

**Abstracts of the lectures to the**



**European Association of  
Cardiothoracic Anaesthesiologists**

**Trainee Course,  
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European Association of  
Cardiothoracic Anaesthesiologists

## Programme

<b>Title</b>	<b>Speaker</b>
Assessment of the patient for thoracic surgery	Giorgio della Rocca
Anaesthesia for peripheral vascular surgery	Simon Howell
Perioperative mechanical support of the circulation	Fabio Guarracino
Current techniques of cardiopulmonary bypass	Gudrun Kunst
Pharmacology for cardiothoracic anaesthesia	Ravi Gill
Cardiac arrhythmias and their management	Joachim Erb
Quality assessment in cardiac anaesthesia	Peter Rosseel
Critical care following heart surgery	Martina Crivellari
Weaning from cardiopulmonary bypass	Anna Flo-Forner
Adverse effects of one-lung mechanical ventilation	Vera von Dossow-Hanfingl
Anaesthetic management of abdominal aortic surgery	Hossam El-Ashmawi

## Assessment of the patient for thoracic surgery

Giorgio Della Rocca



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In the field of thoracic surgery, lung resection is peculiar in that the management and function of the residual lung has the potential to interfere with both pulmonary and cardiovascular systems, whose effects may affect the surgical outcome in terms of morbidity and mortality. In this field, four heterogeneous documents to guide the preoperative evaluation and risk stratification candidates have been published between 2007 and 2013. However, the available literature about the assessment and risk stratification in these patients remains unclear. The aim of the lecture is to focus the actual assessment in terms of risk stratification of the patient undergoing thoracic surgery.

For the first time, in the 2014 European Guidelines there was the inclusion of biomarkers. Brain natriuretic peptide (BNP) is a 32-amino acid peptide containing a 17-amino acid ring structure common to all natriuretic peptides. Measurement of plasma levels of BNP or its N-terminal fragment (NT-pro-BNP) is being increasingly used in the perioperative setting.

A preoperative cardiological consultation need to be done only in patients with  $MET \leq 4$  and clinical risk factors. Whether the cardiac examination is positive (clinical evaluation, non-invasive test), the patient should be investigate with the CPET that will provide information about the real cardiorespiratory reserve with the peak of systemic oxygen consumption ( $VO_2$  max).

The risk of perioperative complications depends on the patients condition before surgery, the type and the magnitude of the intervention and the perioperative management i.e. optimization of the ongoing home therapy, anaesthesia depth and management, postoperative care, i.e. general ward versus intensive care. One should focus in the preoperative evaluation on the surgical perspective in terms of the best tailored surgery for an individual patient and the conditions before surgery as evaluated from a cardiology, pneumonology and anaesthesiology perspective with the purpose to follow an algorithm for simple application in clinical practice.

The evidence suggests that it is reasonable that high-tech testing used in patients with  $ppDLCO/ppFEV_1 < 30\%$ . However, in the light of its limited availability and to save resources and patients between 30 and 60 years old should be evaluated through 'low-technology test e.g. shuttle test, stair climbing. Then, if the performance of the test is less than  $< 22m$  or  $< 400$ , 'high technology tests such as  $VO_2$  max, are mandatory to assess whether patients are at low, moderate or high risk for lung surgery.

In conclusion, no single test should exclude a patient from thoracic surgery. Once reports are available on comorbidity disease, cardiovascular risk, pulmonary function, and exercise tolerance then they should be considered by a multidisciplinary team who will provide counselling regarding the risks, benefits, and alternatives to surgical treatments for lung cancer. Each patient should be informed of and accept the risks of surgery as well as the impact that it will have their lifestyle. Anaesthesiologists are not gate-keepers and generally, they will meet the patients at the very end of the their assessment for thoracic surgery when they should participate in the discussion of the risks and benefits of surgery. In the preoperative assessment, the anaesthesiologists should identify the risks, optimize functional reserves and manage perioperative procedures to improve the outcome from thoracic surgery.

### Further reading

della Rocca, G, Cocca, C. Diagnosis and assessment of lung disease. In Alston RP, Ranucci, M, Myles, P. Oxford textbook of cardiothoracic anaesthesia. 2015, Oxford, Oxford University Press.