SUMMARY of 2017 ESC GUIDELINES on valvular heart disease , peripheral artery disease, STEMI and on dual antiplatelet therapy.

Introduction

During the ESC congress in September 2017 in Barcelona, the new ESC guidelines were presented and are now available on the ESC website

The new guidelines cover management recommendations on following cardiovascular items: valvular heart disease, , peripheral artery disease, ST elevation myocardial infarction (STEMI) and on dual antiplatelet therapy.

The present document gives a summary of these guidelines and highlights the most important recommendations and changes in the management of these diseases.

It will help to increase awareness about the new guidelines and may stimulate to consult the full document for specific items. Ultimately, the authors hope that this document will enhance implementation of new ESC guidelines in daily clinical practice.

Guidelines for the management of valvular heart disease

Summary by Guy Van Camp , MD PhD

This overview focuses on highlights and new items proposed in the new ESC Guidelines on Valvular Heart Disease (VHD)[1].

General considerations: Evaluation of patients history and symptom status, proper physical examination and echocardiography are key for the precise diagnosis and good management of patients with VHD. Other non-invasive investigations are complementary (stress testing, CT, MRI, fluoroscopy, biomarkers) and invasive investigations beyond preoperative coronary angiography are restricted to situations where the non-invasive evaluation is inconclusive. Risk stratification is essential for decision making and in elderly patients life expectancy, quality of life, comorbidities and frailty should be taken into account. Therapeutic decisions in VHD patients should be taken in a multidisciplinary heart valve centre. NOACs may be used in patients with atrial fibrillation and aortic stenosis, mitral regurgitation or aortic bioprostheses > 3 months but not in mitral stenosis and mechanical valves.

Aortic stenosis (AS). A stepwise integrated approach for the assessment of aortic stenosis severity is proposed as an answer towards new data on low-flow AS and pseudo-stenosis. (Figure 1) In asymptomatic AS, a > 20 mmHg increase in mean gradient during exercise and excessive hypertrophy are taken out of the indications for intervention while high BNP values is considered a more robust value. Severe pulmonary hypertension at rest (> 60 mmHg) confirmed by invasive measurement and without an alternative explanation is a new IIaC recommendation for surgery in these asymptomatic AS patients. TAVI has gained a more important role in the treatment of patients with AS. Patients ≥75 years , STS/EuroSCORE II ≥ 4 (Logistic EuroSCORE I ≥ 10 %), previous cardiac surgery, reduced mobility and conditions affecting rehabilitation and favourable access for transfemoral TAVI all favour TAVI treatment.

Aortic regurgitation. Heart team discussion is recommended in selected patients in whom aortic valve repair may be feasible (alternative for AVR). (Ic) Aortic valve repair (reimplantation or remodelling with aortic annuloplasty technique) is recommended in young patients with aortic root dilatation and tricuspid aortic valves when performed by experienced surgeons. (Ic)

Primary mitral regurgitation (PMR). Surgery should be considered in asymptomatic patients with PMR with preserved LVEF and LVESD 40-44 mm when a durable repair is likely and the surgical risk is low in the presence of one of following criteria: new onset of AF, resting pulmonary hypertension >50mmHg, flail leaflet or significant LA dilatation (volumeindex ≥ 60mL/m² BSA at sinus rhythm), while pulmonary hypertension at exercise is taken out as an operative indication.

Secondary mitral regurgitation (SMR). When revascularization is not indicated, mitral valve surgery may be considered in patients with severe SMR and LVEF ≥ 30% who remain symptomatic after optimal medical treatment (including CRT if indicated) and if surgical risk is low. If surgical risk is not low, MitraClip may be considered, avoiding futility. In the same setting but with LVEF < 30% MitraClip or surgery may be considered by the heart team after evaluation for ventricular assist device or heart transplantation. Using lower thresholds for severe secondary MR compared to primary MR, one should remember that no survival benefit has been confirmed for the reduction of secondary MR.

Secondary tricuspid regurgitation (STR). Since tricuspid valve repair during left sided valvular surgery does not increase operative risk and has been demonstrated to provide reverse remodelling of the RV and improvement of functional status even in the absence of substantial TR when annulus dilatation is present, repair should be implemented liberally. It has an indication IIac in patients with mild and moderate TR with a dilated annulus (>

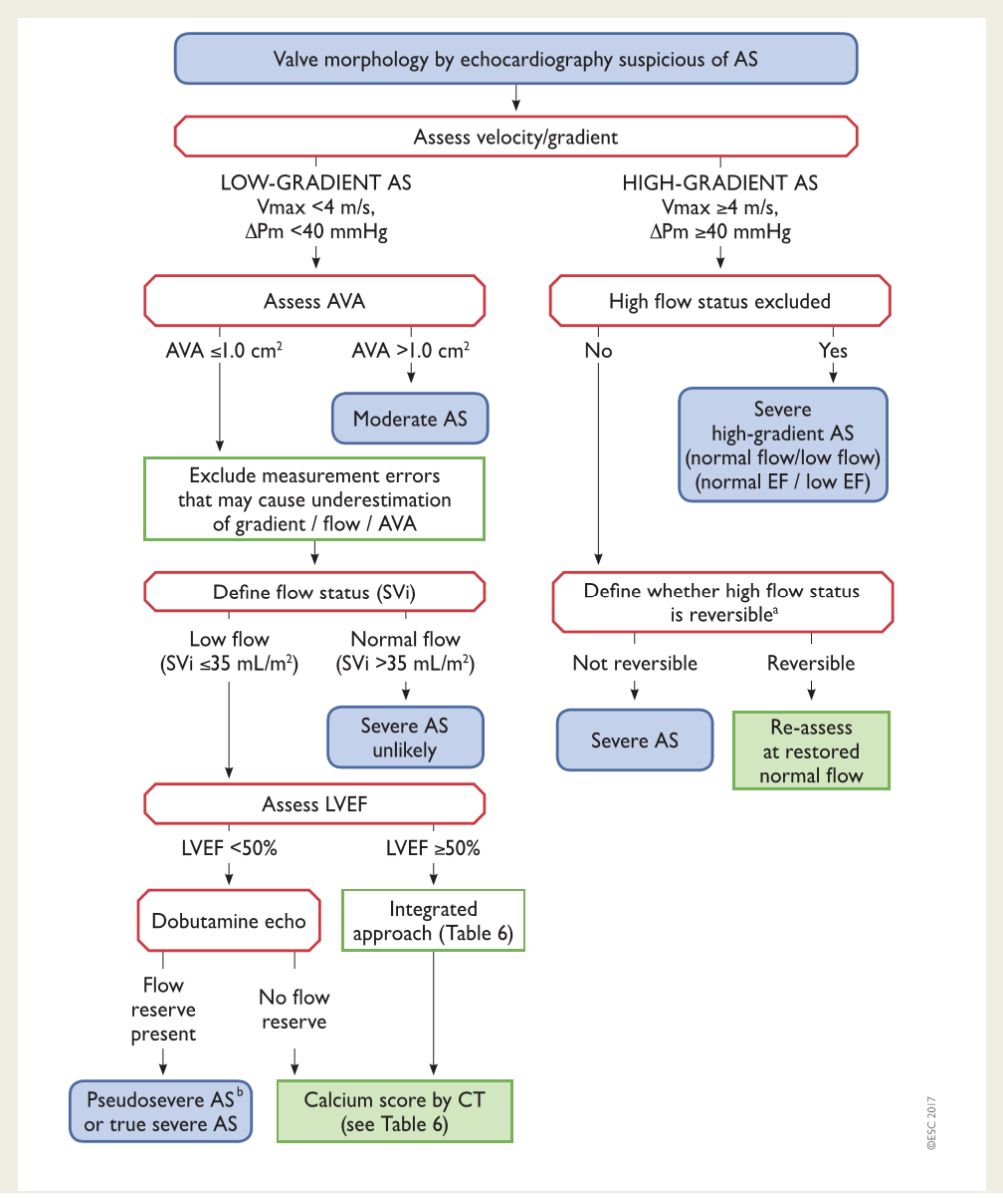
40 mm or > 21 mm/m²) when left sided valve surgery is indicated and a IIbc indication even in the absence of clear annular dilatation if a previous episode of recent right heart failure has been documented.

Anticoagulation using a VKA and/or UFH is recommended in bioprosthetic valve thrombosis before considering reintervention. (Ic)

CT angiography should be considered as an alternative for coronary angiography before valve surgery in patients with a low risk for CAD, or in whom coronary angiography is technically not feasible or who are at high risk. PCI should be considered in patients selected for TAVI or MitraClip and with a coronary artery stenosis > 70% in the proximal segments.

The heart valve centre should be the central place in the hospital where all VHD patients can be discussed in a multidisciplinary approach with one goal: optimal individualized treatment of VHD.

figure



Guidelines on the Diagnosis and Treatment of Peripheral Arterial Diseases,

Summary by Tine De Backer, MD, PhD

In this document, the term 'peripheral arterial diseases' (PADs) encompasses all arterial diseases other than coronary arteries and the aorta, covering atherosclerotic disease of extracranial carotid and vertebral, mesenteric, renal, upper and lower extremity arteries[2].

The main tendency concerning revascularization in PAD is a shift from to "recommend" (I) towards "should be considered" (IIa) and the role of a multidisciplinary "vascular team" is emphasized (Ic).

Carotid artery disease

In asymptomatic 60-99% carotid stenosis surgery (CEA) should be considered for high stroke risk provided documented perioperative stroke/death rates are < 3% and the patient's life expectancy > 5 years. In asymptomatic 60-99% carotid stenosis at high risk for CEA, CAS should be considered provided documented perioperative stroke/death rates are < 3% and the patient's life expectancy > 5 years. In asymptomatic 60-99% carotid stenosis at average risk for CEA, CAS may be considered provided documented perioperative stroke/death rates are < 3% and the patient's life expectancy > 5 years. Note that in Belgium CAS is not reimbursed.

No routine prophylactic revascularization of asymptomatic carotid 70-99% stenosis in patients undergoing CABG. In patients with a recent (< 6 months) TIA/stroke who are scheduled for CABG carotid revascularization should be considered in patients with 50-99% carotid stenosis and CEA should be considered as the first choice. (Remark: In Belgium there is no reimbursement for carotid stenting.) Carotid revascularization may be considered in patients with bilateral 70-99% carotid stenosis or 70-99% carotid stenosis + contralateral occlusion.

In symptomatic 70-99% carotid stenosis, CEA is recommended provided the documented procedural stroke/death rates are < 6%. In symptomatic 50-69% carotid stenosis, CEA should be considered provided the documented procedural stroke/death rates are < 6%.

Upper extremity artery disease

In symptomatic subclavian artery stenosis/occlusion, revascularization by stenting or surgery should be considered. In asymptomatic subclavian artery stenosis revascularization should be considered in patients with or planned for CABG, and in dialysis patients.

Mesenteric artery disease

In patients with suspected acute mesenteric ischemia, urgent CTA is recommended, and the measurement of D-Dimers should be considered to rule out the diagnosis.

In patients with suspected chronic mesenteric ischemia (CMI), duplex ultrasound is recommended as the first line examination. In patients with symptomatic multivessel CMI, revascularization without delay for re-nutrition is recommended.

Renal artery disease

Stenting for symptomatic atherosclerotic RAS > 60% has changed from should be considered to not recommended. Routine revascularization is not recommended in RAS secondary to atherosclerosis. Balloon angioplasty with or without stenting may be considered in selected patients with unexplained recurrent congestive heart failure or sudden pulmonary edema.

In case of hypertension and/ or renal impairment due to fibromuscular dysplasia, balloon angioplasty without stenting should be considered.

Lower extremity artery disease (LEAD)

Ankle-brachial index (ABI) is a first-line non-invasive test for screening and diagnosis of LEAD. In case of ABI >1.40, toe brachial index (TBI), Doppler waveform analysis are indicated. Screening for LEAD may be considered in patients with heart failure or CAD patients.

Antiplatelet therapy in isolated asymptomatic LEAD is not recommended. In patients with LEAD and atrial fibrillation, oral anticoagulation is recommended with a CHA2DS2-VASc score >2 and should be considered in all other patients

Statins are indicated to improve walking distances, on top of general prevention.

When daily life activities (DLA) are compromised despite therapy, revascularization should be considered. Endovascular–first strategy recommended for short occlusive lesions (Ia) or for longer lesions in patients unfit for surgery or in patients with severe comorbidities (IIb). For long occlusive lesions (both aorta-iliac or femoro-popliteal) or infra-popliteal occlusive lesions bypass surgery is recommended . The autologous saphenous vein is the conduit of choice for femoro-popliteal bypass. Acute limb ischemia with neurologic deficit mandates urgent revascularisation

Most important new messages: Peripheral artery disease	**Recommendation level**
- Carotid artery disease:	
In case of asymptomatic severe carotid stenosis: Surgery for high stroke risk and stenting in high surgery risk	**II CHANGE**
No routine prophylactic revascularition pre CABG	**III NEW**
-Renal artery disease:	
No Stenting for symptomatic atherosclerotic stenosis>60%	**III CHANGE**
Fibromuscular dysplasia: balloon angioplasty with bailout stenting	**IIa NEW**
- Lower Extremity Artery disease (LEAD)	
Statins to improve walking distance	**I NEW**
LEAD+ AF: anticoagulation if CHA2DS2-Vasc>2	**I NEW**
Surgery for aorta-iliac or aorto-bi-femoral occlusions	**II a CHANGE**
Endovascular therapy for short aorto-iliac or femoro-popliteal lesions	**I**

Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation.

Summary by Christophe Beauloye, MD, PhD

The diagnosis of STEMI or acute Myocardial infarction in patients presenting with a ST segment elevation is based on either symptoms consistent with myocardial ischemia or ST segment elevation on 12-lead ECG in at least two continuous leads. It classically refers to a total coronary occlusion and requires an urgent reperfusion. Reperfusion strategy by primary PCI is recommended over fibrinolysis in all STEMI patients with symptoms of ischemia of less than 12 hours duration. The ECG is crucial for STEMI diagnosis and has to be performed within 10 minutes after the first medical contact even if the latter occurs in the prehospital setting. The 2017 STEMI guidelines (1) offer new recommendations compared to the previous 2012 guidelines[3]. The most important ones will be highlighted in the next sections.

1. Time delays and networks

Treatment delays are the most reliable index of quality of care in STEMI. Once diagnosis has been done, based on the ECG, patient pathways have to be organized to shorten the time delays within the hospital (PCI center, door to balloon time), between institutions (transfer from non PCI to PCI center) but also in the prehospital setting (emergency medical system, EMS). The treatment delay from the first medical contact to reperfusion (balloon time) should be lower than 60 min if the patient is admitted in a PCI center and 90 min if the patient is transferred from a non PCI center or through EMS. The first medical contact is now better defined as the time point when the patient is assessed by a physician, paramedic or other trained EMS able to interpret an ECG or deliver initial interventions like defibrillation, including in the prehospital setting. Bypassing the emergency department by EMS results in a decrease in treatment delay, up to 20 min. The current guidelines emphasize on the need for implementation of networks (inside and outside the hospital) to provide optimal care.

2. Procedural aspects of primary PCI

Several changes appeared in the 2017 guidelines regarding primary PCI techniques or approaches. The guidelines favor radial access as the default access site in all STEMI patients (class IA recommendation). Radial access lowers the risk of access site bleeding and vascular complications. More importantly, it has been associated with a reduction in mortality (MATRIX) (2). Coronary stenting using new generation drug-eluting stents (DES) is technique of choice for primary PCI (class IA recommendation). New generation DES have been shown to be superior compared to the classical bare-metal stent in recent trials (EXAMINATION (3), COMFORTABLE (4), NOSTENT(5)). Thrombus aspiration should not be systematically performed as no benefit of routine aspiration on clinical outcomes have been proven (TOTAL, TASTE, class III recommendation, futility) (6,7). In multivessel disease patients, complete revascularization before hospital discharge have to be considered (PRAMI, DANAMI-PRIMULTI, CVLPRIT, class IIA recommendation) (8,9,10). PCI of the the non-infarcted related artery (“non culprit” lesion”) reduced the need for repeat revascularization after the index admission.

3. Peri-procedural pharmacotherapy during primary PCI

All patients undergoing primary PCI should be treated by dual antiplatelet agents (DAPT) with Aspirin and a potent P2Y12 inhibitor (Prasugrel or Ticagrelor). While the evidence of a clear clinical benefit of P2Y12 inhibitor pre-treatment is lacking, early initiation of P2Y12 inhibitor while the patient being transported to PCI center is common practice in Europe and in Belgium and is consistent with pharmacokinetic data (ATLANTIC) (11). Anticoagulation options for primary PCI include UFH, Enoxaparin and Bivaluridin. UFH is the reference treatment but enoxaparin (0.5 mg/kg IV) should be considered in STEMI (ATOLL, class IIA recommendation) (12). Because of the increased risk of stent thrombosis and the lack of mortality benefit, routine use of Bivaluridin in STEMI is now considered as a class IIA recommendation (in place of class IA) and is more particularly recommended for high bleeding risk patients or for patients with heparin-induced thrombocytopenia (HEAT-PPCI, MATRIX, class IIA recommendation) (13,14).

4. Hospital discharge, long-term management.

Low risk patients with successful PCI and complete revascularization can safely be discharged at day 2 or 3 after admission, if an adequate follow-up has been arranged (class IIA recommendation). High intensity statin therapy is associated with an early and sustained benefit. The current guidelines argue in favor of additional lipid lowering therapy if LDL remains > 70 mg/dl despite on maximal tolerated statins by ezetimibe or PCSK9 inhibitors (IMPROVE-IT, FOURIER, class IIA recommendation) (15,16).

Finally, beyond treatment recommendations and strategy, assessment of quality of care has been added in the new guidelines. Quality indicators have been proposed in order to improve the quality of health service and that can drive initiatives for quality improvement.

Most important new messages: STEMI	**Recommendation level**
- Procedural aspects primary PCI	
Radial access is recommended over femoral access	**I** **CHANGE**
Stenting with new-generation DES is recommended over BMS	**I** **CHANGE**
No routine use of thrombus aspiration	**III** **CHANGE**
Anticoagulation options for primary PCI include UFH, Enoxaparin and Bivaluridin	**I** **IIa** **CHANGE**
Complete revascularization in multivessel disease before hospital discharge, but during index procedure in case of cardiogenic shock	**IIa** **CHANGE** **IIa** **NEW**
- Half-dose of tenecteplase in patients>75years of age	**IIa** **NEW**
- Early discharge for low risk patients	**IIa** **CHANGE**
- Additional lipid lowering therapy by ezetimibe or PCSK9 inhibitors if LDL remains > 70 mg/dl despite on maximal tolerated statins	**IIa** **NEW**

Update on dual antiplatelet therapy in coronary artery disease

Summary by Walter Desmet, MD PhD

In Europe, the number of patients requiring dual antiplatelet therapy (DAPT), consisting of the combination of aspirin and an oral inhibitor of the platelet $P2Y_{12}$ receptor, is estimated to be 1 400 000 patients per year after coronary intervention and 2 200 000 after myocardial infarction. While DAPT is among the most intensively investigated treatments in cardiovascular medicine, many questions and uncertainties remain regarding the optimal type and duration of DAPT in different clinical situations. This derives from apparently conflicting results from the available studies and limited evidence on various patient subsets (e.g. elderly patients or patients in need of oral anticoagulation) in whom the trade-off between the benefits and risks of DAPT may differ from those observed in more selected patient cohorts included in trials. The writing committee of this focused update have done their very best to address all these issues and to give the best of their guidance[4]. Nevertheless, as described in this update, clinical judgement will still often be needed, sometimes with the help of risk scores, to decide on the optimal type and duration of DAPT in different situations, mostly weighing ischemic and bleeding risks.

The main changes and highlights of the 2017 ESC recommendations are:

1. Stent type and DAPT duration: The need for a short DAPT regimen should no longer justify the use of bare metal stents (BMS) instead of newer-generation drug eluting stents (DES). In addition, DES become the preferred treatment option in all cases (Class I, level of recommendation A). Also in patients with stable CAD treated with drug-coated balloon, DAPT for 6 months should be considered. DAPT duration in each individual patient should be guided by an individualized approach based on ischaemic vs. bleeding risk assessment and not by the stent type. An exception to this rule are patients with stable CAD treated with bioresorbable vascular scaffolds, in whom DAPT for at least 12 months should be considered.
2. ACS patients: Irrespective of the final revascularization strategy (e.g. medical therapy, PCI, or CABG), the default DAPT duration in these patients is 12 months. Six-month therapy duration should be considered in high bleeding risk patients (e.g. PRECISE-DAPT >= 25), whereas >12-month therapy may be considered in ACS patients who have tolerated DAPT without a bleeding complication.
3. Patients with indication for oral anticoagulation (OAC): These patients should be considered at high risk of bleeding and the indication for OAC should be reassessed and treatment continued only if a compelling indication exists. The duration of triple therapy should be limited up to a maximum of six months or omitted after hospital discharge, taking into account the ischaemic (e.g. complexity of treated CAD, amount of disease left untreated, technical considerations regarding stent implantation techniques, and results) as well as the bleeding risk. The use of ticagrelor or prasugrel in this setting is not recommended.
4. Patients undergoing elective non-cardiac surgery after coronary stent implantation: Scheduled surgery requiring discontinuation of the $P2Y_{12}$ inhibitor should be considered after at least 1 month, irrespective of the stent type, if aspirin can be maintained throughout the perioperative period. For ticagrelor, interruption of 3 days prior to elective surgery is optimal. For clopidogrel, interruption should be 5 days, and for prasugrel 7 days. The recommended antiplatelet therapy is to be resumed as soon as possible post-operatively.
5. Measures to minimize bleeding while on DAPT: Some very strong recommendations are made: a) radial over femoral access is recommended for coronary angiography and PCI if performed by an expert radial operator (class I, level of recommendation A); b) In patients treated with DAPT, a daily aspirin dose of 75-100 mg is recommended (class I, level of recommendation A); c) A PPI in combination with DAPT is recommended (class I, level of recommendation B).
6. Switching between $P2Y_{12}$ inhibitors: The only switch for which outcome data are available in patients with ACS, is the switch from clopidogrel to ticagrelor. However, in the acute setting, when a switch is indicated, it is advised to reload the patient with the loading dose of the new drug (600 mg for

clopidogrel; 60 mg for prasugrel, or 180 mg for ticagrelor), at a time irrespective of prior clopidogrel timing and dosing when switching from clopidogrel to prasugrel or ticagrelor, and 24 hours after the last dosing for all other switches. In a chronic setting, switching should be done by giving the maintenance dose of the new drug 24 hours after the last dose of the previous drug, for all switches with the exception of the switches from ticagrelor to prasugrel or clopidogrel, when a loading dose of the new drug is to be given.

Most important new messages on dual antiplatelet therapy	**Recommendation level**
- DAPT duration in each individual patient should be guided by an individualized approach based on ischaemic vs. bleeding risk assessment and not by the stent type (DES/BMS) and should be dynamic and reassessed during the course of the initially selected DAPT regimen .	**I** **NEW**
-Early administration of ticagrelor/ clopidogrel in NSTE-ACS with invasive approach	**IIa** **NEW**
-In ACS patients, previously exposed to clopidogrel, switching ticagrelor at a loading dose of 180mg is recommended unless contra-indications to ticagrelor	**I** **NEW**
- Discontinuation of P2Y12 inhibitor therapy after 6 months when stenting ACS patients with high bleeding risk (eg PRECISE-DAPT ≥ 25)	**IIa** **NEW**
- Elective surgery requiring discontinuation of the $P2Y_{12}$ inhibitor should be considered after at least 1 month, irrespective of the stent type, if aspirin can be maintained throughout the perioperative period	**IIa** **CHANGE**
- For ticagrelor, interruption of 3 days prior to elective surgery is optimal	**IIa** **NEW**
- Liberal use of PPI to mitigate GI bleeding	**I** **CHANGE**
- Dual therapy as alternative to triple therapy when bleeding risk outweighs the ischemic risk	**IIa** **CHANGE**

CONCLUSION

The 2017 guidelines have incorporated new evidence into the management of valvular heart disease, peripheral artery disease and ST elevation acute myocardial infarction. In addition an update on dual antiplatelet therapy is given. The authors hope that this document will enhance implementation of these new ESC guidelines in daily clinical practice.

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