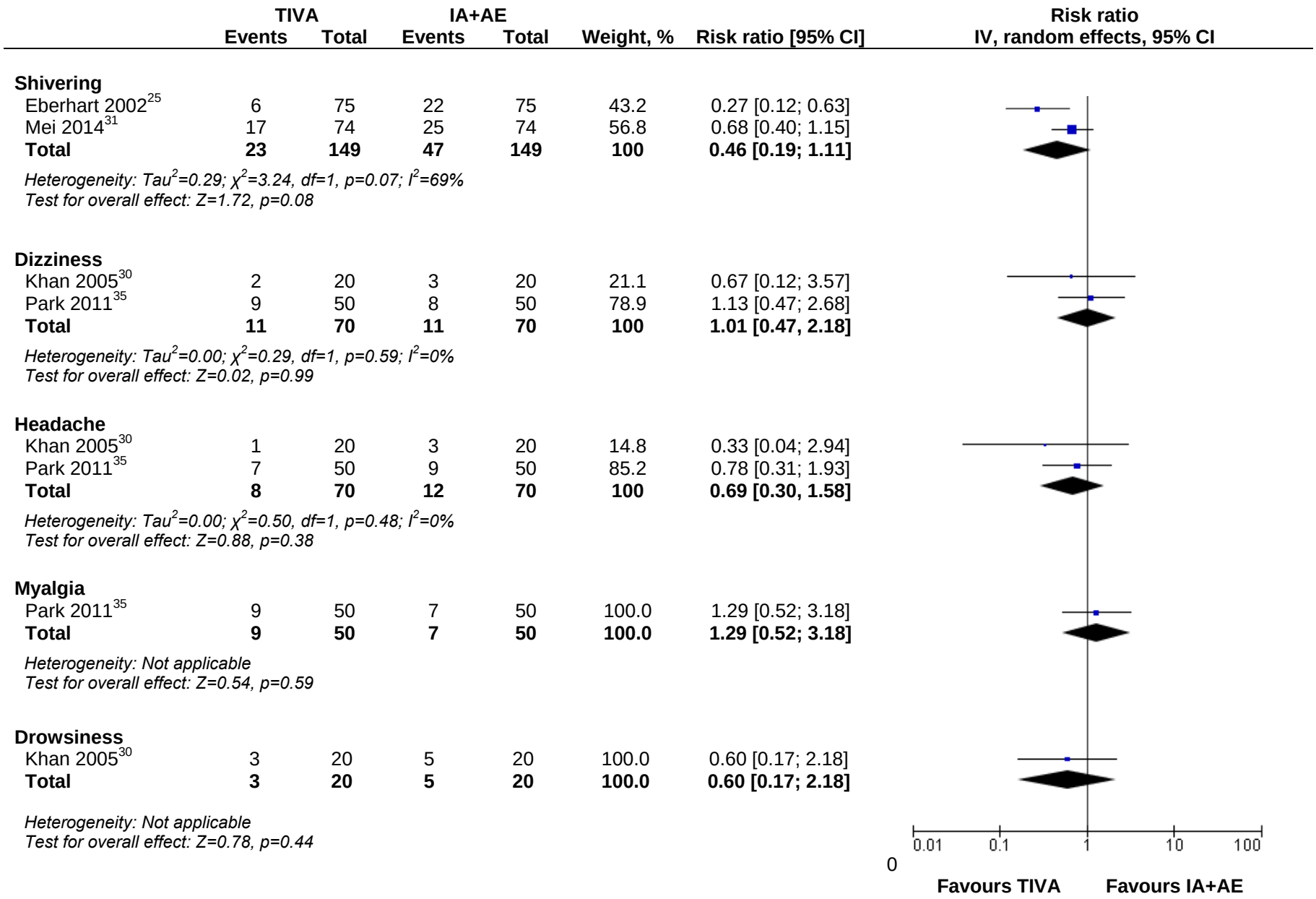
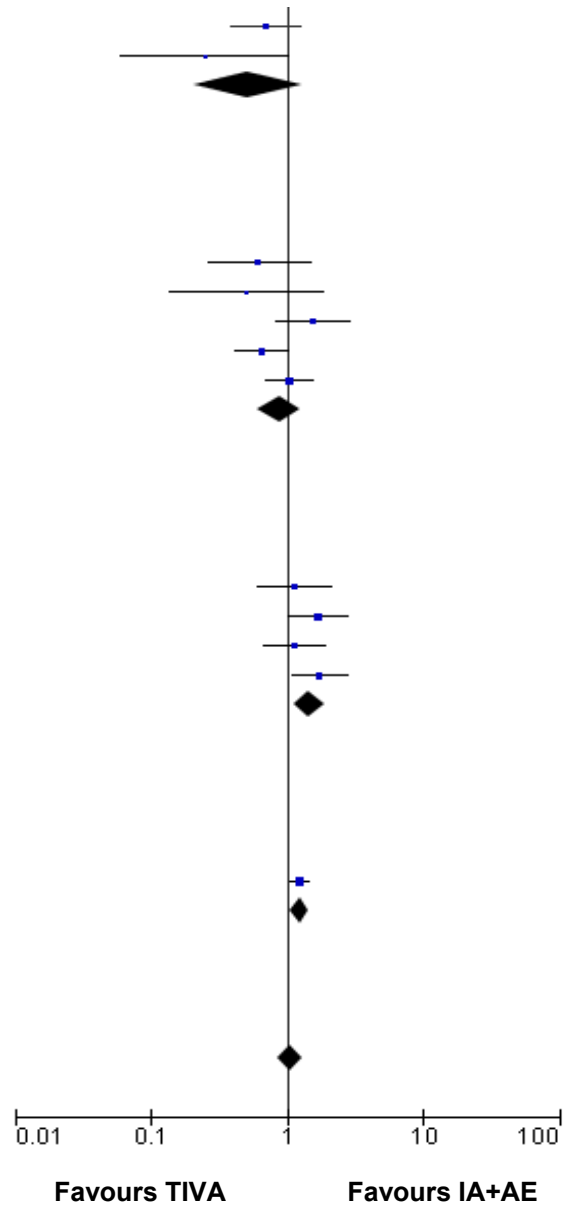
Supplemental Digital Content figure 1 Forest plots of studies reporting adverse events after anaesthesia. TIVA: total intravenous anaesthesia, IA+AE: inhalational anaesthesia with pharmacological antiemetic prophylaxis; Inverse variance; PONV: postoperative nausea and vomiting.

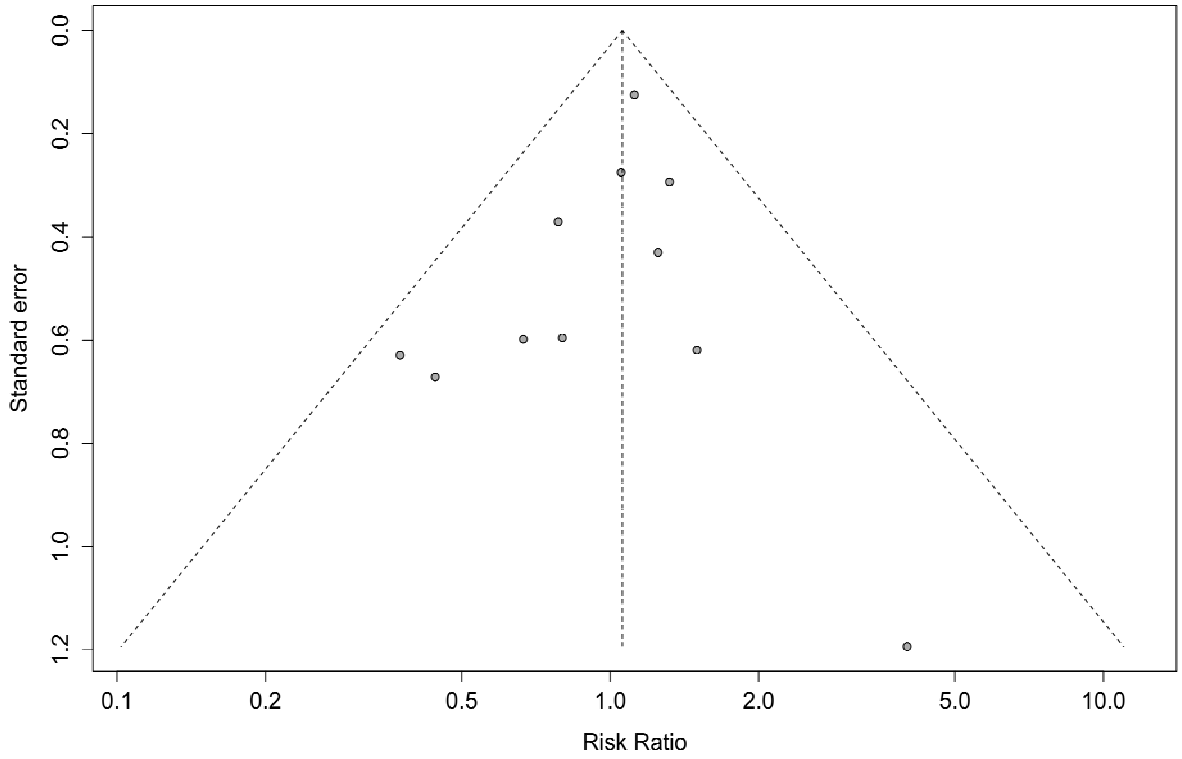

TIVA
IA+AE
Risk ratio
Events Total Events Total Weight, % Risk ratio [95% CI]
IV, random effects, 95% CI
Shivering
Eberhart 2002[25] 6 75 22 75 43.2 0.27 [0.12; 0.63]
Mei 2014[31] 17 74 25 74 56.8 0.68 [0.40; 1.15]
Total 23 149 47 149 100 0.46 [0.19; 1.11]
Heterogeneity: Tau²=0.29; χ²=3.24, df=1, p=0.07; I²=69%
Test for overall effect: Z=1.72, p=0.08
Dizziness
Khan 2005[30] 2 20 3 20 21.1 0.67 [0.12; 3.57]
Park 2011[35] 9 50 8 50 78.9 1.13 [0.47; 2.68]
Total 11 70 11 70 100 1.01 [0.47, 2.18]
Heterogeneity: Tau²=0.00; χ²=0.29, df=1, p=0.59; I²=0%
Test for overall effect: Z=0.02, p=0.99
Headache
Khan 2005[30] 1 20 3 20 14.8 0.33 [0.04; 2.94]
Park 2011[35] 7 50 9 50 85.2 0.78 [0.31; 1.93]
Total 8 70 12 70 100 0.69 [0.30, 1.58]
Heterogeneity: Tau²=0.00; χ²=0.50, df=1, p=0.48; I²=0%
Test for overall effect: Z=0.88, p=0.38
Myalgia
Park 2011[35] 9 50 7 50 100.0 1.29 [0.52; 3.18]
Total 9 50 7 50 100.0 1.29 [0.52; 3.18]
Heterogeneity: Not applicable
Test for overall effect: Z=0.54, p=0.59
Drowsiness
Khan 2005[30] 3 20 5 20 100.0 0.60 [0.17; 2.18]
Total 3 20 5 20 100.0 0.60 [0.17; 2.18]
Heterogeneity: Not applicable
Test for overall effect: Z=0.78, p=0.44
0.01
0.1
1
10
100
0
Favours TIVA
Favours IA+AE

Supplemental Digital Content figure 2 Subgroup analysis stratifying studies by number of participants. TIVA: total intravenous anaesthesia, IA+AE: inhalational anaesthesia with pharmacological antiemetic prophylaxis; Inverse variance; PONV: postoperative nausea and vomiting

	TIVA Events	Total	IA+AE Events	Total	Weight, %	Risk ratio [95% CI]
1 to ≤ 50						
Gan 1996[26]	9	21	13	21	7.8	0.69 [0.38; 1.26]
Özünlü 2005[32]	2	20	8	20	2.1	0.25 [0.06; 1.03]
Subtotal	**11**	**41**	**21**	**41**	**9.9**	**0.51 [0.21; 1.27]**
Heterogeneity: Tau^2=0.21; χ^2=1.68, df=1, p=0.20; I^2=40%						
Test for overall effect: Z=1.44, p=0.15						
51 to ≤ 100						
Heinke 1996[27]	7	43	10	38	4.8	0.62 [0.26; 1.46]
Jellish 1995[28]	3	34	6	34	2.4	0.50 [0.14; 1.84]
Khan 2005[30]	10	20	13	40	7.4	1.54 [0.82; 2.88]
Paech 2002[33]	17	47	26	47	10.3	0.65 [0.41; 1.03]
Park 2011[35]	25	50	24	50	11.6	1.04 [0.70; 1.55]
Subtotal	**62**	**194**	**79**	**209**	**36:5**	**0.88 [0.61; 1.26]**
Heterogeneity: Tau^2=0.06; χ^2=6.7, df=4, p=0.15; I^2=40%						
Test for overall effect: Z=0.70, p=0.48						
100 to ≤ 200						
Eberhart 2002[25]	17	75	15	75	7.5	1.13 [0.61; 2.10]
Jokela 2000[29]	27	60	16	60	9.4	1.69 [1.02; 2.79]
Purhonen 2006[36]	19	50	17	51	9.0	1.14 [0.67; 1.93]
White 2007[37]	28	58	19	68	10.2	1.73 [1.08; 2.75]
Subtotal	**91**	**243**	**67**	**254**	**36**	**1.44 [1.11; 1.87]**
Heterogeneity: Tau^2=0.00; χ^2=2.3, df=3, p=0.51; I^2=0%						
Test for overall effect: Z=2.74, p=0.006						
> 200						
Apfel 2004[1]	172	345	206	512	17.4	1.24 [1.07; 1.44]
Subtotal	**172**	**345**	**206**	**512**	**17.4**	**1.24 [1.07; 1.44]**
Heterogeneity: Not applicable						
Test for overall effect: Z=2.81, p=0.005						
Total	336	823	373	1016	100	**1.06 [0.85; 1.32]**
Heterogeneity: Tau^2=0.00; χ^2=7.9, df=9, p=0.54; I^2=0%						
Test for overall effect: Z=0.53, p=0.60						



Supplemental Digital Content figure 3 Funnel plot for early postoperative nausea and vomiting with weighted regression. The filled circles represent estimated treatment effects (RR) and its precision (standard error) for each individual study. Also, the random-effects estimate (vertical dotted line), as well as the fixed effect estimate (vertical dashed line) with 95% confidence interval limits (diagonal dashed lines) are shown in the figure.



Deviations from the pre-registered protocol at PROSPERO, study number CRD42015019571

1. We planned searching the online databases MEDLINE, EMBASE, CENTRAL and CINAHL. However, access to CINAHL was unavailable at all three locations (Heinrich-Heine University Düsseldorf, Julius-Maximilians University, Würzburg and University of Ulm, Germany). Therefore, the search was performed in MEDLINE, EMBASE and CENTRAL, as described in the manuscript.

2. We stated that, as a secondary outcome, we would address "*Severity of PON/POV/PONV if measured on a numeric rating scale or visual analogue scale*". Severity of PONV was reported in six studies. However, due to heterogeneous reporting (Categorised nausea scores in two studies[1,2], median with total range in one study[3], median with interquartile range in one study[4] and mean ± standard deviation in two studies,[5,6] meta-analysis of severity of PONV/PON/PONV was not performed.

3. We specified that "Analysis will be stratified by the number of prophylactic antiemetics in the Comparator Group". However, since only study groups administering one antiemetic prophylactic drug were included, no such stratification was performed.

4. We specified that "subgroup analysis will be used to explain heterogeneity". However, our subgroup analysis stratifying studies by study size and our sensitivity analysis excluding studies with uneven distribution of nitrous oxide administration were not explicitly described.

5. We detected significant funnel plot asymmetry, as well as differential effects between smaller and larger studies on the primary outcome overall, PONV. Because weighting by a random effects model favours smaller studies, results may be subject to bias when publication bias is evident. Therefore, we performed an additional analysis of

the primary outcome, overall PONV, using a fixed effects model instead of a random effects model, which was not pre-specified.

6. We pre-specified assessing risk of bias using The Cochrane Collaboration ‘Risk of bias’ Assessment Tool. We did not pre-specify additionally rating the “overall bias” for each study.

7. We did not pre-specify creating a Summary of Findings Table and rating the overall quality of evidence with the GRADE approach.

1. White H, Black RJ, Jones M, Mar Fan GC: Randomized comparison of two anti-emetic strategies in high-risk patients undergoing day-case gynaecological surgery. Br J Anaesth 2007; 98:470–6
2. Khan P: Comparative study between granisetron ondansetron and propofol for the prevention of emesis after gynaecological laproscopy. J Postgrad Med Inst 2005; 19:135–43
3. Purhonen S, Koski EM, Niskanen M, Hynynen M: Efficacy and costs of 3 anesthetic regimens in the prevention of postoperative nausea and vomiting. J Clin Anesth 2006; 18:41–5
4. Paech MJ, Lee BH, Evans SF: The effect of anaesthetic technique on postoperative nausea and vomiting after day-case gynaecological laparoscopy. Anaesth Intensive Care 2002; 30:153–9
5. Apfel CC, Korttila K, Abdalla M, Kerger H, Turan A, Vedder I, Zernak C, Danner K, Jokela R, Pocock SJ, Trenkler S, Kredel M, Biedler A, Sessler DI, Roewer N, IMPACT Investigators: A factorial trial of six interventions for the prevention of postoperative nausea and vomiting. N Engl J Med 2004; 350:2441–51
6. Park SK, Cho EJ: A randomized controlled trial of two different interventions for the prevention of postoperative nausea and vomiting: total intravenous anaesthesia using propofol and remifentanil versus prophylactic palonosetron with inhalational anaesthesia using sevoflurane-nitrous oxide. J Int Med Res 2011; 39:1808–15

Appendix: Search strategy

1. Identification of studies including drugs for prevention of postoperative nausea and vomiting as used before[1]

1. MeSH-NAUSEA OR NAUSEA* OR INAPPETENCE
2. MeSH-VOMITING OR VOMIT* OR EMESIS OR EMET*
3. MeSH-POSTOPERATIVE NAUSEA AND VOMITING OR POSTOPERATIVE NAUSEA AND VOMITING
4. #1 OR #2 OR #3
5. MeSH-POSTOPERATIVE OR POST-OPERATIVE
6. MeSH-ANESTHESIA OR ANAESTHESIA OR ANESTHET* OR ANAESTHET*
7. #5 OR #6
8. MeSH-ANTIEMETICS OR ANTIEMESIS OR ANTIEMETIC* OR ANTIEMETOGENIC
9. ALIZAPRIDE OR ALOSETRON OR ALPRAZOLAM OR APREPITANT OR ATROPINE OR BETAMETHASONE OR BETHAMETHAZONE OR BROMAZEPAM OR CHLORAL HYDRATE OR CHLORPROMAZINE OR CIMETIDINE OR CLEBOPRIDE OR CLONIDINE OR CYCLIZINE OR DEXAMETHASONE OR DEXMEDETOMIDINE OR DIAZEPAM OR DIFENIDOL OR DIMENHYDRINATE OR DIXYRAZINE OR DOLASETRON OR DOMPERIDONE OR DROPERIDOL OR EPHEDRINE OR ERYTHROMYCIN OR FAMOTIDINE OR FLUNITRAZEPAM OR FLURBIPROFEN OR FOSAPREPITANT OR GINGER OR GLYCOPYRROLATE OR GRANISETRON OR HYOSCINE OR INTRALIPID OR ITASETRON OR LIDOCAINE OR LORAZEPAM OR LORMETAZEPAM OR MAGNESIUM OR MEDAZEPAM OR METHYLNALTREXONE OR METHYLPREDNISOLONE OR METOCLOPRAMIDE OR MIDAZOLAM OR NALOXONE OR NEOSTIGMINE OR NETUPITANT OR ONDANSETRON OR OXYGEN OR PALONOSETRON OR PENTOBARBITONE OR PERPHENAZINE OR PREDNISOLONE OR PROCHORPERAZINE OR PENTOBARBITONE OR PROMETHAZINE OR PROPOFOL OR RAMOSETRON OR RANITIDINE OR SULPIRIDE OR TIAPRIDE OR TRIMETHOBENZAMINE OR TROPISETRON
10. #8 OR #9
11. #4 AND #7 AND #10

2. AND Identification of studies including total intravenous anesthesia

1. Anesthesia, intravenous (Mesh)
2. Total intravenous anaesthesia OR total intravenous anesthesia
3. TIVA
4. propofol (mesh)
5. 1 OR 2 OR 3 OR 4

3. AND Robinson's highly sensitive PubMed search strategy for controlled clinical trials, as modified by Biondi-Zoccal et al[2]

(randomized controlled trial [pt] OR controlled clinical trial [pt] OR randomized controlled trials [mh] OR random allocation [mh] OR double-blind method [mh] OR single-blind method [mh] OR clinical trial [pt] OR clinical trials [mh] OR ('clinical trial' [tw] OR ((singl* [tw] OR doubl* [tw] OR trebl* [tw] OR tripl* [tw]) AND (mask* [tw] OR blind [tw])) OR ('latin square' [tw]) OR placebos [mh] OR placebo* [tw] OR random* [tw] OR research design [mh:noexp] OR comparative study [mh] OR evaluation studies [mh] OR follow-up studies [mh] OR prospective studies [mh] OR cross-over studies [mh] OR control* [tw] OR prospectiv* [tw] OR volunteer* [tw]) NOT (animal [mh] NOT human [mh]) NOT (comment[pt] OR editorial[pt] OR meta-analysis[pt] OR practice-guideline[pt] OR review[pt]))

Results in the following search term:

(((nausea OR NAUSEA*[mh]) OR (vomiting OR VOMIT* OR emesis OR EMET*[mh]) OR (postoperative nausea AND vomiting OR postoperative nausea AND VOMITING[mh])) AND ((postoperative OR POST-OPERATIVE[mh]) OR (anesthesia OR anaesthesia OR ANESTHET* OR ANAESTHET*[mh])) AND ((antiemetics OR antiemetics OR ANTIEMETIC* OR ANTIEMETOGENIC[mh]) OR (alizapride OR alosetron OR alprazolam OR aprepitant OR atropine OR betamethasone OR betamethasone OR bromazepam OR chloral hydrate OR chlorpromazine OR cimetidine OR clebopride OR clonidine OR cyclizine OR dexamethasone OR dexmedetomidine OR diazepam OR difenidol OR dimenhydrinate OR dixyrazine OR dolasetron OR domperidone OR

droperidol OR ephedrine OR erythromycin OR famotidine OR flunitrazepam OR flurbiprofen OR fosaprepitant OR ginger OR glycopyrrolate OR granisetron OR hyoscine OR intralipid OR itasetron OR lidocaine OR lorazepam OR lormetazepam OR magnesium OR medazepam OR methylnaltrexone OR methylprednisolone OR metoclopramide OR midazolam OR naloxone OR neostigmine OR netupitant OR ondansetron OR oxygen OR palonosetron OR pentobarbitone OR perphenazine OR prednisolone OR prochlorperazine OR pentobarbitone OR promethazine OR propofol OR ramosetron OR ranitidine OR sulpiride OR tiapride OR trimethobenzamide OR tropisetron)) AND (Anesthesia, intravenous [Mesh] OR "total intravenous anesthesia" OR "total intravenous anaesthesia" OR TIVA OR propofol [mesh])) AND (randomized controlled trial [pt] OR controlled clinical trial [pt] OR randomized controlled trials [mh] OR random allocation [mh] OR double-blind method [mh] OR single-blind method [mh] OR clinical trial [pt] OR clinical trials [mh] OR ('clinical trial' [tw] OR ((singl* [tw] OR doubl* [tw] OR trebl* [tw] OR tripl* [tw]) AND (mask* [tw] OR blind [tw])) OR ('latin square' [tw]) OR placebos [mh] OR placebo* [tw] OR random* [tw] OR research design [mh:noexp] OR comparative study [mh] OR evaluation studies [mh] OR follow-up studies [mh] OR prospective studies [mh] OR cross-over studies [mh] OR control* [tw] OR prospectiv* [tw] OR volunteer* [tw]) NOT (animal [mh] NOT human [mh]) NOT (comment[pt] OR editorial[pt] OR meta-analysis[pt] OR practice-guideline[pt] OR review[pt]))

REFERENCES

1. Carlisle JB, Stevenson CA. Drugs for preventing postoperative nausea and vomiting. *Cochrane Database Syst Rev* 2006;CD004125

2. Biondi-Zoccai GGL, Agostoni P, Abbate A, Testa L, Burzotta F. A simple hint to improve Robinson and Dickersin's highly sensitive PubMed search strategy for controlled clinical trials. *Int J Epidemiol* 2005;**34**:224–5; author reply 225

PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	4
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	4,6,7
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	6
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	6
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	6,10
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	SDC
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	6
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	6
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	7
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	7
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	8
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	8

PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	7
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	8, SDC
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	10, figure 1
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	Table 1, figures 1,2, 3, SDC figures 1, 2
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	12, Table 3
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	Figures 1,2,3 SDC figures 1,2
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	Figures 1,2,3 SDC figures 1,2
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	12, figure 4, SDC figure 3
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	10,11,12, SDC

			figure 2
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	SDC table 1
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	16,17
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	13-17
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	18

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097