Tractography under the microscope: Screening manual for a systematic review/meta-analysis

**Aim**

This manual shall aid reviewers in the standardised application of inclusion and exclusion criteria during the title-abstract and full-text screening stages of this systematic review and meta-analysis. The screening criteria have been discussed and tested during an initial screening to ensure inter-reviewer reliability. Reviewers will meet weekly to discuss questions and obtain clarifications during the entire screening process.

**Title-abstract screening**

*General notes*

* Titles and abstracts will be screening using the software CADIMA. Please create an account on CADIMA and you will be added to the project by the lead author.
* When applying the criteria, you have the options “yes” and “no”. At the title-abstract stage of the screening process, **please be more inclusive than exclusive to avoid excluding potentially relevant articles**. Irrelevant articles will be finally excluded in a second, full-text screening stage.
* During the initial double-reviewer stage, where an article is screened by at least two reviewers, the reviewers may make different screening decisions. These will be flagged as screening inconsistencies by CADIMA. Please refrain from resolving inconsistencies without discussion with the other team member.
* If an abstract is not available on CADIMA, please google the abstract in Google Scholar. If the abstract is available on Google Scholar, use this for screening. If the abstract is not available, please select “unclear”.

*PIRD criteria*

* *Other*: Is the paper an original piece of research?
  + Exclude:
    - Literature review
    - Editorial
    - Commentary
    - Animal study
* *Other*: Is the study design cross-sectional?
  + Exclude:
    - Literature review
    - Case study (n<5)
    - Cohort study
* *Population*: Did patients undergo surgery for motor-eloquent lesions?
  + We will include patients of any age undergoing neurosurgical intervention with neuromonitoring for motor-eloquent lesions near the corticospinal tract.
  + If it is unclear whether the lesion was motor-eloquent, include the study.
  + Exclude:
    - If the abstract clearly states that, e.g., only language-eloquent lesions were examined, exclude the study.
* *Index Test*: Did the study use tractography?
  + Exclude:
    - No tractography is used
* *Reference Test*: Did the study use intraoperative mapping?
  + The study should subcortically map the corticospinal tract
  + The “corticospinal tract (CST)” may also be referred to as the “pyramidal tract (PT)” or “motor fibres” or “motor tract”
  + If it is unclear whether motor fibres were mapped, as opposed to, e.g., speech fibres, include the study.
  + Exclude:
    - No intraoperative mapping was used
* *Diagnosis/Outcome*: Will only be applied at full-text screening stage

**Full-text screening**

*General notes*

* If you are unsure whether a screening criterium is met, please select what you think is right. At this stage, there is no “unsure”-option.
* If the full text is not available in CADIMA, contact the lead author. If the full text is not available on the internet, please inform the lead author who will contact the authors of the study of interest.

*PIRD criteria*

* *Other*: Is the paper an original piece of research?
  + Exclude literature reviews, opinion pieces, animal studies or case studies (N≤5)
* *Population*: Did patients undergo surgery for motor-eloquent lesions?
  + We will include patients of any age undergoing neurosurgical intervention with neuromonitoring for motor-eloquent lesions near the corticospinal tract.
  + Exclude papers that only examine non-motor tracts.
  + We will not filter by type of lesion or exact lesion location
* *Reference Test*: Did the study use direct electrical mapping of motor fibres?
  + The study should subcortically map the corticospinal tract
  + The “corticospinal tract (CST)” may also be referred to as the “pyramidal tract (PT)”
  + If only speech fibres were mapped, exclude the study
* *Reference Test*: Did the study use intraoperative neuromonitoring?
  + We will not filter by neuromonitoring protocol, provided some form of intraoperative neuromonitoring of muscles was present.
* *Index Test*: Did the study compare tractography and direct electrical stimulation points?
  + Comparison measures include distance between stimulation points and tract, true/false positives/negatives
* *Diagnosis/Outcome*: Did the study report accuracy measures of tractography?
  + Accuracy may be indicated through sensitivity, specificity, positive predictive value, and negative predictive value. If any of these measures is mentioned, please include the article.