2022

Essential Messages from ESC Guidelines

Clinical Practice Guidelines Committee

NON-CARDIAC SURGERY

Guidelines on cardiovascular assessment and management of patients undergoing non-cardiac surgery
Essential Messages

2022 ESC Guidelines on cardiovascular assessment and management of patients undergoing non-cardiac surgery

Developed by the Task Force for cardiovascular assessment and management of patients undergoing non-cardiac surgery of the European Society of Cardiology (ESC). Endorsed by the European Society of Anaesthesiology and Intensive Care (ESAIC).

Chairpersons

Sigrun Halvorsen
Department of Cardiology
Oslo University Hospital Ulleval
& University of Oslo
Oslo, Norway
Email: sigrun.halvorsen@medisin.uio.no

Julinda Mehilli
Medizinische Klinik I
Landshut-Achdorf Hospital
Landshut, Germany
& Klinikum der Universität München
Ludwig-Maximilians Universität and German Centre for Cardiovascular Research (DZHK)
partner site Munich Heart Alliance
Munich, Germany
Email: Julinda.mehilli@lakumed.de

Task Force Members
Salvatore Cassese (Task Force Coordinator) (Italy), Trygve S. Hall (Task Force Coordinator) (Norway), Magdy Abdelhamid (Egypt), Emanuele Barbato (Italy/Belgium), Stefan De Hert (Belgium), Ingrid de Laval (Sweden), Tobias Geisler (Germany), Lynne Hinterbuchner (Austria), Borja Ibanez (Spain), Radosław Lenarczyk (Poland), Ulrich R. Mansmann (Germany), Paul McGreavy (United Kingdom), Christian Mueller (Switzerland), Claudio Muneretto (Italy), Alexander Niessner (Austria), Tatjana S. Potpara (Serbia), Arsen Ristic (Serbia), L. Elif Sade (United States of America/Turkey), Henrik Schirmer (Norway), Stefanie Schüpke (Germany), Henrik Sillesen (Denmark), Helge Skulstad (Norway), Lucia Torracca (Italy), Oktay Tutarel (Germany), Peter Van Der Meer (Netherlands), Wojtek Wojakowski (Poland), Kai Zacharowski (Germany).

ESC subspecialty communities having participated in the development of this document
Associations: Association for Acute CardioVascular Care (ACVC), Association of Cardiovascular Nursing & Allied Professions (ACNAP), European Association of Cardiovascular Imaging (EACVI), European Association of Percutaneous Cardiovascular Interventions (EAPCI), European Heart Rhythm Association (EHRA), Heart Failure Association (HFA).
Councils: Council of Cardio-Oncology, Council on Valvular Heart Disease.
Working Groups: Adult Congenital Heart Disease, Aorta and Peripheral Vascular Diseases, Cardiovascular Pharmacotherapy, Cardiovascular Surgery, Thrombosis.
Patient Forum

Adapted from the 2022 ESC Guidelines on cardiovascular assessment and management of patients undergoing non-cardiac surgery
European Heart Journal; 2022 - doi:10.1093/eurheartj/ehac270
ESSENTIAL MESSAGES FROM THE 2022 ESC GUIDELINES ON CARDIOVASCULAR ASSESSMENT AND MANAGEMENT OF PATIENTS UNDERGOING NON-CARDIAC SURGERY

Table of contents

- Section 1 - Key messages
- Section 2 - Gaps in evidence
Key messages

• The occurrence of CV complications in the peri-operative phase of NCS has a dramatic impact on prognosis.

• The risk of CV complications in patients undergoing NCS is determined by patient-related factors, type of surgery or procedure, and the circumstances under which surgery takes place (elective vs. emergency procedure; local or tertiary hospital).

• Specific patient-related risk factors may be reduced by adequate pre-operative risk assessment and initiation of effective risk-reduction strategies.

• The quantification of surgical risk as low, intermediate, and high is helpful in identifying the group of patients who should benefit the most from preventive diagnostic and therapeutic approaches to concomitant CV conditions.

• Proper selection of type and timing of the surgical procedure may reduce the risk of complications.

• It is important that patients’ values, quality of life, and preferences with respect to the benefits and risks of surgery are taken into consideration, and that well-informed patients are involved in the decisions. Risk should be communicated to the patient in absolute terms (e.g. 1 out of 100).

• Clinical examination, patient-reported functional capacity, and non-invasive tests represent the cornerstone of pre-operative cardiac assessment.

• Instrumental and functional cardiac examination tools should be selected in view of the surgical risk, relative diagnostic proficiency, and healthcare resource utilization and costs.

• The peri-operative evaluation of elderly patients who require elective major NCS should include a frailty screening, which has proved to be an excellent predictor of unfavourable health outcomes in the older surgical population.

• The treatment of pre-existing or newly diagnosed CV conditions, e.g. coronary and peripheral vascular disease, rhythm disorders, and HF, should be individualized according to the pre-operative risk of NCS, and considering the recommendations of speciality guidelines.

• A multidisciplinary approach to evaluate whether the treatment of concomitant cardiac conditions before scheduled NCS improves the peri-operative safety without unnecessary delay is encouraged.
• Efficient peri-operative management of antithrombotic therapies in patients scheduled for NCS aims at offering the potential benefit of preventing thrombotic events without an excess of bleeding complications.

• It is important to clearly and concisely communicate with patients, with simple verbal and written instructions, about changes in medication in the pre- and post-operative phases.

• The management in the peri-operative phase of NCS aims at avoiding haemodynamic imbalance while ensuring sufficient cardioprotective action.

• Healthcare providers are recommended to have high awareness for peri-operative CV complications combined with surveillance for PMI in high-risk patients undergoing intermediate- or high-risk NCS.

• The routine assessment of treatment quality through specific indicators is important to document and measure the success of preventive and therapeutic strategies in patients undergoing NCS.
Gaps in evidence

- The age cut-off for individuals (considered to be cardiovascularly healthy) benefiting from risk stratification work-out before NCS needs to be evaluated.

- Further studies are needed to characterize outcome differences in NCS between men and women, and between different countries, in order to individualize peri-operative management and improve patient safety.

- Evidence on the additive value of cardiac biomarkers, handheld ultrasound, problem FOCUS, and stress echocardiography for cardiac risk stratification of patients scheduled for NCS presenting with previously unknown cardiac murmur, dyspnoea, oedema, and chest pain is still lacking. The impact of FOCUS on outcomes of urgent or time-sensitive surgery needs further investigation.

- The impact of stress imaging (echocardiography or MRI) before NCS on reduction of peri-operative CV complications in non-ischaemic heart diseases needs further research.

- The role of right heart catheterization in patients with advanced HF or patients with severe pulmonary hypertension undergoing NCS is not known.

- It is unknown whether artificial intelligence-based systems facilitate prompt detection and response to imminent adverse events in high-risk cardiac patients undergoing high-risk NCS.

- Systematic and structured research to investigate pathophysiology, causes, and time distribution of serious peri-operative arrhythmic events among patients undergoing NCS is still needed.

- Strategies of timing of pre-operative CIED control dependent on device type, urgency and type of NCS, and risk of EMI during NCS need to be developed for ensuring maximal patient safety.

- Benefit of routine myocardial revascularization of high-risk CCS patients (except left main or three-vessel CAD, reduced LV function) before elective intermediate- and high-risk NCS is not well-established.

- More evidence regarding the need for bridging of anticoagulation in patients with MHVs is needed.
Gaps in evidence

• There is a lack of evidence regarding the optimal strategies before emergent or time-sensitive NCS for patients on antithrombotic treatment at high-risk for thromboembolic events, including the: (i) use of extracorporeal haemoperfusion or NOAC antidotes (ongoing trial NCT04233073); (ii) use of albumin, extracorporeal haemoperfusion or PB2452-specific antidote to antagonized ticagrelor (ongoing trial NCT04286438 for PB2452); and (iii) premature cessation or bridging during interruption of oral P2Y12-receptor inhibitors (glycoprotein IIb/IIIa receptor inhibitors or cangrelor).

• There is lack of well-powered studies to evaluate the role of platelet function testing to guide the strategy of treatment of NCS patients on antiplatelet therapy.

• Evidence regarding the need for and benefit of anticoagulation in NCS patients with post-operative AF is still lacking (ongoing ASPIRE-AF trial: NCT03968393).

• Prophylactic strategies to reduce the incidence of post-operative AF in NCS patients additional to beta-blocker maintenance in patients already on this treatment need to be evaluated.

• The optimal cardiac work-up and therapy for patients with PMI within and outside hospital settings need to be evaluated.

• Studies are needed to investigate the impact on post-operative outcomes of the treatment of peri-operative hypotension, the use of new HF drug classes (SGLT2 inhibitors and vericiguat), and the use of NSAIDs as a temporary treatment of acute post-operative pain.

• Prospective studies are needed to investigate the incremental value of anaemia algorithms and blood-sparing strategies (use of blood-sparing blood tubes) to reduce the risk of anaemia-associated adverse outcomes among CV patients undergoing NCS.
Download the ESC Pocket Guidelines App
ESC clinical practice recommendations
Anytime. Anywhere

- All ESC Pocket Guidelines
- Over 140 interactive tools
  - Algorithms
  - Calculators
  - Charts & Scores
- Summary Cards & Essential Messages
- Online & Offline

Available on the iPhone App Store, Google Play, and Amazon.
The material was adapted from the 2022 ESC Guidelines on cardiovascular assessment and management of patients undergoing non-cardiac surgery (European Heart Journal; 2022 - doi: 10.1093/eurheartj/ehac270).

Post-publication corrections and updates are available at: www.escardio.org/guidelines

Copyright © European Society of Cardiology 2022 - All Rights Reserved.

The content of these European Society of Cardiology (ESC) Pocket Guidelines has been published for personal and educational use only. No commercial use is authorized. No part of the ESC Pocket Guidelines may be translated or reproduced in any form without written permission from the ESC. Permission can be obtained upon submission of a written request to ESC, Clinical Practice Guidelines Department, Les Templiers - 2035, Route des Colles Colles CS 80179 Biot - 06903 Sophia Antipolis Cedex - France. Email: guidelines@escardio.org

Disclaimer:

The ESC Guidelines represent the views of the ESC and were produced after careful consideration of the scientific and medical knowledge and the evidence available at the time of their publication. The ESC is not responsible in the event of any contradiction, discrepancy and/or ambiguity between the ESC Guidelines and any other official recommendations or guidelines issued by the relevant public health authorities, in particular in relation to good use of healthcare or therapeutic strategies. Health professionals are encouraged to take the ESC Guidelines fully into account when exercising their clinical judgment, as well as in the determination and the implementation of preventive, diagnostic or therapeutic medical strategies; however, the ESC Guidelines do not override, in any way whatsoever, the individual responsibility of health professionals to make appropriate and accurate decisions in consideration of each patient's health condition and in consultation with that patient and, where appropriate and/or necessary, the patient's caregiver. Nor do the ESC Guidelines exempt health professionals from taking into full and careful consideration the relevant official updated recommendations or guidelines issued by the competent public health authorities, in order to manage each patient's case in light of the scientifically accepted data pursuant to their respective ethical and professional obligations. It is also the health professional's responsibility to verify the applicable rules and regulations relating to drugs and medical devices at the time of prescription and to make sure whether a more recent version of this document exists prior to making any clinical decision.