

# Circulation

An American Heart  
Association Journal

April 17, 2018  
Volume 137  
Number 16

## FRAME OF REFERENCE

### Perspective

**Return of Oral Anticoagulation in Chronic Stable Coronary Disease** 1655  
*Freek W.A. Verheugt, MD*

**Continuing Conundrum of Multiple Arterial Conduits for Coronary Artery Bypass Grafting** 1658  
*Mario Gaudino, MD; Stephen E. Femes, MD; David P. Taggart, MD, PhD*

## ORIGINAL RESEARCH ARTICLES

**Association Between Hospital Volume, Processes of Care, and Outcomes in Patients Admitted With Heart Failure: Insights From Get With The Guidelines-Heart Failure** 1661  
*Dharam J. Kumbhani, MD, SM; Gregg C. Fonarow, MD; Paul A. Heidenreich, MD, MS; Phillip J. Schulte, PhD; Di Lu, MS; Adrian Hernandez, MD, MHS; Clyde Yancy, MD; Deepak L. Bhatt, MD, MPH*

**NT-proBNP (N-Terminal pro-B-Type Natriuretic Peptide)-Guided Therapy in Acute Decompensated Heart Failure: PRIMA II Randomized Controlled Trial (Can NT-ProBNP-Guided Therapy During Hospital Admission for Acute Decompensated Heart Failure Reduce Mortality and Readmissions?)** 1671  
*Susan Stienen, MD; Khibar Salah, MD; Arno H. Moons, MD, PhD; Adrianus L. Bakx, MD; Petra van Poel, MD; R. A. Mikael Kortz, MD; João Pedro Ferreira, MD, PhD; Irene Marques, MD; Jutta M. Schroeder-Tanka, MD, PhD; Jan T. Keijer, MD, PhD; Antoni Bayés-Genis, MD, PhD; Jan G.P. Tijssen, MD, PhD; Yigal M. Pinto, MD, PhD; Wouter E. Kok, MD, PhD*



### Editorial

**Getting to Dry** 1684  
*Sandip Zalawadiya, MD; Lynne Warner Stevenson, MD*

**Particulate Matter Air Pollution Exposure and Heart Disease Mortality Risks by Race and Ethnicity in the United States: 1997 to 2009 National Health Interview Survey With Mortality Follow-Up Through 2011** 1688  
*Jennifer D. Parker, PhD; Nataliya Kravets, MA; Ambarish Vaidyanathan, PhD*

**Second Arterial Versus Venous Conduits for Multivessel Coronary Artery Bypass Surgery in California** 1698  
*Andrew B. Goldstone, MD, PhD; Peter Chiu, MD, MS; Michael Baiocchi, PhD; Hanjay Wang, MD; Bharathi Lingala, PhD; Jack H. Boyd, MD; Y. Joseph Woo, MD*

### Editorial

**Why Don't We Kill 2 Birds with 1 Stone?: Less Adverse Cardiac Events and Improved Survival With Multiarterial Coronary Artery Bypass Grafting** 1708  
*Faisal G. Bakaeen, MD; Lars G. Svensson, MD, PhD*



PODCAST



CME



OPEN ACCESS



BRIDGING DISCIPLINES

### On the Cover: *Circulation* Doodle

This month's doodle is in honor of William Shakespeare, who was born on April 23, 1564.

For more information about the doodle, go to <http://circ.ahajournals.org/content/circulation-cover-doodle>.

## ORIGINAL RESEARCH ARTICLES

- Large Cardiac Muscle Patches Engineered From Human Induced-Pluripotent Stem Cell-Derived Cardiac Cells Improve Recovery From Myocardial Infarction in Swine** 1712  
*Ling Gao, PhD; Zachery R. Gregorich, PhD; Wuqiang Zhu, MD, PhD; Saidulu Mattapally, PhD; Yasin Oduk, PhD; Xi Lou, BS; Ramaswamy Kannappan, PhD; Anton V. Borovjagin, PhD; Gregory P. Walcott, PhD; Andrew E. Pollard, PhD; Vladimir G. Fast, PhD; Xinyang Hu, MD, PhD; Steven G. Lloyd, MD, PhD; Ying Ge, PhD; Jianyi Zhang, MD, PhD*

## STATE OF THE ART

### In Depth

- Role of Invasive Functional Assessment in Surgical Revascularization of Coronary Artery Disease** 1731  
*Bipul Baibhav, MD; Maheedhar Gedela, MD; Michael Moulton, MD; Gregory Pavlides, MD, PhD; Vincent Pompili, MD; Tanveer Rab, MD; George Dangas, MD; Deepak L. Bhatt, MD, MPH; Aleem Siddique, MBBS; Yiannis S. Chatzizisis, MD, PhD*

## THE PULSE

### Cardiology News

- Shifting Landscape for Bundled Payments for Heart Conditions** 1740  
*Bridget M. Kuehn*

## CASES AND TRACES

### ECG Challenge

- Cardiac Arrest With ST-Segment-Elevation in V1 and V2: Differential Diagnosis** 1742  
*Belén Arroyo Rivera, MD; Álvaro Aceña, MD, PhD; Pepa Sánchez-Borque, MD; Miguel Orejas, MD, PhD; Jose Tuñón, MD, PhD*

## CORRESPONDENCE

### Research Letter

- Inpatient Echocardiography Use for Common Cardiovascular Conditions** 1745  
*Quinn R. Pack, MD, MSc; Aruna Priya, MA, MSc; Tara C. Lagu, MD, MPH; Penelope S. Pekow, PhD; Joshua P. Schilling, MD; William L. Hiser, MD; Peter K. Lindenauer, MD, MSc*

### Correspondence

- Letter by Bulluck and Hausenloy Regarding Article, “Dynamic Edematous Response of the Human Heart to Myocardial Infarction: Implications for Assessing Myocardial Area at Risk and Salvage”** 1748  
*Heerajnarain Bulluck, MD, PhD; Derek J. Hausenloy, MBChB, PhD*

- Letter by Sacha and Feusette Regarding Article, “Dynamic Edematous Response of the Human Heart to Myocardial Infarction: Implications for Assessing Myocardial Area at Risk and Salvage”** 1750  
*Jerzy Sacha, MD, PhD; Piotr Feusette, MD*

- Letter by Stiermaier et al Regarding Article, “Dynamic Edematous Response of the Human Heart to Myocardial Infarction: Implications for Assessing Myocardial Area at Risk and Salvage”** 1752  
*Thomas Stiermaier, MD; Jan Bogaert, MD, PhD; Ingo Eitel, MD*

- Response by Fernández-Jiménez et al to Letters Regarding Article, “Dynamic Edematous Response of the Human Heart to Myocardial Infarction: Implications for Assessing Myocardial Area at Risk and Salvage”** 1754  
*Rodrigo Fernández-Jiménez, MD, PhD; Ana Martín-García, MD, PhD; Manuel Barreiro-Pérez, MD, PhD; Javier Sánchez-González, PhD; Valentín Fuster, MD, PhD; Pedro L. Sánchez, MD, PhD; Borja Ibanez, MD, PhD*

- Letter by Jin-shan and Xue-bin Regarding Article, “Cardioprotective Role of Tumor Necrosis Factor Receptor-Associated Factor 2 by Suppressing Apoptosis and Necroptosis”** 1756  
*He Jin-shan, MD; Li Xue-bin, MD*



PODCAST



CME



OPEN ACCESS



BRIDGING DISCIPLINES

## CORRESPONDENCE

---

**Response by Liu to Letter Regarding Article, “Cardioprotective Role of Tumor Necrosis Factor Receptor-Associated Factor 2 by Suppressing Apoptosis and Necroptosis”** 1757

*Qinghang Liu, MD, PhD*

**Letter by Mewton et al Regarding Article, “Validity of Cardiovascular Data From Electronic Sources: The Multi-Ethnic Study of Atherosclerosis and HealthLNK”** 1759

*Nathan Mewton, MD, PhD; Cyrille Bergerot, MD; Catherine Cornu, MD, PhD*

**Response by Ahmad et al to Letter Regarding Article, “Validity of Cardiovascular Data From Electronic Sources: The Multi-Ethnic Study of Atherosclerosis and HealthLNK”** 1761

*Faraz S. Ahmad, MD, MS; Cheeling Chan, MS; Marc B. Rosenman, MD, MS; Wendy S. Post, MD, MS; Daniel G. Fort, PhD, MPH; Philip Greenland, MD; Kiang J. Liu, PhD; Abel N. Kho, MD, MS; Norrina B. Allen, PhD, MPH*



PODCAST



CME



OPEN ACCESS



BRIDGING DISCIPLINES

CIRCULATION (ISSN 0009-7322) is published weekly except June and December by Wolters Kluwer Health, Inc. at 14700 Citicorp Drive, Bldg 3, Hagerstown, MD 21742. Business offices are located at Two Commerce Square, 2001 Market Street, Philadelphia, PA 19103. Production offices are located at 351 West Camden Street, Baltimore, MD 21201-2436. Individuals may subscribe for their personal use at the following rates for print subscriptions: \$225 for AHA/ASA Domestic and International Members (excluding General Membership level), or \$693 for domestic non-members and \$1061 for international non-members. AHA membership information can be found online at [professional.heart.org](http://professional.heart.org). Periodicals postage paid at Hagerstown, MD, and additional mailing offices. POSTMASTER: Send address changes to CIRCULATION, American Heart Association, Wolters Kluwer Health, Inc., PO Box 1610, Hagerstown, MD 21740.

137 (16)

*Circulation*. 2018;137:1655-1762

*Circulation* is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231  
Copyright © 2018 American Heart Association, Inc. All rights reserved.  
Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the  
World Wide Web at:

<http://circ.ahajournals.org/content/137/16.citation>

**Permissions:** Requests for permissions to reproduce figures, tables, or portions of articles originally published in *Circulation* can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the [Permissions and Rights Question and Answer](#) document.

**Reprints:** Information about reprints can be found online at:  
<http://www.lww.com/reprints>

**Subscriptions:** Information about subscribing to *Circulation* is online at:  
<http://circ.ahajournals.org/subscriptions/>