



# ARE PHARMACOLOGICAL INTERVENTIONS EFFECTIVE FOR DROOLING IN CHILDREN WITH CEREBRAL PALSY? A SYSTEMATIC REVIEW OF EVIDENCE.

## OBJECTIVE

This is a systematic review (SR) which focuses on pharmacologic treatments for drooling in children with cerebral palsy (CP). Although a wide range of different pharmacological interventions have been developed to minimize drooling in this population, clinicians lack direction on the evidence for these interventions. The aim of this review is to investigate the safety, efficacy and effectiveness of pharmacological treatments for drooling in children with CP.

## METHODS

This SR was conducted according to methods recommended in the “The Cochrane Handbook for Systematic Reviews of Interventions”, Version 5.1 (1). The review included all randomized and/or controlled clinical trials which involved children under 18 years old who were diagnosed with any type of CP along with drooling of any severity and a pharmacological treatment. Electronic databases, academic journals, published conference proceedings and grey literature sources were searched from inception to December 2017. No language limits were applied. Two independent reviewers screened titles and abstracts and reached agreement on inclusion/exclusion of studies for further review. The methodological quality of included studies was evaluated using the Cochrane Risk of Bias tool (2). The GRADE system was used for rating the quality or certainty of the evidence in included studies (Figure 1) (3).

## RESULTS

The initial research revealed 1668 results. Three studies met the inclusion criteria and according to the Cochrane Risk of Bias tool (2), the methodological quality was low with high risk of bias (Figure 2). Using the Grades of Recommendations, Assessment, Developmental and Evaluation (GRADE) (3) tool the average quality of the evidence from the included studies was rated as LOW. A variety of mild to severe adverse effects was also reported in all included studies.

Figure 2 – Risk of Bias summary for the included studies.

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Camp-Bruno, 1989	?	?	?	?	+	+	+
Mier, 2000	?	?	?	?	+	+	+
Zeller, 2012	?	?	+	+	+	+	+

## CONCLUSIONS

Findings are limited by poor outcome measures and well-designed clinical trials are needed. Pharmacological interventions must be considered in the context of all other interventions used to control drooling in children with CP. Adverse effects must be evaluated and reported. We provide directions for further research.

## REFERENCES

1. Higgins JPT, Green S. Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0. In: The Cochrane Collaboration. 2011. p. Table 7.7.a: Formulae for combining groups.
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3. Ryan R, Hill S. How to GRADE the quality of the evidence. Cochrane Consum Commun Gr [Internet]. 2016;(Version 3.0):1–24. Available from: <http://cccr.org.cochrane.org/author-resources>.

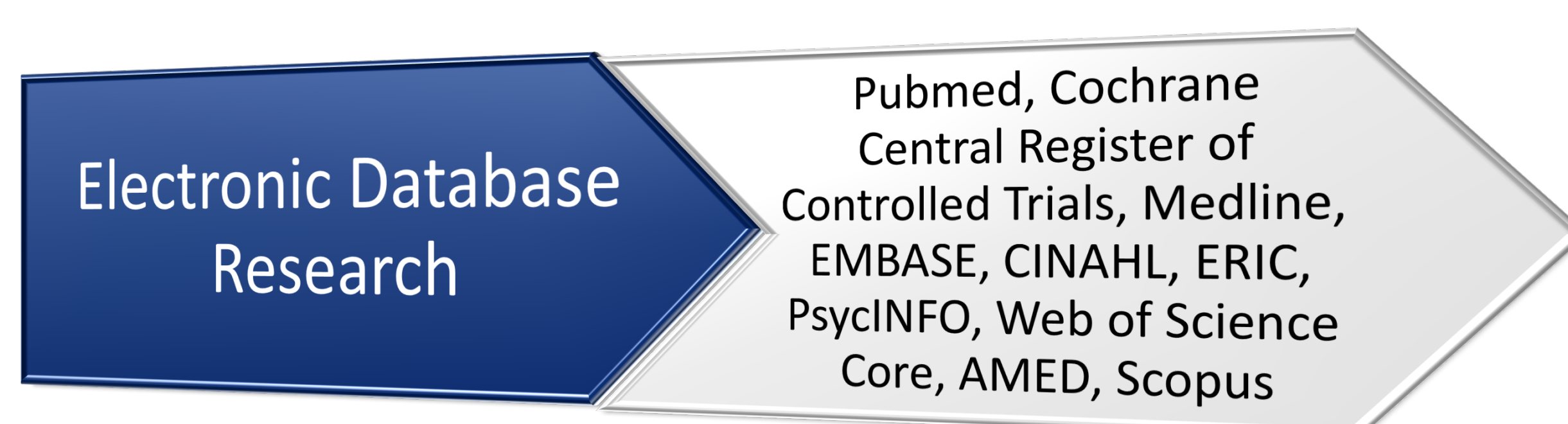


Figure 1 – GRADE quality of evidence scale.

Symbol	Quality	Interpretation
⊕⊕⊕⊕	High	We are very confident that the true effect lies close to that of the estimate of the effect.
⊕⊕⊕○	Moderate	We are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
⊕⊕○○	Low	Our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
⊕○○○	Very low	We have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

\*\*Table taken from the GRADE Handbook, available at

<http://gdt.guidelinedevelopment.org/app/handbook/handbook.html#h.9rdbelsnu4iy>

