Supplementary Table 1. PICOTS criteria for screening of studies

PICOTS domain	**Description**
Population	Patients with chronic heart failure and a HF hospitalization or equivalent in the past twelve months.
Intervention	Hemodynamically guided remote monitoring of pulmonary artery pressures using the CardioMEMS HF system.
Comparator	A separate control group without (use of) remote pulmonary artery pressure monitoring.
Outcome	(1) HF events (hospitalization or urgent HF visits with need for intravenous diuretic therapy); (2) Mortality; (3) HF events and mortality as combined endpoint.
Study design	Randomized Controlled Trials including at least 100 patients.

HF: Heart Failure.

Supplementary Table 2. Random- and fixed effects models for meta-analyses of clinical endpoints

Analysis	**Random effects model**			**Fixed effects model**		
	HR	**95%CI**	**p-value**	**HR**	**95%CI**	**p-value**
Total HF hospitalizations, urgent visits, and all−cause mortality	0.75	0.61-0.91	0.0037	0.76	0.68-0.85	<0.0001
Total HF hospitalizations and all−cause mortality	0.74	0.62-0.89	0.0010	0.75	0.67-0.84	<0.0001
Total HF hospitalizations and urgent visits	0.71	0.57-0.88	0.0018	0.73	0.64-0.82	<0.0001
Total HF hospitalizations	0.70	0.58-0.86	0.0005	0.72	0.63-0.81	<0.0001
All-cause mortality	0.92	0.73-1.16	0.4952	0.92	0.73-1.16	0.4952

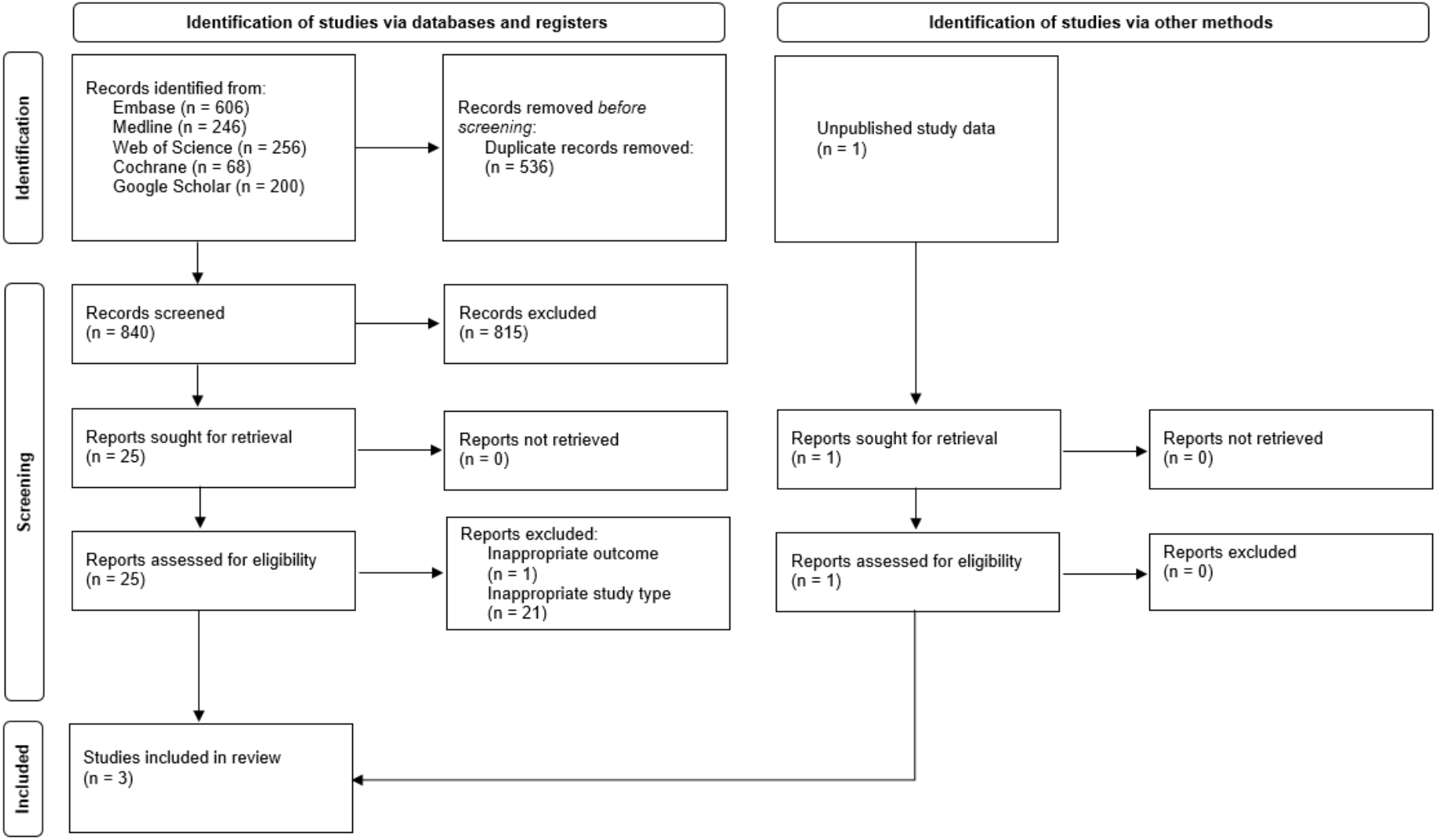
HF: Heart Failure; HR: Hazard Ratio; 95% CI: 95 Confidence Interval.

Supplementary Table 3. Random effects models for meta-analyses of subgroups including interaction tests (total heart failure hospitalizations, urgent visits, all-cause mortality)

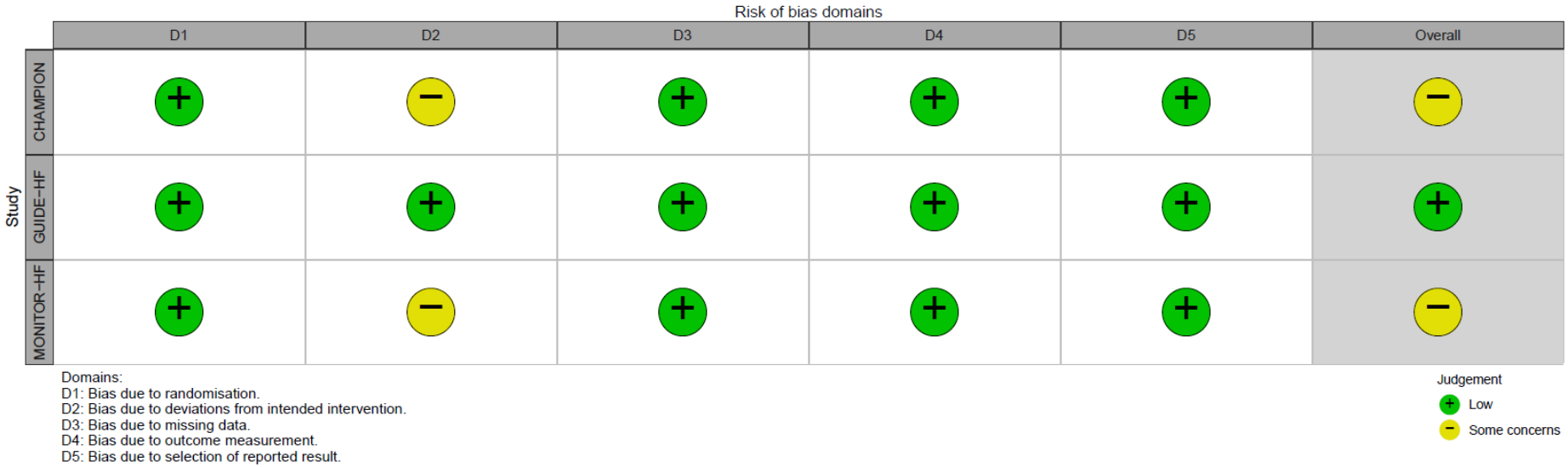
			Random effects model		
Variable	**Subgroup analysis**	**N, %***	**HR**	**95% CI**	**P interaction**
Age	Age ≥71	656 (49)	0.76	0.60-0.97	0.65
	Age <71	692 (51)	0.80	0.51-1.25	
Sex	Women	611 (32)	0.77	0.49-1.21	0.89
	Men	1287 (68)	0.73	0.47-1.14	
Etiology	Ischemic	571 (45)	0.84	0.66-1.07	0.52
	Non-ischemic	688 (55)	0.64	0.28-1.46	
Device	Device (ICD or CRT)	765 (57)	0.78	0.63-0.98	0.68
	No device (ICD or CRT)	583 (43)	0.83	0.58-1.18	
LVEF	LVEF ≥50%	609 (67)	0.55	0.26-1.15	0.84
	LVEF <50%	297 (33)	0.64	0.44-0.94	
	LVEF >40%	675 (34)	0.69	0.47-1.00	0.65
	LVEF ≤40%	1248 (66)	0.76	0.63-0.91	
NYHA	NYHA II	296 (16)	0.72	0.49-1.05	0.15
	NYHA III	1548 (82)	0.73	0.60-0.88	
	NYHA IV	54 (3)	1.68	0.88-3.20	

ICD: Implantable Cardioverter defibrillator; CRT: Cardiac Reschynchronization Therapy; LVEF: Left Ventricular Ejection Fraction; NYHA: New York Heart Association; *Percentage based upon patients and studies with available subgroup data; HR: Hazard Ratio; 95% CI: 95 Confidence Interval.

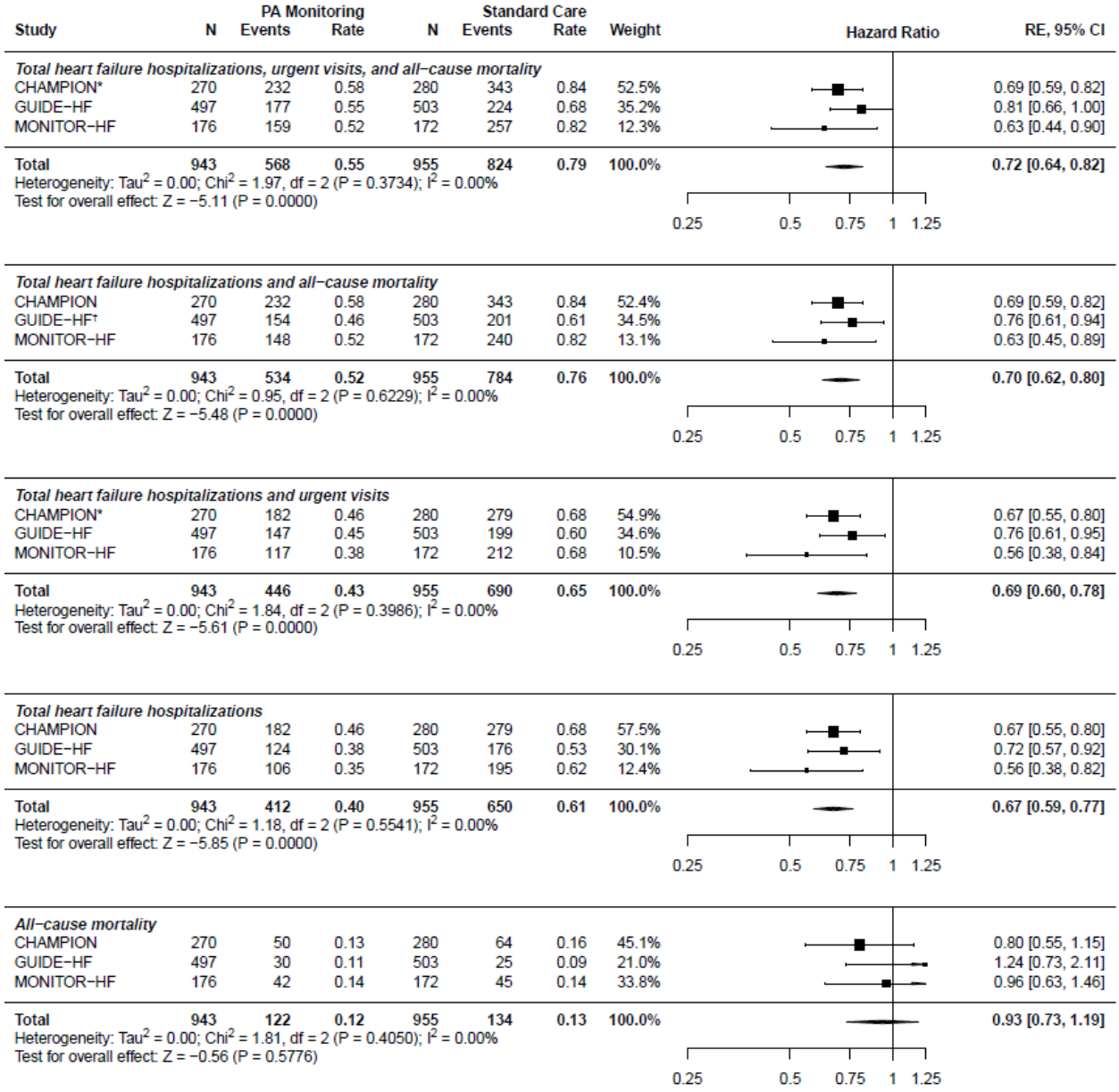
Supplementary Figure 1. PRISMA flowchart of the included studies



Supplementary Figure 2. Risk of bias assessment

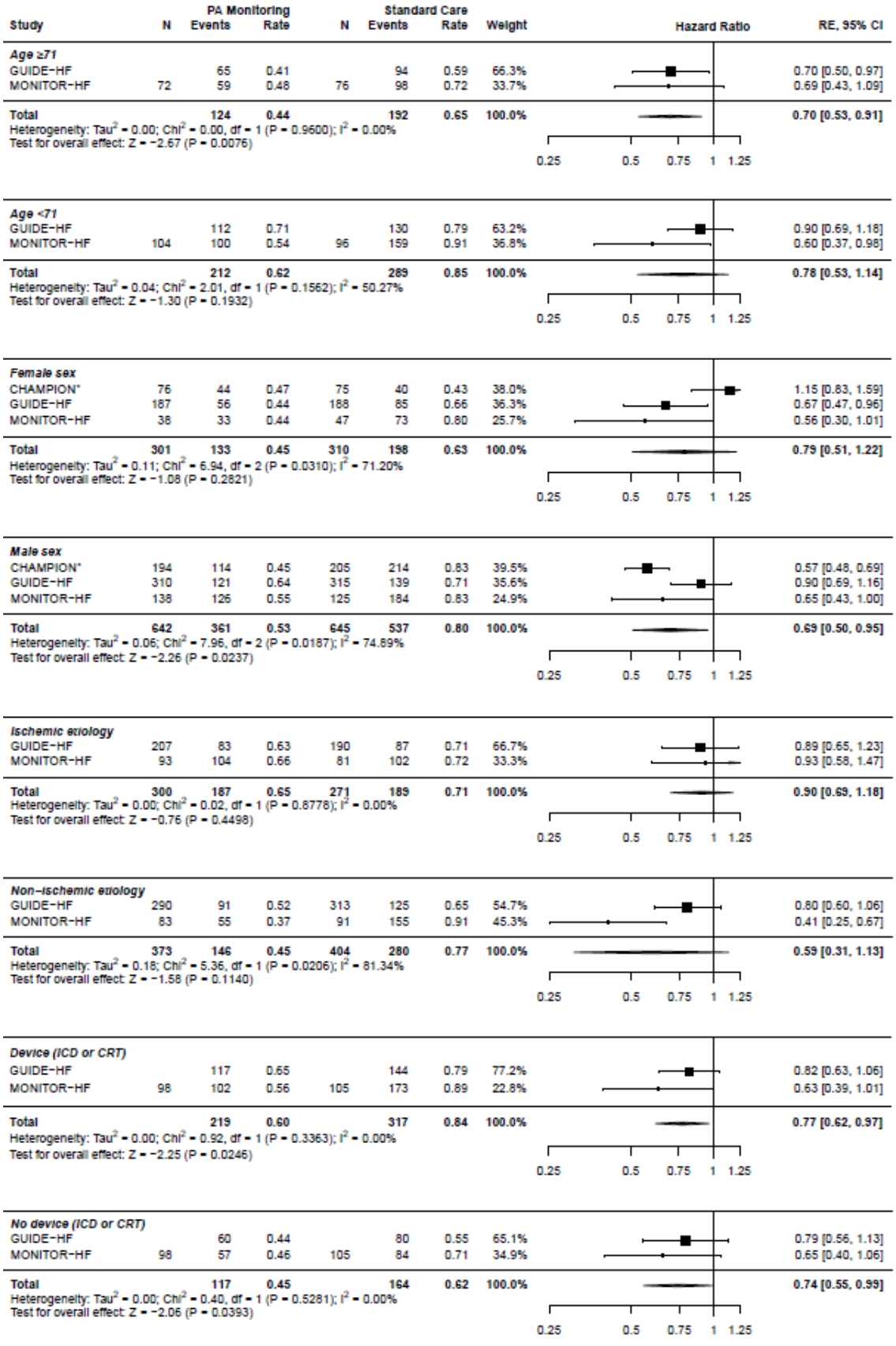


Supplementary Figure 3. Pre-COVID sensitivity analysis for clinical endpoints

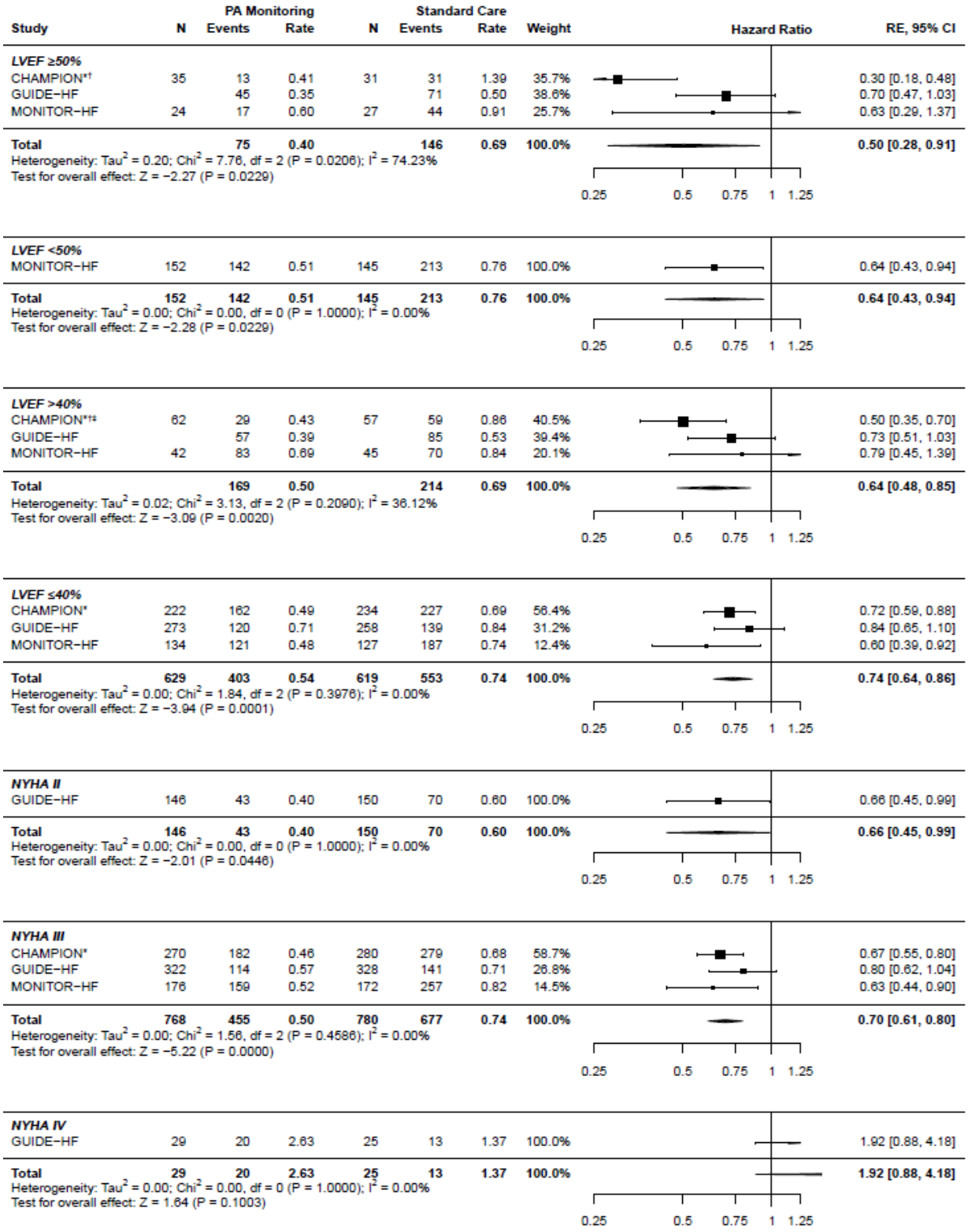


*CHAMPION did not report data on urgent visits; †Calculated and included as Incidence Rate Ratio (IRR); PA: Pulmonary Artery; RE: Random Effects; 95% CI: 95% Confidence Interval; All rates are reported as events per patient-year.

Supplementary Figure 4. Subgroup analysis - pre-COVID sensitivity analysis for clinical endpoints - (Heart failure hospitalizations, urgent visits, and mortality)



Supplementary Figure 4. Pre-COVID sensitivity analysis for clinical endpoints - (HF hospitalizations, urgent visits, and mortality) – subgroup analysis (continued)



*CHAMPION did not report data on urgent visits; †Calculated and included as Incidence Rate Ratio (IRR); ‡CHAMPION only reported data for LVEF ≥40%; PA: Pulmonary Artery; RE: Random Effects; 95% CI: 95% Confidence Interval; All rates are reported as events per patient-year.

Systematic search adapted for each database

Medline

((cardiomem* OR ((pulmonar* OR lung) ADJ9 (arter*) ADJ9 (pressur*) ADJ9 (sensor* OR monitor*)) OR ((intravascular) ADJ9 (haemodynamic OR hemodynamic) ADJ9 (monitor* OR sensor*))).ab,ti,kf.) AND (exp "Heart Failure"/ OR (((heart* OR cardiac OR cardial) ADJ3 (fail* OR insuffic*)) OR HF).ab,ti,kf.) NOT (exp animals/ NOT humans/) NOT (news OR congres* OR abstract* OR book* OR chapter* OR dissertation abstract*).pt. NOT ((exp "Child"/ OR exp "Infant"/ OR "Adolescent"/) NOT (exp "Adult"/)) NOT ("Case Reports".pt. OR "Case Reports as Topic"/ OR (case-report).ti.)

Embase

('implantable pulmonary artery pressure monitoring system'/de OR 'cardiovascular monitoring device'/de OR (cardiomem* OR ((pulmonar* OR lung) NEAR/9 (arter*) NEAR/9 (pressur*) NEAR/9 (sensor* OR monitor*)) OR ((intravascular) NEAR/9 (haemodynamic OR hemodynamic) NEAR/9 (monitor* OR sensor*))):ab,ti,kw) **AND** ('heart failure'/exp OR (((heart* OR cardiac OR cardial) NEAR/3 (fail* OR insuffic*)) OR HF):ab,ti,kw) NOT ([animals]/lim NOT [humans]/lim) NOT ([Conference Abstract]/lim OR [Conference Review]/lim) NOT ('child'/exp NOT ('adult'/exp OR 'adolescent'/de)) NOT ('case report'/de OR (case-report):ti)

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TS=(((cardiomem* OR ((pulmonar* OR lung) NEAR/9 (arter*) NEAR/9 (pressur*) NEAR/9 (sensor* OR monitor*)) OR ((intravascular) NEAR/9 (haemodynamic OR hemodynamic) NEAR/9 (monitor* OR sensor*)))) AND ((((heart* OR cardiac OR cardial) NEAR/3 (fail* OR insuffic*)) OR HF)) **NOT** ((animal* OR rat OR rats OR mouse OR mice OR murine OR dog OR dogs OR canine OR cat OR cats OR feline OR rabbit OR cow OR cows OR bovine OR rodent* OR sheep OR ovine OR pig OR swine OR porcine OR veterinar* OR chick* OR zebrafish* OR baboon* OR nonhuman* OR primate* OR cattle* OR goose OR geese OR duck OR macaque* OR avian* OR bird* OR fish*) NOT (human* OR patient* OR women OR woman OR men OR man))) **NOT** DT=(Meeting Abstract OR Meeting Summary) NOT TI=(case-report*) NOT TI=((child* OR baby OR infant OR infants OR babies) NOT (adult* OR men OR man OR woman OR women OR female* OR male*))

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Cardiomems "heart|cardiac|cardial failure|insufficiency" -"case report" -"case reports" -child -children