follow-ups
- 0 = Follow-up time not reported

#### **6. Was follow up complete, and if not, were the reasons to loss to follow up described?**

Reporting of efforts to follow up participants that dropped out may be regarded as an indicator of a well conducted study. Therefore, this item is scored depending on whether a clear and justifiable description of why people were left out, excluded, dropped out, etc. was provided.

- 2 = Follow-up was complete, or if not, there was a statement of how many participants dropped out and for what reasons
- 1 = There is an unclear statement outlining reasons for drop-out and how many participants for each reason (i.e., reasons for drop-out are given but not how many participants for each reason)
- 0 = There was drop out but no mention of reasons why

**Table S1. Pooled estimates and corresponding effect size (OR, MD, SMD) for pre, intra, and post-operative variables for delirium (1-7 days) post-CABG.**

Variable	Pooled Estimate				Heterogeneity		Common effect size
	k (n)	OR/MD <sup>†</sup> / SMD <sup>‡</sup>	95%CI	p value	I <sup>2</sup>	Tau <sup>2</sup>	SMD
<b>Pre-Operative (Categorical)</b>							
Alcoholism	6 (994)	0.90	0.50—1.62	.721	13.45	0.08	0.06
Arrhythmia, incl. AF	15 (31746)	2.07	1.70—2.51	<.001	25.35	0.03	0.40
BMI >28 (including >30)	7 (16297)	1.16	0.74—1.80	.516	56.28	0.17	0.08
BMI ≥30 only	5 (1786)	1.57	1.05—2.37	.030	0	0	0.25
Cognitive impairment	7 (1039)	4.17	2.75—6.33	<.001	0	0	0.79
Depression	4 (580)	2.49	1.29—4.81	.006	29.16	0.13	0.50
Diabetes	30 (48465)	1.49	1.39—1.60	<.001	0	0	0.22
Dyslipidemia/Hyperlipidemia	13 (6449)	0.89	0.63—1.25	.502	51.79	0.18	0.06
Education>12years/high school	4 (567)	0.66	0.41—1.06	.088	0	0	0.23
Hypertension	27 (38362)	1.44	1.21—1.70	<.001	52.54	0.07	0.20
Sex (male)	35 (37851)	0.90	0.75—1.08	.263	53.35	0.10	0.06
Kidney injury	14 (25264)	1.94	1.50—2.52	<.001	27.49	0.05	0.37
Previous MI <30 days	5 (926)	1.54	0.90—2.65	.116	37.82	0.14	0.24
Previous MI history/ever	11 (10662)	1.17	0.98—1.39	.075	0	0	0.09
Previous stroke, TIA, CVA	15 (27127)	2.55	1.94—3.35	<.001	44.42	0.10	0.52
PVD	14 (16340)	1.98	1.48—2.64	<.001	38.76	0.09	0.38
Smoking current	14 (17825)	1.19	0.84—1.69	.321	72.37	0.24	0.10
Smoking current/history	21 (25813)	1.15	0.94—1.42	.174	56.81	0.09	0.08
<b>Pre-Operative (Continuous)</b>							
Age (years) *	28 (9303)	4.14 <sup>†</sup>	2.95—5.34	<.001	78.61	7.14	0.49

BMI	5 (2143)	0.03†	-0.46—0.51	.915	0	0	0.01
Cognition: All tests	9 (887)	-0.58‡	-0.78— -0.37	<.001	34.11	0.03	0.58
Cognition: MMSE only	7 (621)	-1.14†	-1.91— -0.36	.004	77.72	0.68	0.52
Depression GDS	2 (233)	0.75†	-0.15—1.65	.101	0	0	0.30
Education (years)	6 (665)	-0.93†	-1.65— -0.20	.012	19.31	0.16	0.25
EuroSCORE *	10 (11199)	1.35†	0.58—2.12	.001	96.10	1.38	0.51
LVEF (%)	11 (3308)	1.25†	-0.69—3.19	.208	79.34	7.97	0.13
<b>Intra-Operative (Continuous)</b>							
ACC time (mins)	16 (7488)	5.97†	0.62— 11.32	.029	90.65	101.19	0.29
CPB time (mins)	21 (12412)	7.41†	4.03—10.78	<.001	51.93	25.72	0.25
Duration of surgery (mins)	13 (3218)	20.53†	8.67—32.38	.001	75.96	325.89	0.35
Intubation time (hours)	11 (6693)	6.82†	2.44—11.20	.002	98.40	52.26	0.75
Number of grafts	8 (2731)	0.11†	-0.02—0.24	.084	34.30	0.01	0.13
<b>Post-Operative (Categorical)</b>							
Arrhythmia, incl. AF	16 (8809)	3.53	2.41—5.16	<.001	71.51	0.37	0.70
<b>Post-Operative (Continuous)</b>							
LOS in ICU (days)	14 (7177)	2.22†	1.32—3.13	<.001	97.84	2.69	1.20

Note: \* indicates potential small-study effect or publication bias, see (**Figure S2**) and for forest plots (**Figure S1**). Symbols following pooled estimates denote different effect sizes: indicating OR (no symbol), MD† and SMD‡. ACC= aortic cross-clamp, AF= atrial fibrillation, BMI= body mass index, CPB= cardiopulmonary bypass, CVA= cerebrovascular attack, GDS= geriatric depression scale, ICU= intensive care unit, k= number of estimates (number of studies), LOS= length of stay, LVEF= left ventricular ejection fraction, , MD= mean difference, MI= myocardial infarction, MMSE= mini mental state examination, n= pooled sample size, OR= odds ratio, PVD= peripheral vascular disease, SMD= standardized mean difference and TIA= transient ischemic attack..

**Table S2. Pooled estimates and corresponding effect size (OR, MD, SMD) for pre, intra, and post-operative variables for acute cognitive decline (immediately up to 1-month) post-CABG.**

Variable	k (n)	Pooled Estimate			Heterogeneity		Effect size
		OR/MD <sup>†</sup> / SMD <sup>‡</sup>	95%CI	p value	I <sup>2</sup>	Tau <sup>2</sup>	SMD
<b>Pre-Operative (Categorical)</b>							
Arrhythmia, incl. AF	7 (945)	1.24	0.76—2.04	.389	0	0	0.12
Cognitive impairment	4 (714)	1.11	0.71—1.73	.653	0	0	0.06
Depression	2 (330)	3.42	1.12—10.46	.031	61.53	0.40	0.68
Diabetes	17 (3008)	1.44	1.21—1.72	<.001	4.18	0.01	0.20
Dyslipidemia/Hyperlipidemia	6 (836)	1.16	0.74—1.84	.512	35.86	0.11	0.08
Hypertension	15 (2012)	1.91	1.45—2.53	<.001	34.10	0.09	0.36
Sex (male)	18 (2299)	1.03	0.82—1.29	.824	0	0	0.01
Kidney injury	4 (749)	1.21	0.40—3.72	.735	54.22	0.67	0.11
Previous MI <90 days	3 (418)	1.12	0.59—2.16	.724	0	0	0.07
Previous MI history/ever	7 (1011)	1.16	0.83—1.63	.394	25.17	0.05	0.08
Previous stroke, TIA, CVA	5 (745)	2.44	1.47—4.04	.001	0	0	0.49
PVD	4 (856)	1.09	0.42—2.83	.865	57.17	0.50	0.05
Smoking current/history	9 (1400)	1.03	0.64—1.66	.892	68.09	0.31	0.02
<b>Pre-Operative (Continuous)</b>							
Age (years) *	22 (2761)	2.69 <sup>†</sup>	1.20—4.18	<.001	92.85	9.17	0.53
BMI	5 (906)	-0.20 <sup>†</sup>	-0.25— -0.14	<.001	0	0	0.10
Cognition: All tests	3 (151)	0.23 <sup>‡</sup>	-0.43—0.88	.492	69.56	0.23	0.23
Cognition: MMSE only	2 (116)	0.28 <sup>†</sup>	-1.39—1.96	.740	82.66	1.21	0.24
Depression: All tests	4 (448)	0.50 <sup>‡</sup>	-0.48—1.48	.316	93.32	0.92	0.50

Education (years)	6 (534)	-0.44†	-1.40—0.53	.377	49.52	0.65	0.11
EuroSCORE	4 (582)	0.74†	0.48—1.01	<.001	0	0	0.46
LVEF %	9 (1126)	-1.97†	-4.21—0.28	.086	72.49	8.28	0.21
<b>Intra-Operative (Continuous)</b>							
ACC time (mins)	7 (867)	-1.34†	-5.91—3.23	.566	61.81	20.52	0.07
CPB time (mins)	13 (1699)	3.39†	-0.10—6.88	.057	59.34	16.87	0.15
Duration of surgery (mins)	6 (723)	13.52†	3.67—23.38	.007	21.27	32.28	0.26
Intubation time (hours)	6 (1193)	1.95†	1.37—2.52	<.001	28.29	0.15	0.82
Number of grafts	7 (1113)	0.03†	-0.03—0.09	.400	7.50	0	0.10
Total microemboli	4 (771)	0.16‡	-0.07—0.38	.167	45.77	0.02	0.16
<b>Post-Operative (Categorical)</b>							
Arrhythmia, incl. AF	6 (1045)	1.40	1.01—1.94	.042	0	0	0.19
Delirium	3 (355)	6.15	2.32—16.27	<.001	6.32	0.07	1.00
Without outlier	2 (308)	4.85	1.89—12.45	.001	0	0	0.87
<b>Post-Operative (Continuous)</b>							
LOS in ICU (days)	7 (1055)	0.29†	0.04—0.55	.025	77.82	0.08	0.77

Note: \* indicates potential small-study effect or publication bias, see (**Figure S4**) and for forest plots (**Figure S3**). Symbols following pooled estimates denote different effect sizes: indicating OR (no symbol), MD† and SMD‡. ACC= aortic cross-clamp, AF= atrial fibrillation, BMI= body mass index, CPB= cardiopulmonary bypass, CVA= cerebrovascular attack, ICU= intensive care unit, k= number of estimates (number of studies), LOS= length of stay, LVEF= left ventricular ejection fraction, , MD= mean difference, MI= myocardial infarction, n= pooled sample size, OR= odds ratio, PVD= peripheral vascular disease, SMD= standardized mean difference and TIA= transient ischemic attack



**Table S3. Pooled estimates and corresponding effect size (OR, MD, SMD) for pre, intra, and post-operative variables for cognitive decline in the mid-term (1 to 6-months) post-CABG.**

Variable	k (n)	Pooled Estimate			Heterogeneity		Effect size
		OR/MD†/ SMD‡	95%CI	p value	I <sup>2</sup>	Tau <sup>2</sup>	SMD
<b>Pre-Operative (Categorical)</b>							
Depression	2 (471)	2.50	1.28—4.88	.007	0	0	0.51
Diabetes	10 (2046)	1.54	0.98—2.40	.059	61.33	0.28	0.24
Sex (male)	12 (2599)	1.01	0.82—1.23	.965	0	0	0.00
Hypertension	12 (2350)	0.89	0.59—1.32	.558	69.32	0.31	0.07
Previous MI history/ever	3 (975)	0.88	0.57—1.37	.580	41.32	0.06	0.07
Previous stroke, TIA, CVA	2 (761)	0.83	0.26—2.63	.748	0	0	0.11
PVD	2 (761)	0.71	0.41—1.21	.209	0	0	0.19
Smoking (current)	5 (1006)	1.00	0.73—1.37	.983	0	0	0.00
<b>Pre-Operative (Continuous)</b>							
Age (years)	12 (2093)	1.09†	-0.06—2.25	.063	29.21	1.12	0.13
Cognition: All tests	3 (855)	0.30‡	0.01—0.59	.041	68.84	0.04	0.30
Cognition: CI only	2 (795)	0.50†	-0.17—1.17	.146	89.28	0.21	0.43
Depression: All tests	3 (429)	0.86‡	-0.68—2.39	.273	96.08	1.75	0.86
Education (years)	5 (950)	0.13†	-0.57—0.83	.715	44.26	0.24	0.05
LVEF %	7 (1266)	0.61†	-0.63—1.86	.336	0	0	0.06
<b>Intra-Operative (Continuous)</b>							
ACC time (mins)	4 (890)	-1.29†	-4.35—1.76	.407	0	0	0.06
CPB time (mins)	7 (1266)	2.15†	-2.44—6.74	.359	28.63	10.41	0.06
Number of grafts	4 (1124)	-0.06†	-0.17—0.06	.358	0	0	0.06

Total microemboli	4 (542)	-0.46‡	-0.97—0.05	.076	51.03	0.12	0.46
<b>Post-Operative (Continuous)</b>							
LOS in ICU (days)	2 (100)	0.23†	-1.10—1.55	.736	88.27	0.80	0.33

Note: \* indicates potential small-study effect or publication bias, see (**Figure S6**) and for forest plots (**Figure S5**). Symbols following pooled estimates denote different effect sizes: indicating OR (no symbol), MD† and SMD‡. ACC= aortic cross-clamp, CI= cognitive index score, CPB= cardiopulmonary bypass, CVA= cerebrovascular attack, ICU= intensive care unit, k= number of estimates (number of studies), LOS= length of stay, LVEF= left ventricular ejection fraction, , MD= mean difference, MI= myocardial infarction, n= pooled sample size, OR= odds ratio, PVD= peripheral vascular disease, SMD= standardized mean difference and TIA= transient ischemic attack.

**Table S4. Pooled estimates and corresponding effect size (OR, MD, SMD) for pre, intra, and post-operative variables for cognitive decline in the long-term (12 to 15-months) post-CABG.**

Variable	k (n)	Pooled Estimate			Heterogeneity		Effect size
		OR/MD†/ SMD‡	95%CI	p value	I <sup>2</sup>	Tau <sup>2</sup>	SMD
<b>Pre-Operative (Categorical)</b>							
Cognitive impairment	2 (343)	1.02	0.57—1.80	.952	0	0	0.01
Diabetes	2 (504)	1.44	0.78—2.64	.245	0	0	0.20
Sex (male)	2 (301)	1.17	0.28—4.91	.830	28.63	0.49	0.09
Hypertension	2 (504)	1.30	0.84—2.00	.241	0	0	0.14
<b>Pre-Operative (Continuous)</b>							
Age (years)	2 (301)	1.57†	-2.94—6.09	.495	46.03	5.30	0.17
<b>Intra-Operative (Continuous)</b>							
Number of grafts	2 (301)	0.03†	-0.27—0.33	.832	0	0	0.04

Note: \* indicates potential small-study effect or publication bias. See **(Figure S7)** for forest plots. Symbols following pooled estimates denote different effect sizes: indicating OR (no symbol), MD† and SMD‡. k= number of estimates (number of studies), MD= mean difference, n= pooled sample size, OR= odds ratio, SMD= standardized mean difference.

**Table S5. Excluded references from full-text screening with associated reason.**

Reference	Exclusion Reason
Abner EL, Ding X, Caban-Holt AM, Schmitt FA, Kryscio RJ. Comorbid subjective cognitive decline and sleep apnea significantly increase the risk of incident dementia: Results from the prevention of alzheimer's disease with vitamin e and selenium study. <i>Alzheimer's and Dementia</i> . 2015;11:P733	abstract only
Aghadavoudi Jolfaei O, Bagheri K, Motamedi O, Akbari M. The effect of mean arterial pressure during cardiopulmonary bypass on clinical and para clinical parameters during and after coronary artery bypass graft surgery. <i>European Journal of Anaesthesiology</i> . 2012;29:69-70	abstract only
Al Tmimi L, Sergeant P, Velde M, Meyns B, Coburn M, Rex S. Xenon anaesthesia in patients undergoing off-pump coronary artery bypass graft surgery: A prospective, randomized controlled clinical trial (eudract 2012-002316-12). <i>European Journal of Anaesthesiology</i> . 2014;31:71	abstract only
Alexander W. American college of cardiology meeting highlights. P and T. 2017;42:340-343	abstract only
Andrejaitiene J, Sirvinskas E, Svagzdiene M. Post-cardiac surgery delirium risk factors and clinical outcome. <i>Applied Cardiopulmonary Pathophysiology</i> . 2012;16:251-252	abstract only
Annett Salzwedel A, Heidler MD, Wegscheider K, Schikora M, Jobges M, Zaskia P, Voller H. Cognitive performance in cardiac rehabilitation: Impact on short- and medium-term outcome of patient education. <i>European Journal of Preventive Cardiology</i> . 2017;24 (1 Supplement 1):S10	abstract only
Anonymous. Alzheimer's gene linked with postoperative confusion. <i>Journal of psychosocial nursing and mental health services</i> . 1998;36:13-14	abstract only
Antonitsis P, Anastasiadis K, Argiriadou H, Kosmidis MH, Megari K, Thomaidou E, Aretouli E, Papakonstantinou C. Improved neurocognitive outcome after coronary artery bypass surgery using minimal versus conventional extracorporeal circulation: A randomized controlled study. <i>Journal of the American College of Cardiology</i> . 2011;57:E910	abstract only
Arenson B, Grocott H, MacDonald L, Hiebert BM, Carino M, Freed DH, Arora RC. The effectiveness of implementing a systematic screening tool to improve identification of delirium after cardiac surgery. <i>Canadian Journal of Cardiology</i> . 2012;28:S288	abstract only
Arsenova N, Mosenko S. Neurological complications at the coronary artery bypass grafting. <i>European journal of neurology</i> . 2010;17:169	abstract only
Arthur B, Tan S, Alston P. Is postoperative delirium associated with the use of cardio-pulmonary bypass? A comparison of patients undergoing on- and off-pump coronary artery bypass grafting surgery. <i>Journal of cardiothoracic and vascular anesthesia</i> . 2011;25:S63-S64	abstract only
Arunagirinathan U, Gruning A, Gulbins H, Reichenspurner H. Cognitive outcomes and quality of life after on-pump versus off-pump coronary artery bypass grafting. <i>Thoracic and Cardiovascular Surgeon</i> . 2011;59:no pagination	abstract only
Awe M, Dalyanoglu H, Schipke JD, Lichtenberg A, Korbmacher B. Postoperative delirium: Examination of 1n206 cardio-surgical patients of a single university center during one-year period. <i>Thoracic and Cardiovascular Surgeon</i> . Conference: 46th Annual Meeting of the German Society for Thoracic and Cardiovascular Surgery, DGTHG. 2017;65	abstract only
Baroncelli F, Barile L, D'Agrosa L, Jain A, Lombrano MR, Marini E, Forfori F, Martinelli G, Meraglia A. Adherence to the local guidelines for the management of delirium in a cardiothoracic intensive care unit: A clinical audit. <i>Applied Cardiopulmonary Pathophysiology</i> . 2014;18:102	abstract only
Bendov DV, Gordeev ML. Simultaneous carotid endarterectomy and coronary artery bypass grafting. <i>Interactive cardiovascular and thoracic surgery</i> . 2011;12:S77-S78	abstract only
Brown CH. The effect of remote ischemic preconditioning on delirium after cardiac surgery. <i>Anesthesia and analgesia</i> . 2016;122:S64	abstract only
Caldas J, Panerai R, Camara L, Ferreira G, Bor-Seng-Shu E, Lima M, Galas F, Mian N, Nogueira R, Queiroz De Oliveira G, et al. Dynamic cerebral autoregulation: A marker of post-operative delirium? <i>Critical Care</i> . Conference: 37th International Symposium on Intensive Care and Emergency Medicine. Belgium. 2017;21	abstract only

Caldas J, Panerai R, Ferreira G, Camara L, Zeferino S, Jardim J, Bor-Seng-Shu E, Oliveira M, Norgueira R, Groehs R, et al. Cerebral hemodynamic in high-risk cardiac patients undergoing cardiac surgery with cardiopulmonary bypass: The role of intraaortic balloon. Critical Care. Conference: 37th International Symposium on Intensive Care and Emergency Medicine. Belgium. 2017;21	abstract only
Chugunova J, Chumakova G, Gritzenko O, Veselovskaya N. Neuropsychological dysfunctions among patients with artery bypass grafting. Atherosclerosis. 2015;241:e212	abstract only
Ding S, Feng X, Tao X, Lu S, Su P, Shen Y, Zhao H, Wu Y. Including intra-and post-operative factors in delirium predictive rule after coronary artery bypass graft could increase its accuracy. Circulation. 2015;132:no pagination	abstract only
Dorynska A, Kozela M, Pajak A. Verbal memory and verbal fluency as predictors of cardiovascular disease incidence in polish cohort of the hapiee study. European Journal of Preventive Cardiology. 2018;25 (2 Supplement 1):S31-S32	abstract only
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Zhang Y, Qian Y, Bao H, Shi H, Zhou J. Effect of stellate ganglion block on bilateral regional cerebral oxygen saturation and postoperative cognitive function. <i>Sheng wu yi xue gong cheng xue za zhi = Journal of biomedical engineering = Shengwu yixue gongchengxue zazhi</i> . 2016;33:132-135	not in english
Zhao YH, Wen DX. Analysis of related factors of postoperative cognitive dysfunction for patients undergoing off-pump coronary artery bypass graft surgery. <i>Journal of Shanghai Jiaotong University (Medical Science)</i> . 2016;36:100-104	not in english
Zoll A, Degirmenci U, Bleich S, Richter-Schmidinger T, Kornhuber J, Fischlein T, Weih M. Neuropsychological complications after coronary bypass grafting. <i>Fortschritte der Neurologie-Psychiatrie</i> . 2009;77:97-101	not in english
Ernest CS, Elliott PC, Murphy BM, Le Grande MR, Goble AJ, Higgins RO, Worcester MUC, Tatoulis J. Predictors of cognitive function in candidates for coronary artery bypass graft surgery. <i>Journal of the International Neuropsychological Society : JINS</i> . 2007;13:257-266	only baseline data
Ernest CS, Murphy BM, Worcester MUC, Higgins RO, Elliott PC, Goble AJ, Le Grande MR, Genardini N, Tatoulis J. Cognitive function in candidates for coronary artery bypass graft surgery. <i>The Annals of thoracic surgery</i> . 2006;82:812-818	only baseline data
Hudetz JA, Patterson KM, Pagel PS. Comparison of pre-existing cognitive impairment, amnesic mild cognitive impairment, and multiple domain mild cognitive impairment in men scheduled for coronary artery surgery. <i>European Journal of Anaesthesiology</i> . 2012;29:320-325	only baseline data
Tsushima WT, Johnson DB, Lee JD, Matsukawa JM, Fast KMS. Depression, anxiety and neuropsychological test scores of candidates for coronary artery bypass graft surgery. <i>Archives of clinical neuropsychology : the official journal of the National Academy of Neuropsychologists</i> . 2005;20:667-673	only baseline data
Aldea GS, O'Gara P, Shapira OM, Treanor P, Osman A, Patalis E, Arkin C, Diamond R, Babikian V, Lazar HL, et al. Effect of anticoagulation protocol on outcome in patients undergoing cabg with heparin-bonded cardiopulmonary bypass circuits. <i>The Annals of thoracic surgery</i> . 1998;65:425-433	other
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Cockburn J, Hildick-Smith D, Trivedi U, De Belder A. Coronary revascularisation in the elderly. <i>Heart</i> . 2017;103:316-324	other
Indja B, Fanning JP, Maller JJ, Fraser JF, Bannon PG, Vallely M, Grieve SM. Neural network imaging to characterize brain injury in cardiac procedures: The emerging utility of connectomics. <i>British Journal of Anaesthesia</i> . 2017;118:680-688	other

Lamy A, Devereaux PJ, Prabhakaran D, Hu S, Piegas LS, Straka Z, Paolasso E, Taggart D, Lanas F, Akar AR, et al. Rationale and design of the coronary artery bypass grafting surgery off or on pump revascularization study: A large international randomized trial in cardiac surgery. <i>American Heart Journal</i> . 2012;163:1-6	other
Wu M, Liang Y, Dai Z, Wang S. Perioperative dexmedetomidine reduces delirium after cardiac surgery: A meta-analysis of randomized controlled trials. <i>Journal of Clinical Anesthesia</i> . 2018;50:33-42	other
Yuan SM, Lin H. Postoperative cognitive dysfunction after coronary artery bypass grafting. <i>Brazilian Journal of Cardiovascular Surgery</i> . 2019;34:76-84	other
Maggio M, Nicolini F, Cattabiani C, Beghi C, Gherli T, Schwartz RS, Valenti G, Ceda GP. Effects of testosterone supplementation on clinical and rehabilitative outcomes in older men undergoing on-pump cabg. <i>Contemporary Clinical Trials</i> . 2012;33:730-738	protocol paper
Uva MS, Matias F, Cavaco S, Magalhaes MP. Rationale, design and methodology for a prospective randomized study of graft patency in off-pump and on-pump multi-vessel coronary artery bypass surgery (promiss) using multidetector computed tomography. <i>Trials</i> . 2008;9:44	protocol paper
Whitlock R, Teoh K, Vincent J, Devereaux PJ, Lamy A, Paparella D, Zuo Y, Sessler DI, Shah P, Villar JC, et al. Rationale and design of the steroids in cardiac surgery trial. <i>American Heart Journal</i> . 2014;167:660-665	protocol paper

**Table S6. Demographic data, presence in statistical analyses and quality assessment scores for included studies within risk and protective factor meta-analyses for delirium and cognitive-decline post CABG.**

Ref. No.	Lead Author, Year	Total No. of Patients	Total No. of Males	Mean/Median Age	SD/Range/IQR of Age	Cognitive Decline				QA (/12)
						C1	C2	C3	Del	
<sup>51</sup>	Al Tmimi, 2016	92	78	67	R: 46-86	-	-	-	x	12
<sup>52</sup>	Baba, 2007	218	152	71.25	5.5	x	-	-	-	10
<sup>53</sup>	Boodhwani, 2006*	448	390	68.3	0.4	x	-	-	-	12
<sup>54</sup>	Braekken, 1998	14	14	N/A	N/A	-	x	-	-	7
<sup>55</sup>	Bucerius, 2005	9682	7500	N/A	N/A	-	-	-	x	6
<sup>56</sup>	Caldas 2019	67	51	64.3	9.5	-	-	-	x	12
<sup>57</sup>	Chen, 2017	136	104	60.85	7.76	-	-	-	x	10
<sup>58</sup>	Christiansen, 2016	8	7	63.38	10.69	x	-	-	-	7
<sup>59</sup>	Coffey, 1983	1669	1384	52.15	SEM: 8	-	-	-	x	7
<sup>60</sup>	Colak, 2015	190	148	62.66	7.96	x	-	-	-	7
<sup>61</sup>	Cumurcu, 2008	50	37	59.62	10.66	-	-	-	x	9

Ref. No.	Lead Author, Year	Total No. of Patients	Total No. of Males	Mean/Median Age	SD/Range/IQR of Age	Cognitive Decline				QA (/12)
						C1	C2	C3	Del	
<sup>62</sup>	deTournay-Jette, 2011	61	51	70.39	4.69	x	x	-	-	10
<sup>63</sup>	Dieleman, 2009	281	192	61.3	9	-	x	x	-	10
<sup>64</sup>	Djaiani, 2003	417	293	60.34	10	-	x	-	-	9
<sup>65</sup>	Dong, 2014	108	83	63	7.9	x	-	-	x	10
<sup>66</sup>	Eriksson, 2002	52	40	70.27	5.53	-	-	-	x	12
<sup>67</sup>	Goto, 2000	177	117	70.26	4.99	x	-	-	-	11
<sup>68</sup>	Gottesman, 2010	5052	3682	63.92	N/A	-	-	-	x	7
<sup>69</sup>	Hall, 1999	35	27	65.9	9.1	x	-	-	-	12
<sup>70</sup>	Harmon, 2004 <sup>†</sup>	35	28	61.7	7.51	x	x	-	-	9
<sup>71</sup>	Harmon, 2005 <sup>†</sup>	36	30	64.07	N/A	x	-	-	-	12
<sup>72</sup>	Humphreys, 2016	173	148	63.47	10.1	-	-	-	x	7
<sup>73</sup>	Kadoi, 2001 <sup>‡</sup>	185	138	N/A	N/A	x	x	-	-	6
<sup>74</sup>	Kadoi, 2002 <sup>§</sup>	60	53	62.75	8.5	-	x	-	-	9

Ref. No.	Lead Author, Year	Total No. of Patients	Total No. of Males	Mean/Median Age	SD/Range/IQR of Age	Cognitive Decline				QA (/12)
						C1	C2	C3	Del	
<sup>75</sup>	Kadoi, 2003 <sup>‡</sup>	180	136	65	9	-	x	-	-	9
<sup>76</sup>	Kadoi, 2005 <sup>§</sup>	280	210	65.07	9.93	x	x	-	-	9
<sup>77</sup>	Kadoi, 2007 <sup>§</sup>	106	53	62.55	10.45	-	x	-	-	9
<sup>78</sup>	Kadoi, 2011 (a) <sup>§</sup>	124	89	61.29	5.39	x	-	-	-	12
<sup>79</sup>	Kadoi, 2011 (b) <sup>§</sup>	90	68	65	9	x	x	-	-	9
<sup>80</sup>	Kazmierski, 2014 (a) <sup>¶</sup>	113	90	64	R: 59-71	-	-	-	x	12
<sup>81</sup>	Kazmierski, 2014 (b) <sup>¶</sup>	102	N/A	N/A	N/A	-	-	-	x	12
<sup>82</sup>	Kazmierski, 2014 (c) <sup>¶</sup>	113	90	Med: 64	R: 59-71	-	-	-	x	12
<sup>83</sup>	Khan, 2014	735	577	55.64	9.65	-	-	-	x	10
<sup>84</sup>	Khatri, 1999	170	127	61	10	-	x	-	-	7
<sup>85</sup>	Kok, 2017	57	N/A	N/A	N/A	-	-	x	-	5
<sup>86</sup>	Kumpaitiene, 2019	59	34	66.49	8.04	x	-	-	-	11
<sup>87</sup>	Lachmann, 2018	252	180	61.0	9.1	-	-	x	-	8

Ref. No.	Lead Author, Year	Total No. of Patients	Total No. of Males	Mean/Median Age	SD/Range/IQR of Age	Cognitive Decline				QA (/12)
						C1	C2	C3	Del	
<sup>88</sup>	Leenders, 2018	357	304	66.20	8.84	-	-	-	x	9
<sup>89</sup>	Li, 2015	38	34	62.4	11.8	-	-	-	x	10
<sup>90</sup>	Liu, 2009	227	209	60	8	x	x	-	-	9
<sup>91</sup>	Loponen, 2008	300	237	66.17	8.89	-	-	-	x	8
<sup>92</sup>	Mardani, 2012	196	183	61.84	11.83	-	-	-	x	9
<sup>93</sup>	Mariscalco, 2012	4079	3220	67.8	9.2	-	-	-	x	12
<sup>94</sup>	Martin, 2010 <sup>#</sup>	14262	10912	N/A	N/A	-	-	-	x	5
<sup>95</sup>	Martin, 2012 <sup>#</sup>	8474	6391	N/A	N/A	-	-	-	x	7
<sup>96</sup>	Mathew, 2006 <sup>**</sup>	121	N/A	N/A	N/A	-	x	-	-	8
<sup>97</sup>	Mathew, 2007 <sup>**</sup>	677	471	61.7	10.5	-	x	-	-	9
<sup>98</sup>	Miyazaki, 2011	768	N/A	N/A	N/A	-	-	-	x	6
<sup>99</sup>	Mu, 2010	243	200	61	8.3	-	-	-	x	12
<sup>100</sup>	Mu, 2013	166	141	60	8.9	x	-	-	-	12



Ref. No.	Lead Author, Year	Total No. of Patients	Total No. of Males	Mean/Median Age	SD/Range/IQR of Age	Cognitive Decline				QA (/12)
						C1	C2	C3	Del	
<sup>101</sup>	Newman, 1987	67	62	55.0	7.8	x	-	-	-	10
<sup>102</sup>	Nikolic, 2012	370	271	N/A	N/A	-	-	-	x	7
<sup>103</sup>	Norkiene, 2007	1367	1035	64.98	9.14	-	-	-	x	10
<sup>104</sup>	Norkiene, 2011	127	103	60.91	7.24	x	-	-	-	11
<sup>105</sup>	Oh, 2008	46	36	63	5.5	x	-	-	-	11
<sup>106</sup>	Oh, 2017	292	211	N/A	N/A	-	-	-	x	10
<sup>107</sup>	Oldham, 2015	102	76	65.1	9	-	-	-	x	11
<sup>108</sup>	Oldham, 2019	131	96	65.8	9.2	-	-	-	x	12
<sup>109</sup>	Omiya, 2015	88	N/A	69	7	-	-	-	x	10
<sup>110</sup>	Otomo, 2013	153	109	72	7	-	-	-	x	12
<sup>111</sup>	Palmbergen, 2012	642	452	68.5	9.79	-	-	-	x	11
<sup>112</sup>	Plaschke, 2010	114	89	68.98	8.39	-	-	-	x	12
<sup>113</sup>	Reents, 2002	47	41	60.4	8	x	-	-	-	10

Ref. No.	Lead Author, Year	Total No. of Patients	Total No. of Males	Mean/Median Age	SD/Range/IQR of Age	Cognitive Decline				QA (/12)
						C1	C2	C3	Del	
<sup>114</sup>	Restrepo, 2002	13	10	65	9	x	-	-	-	10
<sup>115</sup>	Ringaitiene, 2015	99	70	67.6	7.78	-	-	-	x	10
<sup>116</sup>	Robson, 2000	124	N/A	59.44	9.25	-	x	-	-	7
<sup>117</sup>	Rodriguez, 2010	356	325	63	9	x	x	-	-	5
<sup>118</sup>	Rolfson, 1999 (a) <sup>††</sup>	75	59	N/A	N/A	-	-	-	x	12
<sup>119</sup>	Rolfson, 1999 (b) <sup>††</sup>	71	57	71	N/A	-	-	-	x	11
<sup>120</sup>	Royse, 2000	47	37	64.22	1.78	x	x	-	-	8
<sup>121</sup>	Royse, 2011	180	153	62.79	10.5	-	-	-	x	10
<sup>122</sup>	Rudolph, 2005	36	36	68.8	9.2	-	-	-	x	12
<sup>123</sup>	Rudolph, 2006 <sup>‡‡</sup>	80	62	74.9	6.2	-	-	-	x	11
<sup>124</sup>	Rudolph, 2009 <sup>‡‡</sup>	68	67	70.7	8.2	-	-	-	x	12
<sup>125</sup>	Sahan, 2018	40	34	65.85	6.02	x	x	-	-	9
<sup>6</sup>	Santos, 2004	220	142	70.71	5.48	-	-	-	x	11

Ref. No.	Lead Author, Year	Total No. of Patients	Total No. of Males	Mean/Median Age	SD/Range/IQR of Age	Cognitive Decline				QA (/12)
						C1	C2	C3	Del	
<sup>126</sup>	Scott, 2002	103	84	64.77	1.3	x	-	-	-	12
<sup>127</sup>	Sevuk, 2015	200	128	70.65	3.95	-	-	-	x	12
<sup>128</sup>	Siepe, 2011	92	74	66.87	8.98	-	-	-	x	12
<sup>129</sup>	Silbert, 2006 <sup>§§</sup>	326	252	67.9	7.6	x	x	-	-	9
<sup>130</sup>	Silbert, 2008 <sup>§§</sup>	264	203	67.8	7.7	x	-	x	-	7
<sup>131</sup>	Slater, 2009	240	201	64.74	9.96	x	x	-	-	7
<sup>132</sup>	Smith, 1986	55	51	54.7	R: 37-74	x	-	-	-	9
<sup>133</sup>	Smith, 2000	381	308	N/A	N/A	-	x	-	-	8
<sup>134</sup>	Stump, 1996	167	138	61	10	x	-	-	-	8
<sup>135</sup>	Subramaniam, 2019	120	101	Med: 69	IQR: 63-76	-	-	-	x	12
<sup>136</sup>	Suksompong, 2002	110	110	61.95	7.58	x	-	-	-	10
<sup>137</sup>	Swaminathan, 2002	282	201	61	10.44	-	x	-	-	8
<sup>138</sup>	Sylvivris, 1998	41	31	69.8	6.9	x	-	-	-	10

Ref. No.	Lead Author, Year	Total No. of Patients	Total No. of Males	Mean/Median Age	SD/Range/IQR of Age	Cognitive Decline				QA (/12)
						C1	C2	C3	Del	
<sup>139</sup>	Tagarakis, 2007	137	99	69.55	7.63	-	-	-	x	7
<sup>140</sup>	Tamura, 2019	88	76	69.3	2.5	-	-	-	x	10
<sup>141</sup>	Toeg, 2013*	652	576	64.37	9	x	-	-	-	10
<sup>142</sup>	Trubnikova, 2014	101	101	56.6	5.85	x	-	x	-	4
<sup>143</sup>	Tully, 2010	158	125	64.68	10.56	-	-	-	x	10
<sup>144</sup>	van Dijk, 2004	281	191	61.2	9.0	-	x	-	-	7
<sup>145</sup>	Yilmaz, 2016	137	105	61.02	7.83	-	-	-	x	10
<sup>146</sup>	Zhang, 2015	249	197	62.9	9.34	-	-	-	x	12

†, ‡, §, ¶, †† Suspected overlap of samples; \*, †, #, \*\*, ††, §§ Known overlap of sample

Ref No. = supplementary reference list number; C1= acute cognitive decline (immediately post-operatively up to 1-month); C2= mid-term cognitive decline (1 to 6-months post-operatively); C3= long-term cognitive decline (12 to 15-months post-operatively). Del = delirium; Med = median; IQR= inter quartile range; QA = quality assessment; SD = standard deviation.

**Table S7. Subgroup meta-analyses of diagnostic tool, for pre, intra and post-operative variables for the development of delirium following CABG.**

Variable	Delirium Diagnosis	k (n)	Pooled Estimate			Heterogeneity	
			OR/MD*/ SMD†	95%CI	p value	I <sup>2</sup>	Tau <sup>2</sup>
<b>Pre-Operative (Categorical)</b>							
Alcoholism	No Tool		Insufficient Data				
	Tool	5 (694)	0.77	0.46—1.29	.317	0	0
Arrhythmia, incl. AF	No Tool	7 (31550)	2.05	1.77—2.37	<.001	0	0
	Tool	8 (1252)	1.91	1.15—3.16	<.001	45.09	0.21
BMI >28 (including >30)	No Tool	2 (15629)	0.86	0.51—1.47	.587	62.68	0.10
	Tool	5 (668)	1.46	0.89—2.41	.133	11.02	0.04
BMI ≥30 only	No Tool		Insufficient Data				
	Tool	4 (419)	1.85	1.09—3.14	.023	0.00	0
Cognitive Impairment	No Tool		Insufficient Data				
	Tool	6 (790)	4.11	2.59—6.53	<.001	0	0
Depression	No Tool	2 (378)	2.06	0.75—5.67	.162	66.06	0.35
	Tool	2 (202)	4.14	1.37—12.51	.012	0	0
Diabetes	No Tool	12 (42736)	1.46	1.33—1.60	<.001	13.34	0
	Tool	18 (5419)	1.57	1.32—1.87	<.001	0	0
Dyslipidaemia/Hyperlipidaemia	No Tool	4 (2283)	0.70	.033—1.49	.355	66.26	0.39
	Tool	9 (4166)	0.99	0.67—1.45	.943	46.78	0.14
Education>12years/high school	No Tool		Insufficient Data				
	Tool	3 (347)	0.78	0.45—1.35	.374	0	0
Hypertension	No Tool	11 (33054)	1.65	1.38—1.98	<.001	50.98	0.04
	Tool	16 (5308)	1.18	0.88—1.57	.267	38.51	0.12
Sex (male)	No Tool	10 (30814)	1.10	0.87—1.40	.415	62.44	0.06
	Tool	25 (6639)	0.78	0.60—1.01	.056	41.95	0.16
Kidney injury	No Tool	6 (23602)	1.91	1.40—2.60	<.001	36.40	0.05

Variable	Delirium Diagnosis	k (n)	Pooled Estimate			Heterogeneity	
			OR/MD*/ SMD†	95%CI	p value	I <sup>2</sup>	Tau <sup>2</sup>
Previous MI <30 days	Tool	8 (1662)	1.96	1.18—3.25	.009	29.13	0.14
	No Tool	3 (101)	1.98	0.88—4.49	.100	52.09	0.27
Previous MI history/ever	Tool	2 (200)	1.04	0.56—1.93	.909	0	0
	No Tool	3 (6877)	1.04	0.72—1.51	.822	45.06	0.05
Previous stroke, TIA, CVA	Tool	8 (3785)	1.24	0.92—1.67	.160	0	0
	No Tool	6 (22297)	2.73	1.92—3.88	<.001	56.18	0.09
PVD	Tool	9 (4830)	2.37	1.50—3.70	<.001	35.96	0.16
	No Tool	4 (11604)	2.11	1.73—2.58	<.001	0.90	0
Smoking current	Tool	10 (4736)	2.01	1.28—3.15	.003	49.82	0.24
	No Tool	5 (16780)	1.19	1.07—3.53	.030	85.56	0.33
Smoking current/history	Tool	9 (1045)	0.83	0.60—1.15	.265	17.36	0.04
	No Tool	8 (24122)	1.41	1.04—1.92	.029	76.07	0.12
	Tool	13 (1691)	0.92	0.73—1.15	.458	0	0
<b>Pre-Operative (Continuous)</b>							
Age (years)	No Tool	8 (3118)	3.11*	1.50—4.72	<.001	51.30	2.31
	Tool	20 (6185)	4.52*	2.95—6.09	<.001	82.93	9.67
BMI	No Tool		Insufficient Data				
	Tool	4 (776)	0.023*	-0.6—0.65	.653	15.02	0.07
Cognition: All tests	No Tool		Insufficient Data				
	Tool	9 (887)	-0.58†	-0.78— -0.37	<.001	34.11	0.03
Cognition: MMSE only	No Tool		Insufficient Data				
	Tool	7 (621)	1.14*	-1.91— -0.36	.004	77.72	0.68
Depression GDS	No Tool		Insufficient Data				
	Tool	2 (233)	0.75*	-0.15—1.65	.101	0	0
Education (years)	No Tool		Insufficient Data				
	Tool	6 (665)	-0.93*	-1.65— -0.20	.012	19.31	0.16
EuroSCORE	No Tool	3 (1058)	3.06*	0.28— 5.83	0.31	95.87	5.71

Variable	Delirium Diagnosis	k (n)	Pooled Estimate			Heterogeneity	
			OR/MD*/ SMD†	95%CI	p value	I <sup>2</sup>	Tau <sup>2</sup>
LVEF (%)	Tool	7 (10141)	0.65*	0.14—1.16	.012	89.23	0.37
	No Tool	4 (2518)	1.91*	-1.94—5.77	.330	91.24	13.83
<b>Intra-Operative (Continuous)</b>	Tool	7 (790)	0.82*	-1.24—2.89	.435	57.05	4.24
	No Tool	7 (3026)	9.88*	-0.52— 20.29	.063	94.19	176.11
ACC time (mins)	Tool	9 (4462)	3.61*	-0.97—8.18	.123	75.77	34.07
	No Tool	8 (7693)	4.98*	2.33—7.63	<.001	0	0
CPB time (mins)	Tool	13 (4719)	7.91*	2.37—13.45	.005	60.91	52.60
	No Tool		Insufficient Data				
Duration of surgery (mins)	Tool	12 (1851)	19.66*	7.18—32.14	.002	77.61	342.16
	No Tool	3 (2194)	7.391*	1.78—13.00	.010	94.02	22.48
Intubation time (hours)	Tool	8 (4499)	6.62*	1.25—12.00	.016	98.50	57.31
	No Tool	3 (1863)	0.06*	-0.27—0.38	.738	58.79	0.05
Number of grafts	Tool	5 (868)	0.15*	0.04—0.27	.009	0	0
	No Tool						
<b>Post-Operative (Categorical)</b>							
Arrhythmia, incl. AF	No Tool	7 (4423)	4.26	2.16—8.40	<.001	82.46	0.65
	Tool	9 (4386)	2.98	1.93—4.61	<.001	52.46	0.20
<b>Post-Operative (Continuous)</b>							
LOS in ICU (days)	No Tool	4 (2390)	3.39*	-0.16—6.94	.061	99.04	12.59
	Tool	10 (4787)	1.69*	1.06—2.31	<.001	94.03	0.86

Note: “Delirium Diagnosis” indicates analyses conducted by categorization of diagnostic method, where “No Tool” represents studies that did not utilize a specific instrument and “Tool” represents studies utilizing a standardized instrument e.g. Confusion Assessment Method (CAM) or the Delirium Rating Scale (DRS) to inform the reference standard. ACC= aortic cross-clamp, AF= atrial fibrillation, BMI= body mass index, CI= cognitive index score, CPB= cardiopulmonary bypass, CVA= cerebrovascular attack, GDS= geriatric depression scale, k= number of estimates (number of studies), LOS= length of stay, LVEF= left ventricular ejection fraction, MD= mean difference, MI= myocardial infarction, MMSE= mini mental state examination, n= pooled sample size, OR= odds ratio, PVD= peripheral vascular disease, SMD= standardised mean difference and TIA= transient ischemic attack. Symbols following pooled estimates denote different effect sizes: indicating OR (no symbol), MD\* and SMD†.

**Table S8. Study specific information regarding instruments utilized and method of classification/diagnosis utilized.**

Reference No.	Lead Author, Year	Instruments	Definitions of Cognitive Decline and Delirium (Standardized Delirium Measurement Tool: Y/N)
51	Al Tmimi, 2016	Delirium: CAM or CAM-ICU	Delirium: Positive CAM/CAM-ICU score (Y)
52	Baba, 2007	Cognition: HDS, Kana pick-out test, digit symbol, digit span (forward & backward)	Cognition: 20% method
53	Boodhwani, 2006	Cognition: Total learning free recall, consistent long-term retrieval, long-term retrieval, long-term storage, delayed recall, digit span (forward & backward), trails A & B, grooved pegboard, symbol digit modalities, RAVLT, Buschke selective reminding, WMS-III/mental control	Cognition: 0.5 SD method
54	Braekken, 1998	Cognition: WAIS vocabulary, WAIS picture completion, RCPM, CVLT-L, CVLT-S, CVLT-L, serial digit learning, WMS drawing, trails A & B, letter cancellation task, WAIS	Cognition: 1 SD method



Reference No.	Lead Author, Year	Instruments	Definitions of Cognitive Decline and Delirium (Standardized Delirium Measurement Tool: Y/N)
		digit symbol, computerized RT, COWAT, grooved pegboard	
55	Bucerius, 2005	Delirium: APA guidelines	Delirium: According to APA guidelines (N)
56	Caldas, 2019	Delirium: CAM-ICU	Delirium: Positive CAM-ICU score (Y)
57	Chen, 2017	Delirium: CAM-ICU	Delirium: Positive CAM-ICU score (Y)
58	Christiansen, 2016	Cognition: VVLT, CST, stroop test, LDCT	Cognition: Decline of >20% in $\geq 2$ tests
59	Coffey, 1983	Delirium: DSM-III criteria	Delirium: DSM-III diagnostic criteria (N)
60	Colak, 2015	Cognition: MMSE, color trail test, grooved pegboard	Cognition: Miscellaneous
		Delirium: DSS	Delirium: Patient met criteria specific to study (N)
61	Cumurcu, 2008	Delirium: DRS (for severity), DSM-IV-TR criteria, MMSE	Delirium: DSM-IV-TR diagnostic criteria (N)

Reference No.	Lead Author, Year	Instruments	Definitions of Cognitive Decline and Delirium (Standardized Delirium Measurement Tool: Y/N)
62	de Tournay-Jette, 2011	Cognition: MMSE (pre-screen, excluded if <24 pre-surgery), logical memory subtest (of the Rivermead battery), RAVLT, digit symbol, trails A & B, stroop test, verbal fluency test	Cognition: 1 SD method
63	Dieleman, 2009	Cognition: RAVLT-L, RAVLT-R, grooved pegboard, trails A & B, Sternberg memory comparison, line orientation test, stroop test, continuous performance task, self-ordering tasks, visuospatial working memory, symbol digit modalities	Cognition: RCI method
64	Djaiani, 2003	Cognition: Randt short story, WAIS digit span, WMS figural memory, WAIS digit symbol, Trails B, RAVLT	Cognition: 1 SD method
65	Dong, 2014	Cognition: 12 neuropsychological tests used to assess cognitive functions including attention, memory and executive function	Cognition: RCI method

Reference No.	Lead Author, Year	Instruments	Definitions of Cognitive Decline and Delirium (Standardized Delirium Measurement Tool: Y/N)
		Delirium: CAM-ICU	Delirium: Positive CAM-ICU score (Features 1 and 2 are present and either Feature 3 or 4 is present) (Y)
		Delirium: DSM-III-R	Delirium: DSM-III-R diagnostic criteria (N)
66	Eriksson, 2002	Delirium: CAM and OBS scale	Delirium: Positive CAM score and fulfilled DSM-IV criteria (Y)
67	Goto, 2000	Cognition: HDS	Cognition: Cutoff method
68	Gottesman, 2010	Delirium: DSS	Delirium: Charts reviewed for delirium in those with neurologic injury (N)
69	Hall, 1999	Cognition: Trails A & B, digit span (forward & backward), COWAT	Cognition: Z-score method
70	Harmon, 2004	Cognition: RAVLT, trails A & B, grooved pegboard, COWAT, digit symbol	Cognition: RCI method

Reference No.	Lead Author, Year	Instruments	Definitions of Cognitive Decline and Delirium (Standardized Delirium Measurement Tool: Y/N)
		Delirium: DSM-III-R, MMSE	Delirium: Diagnosis based on the DSM-III-R criteria and the MMSE (N)
71	Harmon, 2005	Cognition: RAVLT, trails A & B, grooved pegboard, COWAT, digit symbol	Cognition: RCI method
		Delirium: DSM-III-R, MMSE	Delirium: Diagnosis based on the DSM-III-R criteria and the MMSE (N)
		Delirium: ICDSC	Delirium: ICDSC score $\geq 4$ (Y)
72	Humphreys, 2016	Delirium: DSI, SPMSQ	Delirium: Positive DSI score (had any one of the critical symptoms of delirium: disorientation, disturbance of consciousness, or perceptual disturbance) (Y)
73	Kadoi, 2001	Cognition: MMSE, RAVLT, trails A & B, digit span (forward), grooved pegboard	Cognition: 1 SD method

Reference No.	Lead Author, Year	Instruments	Definitions of Cognitive Decline and Delirium (Standardized Delirium Measurement Tool: Y/N)
74	Kadoi, 2002	Cognition: MMSE, RAVLT, trails A & B, digit span (forward), grooved pegboard	Cognition: 1 SD method
75	Kadoi, 2003	Cognition: MMSE, RAVLT, trails A & B, digit span (forward), grooved pegboard	Cognition: 1 SD method
76	Kadoi, 2005	Cognition: MMSE, RAVLT, trails A & B, digit span (forward), grooved pegboard	Cognition: 1 SD method
77	Kadoi, 2007	Cognition: MMSE, RAVLT, trails A & B, digit span (forward), grooved pegboard	Cognition: 1 SD method
79	Kadoi, 2011 (a)	Cognition: MMSE, RAVLT, trails A & B, digit span (forward), grooved pegboard	Cognition: 1 SD method
78	Kadoi, 2011 (b)	Cognition: MMSE, RAVLT, trails A & B, digit span (forward), grooved pegboard	Cognition: 1 SD method
80	Kazmierski, 2014 (a)	Cognition: MoCA, trails B	Cognition: Cutoff method

Reference No.	Lead Author, Year	Instruments	Definitions of Cognitive Decline and Delirium (Standardized Delirium Measurement Tool: Y/N)
		Delirium: CAM or CAM-ICU, RASS	Delirium: If RASS was above -4 (-3 through +4), assessment with the CAM-ICU was administered (Y)
81	Kazmierski, 2014 (b)	Delirium: CAM-ICU, MDAS (for severity)	Delirium: Positive CAM-ICU score (Feature 1 and Feature 2 and either Feature 3 or 4 are present) (Y)
82	Kazmierski, 2014 (c)	Delirium: CAM-ICU	Delirium: If RASS was above -4 (-3 through +4), assessment with the CAM-ICU was administered (Y)
83	Khan, 2014	Delirium: DSM-IV	Delirium: Diagnosed using DSM-IV criteria (N)
84	Khatri, 1999	Cognition: Randt short story, WAIS-R digit span, WAIS-R digit symbol, trails B, figural memory	Cognition: 20% method
85	Kok, 2017	Cognition: CogState brief computerized test battery (detection task, identification task, one card learning task and one back task)	Cognition: RCI method

Reference No.	Lead Author, Year	Instruments	Definitions of Cognitive Decline and Delirium (Standardized Delirium Measurement Tool: Y/N)
86	Kumpaitiene, 2019	Cognition: MMSE, RAVLT, WAIS digit span, WAIS digit symbol, Shulte table	Cognition: Pre-post change of >2 points in combined studentized score, or >2 points in $\geq 2$ individual studentized test scores.
87	Lachmann, 2018	Motor choice RT, grooved pegboard, Trails A & B, symbol digit modalities, stroop test, continuous performance task, RAVLT, self-ordering tasks, visual/spatial working memory, Sternberg memory comparison, line orientation	Cognition: Decrease of $\geq 20\%$ on $\geq 3$ tests
88	Leenders, 2018	Delirium: CAM, CAM-ICU, multidisciplinary consultation	Delirium: Administration of haloperidol in addition to positive CAM or CAM-ICU score and multidisciplinary consultation (Y)
89	Li, 2015	Delirium: CAM	Delirium: Positive CAM score (Features 1 and 2 are present and either Feature 3 or 4 is present) (Y)
90	Liu, 2009	Cognition: WMS mental control, WMS visual retention, WMS paired-associate verbal learning, digit span (forward and backward),	Cognition: RCI method

Reference No.	Lead Author, Year	Instruments	Definitions of Cognitive Decline and Delirium (Standardized Delirium Measurement Tool: Y/N)
		WAIS-R digit symbol, trails A, grooved pegboard (dom & non-dom)	
<sup>91</sup>	Loponen, 2008	Delirium: DSS (clinically diagnosed)	Delirium: Clinically diagnosed with requirement that temporary medication, i.e. diazepam or haloperidol, was needed to sedate the delirious patient (N)
<sup>92</sup>	Mardani, 2012	Delirium: DSM-IV, MMSE	Delirium: DSM-IV criteria interviews conducted on patients with a MMSE score $\leq 23$ (N)
<sup>93</sup>	Mariscalco, 2012	Delirium: CAM-ICU	Delirium: At least 2 positive assessments on CAM-ICU (Features 1 and 2 are present and either Feature 3 or 4 is present) (Y)
<sup>94</sup>	Martin, 2010	Delirium: STS	Delirium: Defined according to STS definition (N)
<sup>95</sup>	Martin, 2012	Delirium: STS	Delirium: Defined according to STS definition (N)



Reference No.	Lead Author, Year	Instruments	Definitions of Cognitive Decline and Delirium (Standardized Delirium Measurement Tool: Y/N)
96	Mathew, 2006	Cognition: Randt short story, WMS modified visual reproduction test, WAIS-R digit span, WAIS-R digit symbol, trails B	Cognition: 1 SD method (domain)
97	Mathew, 2007	Cognition: Randt short story, WMS modified visual reproduction test, WAIS-R digit span, WAIS-R digit symbol, trails B	Cognition: 1 SD method (domain)
98	Miyazaki, 2011	Delirium: DSM-IV	Delirium: Diagnosed according to DSM-IV criteria or administering antipsychotic agents by reviewing medical records during the ICU stay (N)
99	Mu, 2010	Delirium: CAM-ICU, RASS	Delirium: If RASS was above -4 (-3 through +4), assessment with the CAM-ICU was administered (4-step algorithm) (Y)
100	Mu, 2013	Cognition: Trails A, grooved pegboard (dom & non-dom), the WMS-Chinese edn. of the mental control subtest, digit span subtest (forward & backward), visual retention subtest,	Cognition: 1 SD method (preop) / RCI method

Reference No.	Lead Author, Year	Instruments	Definitions of Cognitive Decline and Delirium (Standardized Delirium Measurement Tool: Y/N)
		paired associate verbal learning subtest, digit symbol subtest	
101	Newman, 1987	Cognition: RAVLT, non-verbal recognition memory test (computer-administered), Trails A & B, WAIS block design, Purdue Pegboard (left, right, and both hands), letter cancellation test, symbol digit replacement (computer-based), choice RT (computer-based)	Cognition: Decrease of $\geq 1SD$ in $>3$ tests
102	Nikolic, 2012	Delirium: CAM	Delirium: Positive CAM score (Features 1 and 2 are present and either Feature 3 or 4 is present) (Y)
103	Norkiene, 2007	Delirium: DSM-IV	Delirium: Clinician diagnosis according to DSM-IV criteria (N)
104	Norkiene, 2011	Cognition: MMSE, RAVLT, trails A & B, digit span, digit symbol, cube drawing	Cognition: 1 SD method
		Delirium: DSM-IV	Delirium: Defined according to DSM-IV criteria (N)

Reference No.	Lead Author, Year	Instruments	Definitions of Cognitive Decline and Delirium (Standardized Delirium Measurement Tool: Y/N)
105	Oh, 2008	Cognition: MMSE, trails A, grooved pegboard	Cognition: 20% method
106	Oh, 2017	Delirium: DSS (psychiatric consultation & DSM-IV)	Delirium: Diagnosed by psychiatric consultation according to DSM-IV criteria (N)
107	Oldham, 2015	Cognition: CDR, MMSE, digit span, HVLT, WMS-IV, progressive digit sequencing, three word fluency tasks, NAB mazes subtest, trails A & B, digit symbol	Cognition: Cutoff method, 1 SD method
		Delirium: aDST, CAM, DI, MMSE	Delirium: Determined based on CAM (Y)
108	Oldham, 2019	Delirium: CAM, MMSE, abbreviated digit span test, DI	Delirium: Psychiatrist diagnosis based on CAM, MMSE, digit span test and delirium index (Y)
109	Omiya, 2015	Delirium: DRS-R-98	Delirium: DRS-R-98 score $\geq$ 8 (Y)
110	Otomo, 2013	Delirium: DSM-IV, DRS	Delirium: Diagnosed according to DSM-IV criteria & DRS score (Y)

Reference No.	Lead Author, Year	Instruments	Definitions of Cognitive Decline and Delirium (Standardized Delirium Measurement Tool: Y/N)
111	Palmbergen, 2012	Delirium: DOS scale, confirmed by geriatrician or internist	Delirium: DOS scale for screening. If suspected, confirmed by geriatrician or internist (Y)
112	Plaschke, 2010	Delirium: CAM-ICU (German), RASS	Delirium: Positive CAM-ICU score (Y)
113	Reents, 2002	Cognition: d2-letter cancellation test, trails B, Benton's visual retention test, WAIS block design, WAIS digit span	Cognition: 1 SD method
		Delirium: DSM-IV	Delirium: Defined according to DSM-IV criteria (N)
114	Restrepo, 2002	Cognition: Trails B, oral and written naming test, oral reading tests, line cancellation, Bells tests	Cognition: Z-score method
115	Ringaitiene, 2015	Delirium: CAM-ICU	Delirium: Positive CAM-ICU score (Y)
116	Robson, 2000	Cognition: RAVLT, trails A & B, PASAT, grooved pegboard, COWAT, NART, block design, object assembly test, digit symbol, picture completion test	Cognition: 1 SD method (<20% tests), 0.5 SD method (<20% tests)

Reference No.	Lead Author, Year	Instruments	Definitions of Cognitive Decline and Delirium (Standardized Delirium Measurement Tool: Y/N)
117	Rodriguez, 2010	Cognition: Group 1: RAVLT, trails A & B, grooved pegboard, symbol digit modalities, WAIS-R digit span, WMS mental control, letter (FAS test), category fluency (animal naming), finger tapping; Group 2: RAVLT, trails A & B, grooved pegboard, symbol digit modalities, WAIS-R digit span, verbal fluency (FAS test), categories (animal naming)	Cognition: Z-score method
118	Rolfson, 1999 (a)	Delirium: CAM, MMSE, DSM-III-R	Delirium: Diagnosed according to DSM-III-R criteria, based on results from standardized measures (e.g. CAM) and consultation with nurses, family members and hospital records (Y)
119	Rolfson, 1999 (b)	Delirium: DSM-III-R on clinical grounds (CAM, CAM-MD, CAM-RN, MMSE, clock drawing test, MD chart review, RN chart review - used to determine clinical diagnosis)	Delirium: Clinically diagnosed according to DSM-III-R criteria, based on results from standardized measures (Y)

Reference No.	Lead Author, Year	Instruments	Definitions of Cognitive Decline and Delirium (Standardized Delirium Measurement Tool: Y/N)
120	Royse, 2000	Cognition: Recall (short-term & delayed), COWAT, trails A & B, grooved pegboard (dom & non-dom), digit symbol, digit span (forward & backward)	Cognition: 20% method
121	Royse, 2011	Cognition: Trails A & B, COWAT, stroop test, letter cancellation, grooved pegboard (dom & non-dom), RAVLT, digit span (forward & backward), symbol digit modalities	Cognition: 1 SD method (<20% tests)
		Delirium: CAM	Delirium: Positive CAM score (Y)
122	Rudolph, 2005	Delirium: CAM, digit span, DSI, MDAS, MMSE	Delirium: Positive CAM score (Features 1 and 2 are present and either Feature 3 or 4 is present) (Y)
123	Rudolph, 2006	Delirium: CAM (CAM-ICU for postoperatively intubated patients), digit span, DSI, MDAS, MMSE	Delirium: Positive CAM score (Features 1 and 2 are present and either Feature 3 or 4 is present) (Y)

Reference No.	Lead Author, Year	Instruments	Definitions of Cognitive Decline and Delirium (Standardized Delirium Measurement Tool: Y/N)
124	Rudolph, 2009	Delirium: CAM, digit span, DSI, MDAS, MMSE	Delirium: Positive CAM score (Features 1 and 2 are present and either Feature 3 or 4 is present) (Y)
125	Sahan, 2018	Cognition: WMS logical memory, clock drawing test, word list generation test, digit span, visuomotor spatial skills test	Cognition: 1 SD method ( $\geq 2$ tests)
6	Santos, 2004	Delirium: DSM-IV	Delirium: Diagnosed by geriatrician based on DSM-IV criteria, in addition to notes from nurses and physicians (N)
126	Scott, 2002	Cognition: WMS-R logical memory (I & II), altered form of WMS-R digit span, trails A & B, COWAT	Cognition: 1 SD method ( $< 20\%$ tests), 1 SD method
127	Sevuk, 2015	Delirium: DRS-R-98 (for severity), ICDSC	Delirium: ICDSC score $\geq 4$ (Y)
128	Siepe, 2011	Delirium: MMSE, psychologist assessment	Delirium: 10 point drop or more on MMSE from pre-op and a positive assessment by a psychologist (N)

Reference No.	Lead Author, Year	Instruments	Definitions of Cognitive Decline and Delirium (Standardized Delirium Measurement Tool: Y/N)
129	Silbert, 2006	Cognition: CERAD AVLT, digit symbol, Trails A & B, COWAT, semantic fluency test, grooved pegboard test (dom & non-dom)	Cognition: 1 SD method and 20% method ( $\geq 2$ tests)
130	Silbert, 2008	Cognition: CERAD AVLT, Digit symbol, Trails A & B, COWAT, semantic fluency test, grooved pegboard test (dom & non-dom)	Cognition: 1 SD method ( $\geq 2$ tests)
131	Slater, 2009	Cognition: MMSE, Trails A & B, HVLT (trials 1, 2, 3, B & C), grooved pegboard (dom & non-dom), stroop test (part C & CW)	Cognition: 1 SD method ( $< 20\%$ tests)
		Delirium: DRS	Delirium: Based on DRS (Y)
132	Smith, 1986	Cognition: WAIS vocab and picture completion subtests, RAVLT, block design, grooved pegboard, trails A & B, letter cancellation, digit symbol replacement, two-choice RT	Cognition: 1 SD method



Reference No.	Lead Author, Year	Instruments	Definitions of Cognitive Decline and Delirium (Standardized Delirium Measurement Tool: Y/N)
133	Smith, 2000	Cognition: RAVLT, Rey auditory nonverbal memory, Trails A & B, letter cancellation, symbol-digit replacement, visual RT, grooved pegboard (dom & non-dom), finger tapping (dom & non-dom)	Cognition: 20% method ( $\geq 2$ tests)
134	Stump, 1996	Cognition: Trails A & B, grooved pegboard (dom & non-dom), finger tapping (dom & non-dom), symbol digit, letter cancellation, visual RT, verbal and nonverbal memory	Cognition: 20% method ( $\geq 2$ tests)
135	Subramaniam, 2019	Delirium: CAM, CAM-ICU	Delirium: Positive CAM or CAM-ICU score (Y)
136	Suksompong, 2002	Cognition: Thai Mental State Exam	Cognition: Miscellaneous
137	Swaminathan, 2002	Cognition: Randt short story (immediate & delay), digit symbol, trails B, digit span (forward & backward), figural memory (immediate & delayed)	Cognition: 1 SD method (domain)

Reference No.	Lead Author, Year	Instruments	Definitions of Cognitive Decline and Delirium (Standardized Delirium Measurement Tool: Y/N)
138	Sylivris, 1998	Cognition: WAIS-R general information questionnaire, digit span, digit symbol, RAVLT, COWAT	Cognition: Miscellaneous
139	Tagarakis, 2007	Delirium: DRS	Delirium: Based on DRS, which was performed on patients suspected to develop delirium (Y)
140	Tamura, 2019	Delirium: ICDSC	Delirium: ICDSC >3
141	Toeg, 2013	Cognition: Buschke selective reminding or RAVLT, WAIS-R digit span, finger tapping task, letter and category fluency, trails A & B, grooved pegboard, symbol digit modalities	Cognition: 1 SD method (domain)
142	Trubnikova, 2014	Cognition: Complex visuomotor reaction (reaction time, number of errors), functional mobility of nervous processes and performance of brain responses to feedback (reaction time, number of errors, missed signals), Bourdons test, visual short-term memory tests	Cognition: 20% method

Reference No.	Lead Author, Year	Instruments	Definitions of Cognitive Decline and Delirium (Standardized Delirium Measurement Tool: Y/N)
		(memorisation of 10 numbers, 10 words, 10 nonsense syllables)	
143	Tully, 2010	Delirium: DSI, DSM-IV-TR, SPMSQ	Delirium: Classification based on DSM-IV-TR criteria. Evidence of perceptual disturbance and/or language disturbance was requisite for a delirium diagnosis. Neurology assessments, SPMSQ results and medical notes also evaluated. (N)
144	van Dijk, 2004	Cognition: RAVLT-L, RAVLT-R, grooved pegboard, trails A & B, Sternberg memory comparison, line orientation test, stroop test	Cognition: 20% method
145	Yilmaz, 2016	Delirium: CAM-ICU	Delirium: Positive CAM-ICU score (Features 1 and 2 are present and either Feature 3 or 4 is present) (Y)
146	Zhang, 2015	Delirium: CAM-ICU, RASS	Delirium: Positive CAM-ICU score (Features 1 and 2 are present and either Feature 3 or 4 is present) (Y)

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Reference No.	Lead Author, Year	Instruments	Definitions of Cognitive Decline and Delirium (Standardized Delirium Measurement Tool: Y/N)
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*Note. see Supplementary Table 9 for glossary of instrument acronyms*

**Table S9. Glossary of abbreviations.**

<b>Cognitive Impairment</b>	
<b>AVLT</b>	Auditory Verbal Learning Test
<b>CDR</b>	Clinical Dementia Rating scale
<b>CERAD</b>	The Consortium to Establish a Registry for Alzheimer's Disease
<b>COWAT</b>	Controlled Oral Word Association Test
<b>CST</b>	Concept Shifting Test
<b>CVLT</b>	California Verbal Learning Test
<b>Digit symbol</b>	Digit Symbol Substitution Task
<b>HDS</b>	Hasegawa Dementia Scale
<b>HVLT</b>	Hopkins Verbal Learning Test
<b>LDCT</b>	Letter-Digit Coding Test
<b>MMSE</b>	Mini Mental State Examination
<b>MoCA</b>	Montreal Cognitive Assessment
<b>NAB</b>	Neuropsychological Assessment Battery
<b>NART</b>	National Adult Reading Test
<b>PASAT</b>	Paced Auditory Serial Addition Task
<b>Randt short story</b>	Randt Memory Test Short-Story Module
<b>RAVLT</b>	Rey Auditory Verbal Learning Test
<b>RAVLT-L</b>	Rey Auditory-Verbal Learning – Learning Trial
<b>RAVLT-R</b>	Rey Auditory-Verbal Learning – Recognition Trial
<b>RCPM</b>	Raven Coloured Progressive Matrices
<b>RT</b>	Reaction Time
<b>Stroop test</b>	Stroop Colour Word Interference Test
<b>Trails A &amp; B</b>	Halstead-Reitan Trail-making tests A & B

<b>VVLT</b>	Visual Verbal Learning Test
<b>WAIS</b>	Wechsler Adult Intelligence Scale
<b>WMS</b>	Wechsler Memory Scale

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**Delirium**

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<b>aDST</b>	abbreviated Digit Span Test
<b>APA</b>	American Psychiatric Association
<b>CAM</b>	Confusion Assessment Method
<b>CAM-ICU</b>	Confusion Assessment Method for the ICU
<b>DI</b>	Delirium Index
<b>DOS</b>	Delirium Observation Screening scale
<b>DRS</b>	Delirium Rating Scale
<b>DRS-R-98</b>	Delirium Rating Scale Revised-98
<b>DSI</b>	Delirium Symptom Interview
<b>DSM-III-R</b>	Diagnostic and Statistical Manual of Mental Disorders 3 <sup>rd</sup> ed., Revised.
<b>DSM-IV</b>	Diagnostic and Statistical Manual of Mental Disorders 4 <sup>th</sup> ed.
<b>DSM-IV-TR</b>	Diagnostic and Statistical Manual of Mental Disorders 4 <sup>th</sup> ed., Text Revision
<b>DSS</b>	Definition that is specific to the study
<b>ICDSC</b>	The Intensive Care Delirium Screening Checklist
<b>MDAS</b>	Memorial Delirium Assessment Scale
<b>MMSE</b>	Mini Mental State Examination
<b>OBS</b>	Organic Brain Syndrome scale
<b>RASS</b>	The Richmond Agitation Sedation Scale
<b>SPMSQ</b>	Short Portable Mental Status Questionnaire
<b>STS</b>	Accordance with Society of Thoracic Surgeons

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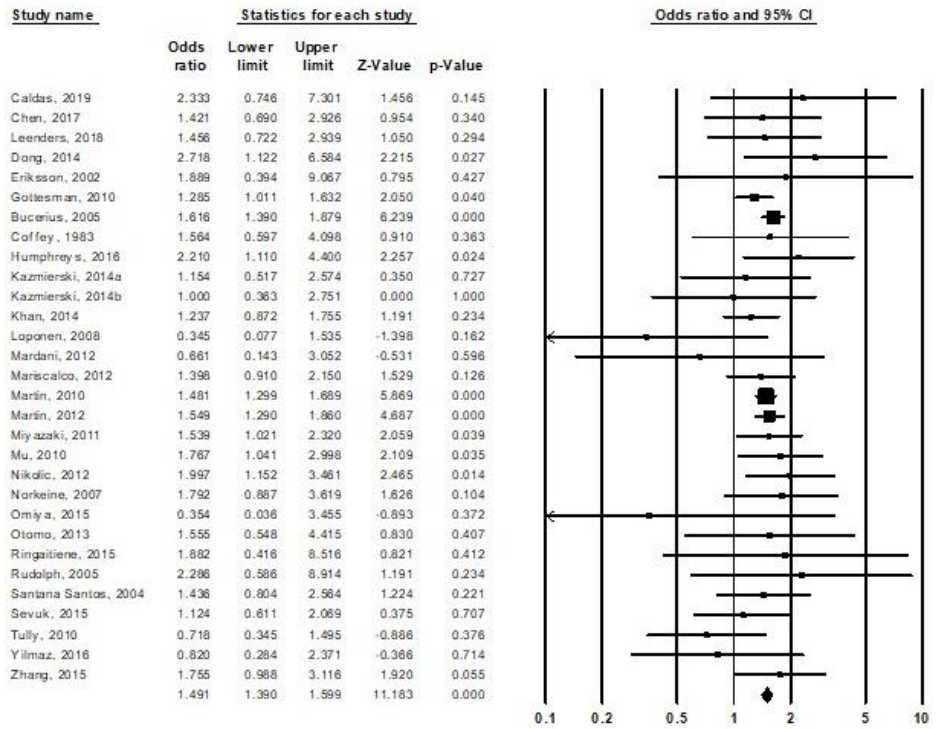
**Figure S1. Forest plots for delirium post-CABG analyses.**

Variable	Forest Plot																																																																																																													
<b>Pre-Operative (Categorical)</b>																																																																																																														
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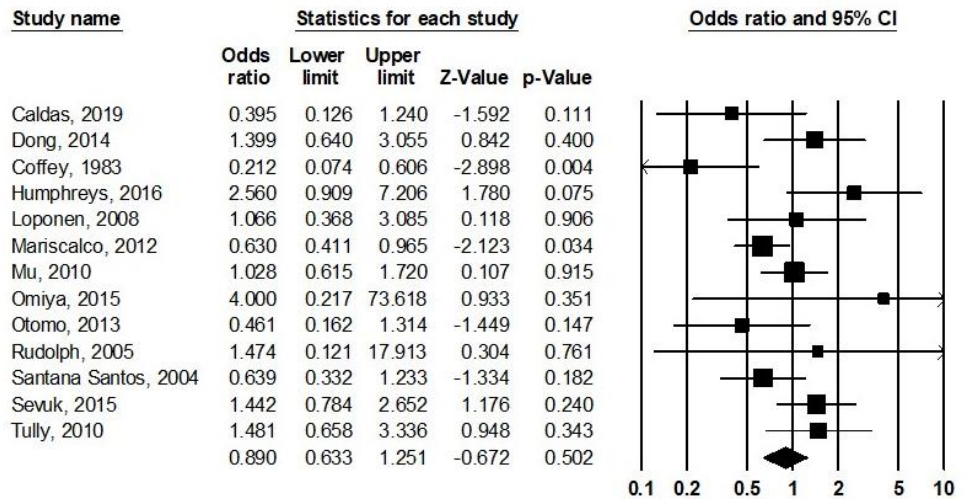
BMI $\geq$ 30 only	<u>Study name</u>	<u>Statistics for each study</u>					<u>Odds ratio and 95% CI</u>
		Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
	Caldas, 2019	1.316	0.299	5.788	0.364	0.716	
	Chen, 2017	1.397	0.575	3.394	0.738	0.460	
	Norkeine, 2007	1.244	0.655	2.364	0.667	0.505	
	Royse, 2011	2.800	1.161	6.752	2.293	0.022	
	Rudolph, 2005	1.750	0.449	6.825	0.806	0.420	
		1.573	1.045	2.368	2.172	0.030	
Cognitive Impairment	<u>Study name</u>	<u>Statistics for each study</u>					<u>Odds ratio and 95% CI</u>
		Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
	Leenders, 2018	4.081	1.446	11.520	2.656	0.008	
	Oldham, 2018	3.000	1.123	8.013	2.192	0.028	
	Kazmierski, 2014a	7.619	2.927	19.832	4.160	0.000	
	Oldham, 2015	6.111	1.056	35.363	2.021	0.043	
	Rudolph, 2005	4.000	0.981	16.311	1.933	0.053	
	Zhang, 2015	4.446	1.676	11.797	2.997	0.003	
	Rolfson, 1999b	2.311	0.752	7.106	1.462	0.144	
		4.170	2.746	6.332	6.700	0.000	
Depression	<u>Study name</u>	<u>Statistics for each study</u>					<u>Odds ratio and 95% CI</u>
		Odds ratio	Lower limit	Z-Value	Upper limit	p-Value	
	Oldham, 2018	3.984	1.158	2.193	13.705	0.028	
	Santana Santos, 2004	1.242	0.553	0.525	2.787	0.600	
	Tully, 2010	3.490	1.477	2.850	8.245	0.004	
	Rolfson, 1999a	4.846	0.408	1.250	57.544	0.211	
		2.493	1.291	2.722	4.811	0.006	



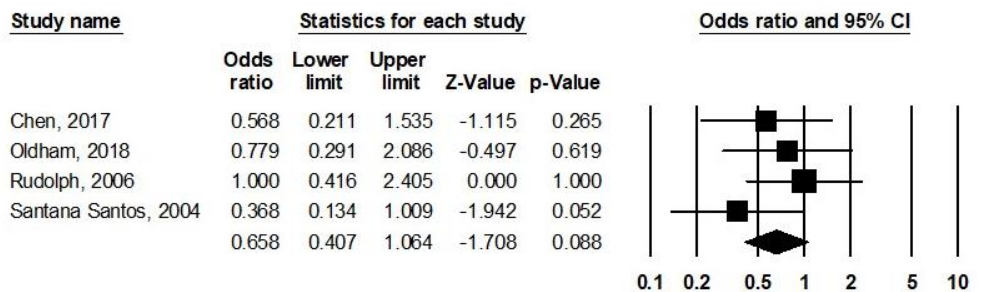
Diabetes



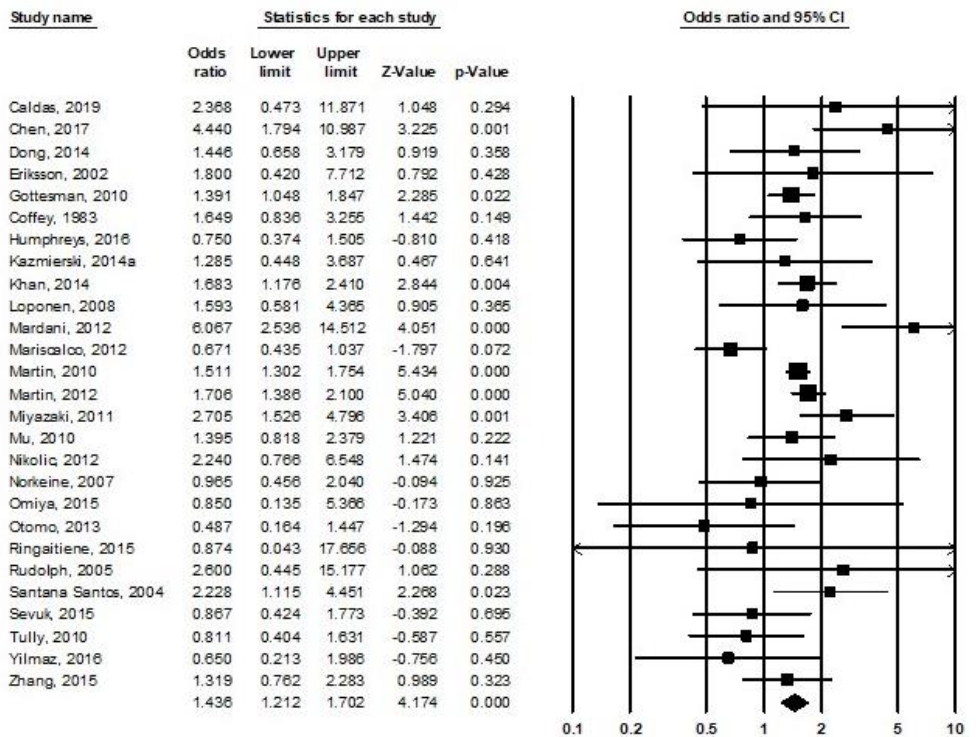
Dyslipidemia/Hyperlipidemia



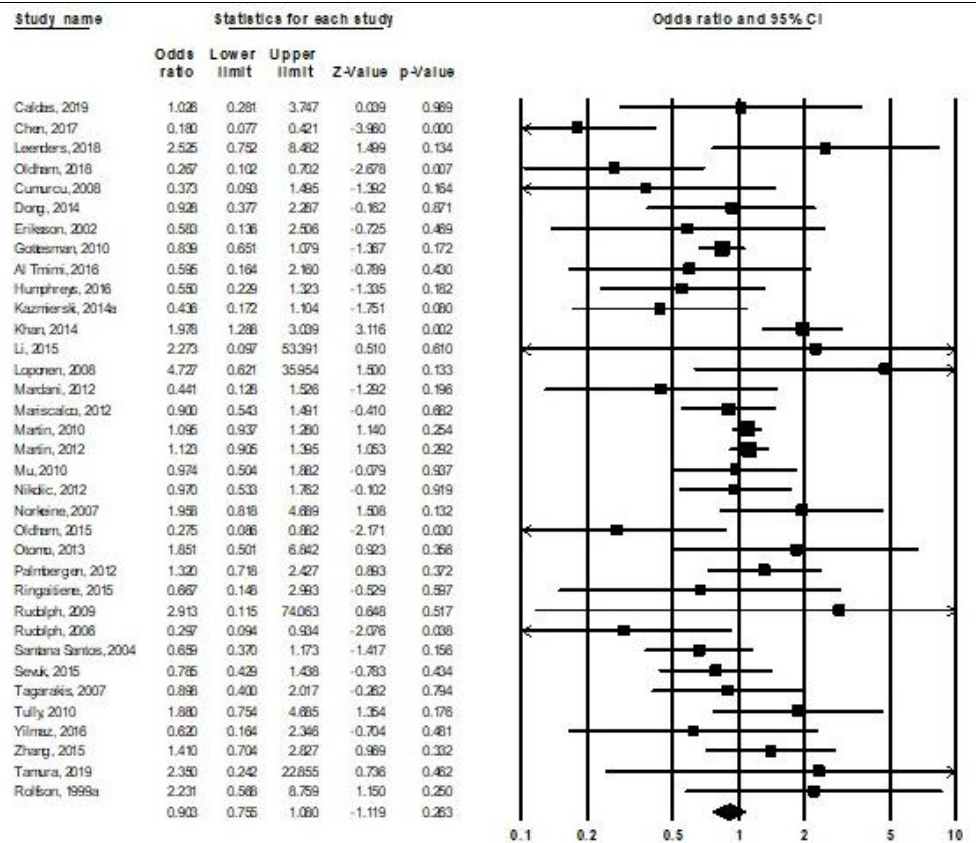
Education>12years/high school

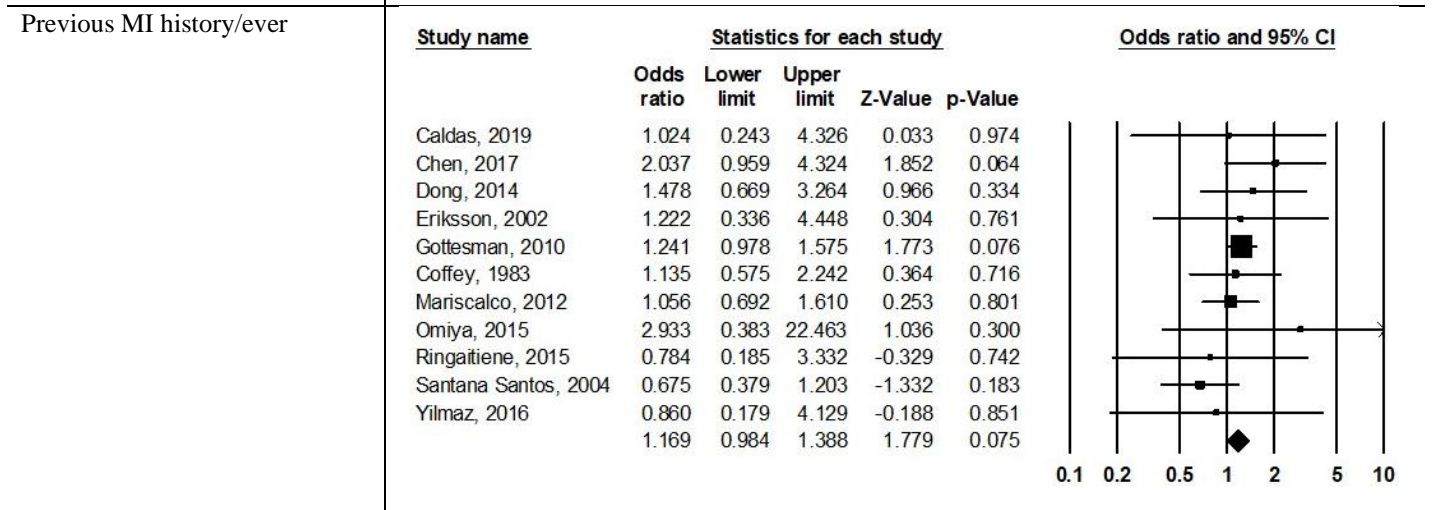
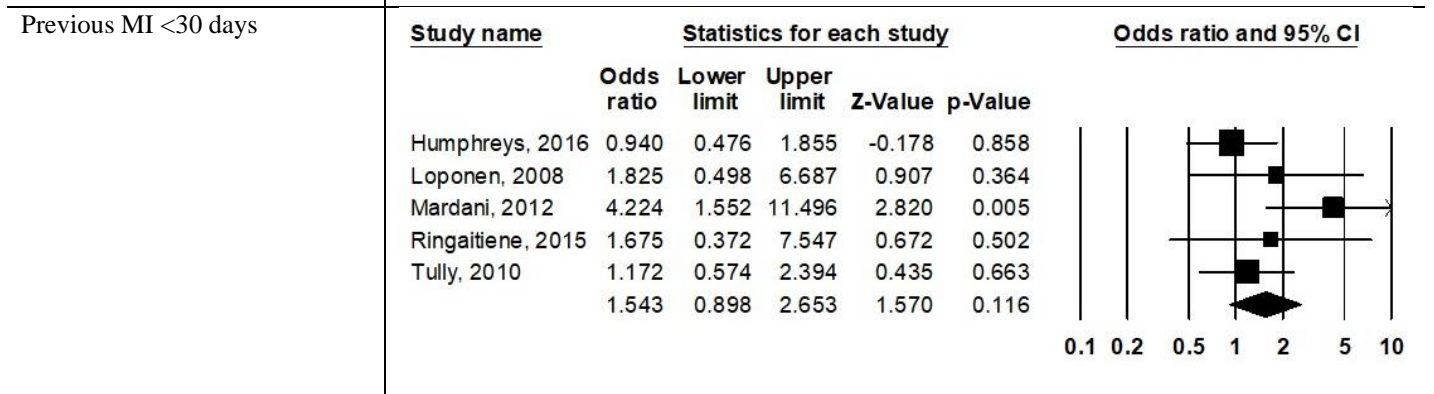
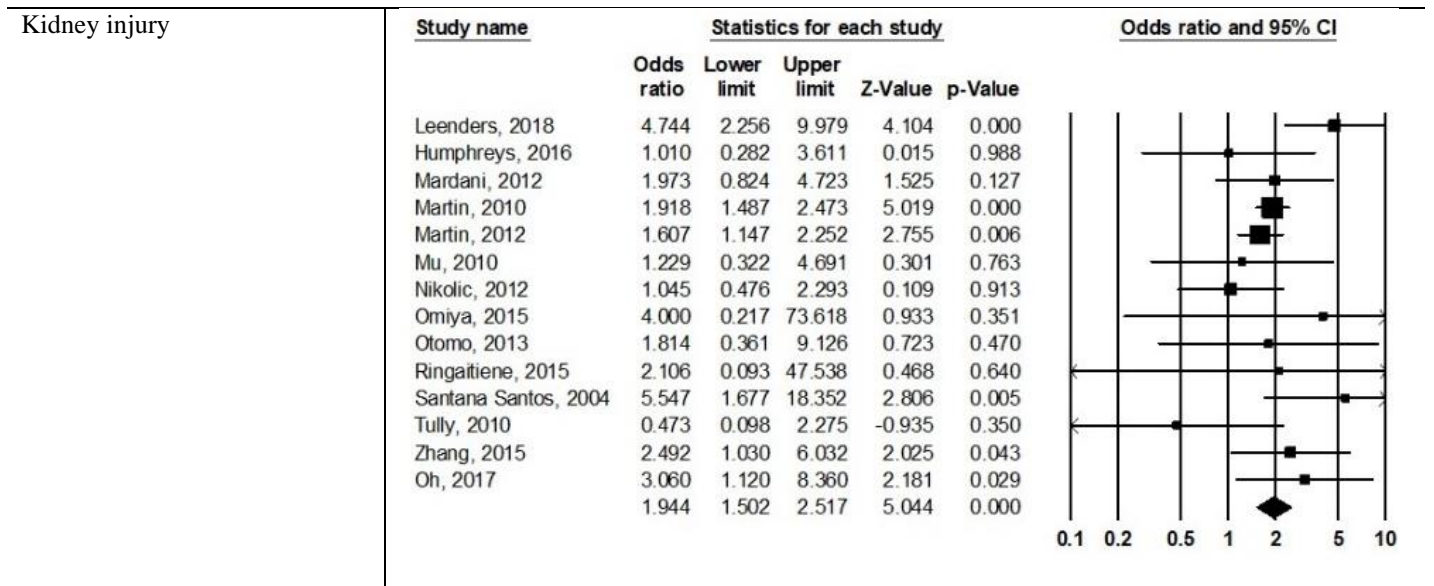


Hypertension

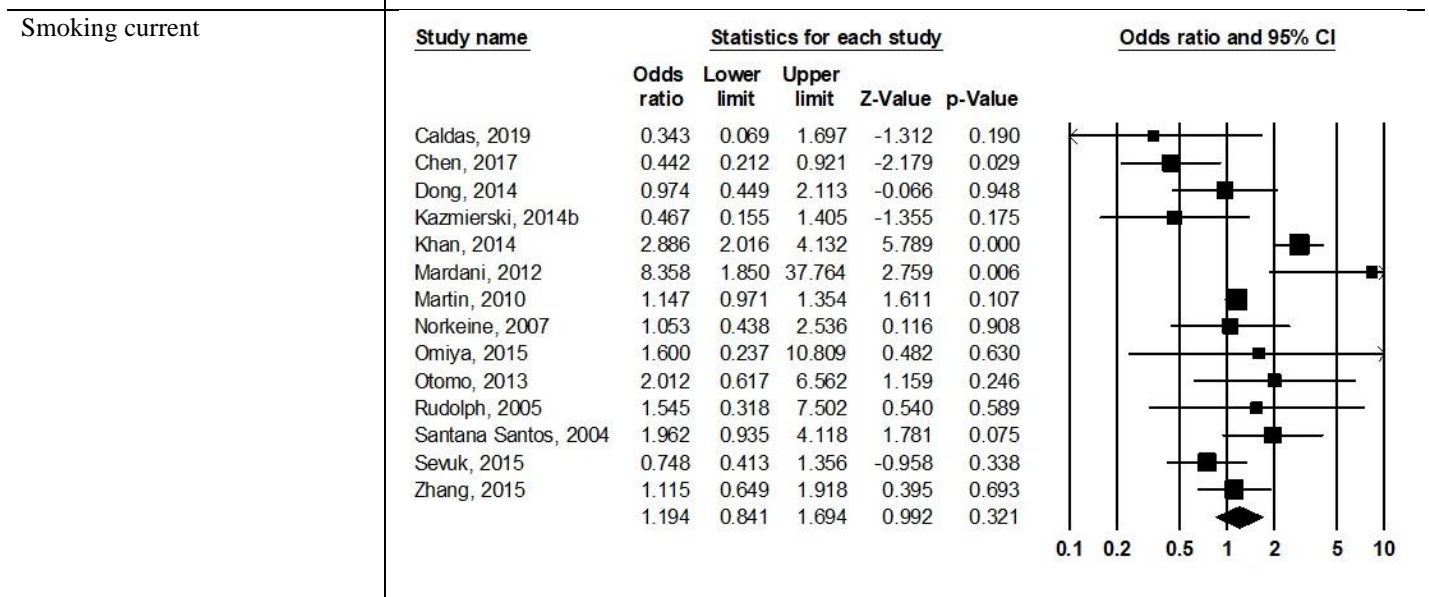
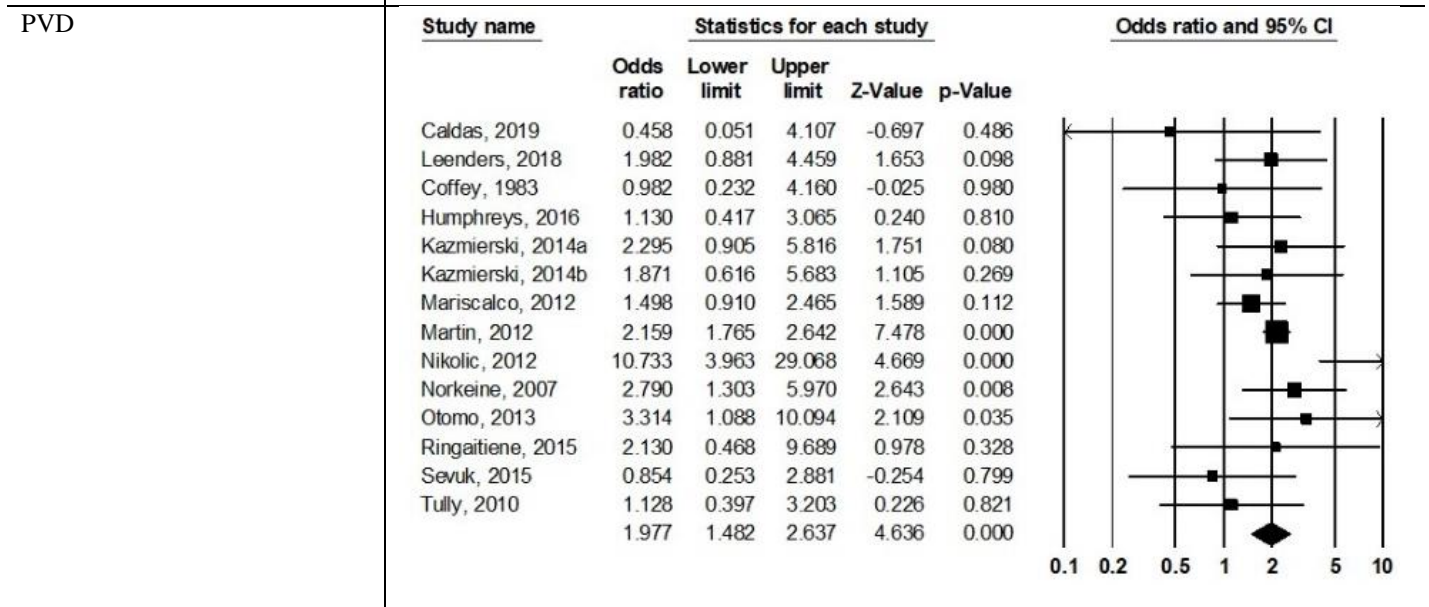
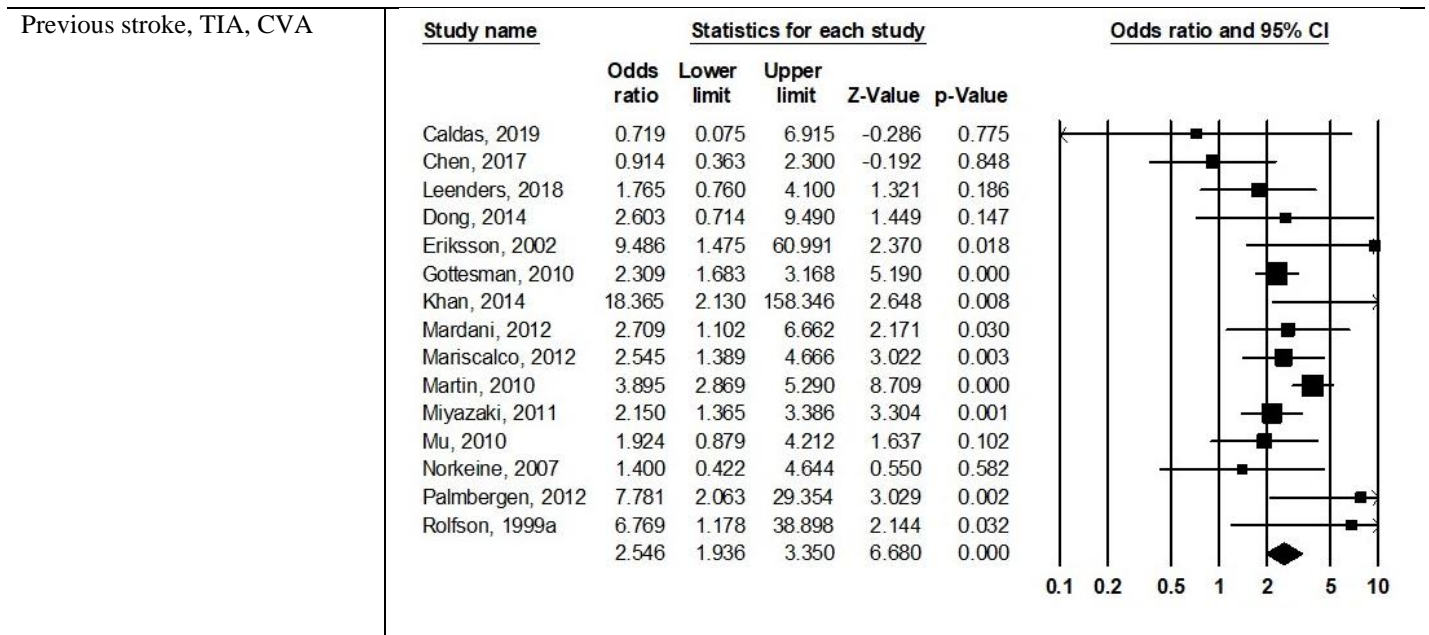


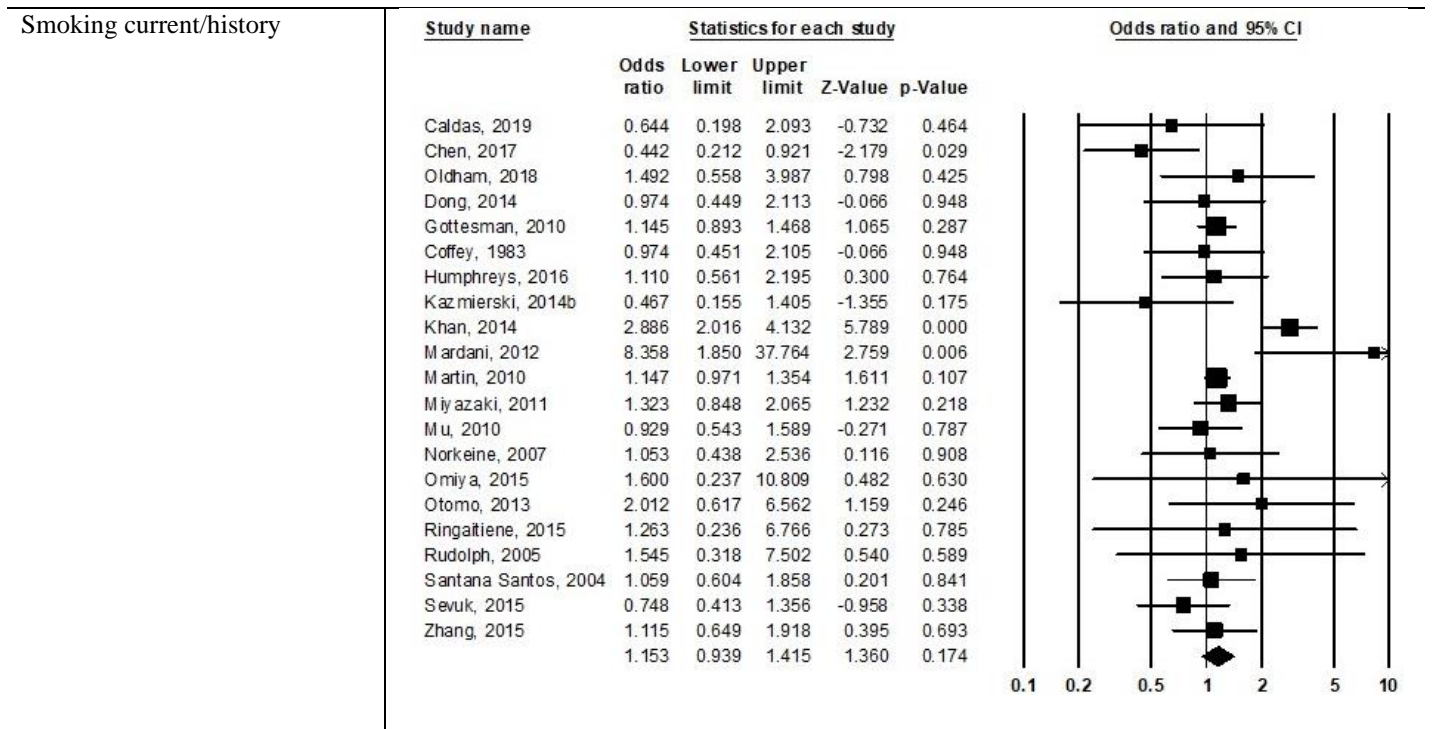
Sex (male)



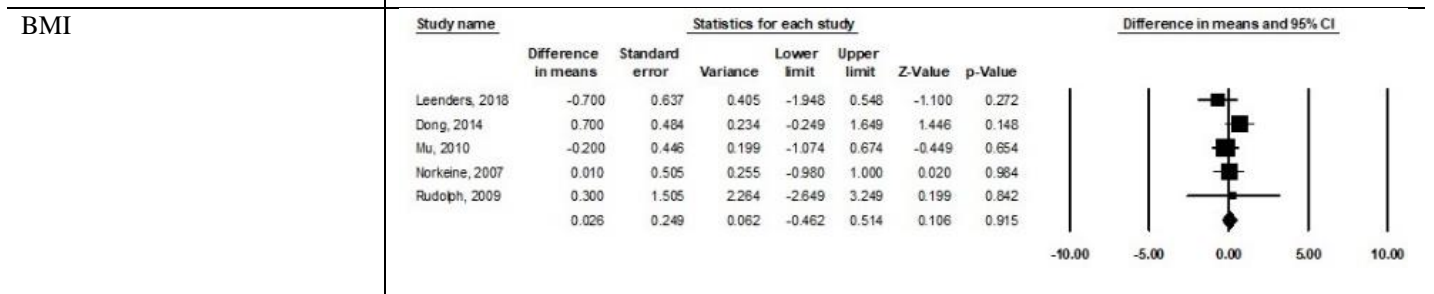
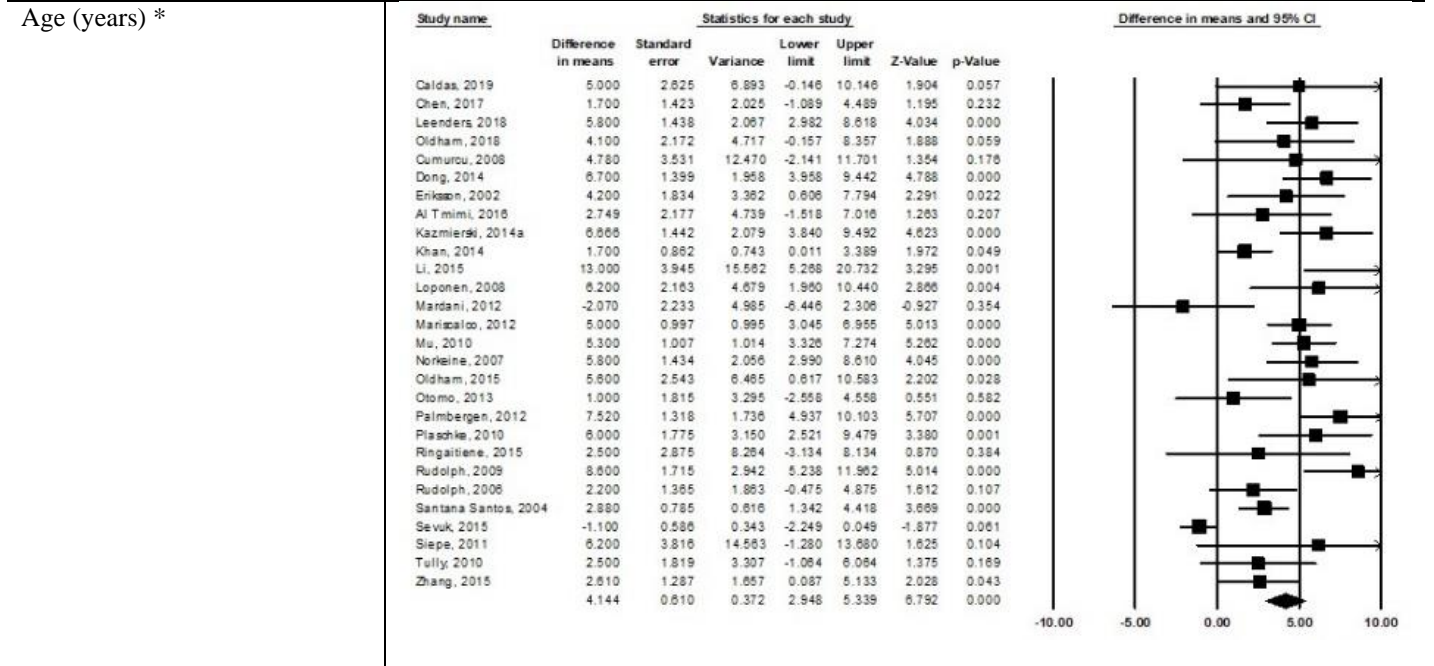


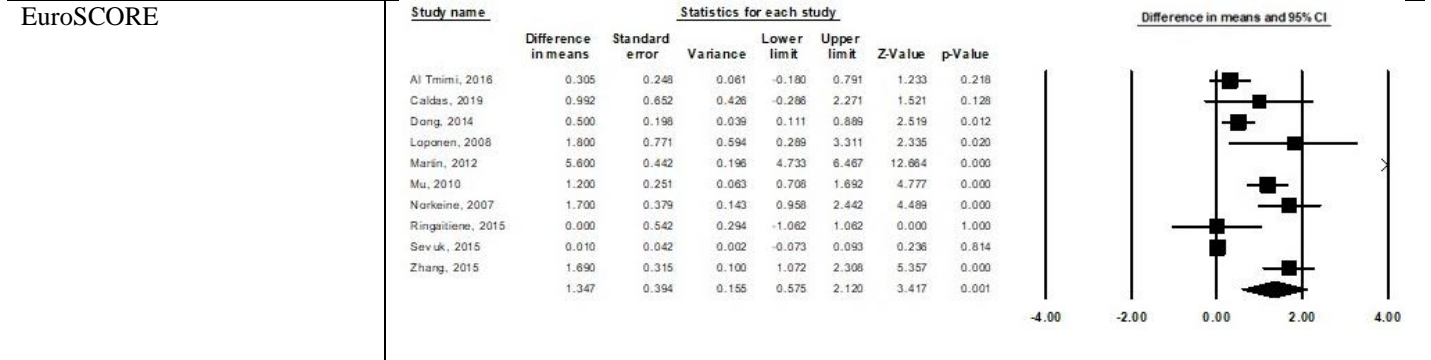
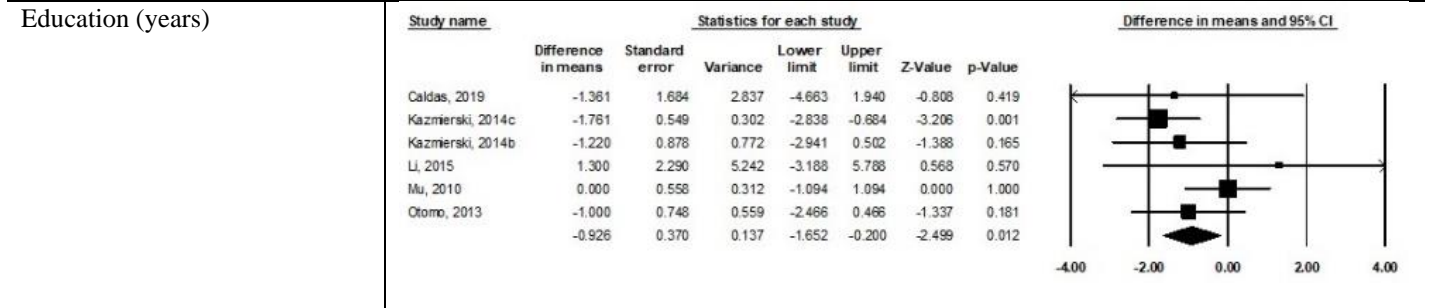
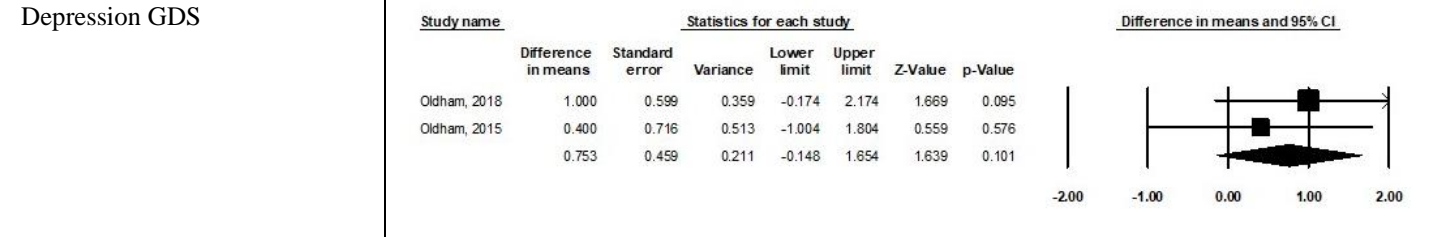
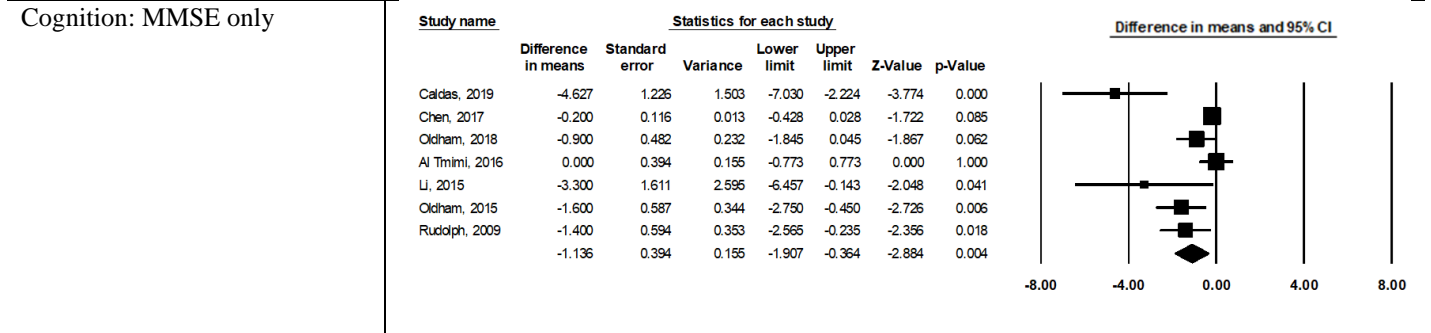
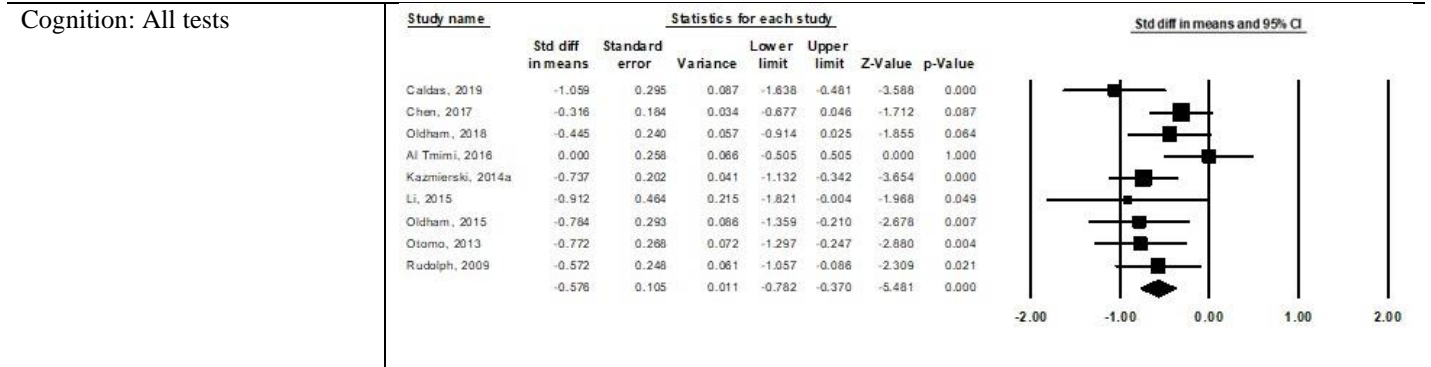




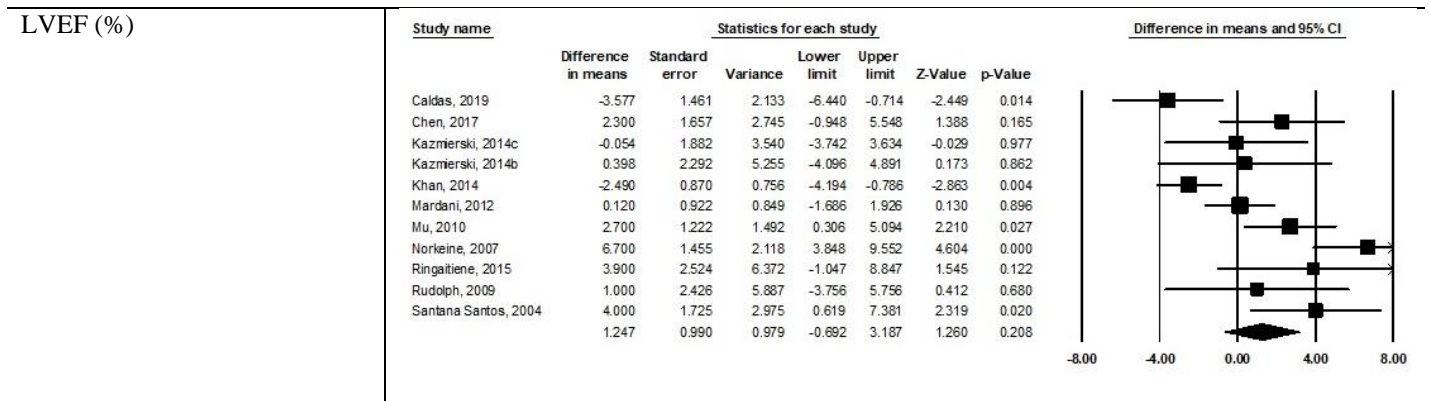


**Pre-Operative (Continuous)**

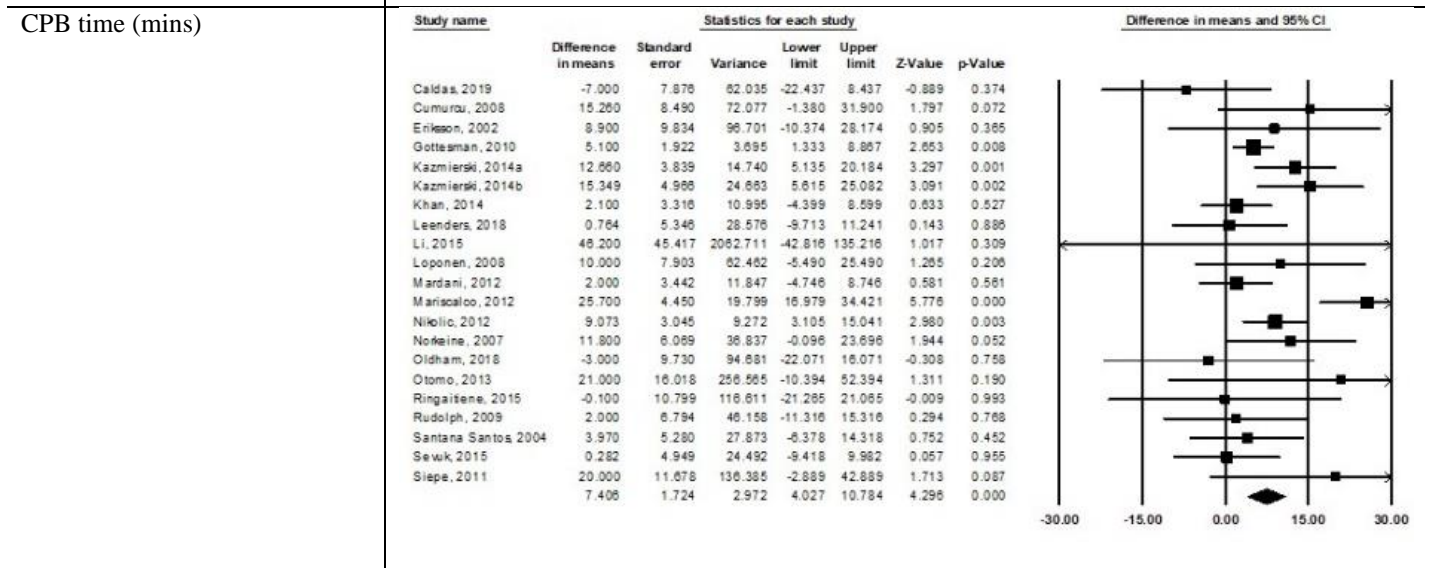
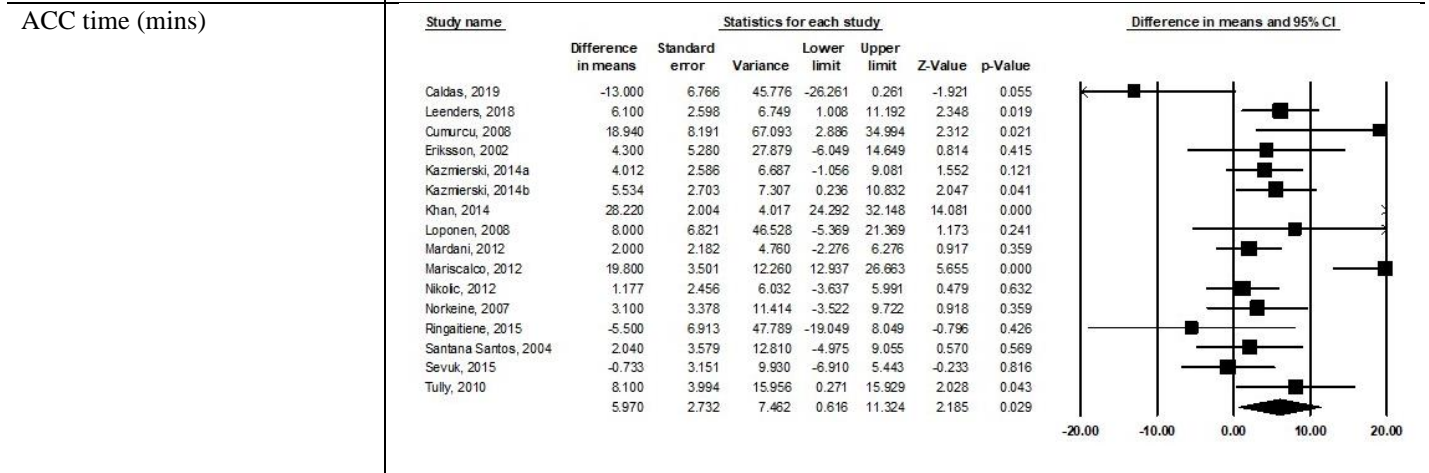


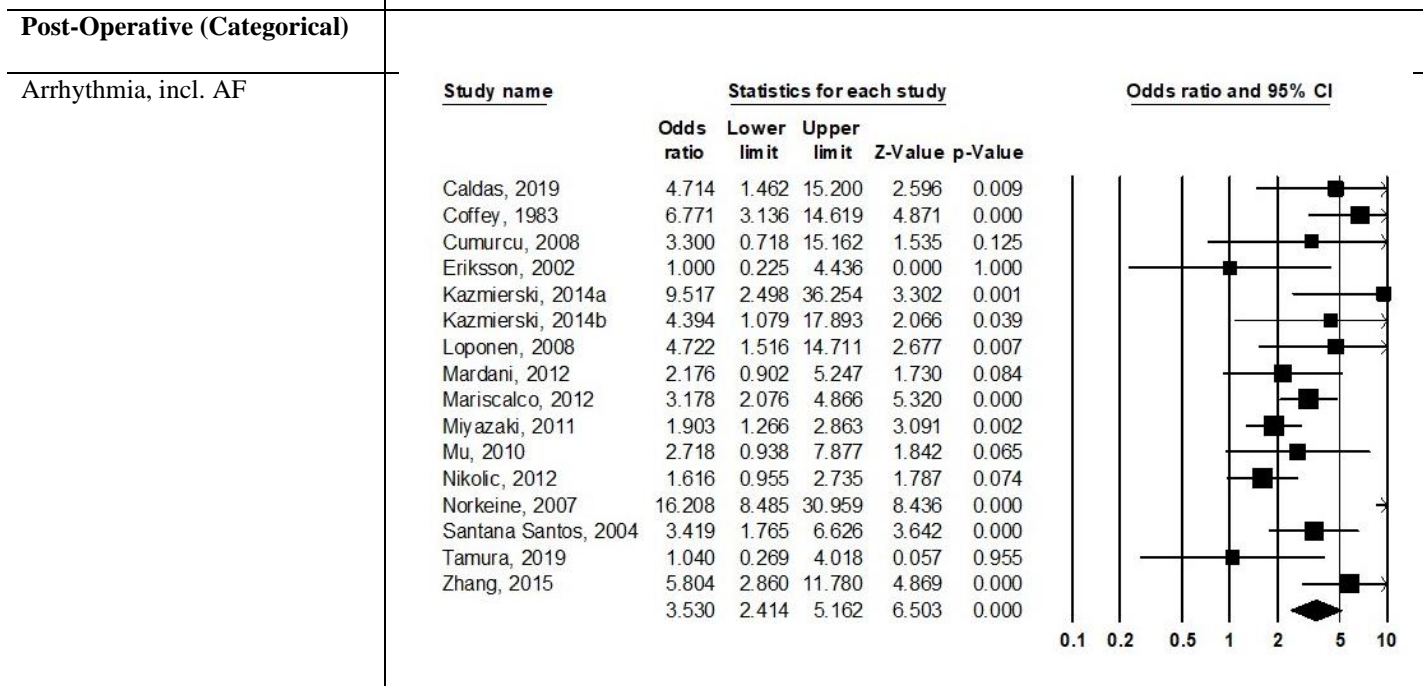
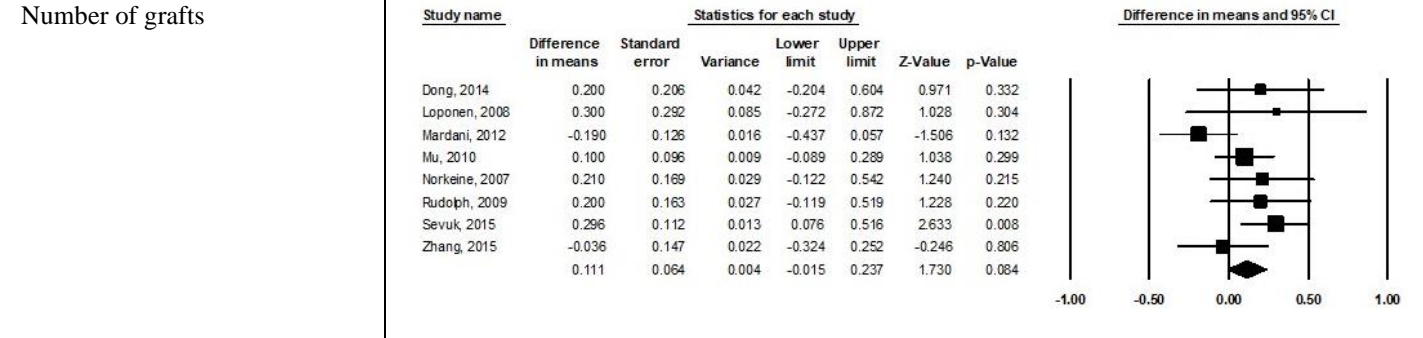
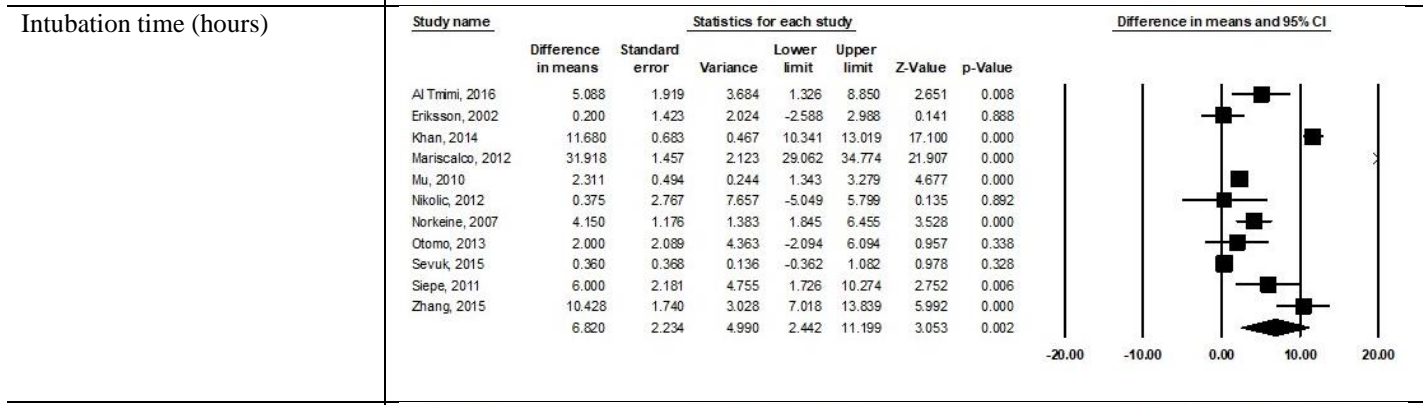
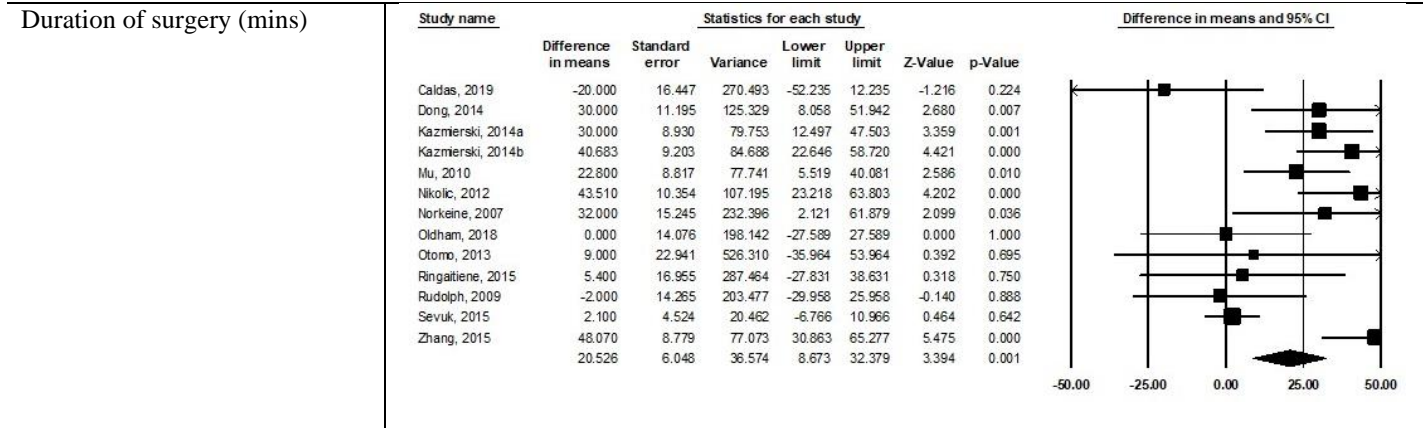






**Intra-Operative (Continuous)**



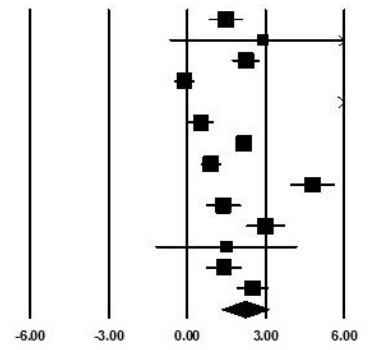




**Post-Operative (Continuous)**

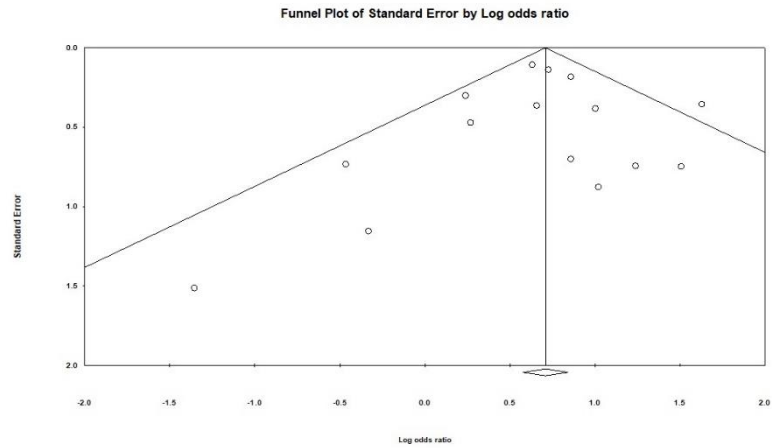
LOS in ICU (days)

Study name	Statistics for each study							Difference in means and 95% CI
	Difference in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	
Al Tmimi, 2016	1.491	0.339	0.115	0.826	2.155	4.396	0.000	
Caldas, 2019	2.910	1.833	3.361	-0.683	6.503	1.587	0.112	
Chen, 2017	2.253	0.272	0.074	1.721	2.786	8.295	0.000	
Eriksson, 2002	-0.100	0.209	0.044	-0.509	0.309	-0.479	0.632	
Khan, 2014	6.510	0.234	0.055	6.052	6.968	27.852	0.000	
Mardani, 2012	0.530	0.251	0.063	0.037	1.023	2.108	0.035	
Mariscalco, 2012	2.188	0.074	0.005	2.043	2.333	29.630	0.000	
Mu, 2010	0.920	0.197	0.039	0.533	1.306	4.666	0.000	
Norkeine, 2007	4.800	0.438	0.191	3.943	5.657	10.971	0.000	
Omiya, 2015	1.385	0.349	0.122	0.701	2.070	3.965	0.000	
Palmbergen, 2012	2.990	0.385	0.148	2.236	3.744	7.773	0.000	
Siepe, 2011	1.500	1.381	1.906	-1.206	4.206	1.087	0.277	
Subramaniam, 2019	1.412	0.353	0.125	0.720	2.105	3.996	0.000	
Zhang, 2015	2.500	0.311	0.097	1.890	3.110	8.035	0.000	
	2.221	0.462	0.213	1.316	3.126	4.812	0.000	



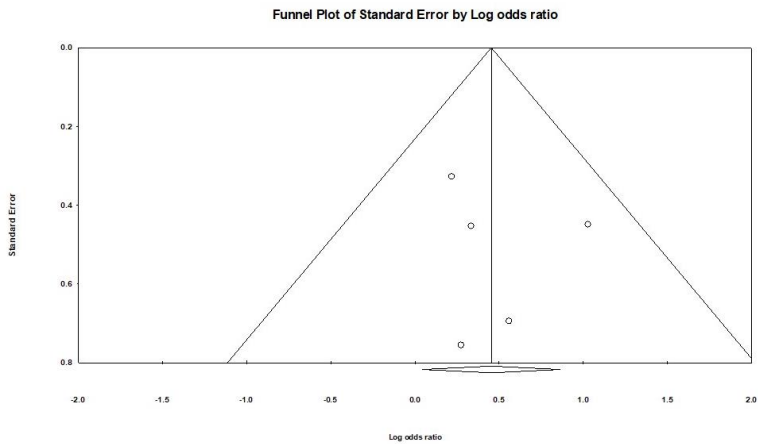
**Figure S2. Funnel plots for statistically significant analyses in regard to delirium post-CABG, and results of publication bias/small-study effect investigation when more than 10 studies were available.**

	Egger's Test		Trim and Fill		
	Intercept	p value (1-tailed)	No. imputed studies	OR/MD <sup>†</sup> /SMD <sup>‡</sup>	95% CI
<b>Preoperative (Categorical)</b>					
Arrhythmia, incl. AF					
BMI $\geq 30$ only					



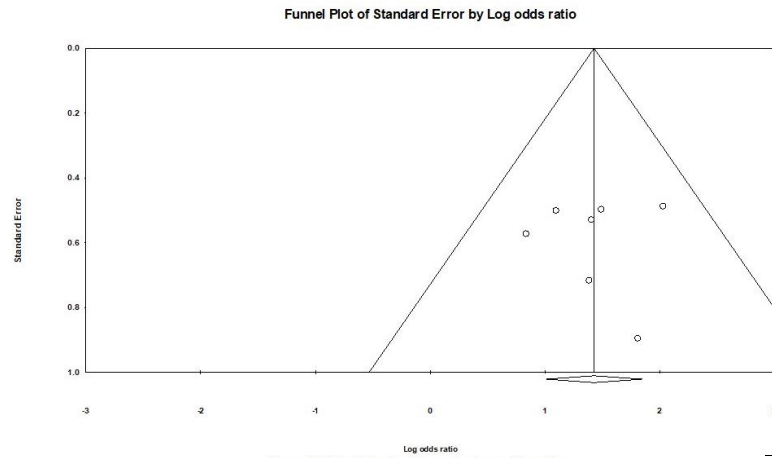
-0.08      .432

-      -      -

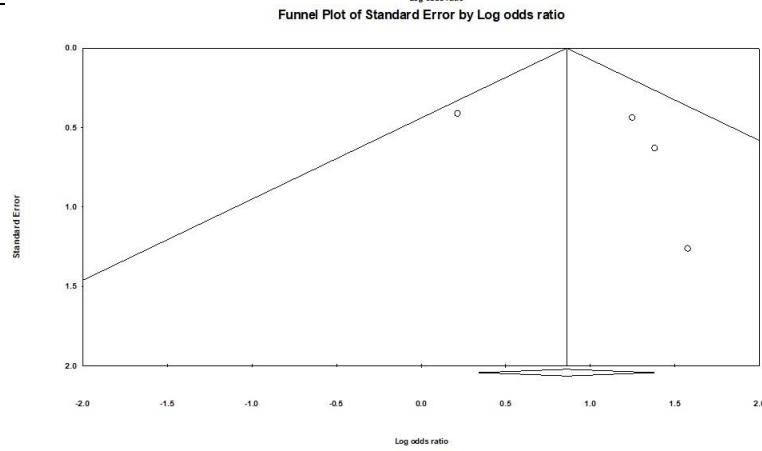


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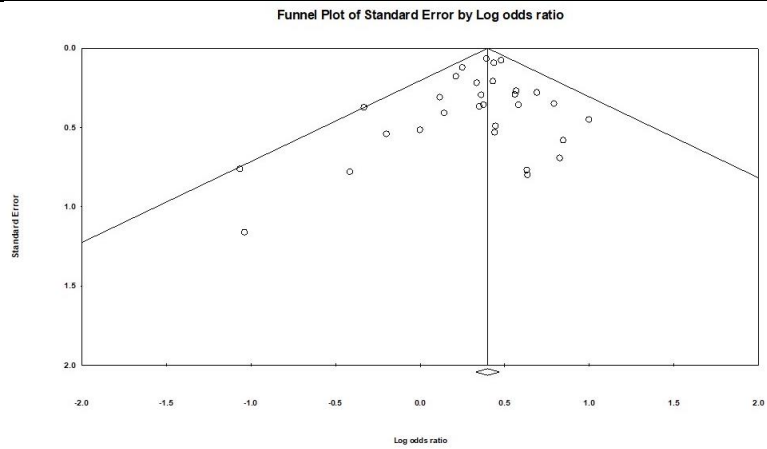
Cognitive Impairment



Depression



Diabetes



-0.27

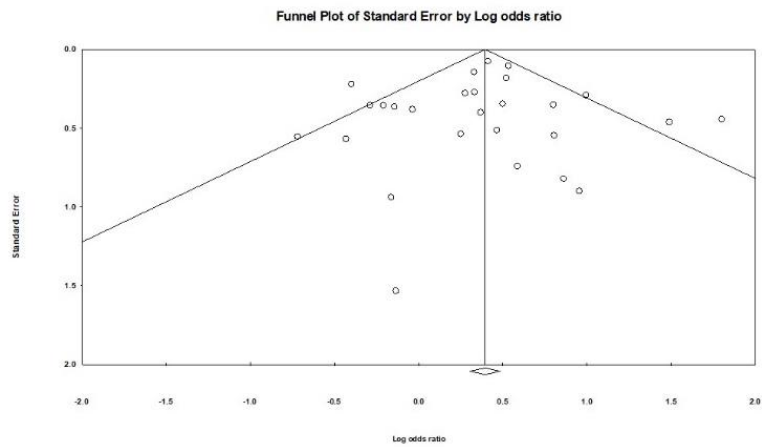
.143

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Hypertension



-0.18

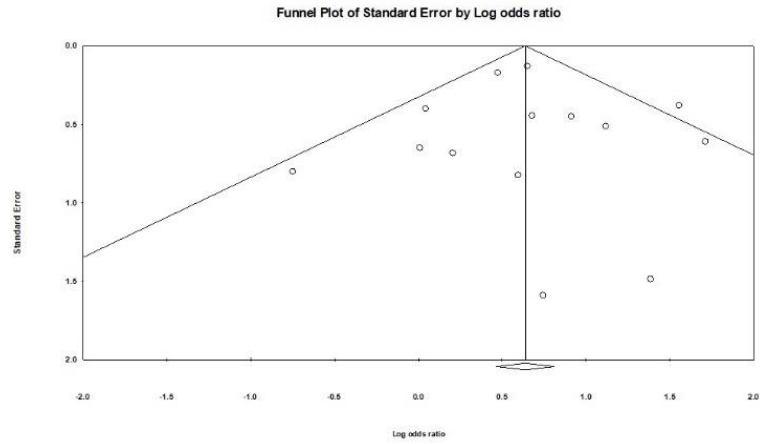
.347

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Kidney Injury



0.13

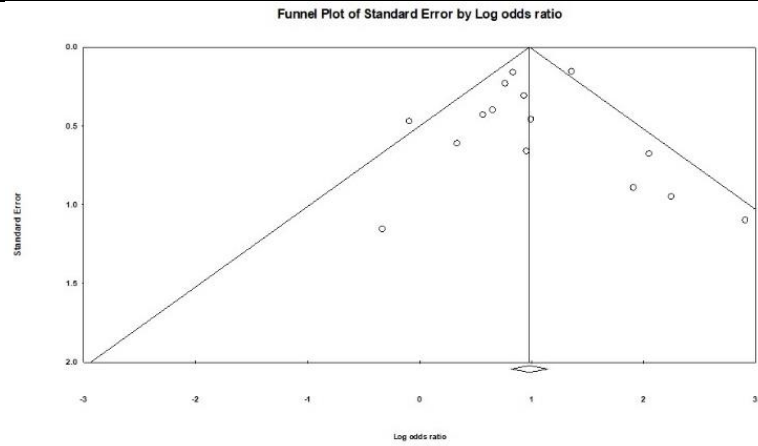
.406

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Previous stroke, TIA, CVA



-0.03

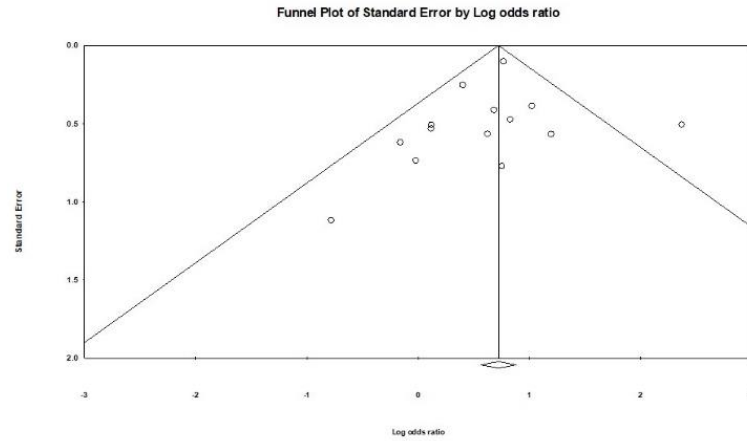
.483

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PVD



-0.35

.266

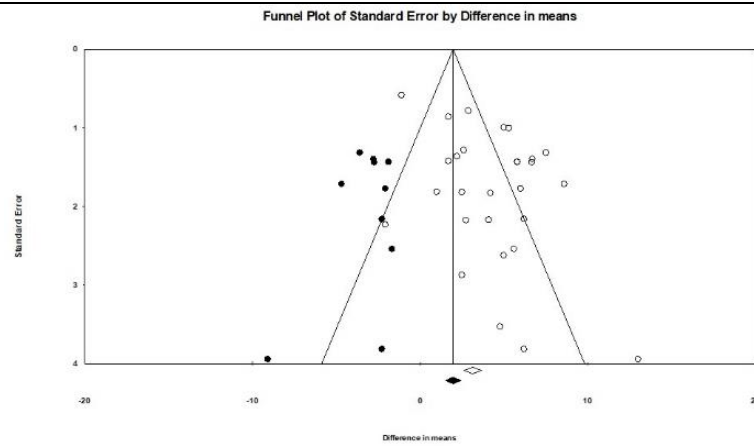
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Preoperative (Continuous)

Age



2.44

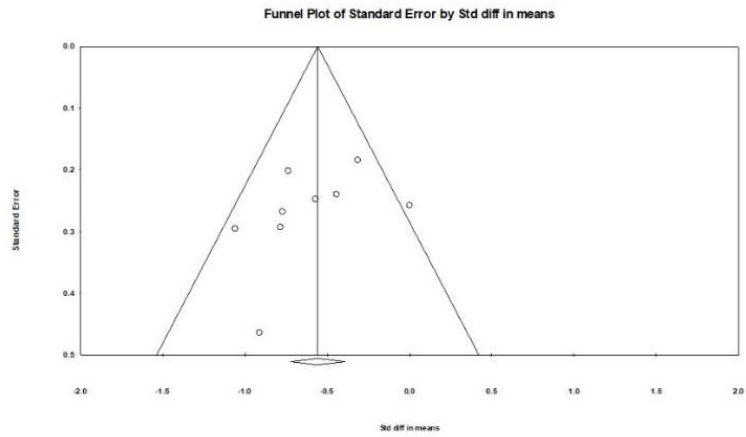
.003

11

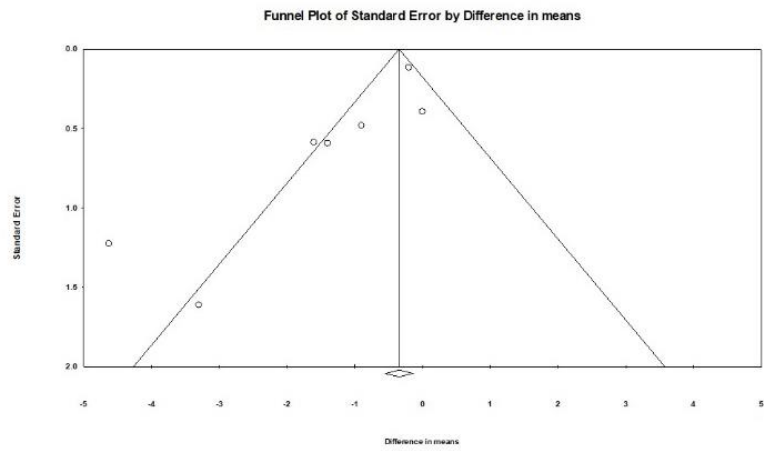
2.24†

1.04-3.45

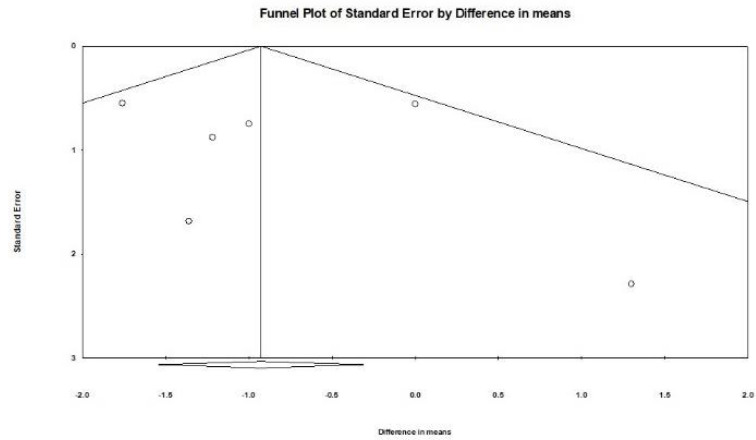
Cognition: All tests



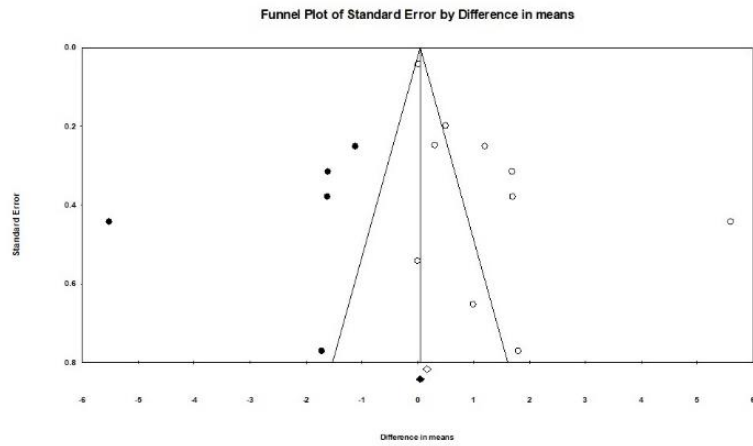
Cognition: MMSE only



Education (years)



EuroSCORE

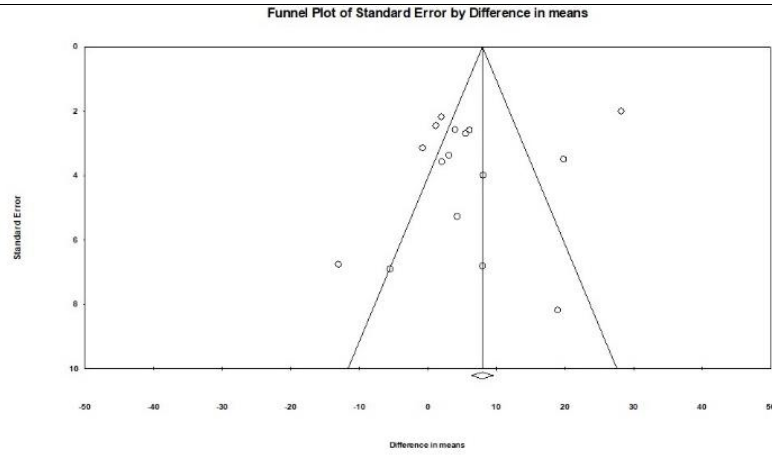


Intra-Operative (Continuous)

4.36	.010	5	0.15†	-0.60-0.90	



ACC time (mins)



-2.45

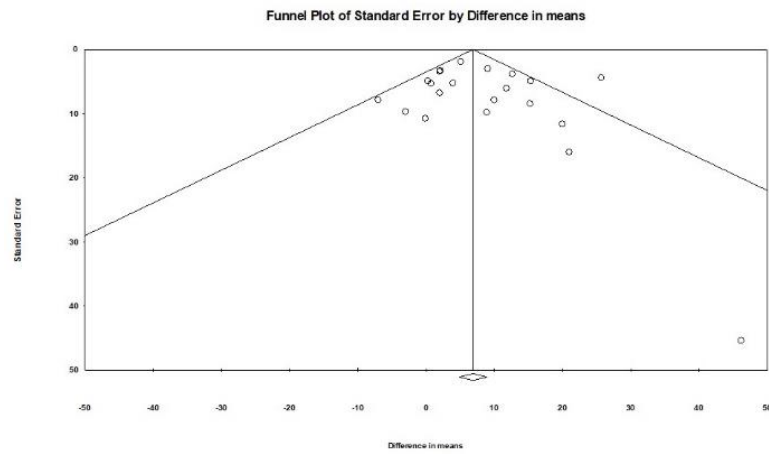
.143

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CPB time (mins)



0.45

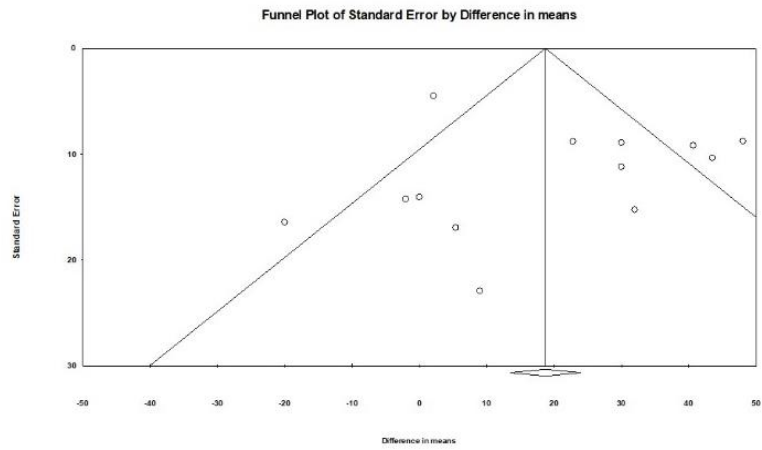
.241

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-

-

Duration of surgery (mins)



0.77

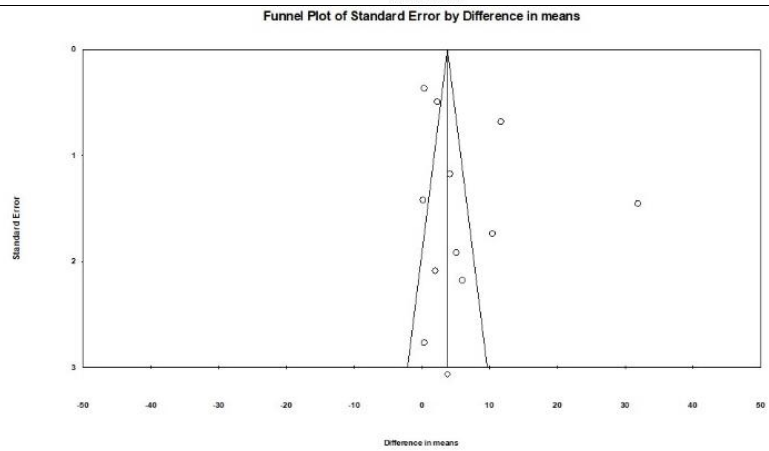
.296

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-

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Intubation time (hours)



5.20

.106

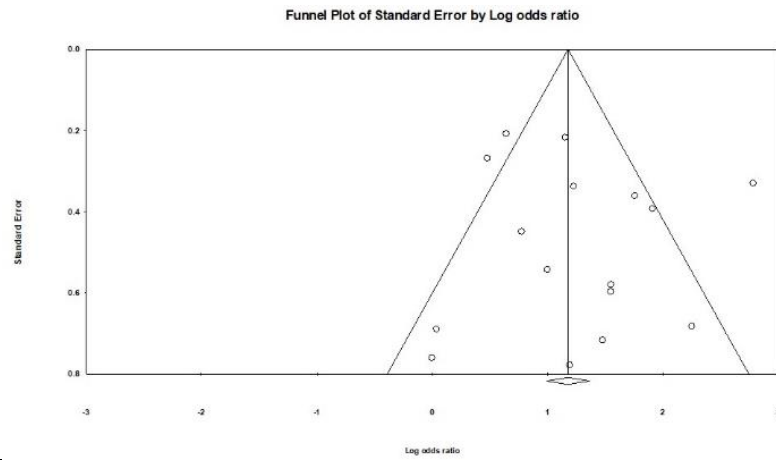
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Post-Operative (Categorical)

Arrhythmia, incl. AF



0.76

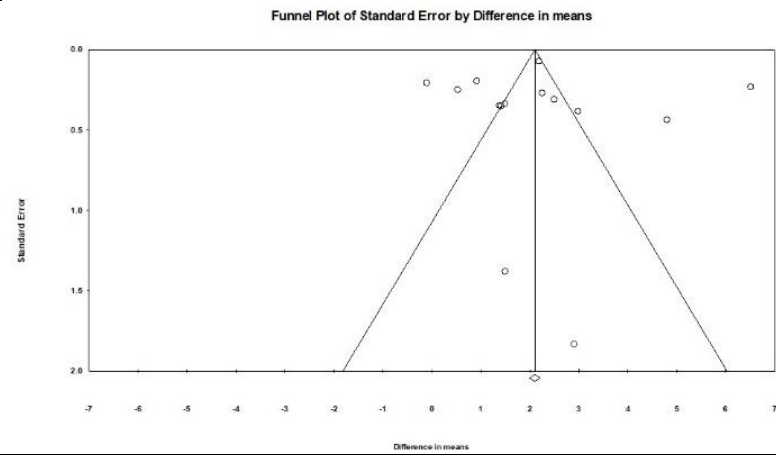
.260

-

-

Post-Operative (Continuous)

LOS in ICU (days)



0.32

.459

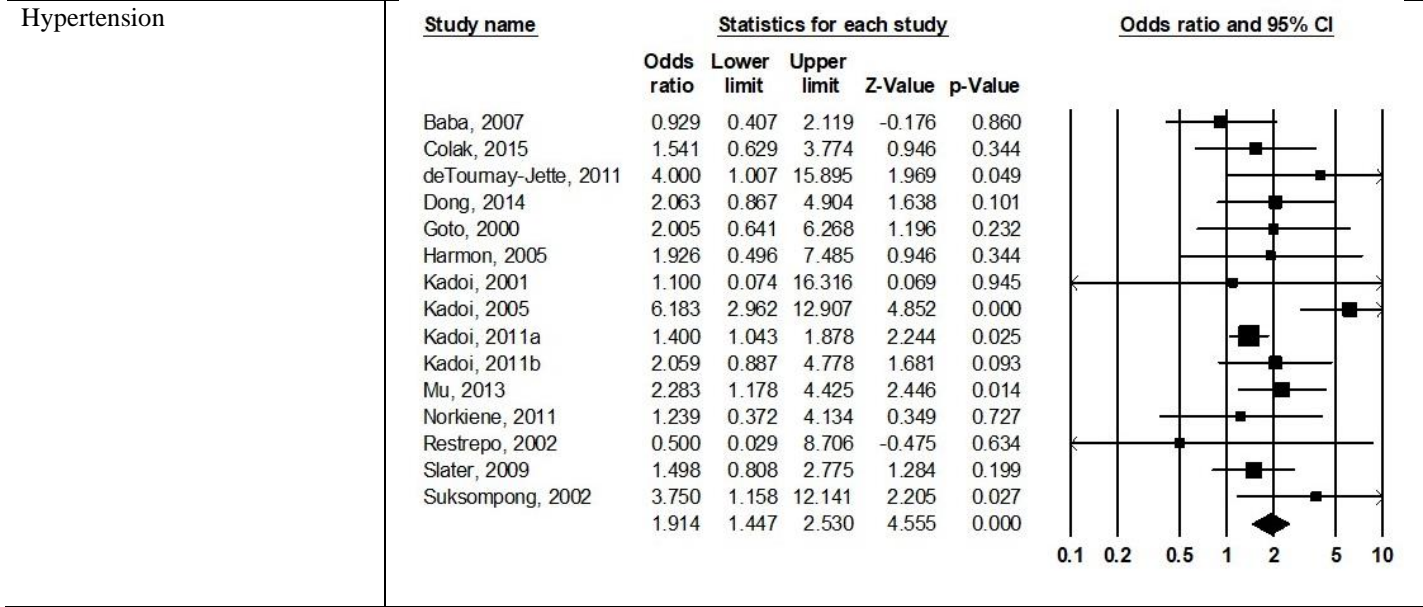
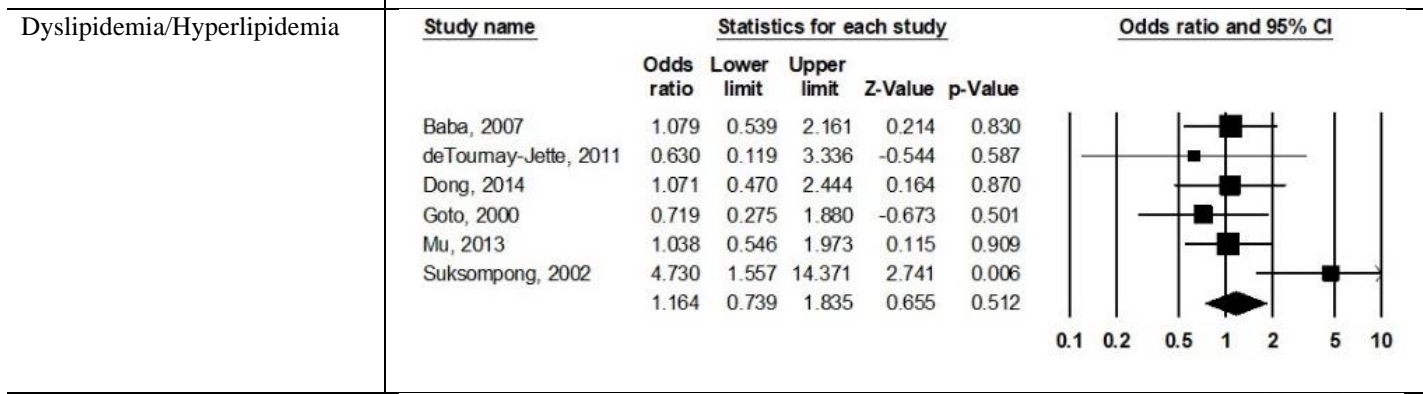
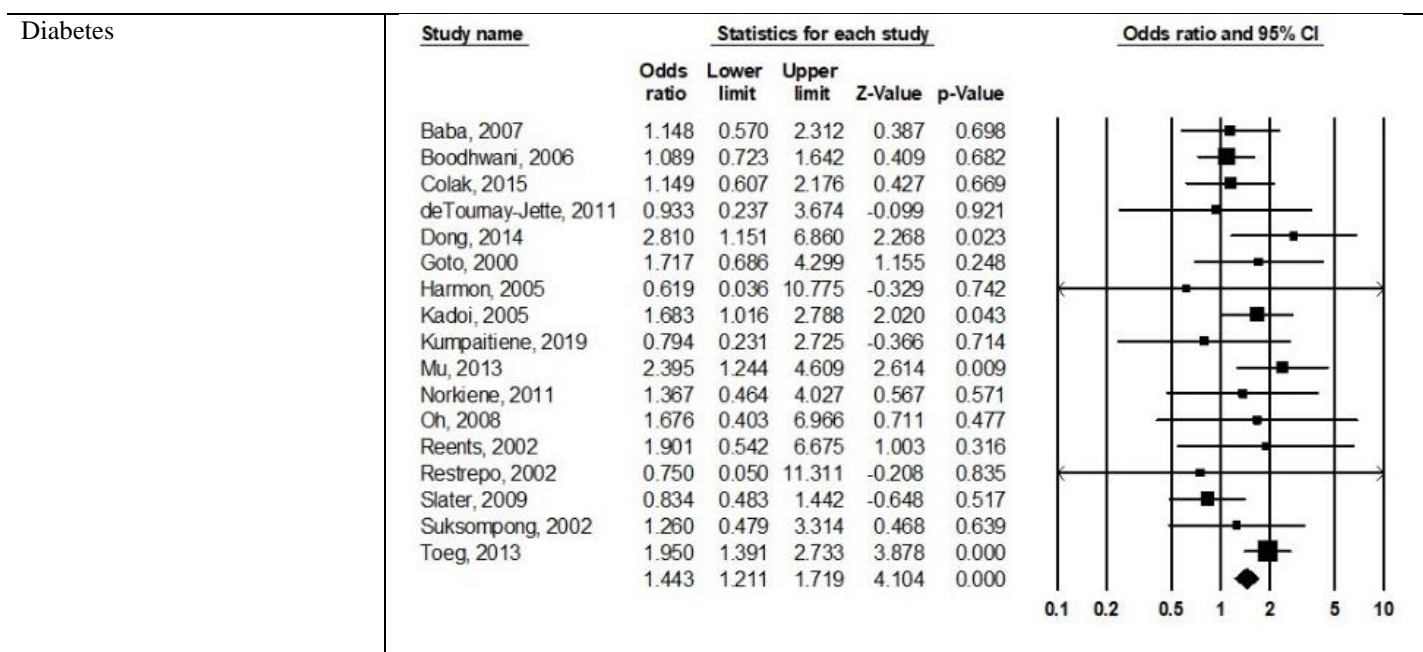
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**Figure S3. Forest plots for acute cognitive decline post-CABG analyses.**

Variable	Forest Plot																																																															
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Sex (male)	<u>Study name</u>	<u>Statistics for each study</u>					<u>Odds ratio and 95% CI</u>	
		<u>Odds ratio</u>	<u>Lower limit</u>	<u>Upper limit</u>	<u>Z-Value</u>	<u>p-Value</u>		
		Baba, 2007	0.972	0.459	2.060	-0.074	0.941	
	Boodhwani, 2006	1.206	0.692	2.102	0.660	0.509		
	Christiansen, 2016	1.667	0.048	58.281	0.282	0.778		
	Colak, 2015	1.322	0.651	2.685	0.772	0.440		
	deTournay-Jette, 2011	0.475	0.053	4.255	-0.665	0.506		
	Dong, 2014	0.811	0.317	2.074	-0.437	0.662		
	Goto, 2000	1.324	0.486	3.607	0.548	0.584		
	Hall, 1999	0.574	0.117	2.810	-0.685	0.494		
	Harmon, 2005	0.750	0.118	4.760	-0.305	0.760		
	Kadoi, 2005	0.896	0.429	1.871	-0.292	0.770		
	Kadoi, 2011b	0.786	0.299	2.061	-0.490	0.624		
	Kumpaitiene, 2019	1.488	0.504	4.393	0.719	0.472		
	Mu, 2013	0.988	0.415	2.355	-0.027	0.979		
	Norkiene, 2011	1.270	0.517	3.121	0.522	0.602		
	Reents, 2002	1.037	0.169	6.375	0.039	0.969		
	Restrepo, 2002	3.267	0.130	82.036	0.720	0.472		
	Slater, 2009	0.795	0.387	1.634	-0.625	0.532		
	Suksompong, 2002	0.913	0.297	2.809	-0.159	0.874		
		1.026	0.818	1.286	0.223	0.824		

Kidney injury	<u>Study name</u>	<u>Statistics for each study</u>					<u>Odds ratio and 95% CI</u>
		<u>Odds ratio</u>	<u>Lower limit</u>	<u>Upper limit</u>	<u>Z-Value</u>	<u>p-Value</u>	
		Baba, 2007	0.860	0.278	2.662	-0.262	0.793
	Colak, 2015	3.668	0.135	99.509	0.772	0.440	
	Slater, 2009	0.411	0.119	1.416	-1.409	0.159	
	Suksompong, 2002	4.200	1.018	17.327	1.985	0.047	
		1.213	0.396	3.716	0.338	0.735	

Previous MI <90 days	<u>Study name</u>	<u>Statistics for each study</u>					<u>Odds ratio and 95% CI</u>
		<u>Odds ratio</u>	<u>Lower limit</u>	<u>Upper limit</u>	<u>Z-Value</u>	<u>p-Value</u>	
		Colak, 2015	1.155	0.376	3.552	0.252	0.801
	Norkiene, 2011	1.621	0.528	4.975	0.844	0.399	
	Suksompong, 2002	0.750	0.240	2.342	-0.495	0.620	
		1.124	0.586	2.156	0.353	0.724	

Previous MI history/ever	<u>Study name</u>	<u>Statistics for each study</u>					<u>Odds ratio and 95% CI</u>
		<u>Odds ratio</u>	<u>Lower limit</u>	<u>Upper limit</u>	<u>Z-Value</u>	<u>p-Value</u>	
		Dong, 2014	1.831	0.800	4.191	1.431	0.152
	Harmon, 2005	1.246	0.312	4.977	0.311	0.755	
	Liu, 2009	1.776	1.046	3.015	2.127	0.033	
	Mu, 2013	0.698	0.369	1.322	-1.103	0.270	
	Norkiene, 2011	0.719	0.354	1.458	-0.915	0.360	
	Slater, 2009	1.345	0.590	3.063	0.705	0.481	
	Suksompong, 2002	1.030	0.352	3.011	0.054	0.957	
		1.160	0.825	1.630	0.852	0.394	



Previous stroke, TIA, CVA	<u>Study name</u>	<u>Statistics for each study</u>					<u>Odds ratio and 95% CI</u>
		<b>Odds ratio</b>	<b>Lower limit</b>	<b>Upper limit</b>	<b>Z-Value</b>	<b>p-Value</b>	
	Baba, 2007	4.799	1.899	12.129	3.315	0.001	
Dong, 2014	2.814	0.795	9.959	1.604	0.109		
Mu, 2013	1.445	0.576	3.623	0.785	0.433		
Restrepo, 2002	4.500	0.190	106.823	0.931	0.352		
Slater, 2009	1.652	0.553	4.938	0.899	0.369		
	2.435	1.468	4.038	3.447	0.001		

PVD	<u>Study name</u>	<u>Statistics for each study</u>					<u>Odds ratio and 95% CI</u>
		<b>Odds ratio</b>	<b>Lower limit</b>	<b>Upper limit</b>	<b>Z-Value</b>	<b>p-Value</b>	
	Baba, 2007	0.414	0.120	1.432	-1.393	0.164	
Boodhwani, 2006	0.990	0.560	1.748	-0.036	0.971		
Goto, 2000	4.353	1.185	15.987	2.216	0.027		
Restrepo, 2002	0.486	0.018	12.929	-0.431	0.666		
	1.087	0.417	2.831	0.170	0.865		

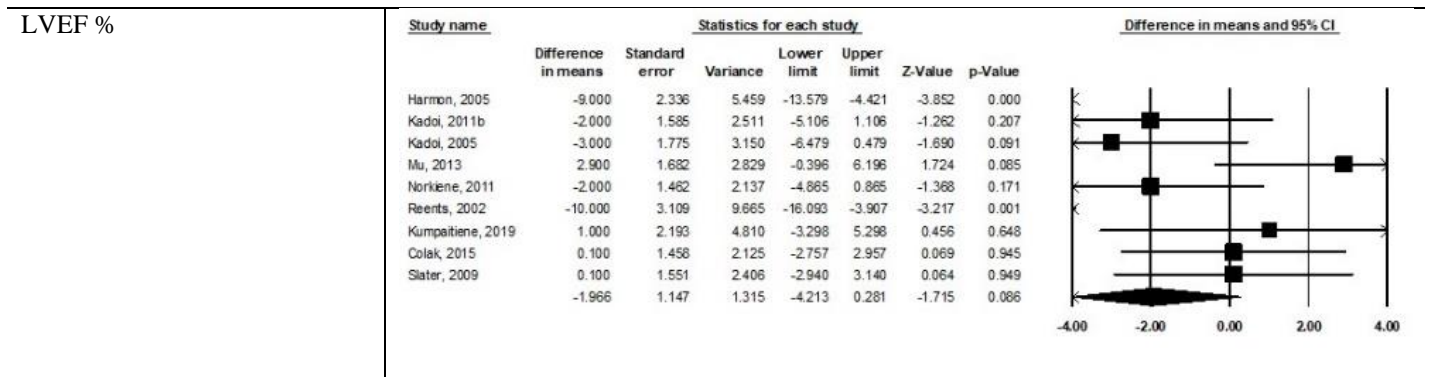
Smoking current/history	<u>Study name</u>	<u>Statistics for each study</u>					<u>Odds ratio and 95% CI</u>
		<b>Odds ratio</b>	<b>Lower limit</b>	<b>Upper limit</b>	<b>Z-Value</b>	<b>p-Value</b>	
	Baba, 2007	0.902	0.445	1.826	-0.287	0.774	
Dong, 2014	1.075	0.475	2.431	0.174	0.862		
Kadoi, 2001	0.100	0.005	1.924	-1.526	0.127		
Kadoi, 2005	1.033	0.553	1.931	0.103	0.918		
Liu, 2009	0.337	0.189	0.603	-3.668	0.000		
Mu, 2013	1.382	0.740	2.581	1.016	0.310		
Norkiene, 2011	1.693	0.755	3.798	1.278	0.201		
Restrepo, 2002	15.000	0.597	376.696	1.647	0.100		
Slater, 2009	1.729	0.997	2.997	1.950	0.051		
	1.033	0.642	1.664	0.135	0.892		

**Pre-Operative (Continuous)**

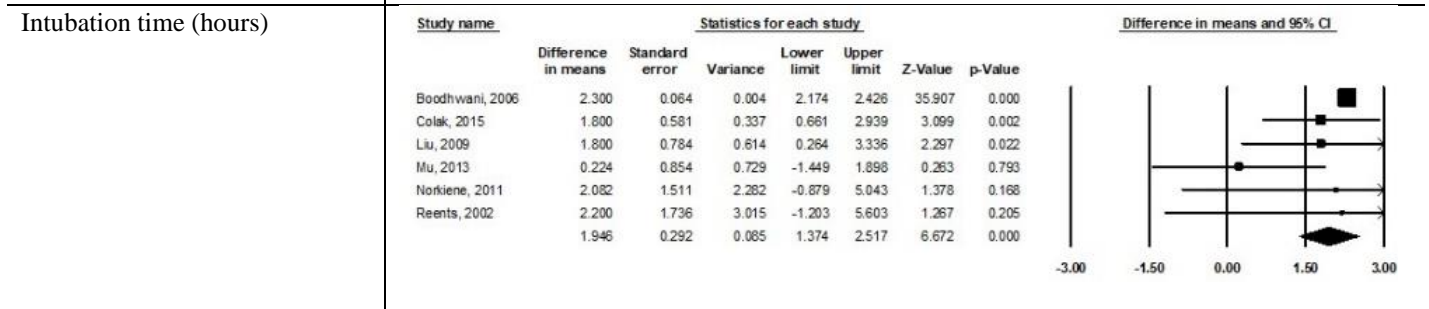
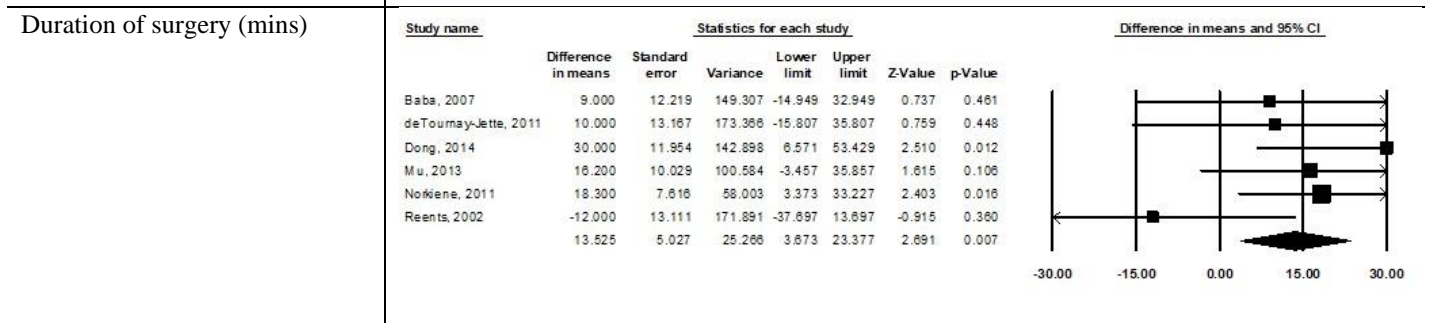
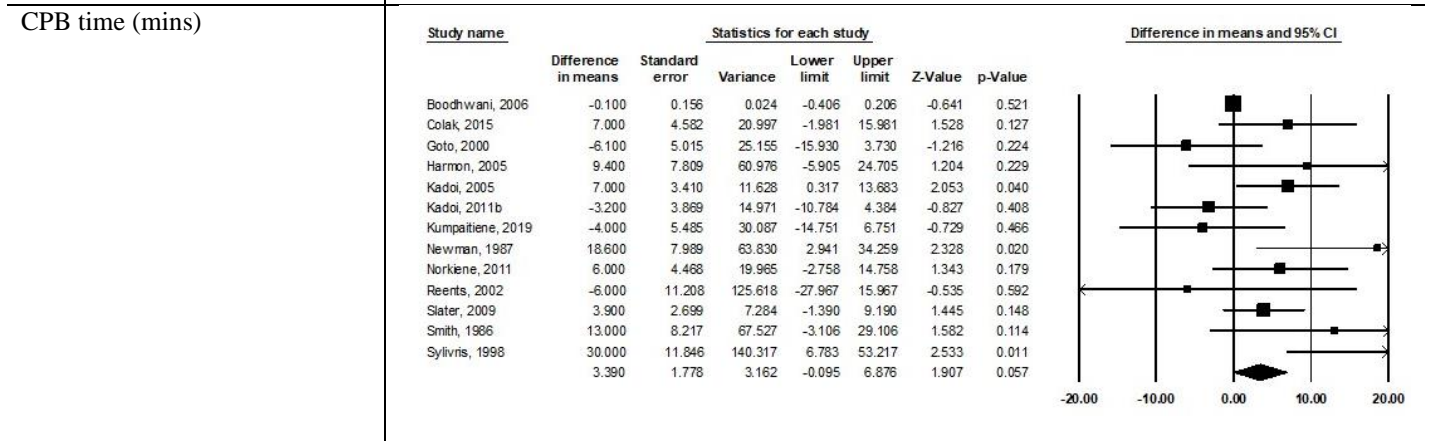
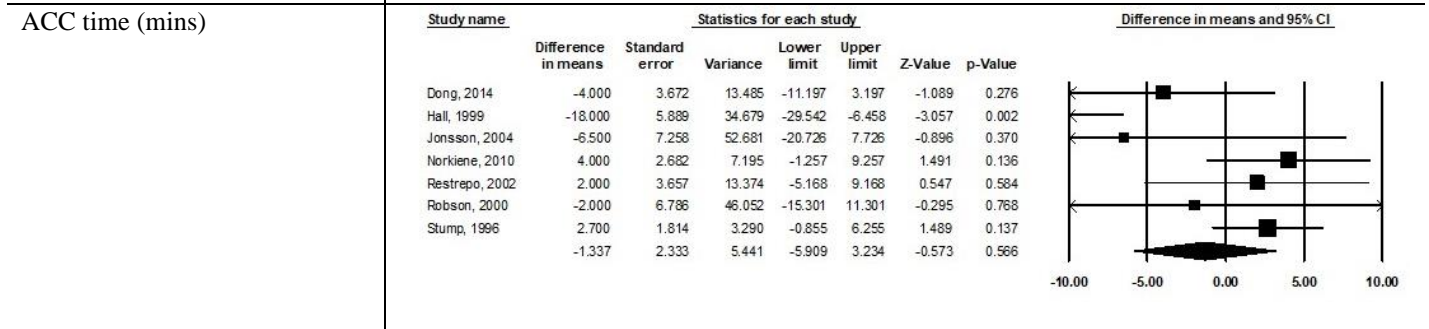
Age (years)	<u>Study name</u>	<u>Statistics for each study</u>							<u>Difference in means and 95% CI</u>
		<b>Difference in means</b>	<b>Standard error</b>	<b>Variance</b>	<b>Lower limit</b>	<b>Upper limit</b>	<b>Z-Value</b>	<b>p-Value</b>	
	Baba, 2007	0.700	0.987	0.973	-1.234	2.634	0.710	0.478	
Boodhwani, 2006	0.500	0.038	0.001	0.425	0.575	13.005	0.000		
Christiansen, 2016	1.900	10.530	110.882	-18.739	22.539	0.180	0.857		
Colak, 2015	7.300	1.091	1.191	5.151	9.439	6.689	0.000		
deTournay-Jette, 2011	-3.010	1.539	2.388	-6.028	0.006	-1.956	0.050		
Dong, 2014	6.000	1.525	2.330	3.008	8.992	3.891	0.000		
Goto, 2000	1.500	1.168	1.364	-0.789	3.789	1.284	0.199		
Hall, 1999	3.300	3.234	10.480	-3.039	9.639	1.020	0.308		
Hamon, 2005	8.300	2.425	5.883	3.546	13.054	3.422	0.001		
Kadoi, 2005	7.000	1.500	2.251	4.060	9.940	4.666	0.000		
Kadoi, 2011b	-0.200	1.098	1.206	-2.352	1.952	-0.182	0.855		
Kumpaleniene, 2019	4.000	2.176	4.736	-0.265	8.265	1.838	0.068		
Liu, 2009	2.000	1.117	1.247	-0.188	4.188	1.791	0.073		
Mu, 2013	2.000	1.413	1.996	-0.769	4.769	1.416	0.157		
Newman, 1987	6.800	2.045	4.180	2.793	10.807	3.326	0.001		
Norkiene, 2011	2.400	1.290	1.655	-0.129	4.929	1.860	0.063		
Reants, 2002	1.000	2.485	6.075	-3.831	5.831	0.408	0.885		
Restrepo, 2002	0.570	6.428	41.315	-12.028	13.168	0.089	0.929		
Scott, 2002	5.900	0.392	0.153	5.132	6.668	15.059	0.000		
Slater, 2009	-0.020	1.313	1.724	-2.593	2.553	-0.015	0.988		
Stump, 1996	2.000	1.810	3.276	-1.548	5.548	1.105	0.269		
Sylviris, 1998	-2.800	2.776	7.704	-8.240	2.640	-1.009	0.313		
	2.688	0.760	0.577	1.198	4.177	3.537	0.000		

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**Intra-Operative (Continuous)**



Number of grafts	<u>Study name</u>	<u>Statistics for each study</u>						<u>Difference in means and 95% CI</u>	
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Boodhwani, 2006	0.000	0.004	0.000	-0.008	0.008	0.000	1.000		
Colak, 2015	0.100	0.091	0.008	-0.078	0.278	1.100	0.271		
Dong, 2014	0.200	0.226	0.051	-0.243	0.643	0.884	0.377		
Harmon, 2005	0.200	0.433	0.188	-0.650	1.050	0.461	0.645		
Mu, 2013	0.200	0.165	0.027	-0.124	0.524	1.212	0.226		
Norkiene, 2011	0.300	0.196	0.038	-0.084	0.684	1.533	0.125		
Reents, 2002	-0.200	0.289	0.083	-0.766	0.366	-0.693	0.489		
	0.025	0.030	0.001	-0.034	0.085	0.842	0.400		

Total Microemboli	<u>Study name</u>	<u>Statistics for each study</u>						<u>Std diff in means and 95% CI</u>	
		Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	
Liu, 2009	0.236	0.134	0.018	-0.026	0.499	1.763	0.078		
Rodriguez, 2010	-0.055	0.107	0.011	-0.264	0.154	-0.512	0.608		
Royse, 2000	0.681	0.550	0.302	-0.397	1.758	1.238	0.216		
Stump, 1996	0.295	0.170	0.029	-0.038	0.627	1.736	0.082		
	0.157	0.113	0.013	-0.066	0.379	1.381	0.167		

**Post-Operative (Categorical)**

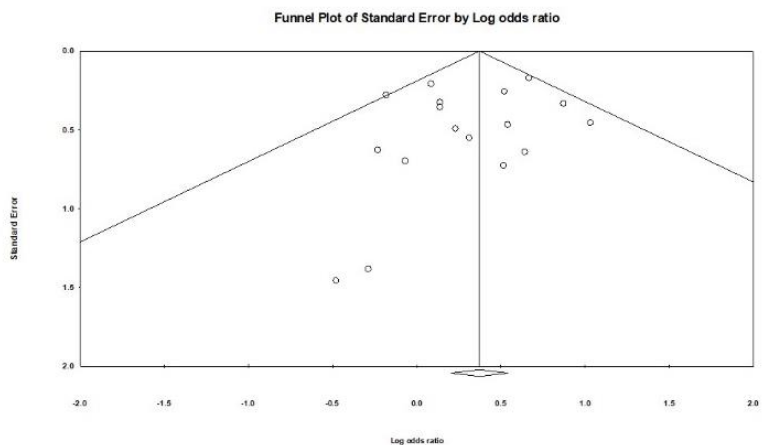
Arrhythmia, incl. AF	<u>Study name</u>	<u>Statistics for each study</u>					<u>Odds ratio and 95% CI</u>
		Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Boodhwani, 2006	1.398	0.922	2.122	1.576	0.115		
Colak, 2015	1.176	0.591	2.342	0.462	0.644		
Mu, 2013	1.531	0.210	11.147	0.421	0.674		
Norkiene, 2011	3.265	0.966	11.035	1.905	0.057		
Restrepo, 2002	2.000	0.134	29.808	0.503	0.615		
Suksompong, 2002	0.870	0.220	3.435	-0.199	0.842		
	1.402	1.013	1.941	2.038	0.042		

Delirium	<u>Study name</u>	<u>Statistics for each study</u>					<u>Odds ratio and 95% CI</u>
		Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	
Colak, 2015	4.171	1.458	11.935	2.662	0.008		
Norkiene, 2011	9.019	1.076	75.621	2.027	0.043		
Reents, 2002	39.000	2.021	752.636	2.426	0.015		
	6.147	2.322	16.269	3.657	0.000		

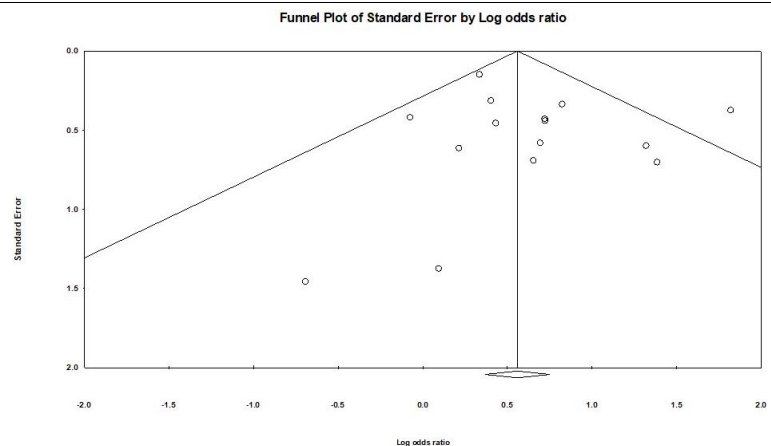
**Post-Operative (Continuous)**

LOS in ICU (days)	<u>Study name</u>	<u>Statistics for each study</u>						<u>Difference in means and 95% CI</u>	
		Difference in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	
Boodhwani, 2006	0.290	0.008	0.000	0.274	0.306	36.220	0.000		
Colak, 2015	0.300	0.146	0.021	0.015	0.585	2.060	0.039		
deTournay-Jette, 2011	-0.710	0.479	0.230	-1.649	0.229	-1.481	0.138		
Harmon, 2005	0.075	0.188	0.036	-0.294	0.444	0.398	0.691		
Mu, 2013	-0.242	0.240	0.058	-0.712	0.228	-1.010	0.312		
Norkiene, 2011	0.600	0.216	0.047	0.176	1.024	2.774	0.006		
Sahan, 2018	1.200	0.240	0.057	0.730	1.670	5.007	0.000		
	0.294	0.132	0.017	0.036	0.552	2.235	0.025		

**Figure S4. Funnel plots for statistically significant analyses in regard to acute cognitive decline post-CABG, and results of publication bias/small-study effect investigation when more than 10 studies were available.**

		Egger's Test		Trim and Fill		
		Intercept	p value (1-tailed)	No. imputed studies	OR/MD† /SMD‡	95%CI
<b>Preoperative (Categorical)</b>						
Depression	Only 2 studies, could not produce funnel plot			-	-	-
Diabetes		-0.39	.232	-	-	-

Hypertension



0.55

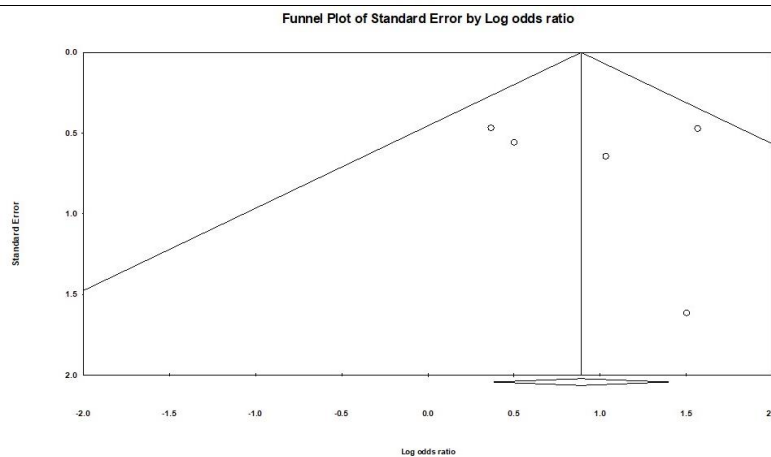
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Previous stroke, TIA, CVA



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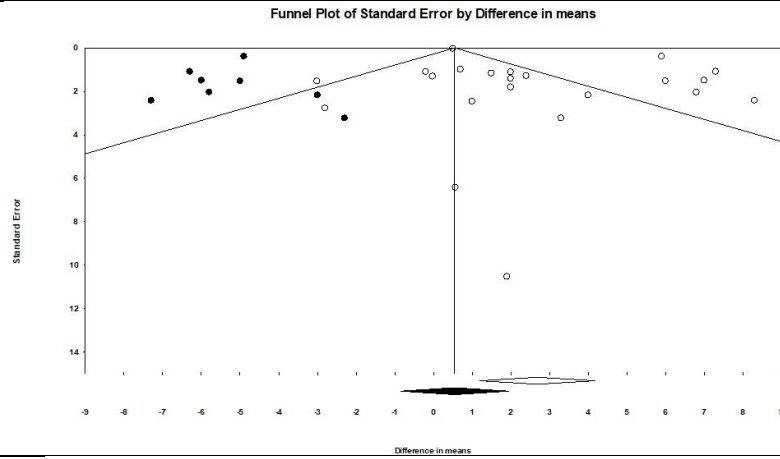
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Preoperative (Continuous)

Age



1.80

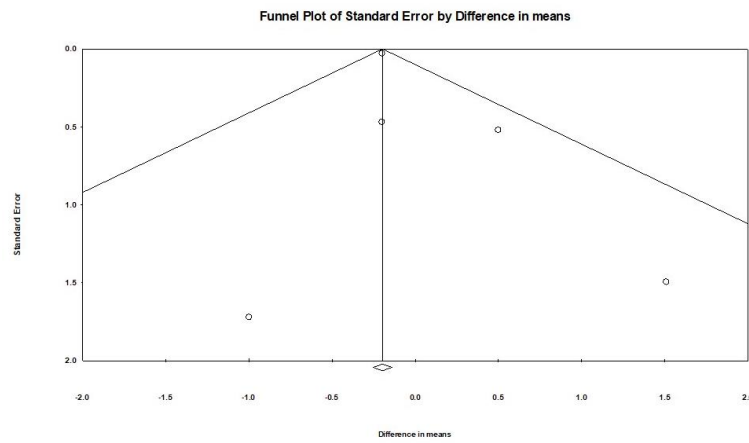
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8

0.55†

-0.86-1.95

BMI



-

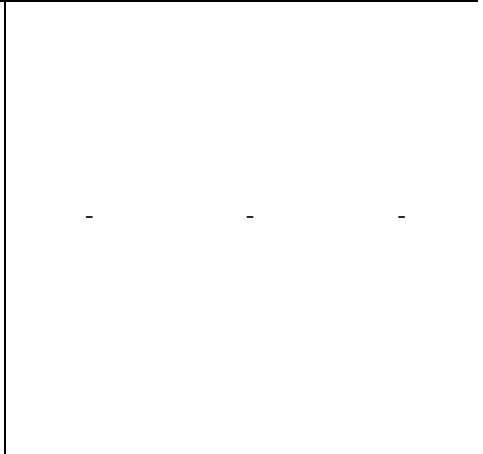
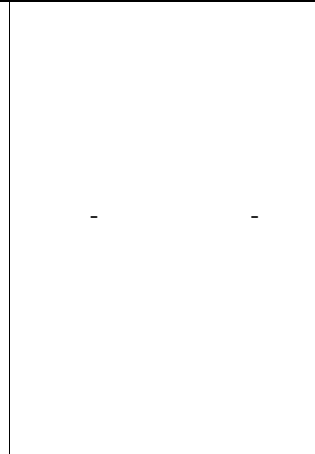
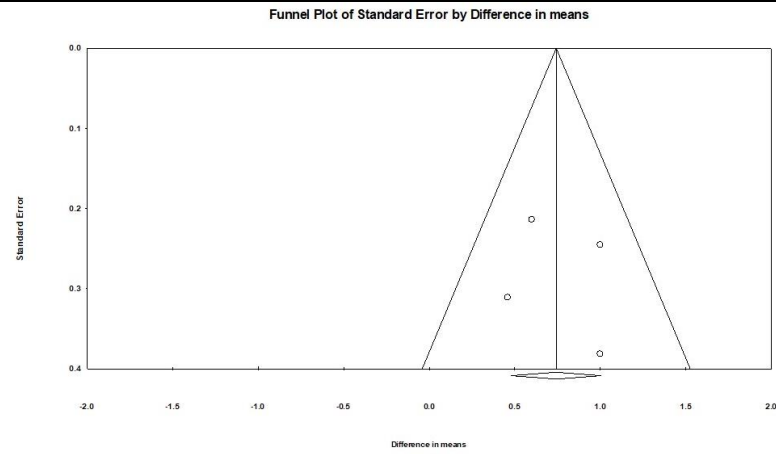
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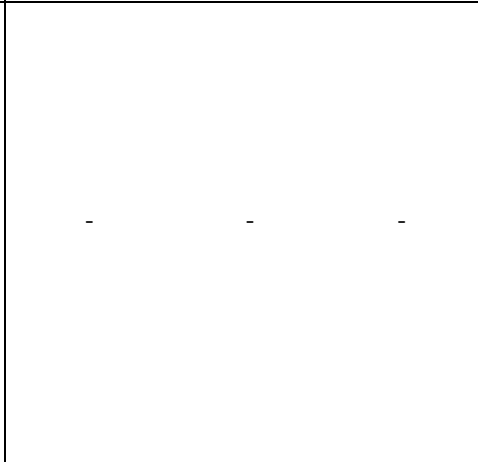
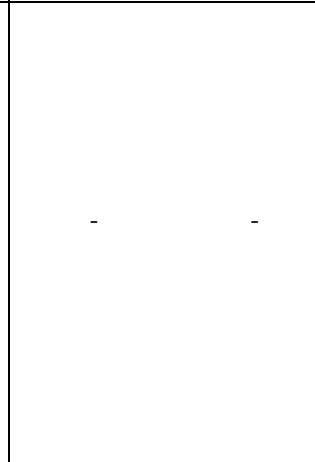
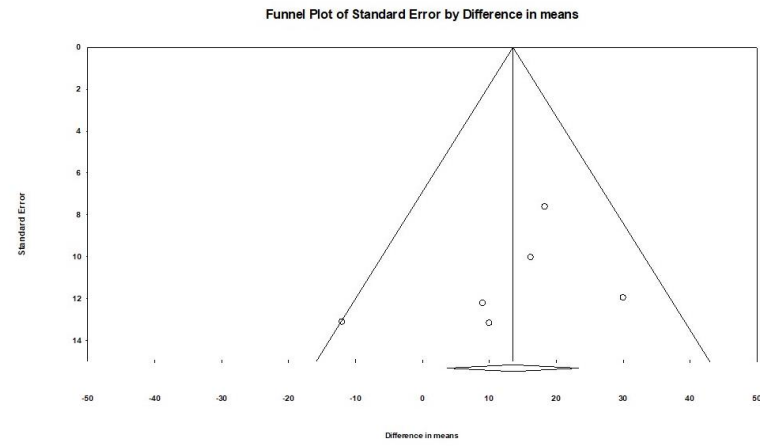
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EuroSCORE

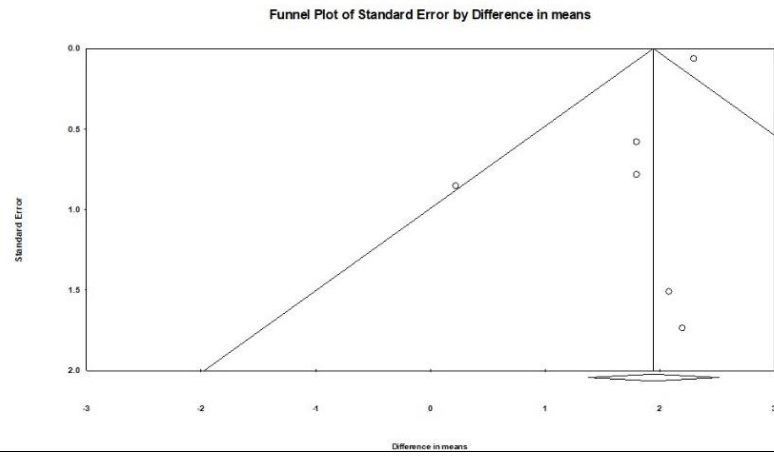


Intra-Operative (Continuous)

Duration of surgery (mins)



Intubation time (hours)

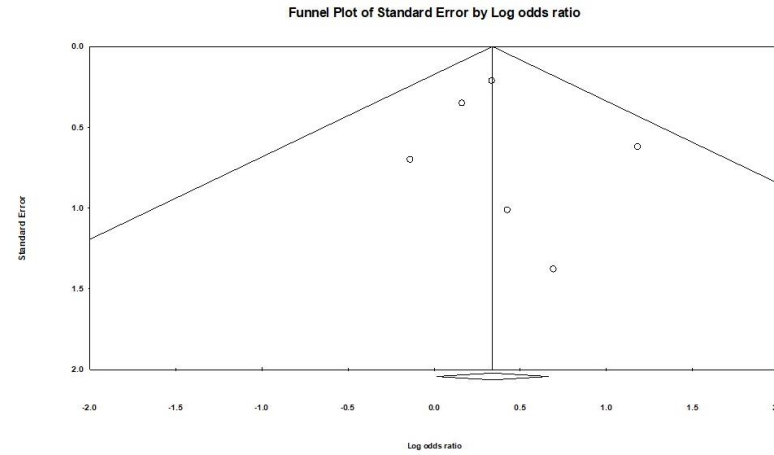


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Post-Operative (Categorical)

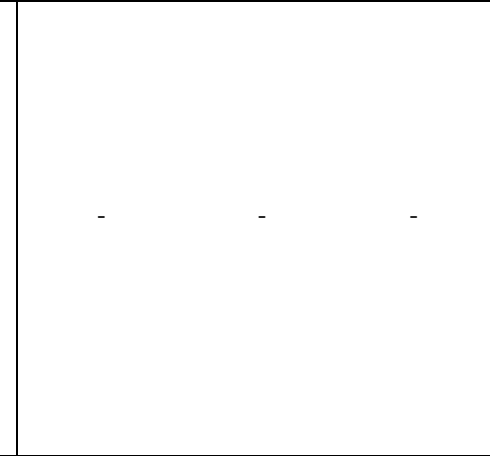
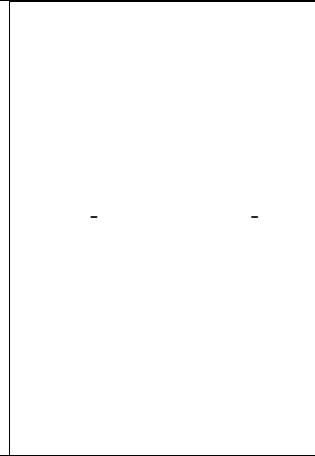
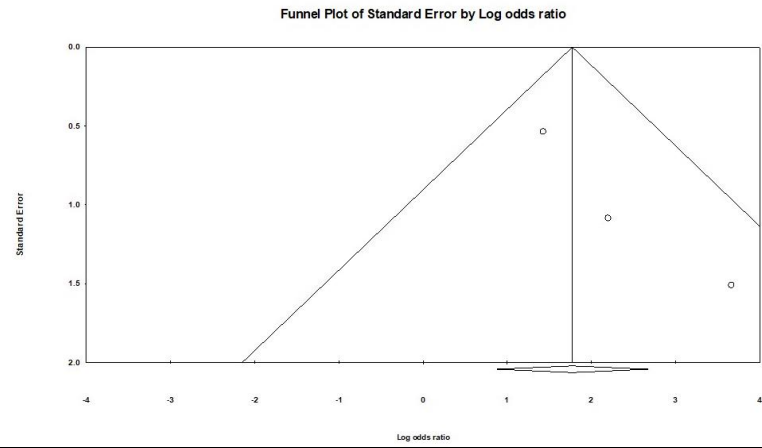
Arrhythmia, incl. AF



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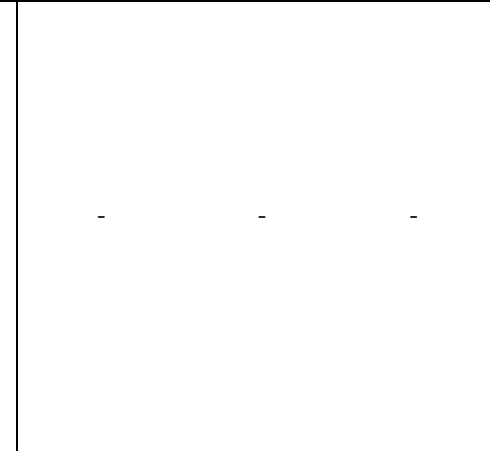
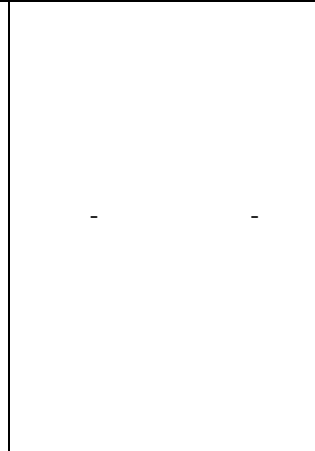
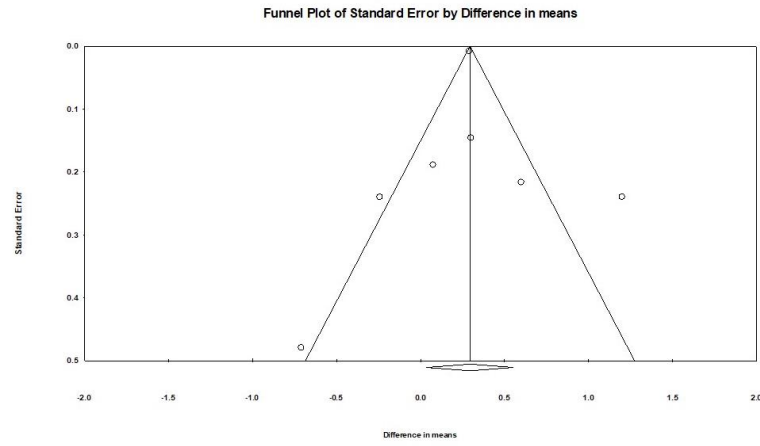
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Delirium



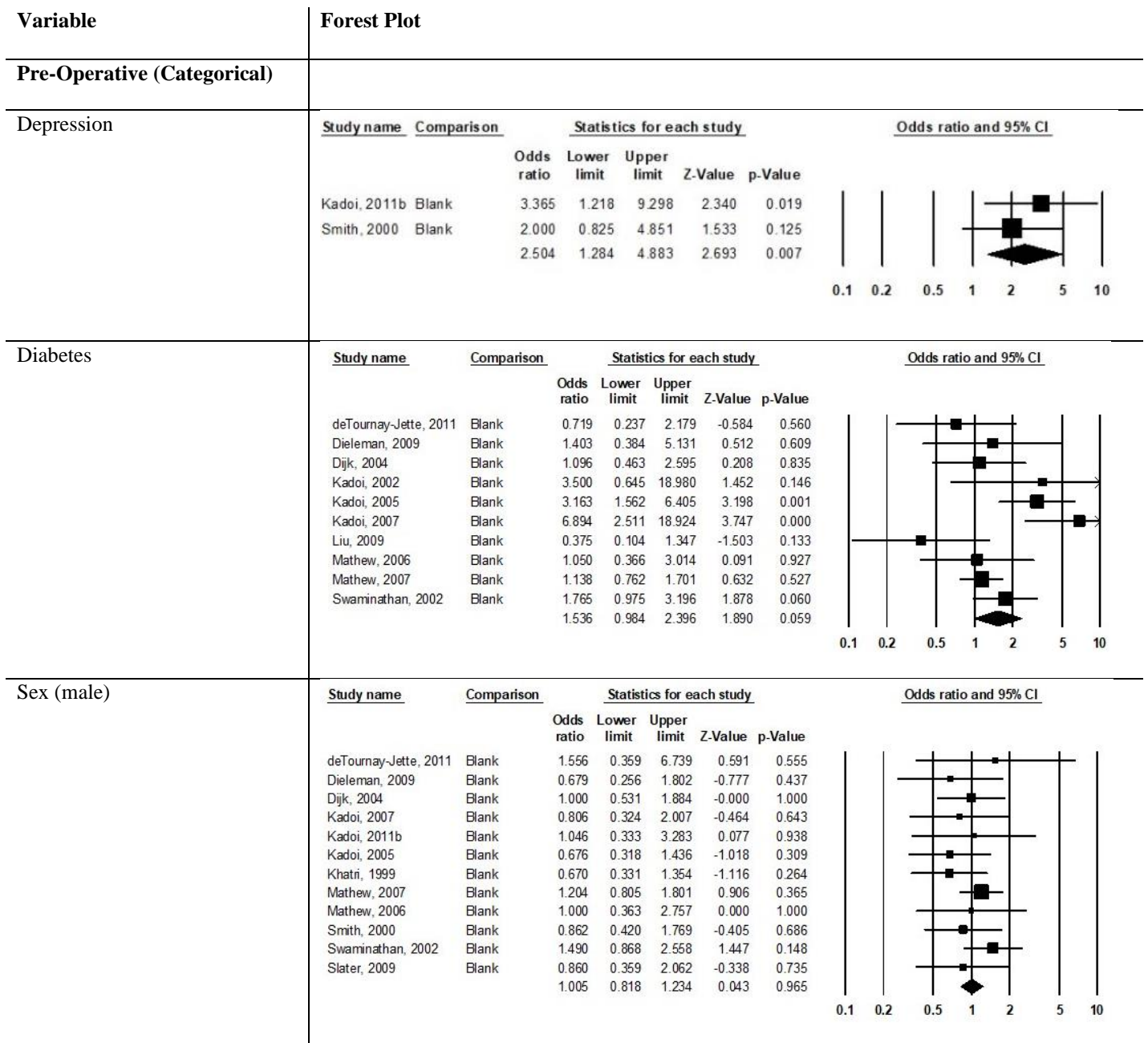
Post-Operative (Continuous)

LOS in ICU (days)





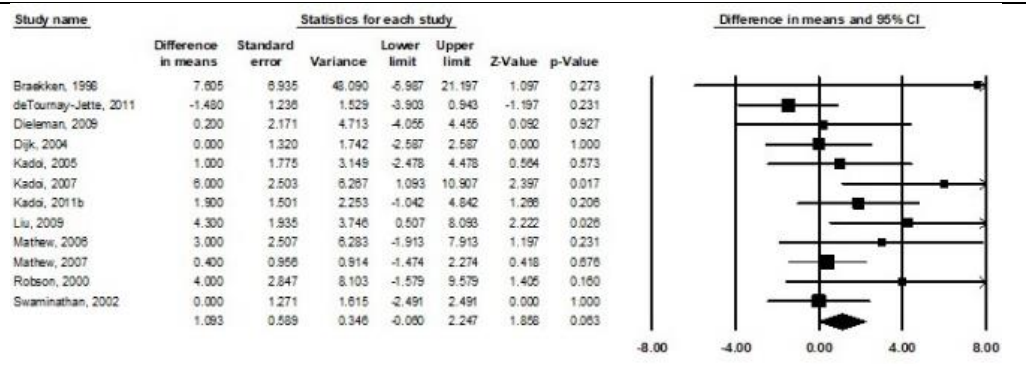
**Figure S5. Forest plots for mid-term cognitive decline post-CABG analyses.**



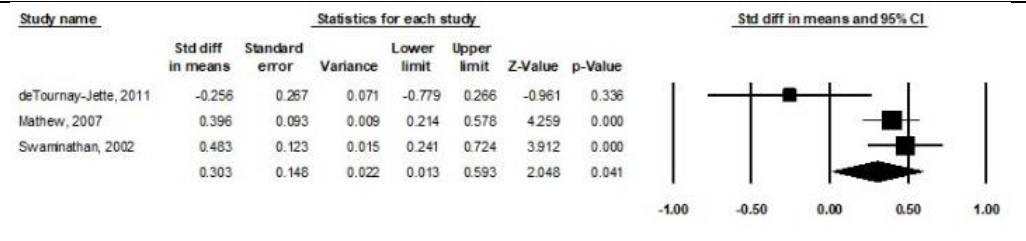
Hypertension	<table border="1"> <thead> <tr> <th rowspan="2">Study name</th> <th colspan="5">Statistics for each study</th> <th rowspan="2">Odds ratio and 95% CI</th> </tr> <tr> <th>Odds ratio</th> <th>Lower limit</th> <th>Upper limit</th> <th>Z-Value</th> <th>p-Value</th> </tr> </thead> <tbody> <tr><td>deTournay-Jette, 2011</td><td>1.016</td><td>0.341</td><td>3.026</td><td>0.028</td><td>0.978</td></tr> <tr><td>Dieleman, 2009</td><td>0.901</td><td>0.342</td><td>2.375</td><td>-0.211</td><td>0.833</td></tr> <tr><td>Kadoi, 2001</td><td>0.200</td><td>0.100</td><td>0.400</td><td>-4.551</td><td>0.000</td></tr> <tr><td>Kadoi, 2002</td><td>0.500</td><td>0.129</td><td>1.936</td><td>-1.003</td><td>0.316</td></tr> <tr><td>Kadoi, 2003</td><td>0.300</td><td>0.087</td><td>1.039</td><td>-1.899</td><td>0.058</td></tr> <tr><td>Kadoi, 2005</td><td>0.925</td><td>0.438</td><td>1.954</td><td>-0.205</td><td>0.837</td></tr> <tr><td>Kadoi, 2007</td><td>1.195</td><td>0.478</td><td>2.983</td><td>0.381</td><td>0.703</td></tr> <tr><td>Kadoi, 2011b</td><td>1.222</td><td>0.456</td><td>3.273</td><td>0.399</td><td>0.690</td></tr> <tr><td>Mathew, 2006</td><td>2.092</td><td>0.626</td><td>6.991</td><td>1.200</td><td>0.230</td></tr> <tr><td>Mathew, 2007</td><td>1.000</td><td>0.689</td><td>1.450</td><td>-0.000</td><td>1.000</td></tr> <tr><td>Smith, 2000</td><td>1.000</td><td>0.581</td><td>1.722</td><td>0.000</td><td>1.000</td></tr> <tr><td>Swaminathan, 2002</td><td>2.083</td><td>1.282</td><td>3.386</td><td>2.963</td><td>0.003</td></tr> <tr><td></td><td>0.887</td><td>0.594</td><td>1.324</td><td>-0.586</td><td>0.558</td></tr> </tbody> </table>	Study name	Statistics for each study					Odds ratio and 95% CI	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	deTournay-Jette, 2011	1.016	0.341	3.026	0.028	0.978	Dieleman, 2009	0.901	0.342	2.375	-0.211	0.833	Kadoi, 2001	0.200	0.100	0.400	-4.551	0.000	Kadoi, 2002	0.500	0.129	1.936	-1.003	0.316	Kadoi, 2003	0.300	0.087	1.039	-1.899	0.058	Kadoi, 2005	0.925	0.438	1.954	-0.205	0.837	Kadoi, 2007	1.195	0.478	2.983	0.381	0.703	Kadoi, 2011b	1.222	0.456	3.273	0.399	0.690	Mathew, 2006	2.092	0.626	6.991	1.200	0.230	Mathew, 2007	1.000	0.689	1.450	-0.000	1.000	Smith, 2000	1.000	0.581	1.722	0.000	1.000	Swaminathan, 2002	2.083	1.282	3.386	2.963	0.003		0.887	0.594	1.324	-0.586	0.558	
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**Pre-Operative (Continuous)**

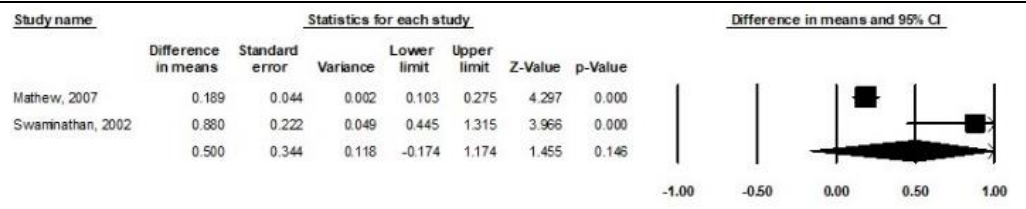
Age (years)



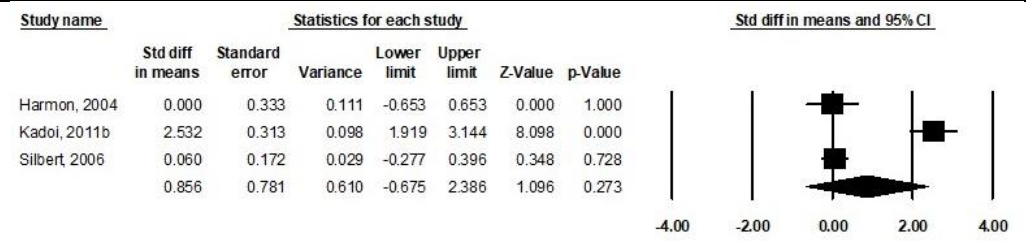
Cognition: All tests



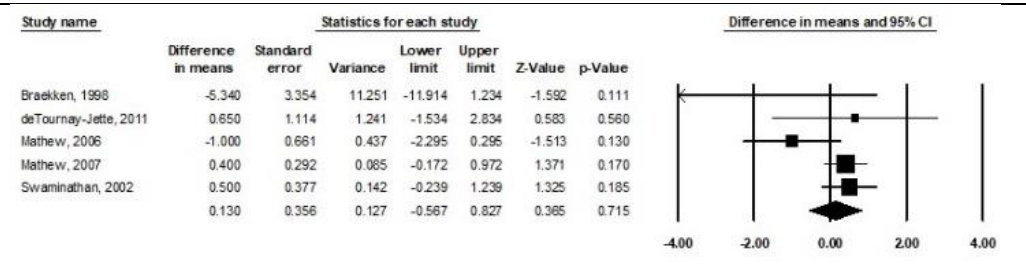
Cognition: CI only



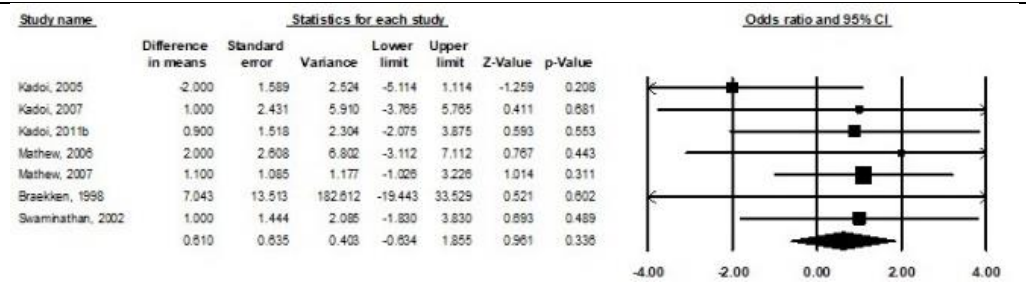
Depression: All tests



Education (years)



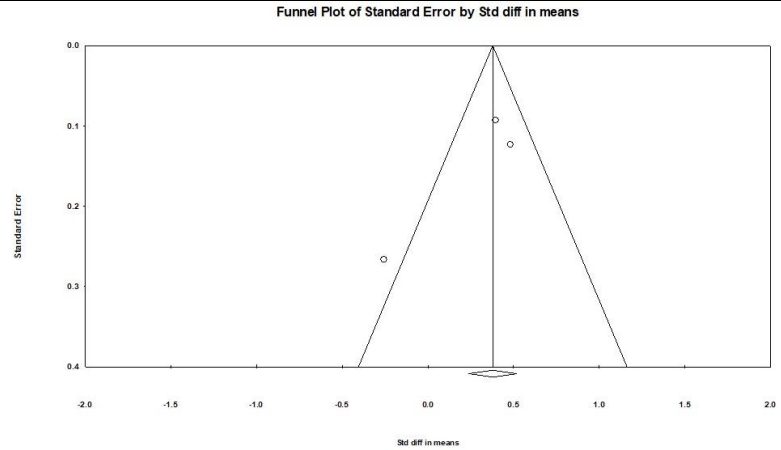
LVEF %



<b>Intra-Operative (Continuous)</b>																																																																																		
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**Figure S6. Funnel plots for statistically significant analyses in regard to mid-term cognitive decline post-CABG, and results of publication bias/small-study effect investigation when more than 10 studies were available.**

	Egger's Test		Trim and Fill		
	Intercept	p value (1-tailed)	No. imputed studies	OR/MD† /SMD‡	95%CI
<b>Preoperative (Categorical)</b>					
Depression	Only 2 studies, could not produce funnel plot		-	-	-
<b>Preoperative (Continuous)</b>					
Cognition: All tests					





**Figure S7. Forest plots for long-term cognitive decline post-CABG analyses.**

Variable	Forest Plot																																											
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Dieleman, 2009	0.047	0.192	0.037	-0.330	0.424	0.243	0.808	
Kok, 2017	0.008	0.249	0.062	-0.480	0.496	0.034	0.973	
	0.032	0.152	0.023	-0.266	0.331	0.213	0.832	