Use anesthetic drops to relieve acute otitis media pain. *J Fam Pract*. 2008;57:370-373.	
Potential PURL Review Form: Randomized controlled trials	
SECTION 1: IDENTIFYING INFORMATION	
1.0 Citation	Bolt P, Barnett P, Babl FE, Sharwood LN. Topical lignocaine for pain relief in acute otitis media: results of a double-blind placebo-controlled randomised trial. *Arch Dis Child*. 2008;93:40-44.
1.1 Editors classification of nominated study	Potential PURL Review Date: 2/28/08
1.2 Editors reason for classification	None given
1.4 Hypertext link to PDF of full article	http://adc.bmj.com/cgi/content/full/93/1/40
1.5 First date published study available to readers	2/9/08
1.6 PubMed ID	18156478
1.7 Nominated By	Mike Mendoza
1.8 Institutional Affiliation of Nominator	University of Chicago
1.9 Date Nominated	2/9/08
1.10 Identified Through	BMJ Updates Online
1.11 PURLS Editor	Bernard Ewigman
1.12 Nomination Decision Date	2/11/08
1.13 Potential PURL Review Form (PPRF) type	PPRF RCTs
1.14 Other comments, materials or discussion	
1.15 Assigned Potential PURL Reviewer	Debbie Stulberg
1.16 Reviewer Affiliation	University of Chicago
1.17 Date Review Due	2/28/08
SECTION 2: DETAILED STUDY DESCRIPTION	
2.1 Number of patients starting each arm of the study?	31 lignocaine, 32 placebo
2.2 Main characteristics of study patients (inclusions, exclusions, demographics, settings, etc.)?	Setting: Children's hospital emergency department (ED) in Australia. Inclusion: ages 3-17, present to ED with ear pain of less than 3 days duration, evidence of acute otitis media (AOM) during triage. Evidence of AOM = tympanic membrane (TM) with erythema, bulging, and dullness. Exclusion: TM perforation, ventilation tube in place, allergy to local anesthetic or paracetamol,

	epilepsy, liver disease, renal disease, cardiac disease.
2.3 Intervention(s) being investigated?	2% aqueous lignocaine drops, 3 drops instilled in the painful ear followed by 5 minutes of the child positioned with the ear upwards
2.4 Comparison treatment(s), placebo, or nothing?	Identical-appearing (both colorless and odorless) saline drops, instilled with the same procedure
2.5 Length of follow up? Note specified end points e.g. death, cure, etc.	Outcomes assessed at 10, 20, and 30 minutes. Also assessed 1 day and 1 week post-treatment, although these were not considered primary outcomes
2.6 What outcome measures are used? List all that assess effectiveness.	Pain assessed by both patient and physician (pain faces scale for children ages 6 years and younger, visual analog scale 0-10 for children 7 years and older) at baseline, 10 minutes, 20 minutes, and 30 minutes after administration of the drops. Primary outcomes: Did the patient experience 50% reduction in pain measure from baseline to 10, 20, and 30 minutes as assessed by patient and physician? Secondary outcomes: Did the patient experience 25% reduction in pain from baseline to 10, 20, and 30 minutes as assessed by patient and physician? Did the patient experience at least a 2-point reduction in pain measure from baseline to 10, 20, and 30 minutes as assessed by patient and physician?
2.7 What is the effect of the intervention(s)? Include absolute risk, relative risk, NNT, CI, P values, etc.	Primary outcomes Percent of patients who experienced 50% reduction in pain at: 10 min by patient (pt) report: 52% lignocaine vs. 25% placebo, P=0.03, RR=2.06 (1.03-4.11), absolute risk reduction [ARR]=27%, number needed to treat (NNT)=3.7 20 min by pt report: 68% lignocaine vs. 50% placebo, P=0.15, RR=1.35 (0.88-2.06), ARR=18%, NNT=5.5 30 min by pt report: 90% lignocaine vs. 63% placebo, P=0.009, RR=1.44 (1.07-1.93), ARR=27%, NNT=3.7 30 min by MD report: 84% lignocaine vs. 66% placebo, P=0.09, RR=1.27 (0.95-1.71), ARR=18%, NNT=5.5 Secondary outcomes Percent of patients who experienced 25% reduction in pain at: 10 min by pt report: 77% lignocaine vs. 44% placebo, P=0.006, RR=1.76 (1.14-2.73), ARR=33%, NNT=3.0 20 min by pt report: 81% lignocaine vs. 56% placebo, P=0.03, RR=1.43 (1.01-2.03), ARR=25%, NNT=4 30 min by pt report: 90% lignocaine vs. 69% placebo, P=0.03, RR=1.31 (1.01-1.70), ARR=21%, NNT=4.8 30 min by MD report: 90% lignocaine vs. 78% placebo, P=0.18, RR=1.15 (0.93-1.43), ARR=12%, NNT=8.3

	Percent of patients who experienced a 2-point pain score reduction at: 10 min by pt report: 74% lignocaine vs. 47% placebo, P=0.026, RR=1.58 (1.03-2.41), ARR=27%, NNT=3.7 20 min by pt report: 81% lignocaine vs. 59% placebo, P=0.06, RR=1.35 (0.97-1.89), ARR=22%, NNT=4.5 30 min by pt report: 90% lignocaine vs. 72% placebo, P=0.06, RR=1.25 (0.98-1.60), ARR=18%, NNT=5.5 30 min by MD report: 87% lignocaine vs. 69% placebo, P=0.07, RR=1.26 (0.96-1.65), ARR=18%, NNT=5.5 In summary: All outcomes measures favor lignocaine over placebo. The primary outcome reached statistical significance at 10 and 30 minutes by patient report. The NNTs for significantly better pain control at 10 and 30 minutes are low. Therefore, this intervention is effective. <u>Adverse events</u> No serious adverse effects during the ED study period or by 1 week of follow-up Mild side effects included: • ear discharge (7% of lignocaine pts, 10% of placebo pts), all resolved by 1 week • dizziness the next day (10% of lignocaine pts, none of placebo pts), none required medical care <u>Follow-up</u> (completed for 60 of 63 patients) No difference in ear pain at 1 day No difference in ear pain at 1 week More pts in the lignocaine group than the placebo group used oral analgesics during the day after ED care (55% vs. 29%) More pts in the lignocaine group than the placebo group took systemic antibiotics by 1 week (45% vs. 32%) No difference in otic antibiotic drop use (7% lignocaine vs. 6% placebo)
SECTION 3: INTERNAL VALIDITY	
3.1 Study addresses an appropriate and clearly focused question	Well addressed
3.2 Random allocation to comparison groups	Well addressed

3.3 Concealed allocation to comparison groups	Well addressed
3.4 Subjects and investigators kept "blind" to comparison group allocation	Well addressed
3.5 Comparison groups are similar at the start of the trial	Well addressed
3.6 Were there any differences between the groups/arms of the study other than the intervention under investigation? If yes, please indicate whether the differences are a potential source of bias.	Well addressed
3.7 Were all relevant outcomes measured in a standardized, valid, and reliable way?	Well addressed
3.8 Are patient oriented outcomes included? If yes, what are they?	Yes. Pain reduction
3.9 What percent dropped out, and were lost to follow up? Could this bias the results? How?	None dropped out during the 30-minute ED evaluation. One pt missed a pain score measurement at 10 min, so this measurement was treated as a failure, biasing the results toward the null. Three pts were lost for longer-term follow-up, but this did not affect outcomes.
3.10 Was there an intention-to-treat analysis? If not, could this bias the results? How?	Yes
3.11 If a multi-site study, are results comparable for all sites?	N/A
3.12 Is the funding for the trial a potential source of bias? If yes, what measures were taken to insure scientific integrity?	Funding was by the Murdoch Children's Research Institute and the Victor Smorgon Charitable Fund. I did not investigate whether these funders have ties to the manufacturer of lignocaine, but they do not appear to have any such ties, based on the disclosure statement, "Competing interests: none."
SECTION 4: EXTERNAL VALIDITY	

4.1 To which patients might the findings apply? Include patients in the study and other patients to whom the findings may be generalized.	Although the study was open to children ages 3-17, the participants were ages 3-12. They had AOM as diagnosed by fairly loose criteria. The real diagnosis (both to whom it applies and what was being treated) was **ear pain**. This study investigated symptomatic treatment of ear pain. Bacteriologic diagnosis and treatment were not considered here, although the authors aimed to treat children whose pain was caused by AOM.
4.2 In what care settings might the findings apply, or not apply?	This study was done in the ED setting, but could apply equally well to the primary care setting.
4.3 To which clinicians or policy makers might the findings be relevant?	Anyone who sees children. Also, payers who cover children.

SECTION 5: REVIEW OF SECONDARY LITERATURE

5.1 DynaMed excerpts	▪ Reviews systematic reviews on analgesics (Fundam Clin Pharmacol 1996;10(4):387 in Clinical Evidence 2001 Jun;5:181); ▪ Systematic review of 4 double-blind randomized or quasi-randomized trials of otic preparation with analgesic effect (excluding antibiotics) vs. placebo or any other otic preparation with analgesic effect, (Cochrane Library 2006 Issue 3:CD005657) o RCT of Auralgan (antipyrine, benzocaine, and glycerin) (Arch Pediatr Adolesc Med 1997 Jul;151(7):675 in J Watch 1997 Aug 15;17(16):129 o Mixed findings, no definite recommendations.
5.2 DynaMed citation/access date	Acute otitis media: treatment: medications http://dynamed102.ebscohost.com/Detail.aspx?id=116345&sid=adb037af-558c-42ee-9c49-a7266865158c@sessionmgr8 accessed February 26, 2008
5.3 UpToDate excerpts	Reviews Auralgan RCT (combination of antipyrine, benzocaine, and glycerin) and one on the topical herbal extract Otikon Otic solution was compared with topical anesthetic treatment. No definitive recommendations.
5.4 UpToDate citation/access date	Treatment of acute otitis media http://www.uptodateonline.com/utd/content/topic.do?topicKey=pedi_id/10593&selectedTitle=4~150&source=search_result accessed Feb 26, 2008
5.5 PEPID PCP excerpts	Acetaminophen ± ibuprofen for fever & pain control (no mention of topical otic analgesics)
5.6 PEPID citation/access data	AOM: treatment and disposition: acute treatment http://www.pepidonline.com/Main.aspx accessed Feb 26, 2008

5.7 Other excerpts (USPSTF; other guidelines; etc.)	
5.8 Citations for other excerpts	
SECTION 6: CONCLUSIONS	
6.1 How well does the study minimize sources of internal bias and maximize internal validity? Give one number on a scale of 1 to 7 (1=extremely well; 4=neutral; 7=extremely poorly)	1
6.2 If 6.1 was coded as 4 or below, please describe the potential bias and how it could affect the study results. Specifically, what is the likely direction in which potential sources of internal bias might affect the results?	

6.3 Are the results of this study relevant to the health care needs of patients cared for by "full scope" family physicians, general internists, general pediatricians, or general ob/gyns? Are they applicable without significant change in programs or policies such as the organization or financing of practice? Give one number of a scale of 1 to 7 (1=absolutely relevant; 4=neutral; 7=not at all relevant)	1
6.4 Please explain your response to item 6.3.	We see lots of kids with acute otitis media and ear pain
6.5 What is the main recommendation for change in practice, if any?	This study adds evidence for the effectiveness of topical anesthetics in the treatment of ear pain caused by AOM. While Auralgan (which includes the anesthetic benzocaine) was already recommended by some sources, the evidence to support its effectiveness was limited to 1 small study. For physicians who were not routinely recommending topical anesthetics for this indication, this is practice-changing. For

Include a description of the change in practice, the indications, and the target population.	those who already were (based on earlier scant, but positive evidence), this report reinforces current practice. Topical anesthetics were tested as adjuncts to oral analgesics, and were given regardless of whether the treatment was also going to include antibiotics. This makes them a nice, effective adjunct for pain control.
SECTION 7: EDITORIAL DECISIONS	
7.1 FPIN PURLs editorial decision (select one)	Pending PURL
7.2 FPIN PURLS Editor	Bernard Ewigman
7.3 Date of decision	February 11, 2008
7.4 Brief summary of decision	This study adds evidence for the effectiveness of topical anesthetics in the treatment of ear pain caused by AOM. While Auralgan (which includes the anesthetic benzocaine) was already recommended by some sources, the evidence to support its effectiveness was limited to 1 small study. For physicians who were not routinely recommending topical anesthetics for this indication, this is practice-changing. For those who already were (based on earlier scant, but positive evidence), this report reinforces current practice. Topical anesthetics were tested as adjuncts to oral analgesics, and were given regardless of whether the treatment was also going to include antibiotics. This makes them a nice, effective adjunct for pain control.