Figure S1. PRISMA diagram

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	6,7
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	8
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	9
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	Not done
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	9
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	9
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	Supplemental table S1
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	Figure 1
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	10
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	10
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	10, 11
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	Figure 2
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	11

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	Not done
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	Not done
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	12, Figure 1
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	Table 1
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	Table 1
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	12,13
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	12,13
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	Not done
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	Not done
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	13,14,15,16
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	16
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	16
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	2

Figure S2. Forest plot of trials that analyzed appropriate versus no appropriate therapy in patients with cardiac sarcoidosis and implantable cardioverter defibrillator. Impact of syncope, primary prevention (PP) versus secondary prevention (SP), left (LBBB) and right (RBBB) bundle branch block, and cardiac magnetic resonance (CMR).
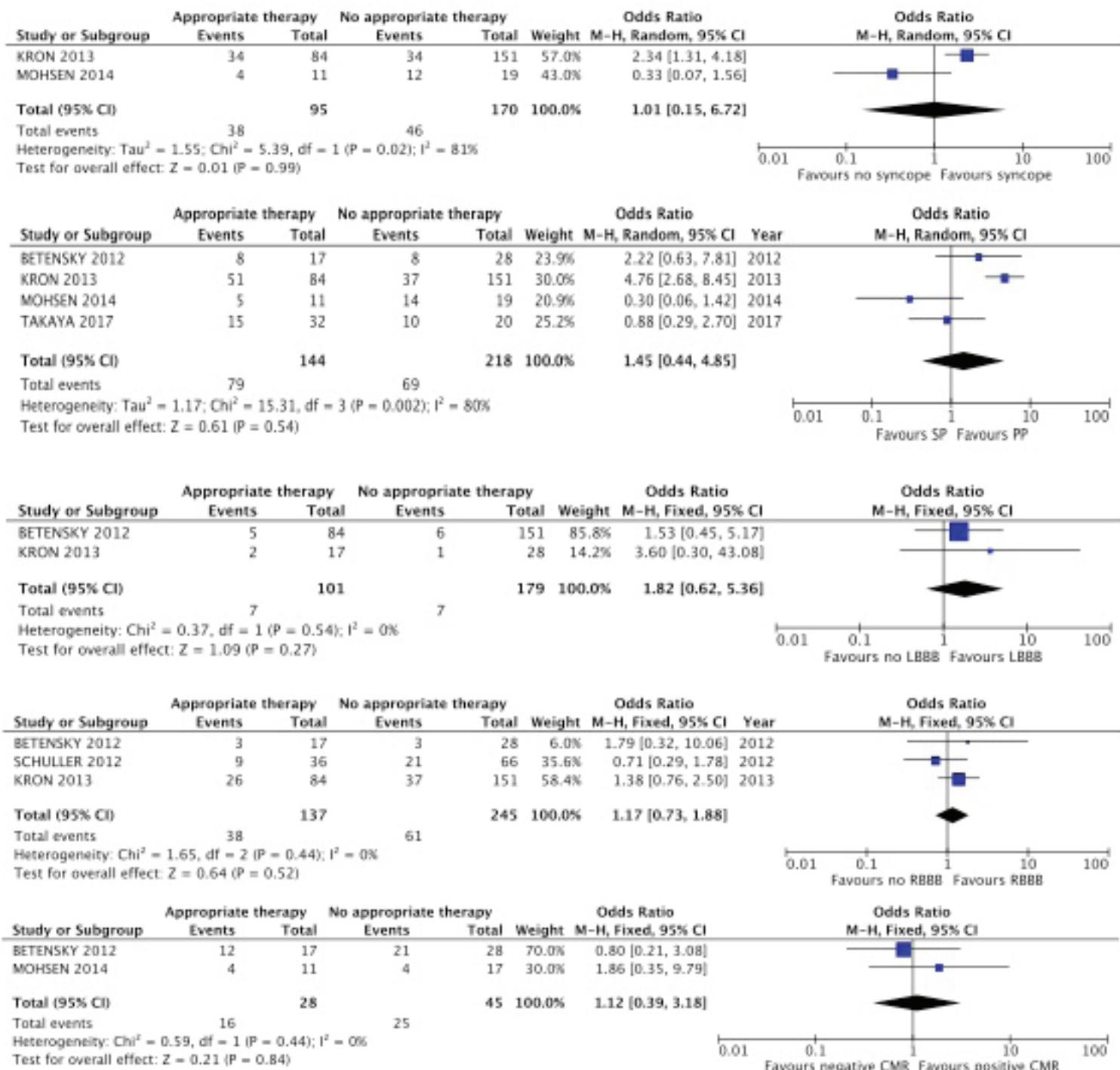
Study or Subgroup	Appropriate therapy Events	Total	No appropriate therapy Events	Total	Weight	Odds Ratio M-H, Random, 95% CI
KRON 2013	34	84	34	151	57.0%	2.34 [1.31, 4.18]
MOHSEN 2014	4	11	12	19	43.0%	0.33 [0.07, 1.56]
Total (95% CI)		95		170	100.0%	1.01 [0.15, 6.72]
Total events	38		46			

Heterogeneity: Tau^2 = 1.55; Chi^2 = 5.39, df = 1 (P = 0.02); I^2 = 81%
Test for overall effect: Z = 0.01 (P = 0.99)

Odds Ratio M-H, Random, 95% CI — 0.01 0.1 1 10 100 — Favours no syncope Favours syncope

Study or Subgroup	Appropriate therapy Events	Total	No appropriate therapy Events	Total	Weight	Odds Ratio M-H, Random, 95% CI	Year
BETENSKY 2012	8	17	8	28	23.9%	2.22 [0.63, 7.81]	2012
KRON 2013	51	84	37	151	30.0%	4.76 [2.68, 8.45]	2013
MOHSEN 2014	5	11	14	19	20.9%	0.30 [0.06, 1.42]	2014
TAKAYA 2017	15	32	10	20	25.2%	0.88 [0.29, 2.70]	2017
Total (95% CI)		144		218	100.0%	1.45 [0.44, 4.85]	
Total events	79		69				

Heterogeneity: Tau^2 = 1.17; Chi^2 = 15.31, df = 3 (P = 0.002); I^2 = 80%
Test for overall effect: Z = 0.61 (P = 0.54)

Odds Ratio M-H, Random, 95% CI — 0.01 0.1 1 10 100 — Favours SP Favours PP

Study or Subgroup	Appropriate therapy Events	Total	No appropriate therapy Events	Total	Weight	Odds Ratio M-H, Fixed, 95% CI
BETENSKY 2012	5	84	6	151	85.8%	1.53 [0.45, 5.17]
KRON 2013	2	17	1	28	14.2%	3.60 [0.30, 43.08]
Total (95% CI)		101		179	100.0%	1.82 [0.62, 5.36]
Total events	7		7			

Heterogeneity: Chi^2 = 0.37, df = 1 (P = 0.54); I^2 = 0%
Test for overall effect: Z = 1.09 (P = 0.27)

Odds Ratio M-H, Fixed, 95% CI — 0.01 0.1 1 10 100 — Favours no LBBB Favours LBBB

Study or Subgroup	Appropriate therapy Events	Total	No appropriate therapy Events	Total	Weight	Odds Ratio M-H, Fixed, 95% CI	Year
BETENSKY 2012	3	17	3	28	6.0%	1.79 [0.32, 10.06]	2012
SCHULLER 2012	9	36	21	66	35.6%	0.71 [0.29, 1.78]	2012
KRON 2013	26	84	37	151	58.4%	1.38 [0.76, 2.50]	2013
Total (95% CI)		137		245	100.0%	1.17 [0.73, 1.88]	
Total events	38		61				

Heterogeneity: Chi^2 = 1.65, df = 2 (P = 0.44); I^2 = 0%
Test for overall effect: Z = 0.64 (P = 0.52)

Odds Ratio M-H, Fixed, 95% CI — 0.01 0.1 1 10 100 — Favours no RBBB Favours RBBB

Study or Subgroup	Appropriate therapy Events	Total	No appropriate therapy Events	Total	Weight	Odds Ratio M-H, Fixed, 95% CI
BETENSKY 2012	12	17	21	28	70.0%	0.80 [0.21, 3.08]
MOHSEN 2014	4	11	4	17	30.0%	1.86 [0.35, 9.79]
Total (95% CI)		28		45	100.0%	1.12 [0.39, 3.18]
Total events	16		25			

Heterogeneity: Chi^2 = 0.59, df = 1 (P = 0.44); I^2 = 0%
Test for overall effect: Z = 0.21 (P = 0.84)

Odds Ratio M-H, Fixed, 95% CI — 0.01 0.1 1 10 100 — Favours negative CMR Favours positive CMR

Table S1. Search strategy

The specific search strategy for PubMed was: (("Sarcoidosis"[Mesh]) OR ("Sarcoidosis"[all fields]) OR ("Cardiac sarcoidosis"[all fields])) AND (("Defibrillators, Implantable"[Mesh]) OR ("Defibrillators, Implantable"[all fields]) OR ("Death, Sudden, Cardiac"[Mesh]) OR ("Death, Sudden, Cardiac"[all fields]) OR ("Tachycardia, Ventricular"[Mesh]) OR ("Tachycardia, Ventricular"[all fields]) OR ("Ventricular Fibrillation"[Mesh]) OR ("Ventricular Fibrillation"[all fields]) OR ("Arrhythmias, Cardiac"[Mesh]) OR ("Arrhythmias, Cardiac"[all fields]))

The specific search strategy for Web of Science was: TS=((sarcoidosis OR cardiac sarcoidosis) AND (implantable cardiac defibrillators OR cardiac sudden death OR ventricular tachychardia OR ventricular fibrillation OR cardiac arrhythmias)) OR TI=((sarcoidosis OR cardiac sarcoidosis) AND (implantable cardiac defibrillators OR cardiac sudden death OR ventricular tachychardia OR ventricular fibrillation OR cardiac arrhythmias))