

# THE PRIMARY CARE COMPANION TO THE JOURNAL OF CLINICAL PSYCHIATRY

VOLUME 4

2002

SUPPLEMENT 4

S U P P L E M E N T

Novel Treatments for  
Attention-Deficit/Hyperactivity Disorder  
in Children and Adults

Editor's Choice for Independent Study:  
A Supplement From The Journal of Clinical Psychiatry

Wiley-Liss, Inc.

This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education (ACCME). To obtain credit, read the Supplement and complete the posttest starting on page 56.

**CME OBJECTIVES**

After completing this CME activity, participants should be able to:

- Describe the process involved in developing drugs with a primary indication for children
- Use a structured instrument to assess outcome in patients with attention-deficit/hyperactivity disorder (ADHD)
- Review the literature on health outcomes in patients with ADHD
- Discuss the treatment of patients with ADHD

**STATEMENT OF NEED AND PURPOSE**

Physicians responding to articles in *The Journal of Clinical Psychiatry* and its related CME activities have requested information on the diagnosis and treatment of ADHD. There are no prerequisites for participating in this CME activity.

**ACCREDITATION STATEMENT**

Physicians Postgraduate Press, Inc. is accredited by the ACCME to provide continuing medical education for physicians.

**CREDIT DESIGNATION**

Physicians Postgraduate Press, Inc. designates this educational activity for up to 5 hours of Category 1 credit toward the AMA Physician's Recognition Award. Each participant should claim only those hours of credit that he/she actually spent in the educational activity.

**DATE OF ORIGINAL RELEASE/REVIEW**

This Supplement was published in December 2002 and is eligible for CME credit through December 31, 2003. The latest review of this material was November 2002.

**FACULTY LIST**

**Chair:** Thomas J. Spencer, M.D. **Faculty:** Lenard A. Adler, M.D.; Albert J. Allen, M.D., Ph.D.; Russell A. Barkley, Ph.D.; Joseph Biederman, M.D.; Curtis M. Buermeyer, Ph.D.; Hong C. Chua, M.D.; Stephen V. Faraone, Ph.D.; Christopher J. Kratochvil, M.D.; Oren Mason, M.D.; David Michelson, M.D.; Mary Roth, M.D.; Keith E. Saylor, Ph.D.; J. F. Wernicke, M.D., Ph.D.; Timothy E. Wilens, M.D.; Mark Wolraich, M.D.

**FACULTY DISCLOSURE**

In the spirit of full disclosure and in compliance with all ACCME Essential Areas and Policies, the faculty for this CME activity were asked to complete a full disclosure statement. The information received is as follows:

Dr. Spencer has received research grant support from, is on the speakers bureau for, and is a consultant for Abbott, Alza, Boston Life Sciences, Bristol-Myers, Eisai, GlaxoSmithKline, Gliatech, Lilly, Medeva, Novartis, Pfizer, Shire, Solvay, and Wyeth.

Dr. Adler has received grant/research support from Lilly; has received honoraria from GlaxoSmithKline; and is a member of the speakers advisory board for Lilly, GlaxoSmithKline, Alza, and Wyeth.

Dr. Allen is an employee of Lilly.

Dr. Barkley receives book royalties from Guilford Press.

Dr. Biederman has received research support from Shire, Lilly, Wyeth, Pfizer, Cephalon, Janssen, Noven, Stanley Foundation, National Institute of Mental Health, National Institute of Child Health & Human Development, and National Institute on Drug Abuse; is on the speakers bureau for GlaxoSmithKline, Lilly, Pfizer, Wyeth, Shire, Alza, and Cephalon; and is on the advisory board for Lilly, Celltech and Shire, Noven, and Alza/McNeil.

Dr. Faraone has received research grant support from, is on the speakers bureau for, and is a consultant for Lilly, McNeil, Novartis, and Shire.

Dr. Kratochvil is a consultant for Lilly and McNeil; has received research grant support from Lilly and McNeil; has received honoraria from Lilly; and is a member of the speakers advisory board for Lilly, Shire, and Novartis.

Dr. Mason is a consultant for Lilly.

Dr. Michelson is an employee of Lilly and is a major stockholder in Lilly.

Dr. Saylor has received honoraria from Physicians Postgraduate Press and is a member of the speakers advisory board for Lilly.

Dr. Wernicke is an employee of Lilly.

Dr. Wilens has received research grant support from, is on the speakers bureau for, and is a consultant for Abbott, Celltech, Medeva, Lilly, McNeil, National Institute on Drug Abuse, National Institute of Mental Health, Novartis, Pfizer, Shire, and GlaxoSmithKline.

Dr. Wolraich has received grant/research support from Noven, is a consultant for Lilly, Celltech, and Noven; and is on the speakers advisory board for the National Initiative for Children Healthcare Quarterly, the American Board of Pediatrics, and Advanced Therapeutic Communications.

Drs. Buermeyer, Chua, and Roth have no significant commercial relationships to disclose relative to their presentations.

**DISCLOSURE OF OFF-LABEL USAGE**

In this Supplement, faculty may be presenting investigational information about pharmaceutical agents that is outside U.S. Food and Drug Administration-approved labeling. This information is intended solely as continuing medical education and is not intended to promote off-label use of any of these medications. Please consult the paragraph titled "Disclosure of Off-Label Usage" at the end of each article for a complete listing of off-label or investigational uses. If you have questions, contact the medical affairs department of the manufacturer for the most recent prescribing information.

**ACKNOWLEDGMENT**

This Supplement was independently developed by the Physicians Postgraduate Press, Inc. Office of Continuing Medical Education pursuant to an unrestricted educational grant from Eli Lilly and Company. The opinions expressed herein are those of the authors and do not necessarily reflect the views of the CME provider and publisher or the commercial supporter.

# THE JOURNAL OF CLINICAL PSYCHIATRY

VOLUME 63

2002

SUPPLEMENT 12



*The Journal of Clinical Psychiatry* (ISSN 0160-6689) is published monthly by Physicians Postgraduate Press, Inc. Address correspondence to P.O. Box 752870, Memphis, TN 38175-2870; phone inquiries to (901) 751-3800.

Periodical postage paid at Memphis, TN, and additional mailing offices. POSTMASTER: Send address changes to Circulation Department, Physicians Postgraduate Press, Inc., P.O. Box 752870, Memphis, TN 38175-2870.

*The Journal of Clinical Psychiatry* is indexed in Index Medicus, EMBASE/Excerpta Medica, Psychological Abstracts, Current Contents, Science Citation Index, Hospital Literature Index, Biological Abstracts, Cumulative Index of Allied Health and Nursing, International Nursing, Industrial Medicine, Chemical Abstracts, Adolescent Mental Health Abstracts, and Alcohol and Alcohol Science Problems Database.

*The Journal of Clinical Psychiatry* is owned and published by Physicians Postgraduate Press, Inc., 3175 Lenox Park Blvd., Suite 409, Memphis, TN 38115. All articles appearing in this publication, including editorials, letters, and book reviews, represent the opinions of the authors and do not necessarily reflect the official policy or opinions of Physicians Postgraduate Press, Inc. or the institution with which the author is affiliated, unless this is clearly specified.

Physicians Postgraduate Press, Inc. disclaims any liability to any party for the accuracy, completeness, or availability of any and all Physicians Postgraduate Press, Inc. publications and other material, or for any damages arising out of the use or non-use of this publication, and any and all Physicians Postgraduate Press, Inc. publications (and other material), and any information contained therein.

*The Journal of Clinical Psychiatry* requires the express transfer of copyright to Physicians Postgraduate Press, Inc., so that the author(s) and Physicians Postgraduate Press, Inc., are protected from misuse of copyrighted material. All submissions must be accompanied by a copyright transfer signed by all authors.

Acceptance of any and all advertising in this publication, or any other material published by Physicians Postgraduate Press, Inc., does not imply endorsement by Physicians Postgraduate Press, Inc.

Visit our Web site at [www.psychiatrist.com](http://www.psychiatrist.com).

© Copyright 2002 Physicians Postgraduate Press, Inc. All rights reserved.

## BOARD OF EDITORS

Editor in Chief ..... Alan J. Gelenberg, M.D.  
Deputy Editor ..... Eric M. Reiman, M.D.  
Deputy Editor ..... Michael H. Ebert, M.D.

## EDITORIAL BOARD

Geoffrey L. Ahern, M.D., Ph.D.  
Hagop S. Akiskal, M.D.  
Judith V. Becker, Ph.D.  
Joseph Biederman, M.D.  
Jonathan F. Borus, M.D.  
Rubin Bressler, M.D.  
Andrew W. Brotman, M.D.  
Paula J. Clayton, M.D.  
Jonathan O. Cole, M.D.  
William E. Falk, M.D.  
Maurizio Fava, M.D.  
Ellen Frank, Ph.D.  
Marlene P. Freeman, M.D.  
Jack M. Gorman, M.D.  
John H. Greist, M.D.  
George T. Grossberg, M.D.  
Bernard I. Grosser, M.D.  
John G. Gunderson, M.D.  
David B. Herzog, M.D.  
Robert M. A. Hirschfeld, M.D.  
James I. Hudson, M.D.  
James W. Jefferson, M.D.  
Dilip V. Jeste, M.D.  
John M. Kane, M.D.  
T. Byram Karasu, M.D.  
Paul E. Keck, Jr., M.D.  
Samuel J. Keith, M.D.  
Martin B. Keller, M.D.  
Donald F. Klein, M.D.  
Susan G. Kornstein, M.D.  
Philip W. Lavori, Ph.D.  
R. Bruce Lydiard, M.D., Ph.D.  
Stephen R. Marder, M.D.  
Susan L. McElroy, M.D.  
Herbert Y. Meltzer, M.D.  
Roger E. Meyer, M.D.  
Erwin B. Montgomery, Jr., M.D.  
Francisco A. Moreno, M.D.  
George B. Murray, M.D.  
Henry A. Nasrallah, M.D.  
Andrew A. Nierenberg, M.D.  
H. George Nurnberg, M.D.  
Mark H. Pollack, M.D.  
Harrison G. Pope, Jr., M.D.  
Michael K. Popkin, M.D.  
Robert M. Post, M.D.  
Sheldon H. Preskorn, M.D.  
Frederic M. Quitkin, M.D.  
John C. Racy, M.D.  
Judith L. Rapoport, M.D.  
Steven A. Rasmussen, M.D.  
Elliott Richelson, M.D.  
Steven P. Roose, M.D.  
Patricia I. Rosebush, M.D.  
Jerrold F. Rosenbaum, M.D.  
A. John Rush, Jr., M.D.  
José M. Santiago, M.D.  
Nina R. Schooler, Ph.D.  
Mogens Schou, M.D.  
George M. Simpson, M.D.  
Gary W. Small, M.D.  
Susan E. Swedo, M.D.  
John A. Talbott, M.D.  
Michael E. Thase, M.D.  
Mauricio F. Tohen, M.D., Dr.P.H.  
Richard D. Weiner, M.D., Ph.D.  
Roger D. Weiss, M.D.  
Katherine L. Wisner, M.D.

## CME ADVISORY BOARD

Michael H. Ebert, M.D., Chair  
Richard C. Shelton, M.D., Vice Chair  
Benjamin L. Beatus, Jr., M.D.  
E. Sherwood Brown, Ph.D., M.D.  
Stephanie Cavanaugh, M.D.  
Lawrence J. Cohen, Pharm.D.  
Larry Culpepper, M.D., M.P.H.  
John M. Downs, M.D.  
Alan J. Gelenberg, M.D.  
Radwan F. Haykal, M.D.  
Paul King, M.D.  
Joseph A. Lieberman, III, M.D., M.P.H.  
Elizabeth H. B. Lin, M.D., M.P.H.  
Frank W. Ling, M.D.  
J. Sloan Manning, M.D.  
Meir Steiner, M.D., Ph.D.

## PUBLICATION STAFF

Publisher ..... John S. Shelton, Ph.D.  
Publisher Emeritus ..... Irving Shelton  
Assistant Publisher ..... Judy Beach  
Dir. Business Development .... Lee Harrington, R.Ph.  
Managing Editor ..... Meg M. Waters  
Deputy Managing Editor ..... Kathryn Hedges  
Assistant Editor ..... Susan K. Beaton  
Assistant Editor ..... Sarah L. Brown  
Assistant Editor ..... Juliet Douglas  
Assistant Editor ..... David M. Twombly  
Senior Proofreader ..... Kathy E. Shassere  
Proofreader ..... David Spicer  
Publications Manager ..... C. J. Firestone  
Director of Circulation ..... Sharon Landers  
Circulation Coordinator ..... Dianne Ware  
Publications Coordinator ..... Anna Kwapien  
Production Coordinator ..... Diana L. Baessler  
Graphic Arts Manager ..... Faye M. Green  
Asst. Graphic Arts Manager ..... Erik Adamec  
Electronic Media Manager ..... F. Grant Whittle, Ph.D.  
Graphic Arts Assistant ..... Sara T. Gentry  
CME Director ..... Jane B. Eckstein  
Assistant CME Director ..... Becky Brown Derych  
CME Coordinator ..... Diane Brunner  
CME Assistant ..... Susan Bedford  
Project Associate ..... Jennifer G. Alessi  
Project Associate ..... Elizabeth Boone  
Project Assistant ..... Erin Mullin Hanski

---

# THE JOURNAL OF CLINICAL PSYCHIATRY

VOLUME 63

2002

SUPPLEMENT 12

---

## ARTICLES

---

- 3 Overview and Neurobiology of Attention-Deficit/Hyperactivity Disorder.  
*Thomas J. Spencer, Joseph Biederman, Timothy E. Wilens, and Stephen V. Faraone*
- 10 Major Life Activity and Health Outcomes Associated With  
Attention-Deficit/Hyperactivity Disorder.  
*Russell A. Barkley*
- 16 Novel Treatments for Attention-Deficit/Hyperactivity Disorder in Children.  
*Thomas J. Spencer, Joseph Biederman, Timothy E. Wilens, and Stephen V. Faraone*
- 23 Adaptive Changes Related to Medication Treatment of ADHD: Listening to  
Parents of Children in Clinical Trials of a Novel Nonstimulant Medication.  
*Keith E. Saylor, Curtis M. Buermyer, Thomas J. Spencer, and Russell A. Barkley*
- 29 Management of ADHD in Adults.  
*Lenard A. Adler and Hong C. Chua*
- 36 Psychosocial Treatments for Attention-Deficit/Hyperactivity Disorder in Children.  
*Russell A. Barkley*
- 44 Drug Development Process for a Product With a Primary Pediatric Indication.  
*Albert J. Allen and David Michelson*
- 50 Safety Profile of Atomoxetine in the Treatment of Children and Adolescents  
With ADHD.  
*J. F. Wernicke and Christopher J. Kratochvil*
- 61 Commentary: ADHD in Primary Care.  
*Mark Wolraich, Mary Roth, and Oren Mason*
- 

## CME SECTION

---

- 56 Instructions and Posttest.  
60 Registration Form and Evaluation.
- 

### Editor's Choice

Few areas of primary care psychiatry are more fraught with confusion and controversy than attention-deficit/hyperactivity disorder (ADHD). ADHD is variably considered a true medical illness, an extension of the world of learning disabilities, or an overrecognized and overtreated "pop" diagnosis of modern living. One thing is certain—primary care physicians among all providers are most likely to encounter ADHD. Specific training in the recognition, assessment, and treatment of ADHD is sorely lacking in primary care postgraduate programs. More current information on diagnosis, comorbidity, and management is slow to disseminate into our care settings.

*The Primary Care Companion to The Journal of Clinical Psychiatry* is pleased to offer our readers this supplement containing a series of articles focusing on ADHD neurobiology, diagnosis (including information for adult pa-

tients), treatment (medical, psychosocial, pediatric, and adult), and the association of ADHD with major life events. Importantly, the supplement includes information on atomoxetine, a selective norepinephrine reuptake inhibitor soon to be available for clinical use. Atomoxetine is the first nonstimulant medication to receive an approvable letter from the U.S. Food and Drug Administration for the treatment of ADHD. A commentary on ADHD in primary care settings concludes the supplement.

We hope that this information is of practical use for our readers. Your comments are appreciated.

J. Sloan Manning, M.D.  
Editor in Chief

*The Primary Care Companion to  
The Journal of Clinical Psychiatry*