JACC: Cardiovascular Imaging provides readers with a broad, balanced view of all aspects of cardiovascular imaging. The Journal includes original clinical research on non-invasive and invasive imaging techniques including echocardiography, CT, CMR, nuclear, optical imaging, and cine-angiography. Advances in basic science and molecular imaging which are likely to substantially influence the clinical practice of medicine in the next decade (in diagnostic performance, understanding of the atherogenetic basis of the disease, and therapy) are also featured. Other content will emphasize imaging for the practicing cardiologist, advocacy and practice management, and state-of-the-art reviews.

JACC: Cardiovascular Imaging maintains a strong clinical focus with a broad appeal to the practicing clinician. Highlights the unique as well as complementary nature of each imaging modality within the "imaging continuum," helping clinicians navigate through "modality parochialism" to scientifically identify which modality works best in what situation, and eventually developing "imaging algorithms." Creates a dynamic continuing education forum for practicing clinicians with the obvious goal of improving patient care and outcomes. Harnesses the web to create a live, dynamic and interactive publication, in terms of content, learning, critique, and debate.

Benefits to authors
We also provide many author benefits, such as a liberal copyright policy, special discounts on Elsevier publications and much more. Please click here for more information on our author services.

Please see our Guide for Authors for information on article submission. If you require any further information or help, please visit our support pages: http://help.elsevier.com/app/answers/list/p/8045

AUDIENCE
Primary: • Board-certified physicians in Internal Medicine with subspecialties in Cardiovascular Disease and Clinical Cardiac Electrophysiology • Board-certified physicians in Nuclear Medicine • Board-certified physicians in Radiology with subspecialties in Vascular and Interventional Radiology Secondary: • Board-certified physicians in Internal Medicine with subspecialty in Interventional Cardiology • General practicing cardiologist, angiography technicians
IMPACT FACTOR

2016: 10.189 © Thomson Reuters Journal Citation Reports 2017

ABSTRACTING AND INDEXING

Abridged Index Medicus
BIOSIS
MEDLINE®
Index Medicus
PubMed
Science Citation Index
Elsevier BIOBASE/Current Awareness in Biological Sciences
EMBASE/Excerpta Medica
Scopus

EDITORIAL BOARD

EDITOR-IN-CHIEF
Y. Chandrashekhar, MD, Minneapolis, MN

EXECUTIVE EDITORS
Christopher M. Kramer, MD, Charlottesville, VA
Leslee J. Shaw, PhD, Atlanta, GA

DEPUTY EDITORS
Vasken Dilsizian, MD, Baltimore, MD
Thomas H. Marwick, MBBS, PhD, MPH, Melbourne, Australia
James K. Min, MD, New York, NY
James D. Thomas, MD, Chicago, IL
William A. Zoghbi, MD, Houston, TX

ASSOCIATE EDITORS
Ron Blankstein, MD, Boston, MA
Yundai Chen, MD, Beijing, China
Frank A. Flachskampf, MD, PhD, Uppsala, Sweden
Farouc A. Jaffer, MD, PhD, Boston, MA
Raymond Y.K. Kwong, MD, MPH, Boston, MA
Eike Nagel, MD, PhD, Frankfurt, Germany

EMERITUS EDITOR-IN-CHIEF
Jagat Narula, MD, New York, NY
Koen Nieman, MD, PhD, Stanford, CA
Partho P. Sengupta, MD, Morgantown, WV

EXECUTIVE MANAGING EDITOR
Meredith Hurt, Washington, DC

GUEST EDITORS
Farooq Chaudhry, MD, New York, NY
Zahi A. Fayad, PhD, New York, NY
Harvey Hecht, MD, New York, NY
Jonathon Leipsic, MD, Vancouver, Canada
Sherif Nagueh, MD, Houston, TX
Dudley J. Pennell, MD, London, United Kingdom
Thomas H. Schindler, MD, Baltimore, MD
James E. Udelson, MD, Boston, MA
Renu Virmani, MD, Gaithersburg, MD

CME EDITOR
Ragavendra R. Baliga, MD, Columbus, OH

SOCIAL MEDIA EDITOR
Jeffrey B. Geske, MD, Rochester, MN
STATISTICAL EDITOR
Paul L. Clopton, MS, San Diego, CA

SENIOR ADVISING EDITORS
Jeroen J. Bax, MD, PhD, Leiden, The Netherlands
Robert O. Bonow, MD, Chicago, IL
Eugene Braunwald, MD, Boston, MA
Pamela S. Douglas, MD, Durham, NC

EDITOR-IN-CHIEF, JACC
Valentin Fuster, MD, PhD, New York, NY

EDITOR-IN-CHIEF, JACC: Cardiovascular Interventions
David J. Moliterno, MD, FACC, Lexington, KY

EDITOR-IN-CHIEF, JACC: Heart Failure
Christopher M. O’Connor, MD, Fairfax, VA

EDITOR-IN-CHIEF, JACC: Clinical Electrophysiology
David J. Wilber, MD, Chicago, IL

EDITOR-IN-CHIEF, JACC: Basic to Translational Science
Douglas L. Mann, MD, St. Louis, MO

VICE PRESIDENT, PUBLISHING
Kimberly Murphy, Washington, DC

MANAGING EDITOR
Monica R. Payne, MS, Washington, DC

EDITORIAL ASSISTANT
Kourtney Frederick, Washington, DC

WEB EDITOR
Kimberly Young, Washington, DC

SENIOR CONSULTING EDITORS
Luigi P. Badano, MD, PhD, Padua, Italy
Daniel S. Berman, MD, Los Angeles, CA
Rebecca T. Hahn, MD, New York, NY
Harlan M. Krumholz, MD, SM, New Haven, CT
Warren J. Manning, MD, Boston, MA
Greg W. Stone, MD, New York, NY

ETHICS COMMITTEE
Holly Atkinson, MD, New York, NY
Lawrence S. Cohen, MD, New Haven, CT
Kim Fox, MD, London, United Kingdom
Robert Frye, MD, Rochester, MN
Philip J. Landrigan, MD, New York, NY
Richard L. Popp, MD, Palo Alto, CA
Eric Prystowsky, MD, Indianapolis, IN
James Willerson, MD, Houston, TX

EDITORIAL CONSULTANTS
Stephan Achenbach, MD, Erlangen, Germany
Eloisa Arbustini, MD, Pavia, Italy
Marcelo F. Di Carti, MD, Boston, MA
Erwan Donal, MD, PhD, Rennes, France
Rami Doukky, MD, MSc, Chicago, IL
Julia Grapsa, MD, PhD, London, UK
Edward O. McFalls, MD, PhD, Minneapolis, MN
Erick Alexander-Rosas, MD, Mexico City, Mexico
Andrew E. Arai, MD, Bethesda, MD
Rob S. Beanlands, MD, Ottawa, Canada
Frank Bengel, MD, Hannover, Germany
Michael J. Blaha, MD, MPH, Baltimore, MD
Jamieson M. Bourque, MD, MHS, Charlottesville, VA
<table>
<thead>
<tr>
<th>Author Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chiara Bucciarelli-Ducci, MD, PhD</strong>, Bristol, United Kingdom</td>
</tr>
<tr>
<td><strong>Matthew J. Budoff, MD</strong>, Los Angeles, CA</td>
</tr>
<tr>
<td><strong>Ignasi Carrio, MD</strong>, Barcelona, Spain</td>
</tr>
<tr>
<td><strong>Hyuk-Jae Chang, MD, PhD</strong>, Seoul, South Korea</td>
</tr>
<tr>
<td><strong>Robin P. Choudhury, DM</strong>, Oxford, United Kingdom</td>
</tr>
<tr>
<td><strong>Benjamin J.W. Chow, MD</strong>, Ottawa, Canada</td>
</tr>
<tr>
<td><strong>Miind Desai, MD</strong>, Cleveland, OH</td>
</tr>
<tr>
<td><strong>Marc Dewey, MD</strong>, Berlin, Germany</td>
</tr>
<tr>
<td><strong>Thor Edvardsen, MD, PhD</strong>, Oslo, Norway</td>
</tr>
<tr>
<td><strong>Andrew J. Einstein, MD</strong>, New York, NY</td>
</tr>
<tr>
<td><strong>Mark K. Friedberg, MD</strong>, Toronto, Canada</td>
</tr>
<tr>
<td><strong>Matthew Friedrich, MD</strong>, Montreal, Canada</td>
</tr>
<tr>
<td><strong>Thierry C. Gillebert, MD, PhD</strong>, Ghent, Belgium</td>
</tr>
<tr>
<td><strong>Paul A. Grayburn, MD</strong>, Dallas, TX</td>
</tr>
<tr>
<td><strong>John P. Greenwood, MBChB, PhD</strong>, Leeds, United Kingdom</td>
</tr>
<tr>
<td><strong>Jong-Won Ha, MD, PhD</strong>, Seoul, South Korea</td>
</tr>
<tr>
<td><strong>Robert C. Hendel, MD</strong>, Fox River Grove, IL</td>
</tr>
<tr>
<td><strong>Diwakar Jain, MD</strong>, Valhalla, NY</td>
</tr>
<tr>
<td><strong>Michael Jerosch-Herold, PhD</strong>, Boston, MA</td>
</tr>
<tr>
<td><strong>Philipp A. Kaufmann, MD</strong>, Zurich, Switzerland</td>
</tr>
<tr>
<td><strong>Sanjiv Kaul, MBBS</strong>, Portland, OR</td>
</tr>
<tr>
<td><strong>Paul Knaapen, MD, PhD</strong>, Amsterdam, the Netherlands</td>
</tr>
<tr>
<td><strong>Juhani Knuutila, MD</strong>, Turku, Finland</td>
</tr>
<tr>
<td><strong>Thierry C. Gillebert, MD, PhD</strong>, Ghent, Belgium</td>
</tr>
<tr>
<td><strong>Andrew J. Einstein, MD</strong></td>
</tr>
<tr>
<td><strong>Mark K. Friedberg, MD</strong></td>
</tr>
<tr>
<td><strong>Matthias Friedrich, MD</strong></td>
</tr>
<tr>
<td><strong>Thor Edvardsen, MD, PhD</strong></td>
</tr>
<tr>
<td><strong>Andrew J. Einstein, MD</strong></td>
</tr>
<tr>
<td><strong>Robert C. Hendel, MD</strong></td>
</tr>
<tr>
<td><strong>Diwakar Jain, MD</strong></td>
</tr>
<tr>
<td><strong>Michael Jerosch-Herold, PhD</strong></td>
</tr>
<tr>
<td><strong>Sanjiv Kaul, MBBS</strong></td>
</tr>
<tr>
<td><strong>Paul Knaapen, MD, PhD</strong></td>
</tr>
<tr>
<td><strong>Paul A. Grayburn, MD</strong></td>
</tr>
<tr>
<td><strong>John P. Greenwood, MBChB, PhD</strong></td>
</tr>
<tr>
<td><strong>Jong-Won Ha, MD, PhD</strong></td>
</tr>
<tr>
<td><strong>Robert C. Hendel, MD</strong></td>
</tr>
<tr>
<td><strong>Diwakar Jain, MD</strong></td>
</tr>
<tr>
<td><strong>Michael Jerosch-Herold, PhD</strong></td>
</tr>
<tr>
<td><strong>Sanjiv Kaul, MBBS</strong></td>
</tr>
<tr>
<td><strong>Paul Knaapen, MD, PhD</strong></td>
</tr>
<tr>
<td><strong>Paul A. Grayburn, MD</strong></td>
</tr>
<tr>
<td><strong>John P. Greenwood, MBChB, PhD</strong></td>
</tr>
<tr>
<td><strong>Jong-Won Ha, MD, PhD</strong></td>
</tr>
<tr>
<td><strong>Robert C. Hendel, MD</strong></td>
</tr>
<tr>
<td><strong>Diwakar Jain, MD</strong></td>
</tr>
<tr>
<td><strong>Michael Jerosch-Herold, PhD</strong></td>
</tr>
<tr>
<td><strong>Sanjiv Kaul, MBBS</strong></td>
</tr>
<tr>
<td><strong>Paul Knaapen, MD, PhD</strong></td>
</tr>
<tr>
<td><strong>Paul A. Grayburn, MD</strong></td>
</tr>
<tr>
<td><strong>John P. Greenwood, MBChB, PhD</strong></td>
</tr>
<tr>
<td><strong>Jong-Won Ha, MD, PhD</strong></td>
</tr>
<tr>
<td><strong>Robert C. Hendel, MD</strong></td>
</tr>
<tr>
<td><strong>Diwakar Jain, MD</strong></td>
</tr>
<tr>
<td><strong>Michael Jerosch-Herold, PhD</strong></td>
</tr>
<tr>
<td><strong>Sanjiv Kaul, MBBS</strong></td>
</tr>
<tr>
<td><strong>Paul Knaapen, MD, PhD</strong></td>
</tr>
<tr>
<td><strong>Paul A. Grayburn, MD</strong></td>
</tr>
<tr>
<td><strong>John P. Greenwood, MBChB, PhD</strong></td>
</tr>
<tr>
<td><strong>Jong-Won Ha, MD, PhD</strong></td>
</tr>
<tr>
<td><strong>Robert C. Hendel, MD</strong></td>
</tr>
<tr>
<td><strong>Diwakar Jain, MD</strong></td>
</tr>
<tr>
<td><strong>Michael Jerosch-Herold, PhD</strong></td>
</tr>
<tr>
<td><strong>Sanjiv Kaul, MBBS</strong></td>
</tr>
<tr>
<td><strong>Paul Knaapen, MD, PhD</strong></td>
</tr>
<tr>
<td><strong>Paul A. Grayburn, MD</strong></td>
</tr>
<tr>
<td><strong>John P. Greenwood, MBChB, PhD</strong></td>
</tr>
<tr>
<td><strong>Jong-Won Ha, MD, PhD</strong></td>
</tr>
<tr>
<td><strong>Robert C. Hendel, MD</strong></td>
</tr>
<tr>
<td><strong>Diwakar Jain, MD</strong></td>
</tr>
<tr>
<td><strong>Michael Jerosch-Herold, PhD</strong></td>
</tr>
<tr>
<td><strong>Sanjiv Kaul, MBBS</strong></td>
</tr>
<tr>
<td><strong>Paul Knaapen, MD, PhD</strong></td>
</tr>
<tr>
<td><strong>Paul A. Grayburn, MD</strong></td>
</tr>
<tr>
<td><strong>John P. Greenwood, MBChB, PhD</strong></td>
</tr>
<tr>
<td><strong>Jong-Won Ha, MD, PhD</strong></td>
</tr>
<tr>
<td><strong>Robert C. Hendel, MD</strong></td>
</tr>
</tbody>
</table>
Raluca Elena Dulgheru, MD, Liege, Belgium
Marcelo Haertel Miglioranza, MD, PhD, Porto Alegre, Brazil
Basma Hammad, MD, Boston, MA
Akihisa Kataoka, MD, PhD, Tokyo, Japan
Asim Katbeh, MD, Damascus, Syria
Tomas Lapinskas, MS, Kaunas, Lithuania
Gina LaRocca, MD, MHSc, New York, NY
Blazej Michalski, MD, PhD, Lodz, Poland
Sorina Mihaila Baldea, MD, PhD, Bucharest, Romania
Sarah Moharem-Eigamal, MBBDh, MSc, MD, Giza, Egypt
Doralisa Morrone, MD, PhD, Pisa, Italy
Didem Oguz, MD, Rochester, MN
Tomaž Podlesnikar, MD, Leiden, The Netherlands
Fuad Samadov, MD, Baku, Azerbaijan
Rizwan Sarwar, MBBS, Oxford, UK
Nishant R. Shah MD, MPH, MSc, Providence, RI
Hatem A. Soliman, MD, MSc, MRCP, London, UK
Carla Sousa, MD, Porto, Portugal
Elena Surkova, MD, PhD, London, UK
Francois Tournoux, MD, PhD, Montreal, Canada
Svetlin Tsonev, MD, PhD, Sofia, Bulgaria
Brandon M. Wiley, MD, MS, Rochester, MN

2016-2017 OFFICERS
Richard A. Chazal, MD, FACC, President
Kim Allan Williams, Sr., MD, FACC, Immediate Past President
Mary Norine Walsh, MD, FACC, President Elect
Michael C. Valentine, MD, FACC, Vice President
A. Allen Seals, MD, FACC, Secretary
Robert A. Guyton, MD, FACC, Treasurer
Shalom Jacobovitz, Chief Executive Officer

PUBLICATIONS AND EDITORIAL COORDINATION COMMITTEE

2016-2017
Paul L. Douglass, MD, MACC, Chair
Lynne T. Braun, PhD, CNP
Prasad C. Gunasekaran, MD
Samir R. Kapadia, MBBS, FACC
Marvin A. Konstam, MD, FACC, (Ex Officio) Chair, Academic Council
Richard J. Kovacs, MD, FACC, (Ex Officio) Chair, Clinical Quality Committee
Jeffrey T. Kuvin, MD, FACC, (Ex Officio) Chair, Lifelong Learning Oversight Committee
Daniel Jose Pineiro, MD, FACC, (Ex Officio) Chair, Assembly of International Governors
Viviany R. Taqueti, MD, MPH, FACC
James E. Tcheng, MD, FACC, (Ex Officio) Chair, Digital Steering Committee
William J. Oetgen, MD, MBA, FACC, ACC Staff
Kimberly Murphy, ACC Staff

EMERITUS EDITOR-IN-CHIEF
Jagat Narula, MD, New York, NY
GUIDE FOR AUTHORS

Introduction

JACC: Cardiovascular Imaging publishes research articles on current and future clinical applications of noninvasive and invasive imaging techniques including echocardiography, CT, CMR, nuclear, angiography, and other novel techniques. JACC: Cardiovascular Imaging also publishes manuscripts related to basic science and molecular imaging with potential clinical applicability. It provides a forum for encouraging a lively and vigorous debate on all aspects of imaging, including imaging algorithms and the hierarchy of various imaging modalities.

General Guidelines for Submission of Original Research Papers

Because of the printed page limitations, the Editors require that manuscripts not exceed 4,500 words (including references and figure legends). Note that if you are asked to revise your paper an alternate word limit may be specified by the Editors. An outcomes expert/associate editor will review such manuscripts after provisional acceptance. If needed, the Editors will work with the authors in revising the manuscript to highlight the important features of the manuscript. Illustrations and tables should be limited to those necessary to highlight key data. Please provide gender-specific data, when appropriate, in describing outcomes of epidemiologic analyses or clinical trials; or specifically state that no gender-based differences were present. Basic science or experimental studies should have potential clinical applicability. We would prefer manuscripts that offer an algorithmic approach to the use of diagnostic modalities for the best cost-effective use in clinical medicine.

The manuscript should be arranged as follows: 1) title page; 2) structured abstract and key words; 3) condensed abstract; 4) abbreviations list; 5) text; 6) acknowledgments (if applicable); 7) references; 8) figure titles and legends; and 9) tables. Page numbering should begin with the title page.

Other Paper Categories

iReviews (State-of-the-Art in Imaging). Editors welcome reviews on integrated cardiovascular imaging and multi-modality imaging in an attempt to provide the best practice guidelines for general cardiologists. Imaging reviews must adhere to preferred length guidelines and would be accompanied by an unstructured abstract. Please contact us with suggestions before you start to prepare such review articles.

iPix (Imaging Vignette). iPIX is designed to convey important concepts in cardiovascular imaging using a series of images. Typical submissions would be a series of clinical and/or basic science images—including studies in motion—that:

a) Comprehensively illustrate a typical spectrum of important classic features or significantly novel findings;
b) Provide unique insight into fundamental mechanisms of cardiovascular disease or pathophysiology; comprehensively illustrate major, but less well known, facets of an abnormality; or clarify a new therapy;
c) Present hypothesis generating and/or cutting edge concepts through images;
d) Present previously unavailable/unclear correlations between clinical imaging and pathology.

Though often presented within the context of a clinical scenario, this section is not meant to be a vehicle for case reports or a substitute for “Images in Medicine” like features. It is expected that submissions will typically involve images from a number of subjects. Only submissions that align closely with the above criteria will be processed for this section and will be subject to regular peer review.

A series of approximately 10 to 20 images should be provided. Text should consist of a title page, an introduction of 150 words, a descriptive figure legend of up to 150 words per figure, and—only if absolutely necessary—up to 3 references. Movie clips can be submitted in any of the standard formats (see “Video Requirements”). If movies are used, they must be linked to a specific figure and be mentioned in the text.

Editorial Comments and Editorial Viewpoints. Up to 5 manuscripts in every issue will be accompanied by editorial comments. Although usually invited, succinct opinion pieces will also be considered for JACC: Cardiovascular Imaging.
iMail (Letters to the Editor). This section is intended to highlight recent development or other important pieces of information. In addition, it will also carry routine letters commenting or critiquing specific articles that have appeared in JACC: Cardiovascular Imaging. A limited number of letters (maximum 800 words) will be published. Please include the cited article as a reference. If needed, replies to the letter will be solicited by the Editors from the authors. After a certain amount of time has passed, the Editors may no longer accept letters for a particular article.

Contact Details for Submission

Mailing Address
The mailing address for JACC: Cardiovascular Imaging and the editor-in-chief is: Y. Chandrashekhar, MD, FACC, Editor-in-Chief, JACC: Cardiovascular Imaging, 2400 N Street NW, Washington, DC 20037. Tel: [+1] [202] 375-6136; Fax: [+1] [202] 375-6819.

Ethics
Studies should be in compliance with human studies committees and animal welfare regulations of the authors’ institutions and Food and Drug Administration guidelines.

Human and Animal Rights

Human studies must be performed with the subjects’ written informed consent. Authors must provide the details of this procedure and indicate that the institutional committee on human research has approved the study protocol. If radiation is used in a research procedure, the radiation exposure must be specified in the Methods.

Studies on patients or volunteers require ethics committee approval and informed consent which should be documented in your paper. Patients have a right to privacy. Therefore, identifying information, including patients’ images, names, initials, or hospital numbers, should not be included in videos, recordings, written descriptions, photographs, and pedigrees unless the information is essential for scientific purposes and you have obtained written informed consent for publication in print and electronic form from the patient (or parent, guardian or next of kin where applicable). If such consent is made subject to any conditions, the editorial office must be made aware of all such conditions.

Animal investigation must conform to the “Position of the American Heart Association on Research Animal Use,” adopted by the AHA on November 11, 1984. If equivalent guidelines are used, they should be indicated. The AHA position includes: 1) animal care and use by qualified individuals, supervised by veterinarians, and all facilities and transportation must comply with current legal requirements and guidelines; 2) research involving animals should be done only when alternative methods to yield needed information are not possible; 3) anesthesia must be used in all surgical interventions, all unnecessary suffering should be avoided and research must be terminated if unnecessary pain or fear results; and 4) animal facilities must meet the standards of the American Association for Accreditation of Laboratory Animal Care (AAALAC).

The JACC Journals have an ethics committee comprised of 7 members, which oversees quality control and will look into the issues of concern, if any.

CENTRAL ILLUSTRATION [NEW FEATURE]
All state-of-the-art reviews should develop at least 1 central illustration drawing or figure (that may be a simple/rough hand-drawn figure), which summarizes the entire manuscript or at least a major section of the manuscript. Our in-house medical illustrators will create the final printable versions of these figures in consultation with the authors and the editors. The purpose of these illustrations is to provide a snap shot of your paper in a single visual, conceptual manner. This illustration must be accompanied by a legend.

Relationship With Industry Policy

Authors are required to disclose any relationship with industry and other relevant entities-financial or otherwise-within the past 2 years that might pose a conflict of interest in connection with the submitted article on the title page. All sources of funding for the work should be acknowledged in a footnote on the title page, as should all institutional affiliations of the authors (including corporate appointments). This includes associations such as consultancies, stock ownership, or other equity interests or patent-licensing arrangements. If no conflict of interest exists, please state this on the title page. Relationship with industry guidelines apply to all authors. ALL FORMS ARE NOW SIGNED AND SUBMITTED ELECTRONICALLY. Once a manuscript is accepted, the authors will be sent links to
complete electronic Copyright Transfer and Relationship with Industry forms. Only the corresponding author may electronically sign the copyright form; however, ALL AUTHORS ARE REQUIRED TO ELECTRONICALLY SIGN A RELATIONSHIP WITH INDUSTRY FORM. Once completed, a PDF version of the form is e-mailed to the author. Authors can access and confirm receipt of forms by logging into their account online. Each author will be alerted if his form has not been completed by the deadline.

Only authors appearing on the final title page will be sent a form. YOU CANNOT ADD AUTHORS AFTER ACCEPTANCE OR ON PROOFS. After a paper is sent to the publisher, the links to the electronic forms will no longer be active. In this case, authors will be sent links to download hard copy forms that they may mail or fax to the JACC: Cardiovascular Imaging office. The JACC Journals program prefers the term Relationships with Industry and Other Entities as opposed to the term Conflict of Interest, because, by definition, it does NOT necessarily imply a conflict. When all relationships are disclosed with the appropriate detail regarding category and amount, and managed appropriately for building consensus and voting, the JACC Journals program believes that potential bias can be avoided and the final published document is strengthened since the necessary expertise is accessible.

**Exclusive Submission/Publication Policy**
The manuscripts are accepted for review only with clear understanding that they are not under consideration elsewhere and that the data presented have not appeared on the Internet or have not been previously published (including symposia, proceedings, transactions, books, articles published by invitation, and preliminary publications of any kind except abstracts not exceeding 400 words). Upon acceptance, written transfer of copyright to the American College of Cardiology Foundation, signed by all authors, is required. Elsevier maintains copyright records for the College.

**Author Contribution**
Each author should have contributed significantly to the submitted work. The contribution of each should be substantiated in the cover letter. If authorship is attributed to a group (either solely or in addition to 1 or more individual authors), all members of the group should meet the full criteria and requirements for authorship. To save space, if group members have been listed in JACC: Cardiovascular Imaging, the article should be referenced rather than reprinting the list.

**Authorship**
The Editors consider authorship to include all of the following: 1) conception and design or analysis and interpretation of data, or both; 2) drafting of the manuscript or revising it critically for important intellectual content; and 3) final approval of the manuscript submitted. Participation solely in the collection of data does not justify authorship but may be appropriately acknowledged in the Acknowledgment section.

**Copyright**
Upon acceptance of an article, authors will be asked to complete a 'Journal Publishing Agreement' (see more information on this). An e-mail will be sent to the corresponding author confirming receipt of the manuscript together with a 'Journal Publishing Agreement' form or a link to the online version of this agreement.

Subscribers may reproduce tables of contents or prepare lists of articles including abstracts for internal circulation within their institutions. Permission of the Publisher is required for resale or distribution outside the institution and for all other derivative works, including compilations and translations. If excerpts from other copyrighted works are included, the author(s) must obtain written permission from the copyright owners and credit the source(s) in the article. Elsevier has preprinted forms for use by authors in these cases.

For open access articles: Upon acceptance of an article, authors will be asked to complete an 'Exclusive License Agreement' (more information). Permitted third party reuse of open access articles is determined by the author's choice of user license.

**Author rights**
As an author you (or your employer or institution) have certain rights to reuse your work. More information.
COPYRIGHT

OPEN ACCESS While this journal does not ordinarily have publication charges, authors can now opt to make their articles available to all (including non-subscribers) via the ScienceDirect platform, which carries a fee of US $3,000. (For further information on open access, visit http://www.elsevier.com/about/open-access/open-access-options.) To avoid any perception of conflict of interest, you can only make this choice after receiving notification that your article has been accepted for publication. The fee excludes taxes and other potential costs such as color charges. In some cases, institutions and funding bodies have entered into agreement with Elsevier to meet these fees on behalf of their authors. Details of these agreements are available at https://www.elsevier.com/fundingbodies. Authors of accepted articles, who wish to take advantage of this option, should complete and submit the order form, which is available at https://www.elsevier.com/openaccessform.pdf. Whatever access option you choose, you retain many rights as an author, including the right to post a revised personal version of your article on your own website. More information can be found here: https://www.elsevier.com/copyright. Your publication choice will have no effect on the peer review process or acceptance of submitted articles.

Elsevier supports responsible sharing
Find out how you can share your research published in Elsevier journals.

Open Access

OPEN ACCESS

This journal offers authors a choice in publishing their research:

Open access Articles are freely available to both subscribers and the wider public with permitted reuse. An open access publication fee is payable by authors or on their behalf, e.g. by their research funder or institution.

Subscription Articles are made available to subscribers as well as developing countries and patient groups through our universal access programs. No open access publication fee payable by authors.

Regardless of how you choose to publish your article, the journal will apply the same peer review criteria and acceptance standards. For open access articles, permitted third party (re)use is defined by the following Creative Commons user licenses.

OPEN ACCESS FEE

The open access fee for this journal is $3000, excluding taxes. Learn more about Elsevier's pricing policy.

FUNDING BODY AGREEMENTS AND POLICIES

CC BY for funded authors only

Elsevier has established a number of agreements with funding bodies which allow authors to comply with their funder's open access policies. Some funding bodies will reimburse the author for the Open Access Publication Fee. Details of HYPERLINK "http://www.elsevier.com/about/open-science/open-access/agreements" existing agreements are available online.

After acceptance, open access papers will be published under a noncommercial license. For authors requiring a commercial CC BY license, you can apply after your manuscript is accepted for publication.

CC_BY-NC-ND

CC BY-NC-ND license

For non-commercial purposes, let's others distribute and copy the article, and to include in a collective work (such as an anthology), as long as they credit the author(s) and provided they do not alter or modify the article.

Green open access

Authors can share their research in a variety of different ways and Elsevier has a number of green open access options available. We recommend authors see our green open access page for further information. Authors can also self-archive their manuscripts immediately and enable public access from their institution's repository after an embargo period. This is the version that has been accepted for publication and which typically includes author-incorporated changes suggested during submission, peer review and in editor-author communications. Embargo period: For subscription articles, an appropriate amount of time is needed for journals to deliver value to subscribing customers before an article becomes freely available to the public. This is the embargo period and it begins from the date the article is formally published online in its final and fully citable form. Find out more.
This journal has an embargo period of 12 months.

**Language Services**

**English language help service:** Upon request, Elsevier will direct authors to an agent who can check and improve the English language of their paper before submission. Please visit our Support Center for further information.

**Informed Consent and Patient Details**

Written consents must be provided to the editorial office on request. Even where consent has been given, identifying details should be omitted if they are not essential. If identifying characteristics are altered to protect anonymity, such as in genetic pedigrees, authors should provide assurance that alterations do not distort scientific meaning and editors should so note. If such consent has not been obtained, personal details of patients included in any part of the paper and in any supplementary materials (including all illustrations and videos) must be removed before submission.

**Submission**

All manuscripts should be submitted online at [http://www.jaccsubmit-imaging.org](http://www.jaccsubmit-imaging.org). Manuscript submissions should conform to the guidelines set forth in the “Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals” available from [www.icmje.org/recommendations](http://www.icmje.org/recommendations) and most recently updated in December 2016.

**Text**

The text should be structured as Introduction, Methods, Results, and Discussion. Use headings and subheadings in the Methods, Results, and Discussion sections. Every reference, figure, and table should be cited in the text according to order of mention.

**Cover Letter**

Authors must agree to the following ICJME statements. These questions will be part of the submission process and manuscripts will not be reviewed until they are confirmed: 1) The paper is not under consideration elsewhere; 2) none of the paper’s contents, with the exception of abstracts, have been previously published; 3) all authors have read and approved the manuscript; 4) agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved; 5) the full disclosure of any relationship with industry (see “Relationship with Industry Policy”) or that no such relationship exists. Exceptions must be explained. If there is no conflict of interest, this should also be stated in the cover letter.

The corresponding author should be specified in the cover letter, who will receive all editorial communications. The Editorial Office will contact the corresponding author for submission queries.

A short paragraph telling the editors why the authors think their paper merits publication priority may be included in the cover letter. Potential reviewers may be suggested in the cover letter, as well as reviewers to avoid.

In order to add or remove any authors after acceptance of their paper, all listed authors at the time of acceptance need to provide written approval to the JACC Journals' editorial office prior to the scheduling and publication of the paper.

**Title Page**

Include the title, authors’ names (including full first and last names and middle initial and degrees), total word count, and a brief title of no more than 45 characters. List the departments and institutions with which the authors are affiliated, and indicate the specific affiliations if the work is generated from more than one institution (use superscript letters a, b, c, d, and so on). Please list authors current e-mail addresses as well. Also provide information on grants, contracts, and other forms of financial support. List the cities and states of all foundations, funds, and institutions involved in the work. This must include the full disclosure of any relationship with industry (see “Relationship With Industry Policy”). If there are no relationships with industry, this should be stated. Under the heading “Address for correspondence,” give the full name and complete postal address of the author to whom communications, printer's proofs, and reprint requests should be sent. Also provide telephone and fax numbers and an e-mail address.
**Structured Abstract**
Provide a structured abstract of 300 words, presenting essential data in 5 paragraphs introduced by separate headings in the following order: Objectives, Background, Methods, Results, and Conclusions. Use complete sentences. All data in the abstract should also appear in the manuscript text or tables. For general information on preparing structured abstracts, see "Haynes RB, Mulrow CD, Huth EJ, Altman DG, Gardner MJ. More informative abstracts revisited. Ann Intern Med 1990;113:69–76." A 200-word unstructured abstract is appropriate for review articles.

**Condensed Abstract**
Provide a condensed abstract of 100 words, stressing clinical implications, for the expanded table of contents.

**Keywords**
Immediately after the abstract, provide a maximum of 6 keywords, using American spelling and avoiding general and plural terms and multiple concepts (avoid, for example, 'and', 'of'). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.

**Abbreviations**
The abbreviations of common terms (e.g., ECG, PTCA, CABG) or acronyms (GUSTO, SOLVD, TIMI) may be used in the manuscript. On a separate page following the condensed abstract, list the selected abbreviations and their definitions (e.g., TEE = transesophageal echocardiography). The Editors may determine which lesser known terms should not be abbreviated. Please consult "Recommendations for the Conduct, Reporting, Editing and Publication of Scholarly Work in Medical Journals (ICMJE Recommendations)," available at www.icmje.org/recommendations and most recently updated in December 2016, for appropriate use of units of measure.

**Acknowledgments**
Acknowledgments or appendices should contain 100 words or less. Anything exceeding this limit will appear in the online version only. Signed letters of permission from all individuals listed in the acknowledgments must be submitted to JACC: Cardiovascular Imaging.

**Statistics**
All publishable manuscripts will be reviewed for appropriateness and accuracy of statistical methods and statistical interpretation of results. We subscribe to the statistics section of the "Recommendations for the Conduct, Reporting, Editing and Publication of Scholarly Work in Medical Journals (ICMJE Recommendations)," available at www.icmje.org/recommendations and most recently updated in December 2016. In the Methods sections, provide a subsection detailing the statistical methods, including specific methods used to summarize the data, methods used for hypothesis testing (if any) and the level of significance used for hypothesis testing. When using statistical methods beyond t tests, chi-square, and simple linear regression, specify the statistical package, version number, and non-default options used. For more information on statistical review, see "Glantz SA. It is all in the numbers. J Am Coll Cardiol 1993;21:835–7." All manuscripts are reviewed by the outcomes editor as well.

**PERSPECTIVES [NEW FEATURE]**
The authors should delineate clinical competencies and translational outlook recommendations for their manuscripts. These should be listed in the manuscript after the Text and before the Acknowledgments and References. Please review the examples provided below. The competencies describe the implications of the study for current practice. The translational outlook places the work in a futuristic context, emphasizing directions for additional research.

**Clinical Competencies.**
Competency-based learning in cardiovascular medicine addresses the 6 domains promulgated by the Accreditation Council on Graduate Medical Education (ACGME) and endorsed by the American Board of Internal Medicine (Medical Knowledge, Patient Care and Procedural Skills, Interpersonal and Communication Skills, Systems-Based Practice, Practice-Based Learning, and Professionalism) (http://www.acgme.org/acgmeweb). The ACCF has adopted this format for its competency and training statements, career milestones, lifelong learning, and educational programs. The ACCF also has developed tools to assist physicians in assessing, enhancing, and documenting these competencies (http://www.acc.org/education-and-meetings/maintenance-of-certification-information-hub? w_nav=MN).
Authors are asked to consider the clinical implications of their report and identify applications in one or more of these competency domains that could be used by clinician readers to enhance their competency as professional caregivers. This applies not only to physicians in training, but to the sustained commitment to education and continuous improvement across the span of their professional careers.

**Translational Outlook.**

Translating biomedical research from the laboratory bench, clinical trials or global observations to the care of individual patients can expedite discovery of new diagnostic tools and treatments through multidisciplinary collaboration. Effective translational medicine facilitates implementation of evolving strategies for prevention and treatment of disease in the community. The Institute of Medicine identified 2 areas needing improvement: testing basic research findings in properly designed clinical trials and, once the safety and efficacy of an intervention has been confirmed, more efficiently promulgating its adoption into standard practice (Sung NS, Crowley WF, Genel M. The meaning of translational research and why it matters. JAMA 2008;299:3140–3148).

The National Institutes of Health (NIH) has recognized the importance of translational biomedical research, emphasizing multifunctional collaborations between researchers and clinicians to leverage new technology and accelerate the delivery of new therapies to patients (http://www.ncats.nih.gov/about/about.html).

Authors are asked to place their work in the context of the scientific continuum, by identifying impediments and challenges requiring further investigation and anticipating next steps and directions for future research.

**Non-Electronic Artwork**

Upon provisional acceptance, we may request 2 sets of glossy or laser print (clean copies will suffice) hard copies of the figures. Glossy prints should be provided for all half-tone or color illustrations. All graphs and line drawings must be professionally prepared on a computer and reproduced as high quality laser prints. Indicate the first author’s last name (and the corresponding author’s last name within parentheses, if different) and the figure number on the back of each figure, preferably on an adhesive label. Figure title and caption material should appear on the legends page in the manuscript, not on the figure. **If we request hard copies of figures, they will not be returned to authors.** After acceptance of the manuscript, the graphs and schematic figures of the manuscripts may be redrawn by the art department to maintain consistency in *JACC: Cardiovascular Imaging*.

**Color Artwork**

Figures and graphs submitted in electronic format should be provided in EPS or TIF format. Graphics software such as Photoshop and Illustrator, NOT presentation software such as PowerPoint, CorelDraw, or Harvard Graphics, should be used to create the art. Color images must be at least 300 DPI. Gray scale images should be at least 300 DPI. Line art (black and white or color) should be at least 1200 DPI and combinations of gray scale images and line art should be at least 600 DPI. Lettering should be of sufficient size to be legible after reduction for publication. The optimal size is 12 points. Symbols should be of a similar size. Figures should be no smaller than 13 cm x 18 cm (5” x 7”). Please do not reduce figures to fit publication layout. If the manuscript is accepted for publication, the publisher will re-size the figures accordingly.

**ALL FIGURES SHOULD HAVE A TITLE AND A LEGEND.** There is no fee for the publication of color figures. Our editors encourage authors to submit figures in color, as we feel it improves the clarity and visual impact of the images. Decimals, lines, and other details should be strong enough for reproduction. **Use only black and white, not gray, in charts and graphs.** Place crop marks on photomicrographs to show only the essential field. Designate special features with arrows. All symbols, arrows, and lettering on half-tone illustrations should contrast with the background.

**Figure Captions**

Figure legends should be typed double-spaced on pages separate from the text; figure numbers should correspond with the order in which they are mentioned in the text. The figure legends should provide an in-depth explanation of each figure, including a figure caption, the purpose of the figure, and brief method, results, and discussion statements pertaining to the figure. All abbreviations used in the figure should be identified either after their first mention in the legend or in alphabetical order at the end of each legend. All
symbols used (arrows, circles, etc.) should be explained. If previously published figures are used, written permission from the original publisher is required. See STM Guidelines for details: http://www.stm-assoc.org/copyright-legal-affairs/permissions/permissions-guidelines/. Cite the source of the figure in the legend.

**Tables**

Tables should be typed double-spaced on separate pages, with the table number and title centered above the table and explanatory notes below the table. Use arabic numbers. Table numbers should correspond with the order cited in the text.

**ALL TABLES SHOULD HAVE A TITLE.** Abbreviations should be listed in a footnote under the table in alphabetical order. Footnote symbols should appear in the following order: *, †, ‡, §, ¶, #, **, ††, etc. Tables should be self-explanatory, and the data presented in them should not be duplicated in the text or figures. If previously published tables are used, written permission from the copyright holder (typically the original publisher) is required. Cite the source of the table in the footnote.

**References**

Do not cite personal communications, manuscripts in preparation, or other unpublished data in the references; however, these may be included in the text in parentheses. Do not cite abstracts that are older than 2 years. Identify abstracts by the abbreviation "abstr" in parentheses. If letters to the editor are cited, identify them with the word "letter" in parentheses.

**Citations in Text**

Identify references in the text by Arabic numerals in parentheses on the line. The reference list should be typed double-spaced on pages separate from the text. The references should be numbered consecutively in the order in which they are mentioned in the text.

**Data references**

This journal encourages you to cite underlying or relevant datasets in your manuscript by citing them in your text and including a data reference in your Reference List. Data references should include the following elements: author name(s), dataset title, data repository, version (where available), year, and global persistent identifier. Add [dataset] immediately before the reference so we can properly identify it as a data reference. The [dataset] identifier will not appear in your published article.

**Reference management software**

Most Elsevier journals have their reference template available in many of the most popular reference management software products. These include all products that support Citation Style Language styles, such as Mendeley and Zotero, as well as EndNote. Using the word processor plug-ins from these products, authors only need to select the appropriate journal template when preparing their article, after which citations and bibliographies will be automatically formatted in the journal's style. If no template is yet available for this journal, please follow the format of the sample references and citations as shown in this Guide.

Users of Mendeley Desktop can easily install the reference style for this journal by clicking the following link:
http://open.mendeley.com/use-citation-style/jacc-cardiovascular-imaging

When preparing your manuscript, you will then be able to select this style using the Mendeley plug-ins for Microsoft Word or LibreOffice.

**Reference Style**

**Periodical**

List all authors if 6 or fewer, otherwise list the first 3 and add et al.; do not use periods after the authors’ initials. Please do provide inclusive page numbers as in example below.


**Doi-based citation for an article in press**

If the ahead-of-print date is known, provide as in example below.

If the ahead-of-print date is unknown, omit as in example below.


Chapter in book

Provide authors, chapter title, editor(s), book title, publisher location, publisher name, year, and inclusive page numbers.


Book (personal author or authors)

Provide a specific (not inclusive) page number.


Online media

Provide specific URL address and date information was accessed.


Material presented at a meeting but not published

Provide authors, presentation title, full meeting title, meeting dates, and meeting location.


Journal Abbreviations Source

Use Index Medicus (National Library of Medicine) abbreviations for journal titles. It is important to note that when citing an article from the Journal of the American College of Cardiology: Cardiovascular Imaging, the correct citation format is J Am Coll Cardiol Img.

Video Requirements

JACC: Cardiovascular Imaging encourages authors to submit video files of their studies in motion as seen in the imaging laboratory. These videos will be available online with the PDFs of the published articles. Inclusion of videos in the published article is at the discretion of the Editors.

Video submissions for viewing online should be one of the following formats: Audio Video Interleave (.avi), MPEG (.mpg), or Quick Time (.qt, .mov).

AVI files can be displayed via Windows Media Player
MPEG files can be displayed via Windows Media Player
https://support.microsoft.com/en-us/help/18612/windows-media-player
Quick Time files require Quick Time software (free) from Apple

Videos should be brief (<2–5 min). Longer videos will require longer download times and may have difficulty playing online. Videos should be restricted to the most critical aspects of your research. A longer procedure can be restructured as several shorter videos.
It is advisable to compress files to use as little bandwidth as possible and to avoid overly long download times. Video files should be no larger than 5 megabytes. This is a suggested maximum. If files are larger please contact the JACC: Cardiovascular Imaging office.

A video legends page giving a brief description of the content of each video should be included in the manuscript. Please note that ALL videos must be linked to figures or panels of a figure(s).

If your paper is accepted for publication you may wish to supply the editorial office with several different resolutions of your video files. This will allow viewers with slower connections to download a lower resolution version of your video.

SUPPLEMENTAL MATERIALS
Authors are encouraged to enhance their manuscript with media files, additional images, web-based calculators, and other material that does not fit into the usual format of an article but that helps communicate results and/or educate the reader.

Permissions
JACC: Cardiovascular Imaging supports the need for authors to share, disseminate, and maximize the impact of their research. Details on how authors can reuse and post their own articles are provided at https://www.elsevier.com/about/our-business/policies/copyright/personal-use. For general information on requesting permission to reuse material published in JACC: Cardiovascular Imaging, please visit https://www.elsevier.com/about/our-business/policies/copyright/permissions. Some requests from other STM signatory publishers qualify for gratis reuse. See the STM website for details: http://www.stm-assoc.org/documents. Questions about obtaining permission? Contact the Permissions Helpdesk at permissionshelpdesk@elsevier.com or +1-800-523-4069 x 3808.

Journal Citation
It is important to note that when citing an article from JACC: Cardiovascular Imaging, the correct citation format is J Am Coll Cardiol Img

Author Enquiries
For enquiries relating to submitted articles or to articles currently under review, please contact the JACC: Cardiovascular Imaging editorial office at jaccimg@acc.org. You can track your accepted article at http://www.elsevier.com/trackarticle. Elsevier’s Authors Home also provides the facility to track accepted articles and set up e-mail alerts to inform you of when an article’s status has changed, as well as detailed artwork guidelines, copyright information, frequently asked questions, and more. You are also welcome to contact Customer Support via http://support.elsevier.com. Authors can order copies of the issue in which their article appears at a discounted rate. For this service, please contact Elsevier Health Sciences Division, Subscription Customer Service, 3251 Riverport Lane, Maryland Heights, MO 63043. Tel: 1-800-654-2452, E-mail: journalscustomerservice-usa@elsevier.com.

© Copyright 2014 Elsevier | http://www.elsevier.com