



TITLE: Amiodarone versus Lidocaine for Arrhythmias: Comparative Clinical Effectiveness

DATE: 08 January 2016

RESEARCH QUESTION

What is the comparative clinical effectiveness of intravenous amiodarone versus intravenous lidocaine for patients in cardiac arrest or with life-threatening arrhythmias?

KEY FINDINGS

One systematic review, two randomized controlled trials, and one non-randomized study were identified regarding intravenous amiodarone versus intravenous lidocaine for arrhythmias.

METHODS

A limited literature search, with main concepts appearing in title or major subject heading, was conducted on key resources including PubMed, The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to the search to limit the retrieval by study type. The search retrieval was limited to the human population where possible and English language documents published between January 1, 2005 and December 16, 2015. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

SELECTION CRITERIA

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

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Table 1: Selection Criteria

Population	Patients in cardiac arrest or with refractory arrhythmias (e.g., shock-resistant ventricular fibrillation or tachycardia)
Intervention	IV Amiodarone
Comparator	IV Lidocaine
Outcomes	Clinical benefits and harms (e.g., mortality)
Study Designs	Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, and non-randomized studies

IV = intravenous

RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, and non-randomized studies.

One systematic review, two randomized controlled trials, and one non-randomized study were identified regarding intravenous amiodarone versus intravenous lidocaine for arrhythmias. No relevant health technology assessments were identified.

Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

Four studies¹⁻⁴ were identified regarding the use of intravenous amiodarone versus intravenous lidocaine for arrhythmias. One systematic review¹ found no significant difference between lidocaine and other antiarrhythmic drugs, including amiodarone, for the outcomes of all-cause mortality and ventricular fibrillation in persons with myocardial infarction. One randomized controlled trial² showed no difference in ventricular fibrillation between lidocaine and amiodarone for patients undergoing coronary bypass grafting; however, the study reported that amiodarone reduced the need for electrical defibrillation. One randomized controlled trial³ concluded the use of lidocaine, compared with both amiodarone and placebo, reduced the incidence of ventricular fibrillation in patients undergoing open-heart surgery. One non-randomized study⁴ reported decreased survival for in-patients with cardiac arrest that received amiodarone, compared with lidocaine, but study authors reported that inadequate dosing of amiodarone and differences in administration were confounding factors for this study.

REFERENCES SUMMARIZED

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses

1. Marti-Carvajal AJ, Simancas-Racines D, Anand V, Bangdiwala S. Prophylactic lidocaine for myocardial infarction. *Cochrane Database Syst Rev.* 2015;8:CD008553.
[PubMed: PM26295202](#)

Randomized Controlled Trials

2. Yilmaz M, Aydin U, Arslan ZI, Balci C, Kocogullari CU, Ata Y, et al. The effect of lidocaine and amiodarone on prevention of ventricular fibrillation in patients undergoing coronary artery bypass grafting. *Heart Surg Forum.* 2014 Oct 1;17(5):E245-E249.
[PubMed: PM25367235](#)
3. Ayoub CM, Sfeir PM, Bou-Khalil P, Azar M, Haddadin AS, Harfouch D, et al. Prophylactic amiodarone versus lidocaine for prevention of reperfusion ventricular fibrillation after release of aortic cross-clamp. *Eur J Anaesthesiol.* 2009 Dec;26(12):1056-60.
[PubMed: PM19809326](#)

Non-Randomized Studies

4. Rea RS, Kane-Gill SL, Rudis MI, Seybert AL, Oyen LJ, Ou NN, et al. Comparing intravenous amiodarone or lidocaine, or both, outcomes for inpatients with pulseless ventricular arrhythmias. *Crit Care Med.* 2006 Jun;34(6):1617-23.
[PubMed: PM16614583](#)

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APPENDIX – FURTHER INFORMATION:**Systematic Reviews – Route of Drug Administration Not Specified**

5. Huang Y, He Q, Yang M, Zhan L. Antiarrhythmia drugs for cardiac arrest: a systemic review and meta-analysis. *Crit Care*. 2013;17(4):R173. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4056084>
[PubMed: PM23938138](#)
6. Ong ME, Pellis T, Link MS. The use of antiarrhythmic drugs for adult cardiac arrest: a systematic review. *Resuscitation*. 2011 Jun;82(6):665-70.
[PubMed: PM21444143](#)

Randomized Controlled Trials – Route of Drug Administration Not Specified

7. Alizadeh-Ghavidel A, Nabavi S, Haghjoo M, Toutonchi Z, Mirmesdagh Y, Javadikasgari H. Amiodarone versus lidocaine for the prevention of reperfusion of ventricular fibrillation. *ARYA Atheroscler*. 2013 Nov; 9(6): 343–349. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3933055/>
[PubMed: PM24575137](#)
8. Mauermann WJ, Pulido JN, Barbara DW, Abel MD, Li Z, Meade LA, et al. Amiodarone versus lidocaine and placebo for the prevention of ventricular fibrillation after aortic crossclamping: a randomized, double-blind, placebo-controlled trial. *J Thorac Cardiovasc Surg*. 2012 Nov;144(5):1229-34.
[PubMed: PM22770549](#)

Non-Randomized Studies – Route of Drug Administration Not Specified

9. Valdes SO, Donoghue AJ, Hoyme DB, Hammond R, Berg MD, Berg RA, et al. Outcomes associated with amiodarone and lidocaine in the treatment of in-hospital pediatric cardiac arrest with pulseless ventricular tachycardia or ventricular fibrillation. *Resuscitation*. 2014 Mar;85(3):381-6. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4354929>
[PubMed: PM24361455](#)
10. Yoshie K, Tomita T, Takeuchi T, Okada A, Miura T, Motoki H, et al. Renewed impact of lidocaine on refractory ventricular arrhythmias in the amiodarone era. *Int J Cardiol*. 2014 Oct 20;176(3):936-40.
[PubMed: PM25201023](#)
11. Piccini JP, Schulte PJ, Pieper KS, Mehta RH, White HD, Van de WF, et al. Antiarrhythmic drug therapy for sustained ventricular arrhythmias complicating acute myocardial infarction. *Crit Care Med*. 2011 Jan;39(1):78-83. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3010352>
[PubMed: PM20959785](#)

12. Leeuwenburgh BP, Versteegh MI, Maas JJ, Dunning J. Should amiodarone or lidocaine be given to patients who arrest after cardiac surgery and fail to cardiovert from ventricular fibrillation? *Interact Cardiovasc Thorac Surg.* 2008 Dec;7(6):1148-51.
[PubMed: PM18796471](#)