ltem No	Recommendation	Reported on Page No
Reporting	of background should include	
1	Problem definition	4
2	Hypothesis statement	4
3	Description of study outcome(s)	4
4	Type of exposure or intervention used	6
5	Type of study designs used	8
6	Study population	5
Reporting	of search strategy should include	1
7	Qualifications of searchers (eg, librarians and investigators)	5
8	Search strategy, including time period included in the synthesis and key words	5
9	Effort to include all available studies, including contact with authors	5
10	Databases and registries searched	5
11	Search software used, name and version, including special features used (eg, explosion)	5
12	Use of hand searching (eg, reference lists of obtained articles)	Not per- formed
13	List of citations located and those excluded, including justification	8 and fig- ure 1
14	Method of addressing articles published in languages other than English	5
15	Method of handling abstracts and unpublished studies	5
16	Description of any contact with authors	5
Reporting	of methods should include	
17	Description of relevance or appropriateness of studies assembled for assessing the hypothesis to be tested	5
18	Rationale for the selection and coding of data (eg, sound clinical principles or convenience)	5-6
19	Documentation of how data were classified and coded (eg, multiple raters, blinding and interrater reliability)	5
20	Assessment of confounding (eg, comparability of cases and controls in studies where appropriate)	Table S5

Item No	Recommendation							
21	Assessment of study quality, including blinding of quality assessors, stratifica- tion or regression on possible predictors of study results	Table 1 + Table S5						
22	Assessment of heterogeneity	Figures 2-4						
23	Description of statistical methods (eg, complete description of fixed or random effects models, justification of whether the chosen models account for predictors of study results, dose-response models, or cumulative meta-analysis) in sufficient detail to be replicated	7						
24	Provision of appropriate tables and graphics	16-20						
Reporting	of results should include							
25	Graphic summarizing individual study estimates and overall estimate	Figures 2-4						
26	Table giving descriptive information for each study included	Table S3-4						
27	Results of sensitivity testing (eg, subgroup analysis)	Not per- formed						
28	Indication of statistical uncertainty of findings	Table 1						
Reporting	of discussion should include							
29	Quantitative assessment of bias (eg, publication bias)	Figure S1- 3						
30	Justification for exclusion (eg, exclusion of non-English language citations)	5						
31	Assessment of quality of included studies	Table S5						
Reporting	of conclusions should include							
32	Consideration of alternative explanations for observed results	13						
33	Generalization of the conclusions (ie, appropriate for the data presented and within the domain of the literature review)	13						
34	Guidelines for future research	13						
35	Disclosure of funding source	14-15						
From: Stroup Meta-analysi 10.1001/jam Transcribed	D DF, Berlin JA, Morton SC, et al, for the Meta-analysis Of Observational Studies in Epidemiology (MOC is of Observational Studies in Epidemiology. A Proposal for Reporting. <i>JAMA</i> . 2000;283(15):2008-2012 a.283.15.2008. from the original paper within the NEUROSURGERY® Editorial Office, Atlanta, GA, United Sates. Augu	DSE) Group. . doi: .st 2012.						

Table S2: PRISMA checklist										
Торіс	No.	Item	Location where item is reported							
	1	Title								
Title	1	Identify the report as a systematic review.	Line 1-2							
	Abstract									
Abstract	2	See the PRISMA 2020 for Abstracts checklist	Page 2-3							
		Introduction								
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Line 64-77							
Objectives	4	Provide an explicit statement of the objec- tive(s) or question(s) the review addresses.	Line 78-81							
		Methods								
Eligibility crite- ria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Line 95-105 and 116- 131							
Information sources	6	Specify all databases, registers, websites, or- ganisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	Line 86-87							
Search strat- egy	7	Present the full search strategies for all data- bases, registers and websites, including any filters and limits used.	Line 87-91							
Selection pro- cess	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	Line 96-105							
Data collec- tion process	Data collec- tion process 9 Specify the methods used to collect data from reports, including how many reviewers col- lected data from each report, whether they worked independently, any processes for ob- taining or confirming data from study investiga- tors, and if applicable, details of automation tools used in the process.		Line 106-115							
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. For all measures, time points, analyses), and if not,	Line 106-115							

Торіс	No.	ltem	Location where item is reported
		the methods used to decide which results to collect.	
	10b	List and define all other variables for which data were sought (e.g. Participant and inter- vention characteristics, funding sources). De- scribe any assumptions made about any miss- ing or unclear information.	Line 106-115
Study risk of bias assess- ment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers as- sessed each study and whether they worked independently, and if applicable, details of au- tomation tools used in the process.	Line 132-138
Effect measures	12	Specify for each outcome the effect meas- ure(s) (e.g. Risk ratio, mean difference) used in the synthesis or presentation of results.	Line 139-146
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. Tabulating the study intervention characteris- tics and comparing against the planned groups for each synthesis (item 5)).	Line 139-146
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	Line 139-146
	13c	Describe any methods used to tabulate or vis- ually display results of individual studies and syntheses.	Line 139-146
	13d	Describe any methods used to synthesize re- sults and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	Line 139-146
	13e	Describe any methods used to explore possi- ble causes of heterogeneity among study re- sults (e.g. Subgroup analysis, meta-regres- sion).	Line 139-146
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	None performed
Reporting bias assess- ment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (aris- ing from reporting biases).	Line 132-138

Table S2: PRISMA checklist							
Торіс	No.	Item	Location where item is reported				
Certainty as- sessment 15 Describe any metho tainty (or confidenc for an outcome.		Describe any methods used to assess cer- tainty (or confidence) in the body of evidence for an outcome.	Line 132-138				
		Results					
Study selec- tion	16a	Describe the results of the search and selec- tion process, from the number of records iden- tified in the search to the number of studies in- cluded in the review, ideally using a flow dia- gram.	Line 148-158+ Figure 1				
	16b	Cite studies that might appear to meet the in- clusion criteria, but which were excluded, and explain why they were excluded.	-				
Study charac- teristics	17	Cite each included study and present its char- acteristics.	Table S3-4				
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Table S6-7				
Results of in- dividual stud- ies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where ap- propriate) and (b) an effect estimate and its precision (e.g. Confidence/credible interval), ideally using structured tables or plots.	Figure 2-4 Table 1, Ta- ble S5				
Results of syntheses	20a	For each synthesis, briefly summarize the characteristics and risk of bias among contrib- uting studies.	Table S5				
	20b	Present results of all statistical syntheses con- ducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. Confidence/credible interval) and measures of statistical heterogeneity. If com- paring groups, describe the direction of the ef- fect.	Table 1 + Figure 2-4				
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	None performed				
	20d	Present results of all sensitivity analyses con- ducted to assess the robustness of the synthe- sized results.	None performed				
Reporting bi- ases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	Table S6-7				

Table S2: PR	Table S2: PRISMA checklist							
Торіс	No.	Item	Location where item is reported					
Certainty of evidence	22	Present assessments of certainty (or confi- dence) in the body of evidence for each out- come assessed.	Table 1 and Table S5					
		Discussion						
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Line 248-275					
	23b	Discuss any limitations of the evidence in- cluded in the review.	Line 276-288					
	23c	Discuss any limitations of the review pro- cesses used.	Line 276-288					
	23d	Discuss implications of the results for practice, policy, and future research.	Line 289-295					
		Other information						
Registration and protocol	24a	Provide registration information for the review, including register name and registration num- ber, or state that the review was not registered.	Not registered					
	24b	Indicate where the review protocol can be ac- cessed, or state that a protocol was not pre- pared.	No protocol available					
	24c	Describe and explain any amendments to in- formation provided at registration or in the pro- tocol.	No protocol available					
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	Line 296-328					
Competing in- terests	26	Declare any competing interests of review au- thors.	Line 296-328					
Availability of 27 data, code and other ma- terials		Report which of the following are publicly avail- able and where they can be found: template data collection forms; data extracted from in- cluded studies; data used for all analyses; an- alytic code; any other materials used in the re- view.	Data sharing statement					

Table S3: Desc	cription of conventional treatment
Arakawa 2004 ¹	Stable blood pressure and positive fluid balance. I.v. calcium channel blockers, Ozagrel sodium, and Fasudil hydrochloride.
Bissolo 2021 ²	A minimal mean arterial pressure (MAP) of >90 mmHg was maintained with fluids and, when necessary, with vasopressors in all the patients after successful aneurysm securing by either microsurgical clipping or endovascular coiling. Induced hyperten- sion, defined as MAP = 100–110 mmHg, was used in case of clinical signs of delayed neurological deficit.
Ding 2020 ³	External ventricular drain
Fistouris 2022 ⁴	Not reported
Haldrup 2023 ⁵	External ventricular drain
Inagawa 1991 ⁶	Not reported
Kim 2014 ⁷	Spontaneous drainage for 7 days
Nakagomi 2011 ⁸	IV mannitol (200–300 ml/patient) is administered at the time of skin incision. Patients have postoperative management both with normovolemia and normo- to mild hyper-tension
Roelz 2017 ⁹	Not reported
Yamamoto 2010 ¹⁰	Normovolemia and normotensive conditions Induced hypertension was attempted in patients with deteriorated neurological status due to vasospasm. Fasudil hydrochlo- ride 90mg was administered every day for 14 days
Yoshikane 2021 ¹¹	Hemodynamics at normotension, normovolemia, and normohydration in the perioper- ative period. The patients received 30 mg of intravenous Fasudil 3 times a day for 14 days

Table S4: Irrigation details								
Study ID	Catheter placement (inlet)	Catheter placement (outlet)	Irrigation solution and description	Irrigation Rate	Irrigation duration	Analysis group		
Bissolo 2021 ²	Sylvian Fissure	Fenestrated Lamina Terminalis	High risk patients in intervention group re- ceived continuous irrigation with Jonosteril with Urokinase (100 IU/ml). In patients showing signs of cerebral vasospasm, nimodipine (0.005 or 0.01 mg/ml) was added (rescue ther- apy)	50 ml/h	14 days	Fibrino- lytic irri- gation		
Fistouris 2022 ⁴	Prepontine Cistern	Sylvian Fissure	High risk patients in intervention group re- ceived continuous irrigation with electrolyte so- lution with urokinase (100 IU/ml) for 7-14 days. In patients showing signs of cerebral vaso- spasm, nimodipine (0.01mg/ml) was added (rescue therapy). Drug free irrigation was con- tinued until day 14-21.	50 ml/h	14-21 days	Fibrino- lytic irri- gation		
Jito 2004 ¹²	N/a	N/a	Patients received intracisternal injection of a bolus of 20 ml tpa (400-800 µg/ml) during sur- gery, followed by irrigation of the opened cis- terns with Lactated ringer.	2000 ml one time	During surgery	Fibrino- lytic irri- gation		
Kim 2014 ⁷	Sylvian Fissure	Interpeduncular Cis- tern	Intervention 1: Continuous irrigation with lactated Ringer with urokinase (120 IU/ml)	21 ml/h	7 days	Fibrino- lytic irri- gation		
Kodama 2001 ¹³	Sylvian Fissure	Prepontine Cistern or Chiasmal Cistern	Continuous irrigation with Lactated Ringer with urokinase (120 IU/ml) and ascorbic acid (4 mg/ml). During the first 12 hours, only Lactated Ringer was used.	30 ml/h/side	Mean: 9.9 days (range: 2- 18)	Fibrino- lytic irri- gation		
Matsukawa 2015 ¹⁴	N/a	N/a	Opened cisterns were irrigated with Saline so- lution 0,9% with urokinase (120 IU/ml), using Suction Plus device. Area irrigated depended on aneurysm location.	N/a	During surgery	Fibrino- lytic irri- gation		
Nakagomi 2011 ⁸	Lateral Ventricle	Carotid Cistern, Chi- asmatic Cistern or Sylvian Cistern	Continuous irrigation with Lactated Ringer with Urokinase (120 IU/mI)	60-180 ml/h	3 days	Fibrino- lytic irri- gation		

Table S4: Irrigation details								
Study ID	Catheter placement (inlet)	Catheter placement (outlet)	Irrigation solution and description	Irrigation Rate	Irrigation duration	Analysis group		
Ota 2017 ¹⁵	N/a	N/a	Opened cisterns were irrigated with Saline so- lution 0,9% with urokinase (120 IU/ml), using Suction Plus device. Area irrigated depended on aneurysm location.	N/a	During surgery	Fibrino- lytic irri- gation		
Roelz 2017 ⁹	Interpeduncular Cis- tern	External ventricular drain	Continuous irrigation with Jonosteril with uroki- nase (100 UI/mI) for 14 days, followed by irri- gation with only Jonosteril until day 21. In case of mean velocity flow ≥160 cm/s in transcranial doppler, nimodipine (0.005mg/mI) was added (rescue therapy).	50-100 ml/h	21 days	Fibrino- lytic irri- gation		
Roelz 2019a ¹⁶	Sylvian Fissure (Third Ventricle)	Fenestrated Lamina Terminalis	Continuous irrigation with Jonosteril with uroki- nase (100 UI/mI) for 14 days. In case of mean velocity flow ≥160 cm/s in transcranial doppler, nimodipine (0.005mg/mI) was added (rescue therapy).	50 ml/h	14 days	Fibrino- lytic irri- gation		
Roelz 2022 ¹⁷	Fenestrated lamina terminalis	Sylvian fissure	Intervention 1: Continuous irrigation with Electrolyte solution with urokinase (100 UI/mI) for 14 days, fol- lowed by drugfree irrigation until day 21. In case of mean velocity flow ≥160 cm/s in transcranial doppler, nimodipine (0.005mg/mI) was added (rescue therapy).	50 ml/h	21 days	Fibrino- lytic irri- gation		
Sasaki 2000 ¹⁸	Sylvian Fissure	Prepontine or Chias- matic Cistern	Continuous irrigation with Lactated Ringer with urokinase (30, 60 or 120 IU/ml). During the first 12 hours, only Lactated Ringer was used.	30 ml/h	Mean (SD): 9.6 (±2.5) days	Fibrino- lytic irri- gation		
Scheiwe 2023 ¹⁹	Third ventricle through fenestrated lamina terminalis	Third ventricle through fenestrated lamina terminalis or External ventricular drain	Continuous irrigation with Jonosteril with Urokinase (100000 IU/ml). In patients showing signs of cerebral vaso- spasm, nimodipine (0.01mg/ml) was added (rescue therapy).	50 ml/h	14-20 days	Fibrino- lytic irri- gation		
Yamamoto 2010 ¹⁰	Basal Cistern	Basal Cistern	Continuous irrigation with Lactated Ringer with tisokinase (96 IU/mI)	20 ml/h	2 days	Fibrino- lytic irri- gation		
Yoshikane 2021 ¹¹	N/a	N/a	Opened cisterns were irrigated with Saline so- lution 0,9% with urokinase (120 IU/ml), using Suction Plus device during surgery.	N/a	During surgery	Fibrino- lytic irri- gation		

Table S4: Irrigation details								
Study ID	Catheter placement (inlet)	Catheter placement (outlet)	leter placement Irrigation solution and description			Analysis group		
Arakawa 2004 ¹	Sylvian Fissure, Lat- eral Ventricle or Chi- asmal Cistern	Chiasmal Cistern or Spinal Drainage	Continuous irrigation with Lactated Ringer with urokinase (120 IU/mI), ascorbic acid (3.5 mg/mI) and milrinone (3.6 µg/mI)	30 ml/h	14 days	Vasodila- tory irri- gation (preven- tive)		
Kim 2014 ⁷	Sylvian Fissure	Interpeduncular Cis- tern	Intervention 2: Continuous irrigation with Lactated Ringer with Papaverin (0.4 mg/ml)	21 ml/h	7 days	Vasodila- tory irri- gation (preven- tive)		
Suzuki 1994 ²⁰	N/a	N/a	The opened subarachnoid space was irrigated with Hartmanns solution with Solumedrol (1 mg/ml) during surgery to remove clots.	10-20 ml/kg total	During surgery	Vasodila- tory irri- gation (preven- tive)		
Yamamoto 2016 ²¹	Basal Cistern	Spinal	Continuous irrigation with mgso ₄ Solution (5 mmol/l). In addition; intermittent intracisternal administration of alteplase (0.2 mg) every 8 hours for 2 days.	20 ml/h	10 days	Vasodila- tory irri- gation (preven- tive)		
Hänggi 2008 ²²	Lumbar catheter	External ventricular drain	Continuous irrigation with Lactated Ringer with nimodipine (0.02 mg/ml) for three days, re- peated max three times, in patients with vaso- spasm (rescue therapy).	20 ml/h	3 -9 days	Vasodila- tory irri- gation (rescue)		
Roelz 2019b ²³	Interpeduncular Cis- tern	External ventricular drain	Continuous irrigation with Jonosteril with Ni- modipine (0.005 mg/ml) as rescue therapy in patients with cerebral vasospasm	50 ml/h	Up to 15 days	Vasodila- tory irri- gation (rescue)		

Study ID	Catheter placement (inlet)	Catheter placement (outlet)	Irrigation solution and description	Irrigation Rate	Irrigation duration	Analysis group
Roelz 2022 ¹⁷	Prepontine Cistern	Sylvian fissure	Intervention 2: Irrigation with electrolyte solution with Nimodi- pine (0.01 mg/ml) in patients with a mean ve- locity flow ≥160 cm/s in transcranial doppler (rescue therapy).	50 ml/h	Mean (SD): 12.3 (±3.4) days	Vasodila- tory irri- gation (rescue)
Mori 2009 ²⁴	Prepontine cistern or sylvian fissure	Spinal	Continuous irrigation with mgso ₄ solution (15 mmol/l) in patients with symptomatic cerebral vasospasm.	20 ml/h	14 days	Vasodila- tory irri- gation (rescue)
Inagawa 1991 ⁶	Frontal horn, Sylvian Cisterns or Interhe- mispheric Fissures	al horn, Sylvian ns or Interhe- peric Fissures Prechiasmic Cisterns Continuous irrigation with lactated Ringer so tion.		500-1500 ml/day	7-9 days	Simple ir- rigation
Ding 2020 ³	N/a	N/a Intraventricular irrigation was performed during surgery with saline solution with gentamicin (40 IU/ml)		500 ml In total	25 min.	IVH
Haldrup 2023⁵	Lateral Ventricle Lateral Ventricle Continuous Ringer Aceta		Continuous intraventricular irrigation with Ringer Acetate, through irraflow system.	20-180 ml/h (mean: 1093 ml/day)	11 or 12 days (SD: 8.6 or 6.6)	IVH

Table S5: Detailed summary of findings and GRADE assesment

Combined Irrigation compared to no irrigation for subarachnoid hemorrhage. Bibliography: Arakawa 2004¹, Bissolo 2021², Fistouris 2022⁴, Inagawa 1991⁶, Kim 2014⁷, Nakagomi 2011⁸, Roelz 2017⁹, Scheiwe 2023¹⁹, Yamamoto 2010¹⁰, Yoshikane 2021¹¹

Certainty assessment						Summary of findings					
Participants (studies)	Risk of bias	Incon- sistenc y	Indi- rect- ness	Impre- cision	Publica- tion bias	Overall certainty of evi-	Study event rates (%) Rela- tive effect		Anticipate fo	d absolute ef- ects	
						dence	With no irrigation	With Irri- gation	OR (95% CI)	Risk with no irriga- tion per 1000	Risk differ- ence per 1000 (95%CI) Ref: no irri- gation
Probability of	favorable	outcome									
1113 (2 RCTs, 5 observa- tional)	Not seri- ous	Not Serious	Not Serious	Not Serious	None	⊕⊕⊕⊕ High	275/526 (52.3)	414/587 (70.5)	1.83 (1.35; 2.48)	523	144 (74; 208)
Mortality				1			1	•	1		
1858 (2 RCTs, 8 observa- tional)	Not seri- ous	Not Serious	Not Serious	Not Serious	None	⊕⊕⊕⊕ High	189/1001 (18.9)	105/857 (12.3)	0.65 (0.45; 0.94)	189	-57 (-94; -9)
Risk of delaye	ed cerebral	ischemia									
1237 (1 RCT, 6 observa- tional)	Serious	Serious	Not Serious	Not Serious	None	⊕⊕⊖⊖ low	174/692 (25.1)	58/545 (10.6)	0.33 (0.19; 0.58)	251	-152 (-191; -88)
Risk of cereb	ral vasospa	asm									
1075 (1 RCT, 5 observa- tional)	Serious	Serious	Not Serious	Not Serious	None	⊕⊕⊖⊖ Low	198/491 (40.3)	102/584 (17.5)	0.31 (0.23; 0.42)	403	-230 (-269; -182)

Table S5: D	etailed s	ummary	of finding	gs and G	RADE asse	sment						
Fibrinolytic ci	isternal irri	gation con	npared to r	no irrigatio	n treatment fo	or subarach	noid hemorr	hage.				
Bibliography: E	Bissolo 202	1 ² , Fistouris	s 2022 ⁴ , Kin	n 20147, Na smont	kagomi 2011 ⁸ ,	Roelz 2017	³ , Scheiwe 2023 ¹⁹ , Yamamoto 2010 ¹⁰ , Yoshikane 2021 ¹¹					
De fisiere fe	Dist of	Certa		Sment		0	01.1	Sum				
(studies)	bias	sistenc y	rect- ness	impre- cision	tion bias	certainty of evi-	Study eve	nt rates (%)	tive effect	Anticipated absolute ef- fects		
Probability of favorable outcom					dence	With no irrigation	With fi- brinolytic irrigation	OR (95% CI)	Risk with no irriga- tion per 1000	Risk differ- ence with fi- brinolytic ir- rigation per 1000 (95%CI) Ref: no irri- gation		
Probability of	favorable	outcome	1	1		•				1	1	
1031 (2 RCTs, 4 observa- tional)	Not Serious	Not Serious	Not Serious	Not Serious	None	⊕⊕⊕⊕ High	266/496 (53.6)	374/535 (69.9)	1.80 (1.30; 2.51)	536	139 (64; 207)	
Mortality		•	•	•		•					·	
1715 (2 RCTs, 6 observa- tional)	Not Serious	Not Serious	Not Serious	Not Serious	None	⊕⊕⊕⊕ High	172/945 (18.2)	96/770 (12.5)	0.68 (0.46; 1.00)	182	-51 (-89; 0)	
Risk of delaye	ed Cerebra	l Ischemia										
1176 (1 RCT, 5 observa- tional)	Not Serious	Not Serious	Not Serious	Not Serious	Strong as- sociation	⊕⊕⊕⊕ High	165/666 (24.8)	45/510 (8.8)	0.28 (0.18; 0.42)	248	-163 (-192; -126)	
Risk of cereb	ral vasosp	asm										
974 (1 RCT, 4 observa- tional)	Not Serious	Not Serious	Not Serious	Not Serious	Strong as- sociation	⊕⊕⊕⊕ High	177/465 (38.1)	66/509 (13.0)	0.28 (0.18; 0.42)	381	-234 (-281; -175)	

		Certa	inty assess	sment				Sum	mary of f	indings	
Participants (studies)	Risk of bias	Incon- sistenc	Indi- rect-	Impre- cision	Publica- tion bias	Overall certainty	Study ever	nt rates (%)	Rela- tive	Anticipated absolute ef- fects	
Drobobility of		У	ness			of evi- dence	With no vasodila- tory irri- gation	With vas- odilatory irrigation	effect OR (95% Cl)	Risk with no vaso- dilatory irrigation per 1000	Risk differ ence with vasodila- tory irriga- tion Per 1000 (95%Cl) Ref: no vas odilatory ir rigation
Probability of	favorable	outcome	I	I	I	1	1			l.	
317 (2 RCTs, 2 observa- tional)	Not Serious	Serious	Not Serious	Serious	None	⊕⊕⊖⊖ Low	114/175 (65.1)	116/142 (81.7)	2.03 (0.97; 4.26)	651	140 (-7; 237)
Mortality											
317 (2 RCTs, 2 observa- tional)	Not Serious	Not Serious	Serious	Not Serious	None	⊕⊕⊕⊖ Moderate	30/175 (17.1)	7/142 (4.9)	0.32 (0.13; 0.79)	171	-109 (-145; -31)
Risk of delay	ed cerebra	ischemia	1	1	1	1				1	1
70 (1 RCT)	Not Serious	Not Serious	Serious	Very Serious	None	⊕○○○ Very low	9/35 (25.7)	5/35 (14.3)	0.48 (0.14; 1.62)	257	-115 (-211; 102)
Risk of cereb	ral vasosp	asm							· · · · ·		
275 (2 RCTs, 1 observa-	Not seri- ous	Serious	Serious	Serious	None	⊕⊖⊖⊖ Very low	49/145 (33.8)	21/130 (16.2)	0.37 (0.17; 0.79)	338	-179 (-258; -51)



Figure S1: Funnel plots for combined cisternal irrigation compared to conventional treatment.

Funnel plots for (a) Mortality (b) Functional Outcome, (c) delayed cerebral ischemia and (d) cerebral vaso-spasm.





Funnel plots for (a) Mortality (b) Functional Outcome, (c) delayed cerebral ischemia and (d) cerebral vasospasm.



Figure S3: Funnel plots for vasodilatory cisternal irrigation compared to other treatments.

Funnel plots for (a) Mortality (b) Functional outcome, (c) cerebral vasospasm.

Figure S4: Mean mortality rate

				Prevalence	Prevalence
Study or Subgroup	Prevalence	SE	Weight	IV, Random, 95% CI	IV, Random, 95% CI
5.3.1 FCI					
Bissolo 2021	0 134888	0.0232969	12.6%	0.13/0.09/0.181	
Fistouris 2022	0.104000	0.0202000	12.0%	0.10 [0.00, 0.10]	
lite 2004	0.1340	0.0200	12.170	Not octimoble	
JII0 2004	0.077	0.040	0.00		
KIM 2014	0.077	0.043	9.3%	0.08 [-0.01, 0.16]	
Kodama 2001	0.027	0.011	14.3%	0.03 [0.01, 0.05]	-
Matsukawa 2015	0	0		Not estimable	
Nakagomi 2011	0.056	0.016	13.7%	0.06 [0.02, 0.09]	
Ota 2017	0	0		Not estimable	
Roelz 2017	0.05	0.049	8.3%	0.05 [-0.05, 0.15]	
Roelz 2019	0	0		Not estimable	
Roelz 2022	0	0		Not estimable	
Sasaki 2000	0	0		Not estimable	
Scheiwe 2023	0.15	0.08	4 8%	0.15 (-0.01 0.31)	
Yamamoto 2010	0.2	0.089	4 1 %	0 20 00 03 0 371	
Yamamoto 2016	0.020	0.000	11.9%	0.03 L0.03 0.081	
Vachikana 2021	0.025	0.020	0.000	0.05[0.04,0.14]	
Subtotal (05% CI)	0.040	0.040	100.0%	0.00 [-0.04, 0.14]	
Subtotal (95% CI)			100.0%	0.09 [0.04, 0.15]	•
Heterogeneity: Tau ² = 0.00	; Chi# = 50.18,	df = 9 (P < 0)	00001); P	'= 82%	
Test for overall effect: Z = 4	.06 (P < 0.000	1)			
5.3.4 VCI					
Arakawa 2004	0.08333	0.0797856	4.2%	0.08 [-0.07, 0.24]	
Hänggi 2008	0.25	0.153	1.1%	0.25 [-0.05, 0.55]	
Kim 2014	0.075	0.0416458	15.5%	0.07 [-0.01, 0.16]	
Mori 2009	01	0 0949	3.0%	0 10 [-0 09 0 29]	
Roelz 2019 2(a novel)	0	0.0010	0.0 %	Not estimable	
Roelz 2013_2(d Hovel)	0	0		Not ectimable	
Rusuki 1004	10000	0.0262	40.000		
Suzuki 1994	0.0304	0.0202	42.3%	0.04 [-0.01, 0.09]	
Yamamoto 2016	0.0286	0.0282	33.8%	0.03 [-0.03, 0.08]	
Subtotal (95% CI)			100.0%	0.05 [0.01, 0.08]	•
Heterogeneity: Tau ² = 0.00	; Chi² = 3.33, d	f= 5 (P = 0.6	5); I² = 0%	6	
Test for overall effect: Z = 2	.81 (P = 0.005))			
5.3.5 Simple irrigation					
Inagawa 1991	0.142857	0.05915	37.9%	0.14 [0.03, 0.26]	
Suzuki 1994	0.17647059	0.04623	62.1%	0.18 (0.09, 0.27)	
Subtotal (95% CI)			100.0%	0.16 [0.09, 0.24]	•
Heterogeneity: $Tau^2 = 0.00$	$Chi^{2} = 0.20 d$	f = 1 (P = 0.6)	5): $I^2 = 0.9$	6	
Test for overall effect: $7 - 4$	19 /P < 0.000	n = 1 (1 = 0.0 01)	57,1 = 0 %		
restion overall ellect. Z = 4	.45 (1 ~ 0.000	017			
536 Conventional treatm	ent				
Arekeure 2004	0.4	0.0004407	4 70	0 40 10 22 0 501	
Arakawa 2004	0.4	0.0894427	4.7%	0.40 [0.22, 0.58]	
BISSOIO 2021	0.146	0.0234895	15.4%	0.15 [0.10, 0.19]	
Fistouris 2022	0.2405	0.0278	14.4%	0.24 [0.19, 0.29]	
Inagawa 1991	0.1923077	0.077292	5.8%	0.19 [0.04, 0.34]	
Kim 2014	0.1190476	0.04997	9.7%	0.12 [0.02, 0.22]	
Nakagomi 2011	0.1440678	0.0323268	13.4%	0.14 [0.08, 0.21]	
Roelz 2017	0.33333	0.060858	7.9%	0.33 [0.21, 0.45]	
Scheiwe 2023	0.1614	0.0246	15.2%	0.16 [0.11. 0.21]	
Yamamoto 2010	0.1	0.067082	7.0%	0.10 (-0.03 0.23)	
Yoshikane 2021	0.1	0.001002	6.6%	0.11 [-0.02, 0.24]	
Subtotal (95% CI)	0.10320	0.07.04	100.0%	0 18 [0 14 0 23]	•
Listeregeneity Tauz - 0.00	068-0400	df = 0 /D = 0	0001-12-	CAN	•
Teaching and the second	, UNIT = 24.93,	ui=9 (P=0. 04)	003), ==	0470	
lest for overall effect: Z = 8	.12 (P < 0.000	UT)			
					-0.5 -0.25 0 0.25 0.5

Mean mortality rate for each intervention. Assessment of mortality rate varied from time of discharge to 1 year between studies. FCI: fibrinolytic cisternal irrigation, VCI: vasodilatory cisternal irrigation.

Figure S5: Mean prevalence of favorable functional outcome

				Prevalence	Prevalence
Study or Subgroup	Prevalence	SE	Weight	IV, Random, 95% CI	IV, Random, 95% CI
5.1.1 FCI					
Bissolo 2021	0	0		Not estimable	
Fistouris 2022	0.593	0.033	11.5%	0.59 (0.53, 0.66)	•
Jito 2004	0	0		Not estimable	
Kim 2014	0.821	0.061	8.6%	0.82 (0.70, 0.94)	+
Kodama 2001	0.811	0.026	12.1%	0.81 [0.76, 0.86]	
Matsukawa 2015	0.763	0.02	12.6%	0.76 (0.72, 0.80)	•
Nakagomi 2011	0.832	0.026	12.1%	0.83 [0.78, 0.88]	•
Ota 2017	0.826	0.03	11.8%	0.83/0.77/0.881	-
Roelz 2017	0.6	0.11	4.8%	0.60 [0.38, 0.82]	
Roelz 2019	0.5	0.354	0.7%	0.50 [-0.19, 1.19]	
Roelz 2010	0.0	0.004	0.1 70	Not estimable	
Sasaki 2000	0.857	0.066	81%	0.86 (0.73, 0.99)	
Scheiwe 2023	0.001	0.000	0.170	Not estimable	
Yamamoto 2010	0.45	0.111	47%	0 45 0 23 0 671	
Yamamoto 2016	0.45	0.068	7 9%	0.40 [0.23, 0.07]	
Yoshikana 2021	0.571	0.000	1 9 %	0.57 [0.36 0.78]	
Subtotal (95% CI)	0.571	0.100	100.0%	0.75 [0.69, 0.81]	•
Heterogeneity: $T_{2}u^{2} = 0.01$	- Chiz - 57 92	df = 11 / 0	2 ~ 0 000	01) 12 - 01%	· · ·
Tact for everall effect: 7 – 2	, CIII = 57.63, M 06 /D ~ 0.00	ui – TT (i 004)	- ~ 0.000	01),1 = 01%	
Testion overall ellect. Z = 2	.4.00 (F < 0.00	001)			
5.1.4 VCI					
Arakawa 2004	0.583	0.142	9.0%	0.58 (0.30, 0.86)	
Hänggi 2008	0.625	0.171	6.7%	0.63 (0.29, 0.96)	
kim 2014	0.825	0.06	25.4%	0.82 [0.23, 0.33]	-
Mori 2009	0.025	0.00	7.6%	0.50 [0.14]	
Roelz 2003	0.3	0.130	2 0 %	0.33 [0.13, 0.01]	
Dool: 2013_2(a novei)	0.000	0.272	2.5 /0	Not actimable	
Quzuki 1004	0 662	0.057	26.4%		
Vamamata 2016	0.002	0.037	20.470	0.00 [0.00, 0.77]	
Subtotal (95% CI)	0.771	0.071	100.0%	0.70 [0.60, 0.79]	•
Heterogeneity: Tau ² = 0.01	Chi≅ = 9.81 c	f= 6 (P =	0.13)	= 30%	
Test for overall effect: 7 = 1	4 43 (P < 0.00	001)	0.10/,1 -	- 5570	
	4.40 (1 0.00	001)			
5.1.5 Simple Irrigation					
Inagawa 1991	0	0		Not estimable	
Suzuki 1994	0.662	0.057	100.0%	0.66 [0.55, 0.77]	
Subtotal (95% CI)			100.0%	0.66 [0.55, 0.77]	
Heterogeneity: Not applica	ble				0-356 578
Test for overall effect: Z = 1	1.61 (P < 0.00	001)			
5.1.6 Conventional treatm	ent		5.50223 (1977) P.1		2002.00
Arakawa 2004	0.3	0.0837	13.6%	0.30 [0.14, 0.46]	
Bissolo 2021	0	0		Not estimable	
Fistouris 2022	0.502	0.0325	15.9%	0.50 [0.44, 0.57]	
Inagawa 1991	0	0		Not estimable	
Kim 2014	0.7619	0.0657	14.5%	0.76 [0.63, 0.89]	· · · · · · · · · · · · · · · · · · ·
Nakagomi 2011	0.7034	0.042	15.6%	0.70 [0.62, 0.79]	
Roelz 2017	0.35	0.0616	14.7%	0.35 [0.23, 0.47]	
Scheiwe 2023	0	0		Not estimable	
Yamamoto 2010	0.4	0.1095	12.1%	0.40 [0.19, 0.61]	
Yoshikane 2021	0.1579	0.0837	13.6%	0.16 [-0.01, 0.32]	↓ •-
Subtotal (95% CI)			100.0%	0.46 [0.32, 0.61]	•
Heterogeneity: Tau ² = 0.03	; Chi ² = 67.36,	df = 6 (P	< 0.0000	1); I² = 91%	
Test for overall effect: Z = 6	i.18 (P ≤ 0.000	01)			
					-2 -1 0 1 2

Mean rate of favorable functional outcome for each intervention. Assessment of functional outcome varied from time of discharge to 1 year between studies FCI: fibrinolytic cisternal irrigation, VCI: vasodilatory cisternal irrigation.

Figure S6: Mean prevalence of delayed cerebral ischemia

		-		Prevalence	Prevalence
Study or Subgroup	Prevalence	SE	Weight	IV, Random, 95% CI	IV, Random, 95% CI
5.2.1 FCI					
Bissolo 2021	0	0		Not estimable	
Fistouris 2022	0	0		Not estimable	
Jito 2004	0.429	0.187	2.4%	0.43 [0.06, 0.80]	
Kim 2014	0	0		Not estimable	
Kodama 2001	0	0		Not estimable	
Matsukawa 2015	0	0		Not estimable	
Nakagomi 2011	0.065	0.017	22.3%	0.07 [0.03, 0.10]	+
Ota 2017	0.025	0.012	23.1%	0.03 (0.00, 0.05)	•
Roelz 2017	0.15	0.08	9.2%	0.15 (-0.01, 0.31)	
Roelz 2019	0	0		Not estimable	
Roelz 2022	0.113	0.04	17.1%	0.11 [0.03, 0.19]	
Sasaki 2000	0	0		Not estimable	
Scheiwe 2023	0	0		Not estimable	
Yamamoto 2010	0.4	0.11	5.9%	0.40 (0.18, 0.62)	
Yamamoto 2016	0.257	0.074	10.1%	0.26 [0.11, 0.40]	
Yoshikane 2021	0.143	0.076	9.8%	0.14 (-0.01, 0.29)	
Subtotal (95% CI)			100.0%	0.13 [0.07, 0.19]	•
Heterogeneity: Tau ² = 0.00	; Chi ² = 32.65.	df = 7 (P	< 0.0001); Iz = 79%	
Test for overall effect: Z = 4	1.13 (P < 0.000	1)			
		.,			
5.2.4 VCI					
Arakawa 2004	0	0		Not estimable	
Hänggi 2008	0.25	0.153	17.2%	0.25 [-0.05, 0.55]	
Kim 2014	0	0		Not estimable	
Mori 2009	0.6	0.155	17.0%	0.60 [0.30, 0.90]	
Roelz 2019_2(a novel)	0	0		Not estimable	
Roelz 2022	0.1818	0.0822	30.3%	0.18 [0.02, 0.34]	
Suzuki 1994	0	0		Not estimable	
Yamamoto 2016	0.143	0.059	35.6%	0.14 [0.03, 0.26]	
Subtotal (95% CI)			100.0%	0.25 [0.09, 0.41]	•
Heterogeneity: Tau ² = 0.02	2; Chi² = 7.75, d	lf = 3 (P =	: 0.05); I ² :	= 61%	
Test for overall effect: Z = 3	3.07 (P = 0.002)			
5.2.5 Simple Irrigation					
Inanawa 1991	0 371	0.082	100.0%	0 37 10 21 0 531	
Suzuki 1004	0.571	0.002	100.0 %	Not ectimable	
Subtotal (95% CI)	0	0	100.0%	0.37 [0.21, 0.53]	•
Heterogeneity: Not annling	hle			out for it cool	
Test for overall effect: $7 = 4$	1.57 (P < 0.000	01)			
		• • •			
5.2.6 Conventional treatm	ent				
Arakawa 2004	0	0		Not estimable	
Bissolo 2021	0.177	0.025	20.9%	0.18 [0.13, 0.23]	-
Fistouris 2022	0	0		Not estimable	
Inagawa 1991	0.346	0.093	10.7%	0.35 [0.16, 0.53]	· · · ·
Kim 2014	0	0		Not estimable	
Nakagomi 2011	0.288	0.042	18.5%	0.29 [0.21, 0.37]	-
Roelz 2017	0.417	0.064	14.8%	0.42 [0.29, 0.54]	
Scheiwe 2023	0.206	0.027	20.7%	0.21 [0.15, 0.26]	+
Yamamoto 2010	0.55	0.111	8.8%	0.55 [0.33, 0.77]	
Yoshikane 2021	0.474	0.155	5.6%	0.47 [0.17, 0.78]	
Subtotal (95% CI)			100.0%	0.31 [0.22, 0.39]	◆
Heterogeneity: Tau ² = 0.01	; Chi ^z = 28.05,	df = 6 (P	< 0.0001); I² = 79%	
Test for overall effect: Z = 7	7.29 (P < 0.000	01)			
					-1 -0.5 0 0.5 1
			-		

Mean prevalence of DCI for each intervention. Assessment of DCI varied from 14 days to 1 month between studies. FCI: fibrinolytic cisternal irrigation, VCI: vasodilatory cisternal irrigation

Figure S7: Mean prevalence of cerebral vasospasm

				Prevalence	Prevalence
Study or Subgroup	Prevalence	SE	Weight	IV, Random, 95% CI	IV, Random, 95% CI
5.5.1 FCI					
Bissolo 2021	0.1395	0.0236	11.1%	0.14 [0.09, 0.19]	+
Fistouris 2022	0	0		Not estimable	
Jito 2004	0.3333	0.1925	2.5%	0.33 (-0.04, 0.71)	
Kim 2014	0.1795	0.0615	8.6%	0.18 (0.06, 0.30)	
Kodama 2001	0.027	0.109	5.4%	0.03 [-0.19, 0.24]	
Matsukawa 2015	0.1385	0.0175	11.4%	0.14 [0.10, 0.17]	+
Nakagomi 2011	0.103	0.021	11.2%	0 10 10 06 0 141	+
Ota 2017	0.2405	0.034	10.5%	0.24 [0.17, 0.31]	-
Roelz 2017	0.25	0.0968	6.1%	0.25 [0.06, 0.44]	
Roelz 2019a	0	0		Not estimable	
Roelz 2022	0.5357	0.0544	91%	0.54 (0.43, 0.64)	
Sasaki 2000	0 1071	0.0585	8.8%	0 11 -0 01 0 22	
Scheiwe 2023	0	0		Not estimable	
Yamamoto 2010	0	0		Not estimable	
Yamamoto 2016	0.543	0.084	6.9%	0.54 (0.38, 0.71)	
Yoshikane 2021	0.0952	0.0641	84%	0.10 -0.03 0.22	
Subtotal (95% CI)	0.0002	0.0041	100.0%	0.21 [0.14, 0.28]	•
Heterogeneity Tau ² =	0.01: Chi ² = 8	= h 28.8	11 (P < 1	00001) 12 = 88%	
Test for overall effect:	7 = 614 (P < 1)	0.02, 01 - 0.00001\			
restion overall ellect.	2-0.140	0.000017			
5.5.2 VCI					
Arakawa 2004	0 1667	0 1076	7 7 96	01760040381	
Vim 2014	0.1007	0.0622	22.206	0.17 [-0.04, 0.30]	
Curulzi 1004	0.2	0.0032	50.5%	0.20 [0.00, 0.32]	-
Vamamoto 2016	0.1091	0.042	10.5%	0.11[0.03, 0.19]	
Subtotal (95% CI)	0.2	0.0070	100.0%	0 15 [0 09 0 21]	
Hotorogonoity: Tou ² -	0.00: Chiz - 2	14 df - 1	2 /P = 0.6	4): IZ = 0%	•
Tect for everall effect:	7 = 6.00 / P < 1	. 14, ui – . 1.000043	5 (F = 0.5	4),1 = 0.30	
Testitut üverall ellett.	Z = 0.00 (F < 1	0.00001)			
555 Simple irrigatio	n				
Inorrowo 1001		0.0676	40.7%	0 00 10 67 0 021	
niayawa 1991 Cuzuki 1004	0.0	0.0070	43.770		
Subtotal (95% CI)	0.2341	0.0000	100.0%	0.55 [0.05 1.04]	
Hotorogonoity Tou2 -	0.12:068-2	2 55 df-	1 /D < 0	000013-12-070	
Test for everall effect:	7 = 2.16 / P = 1	3.55, ui - 1.05%	- I (F < U.	00001), 1 = 97 %	
Testion overall ellect.	Z = 2.10 (F = 0	0.03)			
556 Conventional tr	eatment				
Arakawa 2004	0	0		Not actimoble	
Riakawa 2004 Diseolo 2021	0 2407	0 0 2 1 6	17.0%		
Eistourio 2021	0.3407	0.0315	17.970	0.34 [0.26, 0.40] Not estimoble	A Shared
FISIOURS 2022	0.0460	0.0700	10 50		
inagawa 1991 Kimo 2014	0.0402	0.0708	16.3%		
Kirri 2014 Nekazami 2014	0.2381	0.0057	17.50	0.24 [0.11, 0.37]	
Nakagomi 2011 Deela 2017	0.322	0.043	17.5%	0.32 [0.24, 0.41]	
RUBIZ ZUT /	0.7333	0.0571	17.0%	0.73 [0.62, 0.85]	
Scrielwe 2023 Vememeta 2040	U U	U		Not estimable	
Tamamoto 2010	U 1 2 2 2 2 1	0.4407	1 4 4 10	NUL ESTIMABLE	
Subtotal (05% CI)	0.3684	0.1107	14.4%	0.37 [0.15, 0.59]	
Jubiotal (95% CI)	0.05.052	5 70 df	C (D - C	0.41 [0.29, 0.00]	
Heterogeneity: Tau* =	7 = 5 4 5 (P - 1	0.70, 01=	÷ 5 (P ≤ 0.	00001), 1= 94%	
Test for overall effect:	∠= 5.15 (P < I	0.00001)			
					-1 -0.5 0 0.5 1

Mean prevalence of cerebral vasospasm for each intervention. Assessment of cerebral vasospasm varied from 6 days to 1 month between studies. FCI: fibrinolytic cisternal irrigation, VCI: vasodilatory cisternal irrigation.

Table S6: R	Table S6: RoB 2 for randomized studies											
Study ID	Randomiza- tion	Deviations from inter- vention	Missing data	Measure- ment	Reporting	Overall risk of bias						
Ding 2020 ³	1.1: PN 1.2: NI 1.3: N	2.1: PN 2.2: NI 2.3: N 2.6: PY	3.1: Y	4.1: N 4.2: PN 4.3: NI 4.4: PY 4.5: N	5.1: NI 5.2: NI 5.3: NI	Some con- cerns						
	Some con- cerns	Low risk	Low risk	Some con- cerns	Some con- cerns							
Haldrup 2023 ⁵	1.1: Y 1.2: Y 1.3: N	2.1: N 2.2: Y 2.3: N 2.6: Y	3.1: Y	4.1: N 4.2: N 4.3: Y 4.4: PY 4.5: N	5.1: NI 5.2: NI 5.3: NI	Some con- cerns						
	Low risk	Low risk	Low risk	Some con- cerns	Some con- cerns	_						
Jito 2004 ¹²	1.1: NI 1.2: NI 1.3: NI	2.1: NI 2.2: NI 2.3: N 2.6: Y	3.1: Y	4.1: PN 4.2: N 4.3: NI 4.4: PN	5.1: NI 5.2: NI 5.3: NI	Some con- cerns						
	Some con- cerns	Low risk	Low risk	Low risk	Some con- cerns							
Kim 2014 ⁷	1.1: PN 1.2: NI 1.3: N	2.1: NI 2.2: NI 2.3: PN 2.6: Y	3.1: Y	4.1: N 4.2: PN 4.3: NI 4.4: PY 4.5: N	5.1: NI 5.2: NI 5.3: NI	Some con- cerns						
	Some con- cerns	Low risk	Low risk	Some con- cerns	Some con- cerns							
Sasaki 2000 ¹⁸	1.1: NI 1.2: NI 1.3: N	2.1: PN 2.2: Y 2.3: N 2.6: PY	3.1: Y	4.1: N 4.2: N 4.3: PY 4.4: PY 4.5: N	5.1: NI 5.2: NI 5.3: NI	Some con- cerns						
	Some con- cerns	Low risk	Low risk	Some con- cerns	Some con- cerns							
Yamamoto 2010 ¹⁰	1.1: Y 1.2: PY 1.3: N	2.1: PN 2.2: N 2.6: Y	3.1: Y	4.1: N 4.2: N 4.3: N	5.1: NI 5.2: NI 5.3: NI	Low risk						
	Low risk	Low risk	Low risk	Low risk	Some con- cerns							
Yamamoto 2016 ²¹	1.1: Y 1.2: PY 1.3: N Low risk	2.1: PN 2.2: N 2.6: Y	3.1: Y	4.1: N 4.2: N 4.3: N Low risk	5.1: NI 5.2: NI 5.3: NI Some con-	Low risk						
					cerns							

Study ID	Confounding	Selection	Classifica- tion	Deviations from inter- vention	Missing Data	Measure- ment	Reporting	Overall risk of bias
Arakawa 2004 ¹	1.1: PN	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: N	4.1: N	5.1: PY 5.2: N 5.3: N	6.1: PY 6.2: NI 6.3: PY 6.4: NI	7.1: PN 7.2: PN 7.3: PN	Moderate risk
	Low risk	Low risk	Low risk	Low risk	Low risk	Moderate risk	Moderate risk	
Bissolo 2021 ²	1.1: PN	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: N	4.1: N	5.1: PY 5.2: N 5.3: N	6.1: PN 6.2: NI 6.3: Y 6.4: PN	7.1: PN 7.2: PN 7.3: PN	Low risk
	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
Fistouris 2022 ⁴	1.1: PN	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: N	4.1: N	5.1: NI 5.2: N 5.3: N	6.1: PN 6.2: PN 6.3: Y 6.4: PN	7.1: PN 7.2: PN 7.3: PN	Low risk
	Low risk	Low risk	Low risk	Low Risk	Low risk	Low risk	Low risk	
Hänggi 2008 ²²	1.1: PN	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: N	4.1: N	5.1: Y 5.2: N 5.3: PN	6.1: PN 6.2: NI 6.3: Y 6.4: PN	7.1: N 7.2: N 7.3: N	Low risk
	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
Inagawa 1991 ⁶	1.1: PY 1.2: N 1.4: PN 1.6: PY 1.7: NI	2.1: Y 2.2: N 2.4: Y	3.1: Y 3.2: N 3.3: N	4.1: N	5.1: Y 5.2: N 5.3: Y 5.4: PY 5.5: NI	6.1: N 6.2: PN 6.3: Y 6.4: PN	7.1: NI 7.2: NI 7.3: NI	Serious risk
	Serious risk	Low risk	Low risk	Low risk	Moderate risk	Low risk	NI	
Kodama 2001 ¹³	1.1: N	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: N	4.1: N	5.1: Y 5.2: N 5.3: PN	6.1: PN 6.2: NI 6.3: Y 6.4: PN	7.1: N 7.2: N 7.3: N	Low risk
	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk]
Matsukawa 2015 ¹⁴	1.1: N	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: N	4.1: N	5.1: Y 5.2: N 5.3: N	6.1: PN 6.2: PY	7.1: N 7.2: N 7.3: N	Low risk

Study ID	Confounding	Selection	Classifica- tion	Deviations from inter- vention	Missing Data	Measure- ment	Reporting	Overall risk of bias
						6.3: Y 6.4: N		
	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
Mori 2009 ²⁴	1.1: Y 1.2: N 1.4: NA 1.5: N	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: PN	4.1: N	5.1: Y 5.2: N 5.3: N	6.1: PN 6.2: PY 6.3: Y 6.4: N	7.1: N 7.2: N 7.3: N	Moderate risk
	Moderate risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
Nakagomi 2011 ⁸	1.1: PY 1.2: N 1.4: PY 1.6: N 1.7: NA	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: PN	4.1: N	5.1: Y 5.2 PN 5.3: N	6.1: Y 6.2: PY 6.3: Y 6.4: N	7.1: PN 7.2: PN 7.3: PN	Moderate risk
	Moderate risk	Low risk	Low risk	Low risk	Low risk	Moderate risk	Low risk	
Ota 2017 ¹⁵	1.1: PN	2.1: N 2.4: Y	3.1: NI 3.2: NI 3.3: PN	4.1: N	5.1: Y 5.2: N 5.3: N	6.1: PY 6.2: N 6.3: Y 6.4. N	7.1: PN 7.2: PN 7.3: PN	Low risk
	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
Roelz 2017 ⁹	1.1: PY 1.2: N 1.4: Y 1.5: Y 1.6: N	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: N	4.1: N	5.1: Y 5.2: N 5.3: PN	6.1: PY 6.2: N 6.3: Y 6.4: N	7.1: PN 7.2: PN 7.3: PN	Moderate risk
	Moderate risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
Roelz 2019a ¹⁶	1.1: Y 1.2: N 1.4: PN 1.6: N	2.1: NI 2.4: Y	3.1: Y 3.2: Y 3.3: N	4.1: N	5.1: Y 5.2: NI 5.3: NI 5.5: N	6.1: PY 6.2: Y 6.3: Y 6.4: PN	7.1: N 7.2: PN 7.3: N	Critical risk
	Serious risk	Moderate risk	Low risk	Low risk	Critical risk	Moderate risk	Low risk	
Roelz 2019b ²³	1.1: Y 1.2: N 1.4: PN 1.6: N	2.1: NI 2.4: Y	3.1: Y 3.2: Y 3.3: N	4.1: N	5.1: Y 5.2: NI 5.3: NI 5.5: N	6.1: PY 6.2: Y 6.3: Y 6.4: PN	7.1: N 7.2: PN 7.3: N	Critical risk
	Serious risk	Moderate risk	Low risk	Low risk	Critical risk	Moderate risk	Low risk	

Study ID	Confounding	Selection	Classifica- tion	Deviations from inter- vention	Missing Data	Measure- ment	Reporting	Overall ris of bias
Roelz 2022 ¹⁷	1.1: Y 1.2: N 1.4: N 1.6: N	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: PY	4.1: N	5.1: Y 5.2: N 5.3: PN	6.1: PN 6.2: Y 6.3: PN 6.4: N	7.1: N 7.2: N 7.3: N	Serious risk
	Serious risk	Low risk	Moderate risk	Low risk	Low risk	Moderate risk	Low risk	
Scheiwe 2023 ¹⁹	1.1: PY 1.2: N 1.4: N 1.6: N	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: PY	4.1: N	5.1: Y 5.2: N 5.3: N	6.1: PN 6.2: PY 6.3: Y 6.4: N	7.1: N 7.2: N 7.3: N	Moderate risk
	Moderate risk	Low risk	Moderate risk	Low risk	Low risk	Low risk	Low risk	
Suzuki 1994 ²⁰	1.1: PN	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: PN	4.1: N	5.1: PY 5.2: N 5.3: N	6.1: PN 6.2: NI 6.3: Y 6.4: N	7.1: N 7.2: N 7.3: N	Low risk
	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
Yoshikane 2021 ¹¹	1.1: PN	2.1: N 2.4: N	3.1: Y 3.2: Y 3.3: N	4.1: N	5.1: Y 5.2: PY 5.3: PY	6.1: PY 6.2: N 6.3: Y 6.4: N	7.1: PN 7.2: PN 7.3: PN	Moderate risk
	Low risk	Low risk	Low risk	Low risk	Moderate risk	Low risk	Low risk	

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