ESC/EACTS guidelines 2018 Revaskularizace u SS

Petr Kala

IKK FN Brno

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Petr Kala

- bez konfliktu zájmů,

- reviewer za ČKS těchto guidelines

ESC European Society of Cardiology

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ESC/EACTS GUIDELINES

2018 ESC/EACTS Guidelines on myocardial revascularization

The Task Force on myocardial revascularization of the European Society of Cardiology (ESC) and European Association for Cardio-Thoracic Surgery (EACTS)

Developed with the special contribution of the European Association for Percutaneous Cardiovascular Interventions (EAPCI)

Authors/Task Force Members: Franz-Josef Neumann* (ESC Chairperson) (Germany), Miguel Sousa-Uva*[1] (EACTS Chairperson) (Portugal), Anders Ahlsson[1] (Sweden), Fernando Alfonso (Spain), Adrian P. Banning (UK), Umberto Benedetto[1] (UK), Robert A. Byrne (Germany), Jean-Philippe Collet (France), Volkmar Falk[1] (Germany), Stuart J. Head[1] (The Netherlands), Peter Jüni (Canada), Adnan Kastrati (Germany), Akos Koller (Hungary), Steen D. Kristensen (Denmark), Josef Niebauer (Austria), Dimitrios J. Richter (Greece), Petar M. Seferović (Serbia), Dirk Sibbing (Germany), Giulio G. Stefanini (Italy), Stephan Windecker (Switzerland), Rashmi Yadav[1] (UK), Michael O. Zembala[1] (Poland)

Document Reviewers: William Wijns (ESC Review Co-ordinator) (Ireland), David Glineur[1] (EACTS Review Co-ordinator) (Canada), Victor Aboyans (France), Stephan Achenbach (Germany), Stefan Agewall (Norway), Felicita Andreotti (Italy), Emanuele Barbato (Italy), Andreas Baumbach (UK), James Brophy (Canada), Héctor Bueno (Spain), Patrick A. Calvert (UK), Davide Capodanno (Italy), Piroze M. Davierwala[1]

Kritéria pro výběr typu revaskularizace (PCI vs CABG)

Intervenční kardiologie
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Recommendations on criteria for the choice between coronary artery bypass grafting and percutaneous coronary intervention

Recommendations	Class[a]	Level[b]
Assessment of surgical risk[c]		
It is recommended that the STS score is calculated to assess in-hospital or 30 day mortality, and in-hospital morbidity after CABG.[112,114,138]	I	B
Calculation of the EuroSCORE II score may be considered to assess in-hospital mortality after CABG.[112]	IIb	B
Assessment of CAD complexity		
In patients with LM or multivessel disease, it is recommended that the SYNTAX score is calculated to assess the anatomical complexity of CAD and the long-term risk of mortality and morbidity after PCI.[117–124]	I	B
When considering the decision between CABG and PCI completeness of revascularization should be prioritized.[131,132,134–136]	IIa	B

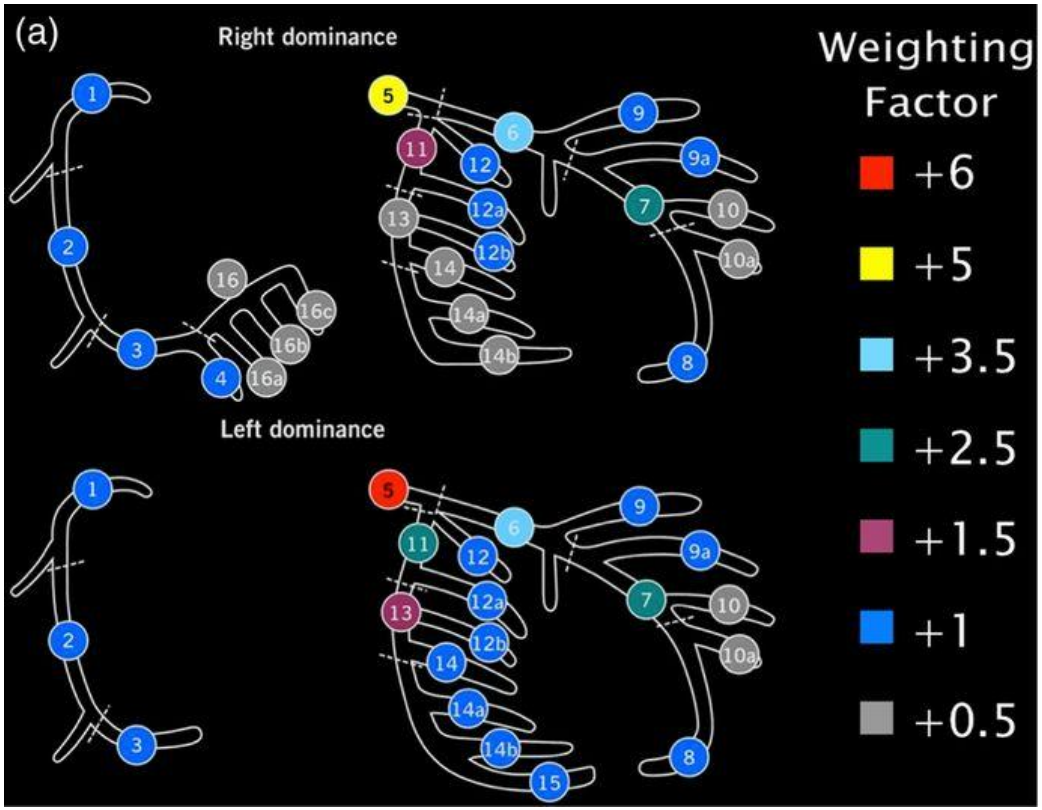
EuroSCORE = European System for Cardiac Operative Risk Evaluation; CABG = coronary artery bypass grafting; CAD = coronary artery disease; LM = left main; PCI = percutaneous coronary intervention; STS = Society of Thoracic Surgeons; SYNTAX = Synergy between Percutaneous Coronary Intervention with TAXUS and Cardiac Surgery.

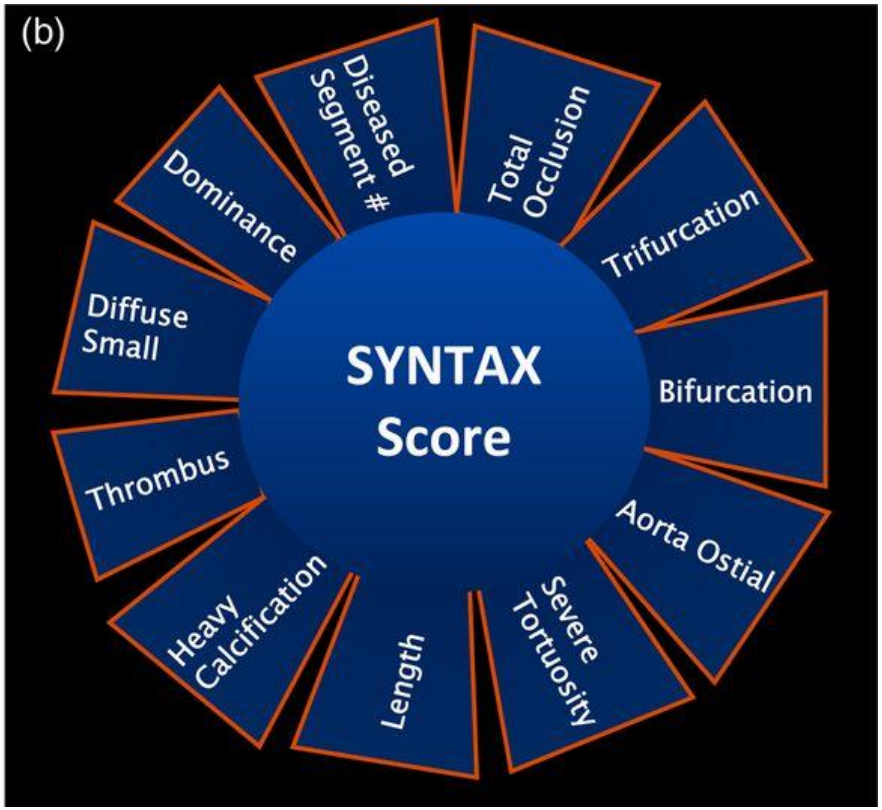
[a]Class of recommendation.

[b]Level of evidence.

[c]Level of evidence refers to prediction of outcomes.

Kritéria pro výběr typu revaskularizace (PCI vs CABG)
Syntax I skóre





Farroq V et al. BMJ Heart 2013

Kritéria pro výběr typu revaskularizace
Syntax II skóre

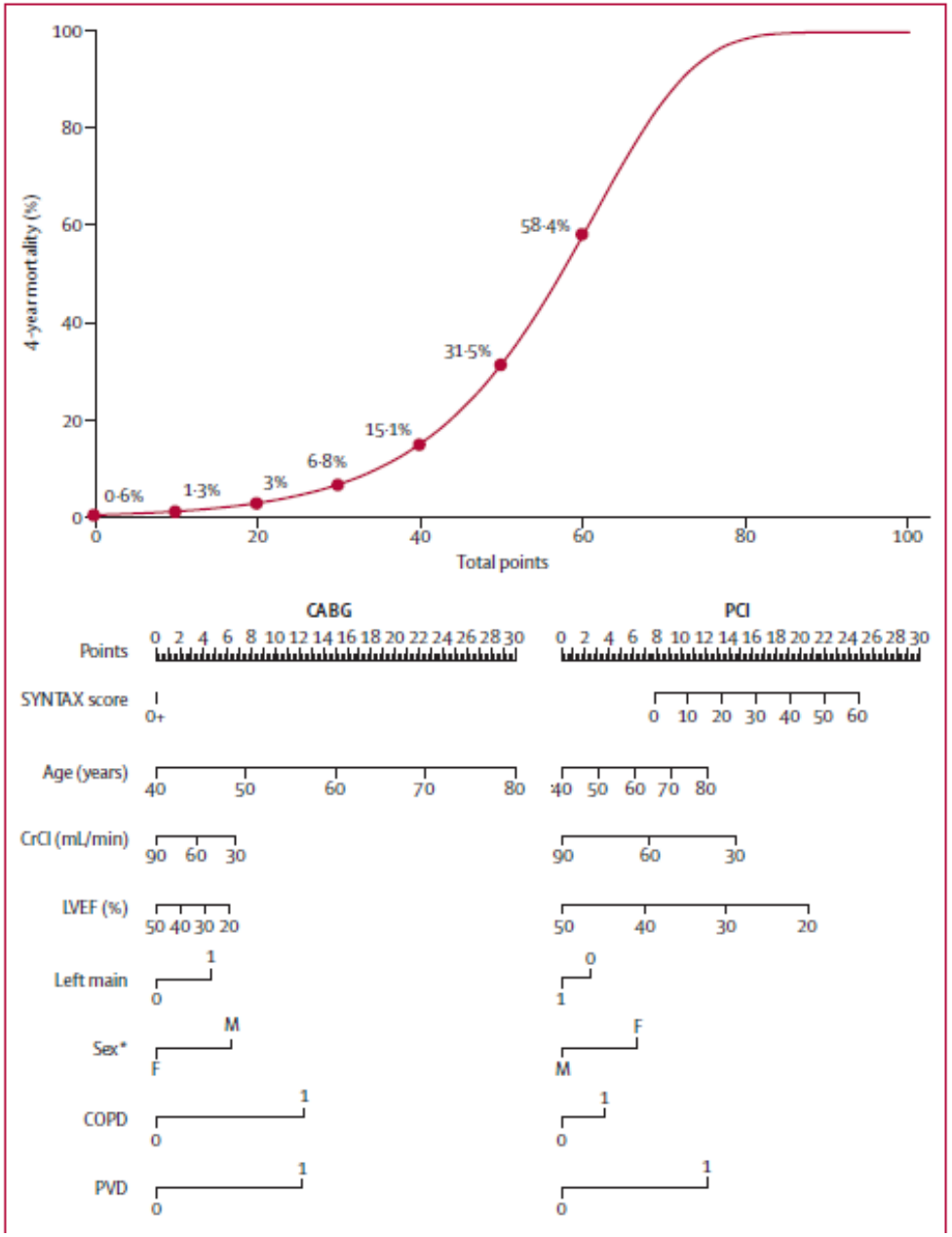


Figure **SYNTAX Score II nomogram for bedside application**

Total number of points for 8 factors can be used to accurately predict 4-year mortality for the individual patient proposing to undergo for CABG or PCI. For example, a 60 year old man with an anatomical SYNTAX score of 30, unprotected left main coronary artery disease, creatinine clearance of 60 mL/min, an LVEF of 50%, and COPD, would have 41 points (predicted 4-year mortality 16·3%) to undergo CABG and 33 points (predicted 4-year mortality 8·7%) to undergo PCI respectively. The same example without COPD included would lead to identical points (29 points) and 4-year mortality predictions (6·3%) for CABG and PCI. COPD defined with EuroSCORE[11] definition, long-term use of bronchodilators or steroids for lung disease. PVD defined according to ARTS I[19] definition, aorta and arteries other than coronaries, with exercise-related claudication, or revascularisation surgery, or reduced or absent pulsation, or angiographic stenosis of more than 50%, or combinations of these characteristics. CABG=coronary artery bypass surgery. PCI=percutaneous coronary intervention. CrCl=creatinine clearance. LVEF=left ventricular ejection fraction. Left main=unprotected left main coronary artery disease. 3VD=three-vessel disease. COPD=chronic obstructive pulmonary disease. PVD=peripheral vascular disease. *Because of the rarity of complex coronary artery disease in premenopausal women, mortality predictions in younger women are predominantly based on the linear relation of age with mortality. The differences in mortality predictions in younger women between CABG and PCI will therefore be affected by larger 95% CIs than those in older women.

Zdroj: ECRI-trials.com

Kritéria pro výběr typu revaskularizace STS a EuroScore II

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Variable	Preoperative score	Combined score
Age (for each five years over 55 years)	1	1
BMI 30–40 kg/m²	4	3
BMI 40 kg/m²	9	8
Diabetes	3	3
Renal failure	4	4
Congestive heart failure	3	3
Peripheral vascular disease	2	2
Female gender	2	2
Chronic lung disease	2	3
Cardiogenic shock	6	n/a
Myocardial infarction	2	n/a
Concomitant surgery	4	n/a
Perfusion time 100–200 minutes	n/a	3
Perfusion time 200–300 minutes	n/a	7
Intra-aortic balloon pump	n/a	5

STS, Society for Thoracic Surgeons; BMI, body mass index.

Important: The previous additive [1] and logistic [2] EuroSCORE models are out of date. A new model has been prepared from fresh data and is launched at the 2011 EACTS meeting in Lisbon. The model is called EuroSCORE II [3] - this online calculator has been updated to use this new model. If you need to calculate the older "additive" or "logistic" EuroSCORE please visit the old calculator by clicking here.

Patient related factors			Cardiac related factors		
Age [1] (years)	0	0	NYHA	select	0
Gender	select	0	CCS class 4 angina [8]	no	0
Renal impairment [2] *See calculator below for creatinine clearance*	normal (CC >85ml/min)	0	LV function	select	0
Extracardiac arteriopathy [3]	no	0	Recent MI [9]	no	0
Poor mobility [4]	no	0	Pulmonary hypertension [10]	no	0
Previous cardiac surgery	no	0	**Operation related factors**		
Chronic lung disease [5]	no	0	Urgency [11]	elective	0
Active endocarditis [6]	no	0	Weight of the intervention [12]	isolated CABG	0
Critical preoperative state [7]	no	0	Surgery on thoracic aorta	no	0
Diabetes on insulin	no	0			
EuroSCORE II — *EuroSCORE II*	0				
Note: This is the 2011 EuroSCORE II	Calculate	Clear			

Indikace zátěžový testů, koronární fyziologie a IVUS

Intervenční kardiologie
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Recommendations	Class[a]	Level[b]
Non-invasive stress imaging (CMR, stress echocardiography, SPECT, or PET) may be considered for the assessment of myocardial ischaemia and viability in patients with HF and CAD (considered suitable for coronary revascularization) before the decision on revascularization.[9–11]	IIb	B

Recommendations	Class[a]	Level[b]
When evidence of ischaemia is not available, FFR or iwFR are recommended to assess the haemodynamic relevance of intermediate-grade stenosis.[15,17,18,39]	I	A
FFR-guided PCI should be considered in patients with multivessel disease undergoing PCI.[29,31]	IIa	B
IVUS should be considered to assess the severity of unprotected left main lesions.[35–37]	IIa	B

Revaskularizace „prognostická“ a „symptomatická“

Extent of CAD (anatomical and/or functional)		Class[a]	Level[b]
For prognosis	Left main disease with stenosis >50%.[c 68–71]	I	A
	Proximal LAD stenosis >50%.[c 62,68,70,72]	I	A
	Two- or three-vessel disease with stenosis >50% with impaired LV function (LVEF ≤35%).[c 61,62,68,70,73–83]	I	A
	Large area of ischaemia detected by functional testing (>10% LV) or abnormal invasive FFR.[d 24,59,84–90]	I	B
	Single remaining patent coronary artery with stenosis >50%.[c]	I	C
For symptoms	Haemodynamically significant coronary stenosis[c] in the presence of limiting angina or angina equivalent, with insufficient response to optimized medical therapy.[e 24,63,91–97]	I	A

1. Revaskularizace pacientů s chronickým SS a EF ≤35%

Recommendations	Class[a]	Level[b]
In patients with severe LV systolic dysfunction and coronary artery disease suitable for intervention, myocardial revascularization is recommended.[81,250]	I	B
CABG is recommended as the first revascularization strategy choice in patients with multivessel disease and acceptable surgical risk.[68,81,248,255]	I	B
In patients with one- or two-vessel disease, PCI should be considered as an alternative to CABG when complete revascularization can be achieved.	IIa	C
In patients with three-vessel disease, PCI should be considered based on the evaluation by the Heart Team of the patient's coronary anatomy, the expected completeness of revascularization, diabetes status, and comorbidities.	IIa	C
LV aneurysmectomy during CABG should be considered in patients with NYHA class III/IV, large LV aneurysm, large thrombus formation, or if the aneurysm is the origin of arrhythmias.	IIa	C

1. Revaskularizace pacientů s chronickým SS a EF ≤35%

STICH trial

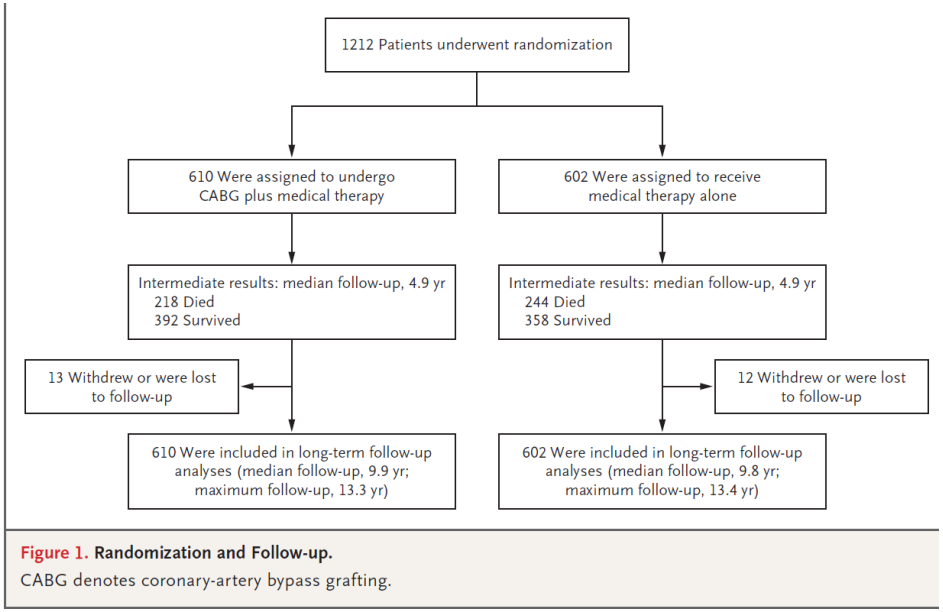

Figure 1. Randomization and Follow-up.
CABG denotes coronary-artery bypass grafting.

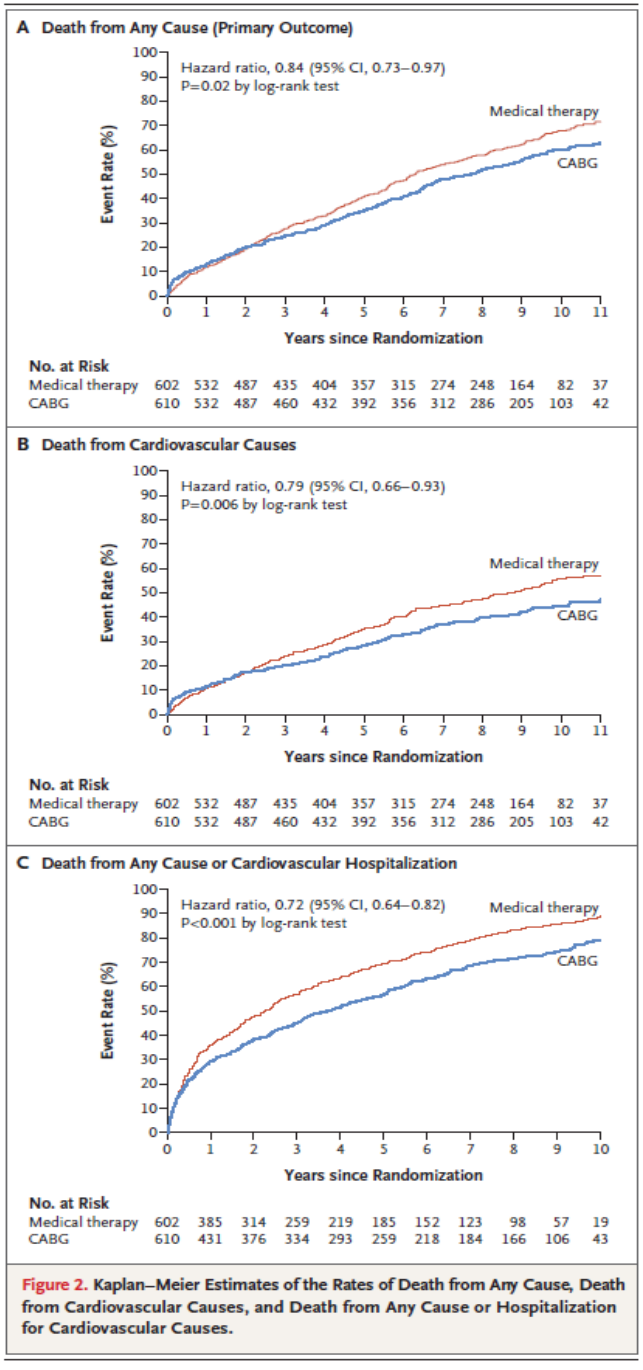

Figure 2. Kaplan–Meier Estimates of the Rates of Death from Any Cause, Death from Cardiovascular Causes, and Death from Any Cause or Hospitalization for Cardiovascular Causes.

Velazquez EJ et al., NEJM 2016 (STICH - extended FU)

1. Revaskularizace pacientů s chronickým SS a EF ≤35%

Surgical ventricular restoration during CABG may be considered in selected patients treated in centres with expertise.[252–254,256,257]	IIb	B

The STICH trial revealed no difference in the primary outcome (total mortality or cardiac hospitalization) between patients randomly allocated to CABG vs. combined CABG and SVR.252
Subgroup analyses of patients with a less dilated LV and better LVEF showed benefit from SVR.253
In the STICH trial, a post-operative LV end-systolic volume index <_70 mL/m2, after CABG plus SVR, resulted in improved survival compared with CABG alone.252,254
In experienced centres, SVR may be done at the time of CABG if HF symptoms are more predominant than angina, and if myocardial scar and moderate LV remodelling are present.

2. Revaskularizace pacientů s akutním SS a kardiogenním šokem

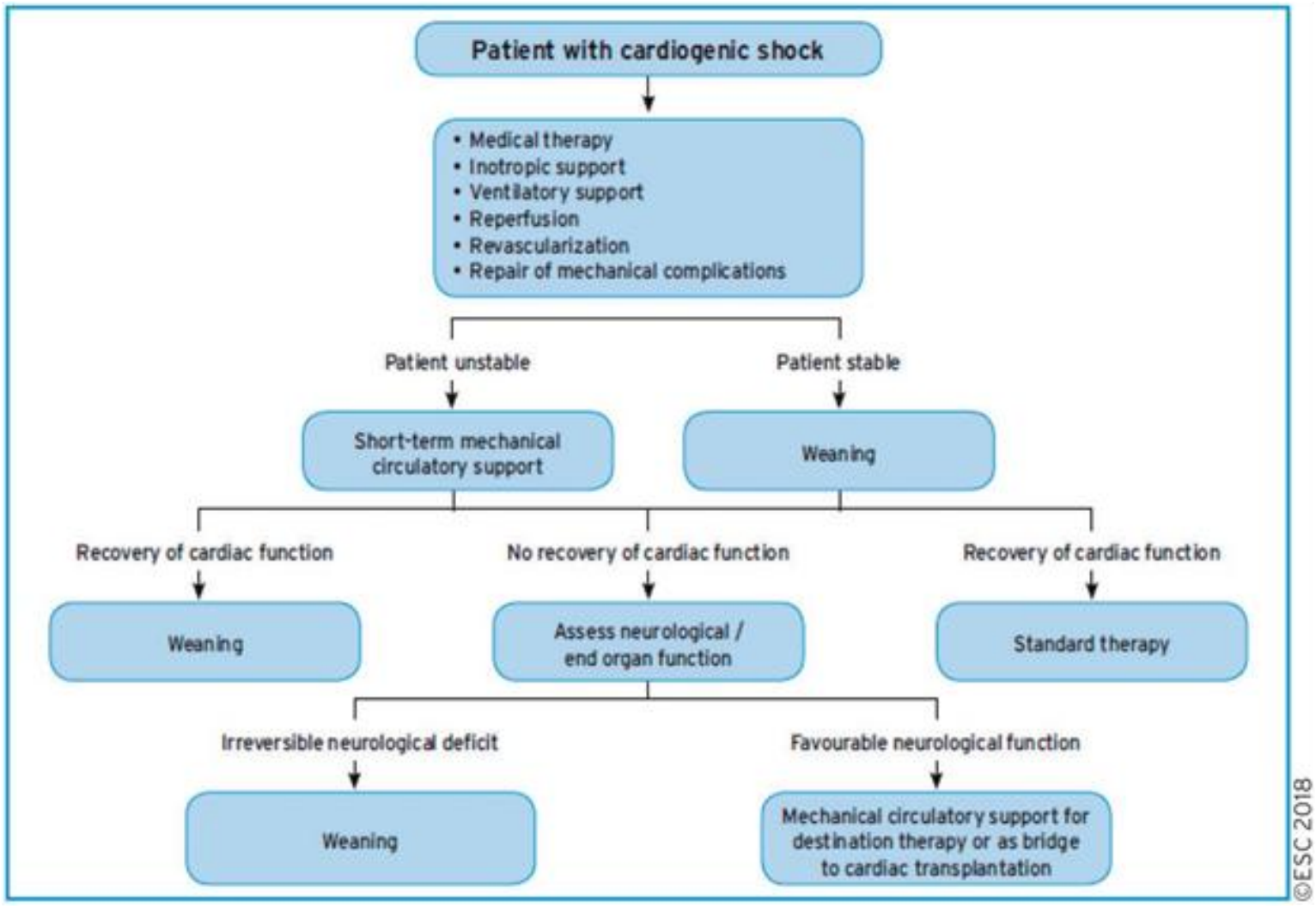

Figure 6 Algorithm for the management of patients with cardiogenic shock.

Management pacientů v kardiogenním šoku

Intervenční kardiologie
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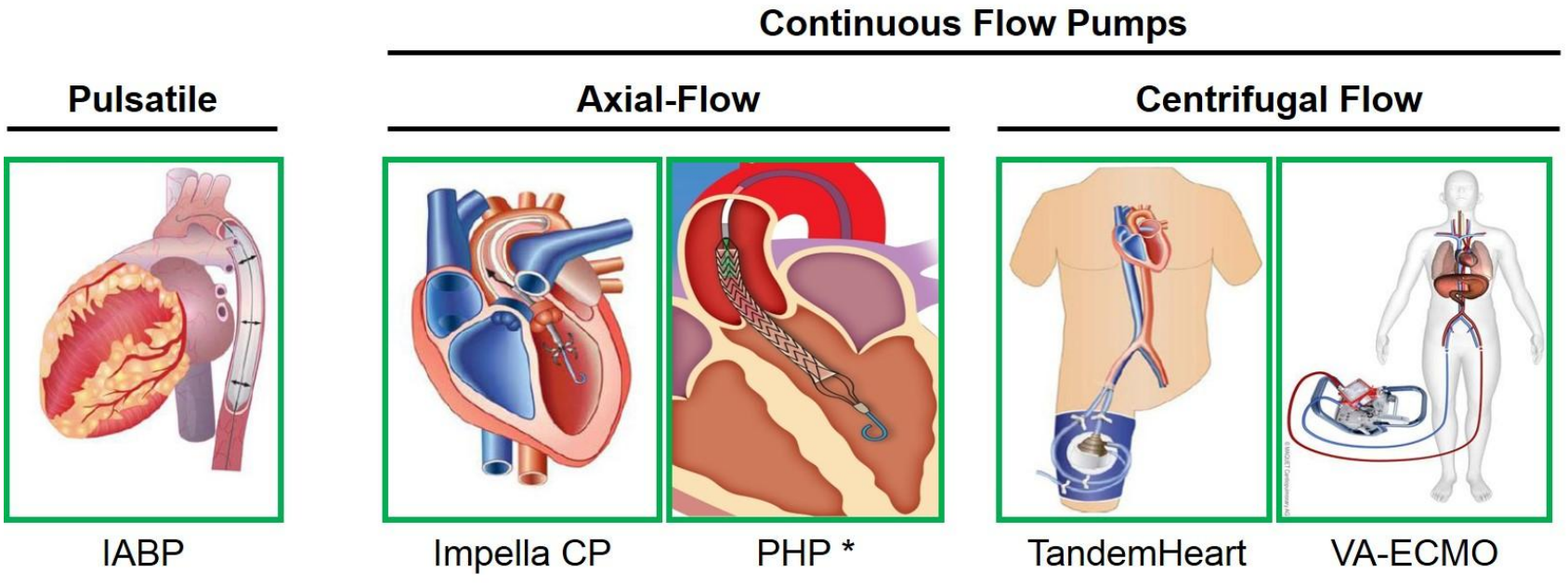
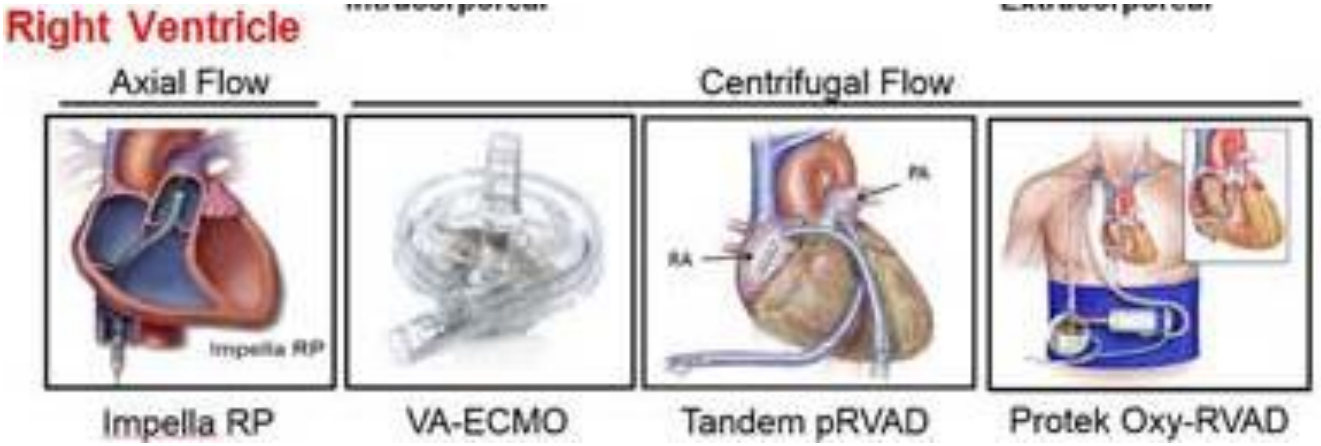
Recommendations	Class[a]	Level[b]
Emergency coronary angiography is indicated in patients with acute heart failure or cardiogenic shock complicating ACS.[258,269]	I	B
Emergency PCI of the culprit lesion is indicated for patients with cardiogenic shock due to STEMI or NSTE-ACS, independent of time delay of symptom onset, if coronary anatomy is amenable to PCI.[258]	I	B
Emergency CABG is recommended for patients with cardiogenic shock if the coronary anatomy is not amenable to PCI.[258]	I	B
In cases of haemodynamic instability, emergency surgical or catheter-based repair of mechanical complications of ACS is indicated, as decided by the Heart Team.	I	C

Mechanické srdeční podpory



Kapur N, ACC 2016

* Investigational

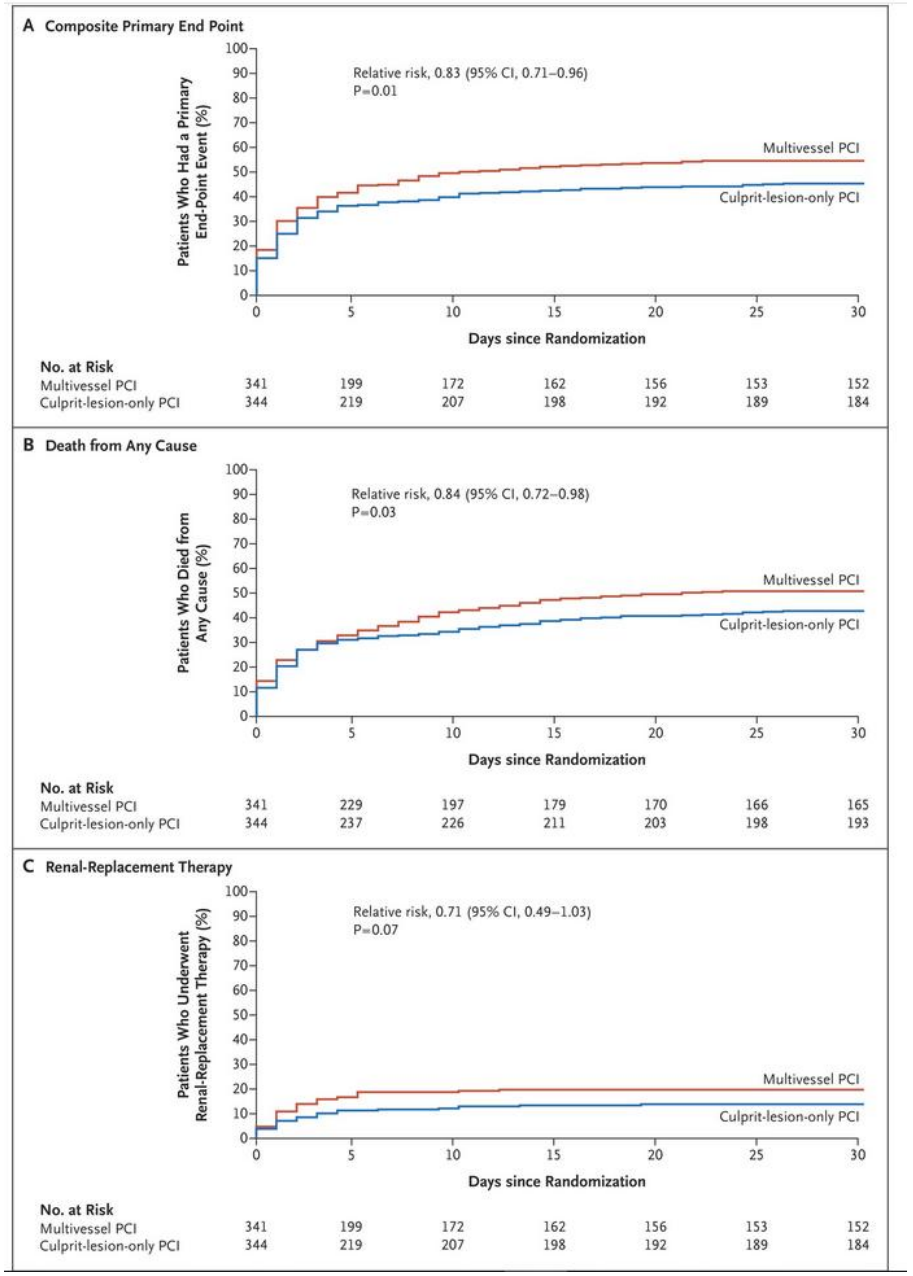


zdroj: TuftsMedicalCenter.org

Primární PCI: strategie a technika

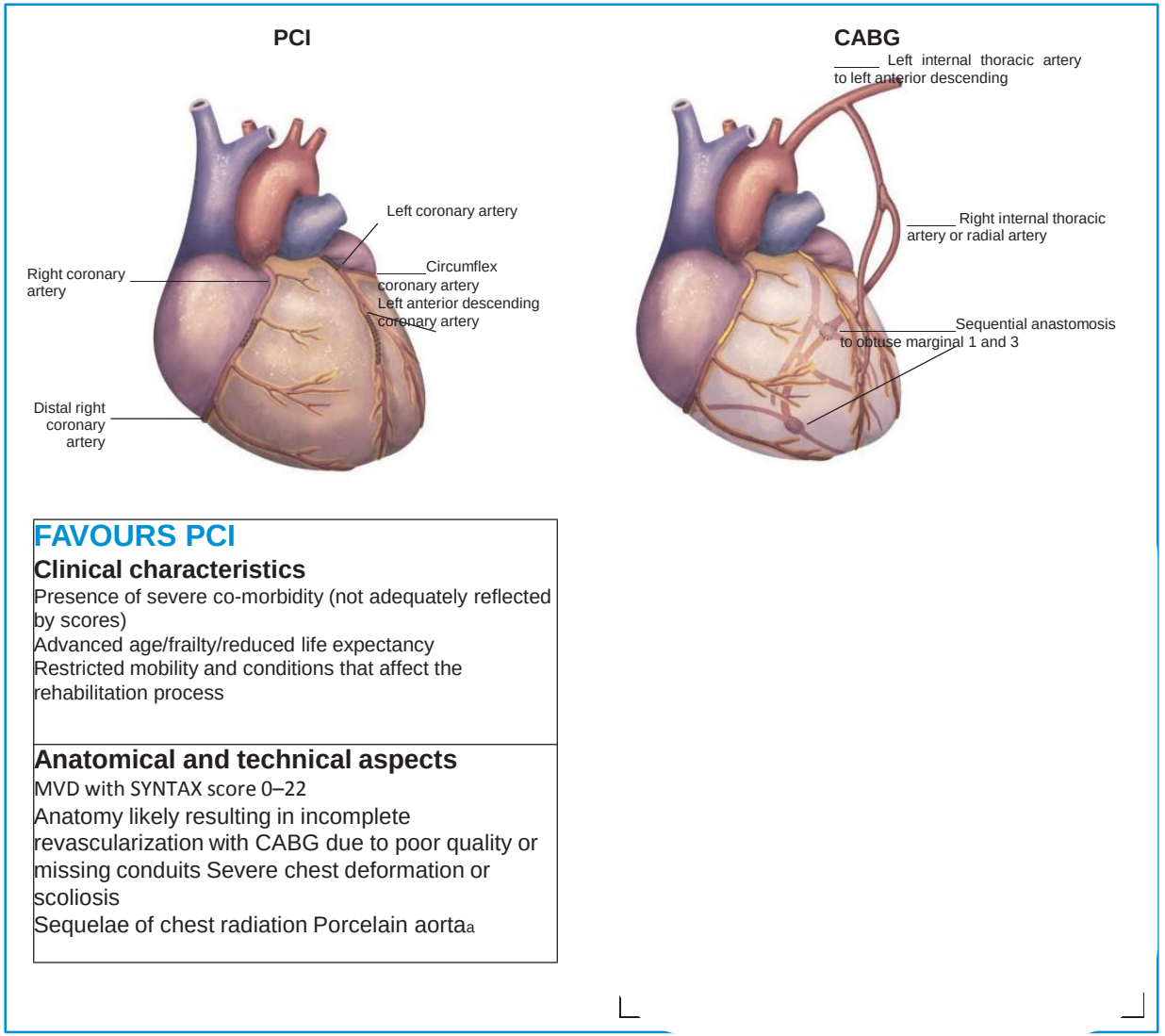
Recommendations	Class[a]	Level[b]
Strategy		
Routine revascularization of non-IRA lesions should be considered in patients with multivessel disease before hospital discharge.[211–214]	IIa	A
CABG should be considered in patients with ongoing ischaemia and large areas of jeopardized myocardium if PCI of the IRA cannot be performed.	IIa	C
In cardiogenic shock, routine revascularization of non-IRA lesions is not recommended during primary PCI.[190]	III	B
Technique		
Routine use of thrombus aspiration is not recommended.[223–226,228]	III	A

Primární PCI: Culprit SHOCK trial
RCT, 706 pacientů, 14 center



Thiele H et al., NEJM 2017

Indikace PCI vs CABG



FAVOURS PCI

Clinical characteristics

Presence of severe co-morbidity (not adequately reflected by scores)
Advanced age/frailty/reduced life expectancy
Restricted mobility and conditions that affect the rehabilitation process

Anatomical and technical aspects

MVD with SYNTAX score 0–22
Anatomy likely resulting in incomplete revascularization with CABG due to poor quality or missing conduits Severe chest deformation or scoliosis
Sequelae of chest radiation Porcelain aorta[a]

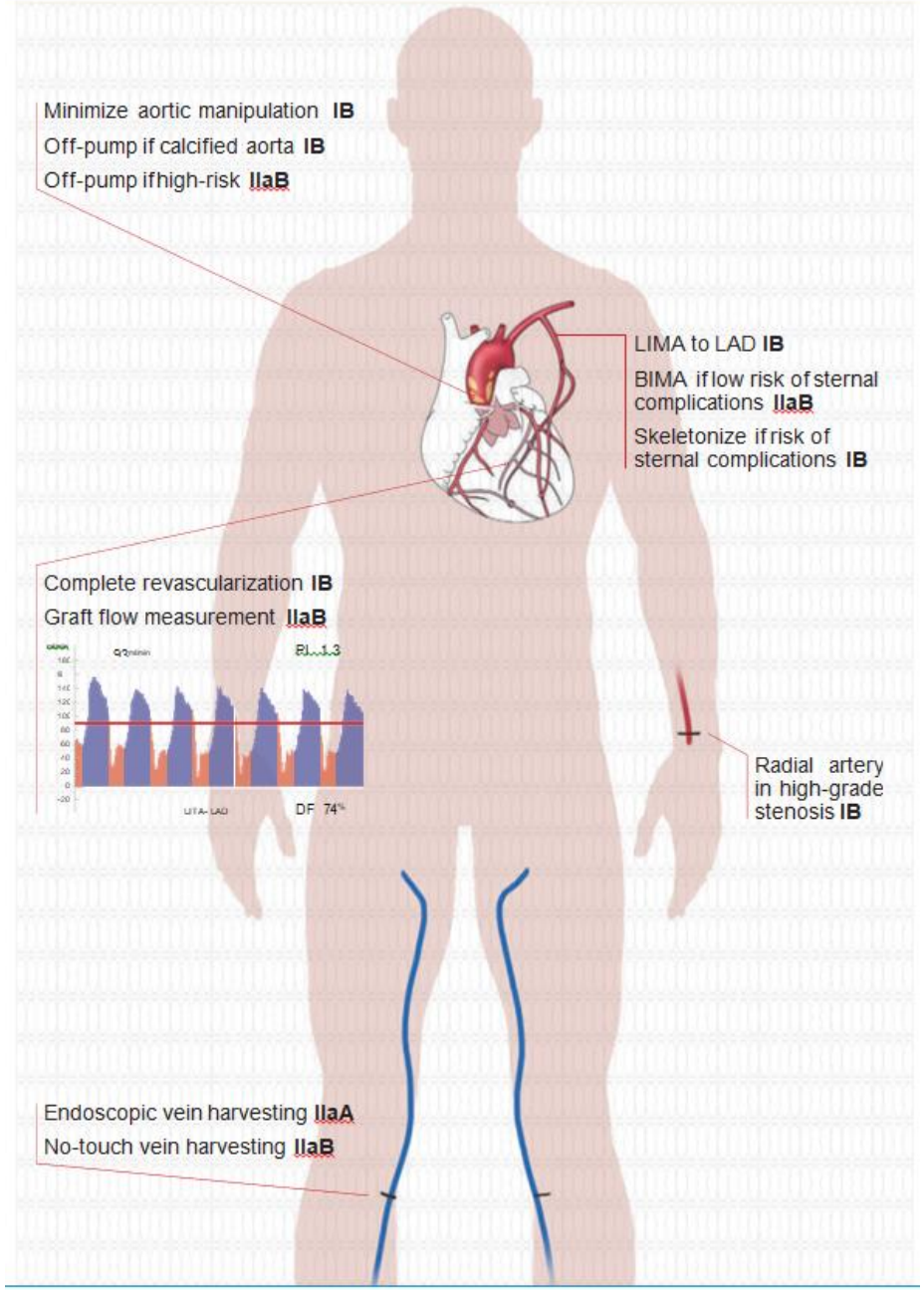
CABG = coronary artery bypass grafting; Cx = circumflex; DAPT = dual antiplatelet therapy; EF = ejection fraction; LAD = left anterior descending coronary artery; LIMA = left internal mammary artery; LV= left ventricular; MVD = multivessel coronary artery disease; PCI = percutaneous coronary intervention; PDA = posterior descending artery; RA = radial artery; RIMA = right internal mammary artery; SYNTAX = Synergy between Percutaneous Coronary Intervention with TAXUS and Cardiac Surgery.
[a]Consider no-touch off-pump CABG in case of porcelain aorta.

ESC 2018

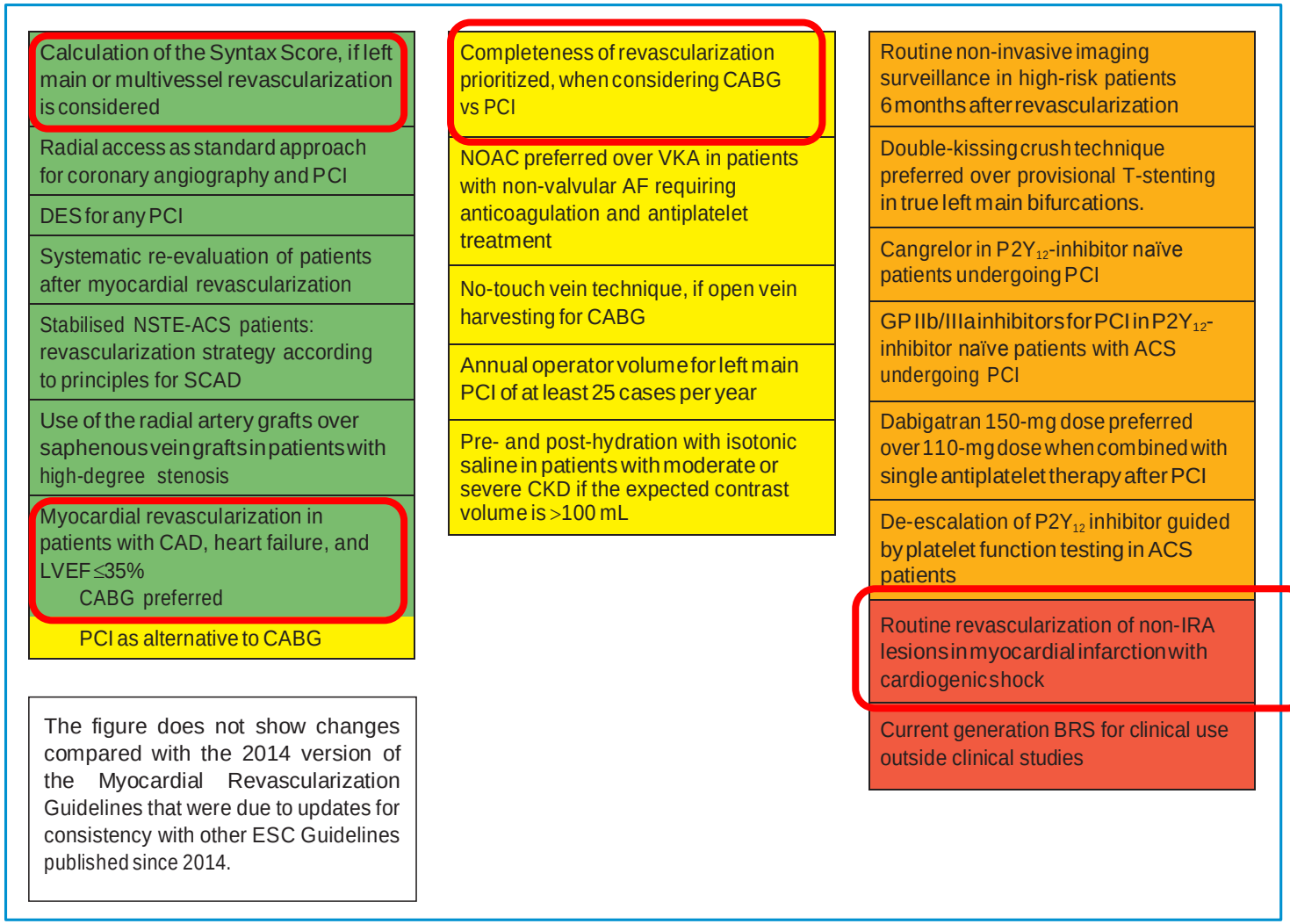
Figure 3 Aspects to be considered by the Heart Team for decision-making between percutaneous coronary intervention and coronary artery bypass grafting among patients with stable multivessel and/or left main coronary artery disease.

CAVE: chybí RCT porovnávající PCI vs CABG u pacientů s CHSS!

Chirurgická revaskularizace



Co je nového v r. 2018?



ACS = acute coronary syndromes; AF = atrial fibrillation; BRS = bioresorbable scaffolds; CABG = coronary artery bypass grafting; CAD = coronary artery disease; CKD = chronic kidney disease; DES = drug-eluting stents; FFR = fractional flow reserve; GP = glycoprotein; IRA = infarct-related artery; LVEF = left ventricular ejection fraction; NOAC = non-vitamin K oral anticoagulants; NSTEMI = non-ST-elevation; PCI = percutaneous coronary intervention; SCAD = stable coronary artery disease; VKA = vitamin K antagonists.

Figure 1 New recommendations.

Co se změnilo v r. 2018?

Intervenční kardiologie
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UPGRADES
For PCI of bifurcation lesions, stent implantation in the main vessel only, followed by provisional balloon angioplasty with or without stenting of the side branch
Immediate coronary angiography and revascularization, if appropriate, in survivors of out-of-hospital cardiac arrest and an ECG consistent with STEMI
Assess all patients for the risk of contrast-induced nephropathy
OCT for stent optimization

DOWNGRADES
Distal protection devices for PCI of SVG lesions
Bivalirudin for PCI in NSTE-ACS
Bivalirudin for PCI in STEMI
PCI for MVD with diabetes and SYNTAX score <23
Platelet function testing to guide antiplatelet therapy interruption in patients undergoing cardiac surgery
EuroSCORE II to assess in-hospital mortality after CABG

Co nesmíte minout v Brně (nejen v r. 2018)? ☺

Ludwig Mies van der Rohe ve vile Tugendhat v únoru 1931, foto: Fritz Tugendhat

http://www.tugendhat.eu/cz/