

APPENDIX 1

Medline Search terms:

("β adrenergic blockers" OR "adrenergic β antagonist" OR "β blockers" OR "beta blockers" OR "adrenergic beta antagonist" OR "beta adrenergic blocker" OR "bisoprolol" OR "metoprolol" OR "atenolol" OR "carvidolol" OR "esmolol") AND ("perioperative" OR "preoperative" OR "intraoperative") AND ("randomized controlled trial"[pt] OR "controlled clinical trial"[pt] OR "randomized"[tiab] OR "placebo"[tiab] OR "clinical trials as topic"[mesh: noexp] OR "randomly"[tiab] OR "trial"[ti]) NOT ("animals"[mh] NOT "humans"[mh])

APPENDIX 2

Summary of literature search and reasons for excluding studies.

Study Reference	Pass at abstract screen	Pass at fulltext screen	Why was study excluded?
Goma <i>Middle East J Anesthesiol.</i> 2012;21(4):599-604	No	No	Not a RCT on b blocker v control
Amr <i>Saudi J Anaesth.</i> 2012;6(3):263-7	No	No	Pre medication only
Hwang <i>J Clin Anesth.</i> 2013;(1):36-41	No	No	On opioid or anaesthetic requirements
Balik. <i>Wein Klin Wochenschr.</i> 2012;124(15-16):552-6	No	No	Not a RCT on b blocker v control
Angeloni <i>Ann Thorac Surg.</i> 2012 Oct	No	No	Cardiac surgery
Chopra <i>Am J Med.</i> 2012;125(10):953-5	No	No	Review
Wijesundera <i>Circ Cardiovasc Qual Outcomes.</i> 2012;5(4):558-65	No	No	prescribing habits
Landoni <i>J Cardiothorac Vasc Anesth.</i> 2012;26(5):764-72	No	No	Review
Leslie <i>Anaesth Intensive Care</i> 2012;40(2):319-27	No	No	Prescribing habits
Lopez Alvarez <i>Can J Anaesth.</i> 2012;59(5):442-8	No	No	On opioid or anaesthetic requirements
Deangelis <i>J Orthop Trauma.</i> 2012;26(3):135-40	No	No	Not a RCT on b blocker v control
Shen <i>Am J Rhinol Allergy</i> 2011;25(6):208-11	No	No	Intraoperative medication only
Flynn <i>Br J Anaesth.</i> 2011;107 Suppl 1:i3-15	No	No	Review
Moon <i>J Int Med Res.</i> 2011;39(5):1861-9	No	No	On opioid or anaesthetic requirements
Mairesse <i>J Mal Vasc.</i> 2011;36(6):339-47	No	No	Review
Amr <i>J Clin Anesth.</i> 2011;23(7):544-8	No	No	Pre and intraoperatively only
Drover <i>J Clin Monit Comput.</i> 2011;25(3):175-81	No	No	Not a RCT of beta blocker vs control
Benedetto <i>J Cardiovasc Med.</i> 2013;14(2):104-9.	No	No	Review
Kesimci <i>Eur Arch Otorhinolaryngol.</i> 2012;269(1):165-9	No	No	Not a RCT of beta blocker vs control (about ganglion block)
Gupta <i>Indian J Anaesth.</i> 2011;55(2):135-40.	No	No	Pre medication only
Brinkman <i>Ann Thorac Surg.</i> 2011;92(3):788-95	No	No	Cardiac surgery

Bakker <i>Eur J Vasc Endovasc Surg.</i> 2011;42(3):317-23	No	No	Study design
Angeli <i>Expert Opin Drug Saf.</i> 2011;10(4):491-8	No	No	Review
Halonen <i>Expert Opin Drug Saf.</i> 2011 Jul;10(4):491-8	No	No	Cardiac surgery
Yu <i>Anesth Analg.</i> 2011;112(2):267-81	No	No	Review
Flu <i>J Am Coll Cardiol.</i> 2010;56(23):1922-9	No	No	No placebo group
Lee <i>Korean J Anesthesiol.</i> 2010 ;59(3):179-84.	No	No	On opioid or anaesthetic requirements
Mastracci <i>Can J Surg.</i> 2010;53(5):342-4	Yes	No	Duplicate
Badgett <i>Anesthesiology.</i> 2010;113(3):585-92	No	No	Review
Angeli <i>Am J Cardiovasc Drugs.</i> 2010;10(4):247-59	No	No	Review
Tisdale <i>J Thorac Cardiovasc Surg.</i> 2010;140(1):45-51	No	No	Not a RCT of beta blocker vs control
Leibowitz <i>J Cardiothorac Vasc Anesth.</i> 2010;24(2):217-8	No	No	Review
Angeli <i>Ther Adv Cardiovasc Dis.</i> 2010;4(2):109-18	No	No	Review
Chopra <i>JAMA.</i> 2010;303(6):551-2	No	No	Review
Van Lier <i>Ther Adv Cardiovasc Dis.</i> 2010;4(2):109-18	No	No	Review
Ragab <i>Otolaryngol Head Neck Surg.</i> 2010;142(1):48-54	No	No	Children
Poldermans <i>Cleve Clin J Med.</i> 2009;76 Suppl 4:S84-92	No	No	Review
Landoni <i>J Cardiothorac Vasc Anesth.</i> 2010;24(2):219-29	No	No	Review
Rajeev <i>Curr Drug Targets.</i> 2009;10(9):833-41	No	No	Review
Domanski <i>J Cardiovasc Pharmacol Ther.</i> 2009;14(4):258-68	No	No	Review
Katznelson <i>Can J Anaesth.</i> 2009;56(11):793-801	No	No	Not a RCT
Tisdale <i>Ann Thorac Surg.</i> 2009;88(3):886-93	No	No	Not a RCT of beta blocker vs control (amiodarone)
Landoni <i>Curr Drug Targets.</i> 2009;10(9):858-62.	No	No	On opioid or anaesthetic requirements
Talati <i>Ann Pharmacother.</i> 2009;43(7):1181-8	No	No	Review
Gokce <i>Saudi Med J.</i> 2009;30(6):771-7	No	No	On opioid or anaesthetic requirements
Dunkelgrun <i>Ann Surg.</i> 2009;249(6):921-6	Yes	Yes	
McNeely <i>J Clin Anesth.</i> 2009 May;21(3):233-4	No	No	Review
Marik <i>J Clin Anesth.</i> 2009 May;21(3):220-9	No	No	Review
Flu <i>Expert Rev Cardiovasc Ther.</i> 2009;7(5):521-32	No	No	Review
Priebe <i>Minerva Anesthesiol.</i> 2009;75(5):319-23	No	No	Review
Iliuta <i>Interact Cardiovasc Thorac Surg.</i> 2009;9(1):89-93	No	No	Cardiac surgery
Suttner <i>Br J Anaesth.</i> 2009;102(5):597-607	No	No	Retracted
Marik <i>J Crit Care.</i> 2009 Sep;24(3):458-63	No	No	Not a RCT of beta blockers
Zangrillo <i>J Cardiothorac Vasc Anesth.</i> 2009 Oct;23(5):625-32	No	No	Review
Alonso Coello <i>Pol Arch Med Wewn.</i> 2008;118(11):616-8	No	No	Review
Tanabe <i>Eur J Anaesthesiol.</i> 2009;26(1):39-42	No	No	On opioid or anaesthetic requirements
Priebe <i>Minerva Anesthesiol.</i> 2009;75(5):319-23	No	No	Review
Feringa <i>Ned Tijdschr Geneeskd.</i> 2008;152(48):2606-11	No	No	Review
Hepner <i>J Clin Anesth.</i> 2008;20(8):580-8	No	No	Review
Tabbutte <i>J Thorac Cardiovasc Surg.</i> 2008;136(5):1229-36	No	No	Children

Elahi <i>Eur J Cardiovasc Prev Rehabil.</i> 2008;15(6):735-41	No	No	Review
Yang XY <i>Zhonghua Yi Xue Za Zhi.</i> 2008;88(21):1476-80.	Yes	Yes	
Adibi <i>Lancet.</i> 2008;372(9644):1147	No	No	Study design
Bhagat <i>Anesth Analg.</i> 2008;107(4):1348-55	No	No	Not a RCT on b blocker v control
Kushakovsky <i>Crit Care.</i> 2008;12(4):172	No	No	Review
Sleilaty <i>Int J Cardiol.</i> 2009 Oct 2;137(2):116-22	No	No	Cardiac surgery
Petzoldt <i>Anaesthesist.</i> 2008;57(7):655-69	No	No	Review
Cesaneck <i>Ann Vasc Surg.</i> 2008;22(5):643-8	No	No	Not a RCT of beta blocker vs control
Ghosh <i>J Anesth.</i> 2008;22(2):131-4	No	No	On opioid or anaesthetic requirements
Vernick <i>Best Pract Res Clin Anaesthesiol.</i> 2008;22(1):1-21	No	No	Review
Devereaux <i>Lancet.</i> 2008;371(9627):1839-47	Yes	Yes	
Fleischer <i>Lancet.</i> 2008;371(9627):1813-4	No	No	Review
Schanzer <i>J Vasc Surg.</i> 2008;47(4):774-781	No	No	Not a RCT of beta blockers vs control
Beattie <i>Anesth Analg.</i> 2008;106(4):1039-48	No	No	Review
London <i>Anesth Analg.</i> 2008;106(4):1025-30	No	No	Review
Lertsburapa <i>J Thorac Cardiovasc Surg.</i> 2008;135(2):405-11	No	No	Review
Howard <i>Ann Pharmacother.</i> 2008;42(2):253-8	No	No	Review
Daumerie <i>Curr Opin Anaesthesiol.</i> 2008;21(1):60-5	No	No	Review
Avilo <i>Rev Bras Cir Cardiovasc.</i> 2007;22(3):332-40	No	No	Cardiac surgery
Ozturk <i>Br J Anaesth.</i> 2008;100(2):211-4	No	No	On opioid or anaesthetic requirements
Sun <i>Am Heart J.</i> 2007;154(6):1021-8	No	No	Review
Fleischer <i>Curr Opin Anaesthesiol.</i> 2007;20(6):526-30	No	No	Review
Collard <i>Anesth Analg.</i> 2007;105(5):1255-62	No	No	On opioid or anaesthetic requirements
Anglade <i>Curr Med Res Opin.</i> 2007;23(11):2849-55.	No	No	Not a RCT
Walsh <i>Br J Anaesth.</i> 2007;99(5):611-6	No	No	Review
Celebi <i>Saudi Med J.</i> 2007;28(9):1357-61	No	No	Not a RCT of beta blocker vs control
Haghjoo <i>Heart Rhythm.</i> 2007;4(9):1170-4	No	No	Cardiac surgery
Filion <i>Am Heart J.</i> 2007;154(3):407-14	No	No	Cardiac surgery
Zeng Nan <i>Fang Yi Ke Da Xue Xue Bao.</i> 2007;27(8):1221-3	No	No	On opioid or anaesthetic requirements
Selimoglu <i>Heart Surg Forum.</i> 2007;10(4):E309-14	No	No	Cardiac surgery
Zaugg <i>Anesthesiology.</i> 2007;107(1):33-44	Yes	Yes	
Ellis <i>J Cardiothorac Vasc Anesth.</i> 2007;21(3):330-6	No	No	Looked at prescribing habits
Acikel <i>Int J Cardiol.</i> 2008;126(1):108-13.	No	No	Cardiac surgery
Poldermans <i>J Am Coll Cardiol.</i> 2007;49(17):1763-9	No	No	Not an RCT of beta blockers vs control
Wijeyesundera <i>Am Heart J.</i> 2007;153(5):e17	No	No	Review
Louizos <i>Ann Otol Rhinol Laryngol.</i> 2007;116(2):107-11	No	No	Pre medication only
Baker <i>Ann Pharmacother.</i> 2007;41(4):587-98.	No	No	Cardiac surgery
Ahonen <i>Br J Anaesth.</i> 2007;98(4):456-61	No	No	On opioid or anaesthetic requirements
Butte <i>Anaesthesist.</i> 2007;56(3):285-96	No	No	Review
Kovac <i>J Cardiothorac Vasc Anesth.</i> 2007;21(1):45-50	No	No	Not a RCT of beta-blocker versus control
Mengistu <i>Eur J Anaesthesiol.</i> 2007;24(6):529-34	No	No	Retracted
Pikto-Pietkiewicz <i>Kardiologia Pol.</i> 2006;64(9):1028-	No	No	Not a RCT

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Wiesbauer <i>Anesth Analg.</i> 2007 Jan;104(1):27-41	No	No	Review
Albaladejo <i>Presse Med.</i> 2006;35(11 Pt 2):1697-702	No	No	Review
Yang <i>Am Heart J.</i> 2006;152(5):983-90.	Yes	Yes	
Werner <i>Int J Clin Pharmacol Ther.</i> 2006;44(9):397-400	No	No	Review
Poldermans <i>J Am Coll Cardiol.</i> 2006;48(5):964-9	No	No	Not a RCT of beta blockers vs control
Shilling <i>J Am Coll Cardiol.</i> 2006;48(5):964-9	No	No	Review
Devereaux <i>Am Heart J.</i> 2006;152(2):223-30.	No	No	Study design
Behmanesh <i>Curr Med Res Opin.</i> 2006;22(8):1443-50.	No	No	Cardiac surgery
Juul <i>BMJ.</i> 2006;332(7556):1482	Yes	Yes	
Kemp <i>AANA J.</i> 2006;74(3):227-32.	No	No	Review
Raghunathan <i>J Vasc Surg.</i> 2006;43(6):1175-82	No	No	Not a RCT of beta blockers vs control (coronary revascularisation)
Neary <i>Surgeon.</i> 2006;4(3):139-43	Yes	Yes	
Hanada <i>Curr Opin Anaesthesiol.</i> 2006;19(3):315-9	No	No	Review
Liu <i>Zhong Nan Da Xue Xue Bao Yi Xue Ban.</i> 2006;31(2):249-53	No	No	Pre and intraoperatively only
Lai <i>Ai Zheng.</i> 2006;25(5):609-13	Yes	No	Only followed for 3 days
Chung <i>J Formos Med Assoc.</i> 2006;105(3):189-93.	No	No	Pre medication only
Mackey <i>J Vasc Surg.</i> 2006;43(3):533-8	No	No	Review
Gillespie <i>Clin Ther.</i> 2005;27(12):1963-9	No	No	Cardiac surgery
Schipke <i>Eur J Cardiothorac Surg.</i> 2006;29(4):479-85	No	No	Review
Valjus <i>Acta Anaesthesiol Scand.</i> 2006;50(1):32-9.	No	No	On opioid or anaesthetic requirements
Cruz <i>Rev Esp Anesthesiol Reanim.</i> 2005;52(10):617-26	No	No	Review
Mitchell <i>JAMA.</i> 2005;294(24):3093-100.	No	No	Cardiac surgery
Maggio <i>Surg Clin North Am.</i> 2005;85(6):1091-102	No	No	Review
Schouten <i>J Vasc Surg.</i> 2005;42(4):825	No	No	Review
Salpeter <i>Cochrane Database Syst Rev.</i> 2005;(4):CD003566.	No	No	Effect in COPD
Nette <i>Naunyn Schmiedebergs Arch Pharmacol.</i> 2005;372(2):115-24	No	No	Cardiac surgery
Schwartz <i>J Cardiovasc Pharmacol Ther.</i> 2005;10(3):181-90.	No	No	Cardiac surgery
Conte <i>J Vasc Surg.</i> 2005;42(3):456-64	No	No	Not a RCT of beta blockers vs control
McGory <i>Surgery.</i> 2005;138(2):171-9	No	No	Review
Lindenauer <i>N Engl J Med.</i> 2005;353(4):349-61.	No	No	Not a RCT
Brady <i>J Vasc Surg.</i> 2005;41(4):602-9.	Yes	Yes	
Sedrakyan <i>J Thorac Cardiovasc Surg.</i> 2005;129(5):997-1005	No	No	Review
Ellison <i>Drugs.</i> 2005;65(6):787-97	No	No	Cardiac surgery
Ferguson <i>Am Heart Hosp J.</i> 2003;1(4):264-72.	No	No	Review
Alex <i>Ann Thorac Surg.</i> 2005;79(2):517-20	No	No	Cardiac surgery
Sellden <i>Acta Anaesthesiol Scand.</i> 2005;49(1):35-40	No	No	Cardiac surgery
Boldt <i>Anesth Analg.</i> 2004;99(4):1009-17	No	No	Cardiac surgery
Chia <i>Br J Anaesth.</i> 2004;93(6):799-805	No	No	On opioid or anaesthetic requirements
Reddy <i>Pharmacotherapy.</i> 2004;24(8):1013-9.	No	No	Cardiac surgery

Crystal <i>Heart</i> . 2004;90(8):941-2	No	No	Cardiac surgery
Halkin <i>J Am Coll Cardiol</i> . 2004;43(10):1780-7	No	No	Cardiac surgery
Booth <i>Anesth Analg</i> . 2004;98(5):1224-31	No	No	Cardiac surgery
Lindenauer <i>Arch Intern Med</i> . 2004;164(7):762-6	No	No	Review
Juul <i>Am Heart J</i> . 2004;147(4):677-83	No	No	Study design
Bekker <i>J Neurosurg Anesthesiol</i> . 2004;16(2):126-35	No	No	Not a RCT on beta blockers
Sanjuan <i>Ann Thorac Surg</i> . 2004;77(3):838-43	No	No	Cardiac surgery
Arbabi <i>J Trauma</i> . 2004;56(2):265-9	No	No	Not a RCT
Tauzin-Fin <i>Br J Anaesth</i> . 2004;92(4):512-7	No	No	Not a RCT on beta blocker vs control
Piper <i>Anesthesiol Intensivmed Notfallmed Schmerzther</i> . 2003;38(12):781-6	No	No	Pre medication only
White <i>Anesth Analg</i> . 2003;97(6):1633-8	No	No	Intraoperative medication only
Kluger J, White CM. <i>Card Electrophysiol Rev</i> . 2003;7(2):165-7.	No	No	Cardiac surgery
Kim Eur <i>J Cardiothorac Surg</i> . 2003;24(5):770-6	No	No	Review
Salpeter <i>Respir Med</i> . 2003;97(10):1094-101	No	No	Effect in COPD
Bohm <i>Z Kardiol</i> . 2003;92(8):668-76	No	No	Cardiac surgery
Cardona <i>P R Health Sci J</i> . 2003;22(2):119-23	No	No	Cardiac surgery
Taylor <i>Can J Surg</i> . 2003;46(3):216-22	No	No	Not a RCT
Shyong <i>J Clin Anesth</i> . 2003;15(3):170-8.	No	No	Not a RCT
Salpeter <i>Cochrane Database Syst Rev</i> . 2002;(4):CD002992	No	No	Effect in COPD
De Castro <i>Anesth Analg</i> . 2003;96(1):33-8	No	No	On opioid or anaesthetic requirements
Tan <i>Anaesthesia</i> . 2002;57(12):1207-12	No	No	Pre medication only
Yazicioglu <i>Eur J Cardiothorac Surg</i> . 2002;22(3):397-401	No	No	Cardiac surgery
Deng <i>Circ J</i> . 2002;66(8):715-7	No	No	Cardiac surgery
Salpeter <i>Cochrane Database Syst Rev</i> . 2002;(2):CD003566	No	No	Effect in COPD
Hynynen <i>Duodecim</i> . 2000;116(17):1805-7	No	No	Not RCT
Auerbach <i>JAMA</i> . 2002;287(11):1435-44	No	No	Review
Tokmakoglu <i>Eur J Cardiothorac Surg</i> . 2002;21(3):401-5	No	No	Cardiac surgery
Salpeter <i>Cochrane Database Syst Rev</i> . 2002;(1):CD002992	No	No	Effect in COPD
Schmidt <i>Arch Intern Med</i> . 2002;162(1):63-9	No	No	Review
Reddy <i>Pharmacotherapy</i> . 2002;22(1):75-80	No	No	Cardiac surgery
Bensky <i>Pharmacotherapy AANA J</i> . 2000;68(5):437-42	No	No	Pre medication only
Van der Maaten <i>J Cardiothorac Vasc Anesth</i> . 2001;15(6):710-6	No	No	Cardiac surgery
Salpeter <i>Cochrane Database Syst Rev</i> . 2001;(2):CD002992	No	No	Effect in COPD
Mollhoff <i>Zentralbl Chir</i> . 2001;126(4):312-7	No	No	Review
Bory <i>Arch Mal Coeur Vaiss</i> . 2000;93 Spec No 4:45-50	No	No	Review
Hynninen <i>Anesth Analg</i> . 2001;92(4):810-6	No	No	Cardiac surgery
Giri <i>Lancet</i> . 2001;357(9259):830-6	No	No	Cardiac surgery
Zalunardo <i>Anaesthesist</i> . 2001;50(1):21-5	No	No	Not a RCT of beta blocker vs control
<i>MMW Fortschr Med</i> . 2001;143(1-2):52	No	No	Not a RCT
Coloma <i>esth Analg</i> . 2001;92(2):352-7	No	No	Not a RCT of beta blocker vs control
Jansson <i>Ann Surg</i> . 2001;233(1):60-4	No	No	Not a RCT
Apitzsch <i>Anesthesiol Intensivmed Notfallmed Schmerzther</i> . 2000;35(8):515-22	No	No	Not a RCT of beta blocker

Urban <i>Anesth Analg.</i> 2000;90(6):1257-61	Yes	No	Post operative medication only
Chauhan <i>Indian J Med Res.</i> 1999;110:174-7	No	No	Cardiac surgery
Solomon <i>Ann Thorac Surg.</i> 2000;69(1):126-9	No	No	Cardiac surgery
Zaugg <i>Anesthesiology.</i> 1999;91(6):1674-86	Yes	No	Followed up for 72 hours only
Poldermans <i>N Engl J Med.</i> 1999;341:1789-94	Yes	Yes	
Harwood <i>J Cardiothorac Vasc Anesth.</i> 1999;13(5):555-61	No	No	No placebo group
Wenke <i>Z Kardiol.</i> 1999;88(9):647-52	No	No	Cardiac surgery
Quaranta <i>Ophthalmology.</i> 1999;106(7):1357-62	No	No	Not a RCT of beta blocker vs control
Van den Berg <i>Eur J Anaesthesiol.</i> 1999;16(3):186-94	No	No	Not a RCT of beta blockers vs control
Kuhn-Regnier <i>Eur J Cardiothorac Surg.</i> 1999;15(1):67-74	No	No	Cardiac surgery
Raby <i>Anesth Analg.</i> 1999;88(3):477-82.	Yes	No	Followed up for 48 hours only
Liguori <i>Anesth Analg.</i> 1998;87(6):1320-5	No	No	Intraoperative medication only
Avramov <i>Anesth Analg.</i> 1998;87(3):666-70	No	No	Not an RCT of beta blocker vs control
Korpinen <i>Acta Anaesthesiol Belg.</i> 1998;49(2):123-32	No	No	Pre medication only
Wallace <i>Anesthesiology.</i> 1998;88(1):7-17	Yes	No	duplicate (Mangano)
Jakobsen <i>Acta Anaesthesiol Scand.</i> 1997 Nov;41(10):1324-30	No	No	Pre medication only
Jakobsen <i>J Cardiothorac Vasc Anesth.</i> 1997;11(6):746-51	Yes	No	Not intention to treat
Ayuso <i>Ann Otol Rhinol Laryngol.</i> 1997;106(10 Pt 1):863-8	No	No	Not an RCT of beta blocker vs control
Palda <i>Ann Intern Med.</i> 1997;127(4):313-28	No	No	Review
Van den Berg <i>Eur J Anaesthesiol.</i> 1997;14(2):134-47	No	No	Pre medication only
Gottlieb <i>J Cardiothorac Vasc Anesth.</i> 1997;11(1):67-71	No	No	Not a RCT
Johansen <i>Anesthesiology.</i> 1997;86(2):364-71	No	No	effect on anaesthetic requirements
Jalonen <i>Anesthesiology.</i> 1997;86(2):331-45	No	No	Cardiac surgery
Gandolfi <i>Ophthalmology.</i> 1997;104(2):181-6	No	No	Not an RCT on beta blockers (5 FU)
Mangano <i>N Engl J Med.</i> 1996;335(23):1713-20	Yes	Yes	
Matsuda <i>J Card Surg.</i> 1996;11(6):411-5	No	No	Cardiac surgery
Searle <i>Can J Anaesth.</i> 1996;43(9):890-9	No	No	Cardiac surgery
Beggs <i>Best Pract Benchmarking Healthc.</i> 1996;1(4):180-6	No	No	Cardiac surgery
Podesser <i>J Thorac Cardiovasc Surg.</i> 1995;110(5):1461-9	No	No	Cardiac surgery
Yeager <i>Arch Surg.</i> 1995;130(8):869-72	No	No	Not RCT
Brogden <i>Drugs.</i> 1995;49(4):618-49	No	No	Review
Podesser <i>J Cardiovasc Surg.</i> 1994;35(6 Suppl 1):233-5	No	No	Cardiac surgery
Schaffer <i>Anaesthesist.</i> 1994;43(11):723-9	No	No	Pre medication only
Bottiger <i>Anaesthesist.</i> 1994;43(11):699-717	No	No	Review
Botcher <i>Br J Anaesth.</i> 1994;72(6):633-7	No	No	Not an RCT on beta blockers (ACEi)
Neustein <i>J Cardiothorac Vasc Anesth.</i> 1994;8(3):273-7	No	No	Cardiac surgery
Ramsay <i>Anesth Analg.</i> 1994;78(5):867-75	No	No	Cardiac surgery
Dorian <i>Can J Cardiol.</i> 1994;10(2):193-200	No	No	Not a RCT (compared to amiodarone)
De Jong <i>Cardiovasc Drugs Ther.</i> 1993;7(4):677-82	No	No	Cardiac surgery
Jakobsen <i>Ugeskr Laeger.</i> 1993;155(29):2269-73	No	No	Pre medication only
Podesser <i>Thorac Cardiovasc Surg.</i> 1993;41(3):173-9	No	No	Cardiac surgery

Jakobsen <i>Ugeskr Laeger</i> . 1993;155(12):877-81	No	No	Not a RCT
Wesslen <i>Ann Thorac Surg</i> . 1992;54(6):1151-8	No	No	Cardiac surgery
Kovac <i>J Clin Anesth</i> . 1992;4(4):315-20	No	No	Pre medication only
Singh <i>Can J Anaesth</i> . 1992;39(6):559-62	No	No	Not a RCT of beta blocker vs control (esmolol vs labetalol)
Rieke <i>Anaesthesist</i> . 1991;40(11):644-7	No	No	Cardiac surgery
Cleophas <i>Angiology</i> . 1991;42(10):805-11	No	No	Pre medication only
Marlow <i>Can J Anaesth</i> . 1991;38(7):844-8	No	No	Not a RCT of beta blocker vs control
Whirley-Diaz <i>Anaesthesia</i> . 1991;46(3):220-3	No	No	Pre medication only
Kharasch <i>Anesth Analg</i> . 1991;72(2):216-20	No	No	Pre medication only
Reves <i>J Thorac Cardiovasc Surg</i> . 1990;100(2):221-7	No	No	Cardiac surgery
Kanitz <i>J Clin Anesth</i> . 1990 Jul-Aug;2(4):238-42	No	No	Intraoperative medication only
Parnass <i>J Clin Anesth</i> . 1990;2(4):232-7	No	No	Pre medication only
Eichwede <i>Anaesthesist</i> . 1990;39(7):361-6	No	No	Not a RCT
Allberry <i>Can J Anaesth</i> . 1990;37(4 Pt 1):448-51	No	No	Pre medication only
Kling <i>Anaesthesist</i> . 1990;39(5):264-8	No	No	Cardiac surgery
Oxorn <i>Can J Anaesth</i> . 1990;37(2):206-9	No	No	Pre medication only
Sheppard <i>Can J Anaesth</i> . 1990;37(2):202-5	No	No	Pre medication only
Mantangi <i>Can J Cardiol</i> . 1989;5(4):229-34	No	No	Cardiac surgery
Jakobsen <i>Anaesthesia</i> . 1989;44(3):249-52	No	No	Pre medication only
Gold <i>Anesth Analg</i> . 1989;68(2):101-4.	No	No	Intraoperative medication only
Gombotz <i>Acta Anaesthesiol Scand</i> . 1988;32(8):686-90	No	No	Not a RCT of beta blocker vs control
West <i>Am J Ophthalmol</i> . 1988;106(2):168-73	No	No	Pre medication only
Stone <i>Anesthesiology</i> . 1988;68(4):495-500	No	No	Pre medication only
Lamb <i>Eur Heart J</i> . 1988;9(1):32-6	No	No	Cardiac surgery
Turlapaty <i>Am Heart J</i> . 1987;114(4 Pt 1):866-85	No	No	Review
Khuri <i>Am J Cardiol</i> . 1987;60(6):51D-58D	No	No	Cardiac surgery
Adlerberth <i>Reviewbolism</i> . 1987;36(7):637-42	No	No	Not a RCT of b blocker vs control
Simpson <i>Anaesthesia</i> . 1987;42(3):243-8	No	No	Pre medication only
Adlrberth <i>Ann Surg</i> . 1987;205(2):182-8	No	No	Not a RCT
Magnusson <i>Br J Anaesth</i> . 1986;58:251-60	No	No	Pre medication only
Jakobsen <i>Br J Anaesth</i> . 1986;58(3):261-6	No	No	Pre medication only
Murthy <i>J Clin Pharmacol</i> . 1986;26 Suppl A:A27-A35	No	No	Review
Reves <i>Am J Cardiol</i> . 1985;56(11):57F-62F	No	No	Review
Gray <i>Am J Cardiol</i> . 1985;56(11):49F-56F	No	No	Cardiac surgery
Mantangi <i>J Thorac Cardiovasc Surg</i> . 1985 Mr;89(3):439-43	No	No	Cardiac surgery
Heikkila <i>Acta Anaesthesiol Scand</i> . 1984;28(6):677-82	No	No	Cardiac surgery
Hasselgren <i>J Clin Endocrinol metab</i> . 1984;59(5):835-9	No	No	Not RCT of beta block vs control
Hanna <i>Anaesthesia</i> . 1983;38(12):1192-4	No	No	Pre medication only
Ponten <i>Anesth Analg</i> . 1983;62(4):380-90	No	No	Cardiac surgery
Berggren <i>Scand J Thorac Cardiovasc Surg</i> . 1983;17(1):29-32	No	No	Cardiac surgery
Bayliff <i>Ann Thorac Surg</i> . 1999 Jan;67(1):182-6.	Yes	Yes	
Burns <i>Br J Anaesth</i> . 1988;61:345-46	No	No	Pre medication only
Coleman <i>Anaesthesia</i> 1980; 35:972-78	No	No	Pre medication only
Cucchiara <i>Anesthesiology</i> 1986;65:528-31	No	No	Pre medication only
Davies <i>Anesth Intensive Care</i> 1993;20:161-164	No	No	Pre medication only
Gibson <i>Clin Pharmacol Ther</i> 1988;44:650-53	No	No	Pre medication only

Leslie <i>J Clin Anesth</i> 1989;1:194-200	No	No	Pre medication only
Liu <i>Can Anaesth Soc J</i> 1986;33:556-62	No	No	Pre medication only
MacKenzie <i>BMJ</i> 1989;298:363-64	No	No	Pre medication only
Inada <i>J Clin Anesth</i> 1989;1:207-13	No	No	Pre medication only
Miller <i>Can J Anesth</i> 1991;38:849-58	No	No	Pre medication only
Rosenburg <i>BMJ</i> 1996;313:258-61	No	No	Pre medication only
Bohm <i>Z Kardiol</i> 2003;92:668-676	No	No	Not a RCT of beta blocker vs control
Guran <i>Jurnalul Roman de Anestezie Terapie Intensiva</i> 2009;16:93-8	No	No	On anaesthetic or opioid requirements
Sandler <i>J Cardiothorac Anesth</i> 1990;4:44-50	No	No	Pre medication only
Khan <i>Annals of Noninvasive Electrocardiology</i> .2013;18(1):58-68	No	No	Cardiac Surgery
Garnock-Jones. <i>Drugs</i> . 2012;72(1):109-32	No	No	Review
Ellenberger. <i>Anesthesiology</i> . 2011;114(4):817-23	No	No	Not a RCT of beta blocker vs control
Halonen. <i>Annals of Internal Medicine</i> . 2010;153(11):703-9	No	No	Cardiac Surgery
Foex. <i>Anesthesiology</i> . 2010;113(4):767-71	No	No	Review
Wallace. <i>Anesthesiology</i> . 2010;113(4):794-805	No	No	Review
Shukla. <i>Internet Journal of Anesthesiology</i> . 2010;25(1):1	No	No	On anaesthetic or opioid requirements
Stephens. <i>Critical Care Nursing</i> . 2010;22(2):209-15	No	No	Review
Koi. <i>Current Therapeutic Research</i> . 2009;70(3):197-208	No	No	Not a RCT of beta blocker vs control
Alper. <i>Advisor for Nurse Practitioners</i> . 2009;12(4):72	No	No	Review
McColl. <i>ACP Journal Club</i> . 2009;150(3):2	No	No	Review
Mui. <i>Journal of Clinical Outcomes Management</i> . 2008;15(10):470-1	No	No	Review
Turan. <i>Internet Journal of Anesthesiology</i> . 2008;17(2):7	No	No	Not a RCT of beta blocker vs control
Mullett. <i>RN</i> . 2008;71(6):23	No	No	Review
Flood. <i>American Family Physician</i> . 2007;75(5):656-85	No	No	Review
Mason. <i>AANA Journal</i> . 2006;74(2):113-7	No	No	Review
Fleisher. <i>Current Reviews for Nurse Anesthetists</i> '. 2004;27(6):63-70	No	No	Review
Martinez. <i>Journal of Critical Care</i> . 2002;17(2):105-13	No	No	Review
Kuro. <i>Anesthesia and Resuscitation</i> . 2002;36(3):145-155	No	No	Cardiac Surgery

Appendix 3

In the trial by Mangano and colleagues, only the post discharge 2- year mortality is reported, so the Kaplan Meier survival curve was used to obtain the post discharge 30-day mortality; 3 deaths occurred in the control group, and 0 deaths in the beta-blocker group. This was added to the in-hospital mortality data to give the all-cause 30-day mortality. Vertical line =30 days.

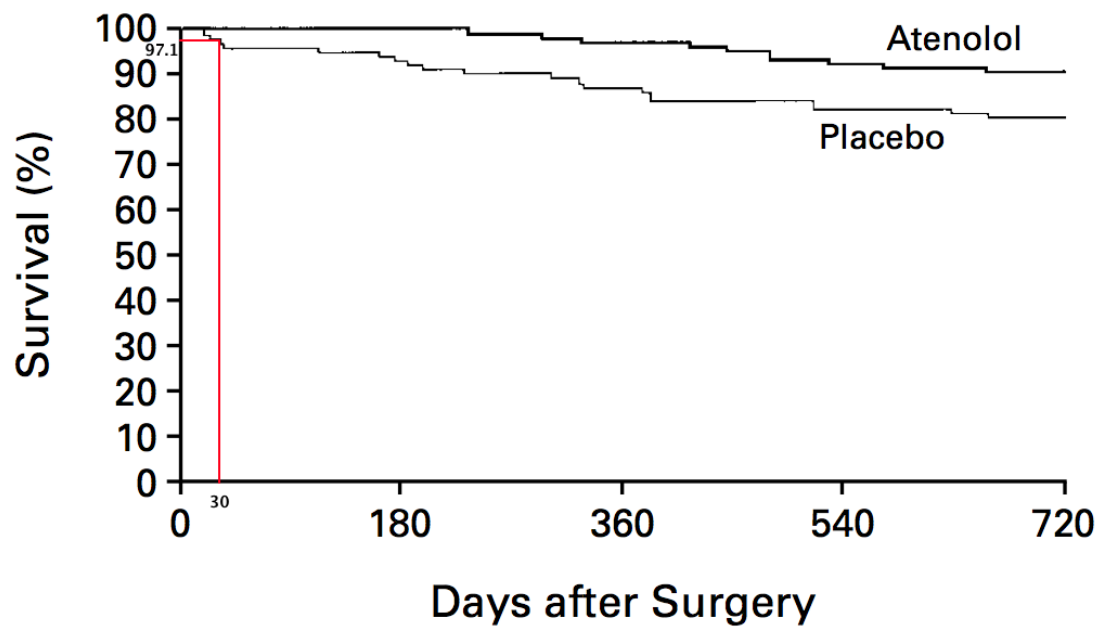


Figure extracted from Mangano *N Engl J Med.* 1996;335(23):1713-20

Appendix 4

Publication bias assessment using funnel plot

