Systematic review

1. * Review title.

Give the working title of the review, for example the one used for obtaining funding. Ideally the title should state succinctly the interventions or exposures being reviewed and the associated health or social problems. Where appropriate, the title should use the PI(E)COS structure to contain information on the Participants, Intervention (or Exposure) and Comparison groups, the Outcomes to be measured and Study designs to be included.

Evaluating the effectiveness of quadratus lumborum block for analgesia after cesarean section: a systematic review and meta-analysis

2. Original language title.

For reviews in languages other than English, this field should be used to enter the title in the language of the review. This will be displayed together with the English language title.

3. * Anticipated or actual start date.

Give the date when the systematic review commenced, or is expected to commence.

25/09/2019

4. * Anticipated completion date.

Give the date by which the review is expected to be completed.

29/02/2020

5. * Stage of review at time of this submission.

Indicate the stage of progress of the review by ticking the relevant Started and Completed boxes. Additional information may be added in the free text box provided.
Please note: Reviews that have progressed beyond the point of completing data extraction at the time of initial registration are not eligible for inclusion in PROSPERO. Should evidence of incorrect status and/or completion date being supplied at the time of submission come to light, the content of the PROSPERO record will be removed leaving only the title and named contact details and a statement that inaccuracies in the stage of the review date had been identified.
This field should be updated when any amendments are made to a published record and on completion and publication of the review. If this field was pre-populated from the initial screening questions then you are not able to edit it until the record is published.

The review has not yet started: No

Review stage	Started	Completed
Preliminary searches	Yes	Yes
Piloting of the study selection process	Yes	Yes
Formal screening of search results against eligibility criteria	Yes	Yes
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

Provide any other relevant information about the stage of the review here (e.g. Funded proposal, protocol not yet finalised).

6. * Named contact.

The named contact acts as the guarantor for the accuracy of the information presented in the register record.

Nasir Hussain

Email salutation (e.g. "Dr Smith" or "Joanne") for correspondence:

Dr Hussain

7. * Named contact email.

Give the electronic mail address of the named contact.

nasir.hussain@osumc.edu

8. Named contact address

Give the full postal address for the named contact.

410 W 10th Ave, Columbus, OH, 43210

9. Named contact phone number.

Give the telephone number for the named contact, including international dialling code.

9898541037

10. * Organisational affiliation of the review.

Full title of the organisational affiliations for this review and website address if available. This field may be completed as 'None' if the review is not affiliated to any organisation.

The Ohio State University, Wexner Medical Center

Organisation web address:

11. * Review team members and their organisational affiliations.

Give the personal details and the organisational affiliations of each member of the review team. Affiliation

refers to groups or organisations to which review team members belong. **NOTE: email and country are now mandatory fields for each person.**

Ms Meiqin Zhou. The Ohio State University, Wexner Medical Center
Dr Nasir Hussain. Department of Anesthesiology, The Ohio State University, Wexner Medical Center, USA
Dr Tristan Weaver. Department of Anesthesiology, The Ohio State University, Wexner Medical Center, USA
Dr Faraj Abdallah. Department of Anesthesiology, The University of Toronto, Canada

12. * Funding sources/sponsors.

Give details of the individuals, organizations, groups or other legal entities who take responsibility for initiating, managing, sponsoring and/or financing the review. Include any unique identification numbers assigned to the review by the individuals or bodies listed.

None

Grant number(s)

13. * Conflicts of interest.

List any conditions that could lead to actual or perceived undue influence on judgements concerning the main topic investigated in the review.

None

14. Collaborators.

Give the name and affiliation of any individuals or organisations who are working on the review but who are not listed as review team members. **NOTE: email and country are now mandatory fields for each person.**

15. * Review question.

State the question(s) to be addressed by the review, clearly and precisely. Review questions may be specific or broad. It may be appropriate to break very broad questions down into a series of related more specific questions. Questions may be framed or refined using PI(E)COS where relevant.

To study the effectiveness of the quadratus lumborum block at improving analgesia and pain scores in patients undergoing cesarean section.

16. * Searches.

State the sources that will be searched. Give the search dates, and any restrictions (e.g. language or publication period). Do NOT enter the full search strategy (it may be provided as a link or attachment.)

A systematic search strategy will be created for the PubMed and the Excerpta Medica database (EMBASE) from inception until November 29, 2019. The search strategy will be developed using medical subject headings (MeSH) and keywords relevant to the central research question of this review. The bibliographies and citations of all included articles will also be hand searched to identify any other potentially relevant trials, and we will hand search the published abstracts of the following international meetings: American Society of Anesthesiologists (ASA) 2011-2019, American Society of Regional Anesthesia and Pain Medicine (ASRA) 2013-2019, the European Society of Regional Anesthesia (ESRA) 2014-2019, the European Society of Anesthesiology (ESA) 2015-2019, and the Society for Obstetric Anesthesia and Perinatology (SOAP)

2013-2019. The clinical trial registry (www.ClinicalTrials.gov) will also be searched, and the authors of potentially relevant ongoing or completed trials will be contacted for additional data.

17. URL to search strategy.

Give a link to a published pdf/word document detailing either the search strategy or an example of a search strategy for a specific database if available (including the keywords that will be used in the search strategies), or upload your search strategy.Do NOT provide links to your search results.

Alternatively, upload your search strategy to CRD in pdf format. Please note that by doing so you are consenting to the file being made publicly accessible.

Yes I give permission for this file to be made publicly available

18. * Condition or domain being studied.

Give a short description of the disease, condition or healthcare domain being studied. This could include health and wellbeing outcomes.

The quadratus lumborum block (QLB) is used as an adjunct to intrathecal opioids, but evidence of its effectiveness in reducing analgesic consumption and pain scores after cesarean section (C-section) has been conflicting. This meta-analysis will therefore study analgesic consumption and pain scores after QLB in patients undergoing C-section.

19. * Participants/population.

Give summary criteria for the participants or populations being studied by the review. The preferred format includes details of both inclusion and exclusion criteria.

Adult patients (18 years old) undergoing elective C-section and receiving intrathecal opioids plus either QLB or sham block/saline injection. Adult patients receiving epidural analgesia will be excluded from the review.

20. * Intervention(s), exposure(s).

Give full and clear descriptions or definitions of the nature of the interventions or the exposures to be reviewed.

Quadratus lumborum block inclusive of spinal morphine

21. * Comparator(s)/control.

Where relevant, give details of the alternatives against which the main subject/topic of the review will be compared (e.g. another intervention or a non-exposed control group). The preferred format includes details of both inclusion and exclusion criteria.

Spinal morphine alone

22. * Types of study to be included.

Give details of the types of study (study designs) eligible for inclusion in the review. If there are no restrictions on the types of study design eligible for inclusion, or certain study types are excluded, this should be stated. The preferred format includes details of both inclusion and exclusion criteria.

Inclusion: Randomized controlled trials involving adult patients (18 years old) undergoing elective C-section who are receiving intrathecal spinal morphine in addition to QLB or Control (intrathecal spinal morphine alone or

sham block)

Exclusion:

- Studies involving patients who received epidural analgesia or are not undergoing elective C-section

23. Context.

Give summary details of the setting and other relevant characteristics which help define the inclusion or exclusion criteria.

24. * Main outcome(s).

Give the pre-specified main (most important) outcomes of the review, including details of how the outcome is defined and measured and when these measurement are made, if these are part of the review inclusion criteria.

Primary outcomes:

- Analgesic consumption over 24 hours

* Measures of effect

Please specify the effect measure(s) for you main outcome(s) e.g. relative risks, odds ratios, risk difference, and/or 'number needed to treat.

- Weighted mean difference at 24 hours for both outcomes

25. * Additional outcome(s).

List the pre-specified additional outcomes of the review, with a similar level of detail to that required for main outcomes. Where there are no additional outcomes please state ‘None’ or ‘Not applicable’ as appropriate to the review

Secondary outcomes:

- Time to first rescue analgesic request

- Opioid-related complications

- Nerve block-related complications

- Patient satisfaction

- Functional outcomes

* Measures of effect

Please specify the effect measure(s) for you additional outcome(s) e.g. relative risks, odds ratios, risk difference, and/or 'number needed to treat.

- Weighted mean difference for outcomes (or proportions) at all time points

26. * Data extraction (selection and coding).

Describe how studies will be selected for inclusion. State what data will be extracted or obtained. State how this will be done and recorded.

A standardized data extraction form will be created and piloted by an independent reviewer (M.Z.). Relevant data will be extracted in duplicate by an additional independent reviewer (N.H.). Any discrepancies in data extraction will be discussed until a consensus was reached. If an agreement cannot be made, a third

reviewer (F.A.) will assess the discrepant data point and made the final decision. The data extraction will collect information relating to the year of publication; age of study participants; year of publication; quadratus lumborum block technique; assessment of block success; nature and dose of local anesthetic injected; surgical anesthetic used; analgesic regimens; nature of primary outcome studied; pain scores; analgesic consumption at all reported follow-up times; level of satisfaction with pain relief; duration of analgesia; respiratory and functional outcomes; opioid- and block-related adverse events; and hospital and post-anesthesia care unit (PACU) duration of stay.

27. * Risk of bias (quality) assessment.

Describe the method of assessing risk of bias or quality assessment. State which characteristics of the studies will be assessed and any formal risk of bias tools that will be used.

The methodological quality of each study will be assessed using the Cochrane Collaboration's risk of bias tool. Ratings of low, unclear, or high risk of bias will be assigned to each domain by two independent reviewers. Any disagreements regarding risk of bias assessment will be discussed until a decision is reached. In situations when a decision cannot be reached, a third reviewer (F.A.) will assess the trial in question and make a final decision.

28. * Strategy for data synthesis.

Provide details of the planned synthesis including a rationale for the methods selected. This **must not be generic text** but should be **specific to your review** and describe how the proposed analysis will be applied to your data.

We will use the inverse variance method with random-effects modeling for the data analysis. If the dichotomous data can be pooled, the Mantel-Haenszel random-effects model will be used, and for the primary outcomes of this review, a weighted mean difference (WMD) will be calculated, along with a 95% CI.

29. * Analysis of subgroups or subsets.

State any planned investigation of ‘subgroups’. Be clear and specific about which type of study or participant will be included in each group or covariate investigated. State the planned analytic approach.

Subgroup analyses may be carried out, depending on the data retrieved.

30. * Type and method of review.

Select the type of review and the review method from the lists below. Select the health area(s) of interest for your review.

Type of review

Cost effectiveness
No

Diagnostic
No

Epidemiologic
No

Individual patient data (IPD) meta-analysis
No

Intervention
Yes

Meta-analysis
Yes

Methodology
No

Narrative synthesis
No

Network meta-analysis
No

Pre-clinical
No

Prevention
No

Prognostic
No

Prospective meta-analysis (PMA)
No

Review of reviews
No

Service delivery
No

Synthesis of qualitative studies
No

Systematic review
Yes

Other
No

Health area of the review

Alcohol/substance misuse/abuse
No

Blood and immune system
No

Cancer
No

Cardiovascular
No

Care of the elderly
No

Child health
No

Complementary therapies
No

Crime and justice
No

Dental
No

Digestive system
No

Ear, nose and throat
No

Education
No

Endocrine and metabolic disorders
No

Eye disorders
No

General interest
No

Genetics
No

Health inequalities/health equity
No

Infections and infestations
No

International development
No

Mental health and behavioural conditions
No

Musculoskeletal
No

Neurological
No

Nursing
No

Obstetrics and gynaecology
Yes

Oral health
No

Palliative care
No

Perioperative care
Yes

Physiotherapy
No

Pregnancy and childbirth
No

Public health (including social determinants of health)
No

Rehabilitation
No

Respiratory disorders
No

Service delivery
No

Skin disorders
No

Social care
No

Surgery

Yes

Tropical Medicine
No

Urological
No

Wounds, injuries and accidents
No

Violence and abuse
No

31. Language.

Select each language individually to add it to the list below, use the bin icon to remove any added in error.
English

There is not an English language summary

32. * Country.

Select the country in which the review is being carried out from the drop down list. For multi-national collaborations select all the countries involved.

United States of America

33. Other registration details.

Give the name of any organisation where the systematic review title or protocol is registered (such as with The Campbell Collaboration, or The Joanna Briggs Institute) together with any unique identification number assigned. (N.B. Registration details for Cochrane protocols will be automatically entered). If extracted data will be stored and made available through a repository such as the Systematic Review Data Repository (SRDR), details and a link should be included here. If none, leave blank.

34. Reference and/or URL for published protocol.

Give the citation and link for the published protocol, if there is one

Give the link to the published protocol.

Alternatively, upload your published protocol to CRD in pdf format. Please note that by doing so you are consenting to the file being made publicly accessible.

No I do not make this file publicly available until the review is complete

Please note that the information required in the PROSPERO registration form must be completed in full even if access to a protocol is given.

35. Dissemination plans.

Give brief details of plans for communicating essential messages from the review to the appropriate audiences.

The findings of this meta-analysis will be submitted to a journal in the field of Anesthesiology.

Do you intend to publish the review on completion?

Yes

36. Keywords.

Give words or phrases that best describe the review. Separate keywords with a semicolon or new line. Keywords will help users find the review in the Register (the words do not appear in the public record but are included in searches). Be as specific and precise as possible. Avoid acronyms and abbreviations unless these are in wide use.

Systematic review; Meta-analysis; Quadratus lumborum nerve block; C-section; Spinal anesthesia; Post-operative pain; Opioid consumption

37. Details of any existing review of the same topic by the same authors.

Give details of earlier versions of the systematic review if an update of an existing review is being registered, including full bibliographic reference if possible.

38. * Current review status.

Review status should be updated when the review is completed and when it is published. For newregistrations the review must be Ongoing.
Please provide anticipated publication date

Review_Ongoing

39. Any additional information.

Provide any other information the review team feel is relevant to the registration of the review.

40. Details of final report/publication(s).

This field should be left empty until details of the completed review are available.

Give the link to the published review.