2012 ACCF/AHA Stable Ischemic Heart Disease Guideline Data Supplements

Data Supplement 1 - Imaging

Study Name, Author, Year, Citation	Aim of Study	Study Type	Study Size	Patient Population		Endpoints		Statistical Analysis (Results)	P Values & 95% CI	OR: HR: RR	Study Limitations	Findings/ Comments
				Inclusion Criteria	*Exclusion Criteria*	*Primary Endpoint*	*Secondary Endpoint*					
Standard Exercise ECG Testing												
RCTs												
A randomized trial of exercise treadmill ECG vs. stress SPECT MPI as an initial diagnostic strategy in stable patients with chest pain and suspected CAD: cost analysis, Sabharwal, 2007, (1)	Compare Ex ECG vs. MPI	RCT	457	Suspected CAD	N/A	Cost to diagnosis	N/A	N/A	p=NS	N/A	No Sens/Spec	Costs similar per ECG & MPI
Comparative effectiveness of exercise electrocardiography with or without myocardial perfusion SPECT in women with suspected CAD, Women's Trial, Shaw, 2011 (2)	Compare Ex ECG vs. MPI in Women	RCT	824	Suspected CAD	N/A	2 y incidence of MACE (composite of cardiac death, nonfatal MI or hospital admission for ACS or HF)	Diagnostic accuracy	ETT 98% vs. exercise MPI 97.7%	p=0.59	N/A	Limited stat. power	.N/A
Meta-Analysis												
Meta-analysis of exercise testing to detect CAD in women, Kwok, 1999 (3)	Diagnostic accuracy of Ex ECG, MPI, and Echo in women	Meta-analysis	27 studies (4,113 pts)	Suspected CAD-Women	N/A	CAD	N/A	ECG: Sens=61; Spec=70 Echo: Sens=86, Spec=79; MPI: Sens=61, Spec=70	N/A	N/A	Planar imaging	Moderate diagnostic accuracy in women

Exercise-induced ST depression in the diagnosis of CAD, Gianrossi, 1989 (4)	Diagnostic accuracy of Ex ECG	Meta-analysis	150 study groups (24,074 pts)	Suspected CAD	N/A	CAD	N/A	Sens=61, Spec=77	N/A	N/A	N/A	Moderate diagnostic accuracy
Pharmacologic Echocardiography, Radionuclide MPI, or MRI												
Clinical Practice Guideline/Expert Consensus Statements												
Myocardial perfusion scintigraphy: the evidence, Underwood, 2004, (5, 6)	Systematic Review of Cost Effectiveness of ECG and MPI	Consensus conference; review	Consensus Conference; 48 studies (7,002 pts)	Suspected CAD	N/A	Diagnostic costs	N/A	N/A	N/A	N/A	N/A	Diagnostic costs
Relationship between obstructive CAD and abnormal stress testing in patients with paroxysmal or persistent AF, Nucifora, 2011 (7)	Diagnostic accuracy of ECG in pts with abnormal ECG	Registry	87	AF pts	N/A	Diagnostic Accuracy	N/A	N/A	N/A	N/A	N/A	Low diagnostic accuracy of ETT in pts with abnormal ECG
Meta-Analysis												
Exercise-induced ST depression in the diagnosis of CAD, Gianrossi, 1989 (4)	Diagnostic accuracy of Ex ECG	Meta-analysis	150 study groups (24,074 pts)	Suspected CAD	N/A	CAD	N/A	Meta-regression: Reduced Sens with LBBB, digitalis	p=0.002	N/A	N/A	Moderate diagnostic accuracy
Multicenter Registry												
Economics of MPI in Europe—the EMPIRE study, Underwood, 1999 (8)	Compare Ex ECG, MPI, vs. Angio	Registry	396	Suspected CAD	N/A	Diagnostic Costs	N/A	N/A	N/A	N/A	N/A	Costs higher for imaging; emphasis on ECG for lower-risk patients
Exercise Echocardiography or MPI with patients who can and cannot exercise and Standard Exercise ECG testing												
Clinical Practice Guideline/Expert Consensus Statements												
Clinical value, cost-effectiveness and safety of myocardial	Diagnostic Accuracy of MPI and	Meta-analysis	19 studies (1,405	Suspected CAD	N/A	CAD	N/A	Pharm: MPI: Sens=87, Spec=90;	N/A	N/A	N/A	High diagnostic accuracy

perfusion scintigraphy: a position statement Marcassa, 2008, (9)	Echo		pts)					Echo: Sens=85, Spec=85; Ex: MPI: Sens=82, Spec=88; Echo: Sens=70, Spec=89				
Myocardial perfusion scintigraphy: the evidence, Underwood, 2004 (5, 6)	Diagnostic Accuracy of MPI	Consens us conferen ce; review	Concen sus confere nce: 48 studies (7,002 pts)	Suspecte d CAD	N/A	CAD	N/A	Ex: Sens=88, Spec=70; Dipy: Sens=91, Spec=75; Ad: Sens=87, Spec=81	N/A	N/A	N/A	High diagnostic accuracy
Meta-analysis												
Ex echo or ex SPECT imaging? A meta-analysis of diagnostic test performance, Fleischmann, 1998, (10)	Diagnostic accuracy of Ex Echo and MPI	Meta-analysis	44 articles (5,830 pts)	Suspected CAD	N/A	CAD	N/A	Echo: Sens=85, Spec=77; MPI: Sens=87, Spec=64	N/A	N/A	N/A	N/A
Cost-effectiveness of alternative test strategies for diagnosis of CAD, Garber, 1999 (11)	Diagnostic accuracy of Echo and MP	Meta-analysis	27 studies (2,753 pts)	Suspected CAD	N/A	CAD	N/A	Echo: Sens=76, Spec=88; SPECT: Sens=87, Spec=76; PET: Sens=88, Spec=81	N/A	N/A	N/A	High diagnostic accuracy
Head-to-head comparison of dipyridamole echo and stress perfusion scintigraphy for the detection of CAD, Imran, 2003 (12)	Diagnostic accuracy of Pharmacol ogic Echo and MPI	Meta-analysis	10 studies (651 pts)	Suspected CAD	N/A	CAD	N/A	Echo: Sens=70; Spec=90; MPI: Sens=88, Spec=67	N/A	N/A	N/A	N/A
Accuracy of noninvasive techniques for diagnosis of CAD and prediction of cardiac events in patients with	Diagnostic accuracy in Patients with LBBB	Meta-analysis	55 studies; 1,432 patients	Suspected CAD in LBBB	N/A	Detection of CAD and prediction of cardiac events in pts with LBBB; >50%	N/A	Echo: Sens=75; Spec=89; MPI: Sens=89, Spec=41	N/A	N/A	N/A	N/A

LBBB, Biagini, 2006 (13)						or >70% coronary artery stenosis on angiography						
Diagnostic performance of stress CMR imaging in the detection of CAD: a meta-analysis Nandular, 2007 (14)	Diagnostic accuracy of CMR WMA and perfusion	Meta-analysis	37 studies (2,191 pts)	Suspected CAD	N/A	CAD	N/A	WMA: Sens=83, Spec=86; Perfusion: Sens=91, Spec=81	N/A	N/A	N/A	N/A
DSE for the detection of CAD in women, Geleijnse, 2007 (15)	Diagnostic accuracy of DSE in women	Meta-analysis	14 studies (91 pts)	Suspected CAD in women	N/A	CAD	CAD	Sens=72% and Spec=88%	N/A	N/A	N/A	N/A
The diagnostic accuracy of pharmacological stress echo for the assessment of CAD: a meta–analysis, Picano, 2008 (16)	Diagnostic accuracy of Pharmacologic Echo	Meta-analysis	5 studies (435 pts)	Suspected CAD	N/A	CAD	CAD	Sens=85%, Spec=89%	N/A	N/A	N/A	High diagnostic accuracy
Diagnostic accuracy of MPI and stress echo for the diagnosis of LM and triple vessel CAD: a comparative meta-analysis, Mahajan, 2010 (17)	Diagnostic accuracy of Echo and MPI for 3VD/LM	Meta-analysis	32 studies (3,533 pts)	Suspected CAD	N/A	3 VD/LM	N/A	Echo: Sens=94, Spec=40; MPI: Sens=75, Spec=48	N/A	N/A	N/A	High Sens
CCTA for patients who are and are not able to exercise												
Controlled Clinical Trials												
Diagnostic performance of 64-multidetector row of CCTA for evaluation of coronary artery stenosis in individuals without known CAD:	Diagnostic accuracy of 64-slide CCTA	Prospective, blinded, MCS	230	a) ≥18 y b) chest pain (typical or atypical) c) nonemergent ICA	a) known CAD b) renal failure c) arrhythmia d) HR >100	a) ≥50% diameter stenosis on QCA b) ≥70% diameter stenosis on	N/A	Patient based analysis ≥50% stenosis Sens: 95% Spec: 83% PPV: 64% NPV: 99%	Patient based analysis ≥50% stenosis (85% to 99%) (76% to 88%) (53% to 75%) (96% to 100%)	N/A	Referred for ICA	≥50% stenosis AUC=0.96 (0.94 to 0.98) ≥70% stenosis AUC=0.95 (0.92 to 0.97)

results from the prospective multicenter ACCURACY, Budoff, 2008 (18)					mm Hg e) SBP <100 mm Hg f) contrast allergy g) CI to BB's, CCB; nitro h) pregnancy	QCA		≥70% stensosis Sens: 94% Spec: 83% PPV: 48% NPV: 99%	≥70% stenosis (79% to 99%) (77% to 88%) (35% to 62%) (96% to 100%)			
Diagnostic performance of coronary angiography by 64-row CT, Miller, 2008 (19)	Diagnostic accuracy of 64-slide MDCTA	Prospective, blinded, international, MCS	291	a) ≥40 y b) chest pain c) nonemergent ICA d) neg. pregnancy test	a) known CABG b) PCI <6 mo c) AF d) renal failure e) contrast allergy f) CI to BB's g) heart failure h) BMI >40 i) aortic stenosis j) multiple myeloma	a) ≥50% diameter stenosis on QCA	N/A	Visual MCDTA Sens: 83% Spec: 91% PPV: 92% NPV: 81% Quant MDCTA Sens: 85% Spec: 90% PPV: 91% NPV: 83%	Visual MDCTA (76% to 88%) (85% to 96%) (87% to 96%) (73% to 87%) Quant MDCTA (79% to 90%) (83% to 94%) (86% to 95%) (75% to 89%)		Referred for ICA	Visual MDCTA AUC=0.93 (0.89 to 0.95) Quant MDCTA AUC=0.93 (0.90 to 0.96)

Diagnostic accuracy of 64-slice computed tomography coronary angiography: a prospective, multicenter, multivendor study, Meijboom, 2008 (20)	Diagnostic accuracy of 64-slide CCTA	Prospective, MCS	360	a) 50 to 70 y b) stable angina and UA referred for CCA c) chest pain d) nonemergent ICA	a) prior PCI with stent or CABG b) renal failure (Cr >120 μM/L) c) arrhythmia d) <15 sec breath hold e) contrast allergy	≥50% diameter stenosis on QCA	N/A	Per patient analysis: Sens: 99% Spec: 64% PPV: 86% NPV: 97%	Per patient analysis: (98% to 100%) (55% to 73%) (82% to 90%) (95% to 100%)	N/A	Referred for ICA	Intraobserver (k=0.66) Iinterobserver (k=0.69) Multivendor
64-Slice computed tomography angiography in the diagnosis and assessment of CAD: systematic review and meta-analysis, Mowatt, 2008 (21)	Accuracy of 64-slice CT angiography compared with ICA	Meta-analysis	18 studies 1,286 patients	a) 64-slice CTA b) RCTs c) nonrandomized comparative studies d) case series	N/A	≥50% diameter stenosis	N/A	Sens: 99% Spec: 89% PPV: 93% NPV: 100%	(97% to 99%) (83% to 94%) *(Range: 64% to 100%)* *(Range: 86% to 100%)*	N/A	N/A	N/A
A systematic review on diagnostic accuracy of CT-based detection of significant CAD, Janne d'Othee B, 2008 (22)	Diagnostic accuracy of CCTA	Meta-analysis	5 studies (308 pts)	a) 64-slice CCTA	a) CABG CTA b) stent CTA	≥50% or ≥70% to 75% diameter stenosis	N/A	Fixed effects: Sens: 92% Spec 98% Random effects: Spec: 85% Sens 99%	N/A	N/A	N/A	N/A
Meta-analysis: noninvasive coronary angiography using computed tomography vs. MRI, Schuetz GM, 2010 (23)	Determine potential of CT for ruling out CAD in adults with suspected or known CAD	Meta-analysis	109 studies (8,205 pts)	a) 64-slice CCTA (9 studies) b) 320-slice CCTA (1 study)	N/A	≥50% diameter stenosis	N/A	Sens: 98% Spec: 89%	(97% to 99%) (86% to 92%)	N/A	N/A	N/A
Diagnostic performance of	Diagnostic accuracy of	Meta-analysis	29 studies;	Suspected CAD	N/A	CAD; >50% diameter	N/A	Sens: 96% Spec: 74%	N/A	N/A	N/A	N/A

multislice spiral computed tomography of coronary arteries as compared with conventional invasive coronary angiography, Hamon M, 2006 (24)	CCTA with invasive coronary angiograph y		2,024 pts			stenosis						
Meta-analysis of comparative diagnostic performance of MRI and multislice computed tomography for noninvasive coronary angiography, Schuijf JD, 2006 (25)	Diagnostic accuracy of CCTA with invasive coronary angiograph y	Meta-analysis	51 studies; 2,203 pts;	Suspected CAD	N/A	CAD ≥50% diameter stenosis	N/A	Sens: 85% Spec: 95%	N/A	16.9	N/A	N/A
Diagnostic value of multislice computed tomography angiography in CAD: a meta-analysis, Sun Z, 2006 (26)	Diagnostic accuracy of CCTA with Invasive Coronary Angiograp hy	Meta-analysis	47 studies; 3,142 pts	Suspected CAD	N/A	CAD	N/A	Sens: 91% Spec: 86%	N/A	N/A	N/A	N/A
Multidetector computed tomography for the diagnosis of CAD: a meta-analysis, Stein PD, 2006 (27)	Diagnostic accuracy of CCTA with Invasive Coronary Angiograp hy	Meta-analysis	33 studies; 1,861 pts	Suspected CAD	N/A	CAD (50% or ≥50%)	N/A	Sens: 98% Spec: 88%	N/A	N/A	N/A	N/A
Bypass Graft CT Angiography												
Multi-detector computed tomography in CABG assessment: a meta-analysis, Jones, 2007 (28)	Determinat ion of diagnostic accuracy of 8-slice, 16-slice, and 54-slice MDCT vs.	Meta-analysis	Occlusi ons: 14 studies 1,791 grafts Stenose	Comparison of CABG patency or stenosis, or both, on MDCT vs. angiography	Use of MDCT was unconfirme d, performed as preoperativ e work-up,	a) graft occlusion b) graft stenosis	N/A	Occlusions: Sens: 98% Spec: 99% PPV: 93.6 NPV:99.4%	Occlusions: (95% to 99%) (98% to 99%)	Occlusions : OR=934.2 (436.4 to 1999.9) Stenoses:	N/A	Occlusions: AUC=0.996 Stenoses: AUC=0.867

	angiography in diagnosis of graft occlusion and stensosis		s: 8 studies 878 grafts		or performed on pts with conduit stenting or angioplasty			Stenoses Sens: 89% Spec: 97% PPV: 77.8% NPV: 98.8%	Stenoses: (75% to 95%) (96% to 98%)	OR=152.0 (64.0 to 360.7)		
Diagnostic performance of 16- and 64-section spiral CT for CABG assessment: meta-analysis, Hamon M, 2008 (29)	Accuracy of 16- and 64- CT to help assess CABG	Meta-analysis	15 studies 723 pts 2,023 grafts	a) use of multisection CT as diagnostic test to sasses significant lesion (occlusion or ≥50% stenosis) of CABG b) used 16- or 64-section scanner c) used coronary angiography as the reference standard	N/A	≥50% diameter stenosis	N/A	Sens: 98% Spec: 97% PPV: 93% NPV: 99%	(96% to 99%) (96% to 98%) (91% to 95%) (97% to 99%)	Positive LR: 23.42 (13.69 to 40.07); Negative LR: 0.045 (0.028 to 0.071); Diagnostic OR: 780.32 (379.12 to 1,606.01)	N/A	N/A
64-Slice computed tomography angiography in the diagnosis and assessment of CAD: systematic review and meta-analysis, Mowatt G, 2008 (21)	Accuracy of 64-slice CT angiography compared with ICA	Meta-analysis	40 studies (28 included) in meta-analysis 543 pts	a) 64-slice CCTA b) RCTs c) non-randomized comparative studies d) case series	N/A	≥50% diameter stenosis	N/A	Patient based detection: Sens: 99% Spec: 89% PPV: 93% NPV: 100% Segment-based detection: Sens: 90% (85% to 94%) Spec: 97% (95% to 98%) PPV: 76% (44% to 93%)	(97% to 99%) (83% to 94%) (64% to 100%) (86% to 100%)	N/A	N/A	N/A

								NPV: 99% (95% to 100%)				
In-Stent Restenosis												
Diagnostic accuracy of 64-slice computed tomography angiography for the detection of in-stent restenosis: a meta-analysis, Carrabba N, 2010 (30)	Accuracy of 64-slice MDCT compared with invasive coronary angiography to detect ISR	Meta-analysis	9 studies 598 pts 978 stents	a) 64-MDCT used for ISR b) Values available for TP, FP, TN, and FN	a) Post-CABG b) prior heart transplantation	>50% by angiography (invasion and quantitative)	N/A	Sens: 86% Spec: 93% Positive LR: 12.32 Negative LR: 0.18	(80% to 91%) (91% to 95%) (7.26 to 20.92)	N/A	N/A	AUC=0.94 per stent analysis indicated good diagnostic agreement between 64-MDCT and invasive coronary angiography
Diagnostic accuracy of 64 multislice CT angiography in the assessment of coronary in-stent restenosis: a meta-analysis, Sun, Z, 2010 (31)	Accuracy of 64-slice CT angiography compared with conventional coronary angiography to detect ISR	Meta-analysis	14 studies 858 pts	Peer reviewed, published in English (2004 to 2008). Prospective and retrospective studies (10 patient minimum), 64-slice CT used for diagnosis and invasion coronary angiography as reference	Review article; editorials; conference abstracts; in vitro or phantomstudies; not reporting numbers of TN, TP, FN and FP.	>50% stenosis; diagnostic sensitivity, specificity using a fixed effects model (TP, TN, FP, FN)	N/A	Assessable stents: Sens: 94% Spec: 91% Evaluable and unevaluable stents (5 studies): Sens: 79% Spec: 81%	Assessable stents: (86% to 94%); (90% to 93%); evaluable and unevaluable stents (5 studies); (68% to 88%); (77% to 84%)	N/A	a) Publication bias (non-English studies excluded, (under way or under review studies excluded; b) lack of uniform criteria of assessment (reporting of type and diameter of stents implanted); c) Limitation of pooled sensitivities and specificities (different pos. criteria not considered)	64-slice CT angiography has high diagnostic accuracy (>90% sensitivity and specificity) for the detection of ISR compared to conventional coronary angiography

*Meta-analyses of the diagnostic accuracy of CCTA from 2006 and earlier include predominantly or exclusively studies done with obsolete scanner technology (16-slice or 4-slice MDCT or electron beam CT (EBCT). These older studies are included here to demonstrate the consistently high diagnostic accuracy of CCTA across all of the available meta-analyses and the evidence and the size of the evidence base supporting its use."

ACCURACY indicates Assessment by Coronary Computed Tomographic Angiography of Individuals Undergoing Invasive Coronary Angiography; ACS, acute coronary syndrome; AF, atrial fibrillation; Angio, angiography; AUC, area under the curve, BB, beta blocker; BMI; body mass index; bpm, beats per minute; CABG, coronary artery bypass surgery; CAD, coronary artery disease; CCA, conventional coronary angiogram/angioplasty, CCB, calcium channel blocker; CCTA coronary computer tomography angiography; CE-CCT, contrast enhanced coronary computed tomography; CI, confidence interval; CMR, cardiac magnetic resonance, Cr, creatinine, CRF, chronic renal failure; CMR, cardiac magnetic resonance; CT, computed tomography; CTA, computed tomographic angiography; DSE, dobutatmine stress echocardiography; EBCT, electron beam computed tomography; ECG, electrocardiogram; Echo, echocardiography; EMPIRE, Economics of myocardial perfusion imaging in Europe; ETT, exercise tolerance test; Ex, exercise; FN, false negative, FP, false positive, HR, hazard ratio, ICA, invasive coronary angiography; ISR, in-stent restenosis, LBBB, left bundle brunch block; LM, left main; LR, likelihood ratio; μM, micromoles MCS, multicenter study; MDCT, multi-detector computed tomography; MDCTA, multidetector CT angiography; MI, myocardial infarction; MPI, myocardial perfusion imaging; MRI, magnetic resonance imaging; N/A not applicable; Neg., negative; NLR, negative likelihood ratio; NPV, negative predictive value; NS, non-significant; NTG, nitroglycerin; OR, odds ratio; PCI, percutaneous coronary intervention; PET, positron emission tomography; PLR, positive likelihood ratio; Pos., positive; PPV, positive predictive value; PTCA, percutaneous transluminal coronary angioplasty; QCA, quantitative coronary angiography; Quant., quantitative; RCT, randomized controlled trial; RR, relative risk; SBP, systolic blood pressure; sec, second; Sens., sensitivity; Spec., specificity; SPECT, single photon emission computed tomography; Stat., statistical; TN, true negative, TP, true positive; UA, unstable angina; VD, vessel disease; vs., versus; and WMA, wall motion abnormality.

Data Supplement 2 - Imaging

Risk Assessment												
Study Name, Author, Year	**Aim of study**	**Study Type**	**Study Size**	**Patient Population**		**Endpoints**		**Statistical Analysis (Results)**	**P Values & 95% CI:**	**Main Study Findings**	**Study Limitations**	**Findings/ Comments**
				Inclusion Criteria	***Exclusion Criteria***	***Primary Endpoint***	***Secondary Endpoint***					
Stress Cardiac MRI-prognostic studies in patients with suspected CAD												
Assessment of myocardial wall motion and perfusion, Korosoglou, 2010 (32)	Prognosis by dobutamine stress MRI	Single-center trial	1,493	Suspected Ischemia	MRI related exclusions	Cardiac death and AMI	Late coronary revascularization	Multivariable Cox Regression	p<0.001	Adj. HR of stress wall motion for primary endpoints: 5.9 (95% CI: 2.5 to 13.6); for late revascularization HR 3.1: (95% CI: 1.7 to 5.6) Adjusted HR of perfusion for primary endpoints: 5.4 (95% CI: 2.3 to 12.9); for late revascularization	Single center observational study	Very low hard event rates by negative dobutamine combined stress function and perfusion

										adj. HR: 6.2 (95% CI: 3.3 to 11.3)		
Long-term prognostic value of dobutamine stress CMR, Kelle S, 2011 (33)	Prognosis by dobutamine stress MRI	Single-center trial	1,463	Suspected Ischemia	MRI related exclusions	Cardiac death and AMI	None	Multivariable Cox Regression	p<0.001 (1.8 to 5.9)	HR of inducible wall motion abnormality for primary endpoints: 3.31	Single-center observational study	Negative dobutamine stress CMR conveys 96.8% 6-y event-free survival
Incremental prognostic significance of combined CMR imaging, adenosine stress perfusion, delayed enhancement, and LV function over preimaging information for the prediction of adverse events. Bingham SE, 2011 (34)	Prognosis by adenosine stress MRI	Single-center trial	908	Suspected Ischemia	MRI related exclusions	Death, AMI, and late coronary revascularization	Cardiac death and MI	Multivariable Cox Regression	p=0.02	HR of 2.2 for primary endpoint	Referral bias of a single-center observational study	Ventricular volume, aortic flow, myocardial viability, and stress perfusion all add incremental value for prediction of adverse events over pre-CMR data and can be combined to further enhance prognostication.
Prognostic value of CMR stress tests: adenosine stress perfusion and dobutamine stress wall motion imaging. Jahnke C, 2007 (35)	Prognosis by adenosine stress MRI	Single-center trial	513	Symptoms suspicious of ischemia and no history of MI	MRI related exclusions	Cardiac death or AMI	None	Multivariable Cox Regression	p<0.001; 95% CI: 3.6 to 43	HR of 12.5 for primary endpoint	Single-center observational study	Both adenosine and dobutamine MRI were effective in cardiac prognostication with high negative event rate.
Stress MPI by CMR provides strong prognostic value to cardiac events regardless of patient's sex. Coelho-Filho OR,	Prognosis by adenosine stress MRI in women	Single-center trial	424	Symptoms suspicious of ischemia	MRI related exclusions	Death or AMI	None	Multivariable Cox Regression	p<0.001	Unadjusted HR of presence of ischemia: 6.4 for primary endpoints	Single-center observational study	Negative annual hard event rate 99.4% in women. Stress CMR risk stratify women effectively

2011 (36)												
Prognostic value of dipyridamole stress cardiovascular MRI in pts with known or suspected CAD. Bodi V, 2007 (37)	Prognosis by dipyridamole stress MRI	Single-center trial	420	Symptoms suspicious of ischemia	MRI related exclusions	Cardiac death and AMI	None	Multivariable Cox Regression	p=0.0006	Stress wall motion abnormality carries a OR of 5.3 for primary endpoints	Single-center observational study	N/A
MRI determination of cardiac prognosis. Hundley WG, 2002 (38)	Prognosis by dobutamine stress MRI	Single-center trial	279	Symptoms suspicious of ischemia	MRI related exclusions	Cardiac death and AMI	None	Multivariable Cox Regression	p=0.0004; 95% CI: 1.1 to 9.7	Stress wall motion abnormality had a HR: 3.3 for primary endpoint, independent of LVEF	Single-center observational study	First study that illustrated the prognostic significance of dobutamine stress MRI
Dobutamine cardiac magnetic resonance results predict cardiac prognosis in women with known or suspected IHD. Wallace EL, 2009 (39)	Prognosis by dobutamine stress MRI in women	Single-center trial	266	Symptoms suspicious of ischemia, women	MRI related exclusions	Cardiac death and AMI	None	Multivariable Cox Regression	p<0.0001; 95% CI: 1.8 to 4.3	Stress wall motion abnormality had a HR: of 2.7 for primary endpoints.	Single-center observational study	Dobtamine stress MRI effectiveness prognosticate in women
Prognostic value of adenosine stress cardiovascular magnetic resonance and DSE in pts with low-risk chest pain. Hartlage G, 2011 (40)	Compare prognosis by adenosine stress CMR and DSE	Single-center trial	255	Suspected ischemia	N/A	Cardiac death, AMI, obstructive CAD on angiography, and rehospitalization	None	Multivariable Cox Regression	N/A	Negative event rate (for primary endpoints) was 100% for stress CMR.	Single-center observational study	Negative event rate 100% by stress CMR and 99% by DSE

Complementary prognostic values of stress myocardial perfusion and late gadolinium enhancement imaging by CMR in pts with known or suspected CAD. Steel K, 2009 (41)	Prognosis by combining stress perfusion and late gadolinium enhancement imaging	Single-center trial	254	Symptoms suspicious of ischemia	MRI related exclusions	Cardiac death and AMI	Late revascularization and UA hospitalization	Multivariable Cox Regression	p<0.0001 (2.79 to 16.89)	Stress CMR had a HR: 6.88 for primary endpoints	Referral bias of a single-center clinical study	Demonstrated that stress perfusion and late gadolinium enhancement imaging provide complement cardiac prognostication.
Prognostic value of normal adenosine-stress CMR imaging. Pilz G, 2008 (42)	Prognosis by adenosine stress MRI	Single-center trial	218	Suspected ischemia but negative stress CMR perfusion	MRI related exclusions	Cardiac death, AMI, revascularization, and hospitalization at 12 mo	None	Logistic regression, ROC analysis	N/A	Negative event rate (for primary endpoints) at 12 mo: 99.1%	Small study with short-term follow-up composite events	CMR 12 mos negative predictive value 99.1%
Prognostic value of adenosine stress myocardial perfusion by CMR imaging in pts with known or suspected CAD. Lo KY, 2011 (43)	Prognosis by adenosine stress MRI	Single-center trial	203	Suspected ischemia	N/A	Cardiac death and nonfatal MI	None	Multivariable Cox Regression	p<0.001; 95% CI: 3.18 to 27.3	Stress CMR had a HR of 9.31 for primary events	Single-center, small size	N/A
Prediction of cardiac events in pts with reduced LVEF with dobutamine cardiovascular magnetic resonance assessment of wall motion score index. Dall'Armellina E, 2008 (44)	Prognosis by dobutamine stress MRI as modified by LVEF.	Single-center trial	200	Suspected ischemia, LVEF ≤55%	MRI related exclusions	Cardiac death and AMI	UA or HF admission	Multivariable Cox Regression	p=0.003	Stress CMR had a HR: 3.01for primary events	Single center observational study	Induced ischemia by dobutamine stress MRI was primarily in those with LVEF >40%

Prognosis of Negative Adenosine Stress Magnetic Resonance in Pts Presenting to an Emergency Department With Chest Pain. Ingkanisorn WP, 2006 (45)	Prognosis by adenosine stress MRI in pts with acute chest pain	Single-center trial	135	Suspected ischemia, acute chest pain pts from the ER, with no ECG changes and negative troponins/CK	MRI related exclusions	Cardiac death, AMI, and late revascularization	None	Logistic regression, ROC analysis	p<0.002	Negative event rate (for primary endpoints) at 12 mo was 100%.	Single-center observational study	12 mos negative event rate 100%
Prognostic value of adenosine stress cardiovascular magnetic resonance in pts with low-risk chest pain. Lerakis S, 2009 (46)	Prognosis by dobutamine stress MRI in low risk chest pain	Single-center trial	103	Suspected ischemia, acute chest pain with no ECG changes and negative troponins/CK	MRI related exclusions	Cardiac death, AMI, revascularization, and rehospitalization	None	Logistic regression	N/A	Negative event rate (for primary endpoints) at 12 mo was 100%.	Single-center observational study, small study size	Negative event rate 100%
Risk stratification by adenosine stress CMR in pts with coronary artery stenoses of intermediate angiographic severity. Doesch C, 2009 (47)	Prognosis by stress MRI in pts with intermediate stenosis	Single-center trial	81	Stable angina, intermediate angiographic severity	MRI related exclusions	Death, stroke, and ACS	Target vessel revascularization, angina, dyspnea	Multivariable Cox Regression	p=0.003	Pts who experienced MACE had ischemic extent 1.64 fold larger in size	Single-center observational study, small study size	Evaluate prognosis in setting of intermediate coronary stenosis
Stress CMR—multicenter or comparative studies to detect CAD												
Combined assessment of myocardial perfusion and late gadolinium enhancement in pts after percutaneous PCI or bypass grafts: a	Multicenter study by adenosine stress CMR in detecting coronary stenosis after PCI or CABG	Multi-center trial	3 centers (477)	Suspected ischemia	MRI related exclusions	≥70% angiographic coronary stenosis	N/A	Logistic regression and ROC, analysis	N/A	NPV of stress CMR for angiographic significant coronary stenosis was 96%. Sens. was 94% and spec. was 87%.	Selection bias due to entry criteria of a clinical indication for X-ray coronary angiography	N/A

multicenter study of an integrated cardiovascular magnetic resonance protocol. Bernhardt P, 2009 (48)												
MR-IMPACT, Comparison of perfusion-CMR with single-photon emission CT for the detection of CAD in a multicentre, multivendor, randomized trial. Schwitter J, 2008, (49)	First multicenter study in evaluating diagnostic accuracy of stress cardiac MRI and compared to SPECT	Multi-center trial	18 cts (241)	Symptoms suspicious of ischemia	MRI related exclusions	Angiographic significant CAD (≥50%)	None	Logistic regression and ROC analysis	p=0.01	Stress CMR for diagnosis of angiographic significant CAD: Sens. 87%, Spec. 86%	N/A	Vasodilating stress MRI has similar diagnostic utility as SPECT overall, but more sensitive that SPECT in pts with multivessel disease
Noninvasive diagnosis of ischemia-induced wall motion abnormalities with the use of high-dose dobutamine stress MRI: comparison with DSE. Nagel E, 1999 (50)	Compare diagnostic utility of dobutamine MRI with DSE	Single-center trial	208	Suspected ischemia	MRI related exclusions	Angiographic significant CAD (≥50% diameter stenosis)	None	Logistic regression and ROC analysis	p<0.05	Dobutamine stress CMR has higher sens. and speci. for diagnosis of significant CAD than DSE: sens. 86% vs. 74%; spec. 86% vs. 70% (both p<0.05)	N/A	N/A
CE-MARC study. Clinical evaluation of magnetic resonance imaging in coronary heart disease: the CE-MARC study.	Compare CAD diagnosis and prognosis by stress MRI and SPECT	Single-center trial	750	Suspected ischemia	MRI related exclusions	≥70% angiographic coronary stenosis	None	Logistic regression and ROC analysis	N/A	Stress CMR: Sens. 87% (95% CI: 82 to 91), Speci. 83% (95% CI: 80 to 87) SPECT sens. 67% (95% CI: 60	N/A	First randomized trial comparing the diagnostic utilities of stress CMR and stress SPECT

Greenwood JP, 2009 (51)										to 72), Spec. =83% (95% CI: 79 to 86)		
Stress CMR-Meta Analysis to Diagnose CAD												
Diagnostic performance of stress CMR imaging in the detection of CAD: a meta-analysis. Nandalur KR, 2007 (14)	To evaluate stress cardiac MRI in the diagnosis of CAD	Meta-analysis	37 studies (2,191 pts)	Suspected ischemia (use of stress MRI as diagnostic test for CAD ≥50% diameter stenosis and use of catheter X-ray angiography as reference standard	MRI related exclusions	≥70% angiographic coronary stenosis	None	Logistic regression and ROC, analysis	N/A	Stress induced wall motion abnormalities imaging: Sens. 0.83, Spec. 0.86, Disease prevalence: 70.5%. Perfusion imaging: Sens. 0.91 (0.88 to 0.94), Spec. 0.81 (0.77 to 0.85), Disease prevalence =57.4%	N/A	N/A
Meta-analysis of the diagnostic performance of stress perfusion cardiovascular magnetic resonance for detection of CAD. Hamon M, 2010 (52)	Studies (from 2001-2008) presented on patient-based analysis	Meta-analysis	35 studies (2,125 pts)	Suspected ischemia. Studies using (a) ≥1.5 Tesla MR scanner; (b) employed invasive coronary angiography as reference standard for diagnosing significant obstructive CAD (≥ 50% diameter stenosis), and	MRI related exclusions	≥70% angiographic coronary stenosis	None	Logistic regression, ROC analysis. Stress perfusion CMR: pt based analysis: Sensitivity 89% (88 to 91), Specificity 80% (78 to 83), Disease prevalence 57%, PLR 4.18 (3.31 to 5.27), NLR 0.15 (0.11 to 0.20), AUC 0.92	N/A	Diagnostic OR: 33.65 (95% CI: 22.09 to 51.27)	N/A	N/A

				(c) provided sufficient data to permit analysis.								

ACS indicates acute coronary syndrome; Adj, adjusted; AMI; acute myocardial infarction; AUC, area under the curve; CABG, coronary artery bypass graft surgery; CAD, coronary artery disease; CE-MARC, Clinical Evaluation of Magnetic Resonance Imaging in Coronary heart disease; CI, confidence interval; CK, creatine kinase; CMR, contract magnetic resonance; CT, computed tomography; CTA, computed tomography angiography; DSE, dobutatmine stress echo; DSMR, dobutamine stress magnetic resonance; ECG, electrocardiogram; Echo, echocardiogram; ER, emergency room; HF, heart failure; HR, hazard ratio; LV, left ventricular; LVEF, left ventricular ejection fraction; MACE, major adverse cardiac events; MI, myocardial infarction; MR-IMPACT, Magnetic Resonance Imaging for Myocardial Perfusion Assessment in Coronary Artery Disease Trial; MR, magnetic resonance; MRI, magnetic resonance imaging; N/A, not applicable; NLR, negative likelihood ratio; OR, odds ratio; pts, patients; PCI, percutaneous coronary intervention; PLR, positive likelihood ratio; ROC, receiver operator characteristics; Sens., sensitivity; Spec., specificity; SPECT, single-photon emission computed tomography; UA, unstable angina and vs., versus.

Data Supplements 3 to 17 pertain to the Revascularization Section

Data Supplement 3. Evidence for Survival Benefit After PCI or CABG (With LIMA Grafting to the LAD) in Patients With SIHD Who Are Receiving Medical Therapy and Are Suitable Candidates for Revascularization

Anatomic Subgroups	Evidence Supporting CABG for Survival	Evidence Supporting PCI for Survival	Evidence Supporting Superiority of Either CABG or PCI for Survival	Evidence Supporting Equivalence of CABG and PCI for Survival
Unprotected left main CAD	CASS Registry* (53, 54) CASS† (55) VA Cooperative† (56, 57) Yusuf et al.† (58) Dzavik et al.* (59)	*None found*	*CABG better:* Wu* (60) *PCI better:* None found	SYNTAX† (62) LE MANS† (63) Boudriot et al.† (64) Chieffo et al.* (65, 66) Lee et al.* (67) Lee et al.§ (68) Naik et al.§ (69) White et al.* (70) Palmerini et al.* (71) Park et al.* (72) Sanmartín et al.* (73) Brener et al.* (74) Mäkikallio et al.* (75)
SYNTAX score <33			SYNTAX†(61)	
SYNTAX score ≥33			SYNTAX† (61)	

3-vessel disease with or without proximal LAD disease	*For:* Dzavik et al.* (59) ECSS† (76) Jones et al.* (77) MASS II* (78) Myers et al.† (79) Smith et al.* (80) SYNTAX†(61) Yusuf et al.† (58)	*For:* Dzavik et al.* (59) Smith et al.* (80) *Against:* Boden et al.† (81)	*CABG better:* Bair et al.* (82) Booth et al.† (83) Hannan et al.* (84) Hannan et al.* (85) Jones et al.* (77) MASS II* (78) Malenka et al.* (86)	Bravata et al.† (87) Daemen et al.† (88) Dzavik et al.* (59) ERACI II† (89) Mercado et al.† (90) RITA I† (91) Van Domburg et al.* (92)
2-vessel disease with proximal LAD disease	*For:* ECSS† (76) Jones et al.* (77) Smith et al.* (80) Yusuf et al.† (58)	*For:* Dzavik et al.* (59) Jones et al.* (77) Smith et al.* (80) *Against:* Boden et al.† (81)	*CABG better:* Hannan et al.* (84) Hannan et al.* (85) Hannan et al.* (93) Jones et al.* (77)	Berger et al.† (94) ERACI II† (89) Malenka et al.* (86)
2-vessel disease without proximal LAD disease	*For:* Smith et al.* (80)	*For:* Jones et al.* (77) Smith et al.* (80) *Against:* Boden et al.† (81) Cecil et al.† (95) Pitt et al.† (96)	*CABG better:* Bair et al.* (82) Booth et al.† (83) Dzavik et al.* (59) Hannan et al.* (93) Hannan et al.* (85) Jones et al.* (77)	Bravata et al.† (87) Daemen et al.† (88) Dzavik et al.* (59) Jones et al.* (77) Mercado et al.† (90) van Domburg et al.* (92)

1-vessel proximal LAD disease	*For:* Smith et al.* (80) *Against:* Greenbaum et al.* (97)	*For:* Jones et al.* (77) Smith et al.* (80) *Against:* Greenbaum et al.* (97)	*CABG better:* Hannan et al. (84)	Aziz et al.† (98) Ben-Gal et al.* (99) Bravata et al.† (87) Cisowski et al.§ (100) Diegeler et al.† (101) Drenth et al.† (102) Fraund et al.* (103) Goy et al.† (104, 105) Greenbaum et al.* (97) Hong et al.† (106) Jaffery et al.† (107) Jones et al.* (77) Kapoor et al.† (108) MASS I† (109)
1-vessel disease without proximal LAD involvement	*Against:* Jones et al.* (77) Smith et al.* (80) Yusuf et al.† (58)	*Against:* Jones et al.* (77)	*PCI better:* Hannan et al.* (84) Jones et al * (77)	Jones et al.* (77)
Multivessel CAD, DM present	*For:* MASS II† (110) Sorajja et al.* (111) *No benefit:* BARI 2D† (112)	*For:* MASS II† (110) *No effect:* BARI 2D† (112) Sorajja et al.* (111)	*CABG better:* BARI I† (113, 114) Brener et al.* (115) Hlatky et al.† (116) Javaid et al.* (117) Malenka et al.* (86) Niles et al.* (118) Pell et al.* for 3-V CAD (119) Weintraub et al.† (120)	ARTS I* (121) Bair et al.* (82) Barsness et al.* (122) Bravata et al.† (87) CARDia† (123) Dzavik et al.* (59) MASS II† (110) Pell et al.* for 2-V CAD (119)

*Observational study, including articles on long-term follow-up, clinical trials not specified as randomized, comparative registry studies, comparative studies, prospective cohort studies, prospective observational studies, prospective registries, and prospective studies. †Randomized controlled trials, including meta-analyses. ‡Reviews (systematic or not). §Unknown study design.

ARTS indicates Arterial Revascularization Therapies Study Part; AWESOME, Angina With Extremely Serious Operative Mortality Evaluation; BARI I, Bypass Angioplasty Revascularization Investigation I; BARI 2D, Bypass Angioplasty Revascularization Investigation 2 Diabetes; CAD, coronary artery disease; CARDIA, Coronary Artery Revascularization in Diabetes; DM, diabetes mellitus; ECSS, European Coronary Surgery Study; ERACI II, Argentine Randomized Trial of Percutaneous Transluminal Coronary Angioplasty versus Coronary Artery Bypass Surgery in Multivessel Disease II; LAD, left anterior descending; LIMA, left internal mammary artery; MASS, Medicine, Angioplasty, or Surgery Study; RITA, Randomised Intervention Treatment of Angina; SIHD, stable ischemic heart disease; SYNTAX, Synergy Between Percutaneous Coronary Intervention with TAXUS and Cardiac Surgery; V, vessel; and VA, Veterans Administration.

Data Supplement 4. Evidence for Relief of Unacceptable Angina in Subsets of Patients With SIHD Who are Receiving GDMT and Have Anatomy Suitable for Revascularization

Anatomic Subgroups	Evidence Supporting CABG + GDMT for Angina	Evidence Supporting PCI + GDMT for Angina	Evidence Supporting Superiority of either CABG or PCI for Angina	Evidence Supporting Equivalence of CABG and PCI for Angina
Multivessel CAD	*Benefit:* Benzer et al.* (124) Bonaros et al.* (125) Favaroto et al.† (126) Hofer et al.* (127) Lukkarinen et al.* (128) MASS II† (78) RITA I† (129)	*No benefit:* Lukkarinen et al.* (128) *Benefit:* Benzer et al.* (124) COURAGE† (81, 130) Hambrecht et al.‡ (131) Hofer et al.* (127) MASS II† (78) RITA I† (129) RITA II† (132) Wijeysundera et al.‡ (133)	*CABG better:* Benzer et al.* (124) Bonaros et al.* (125) Lukkarinen et al.* (128) RITA I† (129) *PCI better:* None found	Hofer et al.* (127) MASS II et al.† (78) Takagi et al.‡ (134)
1-vessel CAD excluding the proximal LAD	No data found	Hambrecht et al.† (131) Parisi et al.† (135) Pitt et al.† (96) Pocock et al.† (132)	No data found	No data found
1-vessel CAD involving the proximal LAD	MASS I† (109)	Hambrecht et al.† (131) Parisi et al.† (135) Pitt et al.† (96) Pocock et al.† (132)	*CABG better:* Ben-Gal et al.* (99) Cisowski et al.† (100) Diegeler et al.‡ (101) Goy et al.† (104) Toutouzas et al.* (130) MASS I† (109)	Cisowski et al.† (136) Drenth et al.§ (137) Thiele et al.† (138)
Special Circumstances				
Patients with prior CABG and small or moderate sized area of ischemia	No data found	Gurfinkel et al.§ (139) Pfautsch et al.* (140) Subramanian et al.* (141)	*CABG better:* Weintraub et al.† (142)	Stephan et al.* (143)

*Observational study, including articles on long-term follow-up, clinical trials not specified as randomized, comparative registry studies, comparative studies, prospective cohort studies, prospective observational studies, prospective registries, and prospective studies. †Randomized controlled trials, including meta-analyses. ‡Reviews (systematic or not). §Unknown study design.

ARTS indicates Arterial Revascularization Therapies Study Part; AWESOME, Angina With Extremely Serious Operative Mortality Evaluation; BARI 2D, Bypass Angioplasty Revascularization Investigation 2 Diabetes; CABG, coronary artery bypass graft; CAD, coronary artery disease; CARDia, Coronary Artery Revascularization in Diabetes; COURAGE, Clinical Outcomes Utilizing Revascularization and Aggressive Drug Evaluation; GDMT, guideline-directed medical therapy; LAD, left anterior descending artery; LOE, level of evidence; MASS, Medicine, Angioplasty or Surgery Study; PCI, percutaneous coronary intervention; RITA, Randomised Intervention Treatment of Angina; SIHD, stable ischemic heart disease; and TIME, Trial of invasive versus medical therapy in elderly patients.

Data Supplement 5. RCTs of CABG Versus Balloon Angioplasty

					Acute Outcome		Late Outcome					
					Death %	**Q Wave MI %**	**Death %**	**Q Wave MI %**	**Angina %**	**Repeat Revascularization %**	**Primary Endpoint**	**Primary Endpoint**	**Follow-Up Years**
Trial	**No.**	**Age (y)**	**Female**	**CAD**	**CABG/ PCI**	**CABG/ PCI**	**CABG/ PCI**	**CABG/ PCI**	**CABG/ PCI**	**CABG/ PCI**		**CABG/ PCI**	
BARI (114, 144, 145, 146)	1,829	61	26%	MV	1.3/1.1	4.6/2.1	26.5/29	36/36	NA/NA	20/77*	D	26.5/29	10
EAST (147, 148)	392	61	26%	MV	1.0/1.0	10.3/3.0*	17/21	19.6/16.6	12/20*	27/65*	D+MI+T	27.3/28.8	8[a]
GABI (149)	359	NA	20%	MV	2.5/1.1	8/2.3*	22/25	9.4/4.5	26/29	59/83*	A	26/29	13[b]
Toulouse et al. (150)	152	67	23%	MV	1.3/1.3	6.6/3.9	10.5/13.2	1.3/5.3	5.3/21.1*	9/29*	A	5.2/21.1*	5
RITA I (91, 129, 151)	1,011	57	19%	SV/MV	1.2/0.8 RR: 0.88 (95% CI: 0.59 to 1.29)	2.4/3.5	9.0/7.7	7.4/10.8	52/78*	11/44*	D+MI+T	8.6/9.8	5
ERACI (152, 153)	127	58	13%	MV	4.6/1.5	6.2/6.3	4.7/9.5	7.8/7.8	3.2/4.8	6/37*	D+MI+A+Revasc	23/53*	3
MASS (109, 154)	142	56	42%	SV (LAD)	1.4/1.4	1.4/0	2.9/5.7	7/11	23/25	0/30*	D+MI+Revasc	3/24*	3
Goy et al. (104)	134	56	20%	SV (LAD)	0/0	0/0	2/9	4/15* RR: 2.6 (95% CI: 1.1 to 5.4; p=0.00004)[c]	29/26	9/38*	D+MI+Revasc	7.6/36.8*	5

CABRI (155, 156)	1,054	60	22%	MV	1.3/1.3	N/A/N/A	2.7/3.9 RR: 1.42 (95% CI: 0.731 to 2.76; p=0.297)	3.5/4.9 RR: 1.42 (95% CI: 0.80 to 2.54; p=0.234)	10.1/13.9* RR: 1.54 (95% CI: 1.09 to 2.16; p=0.012)	9/36* RR: 5.23 (95% CI: 3.90 to 7.03; p<0.001)	D	2.7/3.9	1

*Statistically significant; [a]Mortality and repeat revascularization at 8 y, other endpoints at 3 y; [b]Mortality and repeat revascularization at 13 y, other endpoints at 1 y; [c] Relative risk for combined endpoint cardiac death and MI.

A indicates angina; BARI, Bypass Angioplasty Revascularization Investigation; CAD, coronary artery disease; CABG, coronary artery bypass graft; CABRI, Coronary Angioplasty versus Bypass Revascularization Investigation; CI, confidence interval; D, death; EAST, Emory Angioplasty versus Surgery Trial; ERACI, Argentine Randomized Trial of Percutaneous Transluminal Coronary Angioplasty versus Coronary Artery Bypass Surgery in Multivessel Disease; GABI, German Angioplasty Bypass Surgery Investigation; LAD, left anterior descending; MASS, Medicine, Angioplasty, or Surgery Study; MI, myocardial infarction; MV, multivessel; NA, not available; No., number; PCI, percutaneous coronary intervention; RITA, Randomized Intervention Treatment of Angina; Revasc, repeat revascularization; RR, relative risk; SV, single-vessel; and T, thallium defect.

Data Supplement 6. RCTs of CABG Versus BMS

						Death %	Q Wave MI %	Angina %	Repeat Revascularization %	Primary Endpoint	Primary Endpoint %	Follow-Up in Years
Trial	**No.**	**Age (y)**	**Female**	**CAD**	**Enrollment Period**	**CABG/ PCI**	**CABG/ PCI**	**CABG/ PCI**	**CABG/PCI**		**CABG/ PCI**	
SIMA (157)	121	59	21%	SV	1994-1998	4/2	4/5	5/9	8/24	D+MI+Rep Revasc	7/31*	2.4
AWESOME (158, 159)	454	67	NA	MV	1995-2000	21/18	NA	NA	22/43*	D	21/20	5
MASS II (78)	408	60	32%	MV	1995-2000	25/24	10/13	NA	7.5/41.9	D+MI+Rep Revasc HR: 1.85 (95% CI: 1.39 to 2.47)	33/42*	10
ERACI II (153, 160)	450	62	21%	MV	1996-1998	11.6/7.2	6.2/2.8	18/14	7.2/28.4*	D+MI+CVA+Rep Revasc	23.6/34.7*	5
SoS (161)	988	61	21%	MV	1996-1999	6.8/10.9* HR: 2.91 (95% CI: 1.29 to 6.53; p=0.01)	8.2/4.9	NA	6/21* HR: 3.85 (95% CI: 2.56 to 5.79; p<0.0001)	Rep Revasc	6/21*	6
ARTS I (162)	1205	61	24%	MV	1997-1998	7.6/8.0 RR: 1.05 (95% CI: 0.71 to 1.55; p=0.83)	5.6/6.7 RR: 1.19 (95% CI: 0.76 to 1.85; p=0.47)	NA	8.8/30.3* RR: 3.46 (95% CI: 2.61 to 4.60; p<0.001)	D+MI+CVA+Rep Revasc	21.8/41.7* RR: 1.91 (95% CI: 1.60 to 2.28; p<0.001)	5
Drenth et al. (102, 137)	102	61	24%	SV	1997-1999	2/0	2/10	15/33	4/16	D+MI+CVA+Rep Revasc	14/29	4

Leipzig (101, 163)	220	62	25%	SV	1997-2001	12/10 RR: 0.85 (95% CI: 0.37 to 1.93; p=0.54)	7/5 RR: 0.71 (95% CI: 0.20 to 2.43; p=0.46)	NA	10/32* RR: 3.18 (95% CI: 1.67 to 6.39; p<0.001)	D+MI+Rep Revasc	29/47* RR: 1.64 (95% CI: 1.13 to 2.42; p=0.02)	5
Myoprotect (164)	44	70	30%	MV	1998-2001	24/22	0/4	NA	5/30	D+MI+Rep Revasc	29/48*	1
Octostent (165)	280	60	29%	MV	1998-2000	2.8/0	4.9/4.4	13/22	4.2/15.2	D+MI+CVA+Rep Revasc	9.5/14.5 RR: 0.93 (95% CI: 0.86 to 1.02)	1
AMIST (166)	100	57	22%	SV	1999-2001	25/30	0/4	8/10	0/4	D+MI+Rep Revasc+T	28/34	1
Cisowski et al. (100, 136)	100	54	17%	SV	2000-2001	0/3.6	0/0	0/20	0/20	D+MI	0/4	1
Kim et al. (167)	100	62	35%	SV	2000-2001	4.0/4.0	NA	6/19	2/14	NA	NA	1

*Statistically significant. AMIST indicates Angioplasty versus Minimally Invasive Surgery Trial; ARTS, Arterial Revascularization Therapies Study; AWESOME, Angina with Extremely Serious Operative Mortality Evaluation; BMS, bare-metal stent; CABG, coronary artery bypass grafting; CAD, coronary artery disease; CI, confidence interval; CVA, cerebrovascular accident; D, death; ERACI, Argentine Randomized Trial of Percutaneous Transluminal Coronary Angioplasty Versus Coronary Artery Bypass Surgery in Multivessel Disease; MASS, Medicine, Angioplasty, or Surgery Study; MI, myocardial infarction; MIDCAB, minimally invasive direct coronary artery bypass; MV, multivessel; NA, not available; Octostent, Long-term comparison of stenting versus off-pump; PCI, percutaneous coronary intervention; RITA, Randomized Intervention Treatment of Angina; RR, relative risk; Rep Revasc, repeat revascularization; SIMA, Stenting versus Internal Mammary Artery Study; SoS, Stent or Surgery; SV, single-vessel; and T, thallium defect.

Data Supplement 7. RCTs of CABG Versus DES

						Death %	MI %	Repeat Revascularization %	Primary Endpoint		RR and 95% CI	Follow-Up in Months
Trial	**No.**	**Age (y)**	**Female**	**CAD**	**Enrollment Period**	**CABG/PCI**	**CABG/PCI**	**CABG/PCI**		**CABG/PCI**		
Hong et al. (106)	189	61	36%	SV	2003	2.9/0	2.9/1.7	5.9/1.7	D, MI, Rep Revasc	11.7/4.3	N/A	6
Leipzig (138)	130	66	30%	SV	2003-2007	0/0	7.7/1.5*	0/6.2	D+MI+Rep Revasc	7.7/7.7	N/A	12
SYNTAX (168, 169)	1800	65	22%	MV	2005-2007	6.7/8.6	3.6/7.1	10.7/19.7	D+MI+CVA+Rep Revasc	20.2/28.0	MACCE 12 mo follow-up; RR: 1.44 95% CI: 1.15 to 1.81	36

*Statistically significant. CABG indicates coronary artery bypass surgery; CAD, coronary artery disease; CI, confidence interval; CVA, cerebrovascular accident; D, death; MACCE, major adverse cardiac and cerebrovascular events; MI, myocardial infarction; N/A, not applicable; No., number of patients; MV, multivessel; PCI, percutaneous coronary intervention; RR, relative risk; Rep Revasc, repeat revascularization; SV, single vessel; and SYNTAX, Synergy Between Percutaneous Coronary Intervention with TAXUS and Cardiac Surgery.

Data Supplement 8. Hazard Ratios in Observational Studies Comparing PCI-DES to CABG

Study	Location	No. Patients (CABG/PCI)	Average Age (y)	Female Patients %	CAD	Enrollment Period	Combined Death/MI/CVA HR and 95% CI	Repeat Revascularization HR and 95% CI	MACCE HR and 95% CI	Follow-Up in Months
Park et al. (170)	Korea	1,495/1,547	62	29%	MVD	2003-2005	0.7* 0.53 to 0.91	2.56* 1.96 to 3.4	1.37* 1.16 to 1.63	31
Hannan et al. (85)	USA	7,437/9,964	66	30%	MVD	2003-2004	0.99 0.89 to 1.098	5.88* 5.31 to 6.51	2.89* 2.72 to 3.08	19
Briguori et al. (171)	Italy	149/69	65	29%	MVD	2002-2004	1.03 0.53 to 1.99	4.01* 1.67 to 9.60	1.48* 0.91 to 2.43	12
Yang et al. (172)	China	231/235	65	22%	MVD	2003-2004	0.7 0.33 to 1.49	13.26* 4.15 to 42.34	3.09* 1.80 to 5.30	25
Lee et al. (173)	USA	103/102	68	35%	MVD	2003-N/A	1.29 0.68 to 2.46	6.73* 2.06 to 21.95	2.25* 1.36-3.72	12
Yang et al. (174)	Korea	390/441	63	29%	MVD	2003-2004	0.75 0.43 to 1.31	4.26* 1.78 to 10.15	1.41* 0.93 to 2.13	12
Javaid et al. (117)	USA	701/979	65	33%	MVD	N/A	1.93 1.37 to 2.73	2.43* 1.73 to 3.41	2.44* 1.87 to 3.19	12
Varani et al. (175)	Italy	95/111	65	31%	MVD	2003-2005	0.47* 0.16 to 1.37	5.91* 1.39 to 25.6	1.52* 0.70 to 3.28	12
Tarantini et al. (176)	Italy	127/93	66	18%	MVD	2005-2005	0.56 0.20 to 1.56	1.91* 0.62 to 5.83	0.96* 0.48 to 1.92	24
Pooled HR							0.94	4.06	1.86	
							p=0.66	*p<0.001*	*p<0.001*	

*Statistically significant. CABG, coronary artery bypass surgery; CAD, coronary artery disease; CI, confidence interval; CVA, cerebrovascular accident; DES, drug-eluting stent; HR, hazard ratio; MACCE, major adverse cardiac and cerebrovascular events; MI, myocardial infarction; Mo, months; MVD, multivessel disease; N/A, not available; No, number; PCI, percutaneous coronary intervention, and y, year.

Data Supplement 9. Evidence from RCTs and Cohort Studies Comparing PCI with CABG for Unprotected Left Main CAD

Study	Type of Study/ Years of Recruitment	PCI/CABG No. of Patients	Early Results for PCI Versus CABG	1 to 5-Y Results for PCI Versus CABG
SYNTAX (62)	Randomized/2005-2007 45% of screened pts with LM disease not randomized, 89% of these had CABG	357/348	30-d outcomes not reported	3-y follow-up: MACCE 13.0% vs. 14.3% (p=0.60); repeat revascularization 20.0% vs. 11.7% (p=0.004); all-cause death 7.3% vs. 8.4% (change -0.2%, p=0.64).
LE MANS (63)	Randomized/2001-2004 65% of screened pts excluded as not suitable for both procedures	52/53	30-d outcomes: death 0% vs. 0%; MI 2% vs. 4% (p=NS) MACCE 2% vs. 14% (p=0.01) MAE RR: 0.78, p=0.006; MACCE RR: 0.88, p=0.03	1 y follow-up: death 2% vs. 8% (p=NS); MI 2% vs. 6% (p=NS); revascularization 30% vs. 10% (p=0.01); MACCE 32% vs. 26% (p=NS); MACCE RR: 1.09 (95% CI: 0.85 to 1.38); MAE RR: 0.89 (95% CI: 0.64 to 1.23)
Boudriot et al. (64)	Randomized/2003-2009 53% of screened pts excluded	100/201	Early outcomes not reported	12 mo outcomes: death 2.0% vs. 5.0% (p<0.001 for noninferiority); death, MI or revascularization 19.0% vs. 13.9% (p=0.19 for noninferiority)
Brener et al. (74)	Cohort/1997-2006	97/190	In-hospital outcomes: death 3% vs. 4% (p=NS)	3 y follow-up: survival 80% vs. 85%; OR: 1.42 (95% CI: 0.56 to 3.63; p=0.14)
Cedars-Sinai (67, 69, 70)	Cohort/2003-2005	67/67	30-d outcomes: death 2% vs. 5% (p=NS); MI 0% vs. 2% (p=NS); stroke 0% vs. 8% (p=0.03); MACCE 17% vs. 2%; (p<0.01)	1-2 y follow-up: propensity-adjusted HR for death HR: 1.93 (95% CI: 0.89 to 4.19; p=0.10), MACCE HR: 1.83 (95% CI: 1.01 to 3.32; p=0.05)
Chieffo et al. (65, 66)	Cohort/2002-2004	107/142	In-hospital outcomes: death 0% vs. 2.1% (p=NS); MI 9.3% vs. 26.1% (p=0.0009); stroke 0% vs. 2% (p=NS)	5 y adjusted cardiac death OR: 0.50 (95% CI: 0.16 to 1.46; p=0.24), cardiac death or MI OR: 0.41 (95% CI: 0.15 to 1.06; p=0.06); death, MI, or stroke OR: 0.40 (95% CI: 0.15 to 0.99; p=0.04); TVR OR: 4.41(95% CI: 1.83 to 11.37; p=0.0004), MACCE OR: 1.58 (95% CI: 0.83 to 3.05; p=0.18)

MAIN-COMPARE (72, 177)	Cohort/2000-2006	1102/1138	30-d outcomes not reported	5-y adjusted risk of death HR: 1.13 (95% CI: 0.88 to 1.44, p=0.35), combined adjusted risk of death, Q-wave MI, or stroke HR: 1.07 (95% CI: 0.84 to 1.37,p=0.59); TVR HR: 5.11 (95% CI: 3.52 to 7.42,p<0.001)
Mäkikallio et al. (75)	Cohort/2005-2207	49/238	30-d outcomes: death 2% vs. 7% (p=0.13)	1-y follow-up: death 4% vs. 11% (p=0.14); PCI vs. CABG (using 1^o and 2^o endpoint) HR: 2.1 (95% CI: 0.7 to 5.8, p= 0.180)
Palmerini et al. (71)	Cohort/2002-2005	157/154	30-d outcomes: death 3.2% vs. 4.5% (p=NS); MI 4.5% vs. 1.9%,(p=NS); revascularization 0.6% vs. 0.6% (p=NS)	1-2 y follow-up: death 13.4% vs. 12.3% (p=0.8); MI 8.3% vs. 4.5% (p=0.17); revascularization 25.5% vs. 2.6% (p=0.0001); PCI vs. CABG mortality HR: 0.95 (95% CI: 0.51 to 1.77, p=0.861); cardiac mortality HR: 0.99, (95% CI: 0.49 to 2.04, p=0.994); MI HR: 0.53 (95% CI: 0.21 to 1.32; p=0.170)
Rodés-Cabau et al. (178)	Cohort/2002-2008	104/145	30-d outcomes: MACCE 18.3% vs. 27.6%; death 6.7% vs. 8.3%; MI 12.5% vs. 17.2%; stroke 1.0% vs. 5.5% (all p=NS)	1-2-y follow-up: MACCE 43.3% vs. 35%; death 16.3% vs. 12.4%; MI 23.1% 19.3%; revascularization 9.6% vs. 4.8%; stroke 8.75 vs. 6.2% (all NS). Survival free of cardiac death or MI adjusted HR: 1.28 (95% CI: 0.64 to 2.56; p=0.47); MACCE-free survival adjusted HR: 1.11(95% CI: 0.59 to 2.0; p= 0.73).
Sanmartín et al. (73)	Cohort/2000-2005	96/245	30-d outcomes: MACCE after surgery 2.1% vs. 9.0% (p=0.03).	1-y follow-up: MACCE 10.4% vs. 11.4%, (p=0.50), repeat revascularization 5.2% vs. 0.8% (p=0.02)

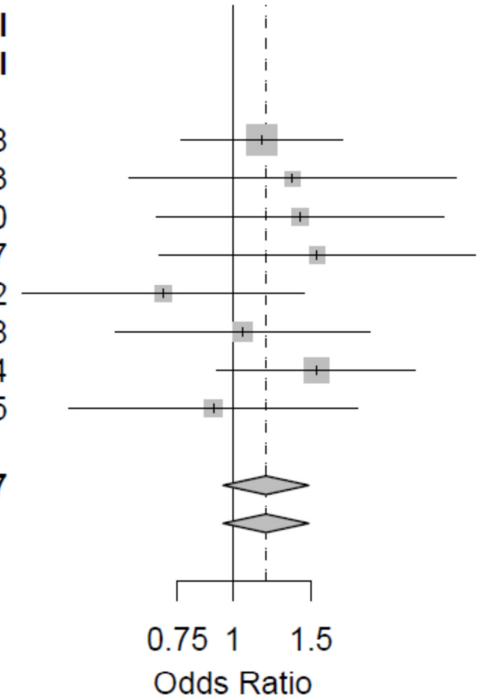
Wu et al. (60)	Cohort/2000-2004	135/135	30-d outcomes: death 5.2% vs. 2.2% (p=0.33)	1-y follow-up: death 16.1% vs. 5.9% OR: 3.06 (95% CI: 0.99 to 9.45) 2-y follow-up: death 18.0% vs. 5.9%; HR: 3.1 (95% CI: 1.42 to 7.14; p=0.005); revascularization 37.3% vs. 6.3%; HR: 6.7; (95% CI: 3.0 to 14.3; p<0.001)

CABG indicates coronary artery bypass grafting; CI, confidence interval; d, day; HR, hazard ratio; LEMANS, Study of Unprotected Left Main Stenting Versus Bypass Surgery; LM, left main; MACCE, Major adverse cardiac and cardiovascular events; MAE, major adverse events; MAIN-COMPARE, Revascularization for Unprotected Left Main Coronary Artery Stenosis: Comparison of Percutaneous Coronary Angioplasty versus Surgical Revascularization; MI, myocardial infarction; NS, not significant; OR, odds ratio; pts, patients; PCI, percutaneous coronary intervention; RR, relative risk; SYNTAX, Synergy Between Percutaneous Coronary Intervention with TAXUS and Cardiac Surgery; TVR, target vessel revascularization; and y, year.

Data Supplement 10. Forest Plot of 1-Year MACCE Rates After PCI or CABG for Unprotected Left Main CAD

Study	Experimental Events	Experimental Total	Control Events	Control Total	OR	95%−CI	W(fixed)	W(random)
SYNTAX	56	357	48	348	1.16	[0.77; 1.76]	28.6%	28.6%
LEMANS	16	52	13	53	1.36	[0.58; 3.19]	6.8%	6.8%
Boudriot	19	101	14	100	1.42	[0.67; 2.98]	8.9%	8.9%
Cedars−Sinai	17	67	12	67	1.55	[0.68; 3.51]	7.4%	7.4%
Chieffo	12	107	22	142	0.70	[0.34; 1.44]	9.3%	9.3%
MAIN−COMPARE	19	371	18	368	1.05	[0.54; 2.03]	11.3%	11.3%
Rodés−Cabau	45	104	51	154	1.54	[0.92; 2.58]	18.8%	18.8%
Sanmartín	10	96	28	245	0.90	[0.43; 1.91]	8.8%	8.8%
Fixed effect model		**1255**		**1477**	**1.19**	**[0.95; 1.48]**	**100%**	**--**
Random effects model					**1.19**	**[0.95; 1.48]**	**--**	**100%**

Heterogeneity: I−squared=0%, tau−squared=0, p=0.73

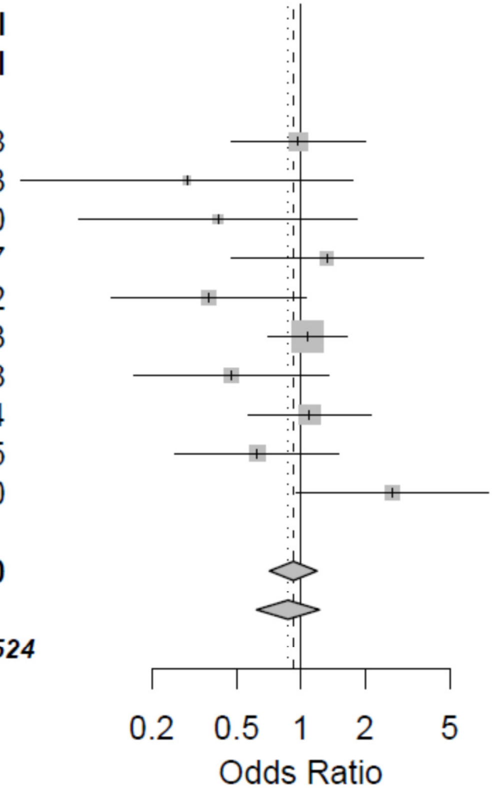


References: (62-67, 69, 70, 72, 177, 178). OR >1 suggest an advantage of CABG over PCI.
CABG indicates coronary artery bypass surgery; CAD, coronary artery disease; CI, confidence interval; LEMANS, Study of Unprotected Left Main Stenting Versus Bypass Surgery; MAIN-COMPARE, Revascularization for Unprotected Left Main Coronary Artery Stenosis: Comparison of Percutaneous Coronary Angioplasty versus Surgical Revascularization; MACCE, major adverse cardiac and cerebrovascular event; OR, odds ratio; PCI, percutaneous coronary intervention; SYNTAX, Synergy Between Percutaneous Coronary Intervention with TAXUS and Cardiac Surgery; and W, weighted.

Data Supplement 11. Forest Plot of 1-Year Mortality Rates After PCI or CABG for Unprotected Left Main CAD

Study	Experimental Events	Experimental Total	Control Events	Control Total	OR	95%−CI	W(fixed)	W(random)
SYNTAX	15	357	15	348	0.97	[0.47; 2.02]	12.4%	13.2%
LEMANS	1	52	4	53	0.29	[0.05; 1.75]	2.1%	3.3%
Boudriot	2	101	5	100	0.41	[0.09; 1.84]	2.9%	4.4%
Cedars−Sinai	9	67	7	67	1.33	[0.47; 3.75]	6.1%	8.1%
Chieffo	3	107	12	142	0.37	[0.13; 1.06]	6.0%	8.0%
MAIN−COMPARE	44	1063	41	1063	1.08	[0.70; 1.66]	35.1%	21.8%
Mäkikallio	2	49	25	238	0.47	[0.16; 1.35]	6.0%	8.0%
Palmerini	21	157	19	154	1.10	[0.57; 2.13]	15.0%	14.8%
Sanmartín	5	96	21	245	0.62	[0.26; 1.51]	8.4%	10.2%
Wu	11	70	5	80	2.68	[0.95; 7.56]	6.2%	8.2%
Fixed effect model		**2119**		**2490**	**0.92**	**[0.71; 1.19]**	**100%**	**--**
Random effects model					**0.87**	**[0.62; 1.22]**	**--**	**100%**

Heterogeneity: I−squared=32%, tau−squared=0.0891, p=0.1524

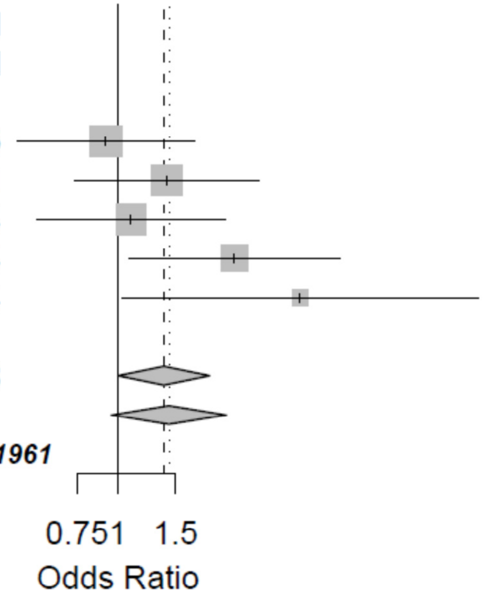


References: (60, 62-67, 69-72, 75, 177, 178). OR >1 suggest an advantage of CABG over PCI.
CABG indicates coronary artery bypass surgery; CAD, coronary artery disease; CI, confidence interval; LEMANS, Study of Unprotected Left Main Stenting Versus Bypass Surgery; MACCE, major adverse cardiac and cerebrovascular event; MAIN-COMPARE, Revascularization for Unprotected Left Main Coronary Artery Stenosis: Comparison of Percutaneous Coronary Angioplasty versus Surgical Revascularization; OR, odds ratio; SYNTAX, Synergy Between Percutaneous Coronary Intervention with TAXUS and Cardiac Surgery; and W, weighted.

Data Supplement 12. Forest Plot of 2-Year Mortality Rates After PCI or CABG for Unprotected Left Main CAD

Study	Experimental Events	Experimental Total	Control Events	Control Total	OR	95%−CI	W(fixed)	W(random)
SYNTAX	20	356	21	345	0.92	[0.49; 1.73]	26.3%	24.5%
MAIN−COMPARE	21	247	18	291	1.41	[0.73; 2.71]	24.5%	23.5%
Palmerini	21	157	19	154	1.10	[0.57; 2.13]	23.8%	23.1%
Rodés−Cabau	19	104	14	154	2.27	[1.08; 4.77]	18.9%	19.9%
Wu	8	43	3	54	3.61	[1.03; 12.70]	6.6%	8.9%
Fixed effect model		**907**		**998**	**1.38**	**[1.00; 1.91]**	**100%**	**--**
Random effects model					**1.43**	**[0.95; 2.15]**	**--**	**100%**

Heterogeneity: I−squared=33.8%, tau−squared=0.0716, p=0.1961

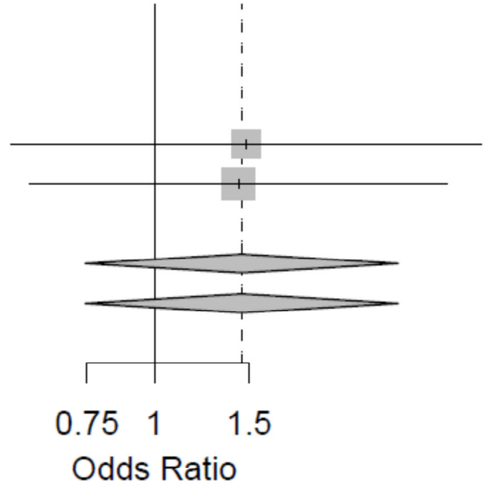


References: (60, 63, 71, 72, 177-179). OR >1 suggest an advantage of CABG over PCI.
CABG indicates coronary artery bypass surgery; CAD, coronary artery disease; CI, confidence interval; MAIN-COMPARE, Revascularization for Unprotected Left Main Coronary Artery Stenosis: Comparison of Percutaneous Coronary Angioplasty versus Surgical Revascularization; OR, odds ratio; PCI, percutaneous coronary intervention; SYNTAX, Synergy Between Percutaneous Coronary Intervention with TAXUS and Cardiac Surgery; and W, weighted.

Data Supplement 13. Forest Plot of 3-Year Mortality Rates After PCI or CABG (for Unprotected Left Main CAD)

Study	Experimental Events	Experimental Total	Control Events	Control Total	OR	95%−CI	W(fixed)	W(random)
Brener	7	35	22	149	1.48	[0.54; 4.05]	44.2%	44.2%
MAIN−COMPARE	10	108	12	179	1.43	[0.58; 3.51]	55.8%	55.8%
Fixed effect model		**143**		**328**	**1.45**	**[0.74; 2.84]**	**100%**	**--**
Random effects model					**1.45**	**[0.74; 2.84]**	**--**	**100%**

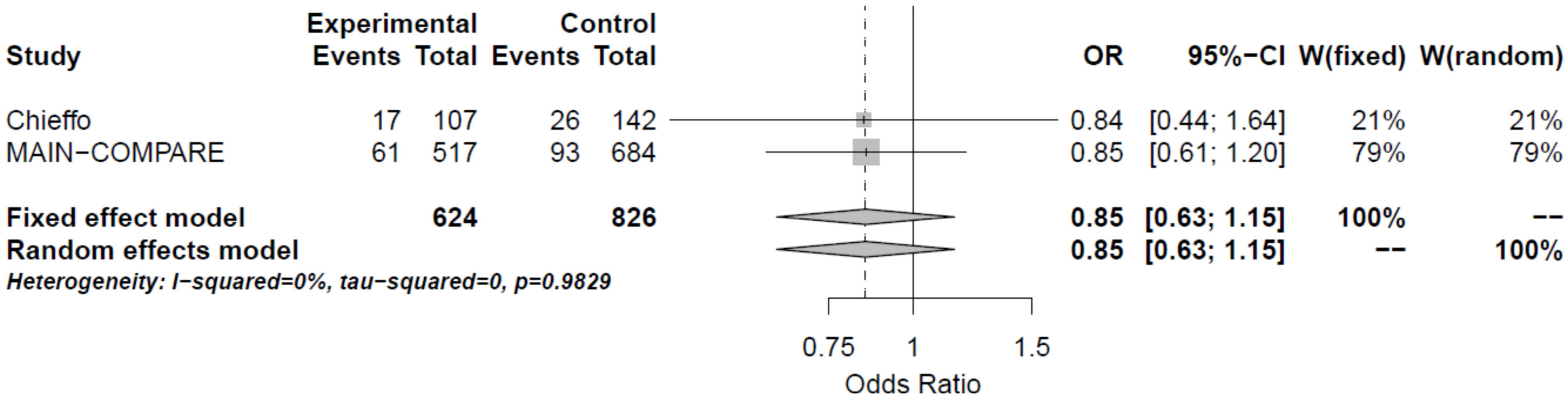
Heterogeneity: I−squared=0%, tau−squared=0, p=0.9625



References: (72, 74). OR >1 suggest an advantage of CABG over PCI.

CABG indicates coronary artery bypass surgery; CAD, coronary artery disease; CI, confidence interval; MAIN-COMPARE, Revascularization for Unprotected Left Main Coronary Artery Stenosis: Comparison of Percutaneous Coronary Angioplasty versus Surgical Revascularization; OR, odds ratio; PCI, percutaneous coronary intervention; and W, weighted.

Data Supplement 14. Forest Plot of 5-Year Mortality Rates After PCI or CABG for Unprotected Left Main CAD



References: (66, 72). OR >1 suggest an advantage of CABG over PCI.
CABG indicates coronary artery bypass surgery; CAD, coronary artery disease; CI, confidence interval; MAIN-COMPARE, Revascularization for Unprotected Left Main Coronary Artery Stenosis: Comparison of Percutaneous Coronary Angioplasty versus Surgical Revascularization; OR, odds ratio; PCI, percutaneous coronary intervention; and W, weighted.

Data Supplement 15. Outcomes of PCI Versus CABG for Patients With Single-Vessel Coronary Disease Involving the Proximal Left Anterior Descending Artery

Author	Type of Study/ Years of Recruitment	Number of Patients PCI/CABG	Short-Term Results for PCI Versus CABG	Long-Term Results for PCI Versus CABG
Greenbaum et al. (97)	Retrospective cohort 1986-1994	754/149	At 1 y, HR for event-free survival for CABG to PCI: 0.20; p<0.0001	At 2 to 7 y, HR for event-free survival for CABG to PCI: 0.62; p=NS
Goy et al. (104, 105, 180)	Randomized 1994-1998	68/66	At 2.4 y: death, MI, revascularization 31% vs. 7% (p<0.001); death or MI 12% vs. 7%	At 5 y: death 9% vs. 3% (p=0.09). At 10 y: death 10% vs. 10% (p=1.0)
Cisowski et al. (100)	Randomized 2000-2001	50/50	At 6 mo: death or MI: 0% vs. 0%; revascularization 12% vs. 2% (p<0.05)	N/A
Diegeler et al. (101)	Randomized 1997- 2001	110/110	At 6 mo: death or MI 3% vs. 6% (p=NS); revascularization 29% vs. 8% (p=0.02)	N/A
Drenth et al. (102, 137)	Randomized 1997-99	51/51	At 6 mo: death or MI 6% vs. 10% (p=NS); revascularization 4% vs. 8% (p=NS)	N/A
Reeves et al. (166)	Randomized 1999-2001	50/50	In-hospital: death or MI 0% vs. 0%	At 1.5 y: death 0% vs. 2% (p=NS); MI 4% vs. 0% (p=NS); revascularization 4% vs. 0% (p=NS). Survival analysis for MIDCAB vs. PTCA HR: 0.77 (95% CI: 0.38 to 1.57; p=0.47)
Thiele et al. (138)	Randomized 1997-2001	110/110	N/A	At 5 y: death 10% vs. 12% (p=0.54); MI 5% vs. 7% (p=0.46); revascularization: 32% vs. 10% (p<0.001)
Hong et al. (106)	Randomized 2003	119/70	In-hospital: death or MI 5.1% vs. 4.3% (p=1.00)	At 6 mo: death or MI: 6.8% vs. 10.1% (p=NS); revascularization 5.9% vs. 1.7% (p=NS)
MASS I (109, 181)	Randomized	72/70	N/A	At 3 y: death, MI or revascularization 24% vs. 3% (p=0.006)
Fraund et al. (103)	Cohort 1998-2001	256/206	In-hospital death or MI 0.8% vs. 2 % (p=NS)	At 3 y: death or MI 4.7% vs. 5.8% (p=NS); revascularization 7.8% vs. 28.9% (p<0.01)

Ben-Gal et al. (99)	Matched cases from prospective cohort 2002-2003 (PCI were all DES)	83/83	30 d death: 0% vs. 1.1% (p=NS)	At 22 mo: death 1.1% vs. 5.5% (p=NS); revascularization 16.8% vs. 3.6% (p=0.005); independent predictors of MACE (Cox analysis) were assignment to the Cypher group (HR: 4.1; 95% CI: 1.26 to 13.16), multivessel disease (HR: 4.3; 95% CI: 1.44 to 13.16), and prior PCI (HR: 4.36; 95% CI: 1.28 to 14.90)
Toutouzas et al. (182)	Cohort	147/110	Inhospital: death or MI or revascularization 0% vs. 0%	At 2 y: death: 2.0% vs. 1.8% (p=NS); MI 0% vs. 0.9%; (p=NS); revascularization 2% vs. 0% (p=0.51)

CABG indicates coronary artery bypass graft; CI, confidence interval; d, day; DES, drug-eluting stents; HR, hazard ratio; MASS, Medicine, Angioplasty, or Surgery Study; MIDCAB, minimally invasive direct coronary artery bypass ;MI, myocardial infarction; mo, month; NS, not significant; PCI, percutaneous coronary intervention; PTCA, percutaneous transluminal coronary angioplasty and y, year.

Data Supplement 16. Cohort Studies Comparing CABG to PCI in Patients With Diabetes

Author	Type of Study/ Year of Recruitment	Number of Patients PCI/CABG	Long-Term Results for PCI Versus CABG
Barsness et al. (122)	Retrospective cohort 1984-1990	770 pts with diabetes total	At 5 y: Similar mortality for PCI and CABG pts: unadjusted 86% vs. 89%; p=NS; adjusted 92% vs. 93%
Weintraub et al. (120)	Cohort 1981-1994	834/1,805	At 10 y: death: 64% vs. 53%; p=0.045 for insulin-requiring pts with diabetes ONLY Insulin-requiring subgroup multivariate HR: 1.35; 95% CI: 1.01 to 1.79 for PTCA vs. CABG
Niles et al. (118)	Retrospective cohort 1992-1996	2,766 pts with diabetes total	At 2 y: higher mortality in PCI pts (HR: 2.0; p=0.038) with 3-vessel disease. Trend to higher mortality in PCI pts (HR: 1.3; p=0.2) with 2-vessel disease, compared to CABG
Van Domburg et al. (92)	Cohort 1970-1985	76/82	At 20 y: survival similar for PCI vs. CABG pts Mortality for CABG vs. PTCA RR: 1.03; 95% CI: 0.87 to 1.24
Brener et al. (115)	Retrospective cohort 1995-1999	265/2,054	At 6 y: deaths for NIDDM: 21% vs. 17%; p=0.008 Deaths for IDDM: 31% vs. 23%; p<0.0001 Unadjusted HR: 1.13; 95% CI: 1.0 to 1.4; p=0.07

Javaid et al. (117)	Retrospective cohort DES era	601 pts with diabetes total 344/257	At 1 y: death, stroke, MI, revascularization HR: 3.5; (p<0.001) for 2-vessel CAD HR: 4.8 (p<0.001) for 3-vessel CAD
Hueb et al. (110)	Cohort 1995-2000	120/221	At 5 y: incidence of cardiac death 11.1% vs. 11.8% (p=NS), revascularization 27.5% vs. 3.2% (p<0.001) The incidence of cardiac death was NS different between PCI and MT groups
Bair et al. (82)	Subset of large cohort 1992-2000	353/1,267	At 15 y: death HR: 0.81; p=0.03
Hannan et al. (85)	Subset of large cohort 2003-2004	2,844/3,256	At 18 mo: death HR: 1.03, p=0.75; death or MI HR: 1.19; p=0.07

CABG indicates coronary artery bypass graft; CAD, coronary artery disease; CI, confidence interval; DES, drug-eluting stent; HR, hazard ratio; IDDM, insulin-dependent diabetes mellitus; MI, myocardial infarction; MT, medical therapy; NIDDM, noninsulin-dependent diabetes mellitus; NS, not significant; pts, patients; PCI, percutaneous coronary intervention; PTCA, percutaneous transluminal coronary angioplasty; RR, relative risk, and y, year.

Data Supplement 17. RCTs of PCI With CABG in Patients With Multivessel CAD and Diabetes

Author	Type of Study in Year of Recruitment	Number of Patients PCI/ CABG	Primary Endpoint for PCI and CABG	Comments
SYNTAX (183)	Randomized 2005-2007	Overall 903/897 DM 231/221	DM: 12-mo death, stroke, MI, or revascularization: 26.0% vs. 14.2% (HR: 1.83, 95% CI: 1.22 to 1.73; p=0.003)	Criterion for noninferiority of PCI to CABG was not met in overall study.
CARDIa (123)	Randomized 2002-2007	DM 256/254	DM: 1-y death, stroke or MI: 13.0% vs. 10.5% ([OR: 1.25, 95% CI: 0.75 to 2.09; p=0.39)	Criterion for noninferiority of PCI to CABG was not met.
BARI 2D (112)	Prestratified/randomized to revascularization-medical therapy	DM 798/807	Death from any cause: • Medical: 87.8% • Revascularization: 88.3% • P=0.97	5-y freedom from MACE: • PCI vs. medical (77.0% vs. 78.9; p=0.15) • CABG vs. medical (77.6% vs. 69.5%; p=0.01) • interaction p=0.002

ARTS I (121, 162, 184)	Randomized 1997-1998	Overall 600/605 DM 112/96	Overall: 5-y overall freedom from death, stroke, or MI 18.2% vs. 14.9% (RR: 1.22; 95% CI: 0.95 to 1.58; p=0.14) DM: 1-y freedom from death, stroke, MI, or revascularization (63.4% vs. 84.4%; p< 0.001)	
MASS II (110)	Randomized 1995-2000	Overall 205/203 DM 56/59	DM: 1-y death 5.3% vs. 6.8% (p=0.5)	

*ARTS indicates Arterial Revascularization Therapies Study; BARI 2D, Bypass Angioplasty Revascularization Investigation 2 Diabetes; CABG, coronary artery bypass graft; CAD, coronary artery disease; CARDIA, Coronary Artery Revascularization in Diabetes; CI, confidence interval; DM, diabetes mellitus; HR, hazard ratio; LAD, left anterior descending artery; LOE, level of evidence; MACE, major adverse cardiac event; MASS II, Medicine, Angioplasty, or Surgery Study (MASS II); OR, odds ratio; MI, myocardial infarction; PCI, percutaneous coronary intervention; RR, relative risk; SYNTAX, Synergy Between Percutaneous Coronary Intervention with TAXUS and Cardiac Surgery; and y, year.

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