

Worksheet for the Reviewing of Systematic Reviews.

Citation

Choi P T-L, Yip G, Quinonez LG, Cook DJ. Crystalloids vs colloids in fluid resuscitation: a systematic review. Crit Care Med 1999;27(1):200-210.

1. Are the following details included in the review? [if yes, provide brief details].

- **A] Purpose of the review** Yes ? No

To systematically review the effects of isotonic crystalloids compared with colloids in fluid resuscitation

- **B] Intervention / treatment** Yes ? No

Isotonic crystalloid (not further defined)

- **C] Comparative Intervention** Yes ? No

Colloid (not further defined)

- **D] Patient population** Yes ? No

Adults requiring fluid resuscitation

- **E] Study design** Yes ? No

Consider whether the right type of study design in order to address the review question was included.

RCTs

- **F] Outcome[s]** Yes ? No

Primary

Pulmonary oedema
Mortality
Length of hospital stay
Physiologic parameters

Other

- Overall, did the review ask a focused question?** Yes ? No

Citation [Author & Date]:

2a. Did the reviewers try to identify all relevant studies?

Yes ? No

Please indicate:

- if Medline was searched

what years were searched: 1966 to November 1996

- if Embase was searched

what years were searched _____

- Date searches were undertaken Not stated

- How well unpublished studies were searched for by indicating whether:

- there was a defined search strategy for unpublished studies;

- conference abstracts were searched;

- the database Sigle was searched;

- personal contact was made with relevant experts;

- contact was made with a relevant pharmaceutical company.

- if there was follow-up from reference lists

- if a strategy for the searching for non-English language studies was described

- whether any other bibliographic databases were searched

if yes, please list with dates: CINAHL

- Any other relevant information regarding identification of relevant studies?

2b. Did the reviewers look for any publication bias?

Yes ? No

Consider whether funnel plots were included in the review.

2c. Were details provided of the search strategies used to identify relevant studies?

Yes ? No

Consider whether:

- search strategies were stated and whether full details were provided

- the search strategy/ search terms were relevant to the review question.

Brief details of keywords used in search provided

3. Were the eligibility criteria of the included studies detailed in the review?

Yes ? No

Consider: whether

- whether full [detailed] eligibility criteria [inclusion and exclusion] were included

- whether the eligibility criteria were appropriate to the review question.

- how any eligibility criteria were applied and the process of the selection of studies.

- whether 1+ independent reviewers were involved in assessing the studies for inclusion.

Eligibility criteria stated – as per first page of the appraisal

Duplicate assessment done

Assessors blinded to journal, author, publication year, results and discussion

Weighted kappa (0.76) suggested good agreement between reviewers

4. Did the reviewers assess the quality of the included studies?

Yes ? No

Consider: if a clear, pre-determined strategy was used to determine which studies were included.

- the process of the quality assessment [i.e. numbers of reviewers involved etc].
- whether any scores were given, the components of the scores were also provided.
- whether an assessment of quality was incorporated into the analysis of the review
- how many included studies were considered by the reviewer to be of good quality.

An explicit system of scoring was employed. It contains the key components of assessment of RCTs that would be expected

Done in duplicate

Weighted kappa statistic (0.54) suggested only moderate agreement

5. Were details of the extraction of data from the included studies provided?

Yes ? No

Consider whether: the procedure for data extraction was provided

- there was any bias in the procedure used
- all important outcomes [individual, policy, family/carers, wider community] relevant to the review question] were considered

Data extracted in duplicate

6a. Have the results of the studies been combined?

Yes ? No

6b. If the results of the individual studies have been combined in the review, was it reasonable to do so?

Yes ? No

Consider whether: the results of each study are clearly displayed

- the results were similar from study to study [Look for tests of heterogeneity: what are the results of any such tests, what was done with these results within the review].
- the reasons for any variation in results are discussed.

Data on physiological outcomes and LOS not combined

For other outcomes, visual inspection of Forest plots suggests minimal variation between studies

However, no tests of statistical significance to confirm this

6c. Do the reviewers comment on the methodology used for combining results?

Yes ? No

7. Number of studies included in the actual review:

17

Total number of patients in treatment group [see 1[B]] included in review

Range Crystalloid 8 to 84

c360

Total number of patients in the control group [see 1[B]] included in review

Range Colloid 9 to 57

c360

Number of outcomes included within the review [see 1F]

4

Was any power calculation undertaken?

Yes ?

No

Was such a power calculation appropriate?

Yes ?

No

[A power calculation any be useful when a review claims to demonstrate no effect].

Between 5000 & 10000 patients would be required to demonstrate a mortality difference of 10% depending on the baseline mortality assumed to be operating

8. What is the main result[s] for each outcome?

Consider:

- how large the size of the result is and how meaningful it is
- how the results are expressed [odds ratio, relative risk]
- how missing data/incomplete outcome data within the included studies has been handled in the review

Outcome 1

Pulmonary oedema

6 RCTs contribute

RR 0.84 (95% CI 0.25 to 2.45)

Outcome 2

Mortality

15 RCTs contribute

RR 0.86 (95% CI 0.63 to 1.17)

Outcome 3

Stated to be too diverse to summarise

Outcome 4

Length of stay

4 studies provide data on ICU LOS

3 studies provide data on hospital LOS

In both cases results mixed (some favouring colloid and other crystalloid)

9. How precise are the results?

Consider: the given statistical significance of the results

- if a confidence interval was reported
- if a p-value was reported where confidence intervals are unavailable

All observed differences compatible with chance alone

Overview by ourselves

Is the review worth reading?

This is a well conducted review on a topic of relevance to transfusion medicine

What is the review about?

Consider whether the review differs from what the reviewers set out to undertake [see section 1]. Summarise what the review was actually concerned with, the methodology used to select studies and details about the included studies.

The review sets out to assess the relative effectiveness of crystalloids and colloids

The included studies are drawn from a wide range of settings (trauma, cardiac surgery, vascular surgery, critically ill non-trauma)

The crystalloids and colloids used varied considerably from study to study

Things to take into account when interpreting the review's results. *Include details of any specific limitations of the review. [see appraisal for more detail on the strengths and weaknesses of the review].*

The review is generally well conducted

The search strategy is limited by current standards, so some studies may have been overlooked

Further the review is out-of-date

The review needs to be considered alongside other reviews, particularly the Cochrane reviews on this topic

In this respect it should be noted that this is one of the few reviews to consider outcomes other than mortality

What are the reliable results of the review?

For pulmonary oedema and mortality in particular the results are compatible with both benefit and harm being associated with colloids relative to crystalloids. The power calculation emphasises that the total number of randomised patients in all the RCTs identified by this review was insufficient to exclude important differences in mortality – taken as a 10% difference by the investigators. Between 5000 and 10000 patients would be required to do this, in stark contrast to the 760 persons identified in the review.

Can the results of the review be applied to clinical practice/ National Blood Service?

Taken in isolation the review suggests the priority should be for further research

Cross-reference to Transfusion Medicine Handbook [3rd Edition].

Non-superiority of colloids relative to crystalloids is mentioned in C6, Transfusion management of acute blood loss (p47-8 especially Notes 1 to 5)
