

# Quality markers in cardiology: measures of outcomes and clinical practice—a perspective of the Spanish Society of Cardiology and of Thoracic and Cardiovascular Surgery

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## Introduction

The complexity of the individual patient and organization of medical practice results in important institutional and country quality of care variability.<sup>1–17</sup> Attempts to assess the quality of clinical practice have established rating systems that may yield completely different results and rating for the same hospital during the same period of time, adding confusion rather than help to prove their usefulness and, questioning whether existing measures can actually measure quality.<sup>18–25</sup> Most important, benchmarking may be associated with progressive improvement both in performance and outcomes,<sup>18,26,28,34–38</sup> highlighting the relevance of standardization of quality measures and the responsibility of scientific societies.

## Objectives

The Spanish Society of Cardiology (ESC) and the Spanish Society of Thoracic and Cardiovascular Surgery (SSTCS) organized a task force to identify and define two sets of quality metrics in hospital cardiology practice: (i) outcome measures (metrics of the final quality of the practice of cardiology) and (ii) performance measures (metrics of clinical practice which are known to positively influence desirable outcomes). Beyond this objective, Scientific Societies and Health Care Authorities should be responsible for the implementation of programmes to measure quality, ensure the quality of the data, benchmarking, and certification/accreditation of cardiology services.

## Methods

All European Society of Cardiology (ESC)<sup>12</sup> and American Heart Association/American College of Cardiology<sup>32</sup> guidelines were reviewed and recommendations related to quality standards were included in the document.

### Grading of quality markers

Three levels were established both for class recommendation and level of evidence considering (i) clinical and practical relevance, (ii) source and difficulty to obtain the information, (iii) difficulty to audit and ascertain the information, and (iv) evidence in the literature (Table 1). Mortality and stroke were considered as self-evident. To avoid confusion with general clinical practice guidelines nomenclature, Class of recommendation was graded in 1, 2, and 3 grades instead of I, II, and III.

### Type of hospital

For quality benchmarking, the task force established three types of hospitals defined as low, intermediate, and high complexity according to their organization, resources, and the need to transfer patients to other hospitals.

### Clusters to assess overall quality in clinical practice

Quality of care parameters may be grouped in clusters including institution characteristics, available technologies, staffing of the hospital and cardiac unit, organization, certification and accreditation, reputation and patients opinion.<sup>17,29,40</sup> All of them may influence outcomes, most are clearly identified in guidelines for clinical practice and all should be taken in consideration in every hospital.

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# Markers In Cardiology

**Michael H. Crawford**



## **Markers In Cardiology:**

**Markers in Cardiology** Jesse E. Adams, Fred S. Apple, Allan S. Jaffe, 2008-04-15 With the rapid development of the field of cardiac biomarkers comes a need for updated guidance on how to use them clinically Drs Adams Jaffe and Apple meet that need with this timely reference Taking a case oriented approach for the greatest clinical relevance the book bridges the gap between science and practice If you use or want to use cardiac markers such as BNP and troponin to help your patients you will find this clear and comprehensive reference provides a dependable source of valuable information The 19 chapters are divided into three parts Cardiac Troponins Natriuretic Peptides Contemporary Markers of Risk The authors cover the technical clinical and outcome assessments for each marker used in clinical practice After each case scenario an extensive discussion explains the clinical decisions and provides valuable context

**Cardiac Markers, An Issue of Clinics in Laboratory Medicine** Kent Balanis Lewandrowski, 2014-03-28 Topics in this clinically focused publication devoted to Cardiac Markers include Overview of cardiac markers in heart disease Methodologies for measurement of cardiac markers Natriuretic peptides in HF and ACS Troponins and high sensitivity troponins Point of care testing for cardiac markers ST 2 and galectin 3 in patients with heart failure Cardiac markers following heart surgery and percutaneous coronary intervention Cholesterol lipoproteins high sensitivity CRP and other risk factors for atherosclerosis Myocarditis and cardiac transplant and rejection New molecular genetic tests in the diagnosis of heart disease Biomarkers for cholesterol balance

**Markers in Cardiology - AHA** Jesse E. Adams, Fred S. Apple, Allan S. Jaffe, Alan H. B Wu, PhD, 2001-05-18 Diagnostic accuracy is critical for the identification and treatment of patients with potential cardiac disease There is now an ever increasing reliance on the measured levels of diverse proteins i e markers whose presence in varying amounts can suggest certain cardiovascular pathologies and help to identify optimal therapeutic alternatives Cardiac Markers Current and Future Applications is designed to familiarize the reader with these concepts and to facilitate the application of these concepts to patients with cardiac disease The chapters in this monograph detail the past present and potential future of markers used for the detection of myocardial injury and for risk assessment as part of a cardiovascular disease work up strategy The strengths of this extensive overview written by many of the current leaders in the field lie in the evidence presented in addressing analytical technical clinical and outcome assessments of each biomarker currently used in clinical practice and for those being investigated as potential cutting edge tools Clinical cardiologists pathologists researchers and critical and primary care physicians interested in the clinical application of blood based assays in cardiac patients will all learn from this monograph

*Markers in Cardiology - AHA* Jesse E. Adams, Fred S. Apple, Allan S. Jaffe, Alan H. B Wu, 2001-05-18 Diagnostic accuracy is critical for the identification and treatment of patients with potential cardiac disease There is now an ever increasing reliance on the measured levels of diverse proteins i e markers whose presence in varying amounts can suggest certain cardiovascular pathologies and help to identify optimal therapeutic alternatives Cardiac Markers Current and Future

Applications is designed to familiarize the reader with these concepts and to facilitate the application of these concepts to patients with cardiac disease. The chapters in this monograph detail the past, present and potential future of markers used for the detection of myocardial injury and for risk assessment as part of a cardiovascular disease work up strategy. The strengths of this extensive overview, written by many of the current leaders in the field, lie in the evidence presented in addressing analytical, technical, clinical and outcome assessments of each biomarker currently used in clinical practice and for those being investigated as potential cutting edge tools. Clinical cardiologists, pathologists, researchers and critical and primary care physicians interested in the clinical application of blood based assays in cardiac patients will all learn from this monograph.

**Cardiac Markers** Alan H. B. Wu, 2003-06-12 In this greatly enlarged and thoroughly updated edition of his much praised Cardiac Markers, Alan Wu and his contributors focus on the use of markers in the practice of cardiology and for the first time on the use of natriuretic peptides for congestive heart failure. Here leading international authorities in clinical chemistry and laboratory medicine, cardiology, emergency medicine and the in vitro diagnostics industry describe the state of the art uses of cardiac markers when treating coronary artery disease and discuss in detail how they may be optimally used in a clinical setting. Comprehensive and cutting edge Cardiac Markers, Second Edition offers physicians a complete guide to the use of cardiac markers in clinical practice and clinical laboratorians a close up view of the new markers now becoming standard.

**Biomarkers in Cardiovascular Disease** Vijay Nambi, 2018-11-27 Get a quick expert overview of the ways in which biomarkers can be used to assess and guide the management of cardiovascular disease in the clinical setting. This concise clinically focused resource by Dr Vijay Nambi consolidates today's available information on this rapidly changing topic into one convenient resource, making it an ideal easy to digest reference for cardiology practitioners, fellows and residents. Covers lab standards and statistical interpretation of biomarkers with a clinical focus. Discusses relevant conditions such as hypertension and diabetes as key markers of injury and prognosis. Includes current information on biomarkers to assess and guide the management of heart failure, acute coronary syndrome, chest pain, shortness of breath and more. Concludes the book with a timely chapter on how biomarkers may guide cardiologists in the future. *Cardiovascular Biomarkers* David A. Morrow, 2010-04-28 In the four pages committed to a discussion of myocardial infarction in the first edition of Harrison's Principles of Internal Medicine published in 1950, there was no mention of use of the laboratory for management of patients. Thirty years later, when the first edition of Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine was published, 2 out of the 1943 pages in the text contained a discussion of the laboratory examinations in acute myocardial infarction. Our knowledge base of the multitude of ways that physicians can and should use the clinical chemistry laboratory has expanded dramatically since these classic texts were published. The nomenclature has changed, terms such as cardiac enzymes have given way to cardiac biomarkers. The number of assays has multiplied and the operating characteristics of available assays are improving at a gratifying but dizzying rate. We now use biomarkers to diagnose cardiovascular diseases and also to frame

our treatment strategies Thus there is a clear need for a scholarly compilation of the state of the art of cardiac biomarkers Dr David Morrow has expertly edited an authoritative book that answers this need The 34 chapters in Cardiovascular Biomarkers Pathophysiology and Disease Management were written by a group of individuals who are internationally recognized thought leaders and experts in clinical and laboratory medicine **Cardiac Markers** Alan H. B. Wu, 2012-12-06

Cardiac Markers is a comprehensive up to date summary of clinical information on serum cardiac markers for coronary artery disease This book reviews in detail the biochemistry clinical significance and analytical measurements for each marker as well as the advantages and limitations of existing and proposed markers Comprehensive descriptions of therapeutic approaches to manage patients are presented Also included are up to date listings of primary references and commercial methodologies the latest data on the pathophysiology of unstable angina and a discussion of the new emergency room chest pain centers Anyone who needs to know how to examine diagnose treat and manage patients with acute chest pain and heart attacks will find this book indispensable **Molecular Biomarkers In Cardiology** Pietro Scicchitano, 2021-04-28

Colleagues The approach to diseases is facing novel frontiers targeting gene and improving person centered medicine able to easily and specifically detect early stages of pathologies The present book includes the most futuristic approaches to the identification of cardiac diseases by means of the most recent discoveries in molecular and genetic diagnosis The articles will give you the opportunity to think of cardiac diseases as adverse conditions which can be more easily detected by means of technologies and the research spirit of us physicians dedicated to humans care Please enjoy this reading **Myocardial Damage** Juan Carlos Kaski, David W. Holt, 1998-08-31

The spectrum of unstable coronary syndromes has been the object of steadily increasing research particularly in respect of novel diagnostic and treatment modalities Although the WHO criteria for the diagnosis of acute myocardial infarction have been known for decades there is still much debate as to the proper use of these especially the handling of biochemical markers Traditional enzymes have limitations in diagnostic power and new markers have unclarified applicability with regard to standardisation of assays and decision limits Furthermore the growing understanding of the conception of minimal myocardial damage in the borderzone between unstable angina pectoris and myocardial infarction necessitates refinement in the definitions of the various entities within the kaleidoscope of acute myocardial ischaemia There has been a strong impetus within the European Society of Cardiology to present this subject to a broad audience of cardiologists and as a consequence the theme of biochemical markers has become an important constituent of the Education and Training Programmes of the Society This book has fundamental implications for the overall comprehension of this complex area This book on myocardial damage compiled by international experts will truly appeal to the basic scientist as well as the clinician searching for updated knowledge of the pathophysiology and risk stratification of unstable coronary syndromes **Cardiac Biomarkers** Alan S. Maisel, Allan S. Jaffe, 2016-10-24

This book covers ACS and Heart Failure the chapters represent the most current up to date and knowledgeable content on the topic available It is

written by the worlds most respected leaders in biomarkers with a majority emphasis on what clinicians need to know The Editors and their contributors have provided algorithms annotated case discussions and caveats They cover biomarkers to predict risk of heart disease biomarkers of cardiorenal disease and conclude with a section on new and emerging biomarkers It be genuinely helpful and practical to those in the field including not just people working in the field but nurses doctors etc who practice medicine in the clinic the emergency department and the hospital      *Textbook of Emergency Cardiology* Alan S Maisel,W Frank Peacock,2021-11-30 This book is a comprehensive guide to the diagnosis and management of acute cardiovascular disorders Divided into four sections the text provides detailed guidance on cardiac arrest acute myocardial infarction and acute coronary syndrome acute heart failure and arrhythmias Individual chapters cover cardiac imaging biomarkers and drug therapy Written by renowned experts in the field led by US based Alan S Maisel and W Frank Peacock the text is further enhanced by more than 300 clinical photographs radiological images tables and figures Key points Comprehensive guide to diagnosis and management of acute cardiovascular disorders Covers cardiac arrest acute myocardial infarction and acute coronary syndrome acute heart failure and arrhythmias Authored by recognised experts in the field Highly illustrated with clinical photographs radiological images tables and figures      *Post-Genomic Cardiology* José Marín-García,2011-04-28 Recent advances in molecular and cellular biology have markedly changed our understanding of the heart and this is having tremendous ramifications for the clinician This unique reference offers a comprehensive and critical evaluation of this contribution in the field of cardiovascular molecular medicine providing the reader with a sense of new directions in which molecular medicine might be applied It begins with a detailed primer that makes readily accessible recent molecular genetic and cellular techniques Rounding out the coverage of this exciting field are critical and comprehensive discussions on the use of molecular genetic and cellular techniques used to identify the etiology and pathophysiology of specific cardiac diseases Discusses diagnostic and therapeutic options available not only in the adult and aging individuals but also in infants children Numerous illustrations and flow charts Explains cutting edge molecular techniques including analysis of mitochondria their role in cardiac dysfunction and updated analysis of Cardioprotection and Metabolic Syndrome Presentation of recent translational studies for the treatment of cardiovascular diseases is included e g gene therapy pharmacological treatments and stem cell transplantation      *Cardiology Explained* Euan A. Ashley,Euan Ashley,Josef Niebauer,2004 One of the most time consuming tasks in clinical medicine is seeking the opinions of specialist colleagues There is a pressure not only to make referrals appropriate but also to summarize the case in the language of the specialist This book explains basic physiologic and pathophysiologic mechanisms of cardiovascular disease in a straightforward manner gives guidelines as to when referral is appropriate and uniquely explains what the specialist is likely to do It is ideal for any hospital doctor generalist or even senior medical student who may need a cardiology opinion or for that ma      **Markers in Cardiology** Jesse E. Adams,2001      **Tresch and Aronow's Cardiovascular Disease in the**

**Elderly** Wilbert S. Aronow, Jerome L. Fleg, Michael W. Rich, 2019-02-06 With an exponential growth in the number of older adults understanding the common disorders of the elderly patient requiring cardiac care is becoming increasingly important. Incorporating recent advances in the field, Tresch and Aronow's *Cardiovascular Disease in the Elderly* 6th Edition has been completely revised and updated to provide cardiologists, primary care physicians, geriatricians, and other clinicians caring for the elderly a comprehensive and accessible overview of the epidemiology, pathophysiology, and treatment of cardiovascular disorders in older patients.

**Myocardial Infarction** Burak Pamukçu, 2019-01-03 Atherosclerotic cardiovascular disease is still the most common cause of death among adults. Its prevalence is increasing in developing countries, and despite all advances in both diagnostic tools and treatment modalities, it is still very common in the developed world. Obesity, diabetes mellitus, hypercholesterolemia, and overuse of dietary salt play a pivotal role in increased cardiovascular morbidity and mortality worldwide. Current clinical efforts are mainly focused on the diagnosis and treatment of myocardial infarction. In this book, we provide epidemiological data on myocardial infarction and atherosclerotic cardiovascular disease, current diagnostic, biochemical tests, and management strategies. A specific patient group, children experiencing myocardial infarction, are also addressed. Current advances in the management of myocardial infarction have decreased the morbidity and mortality from atherosclerotic cardiovascular disease, and especially myocardial infarction; however, more can be achieved by the prevention of atherosclerotic processes via focusing on the early stages of the disease.

*CURRENT Diagnosis & Treatment in Cardiology, Third Edition* Michael H. Crawford, 2009-04-06 The latest clinical advances in cardiology at your fingertips. This is useful as a quick reference, most suitable for physicians in training, medical students, and midlevels dealing with cardiac patients. 3 Stars. Doody's Review Service. Presented in the easy-to-use CURRENT format, this book covers all the major disease entities and therapeutic challenges in cardiology. Concise yet comprehensive, it is perfect for board review as well as for all aspects of heart disease care. Covers every important management issue in cardiology. Includes special topics such as heart disease in pregnancy and the athlete's heart. Consistent chapter template that includes diagnostic techniques, prevention strategies, treatment, and prognosis. All chapters written by experts in the field. 180 illustrations, including ECGs, imaging examples, drawings, tables, and charts. Reflects the most current guidelines in patient care. Updated throughout, including the latest drug information. NEW chapter: Heart Failure with Preserved Ejection Fraction. Emphasis on must-know information makes it perfect for board review.

**Cardiology** Joel W. Heger, James T. Niemann, J. Michael Criley, 2004 Thoroughly updated to reflect the latest advances in cardiology, this concise and easy-to-read handbook presents current core information that busy clinicians need in day-to-day practice. Coverage focuses on fundamentals of diagnosis and treatment and emphasizes understanding the pathophysiology of the various cardiac diseases. This Fifth Edition provides an evidence-based approach utilizing the latest clinical trials. It includes a chapter on unstable angina and non-ST segment elevation myocardial infarction. All diagnosis and treatment recommendations reflect the current guidelines published by the AHA and the ACC.

Research Awards Index ,1981



## **Markers In Cardiology** Book Review: Unveiling the Magic of Language

In an electronic era where connections and knowledge reign supreme, the enchanting power of language has are more apparent than ever. Its capability to stir emotions, provoke thought, and instigate transformation is truly remarkable. This extraordinary book, aptly titled "**Markers In Cardiology**," compiled by a very acclaimed author, immerses readers in a captivating exploration of the significance of language and its profound impact on our existence. Throughout this critique, we shall delve in to the book is central themes, evaluate its unique writing style, and assess its overall influence on its readership.

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