著手撰寫系統性文獻回顧

衛生福利部雙和醫院
實證健康照護中心
譚家偉　主任

Systematic review and meta-analysis is a kind of study method


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PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	
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.	
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	
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.	
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.	
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.	
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	
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).	
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.	
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	
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.	
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	
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.	

Perform a Meta-analysis

- Download software
- Focus a good question
- Selection criteria
- Search strategy
- Study selection and data extraction
- Assess methodological quality
- Statistical Analysis
- Discussion

Table 1 Characteristics of studies fulfilling inclusion criteria in the meta-analysis

Study [references]	Inclusion criteria	No. of patient (% of male)	Age, years, mean ± SD	Baseline serum creatinine, mg/dl	Hydration/intervention	Contrast type, volume, ml
Burns et al. [11]	Serum creatinine >1.2 mg/dL or urine output <0.5 ml/kg over 4 h	A: 21 C: 21	NA	A: 1.15 ± 0.46 C: 1.34 ± 0.30	NS 12 h before and 24 h after CT A: 5 g IV post-randomization and 2 doses of 2.5 g at 6 h and 12 h after CT C: D5 W instead of NAC	NA
Kitzler et al. [16]	Serum creatinine >1.25 mg/dL for males and 1.09 mg/dL for females	A: 10 (20) E: 10 (60) C: 10 (50)	A: 76.6 ± 9.5 E: 73.3 ± 11.9 C: 74 ± 8.5	A: 1.37 ± 0.51 E: 13.7 ± 0.2 C: 1.33 ± 0.12	0.45 % saline 1 ml/kg 12 h before and 12 h after CT A: Orally, 1,200 mg 12 and 6 h before and 6 and 12 h after CT E: 540 mg IV 12 and 6 h before and 6 and 12 h after CT C: 0.45 % saline instead of NAC and vitamin E	Iopromide ultravisit 100 ml
Hsu et al. [15]	Patients received abdominal or chest CT in the emergency department	A: 106 (74) C: 103 (76)	A: 79.7 ± 8.5 C: 79.3 ± 11.1	A: 1.59 ± 0.56 C: 1.61 ± 0.63	A: 600 mg IV in 3 ml/kg NS 1 h before CT and NS 1 ml/kg 6 h after CT C: only hydration	Iohexol or iopromide or iobitridol
Poletti et al. [12]	Patients with serum creatinine >1.2 mg/dL admitted to emergency department	A: 44 (59) C: 43 (67)	A: 66 ± 11 C: 65 ± 15	A: 1.65 ± 0.40 C: 1.67 ± 0.41	0.45 % saline 5 ml/kg 1 h before and 1 ml/kg 12 h after CT A: 900 mg IV diluted in 50 ml D5 W 1 h before and in 0.45 % saline 1 ml/kg 12 h after CT C: 50 ml of NS instead of NAC	Iopromide ultravisit 100 ml
Sar et al. [13]	Diabetic patients with serum creatinine <1.2 mg/dL or creatinine clearance >60 ml/min	A: 25 (52) C: 20 (55)	A: 60 ± 11.3 C: 53.5 ± 9.9	A: 0.83 ± 0.15 C: 0.81 ± 0.17	NS 12 h before and 24 h after CT A: Orally, 1,200 mg before and 2 days after CT C: Only hydration	Iohexol 100 ml
Tepel et al. [14]	Serum creatinine >1.2 mg/dL or creatinine clearance <50 ml/min	A: 41 (58.5) C: 42 (54.8)	A: 66 ± 11 C: 65 ± 15	A: 2.5 ± 1.3 C: 2.4 ± 1.3	0.45 % saline 1 ml/kg 12 h before and 12 h after CT A: Orally, 600 mg BID on the day before and on the day of CT C: Only hydration	Iopromide ultravisit 75 ml

Table 2 Methodological quality assessment of included trials

Study [references]	Allocation generation	Allocation concealment	Double blinding	Data analysis	Duration of follow-up	Loss to follow-up (%)	Other bias
Burns et al. [11]	Random number table	Unclear	Unclear	PP	5 days post-contrast	0	Stopped early due to slow recruitment
Kitzler et al. [16]	Block randomization scheme	Unclear	Adequate	PP	48 h post-contrast	0	Low risk
Hsu et al. [15]	Computer-generated	Adequate	Unclear	PP	72 h post-contrast	13 %	Significant differences in body weight, amount of contrast material administered, and the presence of CKD between groups
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Sar et al. [13]	Unclear	Open-label	Inadequate	ITT	72 h post-contrast	0	No real amount of volume infusion provided
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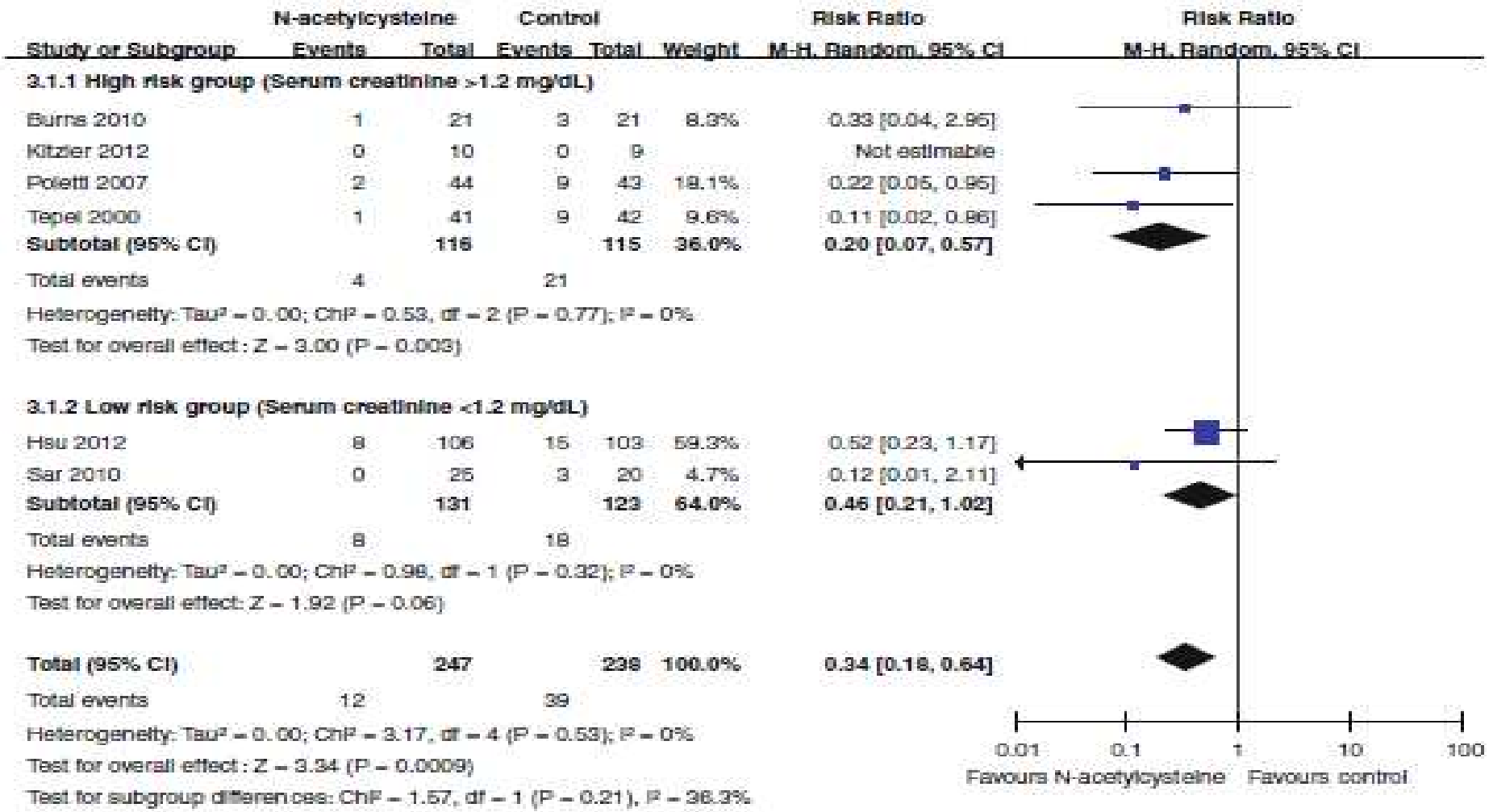
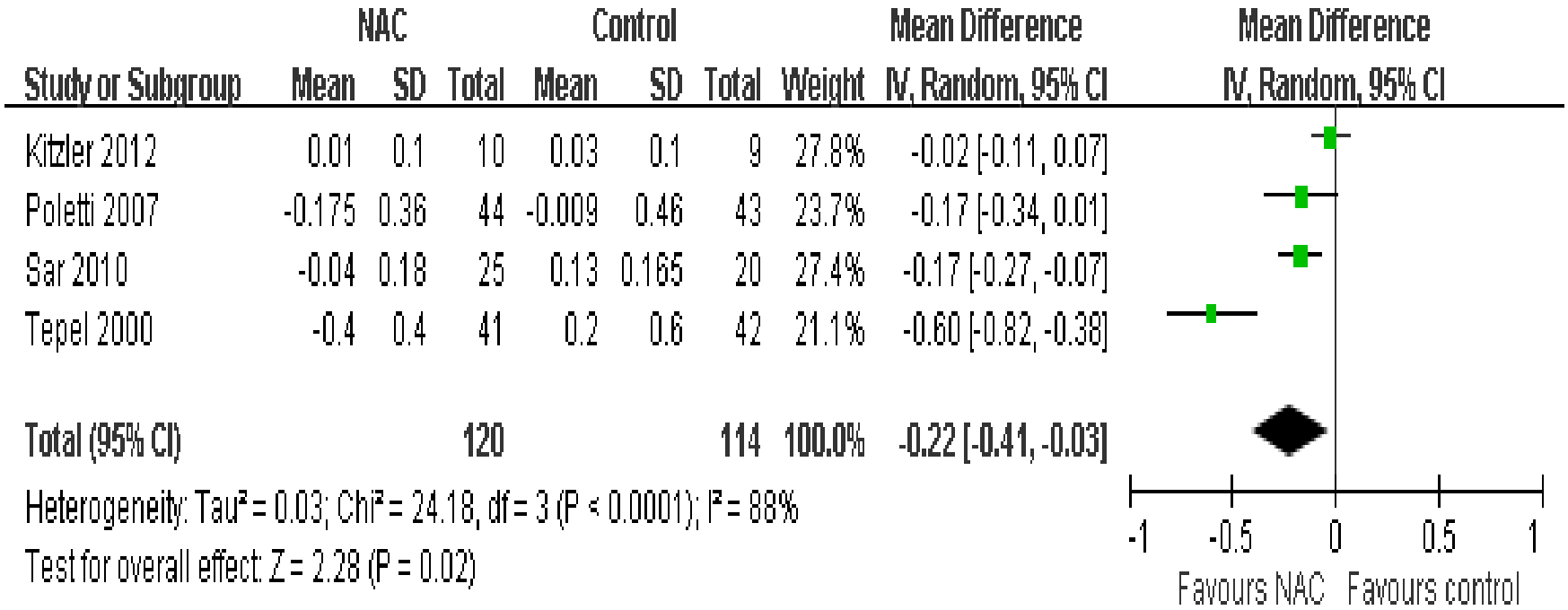
Incidence of CIN



Change of serum creatinine



Forest plot of comparison: N-acetylcysteince with hydration versus hydration.

The effectiveness of *N*-acetylcysteine in preventing contrast-induced nephropathy in patients undergoing contrast-enhanced computed tomography: a meta-analysis of randomized controlled trials

Introduction

Contrast-induced nephropathy (CIN) is a major con
plication of intravenous administration of an iodin
contrast medium and is usually defined as an increas
in serum creatinine greater than 25 % or 44.2 μmol/
(>0.5 mg/dL) within 3 days of intravascular contra
administration in the absence of an alternative cause
[1]. Contrast-induced nephropathy (CIN) is u
mon in patients with normal renal function, r
from 0 to 10 % [2]. However, the incidence is p
as high as 50 % in patients with preexisting
impairment or certain risk factors [3]. The

The effects of various interventions in preventing CIN have been evaluated in clinical trials. The results of several studies have demonstrated a considerable reduction in the incidence of CIN using adequate intravenous fluid hydration, low-osmolality contrast media instead of high-osmolar agents and iso-osmolar agents instead of low-osmolar agents [5]. The contrast agents [7]. Several randomized controlled trials (RCTs) and meta-analyses evaluating the anti-oxidative agent *N*-acetylcysteine (NAC) in preventing CIN in patients undergoing coronary angiography have yielded promising results [8]. However, the effectiveness of NAC in preventing CIN in patients undergoing contrast-enhanced computed tomography (CT) is still controversial. In this report, we systematically review the data from randomized trials to evaluate the effect of NAC in the preventing CIN in the study population.

Aim

Int Urol Nephrol. 2013 Oct;45(5):1309-18.

Review protocol

We utilized the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) statement, explanation and elaboration document, and checklist to guide our methodology and reporting [9]. The systematic review described herein was accepted by the online PROSPERO international prospective register of systematic reviews of the National Institute for Health Research (CRD42012002094).

Search methods

The studies were identified by computerized searching in the PubMed, EMBASE, SCOPUS, and Cochrane databases. The following MeSH search headings were used: *acetylcysteine, radio induced or contrast induced, renal insufficiency or renal failure or kidney*

Study selection

To be included in our analysis, studies were required to meet the following criteria: RCTs that have evaluated the efficacy of acetylcysteine, administered orally or intravenously, versus a control group with hydration alone to prevent CIN

Data extraction and quality assessment

Two reviewers (M.Y. Wu and K.W. Tam) independently extracted the following information from each study: study population characteristics,

The risk of bias in the included trials was assessed according to individual domains, reporting the following aspects: adequacy of randomization, allocation concealment, blinding, length of follow-up, number of drop-outs and whether intention-to-treat (ITT) analysis was conducted.

Data synthesis and analysis

Outcomes

We used the following outcomes to evaluate the efficacy of NAC in preventing CIN for patients undergoing contrast-enhanced CT: the incidence of CIN, the requirement for dialysis, changes of serum

We conducted the analysis using the statistical package Review Manager, Version 5.1 (Cochrane Collaboration, Oxford, England). We statistically analyzed the dichotomous outcomes using risk ratios (RRs) as the summary statistic. Continuous outcomes

Results

- Flowchart of searching
- Characteristics of included studies
- Assessment of methodological quality
- Primary and secondary outcomes:
  - Included papers
  - Sample size
  - Definition and detection of outcomes
  - Results

Discussions

- Summary of the outcomes
- Extend and explain of the outcomes
- 1st issue
- 2nd issue
- 3rd to 5th issue
- Heterogeneity
- Limitation
- Conclusion

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The choice of contrast medium and route of administration are procedural risk factors in preventing CIN in patients undergoing contrast-enhanced image studies. The various osmolality iodinated radiocontrast agents have different levels of nephrotoxicity, with the lowest risk of toxicity associated with low- or iso-osmolar agents.

istration of a contrast medium

There is broad consensus that hydration reduces the risk of CIN based on improving renal blood flow, diluting contrast material, reducing the activation of the rennin–angiotensin system, suppressing the secretion of the antidiuretic hormone, and minimizing reductions in the renal production of endogenous vasodilators. The most effective protocol for intra-arterial procedures appears to be 1.0–1.5 ml/kg/h, 12 h before and 12 h after administering the contrast

radiocontrast agent. The most popular protocol involves an oral NAC, 600 mg, twice daily for 24 h the day before and on the day of the procedure. It has been suggested that periprocedural doses exceeding 600 mg, or daily doses exceeding 1,200 mg, decrease the incidence of CIN [18]. Patients requiring emer-

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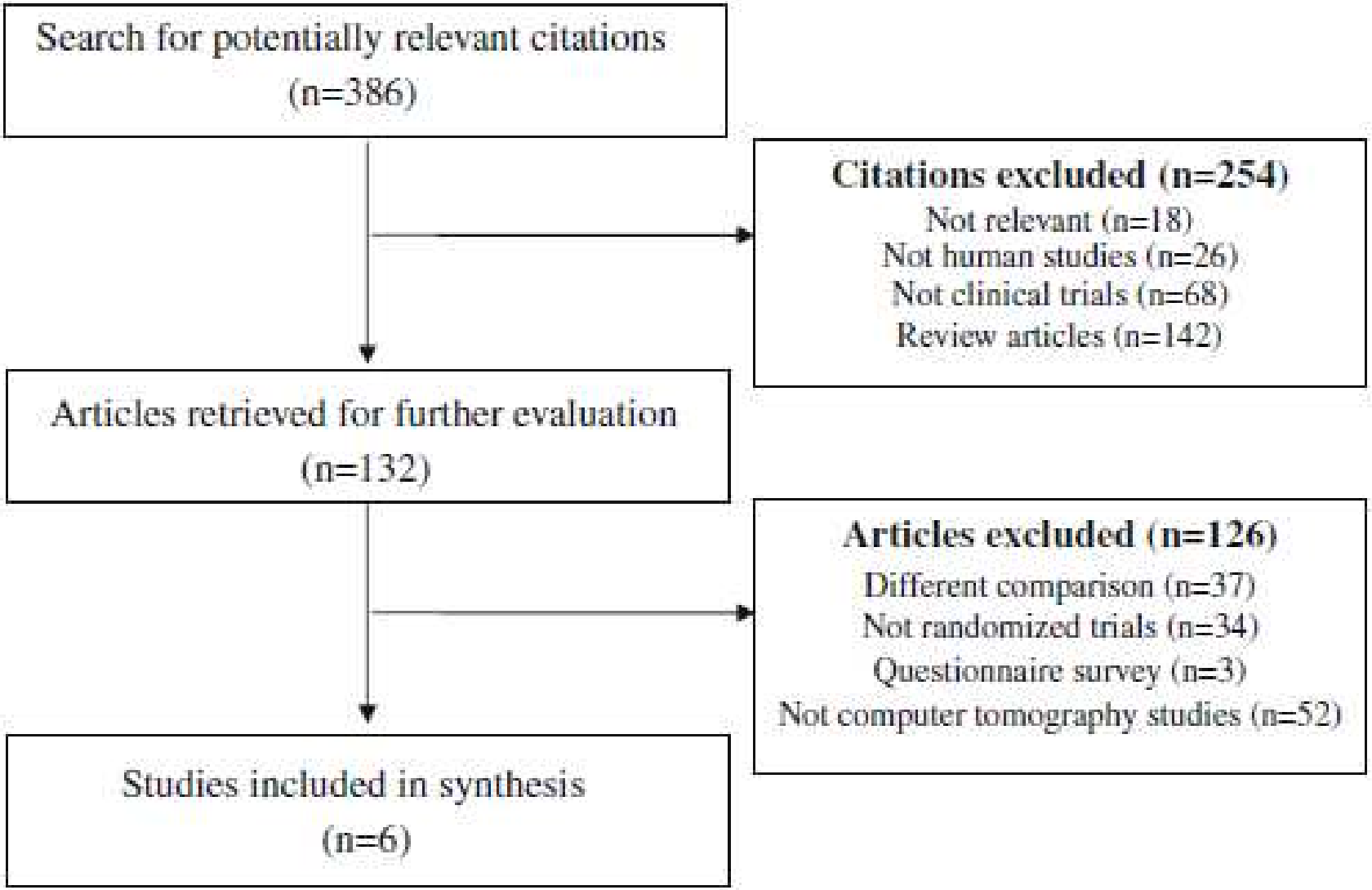
Other issues before submission

PROSPERO

International prospective register of systematic reviews

Flowchart for the selection of the studies



Instructions to Authors (e.g. *Ann Intern Med*)

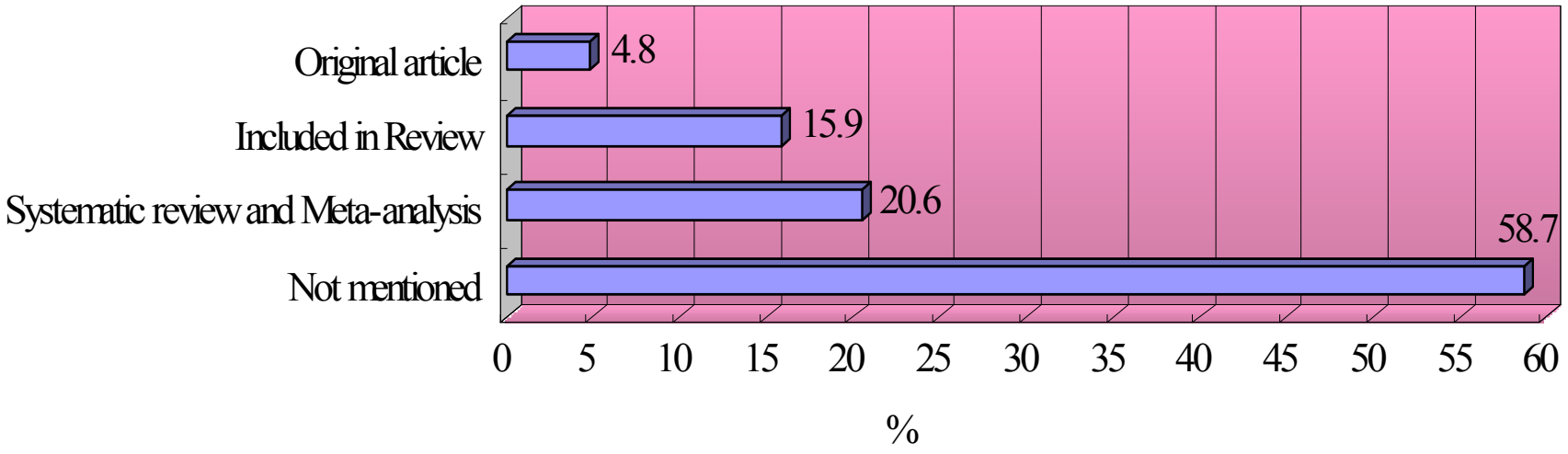
Article Types

Section	Description	Word Limit	Abstract Type*	Miscellaneous Considerations
Reviews: Narrative	Descriptions of cutting-edge and evolving developments, and underlying theory. More details	3500 to 4000	Unstructured 275 or fewer words	Include a box (summary table) that lists concisely 3 to 7 take-home points of the review.
Reviews: Systematic & Meta-Analyses	Reviews that systematically find, select, critique, and synthesize evidence relevant to well-defined questions about diagnosis, prognosis, or therapy. More details	3500 to 4000	Structured 275 or fewer words	Include a flow diagram that depicts search and selection processes, and evidence tables.

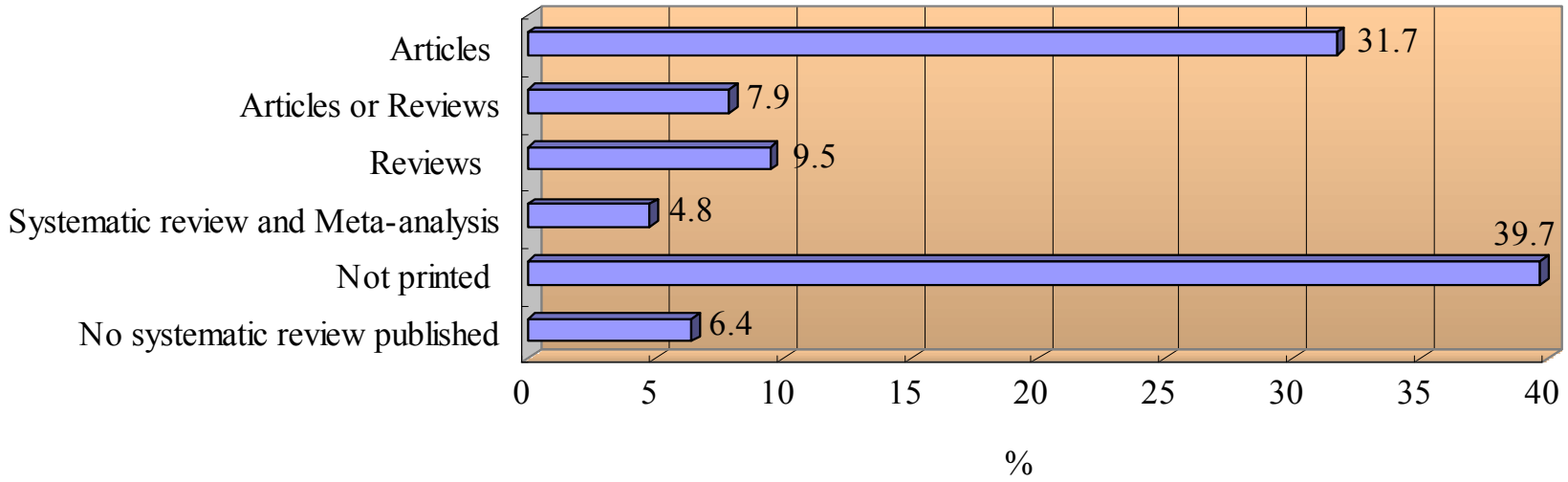
Article category printed at the front page (e.g. *Lancet*)

Efficacy and safety of more intensive lowering of LDL cholesterol: a meta-analysis of data from 170 000 participants in 26 randomised trials

Types of article mentioned in the Instructions to Authors (n=63)



Article category printed at the front page (n=63)



Question

Searching list

Acquire evidence

Selection criteria

Table: characteristics of studies

Table: methodological assessment

Data extraction

Data analysis: forest plot

Drafting manuscript

Registration

Last search

Submission

天下武功，無堅不摧，唯快不破

Thank you for your attention!