

# Critical Review Form

## Meta-analysis

In Patients with Head Injury Undergoing RSI, Does Pretreatment with IV Lidocaine Lead to an Improved Neurological Outcome? A Review of the Literature, *EMJ* 2001; 18: 453-457.

### Objectives

To systematically review the literature on the utility of lidocaine pre-intubation to attenuate the anticipated elevation in intracranial pressure (ICP) in rapid sequence intubation (RSI) of head-injured patients. Specifically, their PICO question is “In patients suffering a major head injury who undergo RSI, does pretreatment with IV lignocaine/lidocaine compared with no pretreatment lead to an improved neurological outcome?” (p. 454)

### Methods

Although the authors do not specify detailed inclusion or exclusion criteria for the primary studies identified AND although they utilized no published validity assessment tool (such as Jadad scale or Cochrane scale) to quantitate study quality, their search seemed inclusive. They performed an electronic search (MEDLINE, EMBASE, PUBMED, and the Cochrane Library) utilizing the title and abstract to screen for applicability to the PICO question posed above. Additionally, they reviewed the bibliographies of the papers obtained by the electronic search. Finally, they sought advice from experts in the field for unidentified studies. All prospective, randomized, controlled trials identified were appraised using the User’s Guide critical appraisal form for therapy. Finally, the quality of each study was “fit” upon a 4-dimensional scale on the variables of Level of evidence, patient population, intervention, and outcome.

Guide	Question	Comments
I	<i>Are the results valid?</i>	
1.	Did the review explicitly address a sensible question?	Yes, the PICO question was quite clear and relevant to daily EM practice.
2.	Was the search for relevant studies details and exhaustive?	Yes, although the authors could have also hand-searched journals and research symposiums as well as industry sponsored trials.
3.	Were the primary studies of high methodological quality?	RCT 4/6 trials, unblinded crossover 1/6 trials, and unblinded crossover cohort 1/6 trials. No validated assessment tool was used to grade the evidence.
4.	Were the assessments of the included studies reproducible?	The search strategy was well described and reproducible.

<b>II.</b>	<b><i>What are the results?</i></b>	
1.	What are the overall results of the study?	Six studies of variable quality evaluated the impact of lidocaine before intubation on ICP changes. Studies were all small and of variable design prohibiting meta-analysis with conflicting results. For instance, in brain tumor patients Bedford and Hamil show reduced post-intubation ICP elevations, while Samaha shows no benefit compared with esmolol. Those with underlying closed head injuries were assessed for the effect of suctioning ( <u>not intubations</u> ) with or without lidocaine by Donegan, White, and Yanos.
2.	How precise are the results?	No precision estimates are possible from the data provided.
3.	Were the results similar from study to study?	No. Some showed beneficial effects of lidocaine and some showed no effect.
<b>III.</b>	<b><i>Will the results help me in caring for my patients?</i></b>	
1.	How can I best interpret the results to apply them to the care of my patients?	There is no compelling evidence that in acute, traumatic brain injury that pre-treatment with IV lidocaine before RSI improves ICP or, more importantly, neurological outcomes (p. 457).
2.	Were all patient important outcomes considered?	Yes—neurological outcome is the gold standard searched for by the authors but which does not exist since no studies have assessed this endpoint.
3.	Are the benefits worth the costs and potential risks?	Probably little benefit and little risk of harm. I would argue that the lack of proven harm IS NOT a reason to use an intervention of no proven benefit.

### **Limitations**

**Poor description by the authors of who conducted the search, what information from the titles or abstract were necessary for inclusion in their review, or how the quality of evidence was assigned.**

### **Bottom Line**

**The most compelling evidence regarding the question of efficacy of lidocaine in RSI of head injured patients. Part of Cochrane Databases Database of Abstracts of Reviews of Systematic Effects (DARE) collection, last updated in 2005 without significant changes or additional studies identified. The authors conclusions appear valid: “There is currently no evidence to support the use of intravenous lidocaine as a pre-treatment for RSI in patients with head injury and its use should only occur in clinical trials.” (p. 453)**