Esc guidelines 2014 non cardiac surgery

Continue

COMPARISON OF 2014 ACCAHA VS. ESC GUIDELINES
EDITORIAL

2014 ESC/ESA guidelines on noncardiac surgery: Cardiovascular assessment and management

Are the differences clinically relevant? The European perspective

Steen D. Kristensen, MD, DMSc, FESC[a]

[a] Department of Cardiology, Aarhus University Hospital, Aarhus, Denmark

In 2012, the European Society of Cardiology (ESC) and the European Society of Anaesthesiology (ESA) established a guideline task force comprising experts within the field of a noncardiac surgery. After a fruitful review process, the guideline document was published in 2014.[1,2] The group consisted of experts within anaesthesiology, surgery, and all subspecialities of cardiology including cardiovascular imaging. In this issue of the Journal, Velasco et al. have prepared a comparison of the latest revision of the US and European guidelines on perioperative cardiovascular evaluation and management of patients undergoing noncardiac surgery and the editorial by Port providing the US perspective.[3,4]

The major goal of the European Guidelines was to provide a step-by-step guidance for clinicians managing cardiac patients undergoing noncardiac surgery. The following points were updated and emphasized:

– A multidisciplinary expert team should be consulted for perioperative evaluations of patients with known or high-risk cardiac disease undergoing high-risk surgery.
– The surgical risk assessment was completely updated (Table 3, Ref 1).

– Patient risk assessment was based on the Lee score,[5] but also other validated risk scores such as NSQIP[6] were recommended.
– The risk reduction section including the indication for preoperative use of beta-blockers was updated and changed.
– The recommendations of the use of aspirin and P2Y12 inhibitors were updated, and a section on new oral anticoagulants was included.
– The recommendations of the timing of noncardiac surgery in patients with recent revascularization were updated. Routine prophylactic myocardial revascularization before low- and intermediate-risk surgeries in patients with ischemic heart disease (IHD) is not recommended, but may be considered before high-risk surgery depending on the extent of stress-induced ischemia.
– The section on specific diseases including several cardiac and vascular conditions and also pulmonary and renal disease was updated.
– The perioperative monitoring section was updated, and new anaesthesiological techniques were recommended.

As for other ESC Guidelines, the approach is to establish recommendations and to evaluate the level of evidence on the best patient management to guide clinicians in their decision making. Clearly this also holds true for optimal use of preoperative cardiovascular imaging in these patients. In general, the view on this topic is that we should be careful not to overuse expensive imaging techniques that are not evidence based. In each case, the

162

Dopo le Linee Guida ACC/AHA ed ESC

La valutazione cardiologica preoperatoria nella chirugia non cardiaca: le certezze, le aree controverse e le opportunità di una gestione in team

After ACC/AHA and ESC Guidelines
Pre-operative cardiological evaluation in non-cardiac surgery: certainties, controversial areas and opportunities for a team approach

Stefano Urbinati, Pompilio Faggiano, Furio Colivicchi, Carmine Riccio,
Maurizio Giuseppe Abrignani, Alberto Genovesi-Ebert, Francesco Fattirolli,
Stefania De Feo, Simona Gambetti e Massimo Uguccioni

ABSTRACT: After ACC/AHA and ESC Guidelines. Pre-operative cardiological evaluation in non-cardiac surgery: certainties, controversial areas and opportunities for a team approach. S. Urbinati, P. Faggiano, F. Colivicchi, C. Riccio, M.G. Abrignani, A. Genovesi-Ebert, F. Fattirolli, S. De Feo, S. Gambetti, M. Uguccioni.

A standardized and evidence-based approach to the cardiological management of patients undergoing noncardiac surgery has been recently defined by Task Forces of the American Heart Association (AHA), American College of Cardiology (ACC) and the European Society of Cardiology (ESC) that published their guidelines in 2007 and 2009, respectively. Both the recommendations moved from risk indices to a practical, stepwise approach of the patient, which integrates clinical risk factors and test results with the estimated stress of the planned surgical procedure.

In the present paper the main topics of the guidelines

are discussed, and moreover, emphasis is placed on four controversial issues such as the use of prophylactic coronary revascularization in patients with myocardial ischemia, the perioperative management of patients with congestive heart failure, the routine use of betablockers and statins, and, finally, the management of antiplatelet therapies in patients with coronary stents.

In addition to promoting an improvement of immediate perioperative care, the preoperative cardiological evaluation should be a challenge for identifying subjects with enhanced risk of cardiovascular events, who should be treated and monitored during a long-term follow-up.

Keywords: noncardiac surgery, perioperative management, noninvasive testing, preoperative revascularization, betablockers, statins, coronary stents.
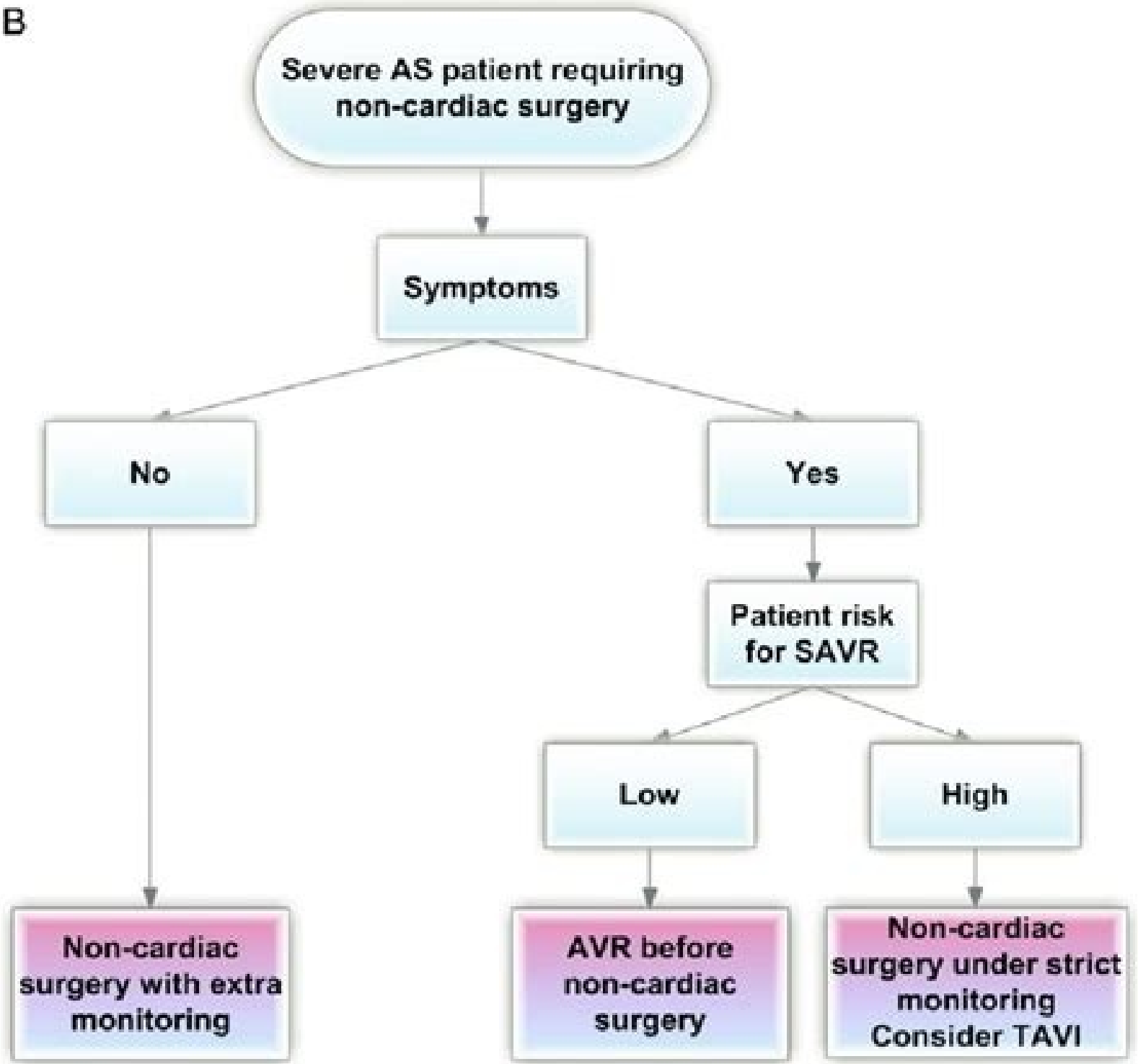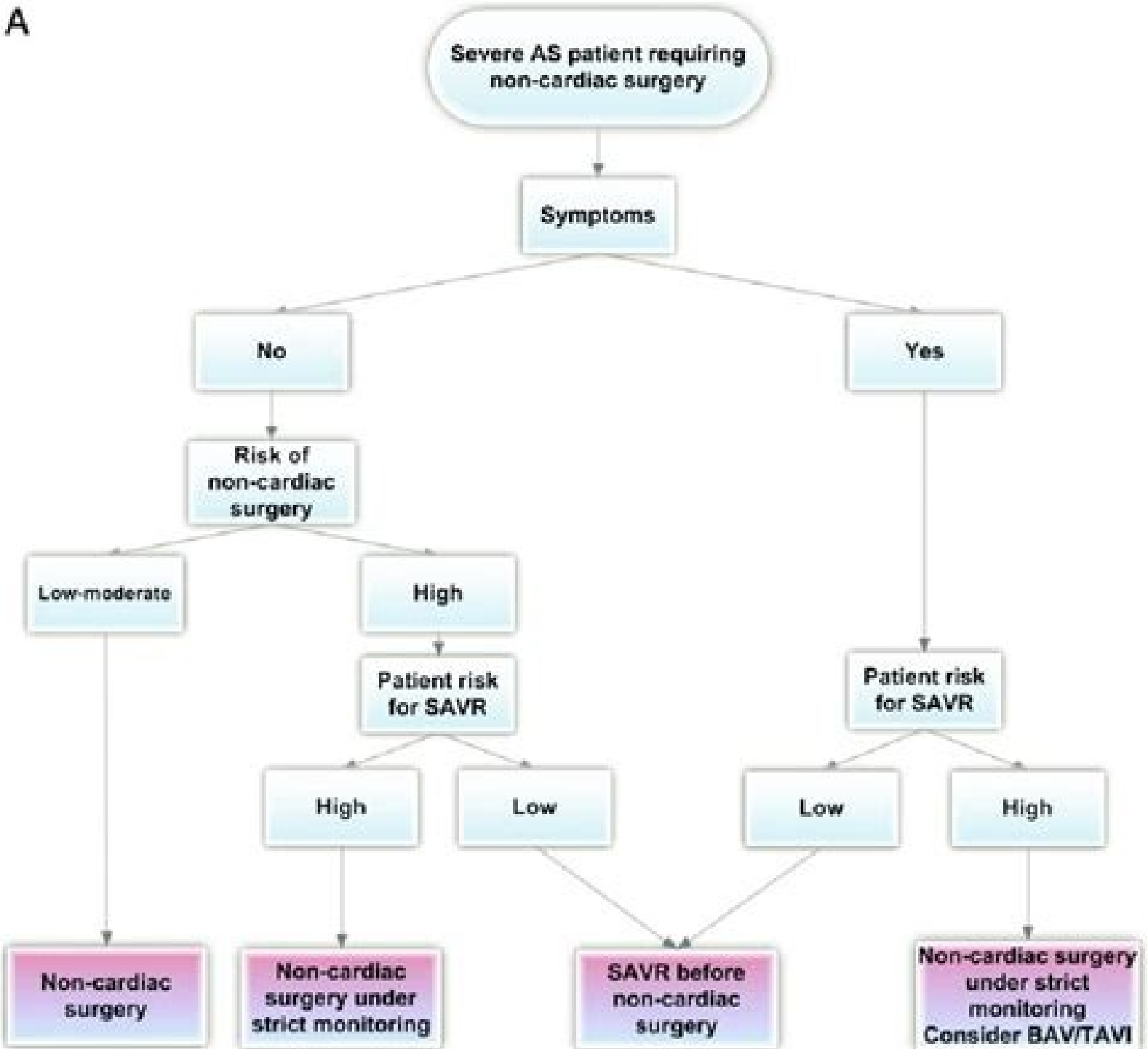
Monaldi Arch Chest Dis 2011; 76: 121-131.

Corresponding author: Stefano Urbinati; UOC Cardiologia, Ospedale Bellaria, Via Altura, 3; I-40139 Bologna, Italy;
Tel. 051-6225241; Fax 051-6225725; E-mail address: stefano.urbinati@ausl.bo.it

La consulenza cardiologica pre-operatoria, pur rappresentando un'attività clinica rilevante di ogni Cardiologia, è raramente standardizzata e continua a svolgersi spesso in maniera empirica e con percorsi eterogenei. La necessità di una sua organizzazione è urgente se si considera che in Europa vengono effettuati ogni anno 40 milioni di interventi chirurgici con un'incidenza di 400.000 infarti miocardici perioperatori e 133.000 morti per cause cardiovascolari [3]. American College of Cardiology (ACC) e American Heart Association (AHA) hanno pubblicato le loro prime Linee Guida sull'argomento nel 2002, aggiornate nel 2007 [1, 2], mentre la Società Europea di Cardiologia (ESC) ha pubblicato per la prima volta le Linee Guida nel 2009 [3] con l'endorsement della Società Europea di Anestesiologia.

Questi documenti, pur basandosi più su un consenso di esperti che su forti evidenze scientifiche [4-7], hanno avuto il pregio di fornire un metodo con cui eseguire la consulenza stessa. Le Linee Guida europee in particolare, riprendono l'impianto di quelle americane, ma sono più fruibili nella pratica clinica, perché hanno una impostazione multidisciplinare e forniscono indicazioni più precise su comportamenti da adottare, indicazioni ai test non invasivi, terapia farma-

cologica e indicazioni alla rivascolarizzazione pre-operatoria. In Italia, prima della pubblicazione delle Linee Guida europee, la ricerca di comportamenti condivisi aveva già prodotto due pubblicazioni, una curata dall'Agenzia Nazionale per i Servizi Sanitari [10] e l'altra dall'Area Prevenzione ANMCO che ha realizzato anche una serie di corsi educazionali sull'argomento [11].

La applicazione delle Linee Guida nella pratica clinica va implementata perché, dopo la pubblicazione delle Linee Guida americane, è stato dimostrato che la loro adozione riduce l'assorbimento di risorse e migliora la prognosi [8, 9] e anche la presente review è stata redatta al fine di fornire un ulteriore contributo in tale senso.

L'epoca degli "score"

La ricerca di "score" per stratificare il rischio cardiovascolare dei candidati a chirurgia non cardiaca è iniziata negli anni '70 con gli ormai classici criteri di Goldman [12], perfezionati da Detsky [13] e da Lee [14] che ha semplificato il sistema a punteggio prevedendo solo 6 variabili (tabella 1), che sono risultate correlate con la prognosi [15] e che per questo sono state adottate dalle Linee Guida sia ameri-

A — Severe AS patient requiring non-cardiac surgery → Symptoms → No / Yes. No → Risk of non-cardiac surgery → Low-moderate / High. High → Patient risk for SAVR → High / Low. Yes → Patient risk for SAVR → Low / High. Outcomes: Non-cardiac surgery; Non-cardiac surgery under strict monitoring; SAVR before non-cardiac surgery; Non-cardiac surgery under strict monitoring Consider BAV/TAVI.

B — Severe AS patient requiring non-cardiac surgery → Symptoms → No / Yes. Yes → Patient risk for SAVR → Low / High. Outcomes: Non-cardiac surgery with extra monitoring; AVR before non-cardiac surgery; Non-cardiac surgery under strict monitoring Consider TAVI.

high-risk patients, although correct positioning of 12 leads is not feasible in high abdominal and thoracic surgery. Recommendations on ECG monitoring   6.2 Transoesophageal echocardiography Transoesophageal echocardiography (TOE) has frequently been used as a monitoring tool during cardiac surgery. TOE has several advantages. It is rapidly available, relatively non-invasive, and provides more versatile and comprehensive information; however, although TOE is in general a safe procedure, serious adverse events can occur. The complication rates relate to the experience of the operator and the presence of oesophageal or gastric diseases. Specific training of users is essential to avoid inaccurate interpretation.Myocardial ischaemia can be identified by abnormalities in regional wall motion and thickening. The agreement between intra-operative TOE and ECG is rather weak.229 Both ST-segment changes and regional wall motion abnormalities can be present in the absence of acute ischaemia. Wall motion abnormalities may be difficult to interpret in the presence of left bundle branch block, ventricular pacing, or right ventricular overload. The resolution of ischaemia is not necessarily detectable if ischaemia is followed by myocardial stunning. Episodes of new or worsened wall motion abnormalities have been shown to be relatively infrequent (20%) in high-risk patients undergoing non-cardiac surgery.229 They were more common in patients submitted to aortic vascular surgery. Episodes were poorly correlated with post-operative cardiac complications.229For the purpose of identifying patients at high risk of perioperative ischaemic outcomes, routine monitoring for myocardial ischaemia with TOE or 12-lead ECG during non-cardiac surgery is of little more clinical value than pre-operative clinical data and intra-operative monitoring using a 12-lead ECG.230TOE is recommended if acute and severe haemodynamic instability or life-threatening abnormalities develop during or after surgery.231 It is a useful technique in the context of hypotension during non-cardiac surgery. In a prospective study including 42 adults, TOE was performed before any other haemodynamic monitoring when severe hypotension developed. It was useful for determining the cause of severe hypotension, hypovolaemia, low ejection fraction, severe embolism, myocardial ischaemia, cardiac tamponade, or dynamic LV outflow tract obstruction.232 The value of TOE for systematic haemodynamic monitoring in patients at risk is more controversial. There is no evidence that haemodynamic monitoring by TOE accurately stratifies risk or predicts outcome. TOE can be useful in the operating room in patients with severe valvular lesions. The loading conditions during general anaesthesia differ from those present in the pre-operative evaluation. Secondary mitral regurgitation is usually reduced during general anaesthesia; on the other hand, primary mitral regurgitation can increase. In the setting of severe mitral regurgitation, the LVEF overestimates LV function and other parameters may be more accurate, such as myocardial deformation obtained by two-dimensional speckle tracking. More validation is needed before this method can be used routinely in this setting. In patients with severe aortic stenosis, appropriate pre-load is important during surgery. Monitoring of LV end-diastolic volume with TOE may be more accurate than by pulmonary capillary pressure. An appropriate heart rate is crucial in patients with mitral stenosis and aortic regurgitation: a sufficient diastolic period in the former and an appropriate—not long—duration of diastole in the latter. When inappropriate control of heart rate occurs, the consequences should be assessed: changes in transmitral mean gradient and pulmonary artery pressures in mitral stenosis, and changes in LV volumes and indices of LV function in aortic regurgitation. Recommendations on intra-operative and/or perioperative TOE for detection of myocardial ischaemia   Recommendations on intra-operative and/or perioperative TOE in patients with or at risk of haemodynamic instability   Transoesophageal Doppler (TOD) (without echocardiography) can be also used to monitor cardiac output. A government-sponsored systematic review performed in the USA concluded that a strong level of evidence existed to support the usefulness of TOD in reducing the rate of major complications and the length of hospital stay after major surgery.233 A similar conclusion was drawn in a separate review commissioned by the UK's National Health Service (NHS) Centre for Evidence-based Purchasing, performed in three NHS hospitals, with 626 patients being assessed before- and 621 patients after implementation of an intra-operative TOD-guided fluid optimization strategy. The findings of the NHS review showed a 67% decrease in intra-operative mortality, a 4-day reduction in mean duration of post-operative hospital stay, a 23% reduction in the need for central venous catheter insertion, a 33% decrease in complication rates, and a 25% reduction in re-operation rate.234 6.3 Right heart catheterization Despite more than 30 years' experience with the pulmonary artery catheter (PAC) and right heart catheterization, little evidence exists in the medical literature to demonstrate a survival benefit associated with PAC in perioperative patients. A case-control analysis, carried out in a subset of patients from a large observational study who underwent PAC placement, and who were matched with a similar number of patients who did not undergo right heart catheterization, demonstrated a higher incidence of post-operative heart failure and non-cardiac events than the control group.236Similarly, a Cochrane review of 12 randomized, controlled clinical trials studying the impact of PAC in a large spectrum of patients—including patients who were undergoing surgery or who were admitted to the ICU with advanced heart failure, acute respiratory distress syndrome, or sepsis—failed to demonstrate a difference in mortality and length of hospital stay, suggesting that PAC does not provide information that is not otherwise available to select a treatment plan.237Routine PAC and right heart monitoring is therefore not recommended in patients during non-cardiac surgery. The use of other non-invasive perioperative cardiac output monitoring techniques (including TOE with Doppler monitoring) to optimize cardiac output and fluid therapy in high-risk patients undergoing non-cardiac surgery, seems to be associated with reduction in length of stay and complications,238 yet convincing data on hard end-points are still lacking. 6.4 Disturbed glucose metabolism Diabetes mellitus is the most common metabolic disorder in Europe, with a prevalence of 6.4% in 2010, which is predicted to increase to 7.7% by 2030.239 Type 2 diabetes accounts for >90% of cases, and is expected to increase, probably due to the obesity epidemic in children and young adults. The condition promotes atherosclerosis, endothelial dysfunction, activation of platelets, and synthesis of pro-inflammatory cytokines. According to the World Health Organization, approximately 50% of patients with type 2 diabetes die of CVD. It is well established that surgery in patients with diabetes is associated with longer hospital stay, greater use of healthcare resources, and higher perioperative mortality. Elevated levels of glycosylated haemoglobin (HbA1c)—a marker of poor glycaemic control—are associated with worse outcomes in surgical and critical care patients.240 Further, surgical stress increases the prothrombotic state, which may present a particular issue in patients with diabetes; thus diabetes is an important risk factor for perioperative cardiac complications and death. Critical illness is also characterized by dysglycaemia, which may develop in the absence of previously diagnosed diabetes, and has repeatedly been identified as an important risk factor for morbidity and mortality.240 More recently, the emphasis has shifted from diabetes to hyperglycaemia, where new-onset hyperglycaemia (compared with hyperglycaemia in known diabetics) may hold a much higher risk of adverse outcome.240,241 Studies in the field of critical care have demonstrated the detrimental effect of hyperglycaemia, due to an adverse effect on renal and hepatic function, endothelial function, and immune response, independent of underlying diabetes. Oxidative stress (a major cause of macrovascular disease) is triggered by swings in blood glucose, more than by sustained and persistent hyperglycaemia. Minimization of the degree of glucose variability may be cardioprotective, and mortality may correlate more closely with blood glucose variability than mean blood glucose per se.240,241A significant number of surgical patients will have previously undiagnosed pre-diabetes, and are at increased risk of unrecognised perioperative hyperglycaemia and the attendant adverse outcomes. Although there is no evidence that screening low- or moderate-risk adults for diabetes improves outcomes, it may reduce complications in high-risk adults. Screening patients using a validated risk calculator (e.g. FINDRISC) can identify high or very high-risk adults; this can be followed up by screening every 3–5 years with HbA1C.242,243 In patients with diabetes, pre-operative or pre-procedural assessment should be undertaken to identify and optimize comorbidities, and determine the peri-procedural diabetes management strategy. For non-cardiac surgery patients without known diabetes, evidence for strict blood glucose control is derived largely from studies in critically ill patients, and is disputed.240,241 Early randomized controlled trials of intensive insulin therapy maintaining strict glycaemic control showed morbidity benefits in medical patients in ICUs, and reduced mortality and morbidity in surgical patients in ICUs. Subsequent studies, however, found a reduction in mortality in those whose blood glucose control was less strict [7.8-10 mmol/L (140-180 mg/dL)] than in those in whom it was tightly controlled [4.5-6 mmol/L (81–108 mg/dL)], as well as fewer incidents of severe hypoglycaemia. Subsequent meta-analyses have demonstrated no reduction in 90-day mortality with intensive blood glucose control but a five- to six-fold incidence of hypoglycaemia.240,241 Several suggestions have been put forward to explain the differences in outcome between these studies, including enteral vs. parenteral feeding, the target for insulin initiation, compliance with therapy, accuracy of glucose measurements, mechanism or site of insulin infusion, type of protocol used, and the nurse's level of experience. In addition, there is disagreement on the timing of the initiation of insulin therapy: tight intra-operative glucose control may provide benefit but appears to be difficult and, thus far, studies have mainly been undertaken in patients undergoing cardiac surgery.The correlation of poor surgical outcome with high HbA1c suggests that screening patients and improving glycaemic control before surgery may be beneficial. Although recommendations for perioperative management of impaired glucose metabolism are extrapolated largely from the critical care literature, general consensus is that interventions in the acutely unwell or stressed patient should be directed towards minimizing fluctuations in blood glucose concentration whilst avoiding hypoglycaemia and hyperglycaemia. In the ICU setting, insulin infusion should be used to control hyperglycaemia, with the trigger for instigating intravenous insulin therapy set at 10.0 mmol/L (180 mg/dL) and relative trigger at 8.3 mmol/L (150 mg/dL). Although there is a lack of agreement on target glucose range,targets below 6.1 mmol/L (110 mg/dL) are not recommended.240,241 Recommendations on blood glucose control   6.5 Anaemia Anaemia can contribute to myocardial ischaemia, particularly in patients with CAD. In emergency surgery, transfusion may be needed and should be given according to clinical needs. In elective surgery, a symptom-guided approach is recommended as no scientific evidence is available to support other strategies. 7. Anaesthesia The optimal perioperative course for high-risk cardiovascular patients should be based on close co-operation between cardiologists, surgeons, pulmonologists, and anaesthesiologists. Pre-operative risk assessment and pre-operative optimization of cardiac disease should be performed as a team exercise. Guidelines on pre-operative evaluation of the adult patient undergoing non-cardiac surgery have previously been published by the European Society of Anaesthesiology.244 The present edition focuses on patients with cardiovascular risk factors and diseases and also takes into account more recent developments, as well as perioperative management of patients at increased cardiovascular risk. 7.1 Intra-operative anaesthetic management Most anaesthetic techniques reduce sympathetic tone, leading to a decrease in venous return due to increased compliance of the venous system, vasodilatation and, finally, decreased blood pressure; thus, anaesthesiological management must ensure proper maintenance of organ flow and perfusion pressure. Recent evidence suggests that there is no universal 'target blood pressure value' to define intra-operative arterial hypotension, but percentage decreases >20% in mean arterial pressure, or mean arterial pressure values 30 minutes, are associated with a statistically significant increase in the risk of post-operative complications that include myocardial infarction, stroke, and death.104,245,246 Similarly, increased duration (>30 minutes) of deep anaesthesia (bispectral index scale values 20%). All high-risk patients undergoing major surgery had a benefit from goal-directed fluid therapy in terms of complications.263 A meta-analysis in 2014 demonstrated that, in patients with CVDs, goal-directed therapy decreased major morbidity without any increase in adverse cardiovascular events.264 7.4 Risk stratification after surgery Several recent studies have demonstrated that it is possible to stratify the risk of post-operative complications and mortality with a simple surgical 'Apgar' score.265 This post-event stratification might allow redirecting patients to higher intensity units or selected post-operative measurements of natriuretic peptides and troponin.3,266 7.5 Early diagnosis of post-operative complications Several recent publications have demonstrated that differences between hospitals, in terms of post-operative mortality, are not due to the incidence of complications but to the way in which they are managed.267 These results suggest that early identification of post-operative complications, allied to aggressive management, could decrease perioperative morbidity and mortality. Several recent meta-analyses have demonstrated that increased post-operative troponin and BNP concentrations after non-cardiac surgery are associated with a significantly increased risk of mortality.55,266,268 The prospective Vascular Events In Noncardiac Surgery Patients Cohort Evaluation (VISION) trial confirmed the results of these meta-analyses.3 Taken together, these results indicate that early troponin measurement in selected patients could trigger therapeutic consequences. A non-randomized trial demonstrated that a bundle of interventions aimed at promoting homeostasis was associated with a significantly decreased incidence of post-operative troponin elevation and decreased morbidity.269 Pre-operatively and post-operatively, patients who could most benefit from BNP or high-sensitivity troponin measurements are those with METs ≤4 or with a revised cardiac risk index value >1 for vascular surgery and >2 for non-vascular surgery. Post-operatively, patients with a surgical Apgar score