Review title and timescale

1  Review title
   Give the working title of the review. This must be in English. Ideally it should state succinctly the interventions or exposures being reviewed and the associated health or social problem being addressed in the review.
   Intranasal ketamine for procedural sedation and analgesia in children: a systematic review

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.
   03/12/2015

4  Anticipated completion date
   Give the date by which the review is expected to be completed.
   01/07/2016

5  Stage of review at time of this submission
   Indicate the stage of progress of the review by ticking the relevant boxes. Reviews that have progressed beyond the point of completing data extraction at the time of initial registration are not eligible for inclusion in PROSPERO. This field should be updated when any amendments are made to a published record.
   The review has not yet started  

<table>
<thead>
<tr>
<th>Review stage</th>
<th>Started</th>
<th>Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminary searches</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Piloting of the study selection process</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Formal screening of search results against eligibility criteria</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Data extraction</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Risk of bias (quality) assessment</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Data analysis</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Provide any other relevant information about the stage of the review here.

Review team details

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

7  Named contact email
   Enter the electronic mail address of the named contact.
   poonai@hotmail.com

8  Named contact address
   Enter the full postal address for the named contact.
   84 Harris Road Delaware, Ontario, Canada N0L 1E0

9  Named contact phone number
   Enter the telephone number for the named contact, including international dialing code.
   5196945309

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.
    Western University
11 Review team members and their organisational affiliations

Give the title, first name and last name of all members of the team working directly on the review. Give the organisational affiliations of each member of the review team.

<table>
<thead>
<tr>
<th>Title</th>
<th>First name</th>
<th>Last name</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr</td>
<td>Naveen</td>
<td>Poonai</td>
<td>Western University</td>
</tr>
<tr>
<td>Mr</td>
<td>Kyle</td>
<td>Canton</td>
<td>Western University</td>
</tr>
<tr>
<td>Dr</td>
<td>Samina</td>
<td>Ali</td>
<td>University of Edmonton</td>
</tr>
<tr>
<td>Dr</td>
<td>Sylvie</td>
<td>LeMay</td>
<td>University of Montreal</td>
</tr>
<tr>
<td>Dr</td>
<td>Michael</td>
<td>Rieder</td>
<td>Western University</td>
</tr>
</tbody>
</table>

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. Any unique identification numbers assigned to the review by the individuals or bodies listed should be included.

None

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.

Are there any actual or potential conflicts of interest?

None known

14 Collaborators

Give the name, affiliation and role of any individuals or organisations who are working on the review but who are not listed as review team members.

<table>
<thead>
<tr>
<th>Title</th>
<th>First name</th>
<th>Last name</th>
<th>Organisation details</th>
</tr>
</thead>
</table>

Review methods

15 Review question(s)

State the question(s) to be addressed / review objectives. Please complete a separate box for each question.

Is intranasal ketamine efficacious for sedation in children undergoing painful procedures?

Is intranasal ketamine an efficacious analgesic in children undergoing painful procedures?

Is intranasal ketamine associated with greater adverse drug events in children undergoing painful procedures?

Is intranasal ketamine associated with greater time to recovery in children undergoing painful procedures?

Is intranasal ketamine associated with a greater requirement for adjunctive sedation or analgesia in children undergoing painful procedures?

Is intranasal ketamine associated with greater patient or caregiver satisfaction in children undergoing painful procedures?

16 Searches

Give details of the sources to be searched, and any restrictions (e.g. language or publication period). The full search strategy is not required, but may be supplied as a link or attachment.


17 URL to search strategy

If you have one, give the link to your search strategy here. Alternatively you can e-mail this to PROSPERO and we will store and link to it.
<table>
<thead>
<tr>
<th>18</th>
<th>Condition or domain being studied</th>
<th>Painful conditions requiring procedural sedation and analgesia with intranasal ketamine.</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Participants/population</td>
<td>Inclusion criteria: Children aged 0-19 years who have a painful condition for which they underwent procedural sedation and analgesia with intranasal ketamine. Exclusion criteria: IN ketamine for non-painful procedures (e.g. MRI imaging) or IN ketamine for non-sedating therapy (e.g. pre-anesthetic induction or exclusively pain management) No exclusion criteria.</td>
</tr>
<tr>
<td>20</td>
<td>Intervention(s), exposure(s)</td>
<td>Intranasal ketamine administered to children aged 0-19 years with painful conditions for the purpose of procedural sedation and analgesia. Any dose, frequency, duration, setting, and comparator.</td>
</tr>
<tr>
<td>21</td>
<td>Comparator(s)/control</td>
<td>Any other agent for procedural sedation and analgesia.</td>
</tr>
<tr>
<td>22</td>
<td>Types of study to be included</td>
<td>All randomized and quasi-randomized trials published in any language that have studied intranasal ketamine in children who require procedural sedation and analgesia for a painful condition.</td>
</tr>
<tr>
<td>23</td>
<td>Context</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>24</td>
<td>Primary outcome(s)</td>
<td>Degree of sedation and analgesia.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Outcomes must be related to the intervention being explored.</td>
</tr>
<tr>
<td>25</td>
<td>Secondary outcomes</td>
<td>Frequency of adverse events, caregiver satisfaction, frequency of requirement for adjunctive sedation therapy, and duration of sedation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Outcomes must be related to the intervention being explored.</td>
</tr>
<tr>
<td>26</td>
<td>Data extraction (selection and coding)</td>
<td>Two independent reviewers will select studies for review using a librarian's search results. Data extraction will be performed by both reviewers independently using a standardized data abstraction form. Discrepancies will be resolved by consensus and arbitration by a third co-investigator if necessary. Data to be extracted include: - study design - publication status - participant age and sex - primary and secondary outcomes (above) - reporting parameters - risk of bias</td>
</tr>
</tbody>
</table>
Risk of bias (quality) assessment
State whether and how risk of bias will be assessed, how the quality of individual studies will be assessed, and whether and how this will influence the planned synthesis.
Risk of bias will be assessed by both reviewers independently using the Cochrane Collaboration Risk of Bias tool.

Strategy for data synthesis
Give the planned general approach to be used, for example whether the data to be used will be aggregate or at the level of individual participants, and whether a quantitative or narrative (descriptive) synthesis is planned. Where appropriate a brief outline of analytic approach should be given.
Data will be synthesized using aggregate data for studies that included exclusively paediatric patients. For those studies that included a mixed population, the authors will be contacted to provide patient-level data. Meta-analyses will be performed if there is minimal heterogeneity with respect to how the primary outcomes are reported. In the case where no meta-analyses are performed, a narrative (descriptive) synthesis will be performed.

Analysis of subgroups or subsets
Give any planned exploration of subgroups or subsets within the review. 'None planned' is a valid response if no subgroup analyses are planned.
Subgroup analysis will be performed based on the dose of intranasal ketamine being used.

Review general information

Type and method of review
Select the type of review and the review method from the drop down list.
Intervention, Systematic review

Language
Select the language(s) in which the review is being written and will be made available, from the drop down list. Use the control key to select more than one language.

Will a summary/abstract be made available in English?
Yes

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. Use the control key to select more than one country.
Canada

Other registration details
Give the name of any organisation where the systematic review title or protocol is registered together with any unique identification number assigned. 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.

Reference and/or URL for published protocol
Give the citation for the published protocol, if there is one.
Give the link to the published protocol, if there is one. This may be to an external site or to a protocol deposited with CRD in pdf format.

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

Dissemination plans
Give brief details of plans for communicating essential messages from the review to the appropriate audiences.
The results of the review will be presented at a national conference and published in a peer-reviewed journal

Do you intend to publish the review on completion?
Yes

Keywords
Give words or phrases that best describe the review. (One word per box, create a new box for each term)

**Intranasal ketamine**

**Paediatric**

**Pain**

**Procedural sedation**

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.
   **Completed but not published**

01/10/2016

39. Any additional information
   Provide any further information the review team consider 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 full citation for the final report or publication of the systematic review.
   Give the URL where available.