



# *2014 ESC/ESAGUIDELINES ON NON-CARDIAC SURGERY: CARDIOVASCULAR ASSESSMENT AND MANAGEMENT*

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رجل ، ٥٠ سنه ، مدخن  
سوابق ارتفاع توتر شرياني من ١٠ سنوات  
سوابق تركيب Icd منذ ٥ سنوات  
لديه عمل جراحي استبدال مفصل ركبه  
استشاره قلبية ؟

# chronic heart failure

The background is a gradient of deep blue and purple, speckled with white dots resembling stars. On the right side, there are several white circular elements: a large semi-circular scale with degree markings from 90 to 210, and two smaller concentric circles with arrows indicating a clockwise direction. On the left side, there are also white circular elements, including a dashed semi-circle with an arrow pointing left and a solid circle with an arrow pointing right.



It is recommended that patients with established or suspected heart failure, and who are scheduled for non-cardiac intermediate or high-risk surgery, undergo evaluation of LV function with transthoracic echocardiography and/or assessment of natriuretic peptides, unless they have recently been assessed for these.

I

A

It is recommended that patients with established heart failure, who are scheduled for intermediate or high-risk non-cardiac surgery, be therapeutically optimized as necessary, using beta-blockers, ACEIs or ARBs, and mineralocorticoid antagonists and diuretics, according to ESC Guidelines for heart failure treatment.

I

A

In patients with newly diagnosed heart failure, it is recommended that intermediate- or high-risk surgery be deferred, preferably for at least 3 months after initiation of heart failure therapy, to allow time for therapy up-titration and possible improvement of LV function.

I

C

It is recommended that beta blockade be continued in heart failure patients throughout the peri-operative period, whereas ACEIs/ARBs may be omitted on the morning of surgery, taking into consideration the patient's blood pressure. If ACEIs/ARBs are given, it is important to carefully monitor the patient's haemodynamic status and give appropriate volume replacement when necessary.

I

C



Unless there is adequate time for dose-titration, initiation of high-dose beta-blockade before non-cardiac surgery in patients with heart failure is not recommended.

**III**

**B**

# ARTERIAL HYPER TENSION

The background is a gradient of deep blue and purple, speckled with white dots resembling a starry sky. On the right side, there are several faint, white circular patterns. One large circle has a scale from 0 to 210 degrees. Below it, another circle has a scale from 0 to 100. In the bottom right, there are concentric circles with arrows indicating a clockwise direction. In the bottom left, there are also concentric circles with arrows indicating a counter-clockwise direction.

It is recommended that patients with a new diagnosis of hypertension pre-operatively be screened for end-organ damage and cardiovascular risk factors.

Large peri-operative fluctuations in blood pressure in hypertensive patients should be avoided.

Clinicians may consider *not* deferring non-cardiac surgery in patients with grade 1 or 2 hypertension (systolic blood pressure  $< 180$  mm Hg; diastolic blood pressure  $< 110$  mm Hg).

**I**

**C**

**IIa**

**B**

**IIb**

**B**



procedure. In a randomized study, when compared with deferred surgery, immediate blood pressure reduction with nifedipine was associated with similar complication rates but a shorter hospital stay.<sup>186</sup>

There is no clear evidence favouring one mode of antihypertensive therapy over another in patients undergoing non-cardiac surgery. Patients with arterial hypertension should be managed according to existing ESC Guidelines.<sup>183</sup>

# Valvular heart disease

The background features a gradient from deep blue at the bottom to a darker purple at the top. It is decorated with several white circular elements: a large dotted circle with a solid inner circle in the top right, a smaller dotted circle with a solid inner circle in the bottom right, and a partial dotted circle with a solid inner circle in the bottom left. A faint dotted grid is also visible across the right side of the image.

	Recommendations	Class <sup>a</sup>	Level <sup>b</sup>	Ref. <sup>c</sup>	
	Clinical and echocardiographic evaluation is recommended in all patients with known or suspected VHD, who are scheduled for elective intermediate or high-risk non-cardiac surgery.	I	C		



Aortic valve replacement is recommended in symptomatic patients with severe aortic stenosis, who are scheduled for elective non-cardiac surgery, provided that they are not at high risk of an adverse outcome from for valvular surgery.

I

B

69

Aortic valve replacement should be considered in asymptomatic patients with severe aortic stenosis, who are scheduled for elective high-risk non-cardiac surgery, provided that they are not at high risk of an adverse outcome from for valvular surgery.

**IIa**

**C**

Elective low or intermediate-risk non-cardiac surgery should be considered in asymptomatic patients with severe aortic stenosis if there has been no previous intervention on the aortic valve.

**IIa**

**C**



In symptomatic patients with severe aortic stenosis who are scheduled for elective non-cardiac surgery, TAVI or balloon aortic valvuloplasty should be considered by the expert team if they are at high risk of an adverse outcome from for valvular surgery.

**IIa**

**C**

Elective non-cardiac surgery should be considered in patients with severe valvular regurgitation, who do not have severe heart failure or LV dysfunction.

**Ila**

**C**

Percutaneous mitral commissurotomy should be considered in patients with severe mitral stenosis, who have symptoms of pulmonary hypertension and are scheduled for elective intermediate- or high-risk non-cardiac surgery.

**IIa**

**C**



### 5.3.6 Patients with prosthetic valve(s)

Patients who have undergone previous surgical correction of VHD and have a prosthetic valve can undergo non-cardiac surgery without additional risk, provided that there is no evidence of valve or ventricular dysfunction. In current practice, the main problem is the need for a modification of the anticoagulation regimen in patients in the peri-operative period, with oral anticoagulants being temporarily replaced by UFH or LMWH at therapeutic doses (see section 4.3).

# Arrhythmias •

The background is a deep blue gradient with a subtle pattern of white and light blue dots, resembling a starry night sky. Overlaid on this are several faint, white circular and semi-circular lines. Some of these lines have small arrows indicating a clockwise direction. In the upper right corner, there is a larger, more complex circular graphic that looks like a medical monitor or a specialized clock face, with numerical markings around its perimeter (e.g., 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210) and concentric circles within it.

Continuation of oral anti-arrhythmic drugs before surgery is recommended.

I

C

Electrical cardioversion when haemodynamic instability occurs is recommended.

I

C

Vagal manoeuvres and anti-arrhythmic therapy for termination of SVT in haemodynamically stable patients is recommended.

I

C



The indications for temporary pacemakers during the peri-operative period are generally the same as those for permanent pacemakers.

I

C

It is recommended that the hospital nominate a person who is responsible for programming of the implanted arrhythmia devices before and after surgery.

I

C

Patients with ICDs, whose devices have been pre-operatively deactivated, should be on continuous cardiac monitor throughout the period of deactivation. External defibrillation equipment should be readily available.

I

C

Patients who have asymptomatic bifascicular or trifascicular block are not recommended for routine management with a peri-operative temporary pacing wire.

III

C



possible amplitude may also decrease the interference. The pacemaker should be set in an asynchronous or non-sensing mode in patients who are pacemaker-dependent. This is most easily done in the operating room by placing a magnet on the skin over the pacemaker. Patients whose underlying rhythm is unreliable should have pacemaker interrogation after surgery, to ensure appropriate programming and sensing-pacing thresholds.



Anti-arrhythmic drugs are recommended for patients with sustained VT, depending on the patient's characteristics.

Anti-arrhythmic drugs are not recommended for patients with VPBs.

I

C

III

C

**Renal disease •**

Hydration with normal saline is recommended before administration of contrast medium.

Use of LOCM or IOMC is recommended.

It is recommended that the volume of contrast media be minimized.

I

A

198

I

A

198

I

B

198



Hydration with sodium bicarbonate should be considered before administration of contrast medium.

**IIa**

**A**

Short-term high-dose statin therapy should be considered.

**IIa**

**B**

In patients with stage 4 or 5 CKD, prophylactic haemofiltration may be considered before complex intervention or high-risk surgery.

**IIb**

**B**

In patients with stage  $\leq 3$  CKD, prophylactic haemodialysis is not recommended.

**III**

**B**

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