



CHEST

For specialists in: Pulmonology, Critical Care Medicine, Sleep Medicine, Thoracic Surgery, Cardiorespiratory Interactions, and related specialists

Editor in Chief: Richard S. Irwin, MD, FCCP, Worcester, MA

Associate Editors:

Peter J. Barnes, DM, FCCP
London, England

Christopher E. Brightling, MBBS, FCCP
Leicester, England

Nancy A. Collop, MD, FCCP
Baltimore, MD

Bruce L. Davidson, MD, MPH, FCCP
Seattle, WA

Jesse B. Hall, MD, FCCP
Chicago, IL

Nicholas S. Hill, MD, FCCP
Boston, MA

Mary Sau-Man Ip, MD, FCCP
Hong Kong, China

Surinder K. Jindal, MD, FCCP
Chandigarh, India

Robert G. Johnson, MD, FCCP
St. Louis, MO

Scott Manaker, MD, PhD, FCCP
Philadelphia, PA

Paul M. O'Byrne, MBBCh, FCCP
Hamilton, ON, Canada

Dario Olivieri, MD, FCCP
Parma, Italy

Bruce K. Rubin, MD, FCCP
Winston-Salem, NC

Marvin I. Schwarz, MD, FCCP
Denver, CO

Virend K. Somers, MD, FCCP
Rochester, MN

Section Editors

Recent Advances in Chest Medicine

Jesse B. Hall, MD, FCCP, Chicago, IL
Nicholas S. Hill, MD, FCCP, Boston, MA

Translating Basic Research into Clinical Practice

Peter J. Barnes, DM, FCCP, London, England
Paul M. O'Byrne, MBBCh, FCCP,
Hamilton, ON, Canada

Medical Ethics

Constantine A. Manthous, MD, FCCP,
Bridgeport, CT

Global Medicine

Mary Sau-Man Ip, MD, FCCP, Hong Kong, China
Surinder K. Jindal, MD, FCCP, Chandigarh, India

Topics in Practice Management

Scott Manaker, MD, PhD, FCCP, Philadelphia, PA

Contemporary Reviews in Sleep Medicine

Nancy A. Collop, MD, FCCP, Baltimore, MD
Virend K. Somers, MD, FCCP, Rochester, MN

Contemporary Reviews in Critical Care Medicine

Howard L. Corwin, MD, FCCP, Lebanon, NH
Curtis N. Sessler, MD, FCCP, Richmond, VA

Chest Imaging for Clinicians

David P. Naidich, MD, FCCP, New York, NY
Suhail Raof, MD, FCCP, Brooklyn, NY
William D. Travis, MD, FCCP, New York, NY

Pulmonary and Critical Care Pearls

John E. Heffner, MD, FCCP, Portland, OR
Steven A. Sahn, MD, FCCP, Charleston, SC

Case Records from the University of Colorado

Marvin I. Schwarz, MD, FCCP, Denver, CO

Medical Writing Tips of the Month

J. Patrick Barron, Tokyo, Japan

International Edition Editors and Coordinators

China

NanShan Zhong, MD, FCCP, Guangzhou, China

India

Surinder K. Jindal, MD, FCCP, Chandigarh, India

Italy

Francesco de Blasio, MD, FCCP, Naples, Italy

Mexico

Leon S. Green, MD, FCCP, Mexico City, Mexico

Spain

A collaborative Editorial Board

Turkey

Günseli Kiliç, MD, FCCP, Istanbul, Turkey

Publisher

Alvin Lever, MA, FCCP (Hon)

Executive Editor

Stephen J. Welch

Managing Editor

Jean Rice

Assistant Editor, Editor in Chief Office

Cynthia T. French, NP, MS (Worcester, MA)

Advertising and Production Manager

Patricia A. Micek

Circulation/Editorial Coordinator

Barbara J. Anderson

Editorial Coordinators

Laura Lipsey, Carla Miller

National Advertising Sales Representatives

The Walchli Tauber Group, Inc.

2225 Old Emmorton Road, Suite 201

Bel Air, MD 21015

Telephone: (443) 512-8899

Fax: (443) 512-8909

Gary Walchli: ext 102

Steve Tauber: ext 103

CHEST (USPS 157-860 ISSN 0012-3692) is published monthly by the American College of Chest Physicians, 3300 Dundee Rd, Northbrook, IL 60062-2348. The ACCP may be contacted by telephone: (847) 498-1400; Fax: (847) 498-5460; e-mail: editor@chestnet.org or through the World Wide Web home page: <http://www.chestnet.org>. Periodicals postage paid at Northbrook, IL and additional mailing offices.

COPYRIGHT © 2007 The American College of Chest Physicians

POSTMASTER: Send address changes to: **CHEST**, 3300 Dundee Rd, Northbrook, IL 60062-2348.

ANNUAL SUBSCRIPTION RATES (Rates effective January 1, 2007.)

Personal: Print & Online \$192.00; Print & Online with Canadian GST \$192.00 + \$11.52.

Institutional: Visit <http://www.chestjournal.org/subscriptions/cost.shtml> to view tiered institutional rates and description of institutional type. For more information, please contact **CHEST** Customer Relations by e-mail: subscriptions@chestnet.org or call (800) 343-2227 U.S. or (847)-498-1400 Canada/Intl.

Special rates for fellows, residents, interns, nursing or respiratory therapy students, physicians-in-training: U.S. and Puerto Rico \$60.00; Other countries \$84.00.

International Special Air Delivery: Please add \$96.00 per print subscription.

SINGLE COPIES: (Rates effective January 1, 2007.) **CHEST:** Issues and Supplements \$25.00 each.

DISCLAIMER: The statements and opinions contained in editorials and articles in this Journal are solely those of the authors thereof and not of the Journal's Editor-in-Chief, peer reviews The American College of Chest Physicians, its officers, regents, members, or employees. The appearance of advertisements or services advertised or of their effectiveness, quality, or safety are solely those of the advertisers. The Editor in Chief, the American College of Chest Physicians, its officers, regents, members, and employees disclaim all responsibility for any statements, opinions, recommendations, injury to persons or property resulting from any ideas or products referred to in articles or advertisements contained in this Journal.

Editorial Board

- Ellinor Ådelroth, MD, PhD, Umea, Sweden
W. Michael Alberts, MD, FCCP, Tampa, FL
Raouf Amin, MD, Cincinnati, OH
Ezra A. Amsterdam, MD, Sacramento, CA
Daniel E. Banks, MD, MS, FCCP, Shreveport, LA
J. Patrick Barron, Tokyo, Japan
Robert P. Baughman, MD, FCCP, Cincinnati, OH
Brian A. Boehlecke, MD, MSPH, FCCP, Chapel Hill, NC
Maria R. Bonsignore, MD, Palermo, Italy
Louis-Philippe Boulet, MD, Quebec City, QC, Canada
Kevin K. Brown, MD, FCCP, Denver, CO
Lee K. Brown, MD, FCCP, Albuquerque, NM
Andrew Bush, MD, London, United Kingdom
Sean M. Caples, DO, Rochester, MN
Shannon S. Carson, MD, FCCP, Chapel Hill, NC
Bartolome R. Celli, MD, FCCP, Boston, MA
Alfredo Chetta, MD, FCCP, Parma, Italy
Prashant N. Chhajed, MBBS, DNB, MD, FCCP Basel, Switzerland
Jason D. Christie, MD, MS, FCCP, Philadelphia, PA
Andrew Churg, MD, Vancouver, BC, Canada
Donald W. Cockcroft, MD, FCCP, Saskatoon SK, Canada
Gene L. Colice, MD, FCCP, Washington, DC
Howard L. Corwin, MD, FCCP, Lebanon, NH
Gregory P. Cosgrove, MD, FCCP, Denver, CO
William G. Cotts, MD, Chicago, IL
Robert J. O. Davies, DM, Oxford, United Kingdom
Ivor S. Douglas, MD, FCCP, Denver, CO
Roland M. du Bois, MD, MA, FCCP, London, United Kingdom
C. Gregory Elliott, MD, FCCP, Salt Lake City, UT
Paul L. Enright, MD, Tucson, AZ
Armin Ernst, MD, FCCP, Boston, MA
Kevin R. Flaherty, MD, MS, Ann Arbor, MI
Kenneth E. Fletcher, PhD, Worcester, MA
Antonio Foresi, MD, Sesto San Giovanni, Italy
Barry A. Franklin, PhD, Royal Oaks, MI
Apoor S. Gami, MD, FCCP, Rochester, MN
Samuel Z. Goldhaber, MD, FCCP, Boston, MA
Roger S. Goldstein, MD, FCCP, Toronto, ON, Canada
James R. Gossage, MD, FCCP, Augusta, GA
Ronald F. Grossman, MD, FCCP, Mississauga, ON, Canada
Gordon H. Guyatt, MD, FCCP, Hamilton, ON, Canada
Ann C. Halbower, MD, Baltimore, MD
John Hankinson, PhD, Valdosta, GA
Timothy W. Harrison, MD, Nottingham, United Kingdom
Paul M. Hassoun, MD, FCCP, Baltimore, MD
Stephen O. Heard, MD, FCCP, Worcester, MA
John E. Heffner, MD, FCCP, Portland, OR
Hitoshi Hirose, MD, PhD, FCCP, Philadelphia, PA
Jack Hirsh, MD, FCCP, Hamilton, ON, Canada
Leslie A. Hoffman, PhD, RN, Pittsburgh, PA
Steven M. Hollenberg, MD, FCCP, Camden, NJ
Rolf D. Hubmayr, MD, FCCP, Rochester, MN
Ferdinando Iellamo, MD, Rome, Italy
James R. Jett, MD, FCCP, Rochester, MN
Paul W. Jones, PhD, London, United Kingdom
Jyotsna M. Joshi, MD, Mumbai, India
Marc A. Judson, MD, FCCP, Charleston, SC
Eitan Kerem, MD, Jerusalem, Israel
Dong Soon Kim, MD, Seoul, Korea
Hardy Kornfeld, MD, FCCP, Worcester, MA
Kevin L. Kovitz, MD, MBA, FCCP, New Orleans, LA
John P. Kress, MD, FCCP, Chicago, IL
Yves Lacasse, MD, MSc, Quebec City, QC, Canada
Mark Larché, PhD, Hamilton, ON, Canada
Teofilo L. Lee-Chiong, MD, FCCP, Denver, CO
Stephanie M. Levine, MD, FCCP, San Antonio, TX
Craig M. Lilly, MD, FCCP, Worcester, MA
Carlos M. Luna, MD, FCCP, Buenos Aires, Argentina
Neil R. MacIntyre, MD, FCCP, Durham, NC
J. Mark Madison, MD, FCCP, Worcester, MA
Atul Malhotra, MD, FCCP, Boston, MA
David M. Mannino, MD, FCCP, Lexington, KY
Constantine A. Manthous, MD, FCCP, Bridgeport, CT
Carole L. Marcus, MBBCh, FCCP, Philadelphia, PA
Vallerie V. McLaughlin, MD, FCCP, Ann Arbor, MI
Atul C. Mehta, MBBS, FCCP, Cleveland, OH
Lawrence C. Mohr, MD, FCCP, Charleston, SC
Nicholas W. Morrell, MD, Cambridge, United Kingdom
David P. Naidich, MD, FCCP, New York, NY
Parameswaran Nair, MD, PhD, Hamilton, ON, Canada
Krzysztof Narkiewicz, MD, PhD, Gdansk, Poland
Michael S. Niederman, MD, FCCP, Mineola, NY
Imre Noth, MD, FCCP, Chicago, IL
Patrick T. O'Gara, MD, Boston, MA
Harold I. Palevsky, MD, FCCP, Philadelphia, PA
Scott M. Palmer, MD, MHS, FCCP, Durham, NC
Polly E. Parsons, MD, FCCP, Burlington, VT
Alan L. Plummer, MD, FCCP, Atlanta, GA
Naresh M. Punjabi, MD, PhD, FCCP, Baltimore, MD
Suhail Raouf, MD, FCCP, Brooklyn, NY
Stephen I. Rennard, MD, FCCP, Omaha, NE
M. Patricia Rivera, MD, FCCP, Chapel Hill, NC
Jesse Roman, MD, FCCP, Atlanta, GA
Mark J. Rosen, MD, FCCP, New Hyde Park, NY
John C. Ruckdeschel, MD, FCCP, Detroit, MI
Jay H. Ryu, MD, FCCP, Rochester, MN
Steven A. Sahn, MD, FCCP, Charleston, SC
Mark H. Sanders, MD, FCCP, Pittsburgh, PA
Gregory A. Schmidt, MD, FCCP, Iowa City, IA
Curtis N. Sessler, MD, FCCP, Richmond, VA
Surendra K. Sharma, MD, PhD, FCCP New Delhi, India
Jay S. Steingrub, MD, FCCP, Springfield, MA
Robert A. Stockley, MD, DSc, Birmingham, United Kingdom
Mary E. Streck, MD, Chicago, IL
Harold M. Szerlip, MD, FCCP, Augusta, GA
Victor Tapson, MD, FCCP, Raleigh, NC
Donald P. Tashkin, MD, FCCP, Los Angeles, CA
Antoni Torres, MD, FCCP, Barcelona, Spain
William D. Travis, MD, FCCP, New York, NY
Philippe van de Borne, MD, PhD, Brussels, Belgium
Jean-Louis Vincent, MD, PhD, FCCP Brussels, Belgium
V. K. Vijayan, MD, FCCP, Delhi, India
Emiel F. M. Wouters, MD, FCCP Maastricht, Netherlands
Kwok Yung Yuen, MD, Hong Kong, China
Dani S. Zander, MD, Hershey, PA
Joseph B. Zwischenberger, MD, FCCP, Galveston, TX

REPRINTS: (More than 100 copies) For U.S.-based companies or persons needing orders of 100 reprints or more, contact Customer Service, Pools Press, Inc., at (847) 498-9111 or e-mail msampson@poolspress.com or fax: (847) 498-9112.

For INTERNATIONAL companies needing orders of 100 reprints or more, contact Iain Spray, Reprints Warehouse, Adis International Ltd, at +44 (0) 1829-771 155 or +44 (0) 1829-772 722 or fax +44 (0) 1829-770 330 or e-mail the Adis International Reprints Warehouse at iain.spray@uk.adis.com

TRANSLATIONS: Requests to translate material and distribute it as reprints, in newsletters, course packs, international journals, electronic products, etc, must be made to ACCP.

PERMISSIONS: Permission is required to reproduce any figure, table, or other material published in *CHEST*. All permission requests must be made through the Copyright Clearance Center (phone, (978) 750-8400; e-mail, info@copyright.com; or web site, www.copyright.com). There are royalty fees associated with such permissions.

NON-REPRINT REPRODUCTIONS (PHOTOCOPIES): Permission to make printed copies of articles or to reproduce articles in print format for newsletters, course packs, conferences, or commercial use must be requested through the Copyright Clearance Center (phone, (978)750-8400; e-mail, info@copyright.com; or web site, www.copyright.com). There are royalty fees associated with such permissions.

ELECTRONIC REPRODUCTION/DISTRIBUTION: Electronic reproduction of *CHEST* content (PDF distribution; posting on web sites, extranets, or intranets; CD-ROMs, etc) must also be requested by contacting the Copyright Clearance Center (see above). There are royalty fees associated with such permissions.