

# **SUPPLEMENTAL MATERIAL**

**Table S1.** Complete search strategy.

**Ovid MEDLINE** (ALL – 1946 to present)

Searched originally on July 6, 2022, updated on May 31, 2023.

No language, publication date, or article type restrictions.

Line #	Search
1	Cardiac Surgical Procedures/
2	(cardiac surgery or cardiac surgical procedure* or heart surgery or heart valve surgery or heart surgical procedures* or cardiac operation* or heart operation* or cardiosurgery or myocardial resection).tw.
3	Arterial Switch Operation/
4	(arterial switch or atrial switch or double switch technique* or Rastelli operation or Rastelli procedure or Rastelli technique or Senning operation or Senning procedure or Jatene procedure or Jatene technique or Jatene operation or Mustard operation or Mustard repair or Mustard procedure).tw.
5	Mitral Valve Annuloplasty/
6	((bicuspid cardiac valve or bicuspid cardiac valvular or bicuspid heart valve or bicuspid heart valvular or bicuspid or bicuspid valve or bicuspid valvular or left atrioventricular cardiac valve or left atrioventricular heart valve or left atrioventricularvalvular or mitral cardiac valve or mitral cardiac valvular or mitral heart valve or mitral heart valvular or mitral or mitral valvular) adj2 (annuloplast* or repair or replacement)).tw.
7	Pericardiectomy/ or (pericardiectomy or pericardiectomies or pericardectomy or pericardectomies or pericardiotomy or pericardiotomies or pericardotomy or pericardotomies).tw.
8	Coronary Artery Bypass/
9	(CABG or aortic coronary bypass or aorticocoronary anastomosis or Total arterial revascularization or total arterial revascularisation or Multiple arterial revascularization or multiple arterial revascularisation).tw.
10	((aortocoronary or aorta or coronary) adj2 (anastomosis or bypass or shunt or graft)).tw.
11	Cardiomyoplasty/ or (cardiomyoplasty or cardiomyoplasties).tw.
12	Heart Valve Prosthesis Implantation/ or (heart valve prosthesis implantation or heart valve prosthesis implant).tw.
13	Myocardial Revascularization/
14	(cardiac muscle revascularisation or cardiac muscle revascularization or coronary revascularisation or coronary revascularization or heart muscle revascularisation or heart myocardium revascularisation or heart revascularisation or heart revascularization or internal mammary arterial anastomosis or internal mammary arterial implantation or internal mammary artery anastomosis or internal mammary artery graft or internal mammary artery implant or internal mammary artery implantation or internal mammary-coronary artery anastomosis or Coronary Internal Mammary Artery Anastomosis or myocardial revascularisation or myocardial revascularization or myocardium revascularisation or myocardium revascularization or transmyocardial laser revascularisation or transmyocardial laser revascularization or vineberg operation).tw.
15	Cardiac Valve Annuloplasty/
16	(Cardiac Valve Annuloplasty or Cardiac Valve Annuloplasties or ValvularAnnuloplasties or ValvularAnnuloplasty or Heart Valve Annuloplasty or Heart Valve Annuloplasties or Cardiac Valve Annulus Repair or Heart Valve Annulus Repair or Cardiac Valve Annular Repair or Heart Valve Annular Repair or Cardiac Valve Annular Reduction or Cardiac Valve Annulus Shortening or Cardiac Valve Annulus Reduction).tw.
17	(Aortic Valve Repair or Aortic Valve Replacement or aorta valve replacement or aorta valve transplantation or aortic valve transplantation or aortic valve xenotransplantation).tw.
18	(tricuspid valve repair or tricuspid valve replacement or tricuspid valve transplantation).tw.
19	Heart-Assist Devices/
20	(heart assist device* or heart assist pump* or vascular assist device* or artificial ventricle* or ventricle assist device* or artificial heart ventricle*).tw.
21	or/1-20
22	(Perioperative Period/ or Postoperative Period/ or Postoperative Complications/) and Atrial Fibrillation/
23	((peri-procedural or peri-procedural or procedure-related or post-procedural or postprocedural or perioperative or intraoperative or postoperative or peri-operative or intra-operative or post-operative or perisurgical or intrasurgical or postsurgical or peri-surgical or intra-surgical or post-surgical or new-onset or after surger* or after cardiac surger*) adj3 (atrial fibrillation* or atrium fibrillation* or auricular fibrillation* or auricular fibrillation*)).tw.
24	22 or 23
25	21 and 24

**Table S2.** Postoperative atrial fibrillation definition in the included studies.*AF: atrial fibrillation; ECG: electrocardiogram; POAF: postoperative atrial fibrillation.*

<b>Study, year</b>	<b>Definition of POAF</b>
CRESWELL, 1993 <sup>21</sup>	AF, flutter, or paroxysmal atrial tachycardias. Excluded transient non-sustained arrhythmias and arrhythmias treated only with oxygen or potassium.
ARANKI, 1996 <sup>16</sup>	Atrial arrhythmias that required either medication or pacing.
STAMOU, 2000 <sup>17</sup>	Any AF episode requiring treatment.
TAMIS, 2000 <sup>22</sup>	Any AF episode lasting $\geq 30$ minutes and confirmed by ECG or telemetry strip with absent P waves and present fibrillatory waves in the isoelectric portion of the ECG/tele strip.
HAKALA, 2002 <sup>23</sup>	Not reported.
SILVA, 2004 <sup>24</sup>	Any supraventricular arrhythmia with f waves and irregular ventricular rhythm on ECG, and lasting $\geq 15$ min or that required treatment.
VILLAREAL, 2004 <sup>12</sup>	Documentation of AF of any duration at any time in the postoperative period on a physician assessment.
KALAVROUZIOS, 2007 <sup>25</sup>	Any AF episode requiring treatment.
MARISCALCO, 2007 <sup>26</sup>	Any AF episode lasting $\geq 15$ minutes.
NISANOGLU, 2007 <sup>13</sup>	Any episode of AF regardless of duration.
MARISCALCO, 2008 <sup>27</sup>	Any AF episode lasting $\geq 15$ minutes.
AHLSSON, 2010 <sup>28</sup>	Any AF episode lasting $\geq 1$ minute.
BRAMER, 2010 <sup>29</sup>	Any AF episode lasting $\geq 30$ minutes.
SHIRZAD, 2010 <sup>30</sup>	Any AF episode lasting $\geq 5$ minutes within 4 days of surgery.
ATTARAN, 2011 <sup>31</sup>	Any episode of AF regardless of duration.
BRAMER, 2011 <sup>32</sup>	Any AF episode lasting $\geq 30$ minutes.
GIRERD, 2012 <sup>33</sup>	Any AF episode requiring medical or electrical cardioversion.
HELGADOTTIR, 2012 <sup>34</sup>	Any AF episode lasting $\geq 5$ minutes and/or initiation of AF treatment with amiodarone or cardioversion.
SAXENA, 2012 <sup>35</sup>	Any AF episode requiring treatment.
HORWICH, 2013 <sup>36</sup>	Any AF episode requiring treatment.
O'NEAL, 2013 <sup>37</sup>	Any AF episode lasting $\geq 60$ minutes and requiring treatment.
SAXENA, 2013 <sup>38</sup>	Any AF episode requiring treatment.
IVANOVIC, 2014 <sup>39</sup>	Any AF episode lasting $\geq 15$ minutes or requiring treatment.
PHILIP, 2014 <sup>40</sup>	Any AF or flutter episode lasting $\geq 2$ minutes but $< 7$ days.
PIVATTO, 2014 <sup>41</sup>	Any AF episode regardless of duration.
WEIDINGER, 2014 <sup>42</sup>	Any AF episode requiring treatment.
JUNIOR, 2015 <sup>43</sup>	Not reported.
MELDUNI, 2015 <sup>15</sup>	Any AF episode lasting $\geq 30$ seconds.
TSAI, 2015 <sup>44</sup>	Any AF episode requiring treatment within 5 days of surgery.
TULLA, 2015 <sup>45</sup>	Any AF episode lasting $\geq 5$ minutes.
OMER, 2016 <sup>46</sup>	Not reported.
SAHIN, 2016 <sup>47</sup>	Not reported.
ISMAIL, 2017 <sup>48</sup>	Any AF episode requiring treatment.
LEE, 2017 <sup>49</sup>	Any AF episode regardless of duration.
PARK, 2017 <sup>50</sup>	Any AF episode lasting $\geq 1$ minute.
SWINKELS, 2017 <sup>14</sup>	Any AF episode lasting for "several hours".
KOSMIDOU, 2018 <sup>51</sup>	Any AF episode lasting $\geq 30$ seconds or requiring treatment.
SCHWANN, 2018 <sup>52</sup>	Any AF episode requiring treatment.
ALMASSI, 2019 <sup>5</sup>	Any irregular atrial-based rhythm lasting $\geq 30$ minutes.
CARTER-STORCH, 2019 <sup>53</sup>	Any AF episode within 7 days of surgery.
FILARDO, 2019 <sup>54</sup>	Any AF episode detected via continuous ECG/telemetry documented by a physician in the chart, regardless of duration or need for treatment.
HERNÁNDEZ-LEIVA, 2019 <sup>4</sup>	Any AF or flutter episode lasting $\geq 30$ seconds.
KATO, 2019 <sup>55</sup>	Any AF episode lasting $\geq 5$ minutes occurring within 6 days of surgery.

BENEDETTO, 2020 <sup>3</sup>	Any episode of AF or flutter lasting $\geq 30$ seconds.
COLE, 2020 <sup>56</sup>	Not reported.
FRAGAO, 2020 <sup>57</sup>	Any AF episode lasting $\geq 30$ seconds or for the entirety of the ECG if shorter than 30 seconds or clinically significant AF that required treatment with rate or rhythm control agents or anticoagulants.
KRISHNA, 2020 <sup>58</sup>	New ECG evidence of AF requiring treatment within 5 days of surgery.
MALHOTRA, 2020 <sup>59</sup>	Not reported.
THOREN, 2020 <sup>60</sup>	Any AF episode requiring intervention during hospitalization.
FAN, 2021 <sup>61</sup>	Any AF episode lasting $\geq 30$ seconds or documented by a physician in the chart.
GAUDINO, 2021 <sup>7</sup>	Any AF episode lasting $\geq 30$ seconds.
HSU, 2021 <sup>62</sup>	Any AF episode lasting $\geq 30$ seconds.
LEE, 2021 <sup>63</sup>	Not reported.
OMAR, 2021 <sup>64</sup>	Any AF episode lasting $\geq 30$ seconds.
WANG, 2021 <sup>65</sup>	Any AF episode lasting $\geq 60$ minutes, causing hemodynamic instability (systolic blood pressure $< 90$ mmHg or mean arterial pressure $< 60$ mmHg), or requiring medical treatment.
ZHAO, 2021 <sup>66</sup>	Any AF or flutter episode lasting $\geq 5$ minutes.
MUSA, 2022 <sup>67</sup>	Any AF episode lasting $\geq 30$ seconds.
ORAIL, 2022 <sup>68</sup>	Any AF episode lasting $\geq 30$ seconds.
POTDAR, 2022 <sup>69</sup>	AF or flutter requiring treatment with rate or rhythm control agents, with or without anticoagulation.

**Table S3.** Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist.

Section and Topic	Item #	Checklist item	Location where item is reported
<b>TITLE</b>			
Title	1	Identify the report as a systematic review.	1
<b>ABSTRACT</b>			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	2
<b>INTRODUCTION</b>			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	4
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	4
<b>METHODS</b>			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	5
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	5
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	5
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	5
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	6
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	6
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	6
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	5-6
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	7
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	6-7
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	7-8
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	7-8

Section and Topic	Item #	Checklist item	Location where item is reported
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	7-8
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	7-8
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	7
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	8
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	8
<b>RESULTS</b>			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	8, Supplementary Figure 1
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	8
Study characteristics	17	Cite each included study and present its characteristics.	8, 23-30
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	8, Supplementary Tables 3 and 4
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	8-10
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	8
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	10-11, Supplementary Table 6-8
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	10-11
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	10-11, 33
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	10, Supplementary Figure 12
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	10-11
<b>DISCUSSION</b>			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	11-13
	23b	Discuss any limitations of the evidence included in the review.	13
	23c	Discuss any limitations of the review processes used.	13

Section and Topic	Item #	Checklist item	Location where item is reported
	23d	Discuss implications of the results for practice, policy, and future research.	13-14
<b>OTHER INFORMATION</b>			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	5
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	5
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	5
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	1
Competing interests	26	Declare any competing interests of review authors.	1
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	8

**Table S4.** Methodological quality of the included studies.

Study, year	<b>Selection and comparability:</b> 1) <b>The cohort includes a broad, representative sample of cardiac surgery patients, without extensive exclusion criteria. (** = high quality)</b> 2) <b>Despite some exclusion criteria, the cohort remains representative of cardiac surgery patients within the group (* = good quality)</b> 3) <b>Highly restrictive inclusion criteria that makes the cohort poorly representative of cardiac surgery patients (low quality for the purpose of this study)</b>	<b>POAF assessment method:†</b> 1) <b>POAF incidence and outcomes according to POAF status are reported <u>AND</u> POAF assessment method is clearly stated (** = high quality)</b> 2) <b>Reports only one of both (low quality for the purpose of this study)</b>	<b>POAF definition:‡</b> 1) <b>Clearly distinguished between duration- and intervention-based POAF episodes, providing definition for the events (** = high quality).</b> 2) <b>The study combined POAF episodes regardless of the diagnosis being based on duration or need for intervention, but a POAF definition was provided (* = good quality)</b> 3) <b>No POAF definition provided (low quality for the purpose of this study)</b>
CRESWELL, 1993 <sup>21</sup>	**	**	
ARANKI, 1996 <sup>16</sup>	* (CABG only)	**	**
STAMOU, 2000 <sup>17</sup>	* (CABG only)	**	**
TAMIS, 2000 <sup>22</sup>	* (CABG only)	**	**
HAKALA, 2002 <sup>23</sup>	* (CABG only)	**	
SILVA, 2004 <sup>24</sup>	**	**	*
VILLAREAL, 2004 <sup>12</sup>	* (CABG only)	**	**
KALAVROUZIOS, 2007 <sup>25</sup>	*	**	**
MARISCALCO, 2007 <sup>26</sup>	**	**	**
NISANOGLU, 2007 <sup>13</sup>	* (CABG only)	**	**
MARISCALCO, 2008 <sup>27</sup>	* (CABG only)	**	**
AHLSSON, 2010 <sup>28</sup>	* (CABG only)	**	**
BRAMER, 2010 <sup>29</sup>	* (CABG only)	**	**
SHIRZAD, 2010 <sup>30</sup>	**	**	**
ATTARAN, 2011 <sup>31</sup>	**	**	**
BRAMER, 2011 <sup>32</sup>	**	**	**
GIRERD, 2012 <sup>33</sup>	* (CABG only)	**	**
HELGADOTTIR, 2012 <sup>34</sup>	*	**	*
SAXENA, 2012 <sup>35</sup>	* (CABG only)	**	**
HORWICH, 2013 <sup>36</sup>	* (CABG only)	**	**
O'NEAL, 2013 <sup>37</sup>	* (CABG only)	**	*
SAXENA, 2013 <sup>38</sup>	* (AVR only)	**	**
IVANOVIC, 2014 <sup>39</sup>	* (CABG only)	**	*
PHILIP, 2014 <sup>40</sup>	* (CABG only)	**	**
PIVATTO, 2014 <sup>41</sup>	* (AVR only)	**	**
WEIDINGER, 2014 <sup>42</sup>	* (CABG only)	**	**
JUNIOR, 2015 <sup>43</sup>	* (CABG only)	**	
MELDUNI, 2015 <sup>15</sup>	**	**	**
TSAI, 2015 <sup>44</sup>	* (CABG only)	**	**



TULLA, 2015 <sup>45</sup>	* (CABG only)	**	**
OMER, 2016 <sup>46</sup>	* (CABG only)	**	
SAHIN, 2016 <sup>47</sup>	* (CABG only)	**	
ISMAIL, 2017 <sup>48</sup>	* (CABG only)	**	**
LEE, 2017 <sup>49</sup>	* (CABG only)	**	**
PARK, 2017 <sup>50</sup>	**	**	**
SWINKELS, 2017 <sup>14</sup>	*	**	
KOSMIDOU, 2018 <sup>51</sup>	* (CABG only)	**	*
SCHWANN, 2018 <sup>52</sup>	*	**	**
ALMASSI, 2019 <sup>5</sup>	* (CABG only)	**	**
CARTER-STORCH, 2019 <sup>53</sup>	*	**	**
FILARDO, 2019 <sup>54</sup>	* (CABG only)	**	*
HERNÁNDEZ-LEIVA, 2019 <sup>4</sup>	**	**	**
KATO, 2019 <sup>55</sup>	**	**	**
BENEDETTO, 2020 <sup>3</sup>	* (CABG only)	**	**
COLE, 2020 <sup>56</sup>	**	**	
FRAGAO, 2020 <sup>57</sup>	* (AVR only)	**	*
KRISHNA, 2020 <sup>58</sup>	* (CABG only)	**	**
MALHOTRA, 2020 <sup>59</sup>	* (CABG only)	**	
THOREN, 2020 <sup>60</sup>	* (CABG only)	**	**
FAN, 2021 <sup>61</sup>	* (CABG only)	**	*
GAUDINO, 2021 <sup>7</sup>	**	**	**
HSU, 2021 <sup>62</sup>	**	**	**
LEE, 2021 <sup>63</sup>	* (CABG only)	**	
OMAR, 2021 <sup>64</sup>	* (CABG only)	**	**
WANG, 2021 <sup>65</sup>	**	**	*
ZHAO, 2021 <sup>66</sup>	* (Total arch repair only)	**	**
MUSA, 2022 <sup>67</sup>	*	**	**
ORAI, 2022 <sup>68</sup>	* (CABG only)	**	**
POTDAR, 2022 <sup>69</sup>	* (CABG only)	**	**

AVR: aortic valve replacement; CABG: coronary artery bypass grafting; POAF: postoperative atrial fibrillation.

† Part of the inclusion criteria for this systematic review and meta-analysis. ‡ This category was only relevant for secondary analyses.

**Table S5. Demographic characteristics of patients in the included studies.**

Study, year	AGE (MEAN±SD)		WOMEN (%)		MEAN LVEF (%)		HYPERTENSION (%)		DM (%)		COPD (%)		PRIOR CVA (%)		PRIOR MI (%)		PRIOR BB (%)		PRIOR CARDIAC SURGERY (%)		CKD (%)	
	NO POAF	POAF	NO POAF	POAF	NO POAF	POAF	NO POAF	POAF	NO POAF	POAF	NO POAF	POAF	NO POAF	POAF	NO POAF	POAF	NO POAF	POAF	NO POAF	POAF	NO POAF	POAF
CRESWELL, 1993 <sup>31</sup>	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
ARANKI, 1996 <sup>36</sup>	66	77	33	25	NR	NR	56	65	32	26	7	12	15	17	56	68	74	78	NR	NR	NR	NR
STAMOU, 2000 <sup>17</sup>	61±12	69±10	33	34	NR	NR	58	61	8	12	6	8	0,6	11	NR	NR	45	39	NR	NR	1	3
TAMIS, 2000 <sup>22</sup>	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
HAKALA, 2002 <sup>23</sup>	58,9±8,6	63,9±7,5	22,6	26,6	63,6	61,8	NR	NR	NR	NR	1,1	2,6	4,9	6,8	NR	NR	NR	NR	NR	NR	NR	NR
SILVA, 2004 <sup>24</sup>	NR	NR	36	32	NR	NR	NR	NR	NR	NR	15	20	NR	NR	33	28,8	39	61	7	11	NR	NR
VILLAREAL, 2004 <sup>12</sup>	65±9	66±8	17,7	17,7	50	51	68,7	67,6	3,4	3,4	16,6	22,6	1,1	1,1	9,4	9,4	NR	NR	NR	NR	6,4	7,2
KALAVROUZIOS, 2007 <sup>25</sup>	NR	NR	24	25,2	NR	NR	64,1	63,9	34,4	33,9	16	16	14,4	15,5	6,2	6,3	85,1	84,2	6,1	6	6,6	6,9
MARISCALCO, 2007 <sup>26</sup>	65±9,6	69,9±8	25,6	29,5	NR	NR	61,2	64,9	18,2	17,1	6,8	9,8	8,3	11,2	NR	NR	NR	NR	NR	NR	NR	NR
NISANOGLU, 2007 <sup>13</sup>	69,8±4,4	71,2±4,6	31,3	27,5	48,7	46,3	41	43	20	13	20	24	2	1	73	71,5	42	43	NR	NR	NR	NR
MARISCALCO, 2008 <sup>27</sup>	63,7±9,1	68,4±7,9	20,1	22,8	55,1	53,8	55,9	54,7	26	28,6	6,3	10,2	5,1	7,4	50,3	53	70,5	68,2	0,6	0,9	3,5	7
AHLSSON, 2010 <sup>28</sup>	64,6±9,4	69,2±7,6	22,9	18,8	57,4	55,7	30,4	35,8	19	17	NR	NR	7,4	7,3	54,2	58,8	NR	NR	NR	NR	NR	NR
BRAMER, 2010 <sup>29</sup>	64±9,7	68,5±8,1	22,5	21,2	NR	NR	47,4	51,5	23	20,7	9,7	11,6	4,6	6,2	NR	NR	NR	NR	4,6	3,7	NR	NR
SHIRZAD, 2010 <sup>30</sup>	NR	NR	26,2	32,4	49,6	49,32	50,7	52,4	30,5	29,1	NR	NR	6,2	7,8	37,6	33,7	83,9	79,2	NR	NR	1,6	3
ATTARAN, 2011 <sup>11</sup>	68	67,5	18,7	18,3	NR	NR	62,6	62,4	20,9	20,7	33,1	33,9	9,2	9,6	9,1	9	NR	NR	1,7	1,9	4,9	4,8
BRAMER, 2011 <sup>12</sup>	72,6	72,6	36,9	37,6	NR	NR	55,5	56,2	13,2	14,5	37,2	38,5	9,7	9,8	1,9	2,2	NR	NR	3,6	2,8	6,3	6,1
GIRERD, 2012 <sup>33</sup>	65,8	66,8	38,7	41,6	NR	NR	36,6	36,6	9,9	10,3	39,5	36,2	11,5	11,1	6,6	7	NR	NR	5,4	4,5	6,2	6,6
HELGADOTTIR, 2012 <sup>14</sup>	66,5	66,7	42,7	41	NR	NR	48,8	49,8	10,4	9,9	44,3	44,1	11,8	12,3	5,9	6,1	NR	NR	6,1	7,3	9,9	9,9
SAXENA, 2012 <sup>35</sup>	62,6±11	67±9,5	41,4	37,4	NR	NR	40,2	39,6	17,4	22,2	12,9	13	3,8	7,2	34,9	38	NR	NR	12,1	13,9	NR	NR
HORWICH, 2013 <sup>36</sup>	62±6,10	68,3±8,9	22	22,6	NR	NR	64,2	69,9	30,6	32,7	9,7	12,5	4,1	5,6	47,4	48	79,6	78,6	NR	NR	4,5	6,9
ONEAL, 2013 <sup>37</sup>	64±8,7	70±9,3	17	26	55	51	59	65	14	19	NR	NR	NR	NR	NR	NR	70	62	NR	NR	NR	NR
SAXENA, 2013 <sup>38</sup>	64,02±10,72	69,04±9,03	NR	NR	NR	NR	75,7	79,8	32,8	32,2	10,6	13,9	9,9	12,6	25,1	22,1	NR	NR	3,3	3,6	3	3,6
IVANOVIC, 2014 <sup>39</sup>	NR	NR	25,3	22,7	NR	NR	63,2	67,8	34,8	35,1	12,3	17,4	11,5	15,9	14,6	16,3	NR	NR	4	4,6	4,5	5,9
PHILIP, 2014 <sup>40</sup>	62	67	30	27	NR	NR	71	77	35	36	6	9	7	10	38	43	55	62	NR	NR	2	1
PIVATTO, 2014 <sup>41</sup>	65±14	72±11	42,1	49,1	NR	NR	60,5	70,1	19,1	19,7	11,5	17,9	8,7	9,4	4	4,6	NR	NR	NR	NR	1,6	1,2
WEIDINGER, 2014 <sup>42</sup>	58±8	64±9	29	27	NR	NR	54	68	18	29	4	9	2	3	43	46	NR	NR	NR	NR	NR	NR
JUNIOR, 2015 <sup>43</sup>	68,3±8,58	68±8,65	28,1	27,8	44,4	44,4	75,3	75,1	34,4	34	36,7	41,8	NR	NR	62,3	61,2	NR	NR	NR	NR	6,7	6,3
MELDUNI, 2015 <sup>15</sup>	76,5±4,3	77,4±5,2	41,9	48,2	NR	NR	71,4	73,7	23,1	20,2	10,3	12,3	6,8	7	5,6	3,5	NR	NR	14,5	9,6	NR	NR
TSAL, 2015 <sup>44</sup>	60	63	28	20	NR	NR	77	92	22	31	9	10	3	3	30	31	NR	NR	NR	NR	1	2
TULLA, 2015 <sup>45</sup>	NR	NR	23,3	33,3	NR	NR	19,7	35,1	32,6	37,8	9,3	8,1	NR	NR	NR	NR	86,5	83,8	NR	NR	NR	NR
OMER, 2016 <sup>46</sup>	62,1±13,3	71,4±10,7	29,4	30,1	55,7	56,3	70	77	27,9	24,3	13,5	17,7	NR	NR	19,9	21,4	68,9	71,8	NR	NR	10,6	19
SAHIN, 2016 <sup>47</sup>	61,84±10,76	69,9±11,62	17,86	28,57	NR	NR	NR	NR	48,57	61,11	8,57	7,94	9,29	16,67	NR	NR	37,86	26,19	NR	NR	NR	NR
ISMAIL, 2017 <sup>48</sup>	67±6,8	70,2±7	25,4	24,6	59,8	59,7	NR	NR	17,4	28,3	11,6	17,4	10,9	15,2	57,2	58	NR	NR	NR	NR	NR	NR
LEE, 2017 <sup>49</sup>	62±7	64,3±6,8	1,1	0,9	NR	NR	97	95,3	19	19,1	27,7	34	NR	NR	41,2	45,6	NR	NR	0	0	NR	NR
PARK, 2017 <sup>50</sup>	NR	NR	NR	NR	NR	NR	NR	NR	34,5	47,9	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
SWINKELS, 2017 <sup>14</sup>	54,69±15,18	65,36±9,96	31	38,1	56,7	44,8	70,2	67,9	49,4	66,7	9,3	11,9	8,4	9,5	32,1	39,3	93,5	91,7	NR	NR	NR	NR
KOSMIDOU, 2018 <sup>51</sup>	65±8	69±7	-	-	59	56,6	72,5	72,5	43	47,1	0,7	4,9	2,7	1	11,7	20,6	47,4	56,9	NR	NR	5,8	9,8
SCHWANN, 2018 <sup>52</sup>	65±7	68±7	-	-	59,3	58	73,2	75,9	44,6	53,2	1,3	5,1	1,9	1,3	9,2	16,5	47,1	63,3	NR	NR	5,7	3,8
ALMASSI, 2019 <sup>3</sup>	55,7±13,5	60,4±11,2	40,4	44,9	58,3	58,1	51,8	58	27,6	25,1	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	13	14,5
CARTER-STORCH, 2019 <sup>53</sup>	64,1±10,9	65,4±10,7	43,6	44,4	NR	NR	48,5	52,3	8,8	7,1	10,7	12,9	3,4	3,7	13,4	13,7	NR	NR	3,4	4,6	0	0,8
FILARDO, 2019 <sup>54</sup>	NR	69±8,1	NR	20,4	NR	56,1	NR	73,5	NR	23,5	NR	11,1	NR	5,6	NR	22,4	NR	NR	NR	0	NR	NR

HERNÁNDEZ-LEIVA, 2019 <sup>7</sup>	63±11	68±10	31,5	29,5	49	48	80,1	83,7	13,2	11,8	19,5	23,6	22,8	29,2	54,4	57,1	66	69,6	4,6	6,1	3,1	4,1
KATO, 2019 <sup>85</sup>	62,1±8,2	65,3±8,5	NR	NR	NR	NR	85	90	38	40	19	24	7	9	NR	NR	NR	NR	NR	NR	7	11
BENEDETTO, 2020 <sup>3</sup>	71±8	70±8	40	31	61	58	64	59	16	24	NR	NR	NR	NR	4	14	24	32	NR	NR	NR	NR
COLE, 2020 <sup>86</sup>	NR	NR	-	-	NR	NR	83,7	85	37,4	38,5	17,9	22,3	13,7	18,5	45,3	49,9	NR	NR	8,1	9,2	2,8	3,3
FRAGAO, 2020 <sup>87</sup>	NR	NR	-	-	NR	NR	88,4	90,3	48,1	49	23,7	22,9	20,1	25,6	45	48,9	NR	NR	7,7	9,5	3	3,5
KRISHNA, 2020 <sup>88</sup>	64,4±8,2	67,9±8,5	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
MALHOTRA, 2020 <sup>89</sup>	67±11	73±9	34,3	47	58,3	62,6	65	62	20	28	NR	NR	11	8	8	8	NR	NR	NR	NR	NR	NR
THOREN, 2020 <sup>90</sup>	62,6	66,4	14,5	13,5	NR	NR	77,2	78,9	22,6	25,6	2,4	2,5	5,6	6,5	41	44,4	NR	NR	NR	NR	NR	NR
FAN, 2021 <sup>61</sup>	67	71	30	31	NR	NR	56,7	63,1	19,5	22,3	13,2	15,6	2	2,1	3,5	4	54,6	56,9	NR	NR	NR	NR
GAUDINO, 2021 <sup>7</sup>	66,2	72,3	-	-	NR	NR	71,8	74,6	30	31	17,2	33,8	6,4	12,7	NR	NR	29,7	35,9	NR	NR	NR	NR
HSU, 2021 <sup>62</sup>	71,2	74,7	-	-	NR	NR	76	70,6	38,5	34,1	13,4	20,5	13,6	13,1	NR	NR	34,8	37,5	NR	NR	NR	NR
LEE, 2021 <sup>83</sup>	60	67,1	25,3	20	58,1	55,9	64,6	85	41,8	80	NR	NR	10,1	10	22,8	35	NR	NR	NR	NR	NR	NR
OMAR, 2021 <sup>64</sup>	59	59,5	20,9	20,8	55	50	43,5	41,7	38,1	33,3	NR	NR	NR	NR	NR	NR	92,5	79,2	NR	NR	NR	NR
WANG, 2021 <sup>65</sup>	65,1±9,1	68,9±7,7	22,8	21	NR	NR	51,9	53,5	14,7	14,4	NR	NR	2,9	3,3	NR	NR	NR	NR	NR	NR	NR	NR
ZHAO, 2021 <sup>66</sup>	58,8	64,5	28,6	16	64	65,6	54,3	56	30	28	1,4	0	7,9	8	30,7	32	95	88	NR	NR	NR	NR
MUSA, 2022 <sup>67</sup>	60	69	25,2	21,4	60	60	66,6	77,7	20,5	24,3	2,8	3,9	2,8	4,9	12,9	13,6	42,9	48,5	NR	NR	NR	NR
ORAIL, 2022 <sup>88</sup>	64,5	65	26,6	25,2	48,4	43,2	67,7	67,1	45,5	44,3	10,7	10,1	NR	NR	NR	NR	47,5	45,4	NR	NR	25,2	25,4
POTDAR, 2022 <sup>69</sup>	63,8	62,9	25,2	17,2	NR	NR	60,5	54,8	52,5	50,5	2,9	3,2	58,4	52,7	7,7	8,6	75,3	76,3	NR	NR	4,8	7,5
CRESWELL, 1993 <sup>51</sup>	57,1	67,5	16,3	21,8	56,2	50,3	64,9	55,1	51,5	61,5	NR	NR	NR	NR	NR	NR	90,1	70,5	NR	NR	NR	NR
ARANKI, 1996 <sup>56</sup>	58,2	62,5	17,2	20,4	NR	NR	75,4	80,5	48,3	49,6	NR	NR	8,1	7,7	NR	NR	75	73,6	NR	NR	10,7	18,2
STAMOU, 2000 <sup>17</sup>	48	53,7	23,5	32,1	60	60	79	83	3,6	3,2	0,8	1	NR	NR	NR	NR	NR	NR	NR	NR	2,3	4,1
TAMIS, 2000 <sup>22</sup>	59,9	62,4	21,4	14,8	51,9	50,7	79,9	83	60,4	64,8	1,3	1,1	NR	NR	NR	NR	NR	NR	NR	NR	9,1	10,2
HAKALA, 2002 <sup>23</sup>	60,5	66,8	25,9	27,2	NR	NR	54,6	63,1	41,3	41,3	4,7	5,9	8,4	11,9	33,8	32,1	NR	NR	NR	NR	NR	NR
SILVA, 2004 <sup>24</sup>	NR	NR	12,9	6,8	NR	NR	88,4	89,8	52,6	67	4,8	8	NR	NR	46,9	55,7	NR	NR	NR	NR	0,8	5,7

*AVR: aortic valve replacement; BB: beta blockers; CABG: coronary artery bypass grafting; CKD: chronic kidney disease; COPD: chronic obstructive pulmonary disease; CVA: cerebrovascular accident; DM: diabetes mellitus; LVEF: left ventricular ejection fraction; MI: myocardial infarction; MVR: mitral valve replacement; NR: not reported; POAF: postoperative atrial fibrillation; SD: standard deviation.*

**Table S6.** Contingency table of the raw proportions of the primary outcome of POAF across the monitoring methods.

	<b>Telemetry</b>	<b>Telemetry+ECG</b>	<b>ECG only</b>	<b>Chi-squared p-value</b>
<b>Number of patients with POAF</b>	15417	25707	7519	<0.001
<b>Number of patients without POAF</b>	54003	72956	22172	
<b>Fixed effects model</b>	0.22 (95% CI 0.22-0.23)	0.26 (95% CI 0.26-0.26)	0.25 (95% CI 0.25-0.26)	
<b>Random effects model</b>	0.27 (95% CI 0.22-0.32)	0.27 (95% CI 0.24-0.31)	0.19 (95% 0.13-0.28)	

*CI, confidence interval; ECG, electrocardiogram; POAF, postoperative atrial fibrillation.*

**Table S7.** Summary of postoperative atrial fibrillation incidence by assessment method.

<b>Assessment method</b>	<b>Number of studies</b>	<b>Number of patients</b>	<b>POAF incidence (95% CI)</b>	<b>Heterogeneity (I<sup>2</sup>)</b>	<b>Egger's test p-value</b>
Continuous telemetry	21	69,420	27% (22-32%)	99%	0.63
Telemetry plus daily ECG	30	98,663	27% (24-31%)	98%	0.92
Daily ECG only	8	29,691	19% (13-28%)	99%	0.36

*CI: confidence interval, ECG: electrocardiogram, POAF: postoperative atrial fibrillation.*

**Table S8.** Summary of secondary outcomes in postoperative atrial fibrillation patients by assessment method.

<b>Assessment method</b>	<b>Outcome</b>	<b>Number of studies reporting outcome (%)</b>	<b>Pooled estimate (95% CI)</b>	<b>Heterogeneity (I<sup>2</sup>)</b>	<b>Egger' test p-value</b>
Continuous telemetry	Mortality	14/21 (66.7%)	4% (3-5%)	80%	0.40
	Stroke	13/21(61.9%)	3% (2-4%)	73%	0.51
	ICU LOS	6/21 (28.6%)	3.7 days (2.1-5.2)	98%	0.98
	Postoperative LOS	11/21 (52.4%)	13.6 days (9.1-18.1)	99%	0.16
Telemetry plus daily ECG	Mortality	19/30 (63.3%)	3% (2-4%)	92%	0.71
	Stroke	20/30 (66.7%)	2% (2-3%)	85%	0.95
	ICU LOS	9/30 (30%)	3.2 days (2.3-4.1)	96%	0.20
	Postoperative LOS	20/30 (66.7%)	11.0 days (9.4-12.6)	99%	0.04
Daily ECG only	Mortality	7/8 (87.5%)	2% (1-4%)	87%	0.36
	Stroke	3/8 (37.5%)	2% (1-4%)	86%	0.34
	ICU LOS	5/8 (62.5%)	3.0 days (1.8-4.3)	100%	0.14
	Postoperative LOS	6/8 (75%)	10.1 days (7.7-12.6)	98%	0.65

*CI: confidence interval; ECG: electrocardiogram; ICU: intensive care unit; LOS, length of stay.*

**Table S9.** Summary of secondary analyses based on postoperative atrial fibrillation definition category.

<b>Definition category</b>	<b>Outcome</b>	<b>Number of studies reporting outcome (%)</b>	<b>Pooled estimate (95% CI)</b>	<b>Heterogeneity (I<sup>2</sup>)</b>	<b>Egger's test p-value</b>
Intervention-based	POAF incidence	15/15 (100%)	26% (21-31%)	98%	0.84
	Mortality	11/15 (73.3%)	2% (1-3%)	93%	0.80
	Stroke	13/15 (86.7%)	1% (1-2%)	93%	0.81
	ICU LOS	4/15 (26.7%)	2.7 days (1.2-4.2)	99%	0.35
	Postoperative LOS	9/15 (60%)	9.7 days (7.1-12.4)	99%	0.32
Non-intervention-based	POAF incidence	36/36 (100%)	27% (23-31%)	99%	0.65
	Mortality	22/36 (61.1%)	2% (1-2%)	97%	0.46
	Stroke	18/36 (50%)	2% (1-2%)	90%	0.27
	ICU LOS	12/36 (33.3%)	2.3 days (1.7-2.8)	100%	0.61
	Postoperative LOS	23/36 (63.8%)	9.5 days (8-10.9)	100%	0.03

*CI: confidence interval; ICU: intensive care unit; LOS: length of stay; POAF: postoperative atrial fibrillation.*

**Table S10.** Meta-regression for postoperative atrial fibrillation incidence and assessment method.

<b>Subgroup</b>	<b>Estimate</b>	<b>95% CI</b>	<b>P-value</b>
All cardiac surgeries	0.17	-0.04 to 0.39	0.10
Isolated CABG	0.267	0.04 to 0.50	0.02

*CABG: coronary artery bypass grafting; CI: confidence interval.*

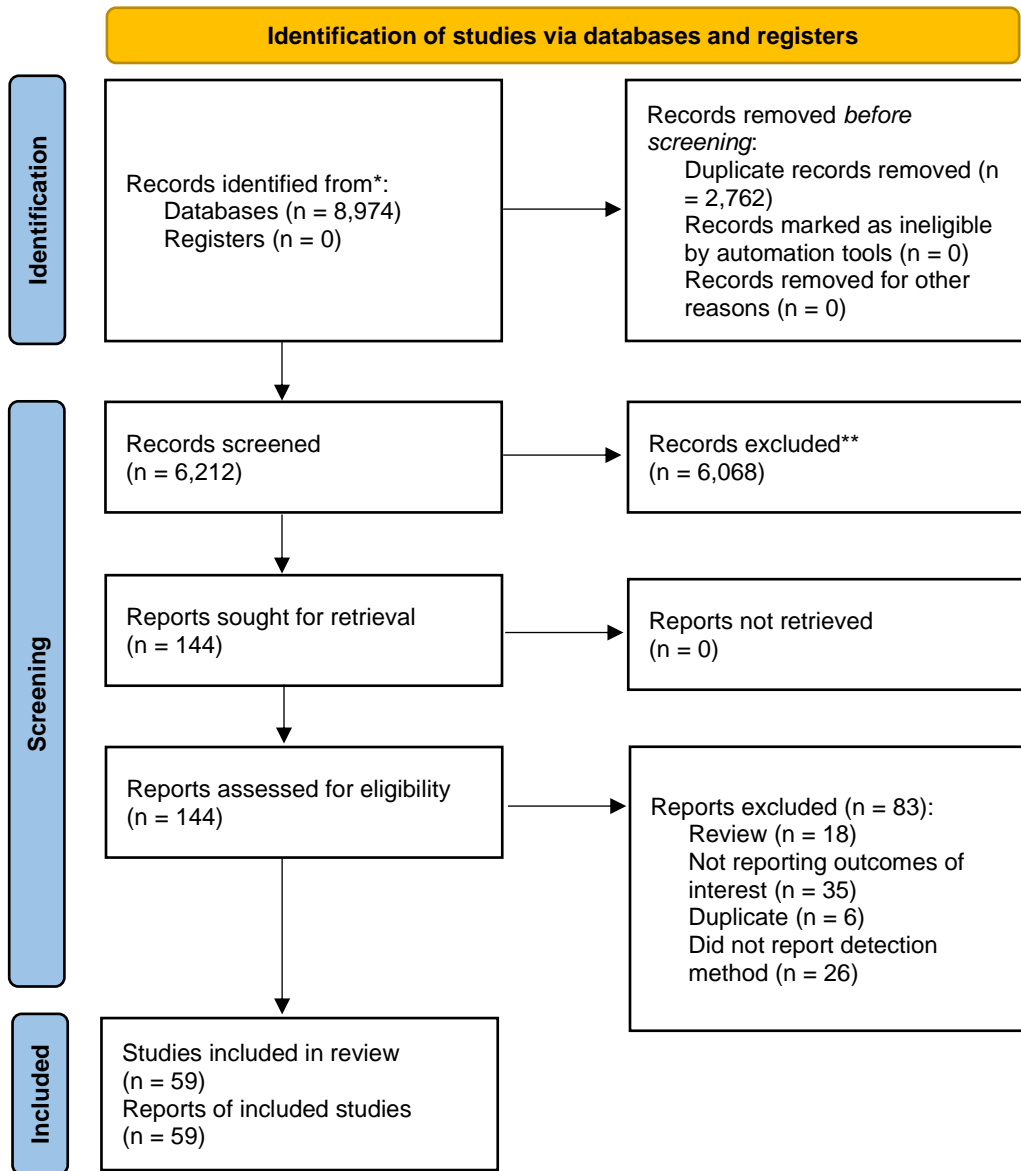


**Table S11. Association of POAF and categorical covariates.**

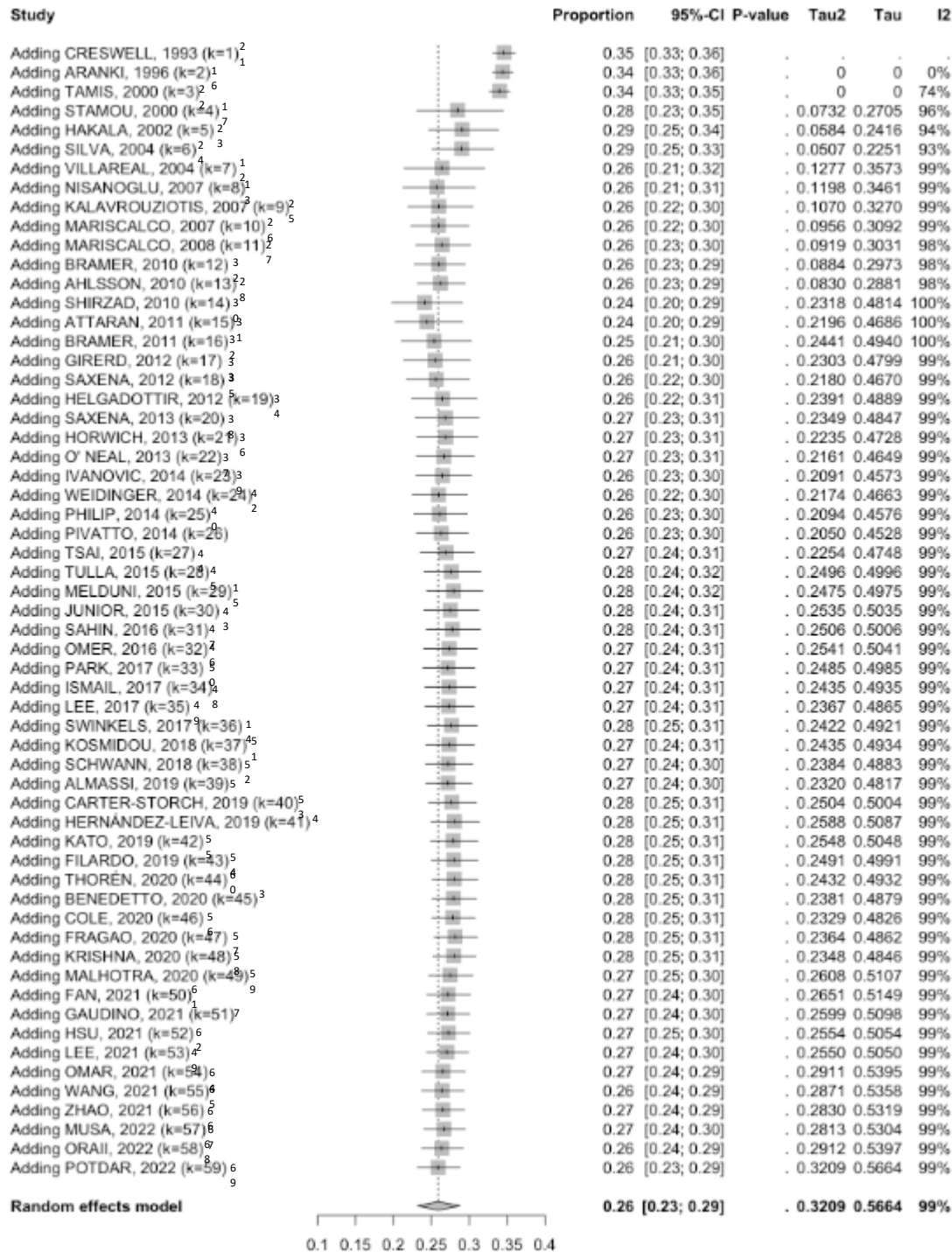
<b>Baseline variable</b>	<b>OR (95% CI), P-value</b>
<b>Year</b>	0.99 [0.99;1.00], <0.001
<b>Women</b>	1.01 [1.01;1.01], <0.001
<b>Prior beta-blocker use</b>	0.98 [0.98;0.98], <0.001
<b>Hypertension</b>	1.01 [1.01;1.01], <0.001
<b>Diabetes</b>	1.00 [1.00;1.00], 0.055
<b>Chronic Kidney disease</b>	1.03 [1.02;1.04], <0.001
<b>Prior cardiac surgery</b>	1.02 [1.01;1.03], <0.001
<b>Myocardial infarction</b>	1.00[1.00;1.00], 0.05
<b>Prior cerebrovascular event</b>	1.01 [1.01;1.01], <0.001
<b>Chronic Obstructive Pulmonary Disease</b>	1.01 [1.01;1.01], <0.001

*CI, confidence interval; OR, odds ratio.*

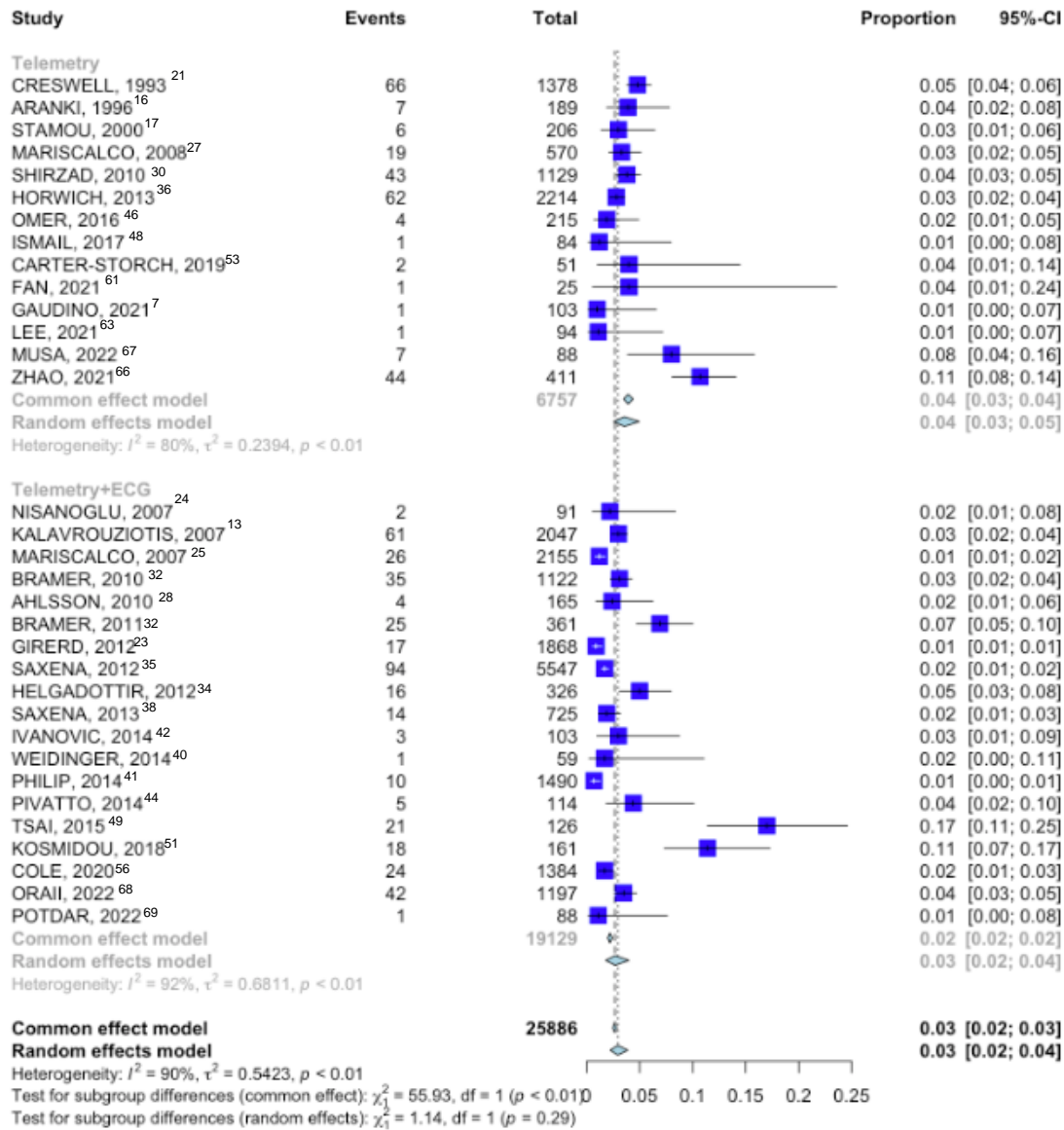
**Figure S1.** Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram.



**Figure S2.** Cumulative analysis of postoperative atrial fibrillation incidence using random effects model.  
*CI: confidence interval.*

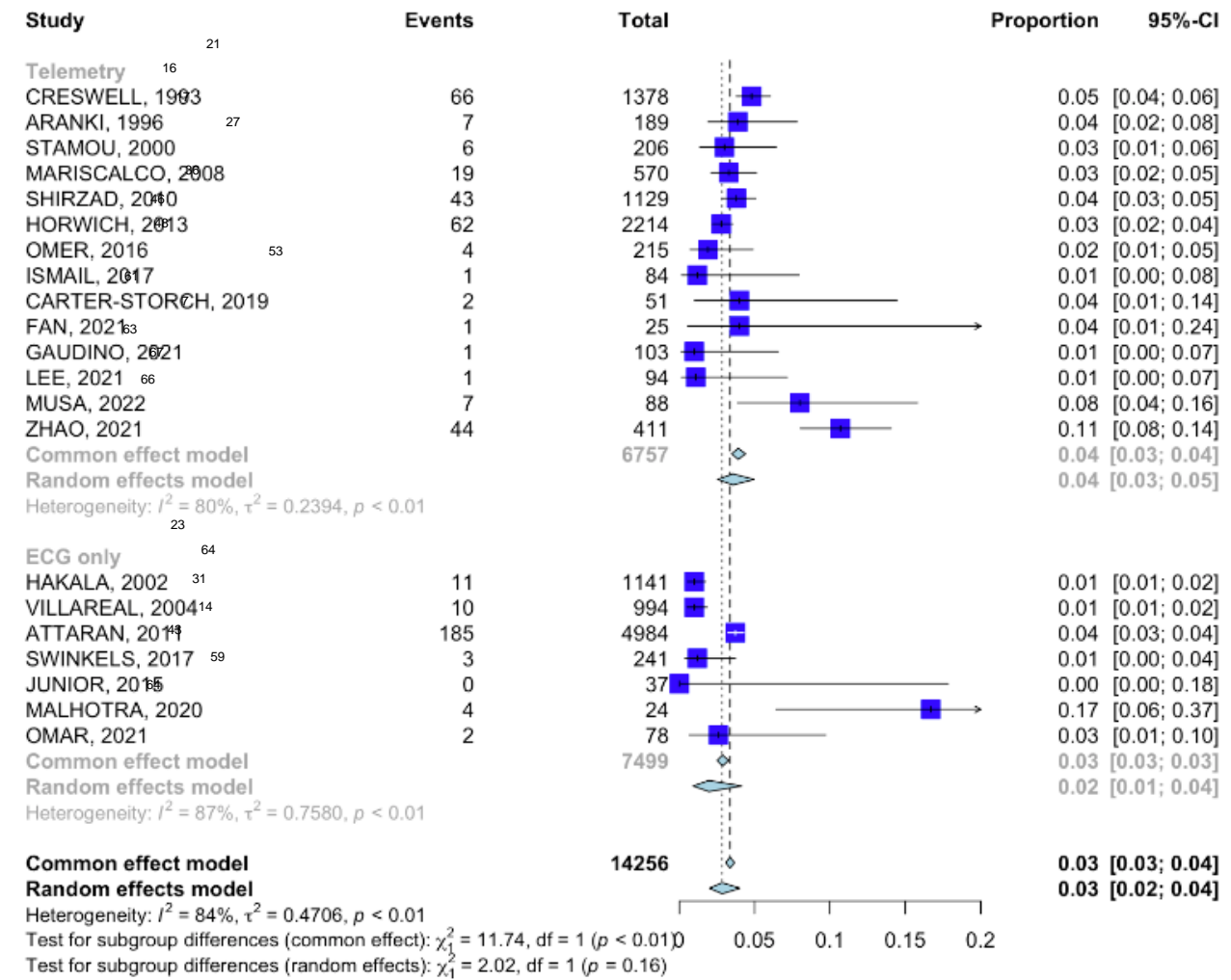


**Figure S3.** Comparison of mortality in postoperative atrial fibrillation patients by assessment method. **A)** Continuous telemetry vs telemetry plus daily ECG group, P=0.29. *CI: confidence interval; ECG: electrocardiogram.*



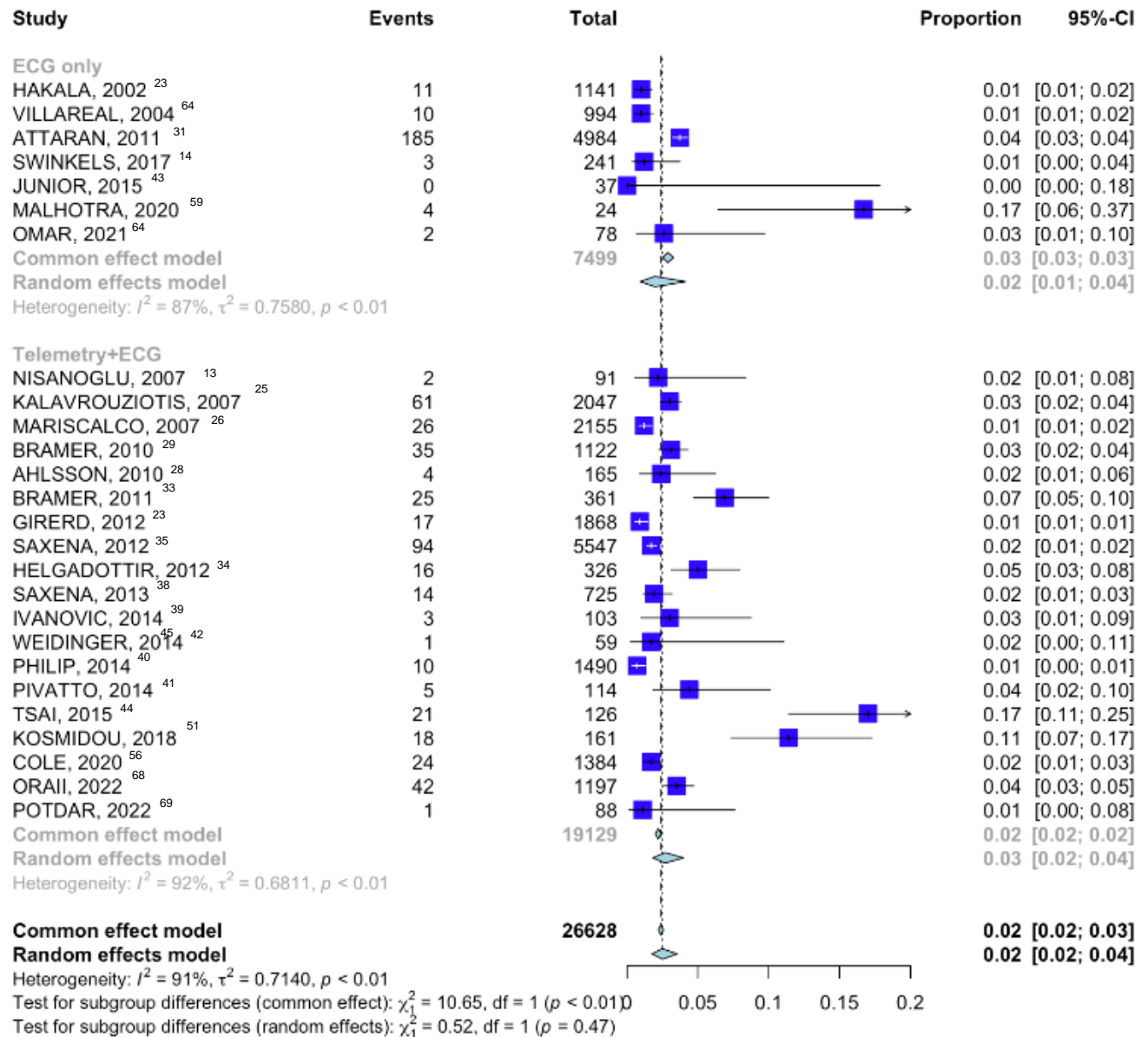
**Figure S3, continued.**

**B) Continuous telemetry vs daily ECG only, P=0.16. CI: confidence interval; ECG: electrocardiogram.**

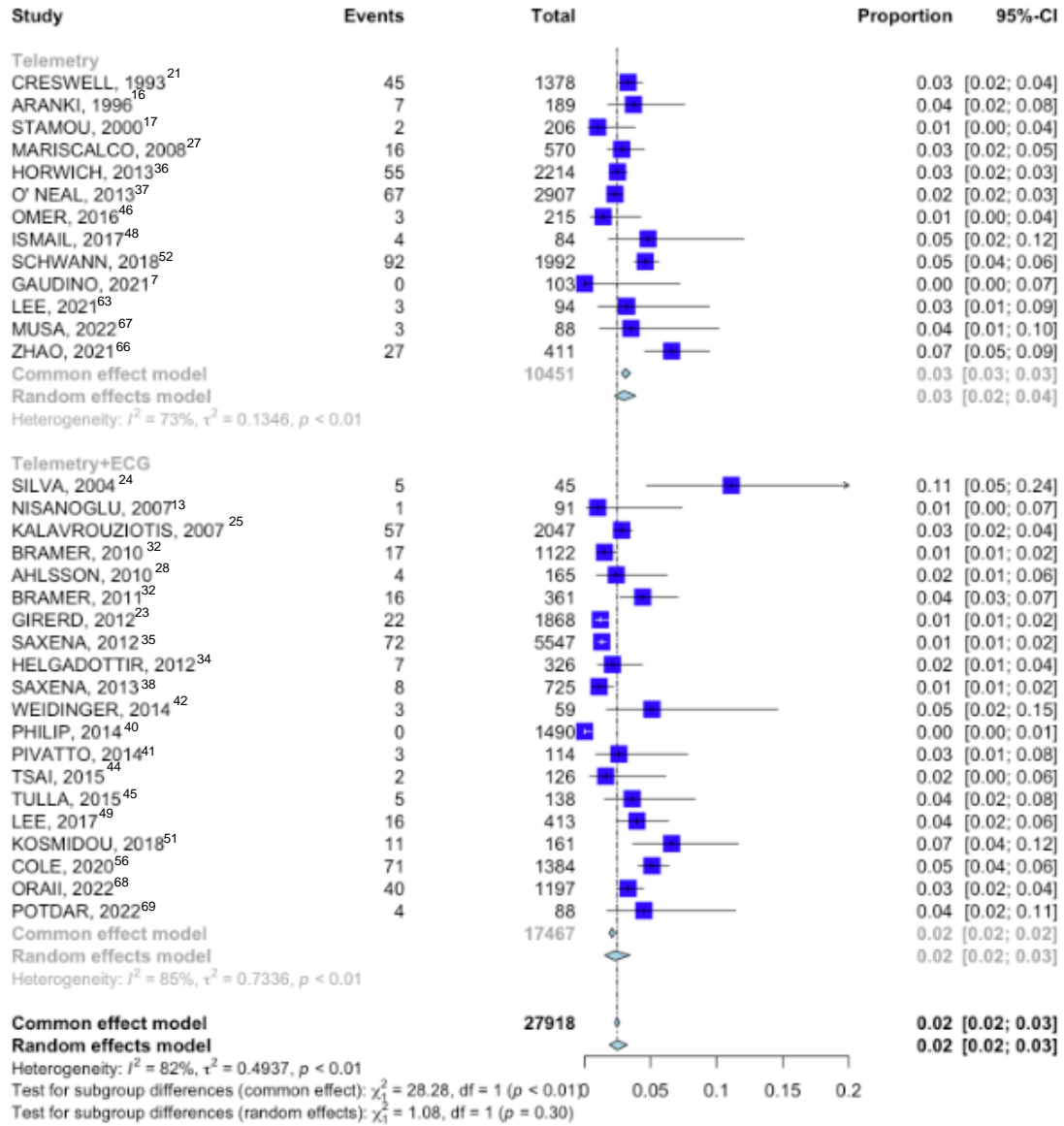


**Figure S3, continued.**

C) Telemetry plus daily ECG vs daily ECG only,  $P=0.47$ . *CI: confidence interval; ECG: electrocardiogram.*

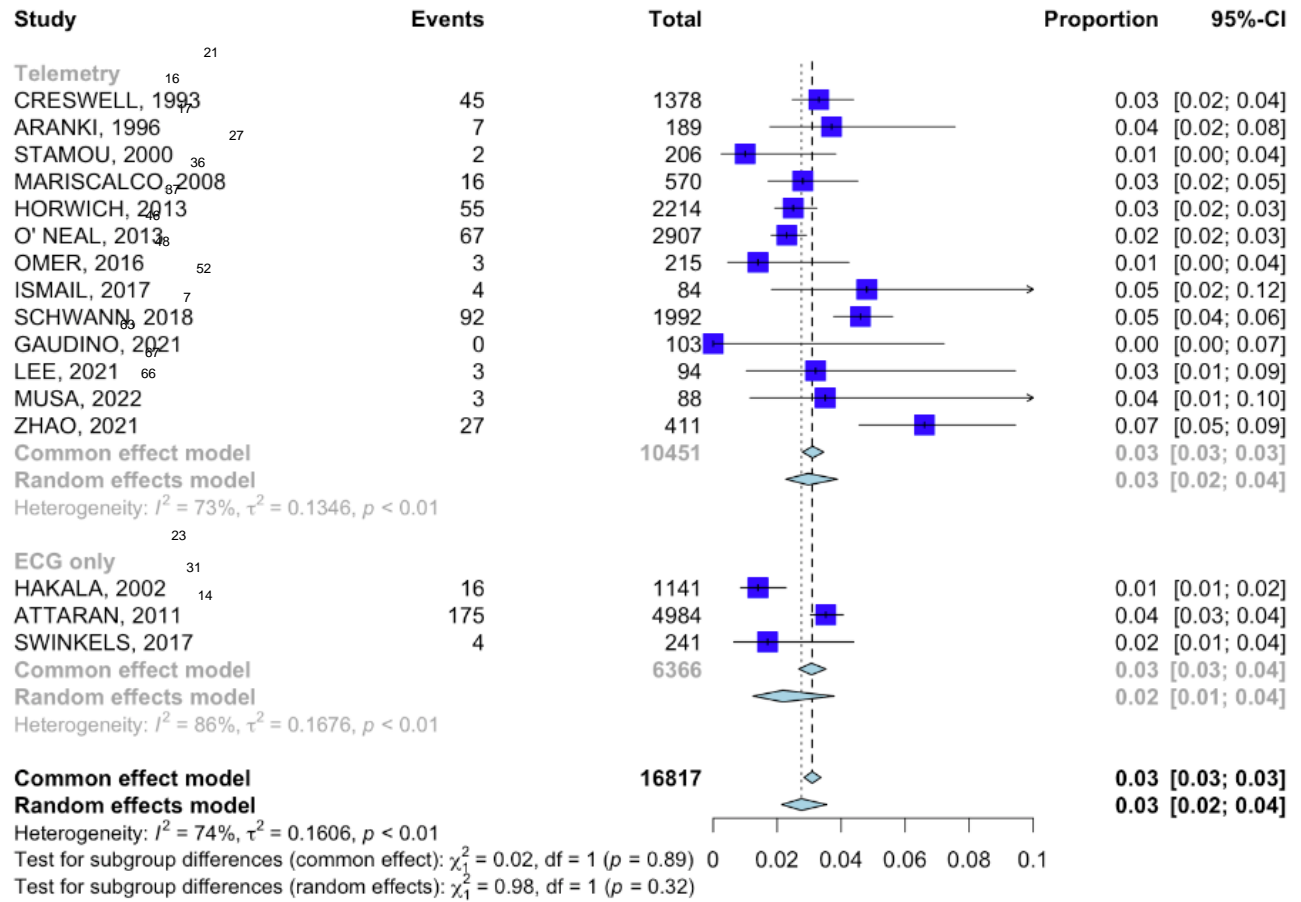


**Figure S4.** Comparison of stroke in postoperative atrial fibrillation patients by assessment method. **A)** Continuous telemetry vs telemetry plus daily ECG group, P=0.30. *CI: confidence interval; ECG: electrocardiogram.*



**Figure S4, continued.**

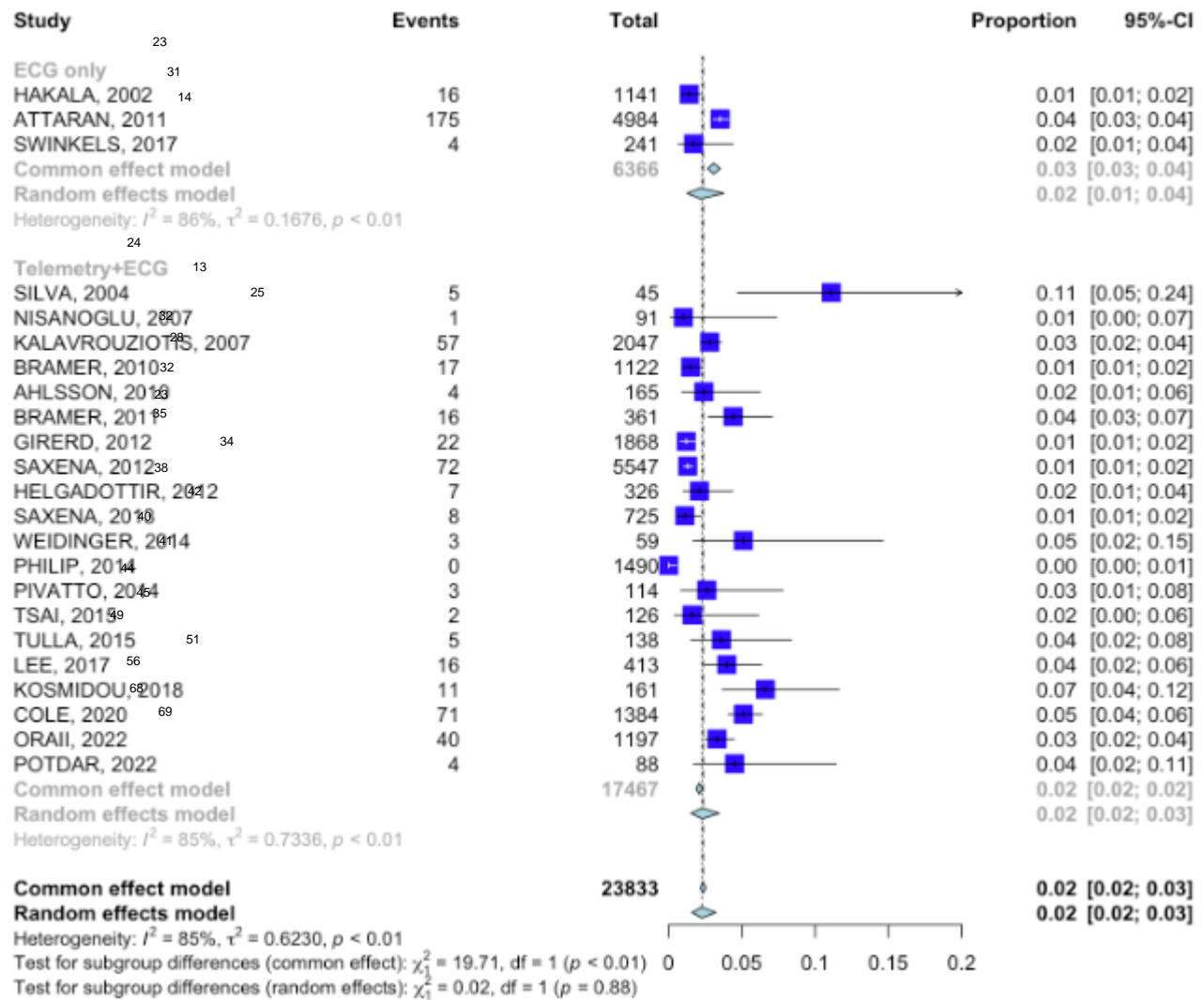
**B) Continuous telemetry vs daily ECG only, P=0.32. CI: confidence interval; ECG: electrocardiogram.**





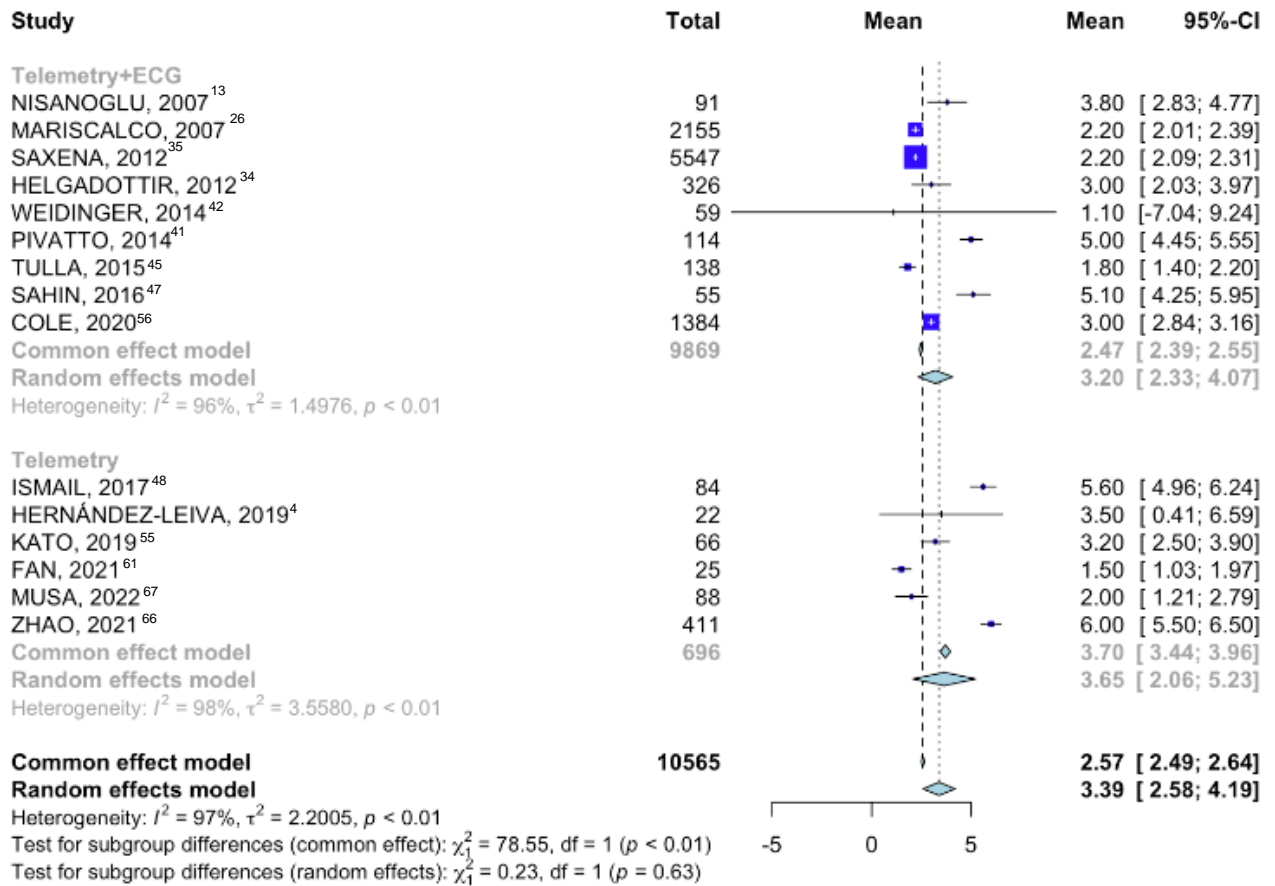
**Figure S4, continued.**

C) Telemetry plus daily ECG vs daily ECG only,  $P=0.88$ . *CI: confidence interval; ECG: electrocardiogram.*



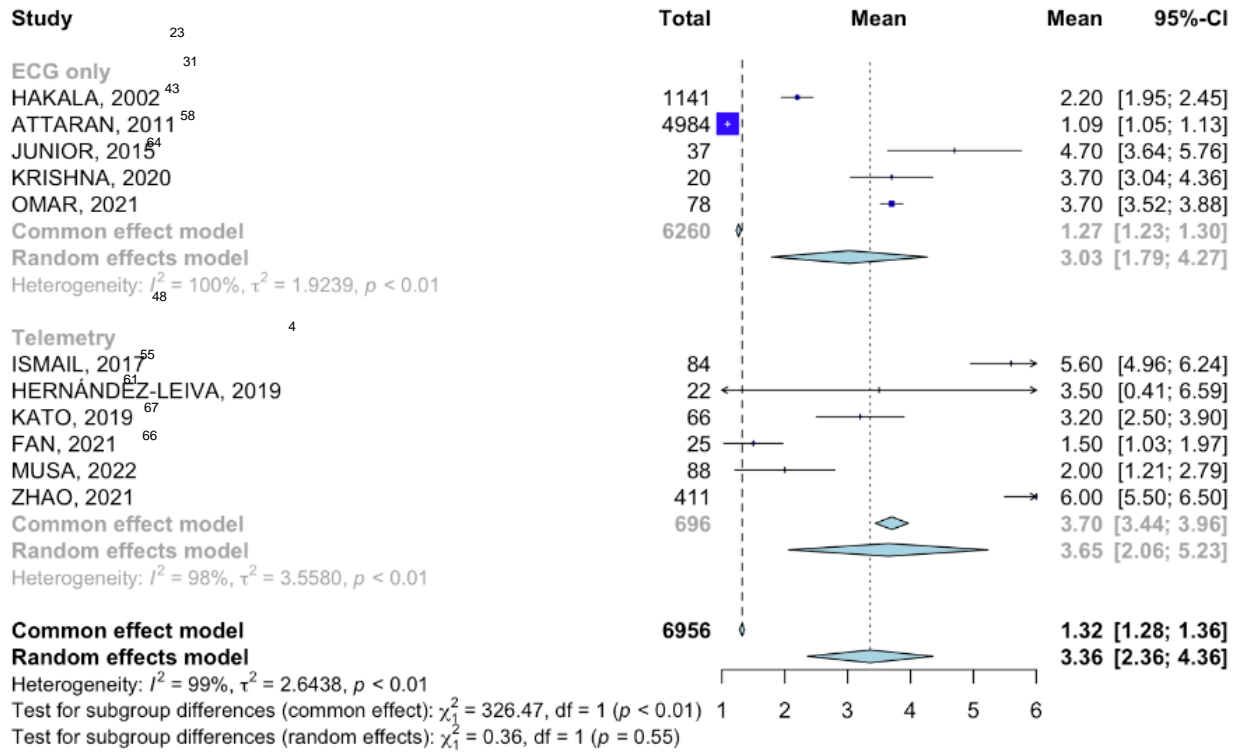
**Figure S5.** Comparison of intensive care unit length of stay in postoperative atrial fibrillation patients by assessment method.

**A)** Continuous telemetry vs telemetry plus daily ECG group,  $P=0.63$ . *CI: confidence interval; ECG: electrocardiogram.*



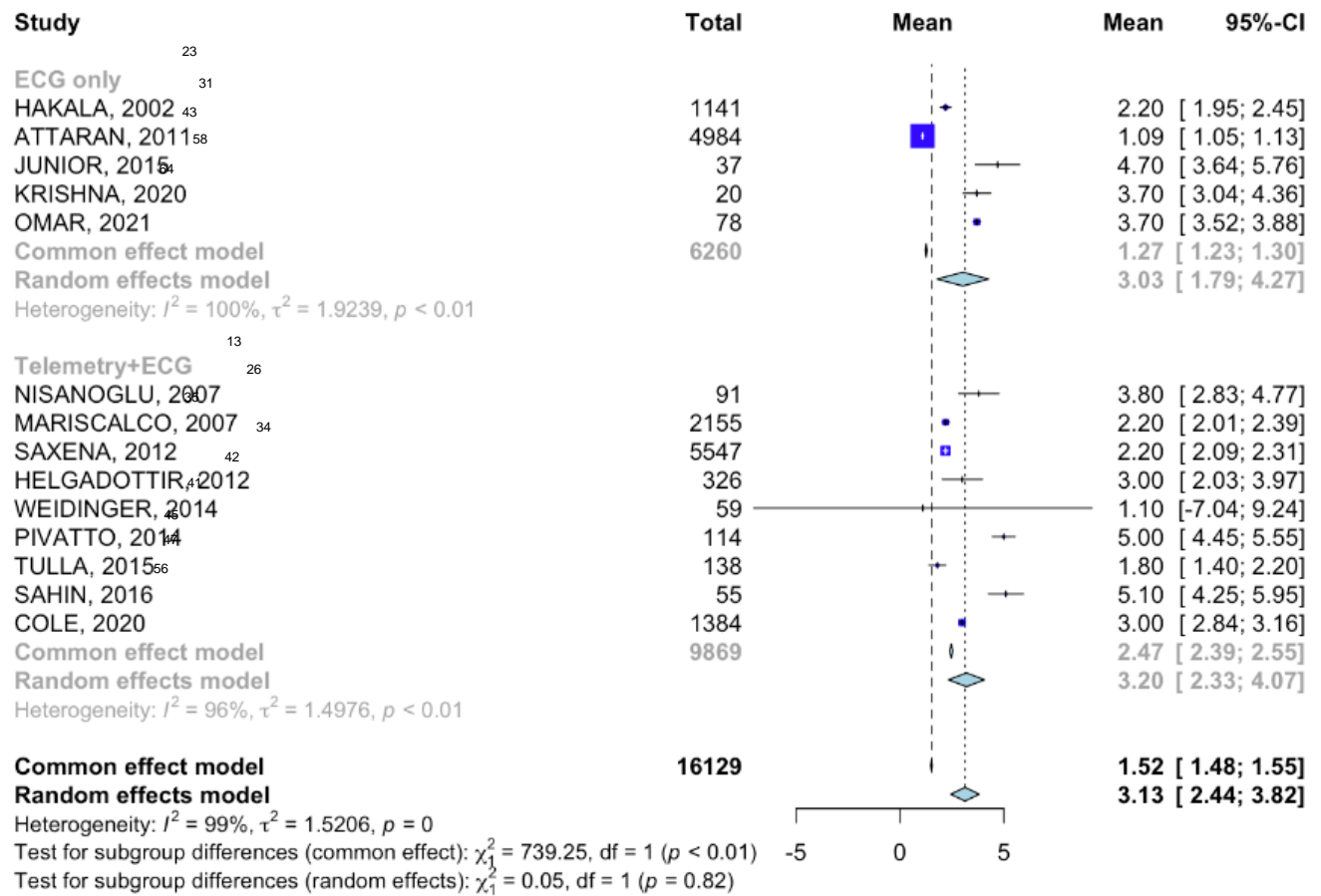
**Figure S5, continued.**

**B) Continuous telemetry vs daily ECG only, P=0.55. CI: confidence interval; ECG: electrocardiogram.**



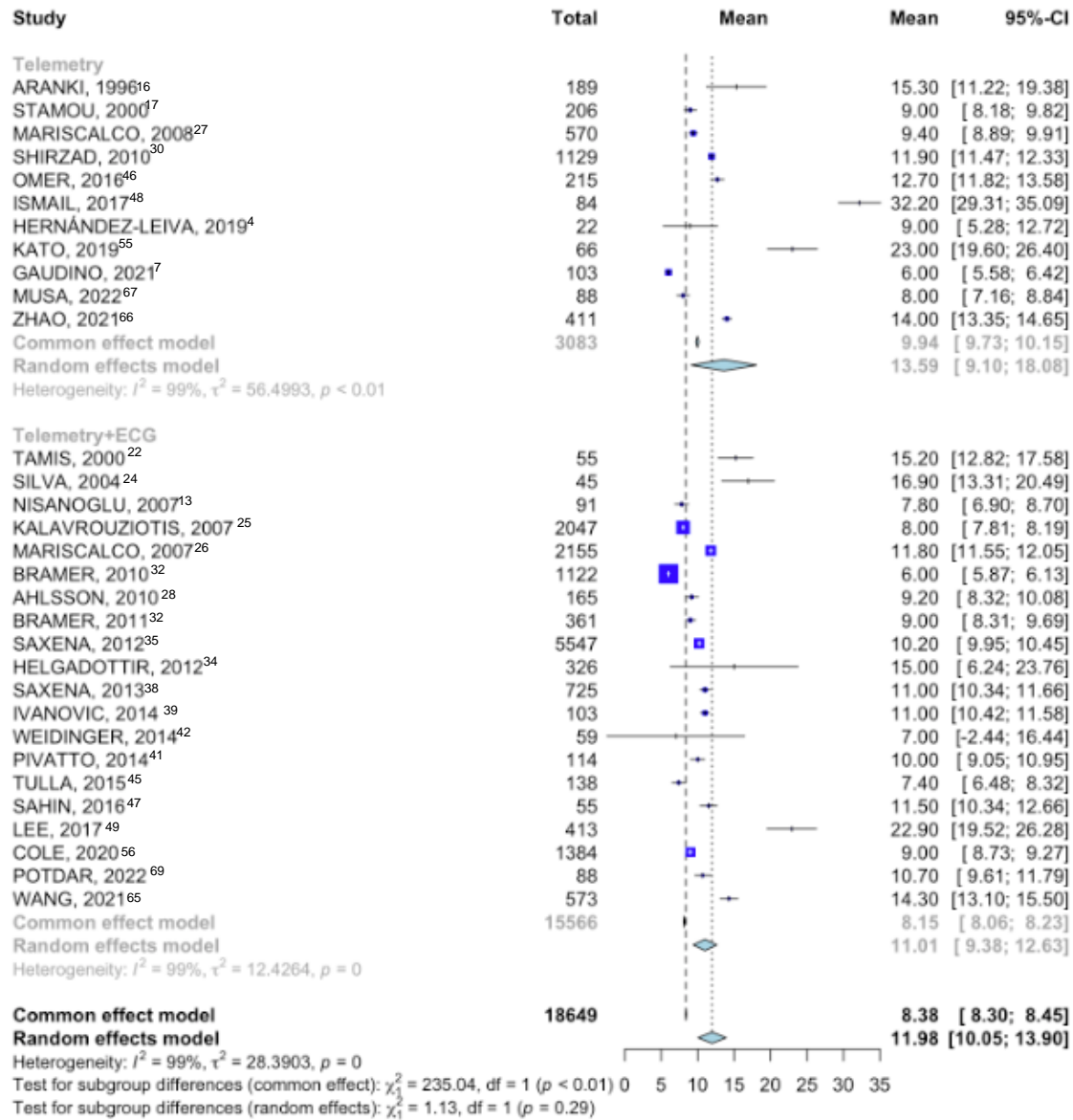
**Figure S5, continued.**

C) Telemetry plus daily ECG vs daily ECG only, P=0.82. CI: confidence interval; ECG: electrocardiogram.



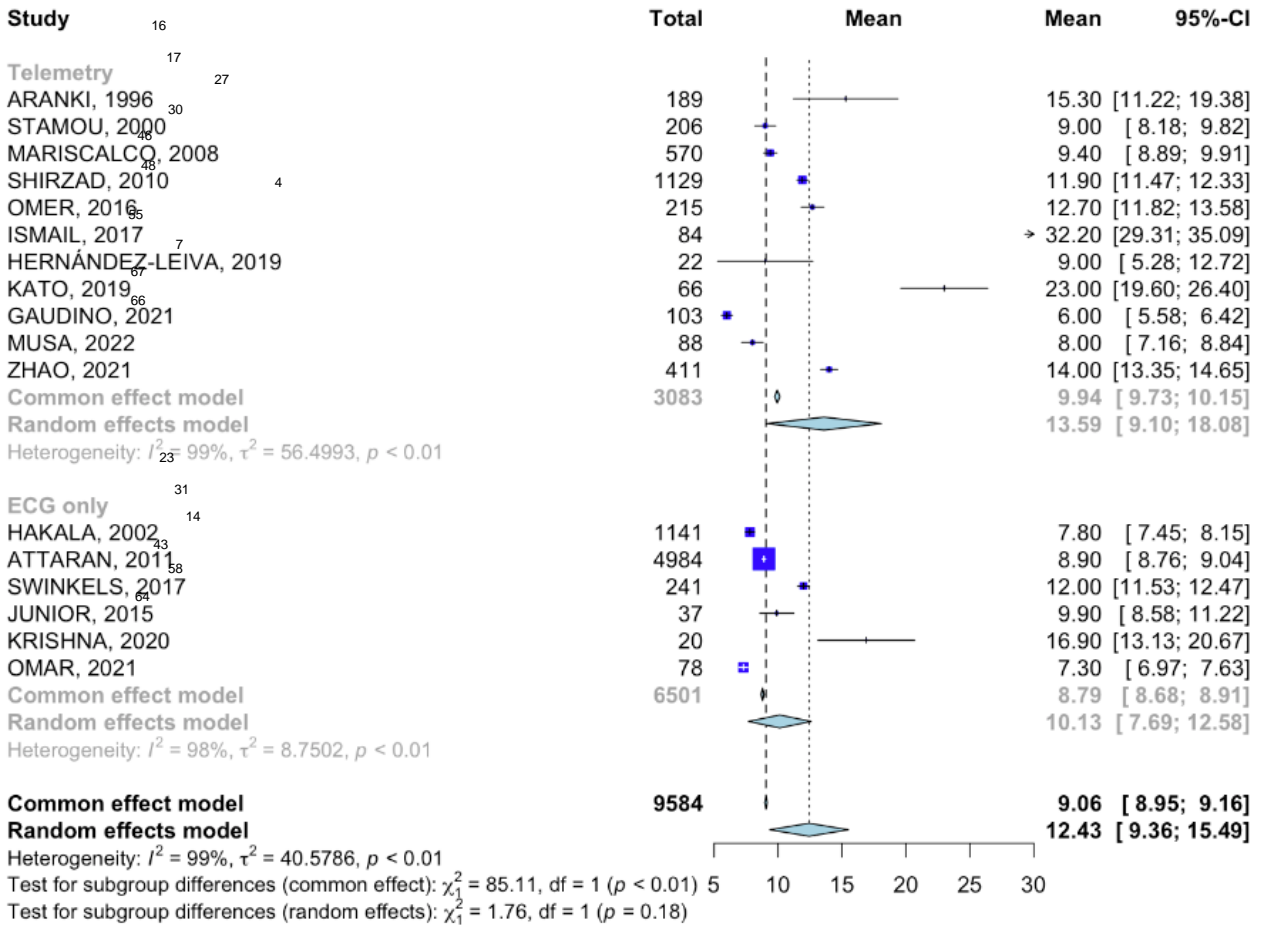
**Figure S6.** Comparison of postoperative length of stay in postoperative atrial fibrillation patients by assessment method.

A) Continuous telemetry vs telemetry plus daily ECG group,  $P=0.29$ . *CI: confidence interval; ECG: electrocardiogram.*



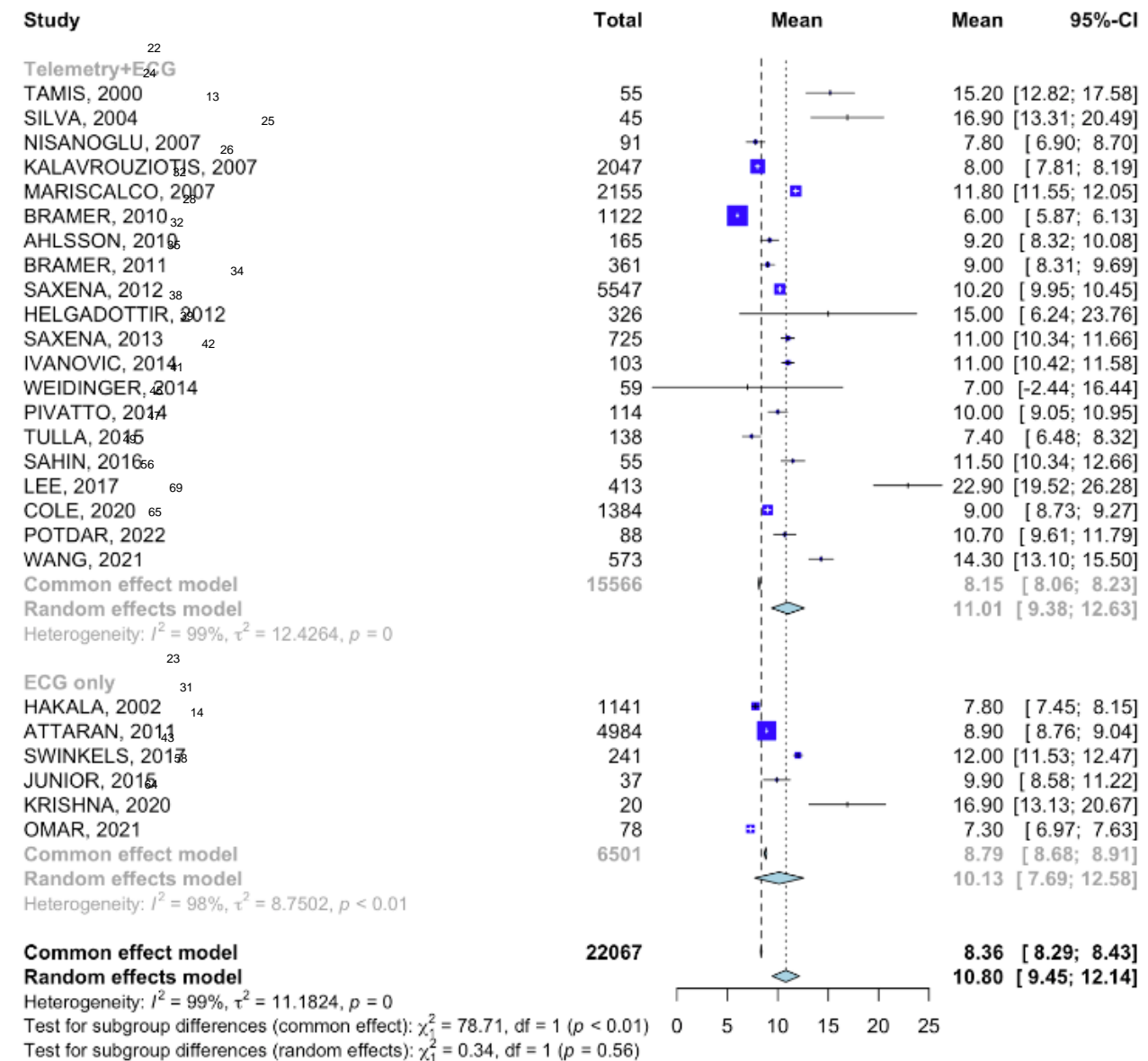
**Figure S6 continued.**

**B) Continuous telemetry vs daily ECG only, P=0.18. CI: confidence interval; ECG: electrocardiogram.**

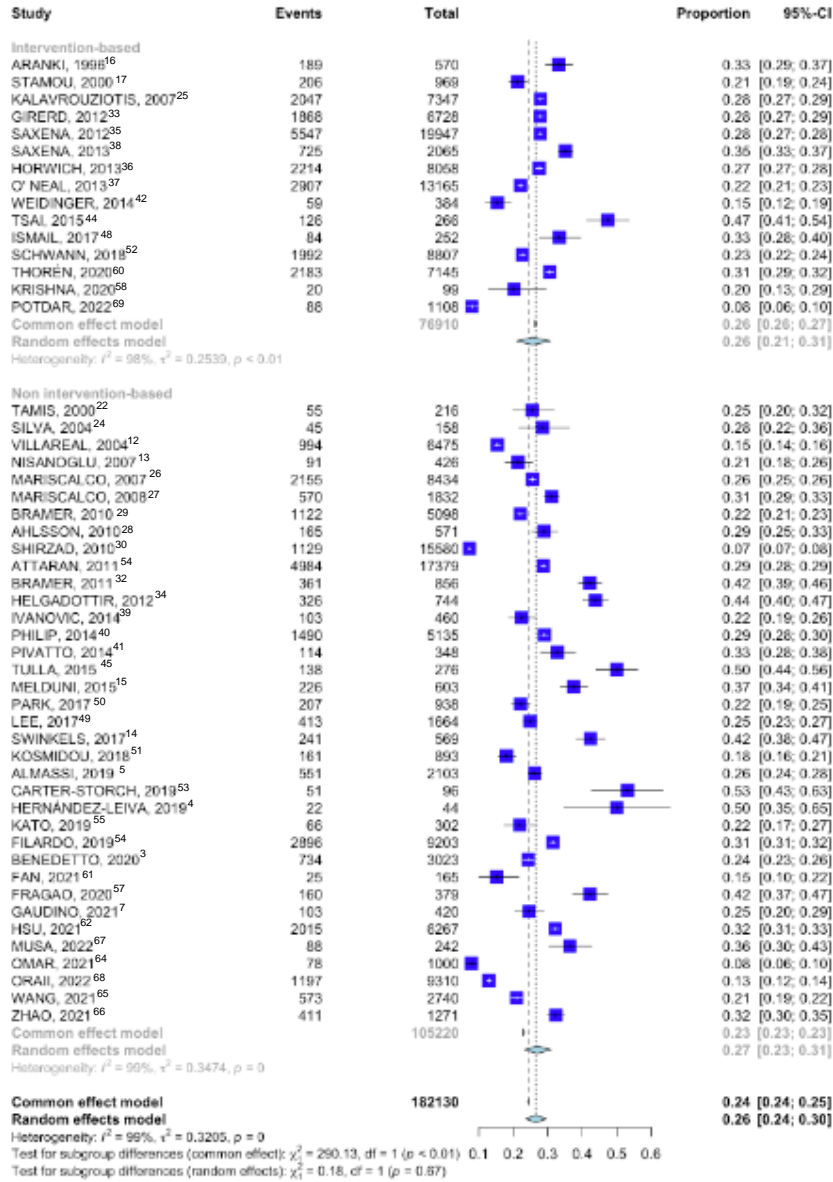


**Figure S6, continued.**

C) Telemetry plus daily ECG vs daily ECG only, P=0.56. CI: confidence interval; ECG: electrocardiogram.

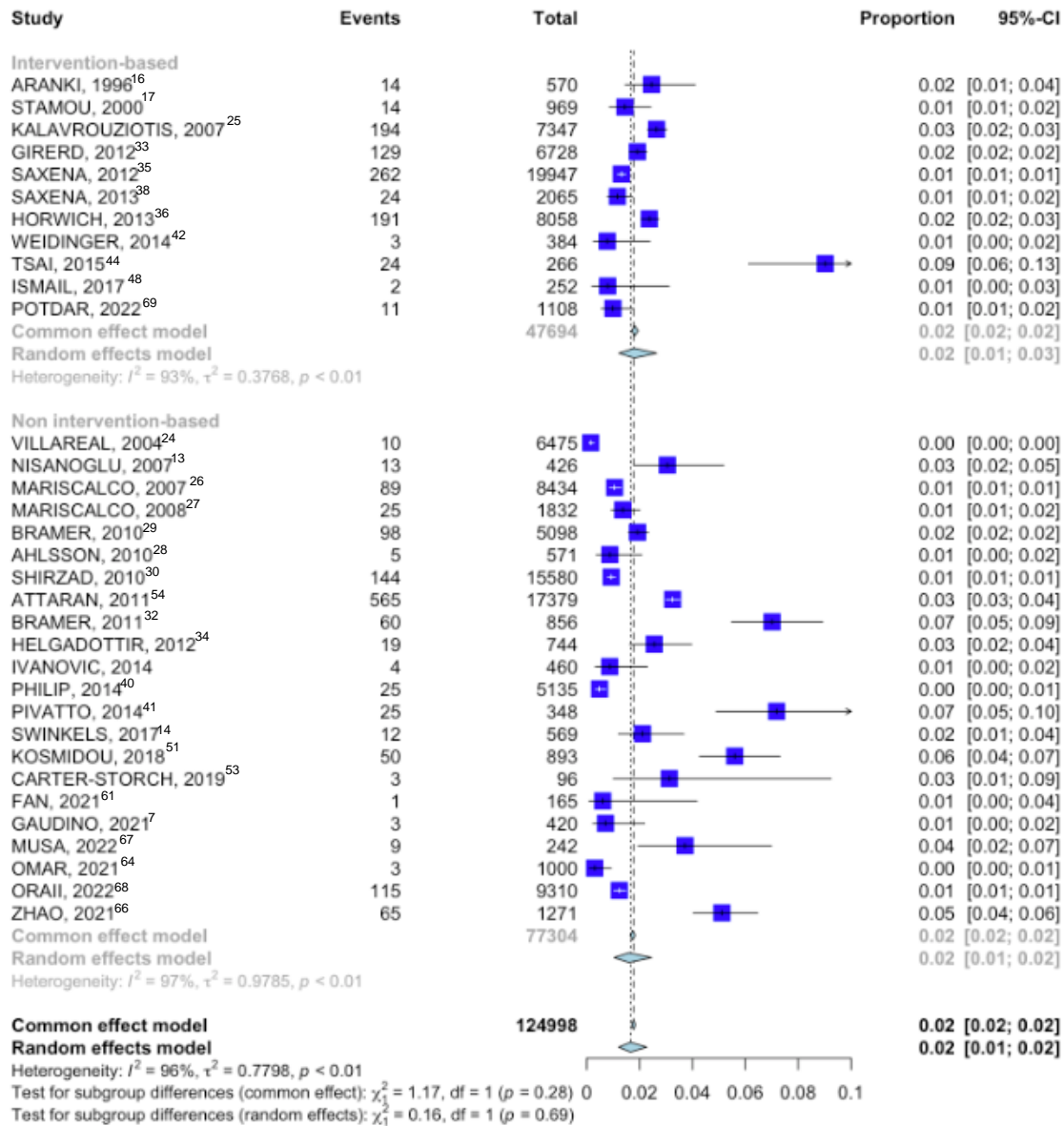


**Figure S7.** Comparison of postoperative atrial fibrillation incidence by definition category.  $P=0.67$ . *CI: confidence interval.*

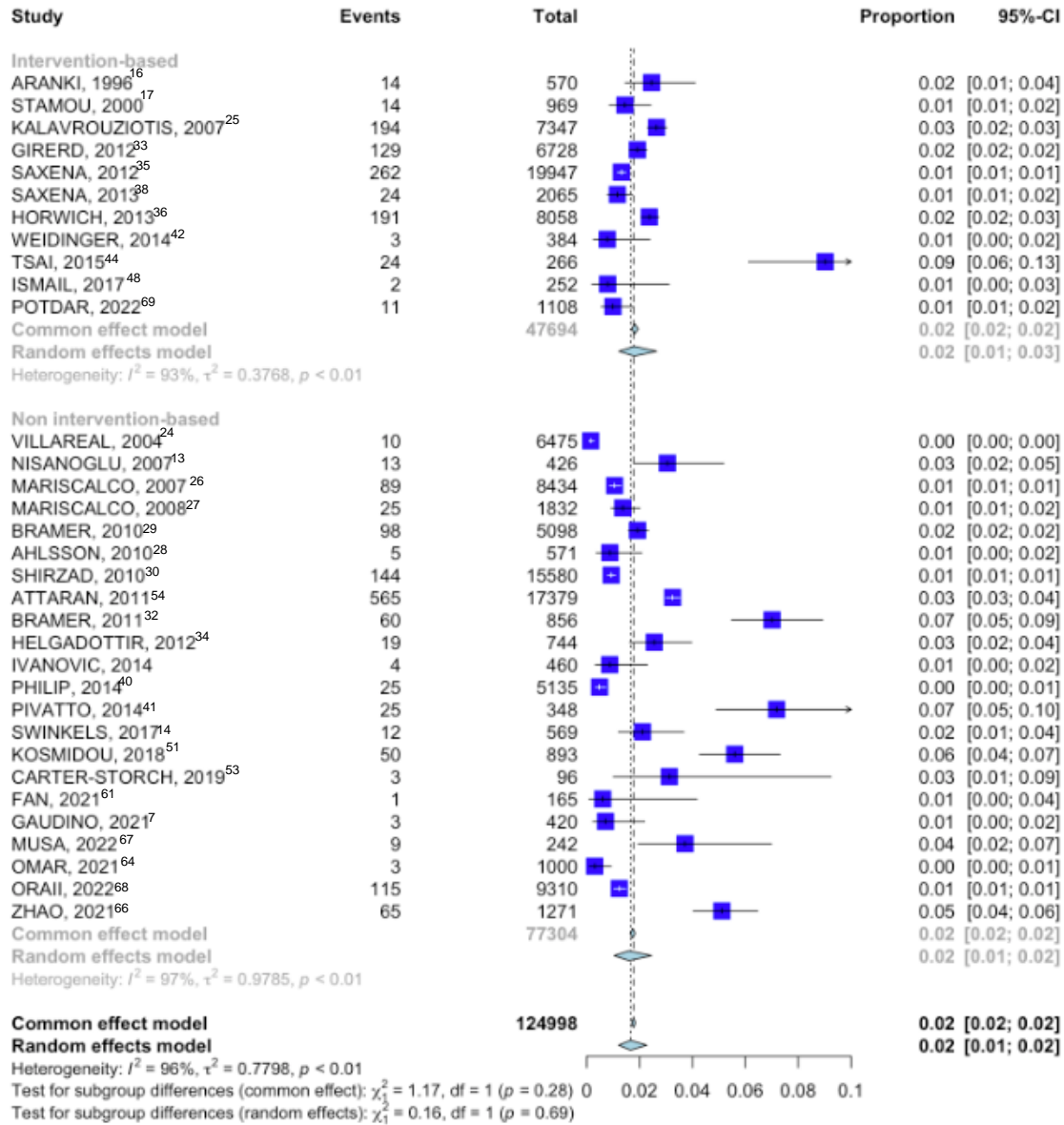




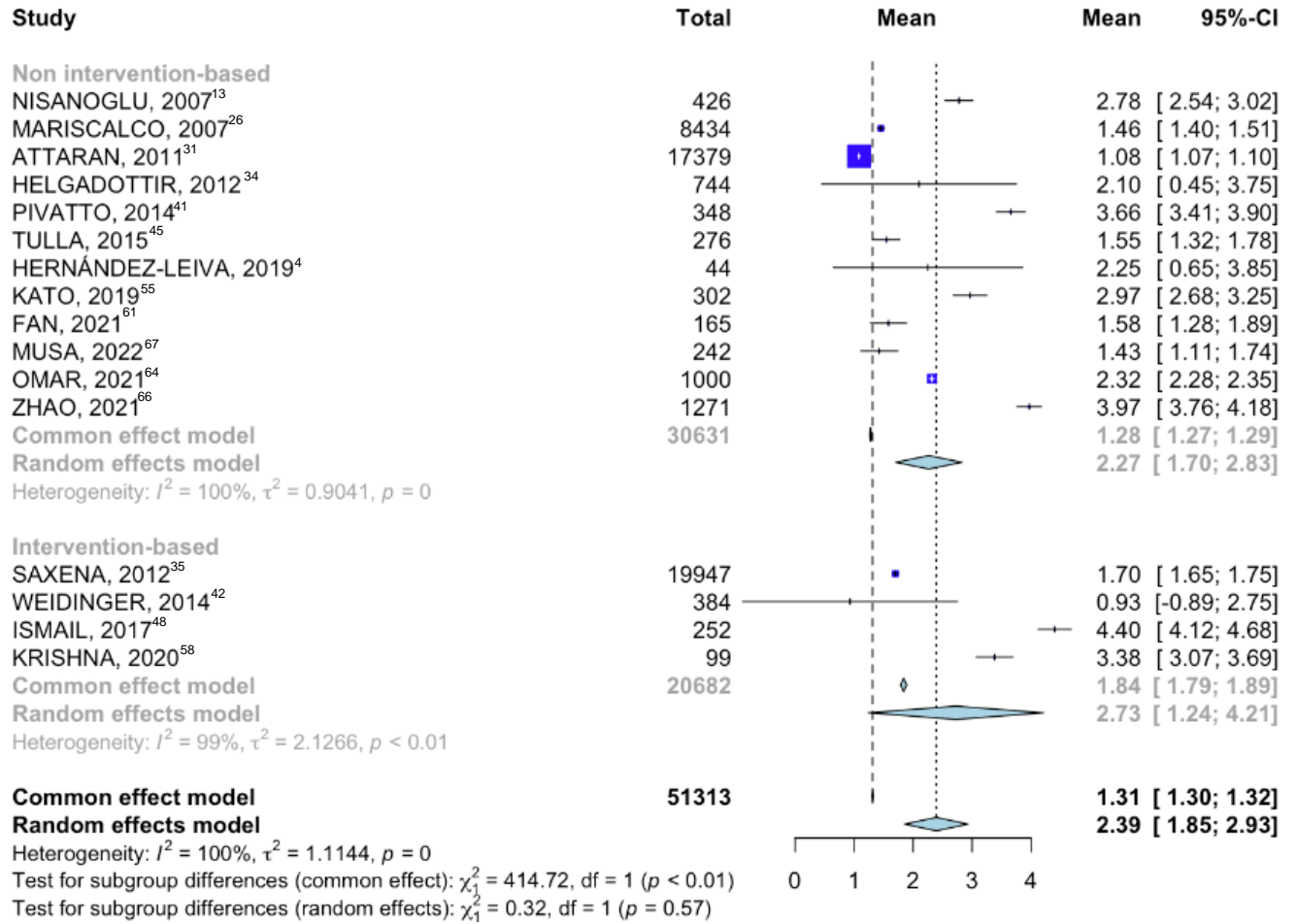
**Figure S8.** Comparison of mortality by definition category.  $P=0.69$ . *CI: confidence interval.*



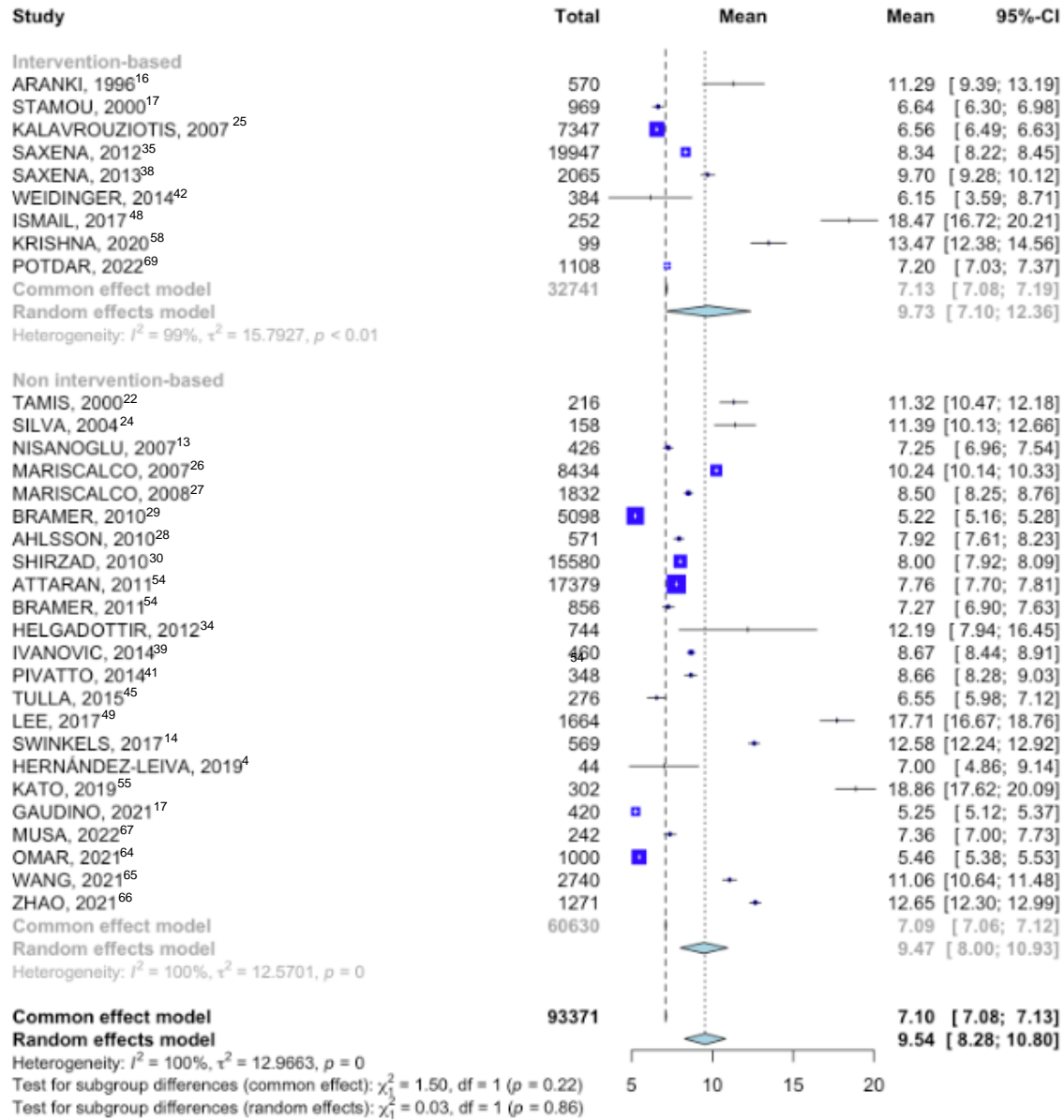
**Figure S9.** Comparison of stroke by definition category.  $P=0.43$ . *CI: confidence interval.*



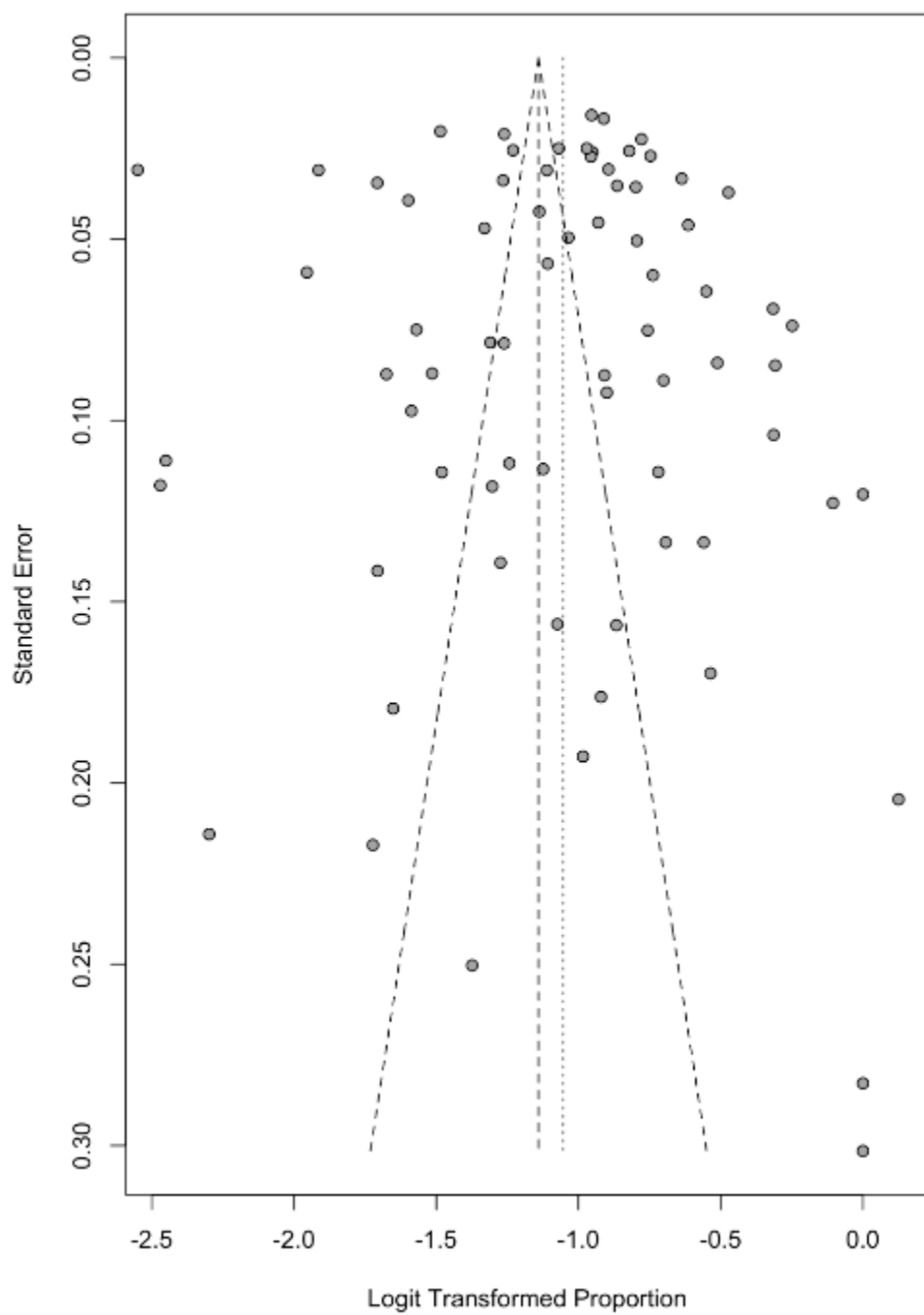
**Figure S10.** Comparison of intensive care unit length of stay by definition category. P=0.57. CI: confidence interval.



**Figure S11.** Comparison of postoperative length of stay by definition category.  $P=0.86$ . *CI: confidence interval.*

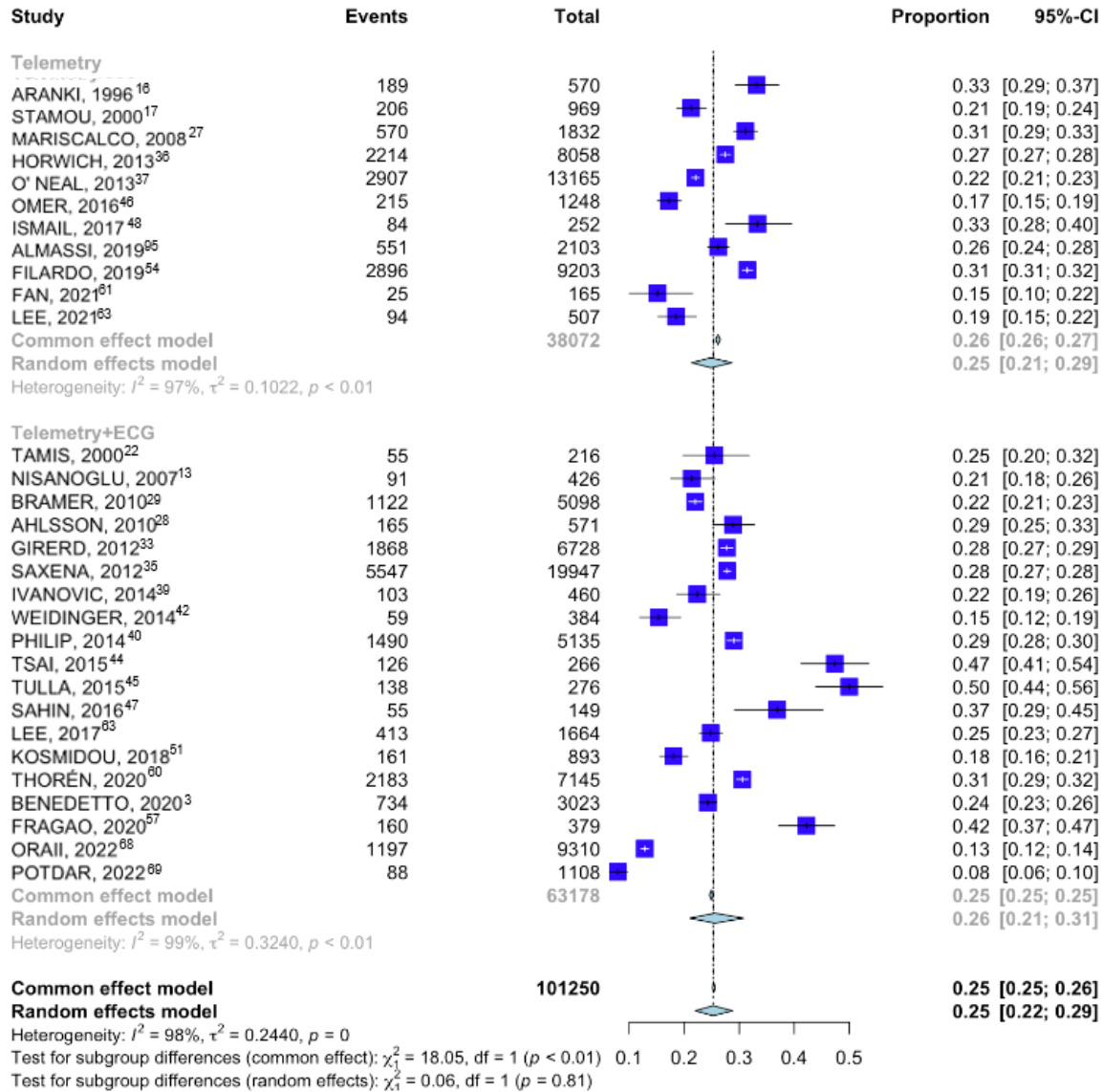


**Figure S12.** Funnel plot for the included studies. Egger's intercept test P-value = 0.86.



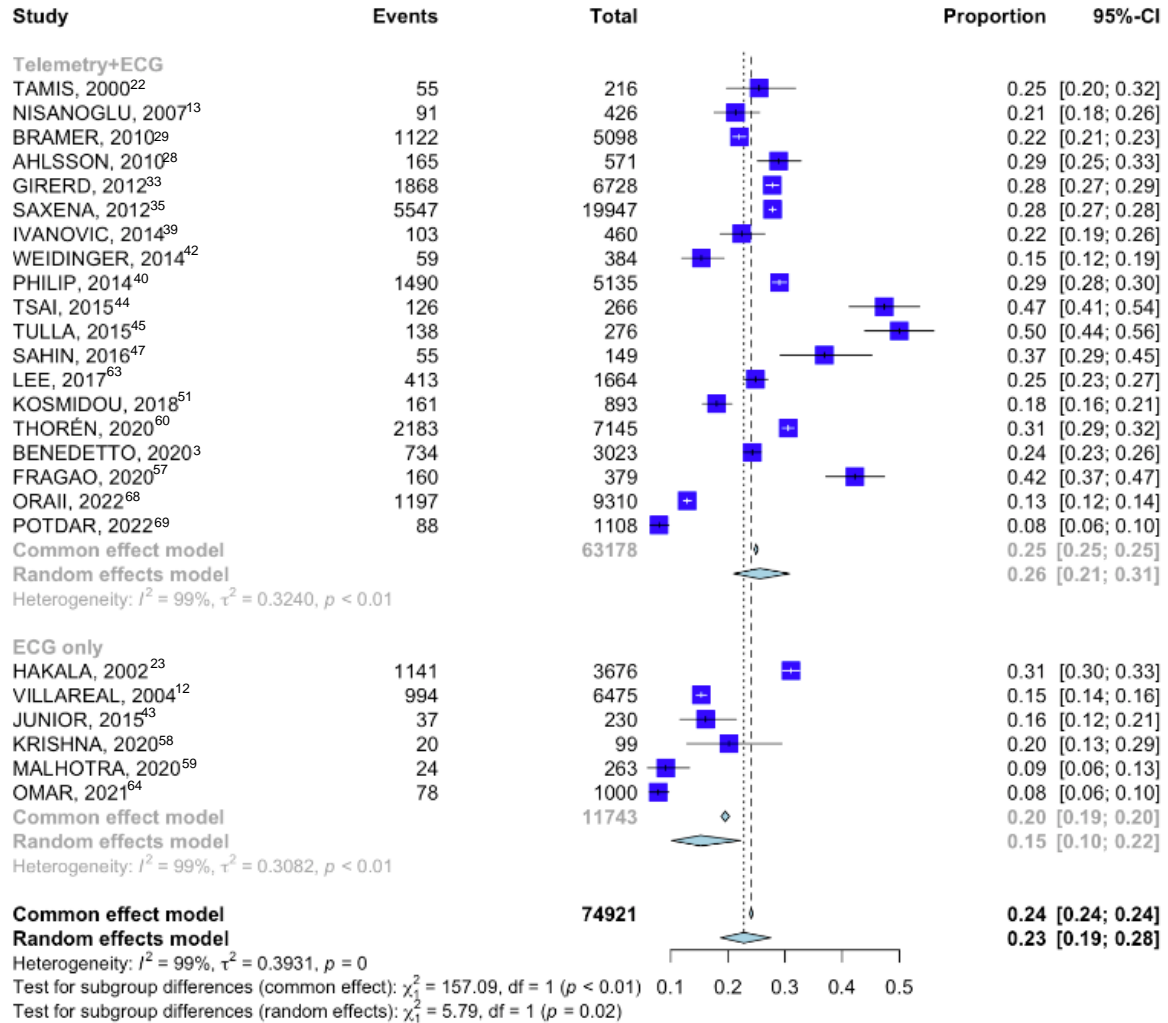
**Figure S13.** Comparison of postoperative atrial fibrillation incidence by assessment method in isolated coronary artery bypass grafting studies.

A) Continuous telemetry vs telemetry plus daily ECG group,  $P=0.81$ . *CI: confidence interval; ECG: electrocardiogram.*



**Figure S13, continued.**

**B) Continuous telemetry vs daily ECG only, P=0.02. CI: confidence interval; ECG: electrocardiogram.**



**Figure S13, continued.**

C) Telemetry plus daily ECG vs daily ECG only, P=0.02. CI: confidence interval; ECG: electrocardiogram.

