CABG/PCI

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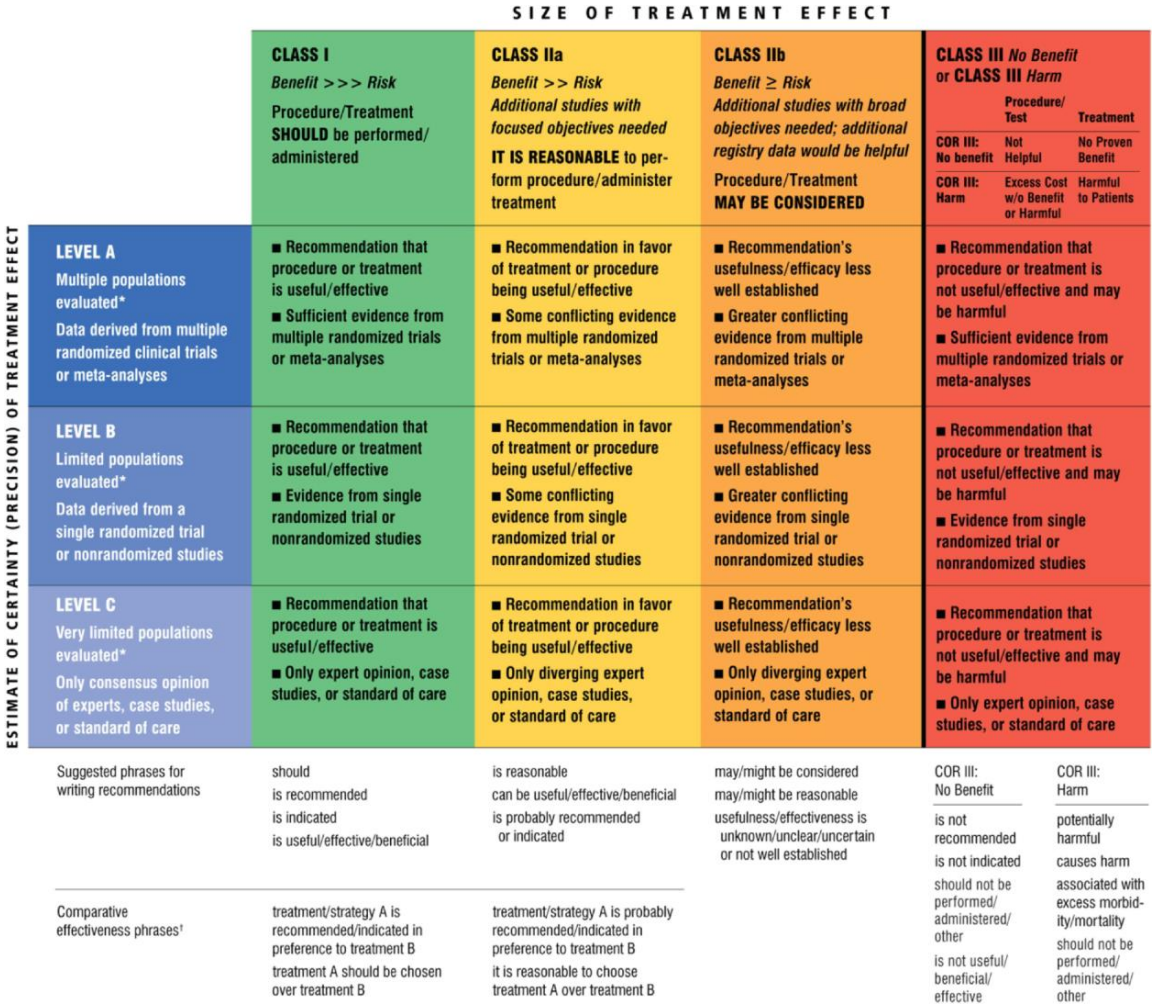
2011 ACCF/AHA Guideline for Coronary Artery Bypass Graft Surgery

CLINICAL SUBSETS

Applying Classification of Recommendations and Level of Evidence



SIZE OF TREATMENT EFFECT

ESTIMATE OF CERTAINTY (PRECISION) OF TREATMENT EFFECT

	CLASS I *Benefit >>> Risk* Procedure/Treatment **SHOULD** be performed/ administered	CLASS IIa *Benefit >> Risk* *Additional studies with focused objectives needed* **IT IS REASONABLE** to perform procedure/administer treatment	CLASS IIb *Benefit ≥ Risk* *Additional studies with broad objectives needed; additional registry data would be helpful* Procedure/Treatment **MAY BE CONSIDERED**	CLASS III *No Benefit* or CLASS III *Harm* Procedure/Test / Treatment COR III: No benefit — Not Helpful / No Proven Benefit COR III: Harm — Excess Cost w/o Benefit or Harmful / Harmful to Patients
LEVEL A Multiple populations evaluated* Data derived from multiple randomized clinical trials or meta-analyses	■ Recommendation that procedure or treatment is useful/effective ■ Sufficient evidence from multiple randomized trials or meta-analyses	■ Recommendation in favor of treatment or procedure being useful/effective ■ Some conflicting evidence from multiple randomized trials or meta-analyses	■ Recommendation's usefulness/efficacy less well established ■ Greater conflicting evidence from multiple randomized trials or meta-analyses	■ Recommendation that procedure or treatment is not useful/effective and may be harmful ■ Sufficient evidence from multiple randomized trials or meta-analyses
LEVEL B Limited populations evaluated* Data derived from a single randomized trial or nonrandomized studies	■ Recommendation that procedure or treatment is useful/effective ■ Evidence from single randomized trial or nonrandomized studies	■ Recommendation in favor of treatment or procedure being useful/effective ■ Some conflicting evidence from single randomized trial or nonrandomized studies	■ Recommendation's usefulness/efficacy less well established ■ Greater conflicting evidence from single randomized trial or nonrandomized studies	■ Recommendation that procedure or treatment is not useful/effective and may be harmful ■ Evidence from single randomized trial or nonrandomized studies
LEVEL C Very limited populations evaluated* Only consensus opinion of experts, case studies, or standard of care	■ Recommendation that procedure or treatment is useful/effective ■ Only expert opinion, case studies, or standard of care	■ Recommendation in favor of treatment or procedure being useful/effective ■ Only diverging expert opinion, case studies, or standard of care	■ Recommendation's usefulness/efficacy less well established ■ Only diverging expert opinion, case studies, or standard of care	■ Recommendation that procedure or treatment is not useful/effective and may be harmful ■ Only expert opinion, case studies, or standard of care
Suggested phrases for writing recommendations	should is recommended is indicated is useful/effective/beneficial	is reasonable can be useful/effective/beneficial is probably recommended or indicated	may/might be considered may/might be reasonable usefulness/effectiveness is unknown/unclear/uncertain or not well established	COR III: No Benefit — is not recommended; is not indicated; should not be performed/ administered/ other; is not useful/ beneficial/ effective COR III: Harm — potentially harmful; causes harm; associated with excess morbidity/mortality; should not be performed/ administered/ other
Comparative effectiveness phrases†	treatment/strategy A is recommended/indicated in preference to treatment B treatment A should be chosen over treatment B	treatment/strategy A is probably recommended/indicated in preference to treatment B it is reasonable to choose treatment A over treatment B		

CABG in Patients With Acute MI

- Emergency CABG

1) Primary PCI has failed or cannot be performed.

2) Coronary anatomy is suitable for CABG.

3) Persistent ischemia of a significant area of myocardium at rest and/or hemodynamic instability refractory to nonsurgical therapy.

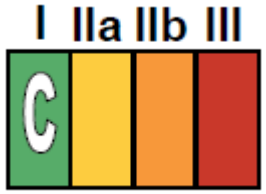
- Emergency CABG

Undergoing surgical repair of a post-infarction mechanical complication of MI(ventricular septal rupture, mitral valve insufficiency or free wall rupture)

CABG in Patients With Acute MI

- Emergency CABG

Cardiogenic shock and who are suitable for CABG irrespective of the time interval from MI to onset of shock and time from MI to CABG.



- Emergency CABG

Patients with life-threatening ventricular arrhythmias in the presence of LM stenosis ≥ 50% and/or 3VD

CABG in Patients With Acute MI

- Multivessel CAD with recurrent angina or MI within the first 48 hours of STEMI.

- Early revascularization with PCI or CABG

Selected patients 〉 75 Yrs with STEMI or LBBB who are suitable for revascularization irrespective of the time interval from MI to onset of shock.

CABG in Patients With Acute MI

- Emergency CABG **should not be performed** with persistent angina and a small area of viable myocardium who are stable hemodynamically.

- Emergency CABG **should not be performed** with no-reflow (successful epicardial reperfusion with unsuccessful microvascular reperfusion).

Life-Threatening Ventricular Arrhythmias

- Resuscitated sudden cardiac death or sustained VT thought to be caused by significant CAD (≥50% stenosis of LM and/or ≥70% stenosis of 1, 2, or all 3 epicardial coronary arteries) and resultant myocardial ischemia.

- CABG **should not be performed** in patients with VT with scar and no evidence of ischemia.

Emergency CABG After Failed PCI

- Emergency CABG

Failed PCI in the presence of ongoing ischemia or threatened occlusion with substantial myocardium.

- Emergency CABG

Failed PCI for hemodynamic compromise in patients without impairment of the coagulation system and without a previous sternotomy

Emergency CABG After Failed PCI

- Emergency CABG

Failed PCI for retrieval of a foreign body (most likely a fractured guidewire or stent) in a crucial anatomic location.

- Emergency CABG

Failed PCI for hemodynamic compromise in patients with impairment of the coagulation system and without previous sternotomy.

- Emergency CABG

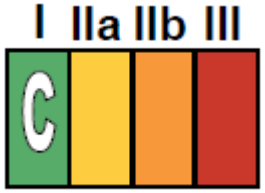
Failed PCI for hemodynamic compromise in patients with previous sternotomy.

Emergency CABG After Failed PCI

- Emergency CABG **should not be performed** after failed PCI in the absence of ischemia or threatened occlusion.

- Emergency CABG **should not be performed** after failed PCI if revascularization is impossible because of target anatomy or a no-reflow state.

CABG in Association With Other Cardiac Procedures



- Noncoronary cardiac surgery

≥50% luminal narrowing of the LM.

≥70% luminal narrowing of other major coronary arteries.

- LIMA is reasonable to bypass a significantly narrowed LAD.

- Moderately diseased coronary arteries (≥50% luminal narrowing).

CAD REVASCULARIZATION
:REVASCULARIZATION TO IMPROVE SURVIVAL

Heart Team Approach to Revascularization Decisions

- Heart Team approach to revascularization is recommended in patients with unprotected LM or complex CAD.

- Calculation of the STS and SYNTAX scores is reasonable in patients with unprotected LM and complex CAD

Left Main CAD Revascularization

- CABG

Significant (≥50%) LM stenosis.

- PCI

Selected stable patients with significant (≥50%) UPLM CAD

1) Anatomic conditions associated with a low risk of PCI procedural complications.
2) Clinical characteristics that predict a significantly increased risk of adverse surgical outcomes.

Left Main CAD Revascularization

- PCI

UA/NSTEMI if not a candidate for CABG.

- PCI

Acute STEMI when distal coronary flow TIMI <3, and PCI can be performed more rapidly and safely than CABG.

Left Main CAD Revascularization

- PCI

Stable patients with significant (≥50% stenosis) UPLM

1) Anatomic conditions associated with a low - intermediate risk of PCI complications and intermediate to high likelihood of good long term outcome(SYNTAX score<33, bifurcation LM).
2) Clinical characteristics that predict an increased risk of adverse surgical outcomes(mod-severe COPD, disability prior stroke or prior cardiac surgery).

- PCI to improve survival **should not be performed** in stable patients who have unfavorable anatomy.

Non-Left Main CAD Revascularization

- CABG

1)Significant(≥70%) stenoses of 3 VD (± proximal LAD)

2)Proximal LAD + Significant(≥70%) stenoses 2 VD

CABG

- CABG or PCI

Survivors of sudden cardiac death with presumed ischemia-mediated VT caused by significant(≥70%) stenosis.

PCI

Non-Left Main CAD Revascularization

- CABG

Significant(≥70%) stenoses without proximal LAD disease in 2 VD with extensive ischemia.

- CABG

Mild–moderate LV systolic dysfunction (EF 35%-50%) and significant (≥ 70%) stenosis multi-vessel CAD or proximal LAD stenosis.

Non-Left Main CAD Revascularization

- CABG with a LIMA graft

Significant (≥70%) stenosis in the proximal LAD and evidence of extensive ischemia.

- CABG

Complex 3-vessel VD(SYNTAX score >22) ± proximal LAD.

- CABG

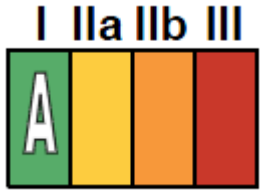
Multivessel VD and DM, particularly if a LIMA graft can be anastomosed to the LAD.

Non-Left Main CAD Revascularization

- CABG or PCI **should not be performed** with the primary or sole intent to improve survival in patients with SIHD with 1 or more coronary stenoses that are not anatomically or functionally significant, involve only the LCX or RCA, or subtend only a small area of viable myocardium.

CAD REVASCULARIZATION
:REVASCULARIZATION TO IMPROVE SYMPTOMS

Revascularization to Improve Symptoms



- CABG or PCI

≥1 significant (≥70%) stenoses amenable to revascularization and unacceptable angina despite GDMT.

- CABG or PCI

≥1 significant (≥70%) stenoses and unacceptable angina for whom GDMT cannot be implemented because of medication contraindications, adverse effects, or patient preferences.

Revascularization to Improve Symptoms

- PCI

Previous CABG, ≥1 significant (≥70%) stenoses associated with ischemia, and unacceptable angina despite GDMT.

- CABG

Complex 3-vessel CAD(SYNTAX score >22) ± proximal LAD.

Revascularization to Improve Symptoms

- CABG

Previous CABG, ≥1 significant (≥70%) stenoses not amenable to PCI, and unacceptable angina despite GDMT.

- CABG or PCI to improve symptoms **should not be performed** in patients who do not meet anatomic (≥ 50% LM or ≥ 70% non– LM) or physiological criteria for revascularization.

2016 ACC/AHA Guideline Focused Update on Duration of Dual Antiplatelet Therapy in Patients With Coronary Artery Disease
A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines

Recommendations for CABG

COR	LOE	Recommendations
I	C-EO	In patients treated with DAPT after coronary stent implantation who subsequently undergo CABG, $P2Y_{12}$ inhibitor therapy should be resumed postoperatively so that DAPT continues until the recommended duration of therapy is completed.
I	C-LD	In patients with ACS (NSTE-ACS or STEMI) being treated with DAPT who undergo CABG, $P2Y_{12}$ inhibitor therapy should be resumed after CABG to complete 12 months of DAPT therapy after ACS (52-54,118-120).
I	B-NR	In patients treated with DAPT, a daily aspirin dose of 81 mg (range, 75 mg to 100 mg) is recommended (56-60,75-78).
IIb	B-NR	In patients with SIHD, DAPT (with clopidogrel initiated early postoperatively) for 12 months after CABG may be reasonable to improve vein graft patency (121-125).

2016 ACC/AHA Guideline Focused Update on Duration of Dual Antiplatelet Therapy in Patients With Coronary Artery Disease
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7.4. Duration of DAPT in Patients With ACS Treated With CABG: Recommendation

See *Online Data Supplement 4 and 11* for evidence supporting this recommendation.

Recommendation for Duration of DAPT in Patients With ACS Treated With CABG

COR	LOE	Recommendation
I	C-LD	In patients with ACS being treated with DAPT who undergo CABG, $P2Y_{12}$ inhibitor therapy should be resumed after CABG to complete 12 months of DAPT therapy after ACS (52-54,118-120).

Recommendations for CABG

- UPLM 

- 3VD with and without proximal LAD disease
- Complex 3VD 

- 2VD with proximal LAD disease 

- 2VD without proximal LAD disease with extensive ischemia 

- 1 proximal LAD disease with LIMA 

- LV dysfunction(EF 35% -50%) 

- Survivors of sudden cardiac death with presumed ischemia-mediated VT