

JMCM

JOURNAL of MANAGED CARE MEDICINE

A PEER-REVIEWED PUBLICATION

Vol. 6, No. 1, 2002

Managing a Meningitis Outbreak

Anemia-Related Costs for Cancer Patients

**Physicians Speak Out on Consumers' Use of the Internet
for Medical Consultation**

Low Back Pain: A Disease Management Opportunity

**Managed Care Under Pressure:
Results of the 2001 Medical Directors Survey**

The Official Journal of the
NATIONAL ASSOCIATION OF MANAGED CARE PHYSICIANS
AMERICAN ASSOCIATION OF INTEGRATED HEALTHCARE DELIVERY SYSTEMS
AMERICAN COLLEGE OF MANAGED CARE MEDICINE

A Publication for Medical Directors and Healthcare Executives

ADVERTISEMENT

JMCM

JOURNAL OF MANAGED CARE MEDICINE

4435 Waterfront Drive, Suite 101
Glen Allen, VA 23060
(804) 527-1905
fax (804) 747-5316

EDITOR-IN-CHIEF

Dexter W. Shurney, MD, MBA, MPH

CIRCULATION MANAGER

Crystal Smith

ADVERTISING COORDINATOR

Crystal Smith

JOURNAL MANAGEMENT

Douglas Murphy
Communications Inc.
2807 N. Parham Rd., Suite 107
Richmond, VA 23294
(804) 217-8968
fax (804) 217-8969
virginia@douglasmurphy.com

MANAGING EDITOR

Virginia Sowers

ART DIRECTOR

David Balch

DESIGN/PRODUCTION ASSISTANT

Lisa Summerell

ADVERTISING MANAGEMENT

Jack F. Klose
16 Pitman Ave.
Pitman, NJ 08071
(856) 589-3842
fax (856) 582-9596
jklose@namcp.com

The Journal of Managed Care Medicine is published quarterly by Association Services Inc. Corporate and Circulation offices: 4435 Waterfront Drive, Suite 101, Glen Allen, VA 23060; Tel (804)527-1905; Fax (804)747-5316. Editorial and Production offices: 2807 N. Parham Road, Suite 107, Richmond, VA 23294; Tel (804)217-8968; Fax (804)217-8969. Advertising offices: Jack Klose, 16 Pitman Ave., Pitman, NJ 08071; Tel (856)589-3842; Fax (856)582-9596. Subscription Rates: one year \$95 in the United States; one year \$105 in Canada; one year \$120 international. Back issues are available for \$15 each. Copyright © 2002 by Association Services. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage or retrieval system, without written consent from the publisher. The publisher does not warrant, either expressly or by implication, the factual accuracy of the articles and descriptions herein, nor does the publisher warrant the accuracy of any views or opinions offered by the authors of said articles or descriptions.

POSTMASTER: Send address changes to THE JOURNAL OF MANAGED CARE MEDICINE, 4435 Waterfront Drive, Suite 101, Glen Allen, VA 23060.

JOURNAL of MANAGED CARE MEDICINE

The Official Journal of the
NATIONAL ASSOCIATION OF MANAGED CARE PHYSICIANS
AMERICAN ASSOCIATION OF INTEGRATED HEALTHCARE DELIVERY SYSTEMS
AMERICAN COLLEGE OF MANAGED CARE MEDICINE

A Publication for Medical Directors and Healthcare Executives

Vol. 6, No. 1, 2002

TABLE OF CONTENTS

Healthcare Providers Can Provide Critical Leadership Role in Managing a Meningitis Outbreak

William Tindall, PhD 6

The Costs of Cancer: Cancer-related Conditions Can Add Dramatically to Overall Costs of Care

Pierre-Yves Cremieux, PhD, Mitchell B. Slavin, PharmD, MBAA,
Mark Fendrick, MD, Thomas C. Hiriak, MBA 12

Anemia-Related Costs for Cancer Patients

Arnold Barnett, PhD, Pierre-Yves Cremieux, PhD, A. Mark Fendrick, MD,
Martine George, MD, MSc, Mitchell B. Slavin, PharmD, MBA 20

Physicians Speak Out on Consumers' Use of the Internet for Medical Consultation: Results of a Delphi Study

W.N. Tindall, PhD, B.R. Siecker, PhD, J.M. Boltri, MD 30

Low Back Pain: A Disease Management Opportunity

Bill Barr, MBA, Jeffrey Migneault, PhD 42

Managed Care Under Pressure: Results of the 2001 Medical Directors Survey

Peter G. Goldschmidt, MD, DrPH, DMS, Jenny C. Liao, MPH,
Kelly Edmond-Moore 52

Journal of Managed Care Medicine Instructions for Authors

The *Journal of Managed Care Medicine* is a peer-reviewed national publication. Original articles dealing with the business or clinical side of managed care are welcome. Manuscript length generally should range between 10 to 15 pages typed pages, including a summary with key points, exhibits and references. All articles should include the following elements:

- Two printed copies of the manuscript, including illustrations/figures/tables.
- Contact numbers (phone and fax), complete mailing address, and e-mail address for designated corresponding author.
- Electronic version on a 3.5" high-density diskette in IBM- or Macintosh-compatible Microsoft Word or WordPerfect.
- Bibliography/References, following the format of the *AMA Manual of Style*, 9th Ed.
- Brief biography of author(s) < 50 words and including academic/corporate affiliations.
- Copyright transfer letter.

For a complete copy of authors' guidelines,
contact JMCM's Managing Editor, Virginia Sowers, (804)217-8968 (ext.110).

Forward submissions to *Journal of Managed Care Medicine*
2807 N. Parham Road, Suite 107 • Richmond, VA 23294 • (804) 217-8968

Editorial Review Board

Alan Adler, MD, MS
Medical Director
Horizon Mercy
Trenton, NJ

Robert J. Ailes, MD
Medical Director
Physicians HealthCare Plans Inc.
Tampa, FL

Talat Ashraf, MD, MS
Medical Director
Abbott Lab
Abbott Park, IL

Jan Berger
VP Clinical Programs, Asst. Medical Director
Caremark
Northbrook, IL

Alan B. Bernstein, MD
Senior VP/Medical Director
Lenox Hill Healthcare Network
New York, NY

Lorena Chicoye, MD
Medical Director
George Washington University Health Plan
Bethesda, MD

Mark Clark, PharmD.
Mercy Care Plan
Phoenix, AZ

Samuel T. Coleridge, DO, CMCM
Project Chair, Dept. Family Medicine
UNTHSCFW
Fort Worth, TX

Linda Dutton
Managed Care Director
Redlands Community Hospital
Redlands, CA

Howard Fillet, MD
Executive Director
Institute for the Study of Aging, Inc.
New York, NY

Joseph B. Fox, MD
Vice President/Medical Director
The Healthcare Group
Indianapolis, IN

Uwe G. Goehrlert
Medical Director
Towson Health Express, LLC
Towson, MD

Barry K. Herman, MD, MMM
CEO
Barry K. Herman, MD & Associates, PA
Austin, TX

John Heryer, MD
VP/Medical Director
Blue Cross Blue Shield of Kansas City
Kansas City, MO

Al Janoski, MD
VP Healthcare Management, Medical Director
QualChoice of NC
Winston-Salem, NC

Surinder K. Kad, MD, FACP, MS, MPH, MBA,
CHCQM, CMCM, PFP
Chairman, Department of Medicine
Univera Healthcare—CNY
Syracuse, NY

Thomas Kaye, RPh, MBA, FASHP
Pharmacy Director
Blue Cross Blue Shield of Oklahoma
Tulsa, OK

Thomas Kim, MD, MBA, MPH
Associate Medical Director
Trigon, BCBS Virginia
Richmond, VA

Herbert C. Kimmons, MD, MMM
Medical Director
Children's Specialists
San Diego, CA

Randall Krakauer
VP, Regional Medical Director
Cigna Health Care
Jersey City, NJ

L.B. Lehman, MD
Senior Vice President
Multiplan, Inc
New York, NY

Jeffrey L. Lenow, MD
Medical Director
Thomas Jefferson University Hospital
Philadelphia, PA

David Lorber, MD
Assistant Vice President
AdvancePCS
Scottsdale, AZ

Imtiaz A. Mallick, MD, FACP
Associate Medical Director
Mohawk Valley Health Plan
Fishkill, NY

Jerome D. Massenburg, MD
Medical Director
Mountain State Blue Cross Blue Shield
Charleston, WV

Peter W. McCauley, MD
Medical Director
Gottlieb/West Tours PHO, Inc.
Melrose Park, IL

William H. McCoy III, MD
Senior VP/ Medical Officer
Forum Health
Warren, OH

Arnold I. Miller, DO, MBA
Oncologist/Hematologist
Oscola Cancer Center
Kissimmee, FL

Lawrence Daniel Mullany, MD, MBA
Regional Medical Director
AvMed Health Plan
Gainesville, FL

Barbara Nabrit-Stephens, MD
Medical Director
OmniCare Health Plan
Detroit, MI

Esther J. Nash, MD
Senior Medical Director
Independence Blue Cross
Philadelphia, PA

Mark Netoskie, MD
Medical Director
United Healthcare
Houston, TX

Gary M. Owens, MD
Vice President Patient Care Management
Independence Blue Cross
Philadelphia, PA

Kenneth W. Patric Jr., MD
Senior Medical Director, Medical Management
Blue Cross Blue Shield of Tennessee
Chattanooga, TN

Gary P. Plundo, DO, MPM
Chief Medical Officer
Midwest Physician Group
Olympia Fields, IL

John W. Richards Jr., MD, MMM, CPE,
DABFP
President/CEO
Innovative Health Strategies
Martinez, GA

Alain R. Scherer
Manager, Managed Care Services
Sun Coast Healthcare
Largo, FL

Joseph Schwerha, MD, MPH
Professor and Director
University of Pittsburgh School of Public Health
Pittsburgh, PA

Mark J. Selna, MD
Senior VP Medical Operations
PARTNERS National Health Plans of NC
Winston-Salem, NC

Scott Spradlin
CMO Carelink
Carelink Health Plans
Charleston, WV

Bruce Steffens
Chief Medical Officer
John Deere Health
Moline, IL

Ron Suprenant, MD, MBA
Chief Medical Officer
Care Source
Dayton, OH

Michael C. Tobin, MD, MBA
Chief Medical Officer
Provida Healthcare Group, Inc.
Roswell, GA

Derek Van Amerongen
Chief Medical Officer
Humana/ChoiceCare
Cincinnati, OH

Celestino Vega
Medical Director
Florida First Health Plans
Winter Haven, FL

Barry Verkauf, MD, MBA
President
The Reproductive Medicine Group
Tampa, FL

William C. Weese, MD
President
AALP/Arizona Affiliated Lung Physicians, PLC
Phoenix, AZ

Larry I. Wolk, MD
Senior Medical Director
Cigna Healthcare of Colorado
Denver, CO

Become a Member of JMCM's
Editorial Review Board

contact Crystal Smith:
JMCM, 4435 Waterfront Drive,
Suite 101, Glen Allen, VA 23060
tel: 804-527-1905 • fax: 804-747-5316
e-mail: csmith@namcp.com

Mark Your Calendar!

2002 MANAGED CARE CONFERENCE SCHEDULE

APRIL 5-6

Medical Directors Spring Update

Four Points by Sheraton
San Antonio, Texas
For more information call 804-527-1905,
or visit www.namcp.com

MAY 16-17

Annual Spring Forum

Orlando World Center
Marriott Resort and Convention Center
Orlando, Florida
For more information call 804-747-5823,
or visit www.aaihds.org

JUNE 19-23

Medical Directors Training Academy

Hyatt Regency Oak Brook
Oak Brook, Illinois
For more information call 804-527-1905,
or visit www.namcp.com

SEPTEMBER 24-26

Institute for Health and Productivity Management

Marriott Camelback Inn Resort and Spa
Scottsdale, Arizona
For more information call 804-527-1905,
or visit www.ihpm.org

OCTOBER 11-12

AAMCN Fourth Annual Conference

Tropicana Hotel and Casino
Las Vegas, Nevada
For more information call 804-747-9698,
or visit www.aamcn.org

NOVEMBER 20-24

Medical Directors Training Academy

Hilton Albuquerque
Albuquerque, New Mexico
For more information call 804-527-1905,
or visit www.namcp.com

Healthcare Providers Can Provide Critical Leadership Role in Managing a Meningitis Outbreak

William Tindall, PhD

A 4-year-old girl wakes up one morning complaining that her neck hurts, so her mother decides to keep her home from day care. Two days later, she is vomiting and has developed a skin rash with small, purplish-red spots on her legs. Her parents rush her to the emergency room, where physicians determine they will have to amputate her legs in order to save her life.

An 18-year-old college freshman calls home early one afternoon in January complaining that he has a fever and a headache. A cold, maybe the flu, but certainly nothing to be concerned about, his father concludes. The youth decides to take a couple of aspirin and go to sleep in his dorm room. By dinner, he is dead.

BOTH SCENARIOS represent classic symptoms of meningococcal meningitis, commonly known as bacterial meningitis, a rare but potentially fatal disease that affects the brain and spinal cord. Each year, an estimated 2,400 to 3,000 cases of bacterial meningitis are reported to the Centers for Disease Control and Prevention (CDC) in Atlanta.¹

Although a relatively uncommon disease, certain populations are at increased risk: infants, young children in daycare, military recruits, and college students living in dormitories. In the United States, 95 to 97 percent of cases of meningococcal meningitis are sporadic.² But since 1991, localized outbreaks have been on the rise.³ The CDC defines an outbreak as 10 or more cases of the same strain per 100,000 people occurring within a three-month period. Between 1991 and 1997, the number of cases of bacterial meningitis among young adults ages 15 to 24 nearly doubled from 308 to 600 cases,^{4,5} causing observers to consider that the disease is spreading.

Despite the number of reported cases, less than 15 percent of the population are carriers of the germ, and less than 1 percent of the total population are susceptible to the bacteria.⁶ In fact, most people who come in contact with the disease do not become sick.⁷ It is not known why some people suddenly become ill and others do not.

Bacterial meningitis is spread through the exchange of respiratory and throat secretions. It is most common from December to March—the height of cold and flu season—which explains why symptoms often are not taken seriously. Presenting symptoms, although not the same in all cases, can include fever, headache, stiffness of the neck, nausea or vomiting, and a skin rash with small, purplish-red spots. Symptoms may develop over several hours, or they may take one to two days to culminate.

Meningococcal immunization is recommended for use in the control of serogroup C meningococcal outbreaks for anyone over 2 years of age. The CDC recommends certain other at-risk groups receive routine meningococcal vaccination. These include military recruits; anyone traveling

to or living in a part of the world where meningitis is common, such as the Middle East or sub-Saharan Africa (known as the “meningitis belt”); anyone who has a damaged spleen or whose spleen has been removed; anyone with an immune system disorder; and lab workers who are routinely exposed to the pathogen. CDC also recommends that college freshmen, especially those living in dormitories, should be educated about meningococcal meningitis and the vaccine so that they can make an educated decision on vaccination.

Unlike viral meningitis, which is rarely fatal, about 10 to 15 percent of people who contract bacterial meningitis die, often within hours of the onset of the first signs of illness, even when treated with antibiotics.⁸ Of those who survive, another 10 percent suffer amputations, deafness, brain damage, or seizures or strokes.⁹ With early diagnosis and treatment, combined with a carefully targeted preventive vaccine program, recovery and prevention rates can be dramatically improved.

The following simulated case study suggests a critical series of questions for healthcare providers to explore when faced with a meningitis outbreak in their community.

The Case of the BestInCare Benevolent PPO Inc.

Late in September, sporadic cases of type C meningococcal meningitis began popping up in the city where BestInCare covers 500,000 lives, about a quarter of the area’s population. By January, 45 people living in three neighboring communities have been struck by the illness and five individuals have died. The CDC has officially declared an outbreak of meningitis. Twenty-five of the 40 cases are serogroup C (There are other serogroups such as A, B, Y, and W-138; serogroup B is not

covered by the vaccine.); 10 cases involve preteens and teen-agers younger than 15—an age group once believed to be at a low risk for contracting meningitis.

Once the CDC officially confirms an outbreak (based on an attack rate of > 10/100,000 population of *Neisseria meningitidis* serogroup C within a three-month period), the state department of health immediately begins public immunizations. The decision to recommend vaccination of the at-risk population is made in consent with local, regional, state, and federal public health officials. However, only residents age 2 to 24 years living in the communities with confirmed outbreaks qualify for free vaccinations. (The vaccine is not effective in persons younger than two.)

A Leadership Opportunity

As the number of cases city-wide continues to rise, parents grow increasingly concerned about the health of their children. Ongoing media coverage contributes to growing public alarm and an ensuing outcry for greater public access to the vaccination. Parents begin flooding doctors' offices to obtain inoculations for their children—even those not considered at high risk for the disease. Many physicians did not carry the vaccine.

BestInCare's medical director quickly assesses the growing public health risk to the metropolitan area and determines that a large-scale vaccination program is needed to reinforce the health department's immunization program and provide greater access to the PPO's patients and the public at large. He enlists the support of the PPO's administration and network physicians by pointing out that BestInCare, as a longstanding community healthcare provider, has an obligation to get involved and do whatever is necessary to

Exhibit 1: Contingency Checklist for Implementing a Private Sector Meningococcal Vaccination Program

- Coordinate activities with local, state, and federal public health officials.
- Establish contact with vaccine manufacturers and ensure an ample supply of vaccine will be available in a timely manner.
- Designate medical and administrative personnel to manage the program.
- Identify additional community facilities that can accommodate large crowds.
- Set up a system to track vaccination lot numbers.
- Ensure availability of refrigerated vaccination storage containers.
- Develop a plan for communicating with the public.
- Develop a plan for managing the media.
- Develop a plan for managing crowd control.
- Establish a budget for financial costs to the organization.

Exhibit 2: Key Facts about Meningitis

- An estimated 2,400 to 3,000 cases of meningococcal meningitis are reported to the Centers for Disease Control and Prevention each year.
- Ten to 15 percent of people who contract meningococcal meningitis die.
- Of those who survive, another 10 percent are disabled.
- *Neisseria meningitidis* is the leading cause of meningococcal meningitis, also known as bacterial meningitis.
- Less than 15 percent of the population are carriers of the *Neisseria* germ, and less than 1 percent of the total population are susceptible to the bacteria.
- There are 13 meningococcal serogroups, but strains belonging to groups A, B, C, Y, and W-135 are the most common.
- Serogroups C and Y account for the majority of cases of meningococcal disease in young adults in the U.S.
- Since 1991, the frequency of localized outbreaks has increased. Most outbreaks have been caused by serogroup C.
- Between 1991 and 1997, the number of cases of meningococcal meningitis among young adults ages 15 to 24 nearly doubled from 308 to 600 cases.

protect public health. The decision is made to go forward even though such an undertaking, especially during the middle of an already busy cold and flu season, will be taxing on employees and create a financial burden for the organization.

BestInCare approaches the overburdened department of health with an offer to imple-

ment an immunization program targeting the population that the department is trying to reach, as well as patients not covered by the free vaccination program but who request the vaccine after being educated on the disease and vaccination.

Given the above scenario, how would you proceed as the med-

Exhibit 3: Key Facts on Menomune®-A/C/Y/W-135
(Meningococcal Polysaccharide Vaccine Groups A, C, Y, and W-135 Combined)

- The only vaccine licensed in the United States for meningococcal meningitis.
- Licensed in 1981 and manufactured by Aventis Pasteur.
- Protects against A, C, Y, and W-135 strains of meningococcal disease. (It does not protect against serogroup B.)
- Made from dead bacteria and cannot cause infection.
- Side effects of the vaccination are usually mild and include redness and swelling at the injection site lasting up to two days. Anaphylaxis occurs in 1:1 million vaccines.
- Reaches maximum effectiveness 7 to 10 days after administered and lasts for three to five years.
- Indicated for persons 2 years and older.

Source: Aventis Pasteur Inc. Menomune®-A/C/Y/W-135 product information, February 2001.

Exhibit 4: Meningitis Types

Although there are more than a dozen different serotypes—or strains—of meningitis, five are most commonly seen today. The greater Houston, Texas area experienced an outbreak of strain C. Following are brief explanations of each strain of meningococcal meningitis.

A – Causes major epidemics in developing countries. There have been no major epidemics of this strain in the United States since World War II.

B – Produces a large percentage of sporadic infection in developed countries and is the most common strain in infants. There is no vaccine for serotype B.

C – Can lead to outbreaks and, occasionally, epidemics. Localized outbreaks of this strain have been on the rise since 1991.

Y – Incidence of this strain in the U.S. doubled between 1992 and 1996. This strain often is associated with pneumonia.

W-135 – Accounts for only a small percentage of meningococcal disease in the United States. This is considered more of a threat for those traveling to sub-Saharan Africa.

Source: Harrison, LH: Meningococcal infection in adolescents and young adults. A Supplement to Contemporary Pediatrics. May 2001.

ical director in this situation? The following questions, as well as the included exhibits, may help you prepare a plan of action should a meningitis outbreak occur in your community.

1. Since the majority of patients who are under contract to your PPO are covered by a capitated scheme, could you approach their employer groups and ask

for coverage of the cost of the vaccine?

2. How should you position yourself as an adjunct to the state department of health programs?

3. Since the state department of health may be overburdened with the sheer size of the outbreak, should you seek to provide vaccinations in partner-

ship with other area managed care plans?

4. How will you get the word out about your PPO's vaccination program? Should you control the story by working with your public relations team to make the initial announcement about the program and provide subsequent updates? Are you prepared to answer questions from the media about vaccine costs and availability?

5. What agencies and people could you enlist for an endorsement that will allay any public concerns and support your PPO's altruistic endeavor?

6. Will you need a telephone hot line to provide information-on-demand to the community? Should you develop a call center script so operators consistently provide accurate information in a calm manner while helping callers determine if they are eligible for the vaccine? Could operators play a role in helping reduce panic among parents and the community? Could operators help callers determine if they reside in areas eligible for free vaccines from the health department?

7. Should you set up a special Web page to distribute factual information 24/7 about the meningitis disease and the vaccination program?

8. Where would you physically set up a site(s) to be able to administer thousands of vaccinations? Inside your PPO? At physicians' offices? Should you involve pediatricians only? Would community sites such as schools, churches, shopping malls be available options for temporary clinics?

9. Since patient education would be a top priority at all vaccination

sites, would you provide patients the Vaccine Information Sheet provided by the CDC, as well as an additional consent form explaining the risks of vaccination and re-vaccination? Or would you prepare custom sheets that are specific to your organization? Should you schedule physicians at each location to answer questions and address any concerns of parents and children? Would you prepare special information sheets for those who qualify for the vaccine? Would the PPO require informed consent forms? Would it be necessary to track forms for registering patients? How would you track vaccine lot numbers?

10. How would you handle co-pays for the vaccine given to regular contracted members of the PPO? How would you handle fees for any person who comes in from another health plan? How would you handle fees for those who are uninsured? Would you set up temporary computer stations at the vaccination sites to manage records of potentially thousands of patients?

11. How would you determine the staffing needs for vaccination sites set up temporarily in the community? Would you need physicians, IT technicians, administrative staff, and nurses to present a professional and caring image to the public? Would staff be paid at regular rates or overtime?

12. Aventis Pasteur is the only vaccine company in the United States that manufactures the meningitis vaccine, sold under the trade name Menomune®-A/C/Y/W-135 (Meningococcal Polysaccharide Vaccine Groups A, C, Y, and W-135 Combined). Would you prepare your pharmacy director to work with the vaccine manufacturer to assure just-in-time delivery of the meningitis vaccine?

Exhibit 5: Recommendations by CDC's Advisory Committee on Immunization Practices

As a result of the increasing number of outbreaks of bacterial meningitis on college campuses in the 1990s, the Advisory Committee on Immunization Practices (ACIP) of the Centers for Disease Control and Prevention issued new recommendations regarding meningococcal vaccinations in October 1999. The guidelines recommend that healthcare practitioners talk to college freshmen and their parents about bacterial meningitis and the benefits of receiving a vaccination.

The American Academy of Pediatrics' Committee on Infectious Diseases (AAP) and the American College Health Association (ACHA) have adopted or support ACIP's recommendations.

ACIP recommends:

- Providers of medical care to incoming and current college freshmen, particularly those who plan to or already live in dormitories and residence halls, should, during routine medical care, inform these students and their parents about meningococcal disease and the benefits of vaccination. ACIP does not recommend that the level of increased risk among freshmen warrants any specific changes in living situations for freshmen.
- College freshmen who want to reduce their risk for meningococcal disease should either be administered vaccine (by a doctor's office or student health service) or directed to a site where vaccine is available.
- The risk of meningococcal disease among non-freshmen college students is similar to that for the general population. However, the vaccine is safe and efficacious and therefore can be provided to non-freshmen undergraduates who want to reduce their risk for meningococcal disease.
- Colleges should inform incoming and/or current freshmen, particularly those who plan to live or already live in dormitories or residence halls, about meningococcal disease and the availability of a safe and effective vaccine.
- Public health agencies should provide colleges and healthcare providers with information about meningococcal disease and the vaccine as well as information regarding how to obtain vaccine.

Exhibit 6: Resources

U.S. Department of Health & Human Services Centers for Disease Control and Prevention
1600 Clifton Rd.
Atlanta, GA 30333
404-639-3311
www.cdc.gov

American Academy of Pediatrics
141 Northwest Point Blvd.
Elk Grove Village, IL 60007-1098
847-434-4000
www.aap.org

American College Health Association
P.O. Box 28937
Baltimore, MD 21240-8937
410-859-1500
www.acha.org

Aventis Pasteur Inc.
Discovery Drive
Swiftwater, PA 18370
570-839-7187
www.us.aventispasteur.com

13. Would the director of pharmacy be charged with developing a plan for determining the amount of vaccine needed each day, as well as tracking the vac-

cine shipments and keeping a cold-chain record?

In an outbreak situation, Aventis Pasteur supplies the vaccine in 10-dose vials. Once the

vial is opened, all of the vaccine must be used within 10 days, otherwise, it must be disposed of. Keeping the vaccine refrigerated at between 35 and 46 degrees F at all times poses another critical logistic for your pharmacy team. Thus, you need assurance that an adequate number of refrigerators and ice chests are available at the vaccination sites. The vaccine is shipped “counter-to-counter” on dry ice in special coolers that include a thermometer and a sensor that pops if the temperature exceeds the accepted limit. When additional doses are needed, Aventis Pasteur will arrange overnight shipment, but close coordination and maintenance of cold-chain records will maintain the supply of Menomune and also prevent overstocking the vaccine.

14. How would you track all vaccine lot numbers? As is the case with many pharmaceuticals, success is based on tracking systems that are able to respond to recalls or other issues requiring accountability of supplies while under a professional’s supervision.

15. Would your director of pharmacy be prepared to make a personal commitment or assign staff to visit each and every vaccination site every day during the outbreak?

16. How would you handle media attention, especially if unfavorable? Would you prepare news releases on a regular basis? Would you assign one spokesperson for the PPO?

17. Would you be prepared to work in “outbreak conditions” for at least two months? Would

you be prepared to administer up to 25,000 vaccinations during this time frame?

18. How would you determine when the outbreak is over and make that announcement to the public? Would you consult with the state department of health, local medical societies, local media, local hospitals? Would you issue a joint statement with the department of health and the CDC that the outbreak is

As is the case with many pharmaceuticals, success is based on tracking systems that are able to respond to recalls or other issues requiring accountability of supplies while under a professional’s supervision.

over? Would you then close the temporary clinics and offer the vaccine only on an appointment basis as the crisis winds down? What would you do with any leftover vaccine?

19. When it’s all over, who and how would you publicly thank or recognize for their commitment, teamwork, and collaboration?

20. Once you’ve experienced a meningitis outbreak in your community, would you and your

staff be willing to develop a strategic plan of action, or a contingency plan, so that the PPO has a written plan to follow should a similar situation occur again? Would you share your experiences with others?

Conclusion

This fictional case points to the need for various community resources to come together to successfully manage a large-scale meningitis outbreak. An opportunity exists for managed care organizations to take a leadership role in supplementing vaccination programs provided by the department of health. When taking on this role, MCOs should be prepared to manage a number of contingencies. By working closely with the state and local department of health, the vaccine manufacturer, and the media, it’s possible to bring an outbreak of meningitis under control and provide a valuable public service. **JMCM**

William Tindall, PhD, is executive director of the American College of Managed Care Medicine in Glen Allen, Va.

References

1. Centers for Disease Control and Prevention (CDC). Prevention and control of meningococcal disease and meningococcal disease and college students—recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 2000; 49 (No. RR-7):1-20.
2. CDC. Prevention and control of meningococcal disease and meningococcal disease and college students—recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 2000; 49 (No. RR-7):1-20.
3. CDC. Prevention and control of meningococcal disease and meningococcal disease and college students—recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 1998; 46(54):3-13.
4. CDC. Summary of notifiable diseases, United States, 1991. *MMWR*. 1992; 40(53):3-12.
5. CDC. Summary of notifiable diseases, United States, 1997. *MMWR*. 1998; 46(54):3-13.
6. American Academy of Pediatrics (AAP). *Pediatrics*. 1996; 97(3):404-412.
7. AAP. *Pediatrics*. 1996; 97(No. 3):404-412.
8. CDC. Meningococcal Vaccination Information Sheet. 3/31/2000.
9. CDC. Meningococcal Vaccination Information Sheet. 3/31/2000.

ADVERTISEMENT

The Costs of Cancer: Cancer-related Conditions Can Add Dramatically to Overall Costs of Care

Pierre-Yves Cremieux, PhD
Mitchell B. Slavin, PharmD, MBA
Mark Fendrick, MD
Thomas C. Hiriak, MBA

ONE-HALF of American men and one-third of American women will develop cancer in their lifetimes. These high cancer rates and an increasing number of cancer survivors—over 8 million Americans in 2000—have significantly increased healthcare expenditures for cancer care. A recent National Institutes of Health (NIH) estimate of these expenditures is \$107 billion annually.¹ To formulate recommendations for cost-effective resource allocation in cancer management, however, it's necessary to have an understanding of the prevalence and treatment costs of specific cancers and cancer-related conditions. In addition, an understanding of cancer cost drivers (e.g., direct treatment and the treatment of comorbidities) and the types of cancer costs (e.g., hospitals, physicians, drugs) is necessary to inform sensible policy recommendations.

In the past, studies of cancer costs have rarely distinguished between costs resulting from the

direct treatment of specific types of cancer and the costs of treating conditions such as infections, nausea, or anemia that are cancer or treatment-related. The management of patients with such conditions may require significantly greater resources than similar patients without such conditions. Indeed, a recent case-control study of employees from a major U.S. corporation suggested that the additional costs of managing patients with such conditions were substantial and accounted for a significant portion of overall cancer treatment costs.²

Anemia is one of the most frequent complications of cancer therapy, but the condition has traditionally been managed conservatively because only severe cases (hemoglobin level < 8 g/dL) were thought to have an adverse impact on the patient. More recently, treatment of mild-to-moderate anemia (hemoglobin level 8-12 g/dL) has been reported to improve quality of life and functional outcomes in cancer patients receiving chemotherapy.^{3,4,5} This may lead to changes in treatment patterns and in the accompanying disease management costs.

This research examines the extent to which anemia leads to increased costs for managing cancer patients, and is based on records from a large database of managed-care health plan participants from multiple employers. A limited case control analysis was conducted that matched patients on the basis of gender, age, and cancer type (system of the body); data limitations precluded using a more extensive set of control variables. Although some single employer data sets offer a richer set of control variables, the advantage of this study is that it relies on data from mul-

iple employers. Results similar to those obtained from other data sets would provide confirmation of the relationship between anemia and the cost of cancer management.

Data and Methods

Data were obtained from the PTE-Registry™ (Practice Patterns Science Inc.), a relational database containing information on approximately 6.4 million patient treatment episodes (PTEs) experienced by over 2.1 million patients enrolled in commercial health plans (65 percent in IPA-based health maintenance organizations [HMOs], 25 percent in well-managed PPO/indemnity plans, and 10 percent in group/staff model HMOs) throughout the United States. PTEs were recorded over a two-year period from Jan. 1, 1997 to Dec. 31, 1998 and were made up of all services incurred in treating a specific medical condition (including prescription drug use and ambulatory, outpatient, and inpatient services) within a reasonable, specified follow-up period.

The PTE-registry™ provides a unique and powerful format to examine the prevalence and costs of different cancer types, and the prevalence and additional costs of cancer-related anemia in a large managed-care population. The registry uses rigorous data quality standards that result in the inclusion of only 20 percent to 30 percent of all processed participants, ensuring that prevalence rates and actual practice patterns reflect “real world” practice and are not distorted by incomplete member data, such as missing prescription drug data or out-of-network claims.

Cancer prevalence rates were determined based on patients with cancer identified from approximately 1.52 million health plan participants ≥ 18 years of age by the presence of

one or more cancer-related PTEs. All PTEs had to begin during the first year of the study interval (Jan. 1, 1997 to Dec. 31, 1997). The following year (Jan. 1, 1998 to Dec. 31, 1998) was used as a run-out interval to allow all incomplete PTEs to end. Anemia prevalence was estimated based on approximately 1.18 million health plan participants who had one or more PTEs for any condition (including cancer) within the two-year study period. Anemia was identified in cancer patients based on the presence of select ICD.9.CM diagnosis codes on incurred medical expenses.

Cost estimates were based on a “claims-incurred” basis because of the lag time associated with the payment of claims. Related claims/costs were examined because they take into account both direct claims/costs (cancer treatment) and charges for the management of complications and adverse events. This combination helps to give a more complete summary of overall cancer costs. For example, in addition to direct treatment costs such as chemotherapy and radiation therapy, related charges could include the treatment of anemia or heart failure resulting from chemotherapy. Paid charges (actual dollars paid) for claims were examined to remove the effects of differences among health plan designs. Paid charges included cost-sharing features such as co-payments, deductibles, co-insurance, and coordination of benefit savings, if any. Ineligible charges, duplicate bills, expenses over reasonable and customary levels, and any negotiated charge discounts were excluded. Claims were incorporated into PTEs

based on ICD.9 code assignments. An algorithm was developed to assign diagnosis codes to claims with missing values. When used in conjunction with procedural code and prescription drug data, the algorithm obtained a 97 to 98 percent accuracy in assigning missing ICD.9 codes.

Costs for incurred charges and medical and pharmaceutical services utilized from Jan.

der and age range who had the same cancer type.

Results

Prevalence and Overall

Cost of Cancer

Exhibit 1 shows overall cancer prevalence rates, along with the prevalence rates for the 10 most frequent cancer types. The overall prevalence of cancer was 2.04 percent (1.86 percent in men, 2.20 percent in women) and increased with age. The overall prevalence in patients age 65 and over was 5.9 times that of the 18 to 64 age group. The increase in prevalence that occurs with age is significantly greater for men than for women. For men, cancer was 8.5 times more prevalent in the 65+ age group than in the 18 to 64 age group (13.29 percent vs. 1.57 percent). For women, cancer was only four times more prevalent in the older group (8.33 percent vs. 2.06 percent). The overall prevalence is lower than the 3 percent rate reported by the National Cancer Institute’s Surveillance, Epidemiology, and End Results (SEER) program. The difference is likely to be related to the methods of defining cancer patients. This study counted patients currently undergoing treatment for

cancer, while the SEER program counts living patients who have ever had a diagnosis of cancer.

This study’s findings are consistent with the growing national costs for cancer care. Despite the low overall prevalence of cancer in the study population, cancer costs accounted for a considerable proportion (approximately 11 percent) of total healthcare expenditures. Lung cancers, along

This study’s findings are consistent with the growing national costs for cancer care. Despite the low overall prevalence of cancer in the study population, cancer costs accounted for a considerable proportion (approximately 11 percent) of total healthcare expenditures.

1, 1997 to Dec. 31, 1997 were compared for cancer patients and matched patients without cancer (1:2 ratio) of the same gender and age range (six- to nine-year range) with medical conditions involving the same body system. Cost comparisons between cancer patients with and without anemia (up to a 1:2 ratio) were performed on patients of the same gen-

Exhibit 1: Cancer Prevalence (By Gender and Age) and Related Charges

Cancer Type	Women		Men		Combined Prevalence	Overall Paid Charges
	18-64 yr	≥65 yr	18-64 yr	≥65 yr		
Overall (all cancer types)	2.06%	8.33%	1.57%	13.29%	2.04%	\$273,535,192
Skin/subcutaneous tissue	0.49	2.09	0.53	3.64	0.57	14,026,582
Breast	0.79	3.06	0.02	0.12	0.46	50,108,481
Reproductive system	0.21	0.67	0.37	5.56	0.35	37,968,379
Lymphatic/hematopoietic	0.18	0.72	0.20	0.83	0.20	38,897,439
Digestive system	0.12	0.95	0.14	1.48	0.15	33,390,437
Respiratory (lung)	0.11	0.64	0.11	1.23	0.13	40,681,776
Carcinoma in situ overall	0.19	0.24	0.04	0.27	0.12	3,411,054
Urinary tract and kidney	0.05	0.37	0.12	1.05	0.10	11,291,869
Musculoskeletal system	0.09	0.30	0.08	0.25	0.09	4,958,084
Nervous system	0.06	0.15	0.06	0.25	0.07	20,968,474
Endocrine and metabolic systems	0.09	0.09	0.04	0.09	0.06	3,804,855
Eye, ear, nose, mouth	0.04	0.13	0.05	0.22	0.04	3,891,895
Hepatobiliary system and pancreas	0.04	0.26	0.04	0.29	0.04	7,029,278
Respiratory (non-lung)	0.02	0.07	0.04	0.24	0.03	2,762,798
Circulatory system	0.0029	0.01	0.0041	0.01	0.0036	255,206
Immune disorders/blood diseases	0.0017	0.01	0.0026	0.02	0.0024	88,585

Exhibit 2: Average Yearly Charges for Cancer Patients and for Matched Patients Without Cancer for the 10 Most Costly Types of Cancer

Additional costs per health plan member per year (PMPY) for each cancer type are shown in parentheses. Average yearly charges for patients with any type of cancer were significantly ($p < .001$) greater than those for patients without cancer in each group.

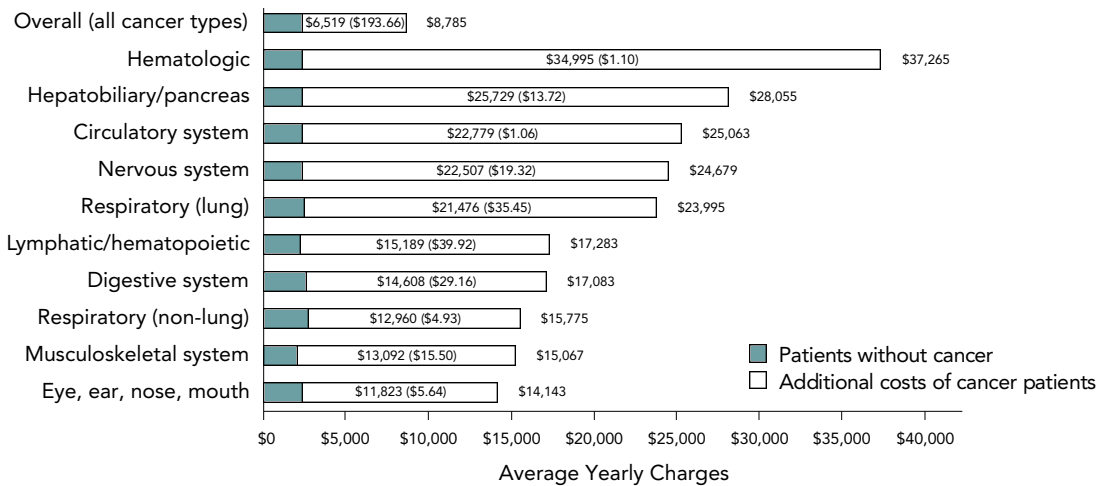
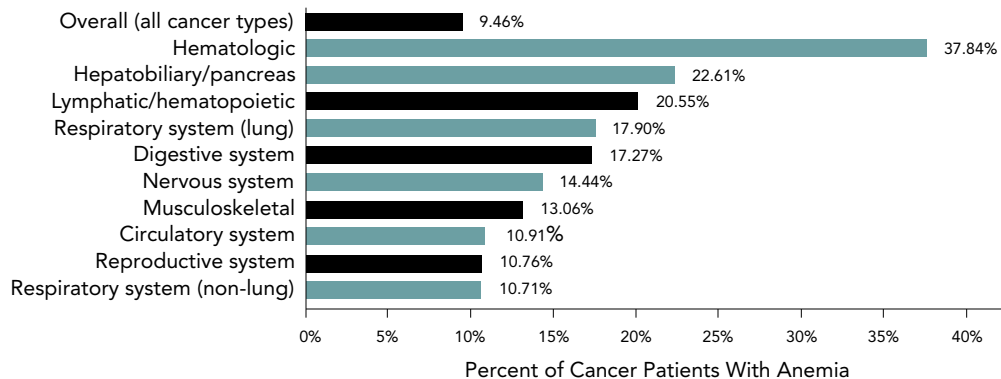


Exhibit 3: Percent of Cancer Patients With Anemia Overall and by Cancer Type



with breast and reproductive system cancers, were among the most costly (approximately \$40.7 million, \$50.1 million, and \$38.0 million in total cancer-related charges, respectively). These three cancer types account for 47 percent of the total cancer-related charges; this finding is consistent with the NIH estimate that breast, lung, and prostate cancers account for approximately half of the direct medical costs of cancer care. Other than skin cancer (which is the most prevalent but relatively inexpensive to treat) cancers of the breast, reproductive system, lymphatic/hemopoietic, digestive, and respiratory systems (lung) account for approximately 75 percent of all remaining cases. These five cancer types result in cancer-related outlays of \$201 million (approximately 74 percent) of total cancer-related costs (*Exhibit 1*).

In the overall study population, cancer patients incurred average additional charges for all medical services of \$6,519 (\$8,785 to \$2,266) when compared to patients without cancer (*Exhibit 2*). Every service category contributed to the additional costs. The additional costs per health plan member per year (PMPY) for the 10 most costly cancers (based on average costs for all services) are shown in *Exhibit 2*.

Prevalence and Associated Costs of Anemia in Cancer Patients

The prevalence of anemia in cancer patients depends on many factors, including the type and stage of cancer and the duration and intensity of treatment. In this sample, 9.5 percent

of cancer patients had anemia. *Exhibit 3* shows the prevalence of anemia in the population of 31,046 eligible cancer patients, as well as the 10 most frequent rates of anemia by cancer type. Overall, average yearly paid charges for all medical services pertaining to cancer patients with anemia were \$15,717 higher (\$25,957 vs. \$10,240) than those of matched patients with the same type of cancer who

In light of the considerable and growing economic burden of cancer in the U.S. and increasing pressure to optimally allocate resources, cost considerations must be integrated with patient outcomes and quality of life in decisions regarding cancer patient care.

were not anemic (*Exhibit 4*). This cost difference is statistically significant ($p < .001$). The added costs of anemia ranged from \$33,027 (\$43,914 to \$10,877) for patients with lymph/hemopoietic tissue cancer to \$8,460 (\$12,057 to \$3,597) for patients with skin/subcutaneous tissue cancer.

Every service category contributed in a statistically signifi-

cant way ($p < .001$) to the higher yearly paid charges for cancer patients with anemia (*Exhibit 5*). Hospitalization, however, was the major driver of the anemia cost difference. For anemic cancer patients, hospitalization was more frequent (1.1 vs. 0.4 admits on average) and of longer duration (7.9 vs. 2.4 days on average). Anemic cancer patients age 18 to 64 were hospitalized 2.9 times as often, and the length of stay averaged 5.6 additional days. Cancer patients age 65 and over with anemia were hospitalized 2.4 times as often, with the length of stay averaging 4.9 additional days.

Implications for Cancer Care

In light of the considerable and growing economic burden of cancer in the U.S. and increasing pressure to optimally allocate resources, cost considerations must be integrated with patient outcomes and quality of life in decisions regarding cancer patient care. Numerous factors influence overall costs: cancer type, cancer prevalence, specific therapies, and related medical conditions are all important determinants of the cost of treating cancer patients. This study shows that cancer patients incur significantly higher

costs than similar patients without cancer, and that cancer-related conditions such as anemia add substantially to the cost of caring for cancer patients. This suggests a possible economic case for aggressive strategies to reduce the risk of cancer and to manage related conditions. **JMCM**

Pierre-Yves Cremieux, PhD, is principal with the Analysis

ADVERTISEMENT

ADVERTISEMENT

ADVERTISEMENT

Exhibit 4: Average Yearly Paid Charges for Cancer Patients With and Without Anemia and by Cancer Type for the 10 Most Costly Cancer/Anemia Diagnoses

Paid charges for cancer patients with anemia were significantly ($p < .001$) higher than those for patients without anemia in each group.

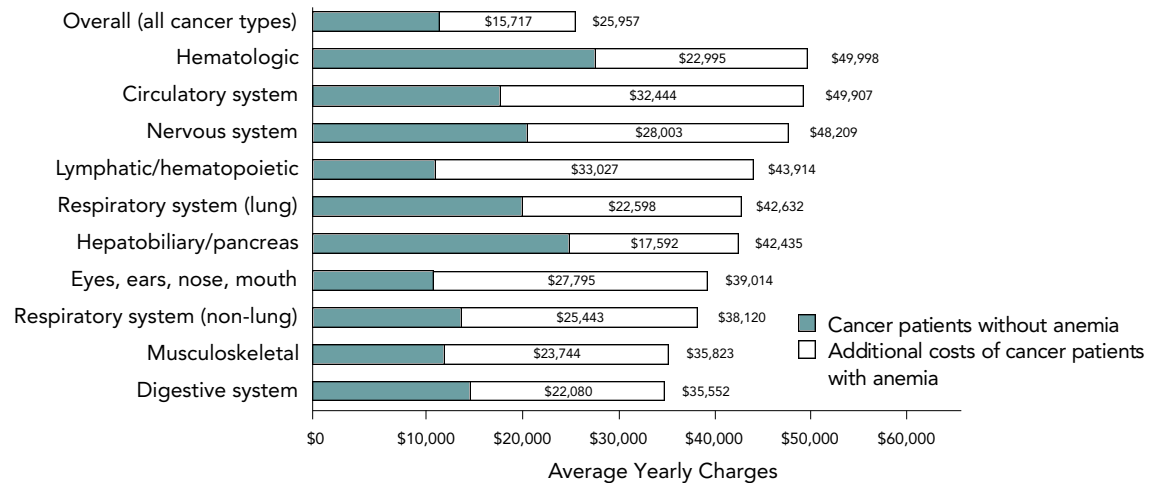


Exhibit 5: Average Yearly Paid Charges by Service Category for Cancer Patients (overall) With and Without Anemia

Average Yearly Paid Charges	Patient Group		p-value
	Cancer Without Anemia	Cancer With Anemia	
Total charges	\$10,240	\$25,957	<.001
Professional charges			<.001
Visits	\$607	\$1,016	<.001
Diagnostic tests	\$825	\$1,303	<.001
Laboratory/pathology	\$312	\$866	<.001
Medical/surgical	\$503	\$716	<.001
Prescription drugs	\$1,276	\$2,622	<.001
Inpatient services	\$695	\$2,180	<.001
Facility charges			<.001
Outpatient visits	\$785	\$1,723	<.001
Hospital inpatient	\$3,534	\$11,774	<.001
Other charges			<.001
Alternative site services	\$308	\$851	<.001
Other medical services	\$1,396	\$2,906	<.001

Group/Economics, Cambridge, Mass. Mitchell B. Slavin, PharmD, MBA, is executive director, clinical affairs at Ortho Biotech Products, LP, Raritan, N.J. A. Mark Fendrick, MD, is associate professor, Division of General Medicine, Department of Internal Medicine & Health Policy Management, University of Michigan School of Medicine, Ann Arbor. Thomas C. Hiriak, MBA, is director of strategic accounts, Ortho Biotech Products LP, Raritan, N.J., George Kosicki, PhD, is senior associate at the Analysis Group/Economics in Cambridge, Mass.

Acknowledgments

The authors gratefully acknowledge Practice Patterns Science Inc. for assistance with data collection and analyses presented in this research. The opinions expressed in this paper are the authors' and do not necessarily reflect the opinion of Practice Patterns Science Inc. or Ortho Biotech Products, LP

This study was funded by Ortho Biotech Products LP, Raritan, N.J.

References

- Schuetz HL, Tucker TC, Brown ML et al. The costs

of cancer care in the United States: implications for action. *Oncology*. 1995;9(Suppl 11):19-22.

- Barnett A, Birnbaum H, Cremieux P, Fendrick AM, and Slavin M. The costs of cancer to a major employer in the United States: a case-control analysis. *Am J Managed Care*. 2000;6(11):1243-1251.

- Glaspj J, Bukowski R, Steinberg D, et al. The impact of therapy with epoetin alfa on clinical outcomes during cancer chemotherapy in community oncology practice. *J Clin Oncol*. 1997;15(3):1218-1234.

- Demetri G, Kris M, Wade J, et al. Quality-of-life benefit in chemotherapy patients treated with epoetin alfa is independent of disease response or tumor type: results from a prospective community oncology study. *J Clin Oncol*. 1998;16(10):3412-3425.

- Gabrilove JL, Cleeland CS, Livingston RB, et al. Clinical evaluation of once-weekly dosing of epoetin alfa in chemotherapy patients: improvements in hemoglobin and quality of life similar to three-times-weekly dosing. *J Clin Oncol*. 2001;19(11):2875-2882.

Anemia-Related Costs for Cancer Patients

Arnold Barnett, PhD
Pierre-Yves Cremieux, PhD
A. Mark Fendrick, MD
Martine George, MD, MSc
Mitchell B. Slavin, PharmD, MBA

AN ESTIMATED 1.3 million Americans are newly diagnosed with malignant cancer every year.¹ The life-threatening disease is often treated aggressively, resulting in high levels of healthcare utilization and a substantial number of treatment-related adverse effects. In a previous study, it was estimated that each newly diagnosed cancer patient would on average incur *additional* expenses of approximately \$80,000 over the course of many years of cancer treatment.² These additional costs reflect medical expenses and work losses, and are estimated by matched comparisons between cancer patients and similar individuals without cancer.

Surprisingly, costs directly related to cancer, such as surgery, chemotherapy, and radiation, account for less than half of these additional costs. Comorbidities and related treatment contributed the most.² These “secondary” conditions are extremely varied and include ailments frequently associated with cancer (e.g., nausea, anemia, and neutropenic fever) as well as some that are not commonly associated with the disease (e.g., dental procedures and infections). As a result, the added costs varied considerably. Cancer patients suffering both anemia and nausea had additional costs of \$185,000 over the course of cancer treatment; the corresponding

figure for cancer patients with neither of these conditions was \$69,000. Cancer patients with anemia or nausea but not both had additional costs of about \$100,000 over the course of treatment when compared to individuals without a cancer diagnosis.

Although the previous study noted these patterns, it did not investigate an important follow-up question: Were the additional costs caused by anemia/nausea *per se*, or were they merely associated with other factors that arise simultaneously with anemia/nausea? This paper addresses that question, concentrating primarily on anemia because diagnosed anemia was far more common than diagnosed nausea among patients studied. Because anemia is associated with type of cancer, severity of disease, and type of treatment, this research explored the degree to which the large cost difference between anemic and non-anemic cancer patients is attributable to these factors. If only a fraction of the cost difference is explained by these factors, that circumstance would suggest that anemia itself accounts for much of the remaining cost difference.

Methods

Study Population

Comprehensive data from 1996 to 1998 from a large employer was used to identify anemic and non-anemic cancer patients, and to study their healthcare utilization and cost profiles. Retrospective claims data was analyzed for more than 100,000 active employees and retirees of a Fortune 100 company, as well as spouses and dependents covered by the company's generous health plan. Medical-care expenditures for both anemic and non-anemic cancer patients was observed; for active employees, the research also compared absences from work. There were 4,204 cancer patients in this data set; 1,146 (27 percent) with at

least one diagnosis of anemia and 3,058 (73 percent) without such a diagnosis. Exhibit 1 shows the sample sizes of patients and the way in which the samples were organized for this analysis.

The available data included demographic information, employment status, healthcare utilization, and disability claims. For all individuals, the records showed year of birth, gender, and ZIP code of residence. For employees, the data indicated whether or not the worker was active or retired, and unionized or white collar. Healthcare data on medical and prescription drug expenditures included physician diagnoses (ICD-9 codes), procedure (CPT) codes, and prescription drug (NDC) codes that allowed the identification of illnesses and related treatment patterns. Periods of disability were recorded for active employees. Additional absenteeism due to illness (for which disability claims were not filed) was imputed from hospitalizations, and from medical visits that occurred during regular workdays.

Cancer patients were defined as individuals with two or more principal diagnoses for malignant cancer (ICD-9 codes 140 through 208, excluding 173, which reflects malignant neoplasms of the skin) at least 30 days apart and no more than one year apart. By this criterion, it was possible to distinguish individuals who actually suffered from cancer from others tested for cancer but who did not have it. Non-melanoma skin cancers were excluded in order to keep the study consistent with SEER cancer statistics.¹ Cancer patients with anemia were defined as those having at least one medical claim for anemia (ICD-9 codes 280 through 285, excluding 282, hereditary anemia) during the study period. The analysis considered all cancer patients in the dataset with anemia, and a control group of comparable patients who had cancer but not anemia.

Stratified Case-Control and Regression Designs

To estimate the additional costs for cancer patients systematically related to anemia per se, the impact of anemia was separated from that of other cost-driving factors that may be correlated with anemia but are not *caused* by anemia. In general, these other factors fit into two categories: general demographic variables (e.g., age, gender) and disease-specific factors (e.g., type of cancer, severity of illness or intensity of treatment). As Exhibit 2 demonstrates, anemic cancer patients in this dataset are somewhat older and more likely to be female than the non-anemic cancer population. In

addition, anemia typically affects cancer patients who undergo intensive chemotherapy or radiotherapy, and/or experience a particularly virulent form of cancer.

The ideal would be to match anemic cancer patients with cancer patients without anemia. The match would consider various demographic, disease, and treatment characteristics. However, despite the large size of the dataset used for this study, such precise matching was rarely possible. Instead, a three-step approach was followed. First, for all cancer patients—whether or not they suffered anemia—matched comparisons were sought with similar individuals covered by the same

employer who did *not* have cancer. Because healthcare costs are influenced by age, gender, and socio-economic status, and because these characteristics may be different for cancer patients and non-cancer patients, cancer patients were matched with non-cancer controls on these dimensions.^{3,4} Socio-economic status was approximated by ZIP code of residence and job classification. Ideally, the case and controls would be of the same age, gender, and job classification, and would live in the same ZIP code. Presumably, the cancer patients would, absent cancer, have incurred costs similar to those of their socio-economic and demographic match-

Exhibit 1: Sample Sizes and Organization

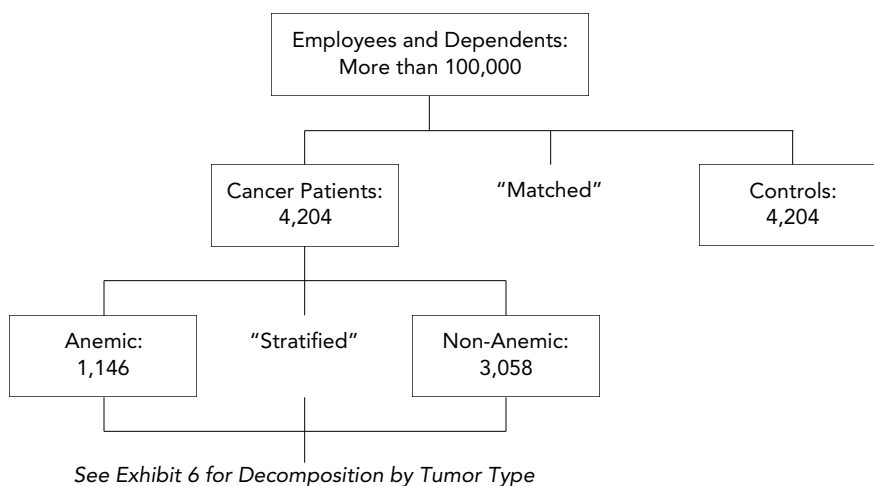


Exhibit 2: Comparison of Demographics and Disease Characteristics

	Overall Population	Anemic Cancer Patients	Non-Anemic Cancer Patients
Age (mean years)	47.8	56.1*	55.1
Female (%)	52.3	54.7*	51.5
Active Employees (%)	23.0	34.1	36.1
Spouses and Dependents (%)	52.4	47.5	45.6
Treated with Chemotherapy (%)	—	-35.6*	20.7
Treated with Radiotherapy (%)	—	-27.8*	20.7
Lymph Node Involvement (%)	—	-14.5*	8.4
Distant Metastasis (%)	—	-41.0*	26.3

Note: * Indicates that anemic cancer patients are statistically different from all other cancer patients (P-Value <0.05)

es (i.e., the controls offer an appropriate baseline for non-cancer costs). Therefore, the *additional* costs for a given group of cancer patients is the mean difference between their actual healthcare costs and the costs of their matched controls.

In this study, 92 percent of cancer patients were paired with non-cancer controls. It was possible to match 57 percent exactly on all four dimensions: age, gender, job-classification, and residential ZIP code. The remainder were matched exactly on gender and job-classification and allowed slight variation in age and ZIP code. (ZIP codes had to be in the same metropolitan area and have similar mean incomes.) These variations and other details regarding the matched comparisons are described in Barnett et al. (2000).

Once the additional costs were computed for cancer patients, the researchers proceeded to the second step. In this step, cancer patients were stratified according to disease and treatment characteristics and placed in homogeneous “buckets.” To characterize “type of cancer” with sufficient precision, the researchers took note of the American Joint Committee on Cancer’s (AJCC) staging system for the extent and severity of different types of malignant neoplasms. The system presumes that tumors located in the same anatomical site and demonstrating the same histology will follow very similar patterns of growth and development.⁵ The stage of the disease is a function of the size and location of the primary tumor, the extent of lymph node involvement, and the presence of a distant metastasis. Although retrospective claims data do not provide exact staging information, ICD-9 codes indicating the location of the primary tumor and the spread of the disease to the lymph

nodes or other distant locations provide a reasonable proxy. Staging of the disease, however, corrects only partially for variations in disease-induced health costs. Two individuals experiencing the same type of cancer at a similar stage may elect different treatment regimens because of overall health, age, or preferences. Therefore, patients were classified based on the combination of surgery, chemotherapy, and radiation therapy they received. In theory, over the disease, stage, and treatment patterns that

to compare the additional costs for anemic cancer patients within a given bucket to those for non-anemic patients. Comparisons were made in 406 disease/stage/treatment buckets. Since the mean cost difference among the groups could not reflect differences in type of cancer, severity of disease, or type of treatment, it is likely to be driven largely by whether or not the cancer patient suffers from anemia.

To supplement the results from this stratified case-control analysis, a regression analysis was performed. In the regression model, researchers controlled for the variables around which the case control and stratification approaches were structured (age, gender, ZIP code, treatment, stage of disease, and type of cancer). Regression analysis made it possible to use data for the minority of patients without counterparts in the matched comparisons. It also allowed researchers to control for nausea.

Underlying both the stratified case-control analysis and the regression analysis is the viewpoint that, after important extraneous influences have been “weeded out,” it is more likely that anemia itself is driving the differences in costs between cancer patients with anemia and those without it. Based on these methods it is not possible to *definitively* identify anemia as the *sole* cause of cost differences, for there is always the possibility that cost differences arising from unobserved characteristics are being attributed to anemia. However, it’s possible to ensure that anemia is not simply a proxy for differences in disease, treatment, or the other observable patient characteristics available in this data set.

Data Analysis

Analysis was conducted on medical and drug costs as well as the

In this study, 92 percent of cancer patients were paired with non-cancer controls. It was possible to match 57 percent exactly on all four dimensions: age, gender, job-classification, and residential ZIP code.

were identified, there are 720 buckets of highly similar cancer patients [30 disease locations (breast, lung, etc.) x 3 disease stages (primary only, lymph node metastasis, distant metastasis) x 8 treatment regimens (based on surgery, chemotherapy, radiotherapy, or no known treatment)].

In the third step, patients in each bucket were divided into two groups: those whose medical records included anemia and those whose records did not. It was then possible

number of days missed from work by active employees. “Costs” refers to payments made by the employer to healthcare providers for medical care and prescription drugs. For anemic patients, days lost from work are allocated to 10-day periods in relation to the first diagnosis for anemia. A similar profile was created for the non-anemic patients, who are compared to anemia patients based on the time since the first cancer diagnosis. This ensures that work loss for anemic and non-anemic patients is compared at similar times in the development of the disease.

As noted in the previous subsection, analysis began by “purging” non-cancer-related healthcare costs, with separate calculations for anemic and non-anemic cancer patients. Then, for each stratum (e.g., lung cancer patients with localized disease treated with chemotherapy alone), researchers calculated the *difference between* the mean annual additional cost of cancer for anemic patients and that for non-anemic cancer patients. To obtain an overall statistic, results were then weighted from individual buckets to reflect the distribution of anemic patients among the various disease locations, stages, and treatments. If, for example, anemic cancer patients with localized lung cancer treated with chemotherapy alone constituted 5 percent of all anemic cancer patients, researchers weighted the cost-difference statistic for that bucket by .05. In short, they estimated the mean additional cost of anemia (DC) across all malignant cancers by the approximation,

$$DC^a \hat{A} f_j D_j$$

where f_j is the fraction of all anemic cancer patients who fell in bucket j , and D_j is the difference in additional costs between anemic and non-anemic cancer patients in bucket “ j .” The summation is taken over all buckets.

This approach to quantifying the cost of anemia in cancer patients is straightforward, but it has some

limitations. First, 5.9 percent of anemic cancer patients did not have non-anemic counterparts, and thus could not be included in the matched comparisons. Second, the impact of demographic differences between anemic and non-anemic cancer patients is not accounted for in the *second* step of the stratified case-control design. Recall that in the first step each cancer patient was compared to a non-cancer control of the same age and gender. In the second step, however, cancer patients of different age, gender, and socio-economic status may have been placed into the same bucket. For example, a 42-year-old anemic woman with lung cancer who gets chemotherapy will be in the same bucket as a 60-year-old non-anemic man who also has lung cancer and gets chemotherapy. When the additional costs for these two patients are contrasted, there is a difference in age and gender as well as anemic status.

Because of such issues, the stratified case-control method was accompanied with regression analysis. Regression models have their own limitations; but if the two approaches yield similar estimates of the additional costs of anemia, the result achieves a credibility

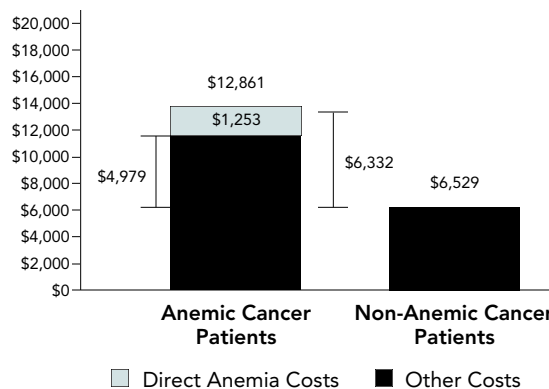
that transcends the imperfections of the methods that produced it.

Results

Annual medical and pharmacy drug costs for both anemic and non-anemic patients appear in Exhibit 3. The analysis shows that medical/drug costs for anemic cancer patients averaged \$14,562 per year, compared to only \$1,701 for their non-cancer controls. Thus, their average annual additional cost was \$14,562 - \$1,701 = \$12,861. For non-anemic cancer patients, the corresponding additional cost was \$6,529. Thus, the additional cost of cancer was almost twice as high for anemic cancer patients as for non-anemic ones (\$12,861 vs. \$6,529).

A portion of this last difference is directly related to the diagnosis and treatment of anemia (e.g., lab costs, epoetin alfa therapy, transfusions). These direct anemia costs are identified by a diagnostic code for anemia or, in less than 5% of the cases, by a drug code for epoetin alfa. These costs represent \$1,353 (21 percent) of the \$6,332 (= \$12,861 - \$6,529) difference. The remainder can be divided into two categories: costs related to the symptoms and side effects of anemia (e.g., fatigue) but not identified with an anemia code; and costs that are concomitant with *but unrelated* to

Exhibit 3: Comparison of Additional Medical and Rx Costs for Anemic and Non-Anemic Cancer Patients (Relative to Similar Individuals Without Cancer)



Note: Direct anemia costs are defined as costs for medical claims with either a diagnostic code for anemia or a drug code for epoetin alfa.

Exhibit 4: Sample of Calculation Used to Determine the Additional Cost of Anemia

Tumor Type	Treatment	Stage	Additional Cost for Anemic Cancer Patients		Additional Cost for Non-Anemic Cancer Patients		Difference in Mean Costs	Weight	Weighted Difference in Mean Costs
			Annual Cost	No. of Obs.	Annual Cost	No. of Obs.			
			[1]	[2]	[3]	[4]	[5]=[1]-[3]	[8]=[2]/1,146	[9]=[8]*[5]
Lung	Chemo Only	Distant Metastasis	13,732	11	13,761	13	-29	0.0096	0
		Primary Only	10,309	2	11,896	9	-1,587	0.0017	-3
	Chemo and Radio	Distant Metastasis	22,629	28	19,975	47	2,654	0.0244	65
		Primary Only	17,997	2	13,442	11	4,556	0.0017	8
	Radio Only	Distant Metastasis	4,967	4	12,008	27	-07,041	0.0035	-25
		Primary Only	10,003	2	8,717	11	1,286	0.0017	2
	Surgery Only	Distant Metastasis	15,968	2	5,062	5	10,906	0.0017	19
		Primary Only	11,979	1	8,910	15	3,069	0.0009	3
	Surgery, Chemo	Distant Metastasis	30,268	3	11,379	8	18,889	0.0026	49
		Distant Metastasis	28,583	12	23,830	19	4,752	0.0105	50
	Surgery, Chemo, Radio	Distant Metastasis	28,781	5	17,636	12	11,145	0.0044	49
	Surgery, Radio	Distant Metastasis	13,044	9	7,881	33	5,163	0.0079	41
		Distant Metastasis	35,744	1	10,184	1	25,560	0.0009	22
Treatment Unknown	Distant Metastasis	5,289	13	5,493	70	-204	0.0113	-2	
	Primary Only								
Breast	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	
Total for All Cancers			\$12,336	1,146	\$6,034	3,058	\$6,302	1.0000	\$3,775

Note: Lung cancer cases—shown in full here for illustrative purposes—constitute 9% of all cancer cases with anemia.

Totals in columns [1], [3], and [5] differ slightly from the totals in Exhibit 3 because some anemic patients did not have non-anemic counterparts.

anemia. The direct anemia costs (with anemia code) plus the costs associated with the symptoms and side effects of anemia (without anemia code) form the total anemia-related costs that are the focus of this study.

The stratification to calculate the total anemia-related additional medical and pharmacy costs is outlined in Exhibit 4. For example, there are 28 anemic lung cancer patients with distant metastasis treated with chemotherapy and radiotherapy. On an annual basis, the additional cost of cancer associated with these patients is \$2,654 greater than for their non-anemic counterparts in the same bucket. These 28 patients comprise 2.4 percent of all 1,146 total anemic cancer patients in the analysis, so the statistic for the group (\$2,654) gets 2.4 percent weight in the anemia cost calculation. Proceeding this way with all observed combinations of

tumor type, treatment patterns, and stages, the net additional medical and pharmacy costs were estimated at \$3,775 per anemic cancer patient per year, compared to non-anemic cancer patients.

Exhibit 5 provides regression results to evaluate the robustness of the stratified analysis. The coefficient on the anemia variable, \$3,556, is close to the estimated cost of anemia, based on the stratified case control (\$3,775). This outcome corroborates that anemia in cancer patients, exclusive of other factors, is identified with increased costs of approximately \$3,775 per year over the course of cancer. Exhibit 6 provides a breakdown of the additional costs of anemia by cancer type, and suggests that these additional costs vary significantly with tumor location. Interestingly, the regression coefficient for nausea is higher than ane-

mia, suggesting that nausea is a major cost driver in the rare instances when it arises. (Because nausea was rare and only weakly correlated with anemia among cancer patients its absence from the case control “bucket” analysis does not materially compromise the findings.)

Based on claims that include an indication of anemia, it is estimated that approximately \$1,353 per year is spent on the direct diagnosis and treatment of anemia among cancer patients. That figure accounts for about 36 percent of the \$3,775 increase in annual costs for anemic cancer patients over non-anemic ones. It follows that about 64 percent of the cost of anemia in cancer patients is indirectly associated with the diagnosis and treatment of anemia. It appears that such anemia-related conditions are associated with annual costs of approximately \$2,422 (= \$3,775 - \$1,353) per patient.

Exhibit 5: Regression Results

Adjusted R-Squared = 0.3291
 Number of Observations = 4,378

Dependent Variable	Healthcare Costs			Days Missed From Work		
	Parameter Estimate	Standard Error	P-Value	Parameter Estimate	Standard Error	P-Value
Intercept	6,186	2,664	0.020	-42.718	40.628	0.293
Anemia	3,556	381	0.000	8.840	3.560	0.013
Nausea	5,428	617	0.000	11.138	6.006	0.064
Demographics:						
Age	-198	78	0./011	4.504	4.739	0.342
Age Squared	1.35	0.8	0.107	2.178	1.552	0.161
Gender (female=1)	-997	578	0./084	NA		
Health Plan	560	790	0.479	-0.023	0.015	0.129
Spouse or Dependent	1,611	846	0.057	NA		
Retired	1,591	848	0.061	NA		
Per Capita Income (by ZIP code)	-0.21	0.1	0.033	-0.002	0.001	0.070
Per Capita Income Squared	0.00	0.0	0.126	0.000	0.000	0.218
Stage of Cancer						
Distant Metastases	4,257	410	0.000	14.017	3.840	0.000
Lymph Node Metastases	4,174	585	0.000	11.539	5.201	0.027
Treatment (reference=none):						
Chemotherapy (Yes=1)	5,551	430	0.000	9.404	3.904	0.016
Radiotherapy (Yes=1)	5,759	432	0.000	9.329	4.113	0.023
Surgery (Yes=1)	2,563	353	0.000	7.940	3.263	0.015
Types of Cancer (ref=Testicular)						
Karposi Sarcoma	21,052	5,588	0.000	-2.810	35.098	0.936
Leukemia	10,151	1,868	0.000	17.651	13.257	0.183
Brain	10,127	1,800	0.000	41.051	11.804	0.001
Pancreas	8,347	2,263	0.000	23.106	17.575	0.189
Lymph. Sar.	7,149	3,119	0.022	11.357	30.824	0.713
Other Digestive	7,041	2,578	0.006	50.296	20.136	0.013
Esophagus	6,869	2,340	0.003	26.143	16.449	0.112
Kidney	6,350	1,835	0.001	12.063	12.314	0.327
Multiple Myeloma	6,294	2,169	0.004	25.963	15.356	0.091
Stomach	6,253	2,478	0.012	34.235	16.828	0.042
Hodgkins Disease	5,931	2,168	0.006	24.821	14.836	0.095
Liver	5,498	2,329	0.018	20.856	16.817	0.215
Lung	5,099	1,681	0.002	18.323	10.807	0.090
Bone	4,883	2,135	0.022	27.357	15.922	0.086
Other Nervous System	4,730	2,664	0.076	33.070	20.777	0.112
Other Lymphoma	4,685	1,791	0.009	15.885	11.820	0.179
Other Respiratory	4,631	1,928	0.016	15.719	13.517	0.245
Ill Defined	4,446	1,883	0.018	25.398	12.817	0.048
Oral	4,285	1,864	0.022	8.434	12.379	0.496
Bladder	4,036	1,791	0.024	12.447	11.707	0.288
Female Genital	3,527	1,744	0.043	24.930	13.487	0.065
Colo-Rectal	2,942	1,686	0.081	8.760	10.903	0.422
Endocrine	1,712	1,900	0.368	22.299	13.158	0.090
Prostate	1,628	1,643	0.322	8.648	10.368	0.404
Soft Tissues	987	2,202	0.654	17.223	16.294	0.291
Melanoma	835	1,889	0.659	17.508	12.710	0.169
Breast	798	1,663	0.631	14.013	11.019	0.204

Exhibit 6: Summary of Cost of Anemia by Type of Cancer

Cancer	Number of Observations		Additional Cost of Anemia	Number of Observations		Additional Days Lost Due to Anemia
	Anemia	No Anemia	Weighted Mean	Anemia	No Anemia	Weighted Mean
Lymphosarcoma	2	8	\$19,886			
Other Lymphomas	46	110	12,942	16	25	36.2
Stomach	11	12	9,603	6	5	29.3
Kidney	31	85	9,579	11	41	20.2
Bone	13	35	7,655	5	8	-13.2
Brain	43	99	6,365	20	41	-2.2
Female Genital	86	202	5,626	7	23	34.8
Other and Ill-Defined	29	71	5,169	9	33	-5.5
Leukemias	45	67	4,847	15	20	4.8
Bladder	26	133	4,758	11	59	17.6
Other – Digestive	11	13	4,486	4	6	43.3
Other – Respiratory	17	53	4,444	5	16	56.5
Liver	11	23	4,157	4	6	24.5
Endocrine Glands	22	73	4,080	7	28	26.8
Colo-Rectal	127	240	3,753	46	95	18.0
Pancreas	14	18	3,723	3	3	-57.9
Lung	95	281	3,347	44	108	14.8
Testicular	6	27	3,242	5	22	6.8
Oral Cavity and Pharynx	26	73	2,500	8	37	35.7
Hodgkins Disease	10	28	2,497	5	14	22.2
Breast	265	806	2,333	28	65	-14.4
Other – Nervous	6	15	1,953	1	1	-105.7
Multiple Myeloma	20	19	1,763	6	11	34.6
Prostate	153	441	977	84	238	-3.7
Malignant Melanoma	15	90	950	3	44	8.2
Soft Tissue	8	25	-5,953	4	11	-11.8
Esophagus	8	11	-7,297	4	4	-38.1
Total (STD)	1,146	3,058	\$3,775 (438)	361	964	8.4 (3.7)

Note: For individual cancers, sample sizes are larger for medical costs than for workloss costs because the former include retirees and spouses in addition to employees.

Therefore, early detection and more aggressive treatment of anemia—while increasing the direct costs of treatment—could help reduce other large medical and prescription costs associated with anemia, as well as spare patients from considerable discomfort and suffering.

Based on a similar methodology, Exhibit 7 maps additional work loss resulting from anemia before and after its first occurrence, and compares it with non-anemic cancer patients. Exhibit 7 suggests that up to four weeks prior to the onset of diagnosed anemia, there is no difference in work loss between anemic and non-anemic cancer patients. However, in the first two months following the initial diagnosis (40 working days), anemic patients appear to lose an additional 5.3 days

of work, or 13 percent of their working time, due to the adverse impact of anemia. For the first year after anemia was diagnosed, the additional work loss among anemic patients averaged 8.4 days. Observed disability data lead to the estimate that it costs the employer about \$133 for every person-day of missed work. The 8.4 days of additional work loss, therefore, translate into approximately \$1,117 (= 8.4 x \$133) in average work-loss costs. The regression results in Exhibit 5 yield a similar outcome: the anemia coefficient suggests 8.8 days of work loss (\$1,170).

Discussion

Many chemotherapy and radiotherapy regimens often result in anemia. Although not always life-threat-

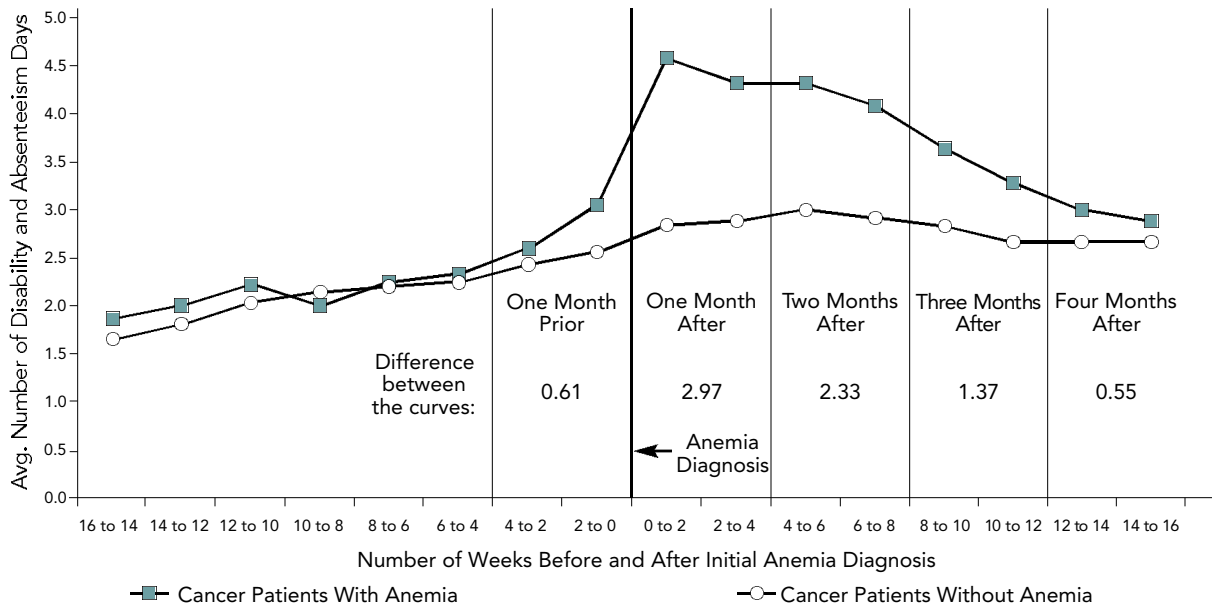
ening, this anemia or decrease in hemoglobin level frequently causes fatigue, decreased functional capacity, and lower quality of life.^{6,7} Using a comprehensive retrospective claims database from a large employer, it is possible to estimate in dollar terms the consequences of anemia among cancer patients, above and beyond the costs arising from the cancer itself.

There are limitations in drawing inferences from this claims database. There is the possibility of inaccurate diagnostic coding and incomplete assembly of claims (e.g., missing claims, multiple plan coverage). In addition, the results of this study reflect the age and lifestyle of this particular company's workforce and the geographic locations where this company operates. Finally, there is always the

ADVERTISEMENT

Exhibit 7: Work Loss Analysis for Employees With Cancer—With and Without Anemia

N = 209 Anemic Patients, N = 540 Non-Anemic Patients



chance that the key variable—*anemia*—may be correlated with some unobservable or missing variables and so may be credited with an influence actually exerted by these variables. However, disease and treatment characteristics have been controlled for, and they are likely to be the main cost drivers that could be correlated with anemia. Therefore, the results offer a credible first estimate of anemia's economic impact among cancer patients.

After controlling for both patient-specific and disease-specific factors, the additional medical and prescription costs of anemia in cancer patients, exclusive of other concomitant effects, were approximately \$3,775 per year, of which \$1,353 results directly from the diagnosis and treatment of anemia. This result is an average across different cancer types, treatment, and disease stages, and it was corroborated with regression analysis. In addition, anemic cancer patients within the workforce show greater absenteeism than other cancer patients. This additional work loss is most apparent in the two months follow-

ing diagnosis of anemia (five extra days or 10 percent of work time), but its impact is still felt after four months and averages eight days over the first year. The associated dollar cost is estimated at approximately \$1,117. Patients with anemia experience, on average, \$4,892 in additional costs from treatment (\$3,775) and work loss (\$1,117).

The benefits of aggressive treatment of anemia to patients are well established.^{6,7,8} The preceding economic analysis suggests that the direct costs of treating anemia more aggressively among cancer patients may be substantially offset by reduced medical and work-loss expenditures. **JMCM**

Arnold Barnett, PhD, is George Eastman Professor of Management Science, School of Management Science, Massachusetts Institute of Technology, Cambridge, Mass. Pierre-Yves Cremieux, PhD, is principal with the Analysis Group/Economics in Cambridge, Mass. A. Mark Fendrick, MD, is associate professor, Division of General Medicine, Department of Internal Medicine & Health Policy Management at the University of Michigan School of

Medicine in Ann Arbor. Mitchell B. Slavin, PharmD, MBA, is executive director, clinical affairs, at Ortho Biotech Products LP, Raritan, N.J.

Acknowledgments

Research support for this article was provided by Ortho Biotech Products LP, Raritan, N.J.

References

- Kosary CL, Ries LAG, Miller BA, et al. (Eds). SEER Cancer Statistics Review, 1973-1992: Tables and Graphs. Bethesda: National Cancer Institute, NIH Pub. No. 96-2789;1995.
- Barnett A, Birnbaum H, Cremieux P, Fendrick AM, and Slavin M. The costs of cancer to a major employer in the United States: a case-control analysis. *Am J Managed Care.* 2000;6(11):1243-1251.
- U.S. Census Bureau. Statistical Abstract of the United States: 2000 (Tables 163 and 228). Washington, DC: Government Printing Office; 2000.
- Mackillop WJ, Zhang-Salomons J, Boyd CJ, Groome PA. Associations between community income and cancer incidence in Canada and the United States. *Cancer.* 2000;89(4):901-912.
- Fleming ID, Cooper JS, Henson DE, et al. (Eds). AJCC Cancer Staging Manual. Philadelphia: Lippincott Williams & Wilkins; 1997.
- Glaspy J, Bukowski R, Steinberg D, et al. The impact of therapy with epoetin alfa on clinical outcomes during cancer chemotherapy in community oncology practice. *J Clin Oncol.* 1997;15(3):1218-1234.
- Demetri G, Kris M, Wade J, et al. Quality-of-life benefit in chemotherapy patients treated with epoetin alfa is independent of disease response or tumor type: results from a prospective community oncology study. *J Clin Oncol.* 1998;16(10):3412-3425.
- Gabrilove JL, Cleeland CS, Livingston RB, et al. Clinical evaluation of once-weekly dosing of epoetin alfa in chemotherapy patients: improvements in hemoglobin and quality of life similar to three-times-weekly dosing. *J Clin Oncol.* 2001;19(11):2875-2882.

ADVERTISEMENT

Physicians Speak Out on Consumers' Use of the Internet for Medical Consultation: Results of a Delphi Study

W.N. Tindall, PhD, B.R. Siecker, PhD, J.M. Boltri, MD

Summary

Pfizer Health Solutions recently conducted a collaborative partnership program with the National Association of Managed Care Physicians to assess physicians' opinions on the growing role of the Internet in healthcare. The research program involved administering a Delphi Survey Technique to a group of physician leaders from Boston and Atlanta. The goal was to gather a valid consensus of their beliefs and opinions about consumers who use the Internet both as a health resource and as a means of obtaining a consultation from a physician. The study further explored how physicians, having firsthand knowledge of managed care markets, might develop a structure for compensating provider physicians for the time they spend consulting with patients who are empowered with information gleaned from the Internet.

Key Points

Forty-seven physicians completed both rounds of the survey. Among their strongest-held beliefs and opinions:

- The Internet will continue to grow as a consumer resource for health, disease, drug information, and performance and health measures.
- A gap remains between physicians and consumers on how best to use the Internet for mutual benefit.
- The consumer movement will result in physicians accepting more accountability for their actions.
- Direct-to-consumer advertising will drive consumers to specific online sites.
- Internet resources will change healthcare decision tools.

Survey participants also gave 390 written comments to nine open-ended questions. Most comments supported some type of E&M code for Internet consultation, but physicians gave varied opinions on how to achieve it. They cited lack of provider leadership and lack of health plan initiative as the two biggest obstacles to achieving a reimbursement scheme that reflects time spent with Internet-empowered patients.

AMERICA'S GROWING CONSUMERISM is affecting healthcare professionals. At issue are those consumers who rely on the Internet as if it were the world's medical library. The Internet gives consumers access to the best and worst of medical content—clinical information, clinical research, support groups, and health-related Web sites placed by payers, providers, employers, and pharmaceutical manufacturers. Consumers' increasing ability to glean new health knowledge online, combined with their misunderstandings, misperceptions, and indignations about managed care, is resulting in a patient group

that knows more, expects more, and asks for more benefits, access, and treatment choices.

In its purest form, healthcare information technology can be used to enhance the delivery of more efficient and more cost-effective care to patients. But it's important to consider that the new-found ease of delivering healthcare information online also affects

- the physician-patient relationship;
- patient privacy, as medical records are increasingly stored online;
- physician reimbursement, as insurers adjudicate claims online in real time and pay claims electronically; and

• systems for compensating physicians who spend more time treating patients armed with Internet knowledge of their diseases and treatment options.

Although a more knowledgeable consumer is an asset to any physician's ability to explain her diagnosis and treatment plans, the increased length of office and consulting time to deal with more complex questions from well-informed patients is not a compensated service under most health plans. Research shows that employees who are involved in their own treatment make healthier and more productive workers, but health plans seemingly are doing little in terms of incentives or changes to the patient-physician interface to stimulate the individual's involvement. For example, many patients are able to e-mail their physicians, yet if physicians decide to answer those patients, there is no E&M code, or other procedural code, to compensate the physician for the time he spends responding to in-depth and complex questions.

Survey Technique and Objectives

From the outset, Pfizer Health Solutions (PHS) and the National Association of Managed Care Physicians (NAMCP) determined that the best way to gather quantifiable opinions from physicians in an unbiased way was to apply a Delphi Survey Technique.

Created by the Rand Corp., the Delphi Technique is a practical and valid method for gathering an array of opinions from targeted experts and thought leaders in order to build a valid consensus. The technique often is used to evaluate marketplace trends, gather new ideas, assess problem-solving alternatives, and forecast near-future events using small research groups.

The Delphi Technique offers several advantages:

- protects anonymity of participants
- gauges trends in an inexpensive format
- eliminates social pressure and dominance by a strong personality
- facilitates independent thinking
- provides reliable consensus and forecasts, in spite of differing backgrounds and values among respondents.

The Delphi Technique is based on the principle of achieving "oneness of mind" through a stepwise process of thesis and antithesis, followed by synthesis. In the first step, all members of a panel are asked to present their opinion and views on a given subject. In a second step, all participants are supplied with the new thesis and support it, change their minds, or develop a new thesis. The success of the Delphi Technique depends on the skill of a neutral coordinator who organizes requests for information, communicates with all participants, manages the mathematical modeling

behind the technique, and turns participants' opinions into easy-to-understand language.

To capture a clearer picture of the Internet's role in consumer healthcare, the PHS/NAMCP survey asked a panel of physicians the following questions:

- How do you cope with Internet-savvy, health-conscious consumers?
- What suggestions might you make to help foster more discriminating use of the Internet among those consumers?
- How might health plans compensate physicians for the extra time spent responding to complex questions posed by better-educated consumers?

During July and August 2001, physicians in the Atlanta and Boston metropolitan areas were identified who agreed to respond to the Delphi instruments (*Exhibit 1*). The research was completed just before Labor Day 2001, and a report was prepared for a meeting in each of the two research markets (Sept. 19, 2001, in Atlanta; Oct. 4, 2001, in Boston). All respondents who had completed the Delphi Technique were invited to attend these meetings to discuss the research results in an open forum.

Exhibit 1: Sites From Which Delphi Respondents Were Obtained

Atlanta

Medical Center of Central Georgia
Emory Health Care
Kids First Pediatric Center
AT&T
Coventry Healthcare of Georgia
Delta Air Lines Inc.
The Pediatric Center
Columbus Health Alliance/BCBS of Georgia
Southern Crescent Health Network
Meridian Medical Group
One Health Plan of Georgia
Dunwoody Pediatrics
Aetna
Pinnacle Eye Care
Providia Healthcare Group
Surgical Health Collective

Boston

Boston Health Net
Boston University
Liberty Mutual Insurance
Fallon Clinic
Harvard Vanguard Medical Associates
Boston Medical Center
St. Elizabeth's Health Professionals
Joslin Diabetes Center
Mass General West
Neighborhood Health Plan
Fallon Healthcare System
Tufts Total Health Plan
Cigna Healthcare of Mass
Partners Health Care System Inc.

Survey Methodology

The first step in the Delphi process was to ask senior-level physicians, in either payer or provider groups, to rank (using a scale of 1-9) their agreement or disagreement with 34 issue-related statements. Participants also were asked to write responses to nine open-ended questions. Survey content was first reviewed by PHS staff and formatted by Business Research Services. The nine open-ended questions were included to solicit feedback from respondents on how they are coping with Internet-savvy consumers/patients. The second step in the research method was to submit the 34 issue statements, along with the group mean response to each, back to participants to determine if any shifts in consensus would occur.

Survey Findings

Delphi Survey Issue Statements

Of the 61 recruited physicians (32 in Atlanta, 29 in Boston), 47 completed both surveys in the Delphi two-step process (24 in Atlanta, 23 in Boston). By conducting a student's t-test, (i.e., analysis of variance for comparing the mean answer to each of the 34 issue statements between the two cities) it was determined, with a 95 percent level of confidence ($P < .05$), that the results from each city were not different and that the surveys could be aggregated.

Responses to each of the 34 Delphi statements were then placed into a spreadsheet program, and responding means, modes, frequency, and range were tabulated for each. From this analysis, it became possible to identify strongly held, yet convergent, opinions of the group as well as strongly held, yet divergent, opinions (*Exhibit 2*).

Among the 34 issue statements in the Delphi survey, seven emerged as evoking the strongest opinions from responding physicians. Participants were strongest in their agreement in five areas but least in agreement (divergent) in two. Eliciting the strongest agreement (convergent) were the following five strongly held opinions:

- The Internet will continue to grow as a consumer resource for health, disease, drug information, and providing performance and health measures (*Exhibit 3*).
- There remains a gap between physicians and

consumers on how best to use the Internet for mutual benefit (*Exhibit 4*).

- The consumer movement will result in physicians accepting more accountability for their actions (*Exhibit 5*).
- Direct-to-Consumer (DTC) advertising will drive consumers to specific sites.
- Internet resources will change healthcare-decision tools.

The two areas with the strongest beliefs but with the least agreement among respondents were:

- Health plans are not going to initiate compensation to physicians for Internet-based consultations (*Exhibit 6*).
- Managed care organizations could save considerable money by reimbursing physicians who perform online or e-mail consultations (*Exhibit 7*).

Open-Ended Questions

Although physicians participating in this Delphi survey believe health-related Internet usage will grow, they also said a gap remains between physicians and consumers on how to best use the Internet for mutual benefit. Physicians agreed that currently there is no place for consumers on managing boards of MCOs, but said the consumer movement would result in physicians accepting a higher degree of accountability for their actions.

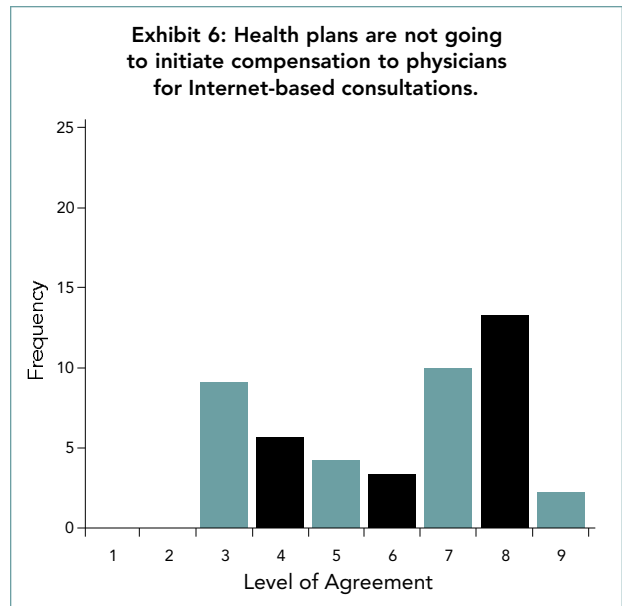
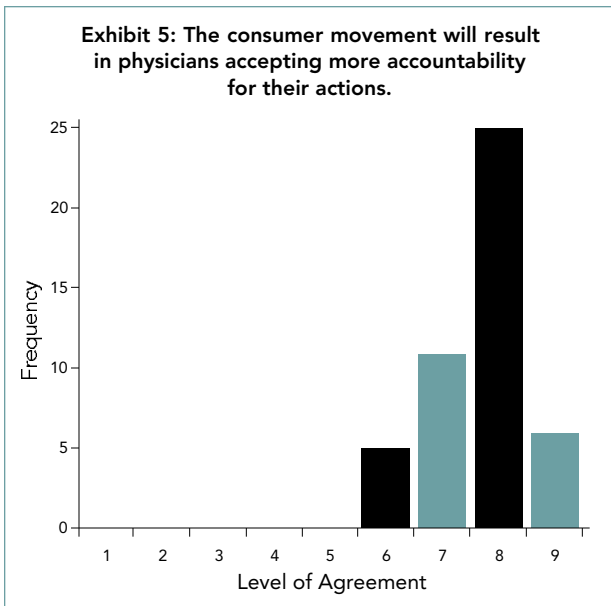
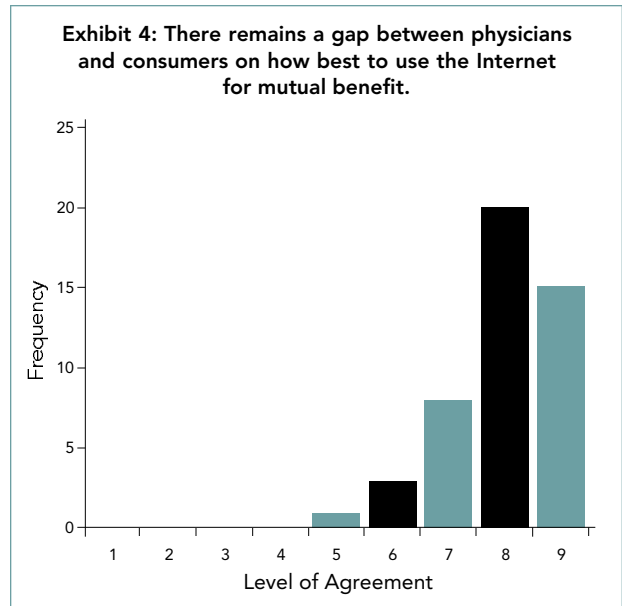
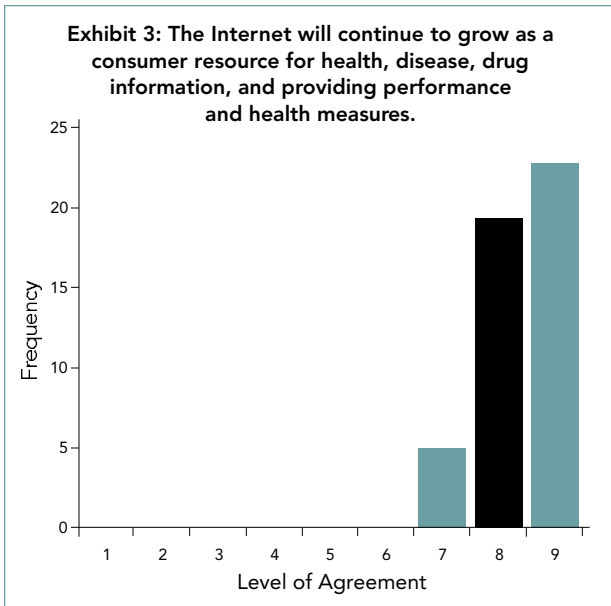
They also were asked to give suggestions on how physicians might effectively deal with Internet-savvy patients who bring Internet material to an office visit or send queries via e-mail. Among the most common advice statements:

- Ask the patient to leave the material for further review and discussion at another visit. Respond quickly and professionally to simple stuff, but suggest an office visit for anything else.
- Deal with patient concerns immediately, but address the Internet's lack of valid standards for posting quality information. Steer the patient to more credible sites. Ask the patient to give a summary of what he had read.
- Develop a system to track and record e-mails to avoid liability issues.

The Delphi survey also detected divergent opinions on how physicians should cope with empowered consumers, and a number of participating physicians

Exhibit 2: Strongly Held Convergent Opinions

	High Convergence Standard Deviation £ 1.0	Some Convergence Standard Deviation 1.01-2.00	Divergence Standard Deviation > 2.00
Agree (Mean = 7-9)	1, 14, 16, 23, 32	3, 4, 11, 12, 15, 21, 22, 25, 27, 28, 29, 33	
Neutral (Mean = 4-6)		2, 5, 7, 9, 10, 17, 18, 19, 24, 26, 30, 34	20, 31
Disagree (Mean = 1-3)		6, 8, 13	



strongly suggested the federal government develop and endorse an E&M code specifically for compensating an office-based physician for Internet consultations. To facilitate the development of a new E&M code, physicians made the following suggestions:

- Develop a tiered E&M code based on time and complexity issues.
- Develop a flat E&M code, but one accepted by third-party payers and communicated to fee-for-service patients.
- Develop an E&M code to cover office visits that are shorter than brief visits but have the visits billed as a telephone consult.

Responding physicians noted that some type of template or software package would be needed to

track Internet consultations, and that the package should document time and outcomes. One open-ended question in the Delphi survey gleaned four ideal features of such a software package: be easy to use, come at a low price, integrate with existing EMR systems, and perform tracking and documentation, thereby making it acceptable to MCO payers.

Survey panelists also were in strong agreement that unless their colleagues take a proactive stance, useable software and compensation for time spent with Internet-empowered patients would never materialize because health plans would not initiate software development or additional compensation plans for physicians.

ADVERTISEMENT

ADVERTISEMENT

The survey's open-ended questions identified additional barriers to building a compensation system:

- inability to quantify and verify documentation
- inability to apply quality measures to track time spent with patients and complexity of issues
- valuation issues
- a prevailing perception that MCOs have no reason to promote another covered service that adds to costs or premiums.

In an era of consumerism, physicians inherently know that building patient satisfaction is paramount to continued success. Thus, when respondents were asked how medical practitioners could help patients be better users of the Internet, their most common recommendations were:

- Be extremely careful in selecting Internet sites, as many offer information that is questionable and unsubstantiated.
- Work in concert with your physician.
- Change no therapy unless discussed with a physician.

Survey participants also suggested that their fellow practitioners make a list of credible Web sites, share them with patients, and be supportive of the notion that patients can become better consumers through better knowledge. To attract consumers to patient-friendly Web sites, promote the URL address in office bulletins, patient mailings, e-mails to patients, and through hospital newsletters and consumer group presentations. They also suggested that physician practices with Web sites consider allowing patients to make office appointments online.

Physicians participating in the Delphi study said they would take part in any outcomes study that focused on well-informed consumers if the study was well-designed with well-defined end points, and

if the study helped clarify patient behavior while encouraging physicians and patients to talk and facilitate an in-office procedure.

W.N. Tindall, PhD, is executive director of the American College of Managed Care Medicine, in Glen Allen, Va. B.R. Siecker, PhD, is president of Business Research Services Inc. in Oak Hill, Va. J.M. Boltri, MD, is associate professor of medicine at Mercer University in Macon, Ga. For a copy of the survey instrument, call Bill Tindall at 804-527-1905.

COMMENTARY

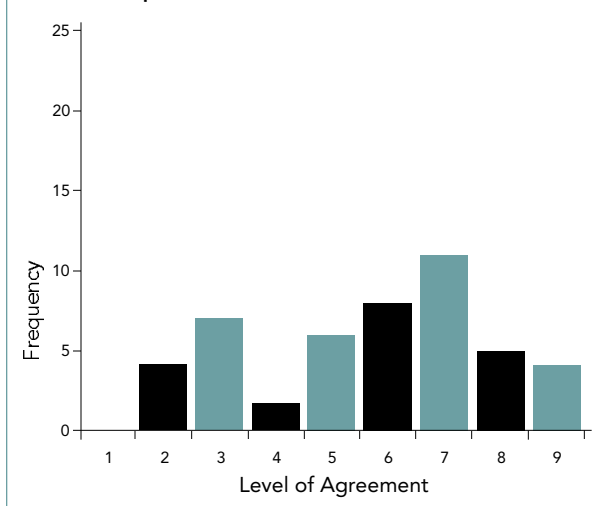
Closing the Doctor-Patient Digital Divide

Stan Bernard, MD, MBA

THERE HAVE BEEN numerous surveys evaluating doctors' opinions of the Internet and its use for their profession, their practices, and their patients. Most of these surveys have revealed consistent findings regarding physicians and their patients' use of the Internet. In general, while the majority of doctors believe that patients often find inaccurate, incomplete, or inappropriate Web-based healthcare information, they are unable or unwilling to spend uncompensated time either correcting this information or providing better sources of online information. Patients, for their part, clearly prefer to get online health information from their own physicians, but fewer than 25 percent of physicians interact online with their patients. A recently conducted survey sought to shed light on this predicament which I refer to as the "Doctor-Patient Digital Divide."

The Delphi survey conducted jointly by the National Association of Managed Care Physicians (NAMCP) and Pfizer Health Solutions (PHS) explored new territory on this topic in three ways. First, it used the Delphi Technique as opposed to standard survey techniques. This market research approach encourages consensus building and problem solving for complex issues. Second, the survey exclusively targeted physicians well-versed in managed care markets, although it did not characterize the physicians by their managed care role, demographics, or specialty. Third, it attempted to offer solutions to two of the more challenging problems in physician-patient online interactions: how to manage patients seeking online health information and how to compensate physicians for their online consultations.

Exhibit 7: Managed care organizations could save considerable money by reimbursing physicians who perform online or e-mail consultations.



This survey is one of the first to show that there is a growing consensus among some physicians that “the e-Empowered Patient” is real and not virtual. The 47 physicians surveyed recognize that patients will increasingly use the Internet not only to find health information but also to rate physician performance, file insurance claims, and receive healthcare services. The fact that the surveyed physicians appreciate the expanding role of patients in managing their own health may result from the respondents’ collective experience in managed care, where patients have been vocal and active in communicating their opinions.

Perhaps the most important finding in the PHS-NAMCP survey is that physicians understand that patients want to move from generic health information offered at many sites to personal health information and services which can be provided only by their own healthcare professionals. The physicians in the survey believe that “the Internet will be used to supply patient specific medical information.” In fact, they agreed that it would become “commonplace” for consumers to visit “Internet sites where physicians and pharmacists provide individualized health information.” Moreover, these doctors recognize that they “should promote their Internet-based capabilities to provide healthcare information and services,” and that “providing consumers with more healthcare information actually improves their [the physicians’] abilities to give better quality healthcare.”

If patients want personal, online health information and services from their physicians, and physicians believe that they should provide this, what is holding physicians back from doing so? The survey helps answer that question. The physicians surveyed agree that “there is a major gap between consumers and physicians about how to use the Internet for mutual benefit.” Unlike other surveys which suggest that patient confidentiality and medical liability will be major factors inhibiting Internet-based consultations, this survey focuses almost exclusively on the issue of physician compensation as the major barrier to online physician-patient interactions. The surveyed doctors believe that they “will need to be proactive to get compensated for the extra time it takes to deal with well-informed consumers” and “should document the time they spend on Internet-based communication and consultation.”

How should doctors be compensated for their Web-based interactions with patients? This series of questions was the most controversial of the survey. The physicians had widely divergent opinions on whether managed care “could save considerable money by reimbursing physicians who perform online or e-mail consultations” and whether or not managed care “would initiate compensation to physi-

Perspectives on Integrated Delivery Systems and Executives

2002 Edition

Eighth annual survey presented by the American Association of Integrated Healthcare Delivery Systems (AAIHDS) and Health Data & Management Solutions

This comprehensive monograph details key staffing and compensation facets of current and emerging PHOs and IDs, including the status and demographics (background, age, salary) of participating executive directors and medical directors.

Plus:

Data on staffing, benchmarking methods, compensation by region, outsourcing administrative functions, budgets, and three-year outlook predictions for PHOs.

Survey participants:

Current and evolving IDs such as PHOs, Super-PHOs, individual practice associations, management service organizations, and provider-sponsored health plans.

Preliminary results indicate an increase over the previous year in the number of covered lives by line of business (commercial, Medicare and Medicaid). *PPOs are showing a greater propensity for directional change in the health plan environment than are POSs and HMOs.* Other preliminary results detect an increase in the median salary for chief executives from 2000 to 2001.

Turn to this monograph for insights on important issues facing healthcare:

- Timely CEO/Executive Director salary and benefits information
- Industry opinions on the real future of evolving delivery systems
- Medical director salaries in healthcare delivery systems
- Staffing and compensation information to help benchmark a budget
- Trends in outsourcing delivery system functions

Order online at www.aaihds.org, or call 804-747-5823 for more information.

cians for Internet-based consultations.” However, the respondents did agree that “the federal government should develop an E&M code specific for an extended office visit conducted on the Internet.” The physicians in this Delphi survey suggested ways to structure this E&M code, including a tiered approach, a flat rate, or a telephone consultation fee.

Given that it may take considerable time to resolve the issue of physician compensation for Web-based interactions, how should physicians seek to work with e-empowered patients until then? The surveyed physicians offered several practical suggestions to their medical colleagues, including urging caution in site selection; recommending that patients not change therapy without physician involvement; and referring patients to specific sites that offer credible, accurate, and practical information. By acting on this advice and heeding the recommendations of this survey, we, hopefully, will better understand and, ultimately, close the Doctor-Patient Digital Divide.

Stan Bernard, MD, MBA, is president of Bernard Associates, a healthcare consulting firm based in Neshanic Station, N.J. He also is an adjunct professor in the Health Care Management Department at The Wharton School of the University of Pennsylvania. He can be reached at SBernardMD@aol.com.

The Internet and the Practice of Medicine

John Gastright, MD

REALITY BYTES: In 2001, 54 percent of U.S. households were connected to the Internet. That number increases to 63 percent in 2002, 67 percent in 2003, and 71 percent in 2004. Further, those with high-speed broadband connection are 9 percent today and will increase to 30 percent by 2004. Clearly, our patients are embracing the Internet in their personal lives, much as they have on the job. Surveys indicate that more than 60 percent of respondents want to communicate with their physician via e-mail, and a large proportion say that they will change doctors if necessary to get connected. A recent Harris survey found that fewer than 13 percent of physicians are communicating with their patients by e-mail.

Most physicians have freely given advice to patients by phone to the detriment of all. Physicians disdain the aggravation of phone calls without reimbursement, and patients resent the lack of response. The phone tag component is frustrating for both

parties, and the frequent lack of documentation is problematic. E-mail communication is 24/7; it documents, and no one has to be there to receive it. It's also more succinct than lengthy phone dialogue.

Health plans increasingly are reimbursing physicians for proper Internet consults. There must be an established doctor-patient relationship. The consult must be documented in the patient's record, and it must address and manage a medical issue. In South Carolina, Blue Cross/Blue Shield has agreed to reimburse \$15 for an Internet consult. Not a lot, but a hell of a lot more than phone consults.

The concern over patients presenting to the office armed with reams of information about their condition from the Web is ill-founded. A recent VHA survey found that the most important thing that patients wanted from their visit to the doctor is “information.” Getting information from the Web helps meet this need. Further, when asked, “What is the most important factor in deciding where to get information from the Web?” patients respond that they want their doctor's recommendation. Finally, there is no need for a new E&M code for the expanded time required to discuss the Web information with the patient. The present E&M coding allows for increased levels, if counseling time is provided.

As a last note, a coalition of major employers called the Leapfrog Group has undertaken initiatives to facilitate the movement of physicians to more sophisticated information systems, such as electronic medical records and Internet communication. It would be a shame if the profession lags on this initiative and lets employers “leapfrog” us.

John Gastright, MD, practices internal medicine and is president of Health Care Consultants in South Carolina.

The Viewpoint of the Consumer

Ellen Severoni

CALIFORNIA HEALTH DECISIONS (CHD), a nonprofit organization dedicated to putting the consumer at the heart of healthcare, commends Pfizer Health Solutions for addressing the growing consumer use of the Internet as a resource for health information and care. This phenomenon reflects not only new access to enormous amounts of information, but the desire of consumers to take charge of their own health in a changing and often bewildering managed care environment. However, the

Internet is uncontrolled, and consumers always will need physicians to help them distinguish true information from misinformation.

Two related issues are on the table: how physicians work with patients who bring with them the knowledge they have acquired on the Internet, and how healthcare organizations effectively support Internet communication between patients and physicians. In both cases, consumers (patients) must be brought into the discussion and planning, sharing their views with healthcare providers, plans, and purchasers. Our work at CHD consistently shows that when consumers participate in creating and evaluating solutions, everyone benefits. They bring the unique and valuable point of view that only users of a system can understand and express.

Physicians in this study say that health plans have no incentive to share in the responsibility for educating patients or compensating physicians for time spent on Internet consultations or discussions. That means we have to rethink the relationships and re-evaluate the incentives. It's just as important to build an Internet component into compensation as it was to build in telephone consults earlier. Changing times call for changing incentives, but serious change doesn't develop effectively in a closed setting. All four parties in the healthcare system must come together: health plans, physicians and medical groups, employers and other purchasers, and their patient representatives. Only then will the emerging structure be consumer-centric and fair to the other parties.

There is no question that healthcare consumers are becoming more informed every day, and that they are empowered by their knowledge—a positive development. Informed consumers know what questions to ask their doctors, are more likely to be aware of possible side effects, and tend to seek treatment early. But informed patients also may be more assertive, asking for specific prescriptions, suggesting alternative treatments, and expecting to reach their doctors via e-mail.

As consumers, they are entitled to seek the best value. As patients, they need to know as much as possible about their health and their healthcare choices. But, they also need to understand how to use information, how to access their physicians, and how much it will cost them. That means establishing clear policies and practices. It means patient education.

Consumers increasingly will continue to use the Internet for both empowerment and communication. It's no longer a question of "if" but of "how much?" If health plans lack the incentives to adapt to Internet usage, physician groups will absorb the care by default—unless they start the dialogue.

Physicians can't bring about positive change alone. Health plans can't do it alone. But bring in the strength of employers/purchasers and the voice of

consumers, and the opportunity exists for creative solutions that use the Internet to benefit everyone.

Ellen Severoni is president of California Health Decisions in Orange, Calif., a consumer advocacy group with a mission to foster strategic decision-making regarding health matters on the Internet.

Reconciling the Promises of the Internet With Clinical and Economic Realities

J.D. Kleinke

THE DELPHI STUDY is an interesting milestone on what we have finally begun to recognize is a long road toward reconciling the promises of the healthcare Internet with the clinical and economic realities both driving and impeding its adoption. As the physician responses illustrate, the Internet is no longer viewed as a nuisance and distraction for the worried well with too much time, money, and "cyberchondria"—but a permanent, profound new force in the way medical information is distributed and acted on by an ever larger share of the publicly and privately insured population. The responses also point to a number of economic and legal barriers that need to be overcome to get us to the next milestone on the road to widespread adoption of the Internet as a meaningful clinical tool.

The study underscores the growing recognition that the Internet is quickly eroding the asymmetries of information that have characterized the practice of modern medicine for its 100-year history—and that this erosion will have a broad and mixed set of outcomes. The diagnosis and treatment of uninformed patients by highly trained physicians has been referred to throughout health economics literature as "asymmetries of information." These asymmetries have been used to explain everything from broad variations in care patterns, to the arbitrary pricing for medical services in an essentially dysfunctional consumer marketplace, to the necessity of managed care's utilization management activities as "proxy informed consumers." As the physician-respondents recognize—and in a major divergence from similar studies conducted as recently as 1998—the Internet has the potential to resolve many of the traditional clinical and economic problems created by asymmetries of medical information.

Here is how this works in daily practice. As more patients at risk for or diagnosed with a specific dis-

ease gain Web-based access to breakthrough information about the diagnosis, treatment, and management of that disease, the power dynamics of the traditional physician/patient relationship galvanizing medicine's information asymmetries will be slowly neutralized and, in many cases, actually reversed. The study points to physician acknowledgement of what many of us have known all along about e-health: specific patient populations want specific information, and the Internet is the first combination of searchable media and information "push"-type tools to provide this to any significant degree. The wellness postcards and quarterly patient newsletters sent out, respectively, by health plans and patient advocacy societies are crude, limited tools compared to the power of a good search engine and a motivated patient, spouse, adult child, or parent. Targeted information (e.g., news about new treatment breakthroughs for online patient communities with a certain type of cancer) will accelerate the acceptance of those new treatments, in many cases driving physician adoption via patient demand—an exact reversal of the traditional mode of diffusion of medical technologies and treatment patterns. In this sense, the Internet is the direct-to-consumer movement in overdrive, with every treatment message tailored to precisely the right consumer.

The cost and utilization consequences of this movement are obvious: more patients demanding more leading-edge treatments, more frequently, and more ferociously. Consider recent clinical news about the superior benefits of colonoscopy (an expensive, invasive procedure) vs. sigmoidoscopy (the current, less costly standard) for diagnosing colon cancer. Before the Internet, demand-preference for colonoscopy among asymptomatic adults at risk for colon cancer may have taken years to build to critical mass, thanks to the traditionally slow diffusion of new practice patterns among the physician community. With widespread Internet adoption, demand for this more effective, more expensive procedure will escalate rapidly as at-risk patients tell each other about the preferred procedure electronically or discover it on targeted healthcare Web sites. (Colon cancer is highly hereditary, and patients with a family history of the disease know full well they need to be screened annually.) In the pre-Internet days, the need for vigilance and regular screening was something a primary care physician told her patients about and then provided, using whatever diagnostic technique she was comfortable with and the health insurer would pay for. But as these same at-risk consumers participate in Web-based discussions about their common medical concern—as they receive messages from "listservs," or see them posted on electronic bulletin boards, or e-mail them to

each other—word about the better, more expensive procedure will spread with an exponential breathlessness attendant to all pervasive information networks.

The sum total of motivated consumers' use of the Web for hundreds of clinical spheres like this one: earlier and better diagnosis of disease; increased demand for more and better medical interventions; increasing costs for health plans and the government to bear, at least in the short run; faster diffusion of new diagnostic techniques, superior medical technologies, and better clinical care; and a much healthier insured population. As this study makes clear, the Internet is a complicated story that affects almost everyone and everything in the healthcare system—and the story is only now starting to unfold.

J.D. Kleinke is a medical economist, author, and president of HSN, a healthcare software development company based in Colorado. His work has appeared in The Wall Street Journal, JAMA, Barron's, Health Affairs, and Modern Healthcare. His latest book is "Oxymorons: The Myth of a U.S. Healthcare System."

Time to Evaluate Pay Systems for Physicians

Nancy-Ann DeParle

THE INTERNET and information technology, more generally, have great potential to transform healthcare the way they have other aspects of society. The Internet puts the medical knowledge database directly into consumers' hands on a real-time basis, and offers physicians easier access to the latest clinical information as well.

It's clear that the Internet will drive consumer demand for more healthcare services. What is less clear is how physicians will deal with new demands on their time from Internet-empowered consumers full of questions and answers from the Internet. Nor is it clear whether the Internet will make the delivery of healthcare services more efficient—will health plans and consumers realize savings from online physician-patient consultations?

Public and private payers should begin experimenting now with ways to pay physicians for Internet-based consultations with patients so that we can determine the most effective reimbursement model.

Nancy-Ann DeParle is senior adviser at JP Morgan Partners and adjunct professor of Health Care Systems at The Wharton School of the University of Pennsylvania.

Announcing a Home Study Certification Program for Managed Care Nurses

A Comprehensive Introduction to Managed Care Nursing

Now available from the American Association of Managed Care Nurses

Course Outline:

- Overview of Managed Care
- Nurse's Role
- Negotiation Skills for Medical Professionals
- Managed Care Products
- Nursing Implications of Contracting and Capitation
- Benefits of Managed Care to the Patient
- Legal and Risk Management Issues
- Utilization Management
- CQI, QM, Outcomes
- Introduction to Medical Informatics
- Accreditation and Provider Profiling
- Nursing Bridge into the 21st Century

Program materials include 12 audiocassettes, study guide, and textbook.

A Sampling of Lessons:

- How to recognize and describe the five major components of managed care
- Basic managed care reimbursement terminology and the relationship between the different types of provider reimbursement
- Legal fundamentals, contractual, and risk-management issues
- Accreditation primer
- Critical factors impacting patient benefits
- Impact of informatics on managed care and the healthcare industry
- Fundamentals of a continuous quality improvement program

Continuing Education Credit

This EDII is approved for 15.0 contact hours by the Virginia Nurses Association, which is accredited as an approver of Continuing Education in Nursing by the American Nurses Credentialing Center's Commission on Accreditation.

Call AAMCN at 804-747-9698 for more information, or visit www.aamcn.org.

A Valuable Textbook Just for Nurses "A Nurse's Introduction to Managed Care"

Published by the American Association of Managed Care Nurses (AAMCN), this text was written with one goal in mind: to provide nurses with a better understanding of managed care.

Nurses experienced in managed care share their knowledge and experience with other nurses who must make choices about careers and patients influenced by managed care.

Here's just a sampling of topics in this valuable guide:

- Managed Care: The Implications
- Paving the Pathway for Managed Care
- Using Information Technology to Support Nursing Practice
- Nursing Implications of Managed Care Contracting and Capitation
- Managed Care: Benefits to the Patient
- Nurses Play a Vital Role in Disease State Management
- Negotiation Skills for Managed Care Nurses
- A Perspective on Quality in Managed Care
- Nursing: A Bridge to the 21st Century

AAMCN Members (\$24.95 + \$5 S&H) = \$29.95 — Non-members (\$29.95 + \$5 S&H) = \$34.95

Call AAMCN at 804-747-9698 for more information, or visit www.aamcn.org.

Low Back Pain: A Disease Management Opportunity

Bill Barr, MBA, Jeffrey Migneault, PhD

Summary

Organizations responsible for the care of populations are more inclined to allocate proactive funding to those illnesses or diseases which 1) absorb resources; 2) are treated improperly based on available evidence; and 3) have the potential for more cost-effective treatment patterns and improved outcomes. Many studies confirm that low back pain or problems (LBP) meets the first two criteria; however, there are few studies within the medical treatment model which document that interventions can either prevent onset or improve the natural course of the illness. By contrast, studies based on the broader biopsychosocial model show many positive and compelling results.

Key Points

- Low back pain is a pervasive disorder, estimated to affect up to 80 percent of adults at some point in their lives. The costs of LBP—which are difficult to estimate but likely to be in the high billions annually—have an enormous impact on U.S. industry.
- Studies show significant variations in treatment methods, surgical rates, hospitalizations, and the use of specialists, all of which indicate LBP is being treated improperly based on available evidence.
- The biopsychosocial model provides an alternative approach to the strictly biological treatment of LBP. This approach focuses on the patient's total experience of the condition, including social, emotional, and cognitive variables, and may provide the means with which to reposition LBP as a disease management opportunity.

LOW BACK PAIN (LBP) is a pervasive disorder, estimated to affect up to 80 percent of adults at some point in their lives. It is the second leading symptomatic cause for all physician visits; and it is the leading reason for visits to orthopedic surgeons and neurosurgeons.¹ Back pain is also the leading cause of worker disability, which has been a particularly serious problem in industrial countries.²

In spite of its significant cost and obvious impact on industrial production in the United States, low back pain (or low back problems) receives minimal attention from managed care organizations as a disease management opportunity. This analysis attempts to explain this inconsistency.

In general, the following three criteria can be used to prioritize diseases or illnesses as proactive management (or disease management) opportunities.^a

1. The disease or illness has a significant impact on the specific healthcare system and society in general.
2. There are gaps separating actual and evidence-supported care, which result in either increased costs or sub-optimal clinical and/or patient outcomes.
3. Interventions have proven to cost-effectively reduce these gaps and improve outcomes.

Organizations responsible for the care of populations are more inclined to allocate funding to those diseases which absorb resources, are treated improperly based on available evidence, and respond to intervention. Asthma and diabetes are examples of diseases that meet all three criteria, and therefore attract ample disease management attention. Low back pain receives fewer proactive disease management resources, primarily because it is perceived to not meet the third criteria. An analysis of LBP across the three criteria reveals why this perception is common.

^a The healthcare performance reporting movement, especially NCQA's Accreditation and HEDIS, adds a fourth factor. Managed care organizations will undoubtedly focus on diseases or illnesses for which they are asked to submit performance standards.

Criterion 1: Does Low Back Pain Have a Significant Impact on Society?

The impact of low back problems on society can be evaluated across two broad areas—prevalence and cost. In both areas, the condition clearly has a profound impact.

The Prevalence of Low Back Pain

Low back pain prevalence studies often reach different conclusions because of variations on how low back pain is defined. In the Nuprin Pain Report, for example, Sternbach noted that 50 percent of working-aged adults admitted to back symptoms each year.³ Carey et al. used a more stringent definition of LBP in a survey of North Carolina households and found that 7.6 percent of respondents had experienced severe back pain in the previous year that significantly restricted daily activities.⁴ Anderson showed that at any given time, about 1 percent of the U.S. population is chronically disabled because of back problems, and another 1 percent is temporarily disabled.⁵ In a meta-analysis of the literature, Loney et al. showed North American adults' low back pain point prevalence to be 5.6 percent.⁶ Other studies show that 80 percent of the human race will experience low back pain at some point in their lives.⁷

The Costs of Low Back Pain

There is not a direct correlation between an episode of LBP and its costs, because the vast majority of sufferers cope with the problem without incurring direct costs via medical intervention or missed work days.⁷ Nevertheless, LBP that incurs costs is ubiquitous in all industrialized societies; and it has a very significant financial impact, in spite of its generally favorable prognosis. For example, data from the National Ambulatory Medical Care Survey showed that with 15 million annual visits in 1990, LBP ranked fifth as a reason for all physician visits.¹

Although it is difficult to estimate the costs related to low back pain in the U.S., Frymoyer and Durett show that a range of \$38 billion to more than \$50 billion seems reasonable.⁸ (Compare these costs with a 1990 estimate of \$6.2 billion for asthma,⁹ a disease which receives significantly more proactive management resources.)

The cost of LBP is particularly significant in the workplace, where it is the most common and costly musculoskeletal condition; and for persons under 45 years old is the most frequent cause of disability.¹⁰

Recent estimates, using retrospective data from three large data sources,^b show that in 1995 the rate of occupational LBP claims was 1.8 per 100 workers; and the cost of these claims to industry exceeded \$8.8 billion. Within this study population, occupationally related LBP claims represented 16 percent of all claims and 23 percent of all workers compensation payments.¹¹

To an employer, workers compensation laws that generally require employers to pay all medical costs and indemnity costs compound the costs of work-site illnesses or injuries. Representing more than 62 percent of all costs, indemnity costs are nearly twice as expensive as medical costs. Breaking out the medical costs, the most costly service category was diagnostic procedures (25 percent of total medical costs), with surgical costs (21 percent) and physical therapy (20 percent) representing the next two most costly categories.¹²

A number of studies indicate that the majority of the costs resulting from LBP stem from slow-to-recover cases. Antonakes showed that as the duration of disability for low back pain increases, the costs rise at an accelerated rate, primarily due to permanent partial and permanent total disability payments, and to increased surgical rates.¹³ Supporting Antonakes' study is a recent study analyzing insurance claims data, which detailed that the small percentage of claims lasting for more than one year (4.6 percent to 8.8 percent of claims, depending on the year) accounted for a much larger percentage of the total costs (64.9 percent to 84.7 percent).¹⁴

Although some recent studies suggest that the rate of occupationally related low back pain has been steadily declining for nearly a decade,^{14,15} LBP remains a very costly illness, both inside and outside the workplace. Its financial impact and high prevalence support the argument that back pain has a significant impact on the healthcare system and society in general.

Criterion 2: Are There Gaps Separating Actual and Evidence-Based Care That Result in Either Increased Costs or Poor Outcomes?

In 1987, the Quebec Task Force on Spinal Disorders concluded that there is limited scientific support for the effectiveness of most commonly used low back pain treatments.¹⁶ Ten years later, Dan Cherkin arrived at the same conclusion when he noted in a 1997 article that his 12 prior years in back pain research has been spent, "either reading about the negative results published by other researchers, or performing my own negative studies."¹⁷

^b Data from a Workers Compensation Provider (Liberty Mutual) claims database were examined over a nine year period, 1987-1995. Washington state Department of Labor and Industries data were examined over a five year period, 1991-1995. Data from the Bureau of Labor Statistics was examined over a four year period, 1992-1995.

The lack of any one generally effective treatment, coupled with the lack of clear indicators for most of the treatments in use, has left patients and clinicians frustrated with treatment options and outcomes.¹⁸ The frustration has resulted in the investigation and adoption of an endless array of LBP treatments. One consequence of this search for an effective procedure is the increasing popularity of alternative forms of medicine. A second has been vast variations and inefficiencies in provider approaches to LBP treatment. The following summarizes numerous studies detailing variations in care and other evidence of gaps in LBP treatment.

Gap 1: There Are Significant Variations in Perceptions of Low Back Pain Treatment Effectiveness.

The vast variation in treatment patterns of LBP has led many to wonder whether physicians agree on appropriate medical care. A study conducted by Cherkin et al. assessing physicians' perceptions of the effectiveness of non-surgical treatments of low back pain showed that there is minimal agreement among the provider community.¹⁹ For the study, physicians were pooled based on their specialty. In the study summary chart (*Exhibit 1*), the numbers outside the bracket show the percentages of physicians within the specialty falling at the median who believe the listed treatment to be effective. The bracketed numbers display the variation between the high and low specialties. (For example, for spinal manipulation, 36 percent of all providers in the median specialty felt it to be effective. Among one specialty group (physiatry) 83 percent felt it to be effective; while only 28 percent of orthopedic surgeons thought it to be effective.)¹⁹ The uncertainty reflected in the chart manifests itself in the actual overuse (and misuse) of procedures.

What is particularly troubling about this data is the number of physicians who believe bed rest to be an effective procedure, a belief which manifests itself in the fact that bed rest is a frequently prescribed treatment for low back pain.²⁰ Yet, there is no evidence to support the

efficacy of bed rest and substantial evidence to show that deactivation resulting from prolonged bed rest appears to be worse for patients than a gradual return to normal levels of activity.^{2,10,21,22} Protracted rest leads to a catabolic state with general malaise,²³ demineralization of bone,²⁴ and potentially negative social side effects such as perception of severe illness.²³ Furthermore, in the employed population, bed rest is costly in that it is, as Waddell notes, "ipso-facto associated with work loss."²⁷

Cherkin conducted another study to assess whether or not variation existed in the ordering of diagnostic tests for LBP. He concluded that there is little consensus, either within or among specialties, on the use of diagnostic tests for patients with LBP. Furthermore, the diagnostic evaluation was much more heavily influenced by the whims of the individual physician and his or her specialty, and rarely by the patients' symptoms and findings. The study concluded that many physicians order imaging studies too early and for patients who do not have the appropriate clinical indications.²⁵

Many studies have documented the real-world implications of this lack of consensus on imaging. In a study of 183 patients presenting with LBP, X-rays performed were deemed to be non-indicated 26 percent of the time, and MRI and CT scans 66 percent of the time.²⁶ Similarly, an evaluation of ER physicians found that 22 percent recommended CT and 36 percent recommended MRI in acute cases (less than one week).²⁰ Given that most cases of acute LBP resolve with minimal intervention, this early diagnostic imaging favored by ER physicians would add little except expense.

Gap 2: Variation Exists in and Excessive Use of Non-Surgical Hospitalizations.

An analysis by Taylor et al. showed that in the United States, the estimated number of non-surgical hospitalizations for low back pain were between 580,500 in 1979 and 265,500 in 1990.²⁷ In spite of the decline—a probable result of the rise in managed care coupled with studies questioning the value of inpatient care for LBP—most experts agree that LBP hospitalizations continue to be excessive. For instance, the AHCPR Back Pain Outcomes Assessment Team, led by Richard Deyo, concluded that the two primary reasons for non-surgical hospitalization—myelography and pain control—are safe, less expensive, and preferred by patients when done as an outpatient procedure.² According to Deyo, myelography in particular has been proven to have no advantage over non-invasive MRIs and CT when assessing spinal stenosis.

Gap 3: Variation Exists in Surgical Rates.

Data on lumbar spine surgical rates from several U.S. sources, including the National Hospital Discharge Survey, Medicare claims files, and state hospital discharge

Exhibit 1: Physician's Perceptions, By Specialty, of the Effectiveness of Non-Surgical Treatments¹⁹

Treatment	Median (%)	(Range)
Physical therapy	81	(77-97)
Strict bed rest > 3 days	72	(49-89)
Trigger point injections	64	(42-84)
Epidural steroid injections for sciatica	44	(19-66)
Traction for sciatica	42	(28-56)
TENS	37	(33-66)
Spinal manipulation	36	(28-83)

registries was collected and analyzed. The data showed that the estimated number of low back operations among persons older than 20 years was 279,000 in 1990.²⁸ Although many studies do support the short-term effectiveness of lumbar discectomy,²⁹⁻³³ others suggest that the long-term outcomes improvement from surgery is not as certain.^{2,32,34} Regardless, most experts agree that, in general, lumbar discectomy is used excessively and for individuals without the proper indications.³⁵

There is also significant geographical variation in discectomy rates—surgical rates in the southern U.S. are 51 percent higher than in the West. Even within states, surgical rates vary considerably. In Washington state, for instance, Deyo found 15-fold variations among counties, which he primarily attributed to differences in practice style.² Birkmeyer and Weinstein revealed variations within the Medicare population, with eight-fold variation rates for disc herniation and 12-fold variation for spinal stenosis surgery.³⁶

Even more dramatic variation is evident when comparing the U.S. surgical rates against other industrialized countries. Back surgery rates in the U.S. are 40 percent higher than in any other country; and they are more than five times that in England and Scotland.³⁷ Analysis shows that there is a direct linear relationship between the rate of surgery and the per-capita supply of orthopedic and neurosurgeons in the country; and the fact that the U.S. has the highest per capita supply of these types of physicians is reflected in the disproportionately high rate of surgery.³⁷

A study assessing lumbar fusion rates shows an even more remarkable variation across geographic areas. The data document that the fusion rates vary even in areas that have similar rates for other back procedures, and further suggest that fusion rates are not driven primarily by a general propensity to perform back surgery, but instead by the variability in the indications for spinal fusion in particular.³⁸ Suggesting further problems with indications for spinal fusion, Taylor et al. showed that workers compensation patients were 1.37 times more likely to undergo surgery involving fusion and almost twice as likely to have a subsequent re-operation within three years of the index surgery than those with other sources of payment.³⁹ Clear evidence of a treatment gap exists when patient insurance type predicts procedure frequency.

The excessive use of fusion is particularly troubling, given the high complication rates, questioned effectiveness, and costs of the procedure. As Deyo notes, any procedure involving a lumbar fusion is associated with 50 percent higher hospital charges, a postoperative mortality rate twice that of surgery without fusion, and a six-fold higher rate of blood transfusion.^{2,40} Deyo's arguments are supported by a study by Franklin et al., who showed that among post-fusion,

workers compensation patients enrolled in the study, the majority felt that their back pain was worse and overall quality of life was no better or worse than before surgery.⁴¹ Quality-of-life-related outcomes are among the most important for LBP patients, given that the illness is generally not life threatening.

Studies documenting treatment variation rarely conclude with arguments that one utilization rate (high or low) may lead to better outcomes. Rather, they typically suggest that variation indicates a need for a more consistent treatment approach. A 1999 study by Keller et al., however, suggests that with LBP, the areas with higher population-based rates of elective spinal surgery may be associated with inferior outcomes.⁴² This result suggests that surgeons populating high-rate areas have a surgical threshold beneath appropriate surgical indications and that, within high-rate areas, the optimal surgical rate is well below the existing rate.

Gap 4: Treatment by Certain Physician Specialties Is More Cost-Effective.

Many different types of practitioners treat back pain, from orthopedic and neurosurgeons to chiropractors and family physicians. A study done by Carey et al. attempted to assess which specialty was most successful in treating back pain.⁴³ The study showed that patient outcomes (time to functional recovery, return to work, and complete recovery) were similar across all specialties, but there were marked differences in the use of healthcare services and in costs. Costs were highest for the patients seen by orthopedic surgeons and chiropractors and were lowest for the patients seen by primary care providers. This study, directly supported by a Shekelle study published in the same year,⁴⁴ confirms that inefficiencies exist in current treatment, and that directing individuals to the most appropriate physicians can decrease costs without affecting care.

The findings from the above studies, and many others, suggest that the gaps in LBP treatment are substantial and are attributable to differences in practice style related to uncertainty about which management approach results in the best patient outcomes. These studies document that LBP meets the second criterion of a suitable disease management opportunity: that significant gaps exist separating actual from evidence-supported care.

Criterion 3: Have Interventions Successfully Proven to Cost-Effectively Reduce These Gaps and Improve Outcomes?

It's apparent that low back pain meets the first two criteria of a disease management opportunity: It is costly and has significant treatment gaps. The reason that back pain receives limited funding as a proactive disease management opportunity, however, is that it has *been perceived*

to fail the third criterion. And the reason for this perception is clear. With LBP treatment, there are few interventions in the medical model that cost-effectively improve the natural course of the illness. As Gordon Waddell notes in his 1987 groundbreaking article:

“Despite uncontrolled personal claims for symptomatic success with particular modalities of treatment, every scientific study has shown remarkably little difference between every conceivable treatment for low back pain. The few reported effects that have reached statistical significance are usually so small as to be of no practical clinical significance...there is no definite evidence that any treatment for low-back pain is much better than a combination of natural history and placebo effect.”⁷⁷

Since 1987, few scientifically valid studies have contradicted Waddell’s claim.¹⁷ Furthermore, not only is there no medically effective solution for most cases of LBP; but there is growing evidence that treating the low back patient solely through the medical model often worsens the course of the LBP episode while increasing costs. As Vlaeyen states, “Conventional medical treatment for low back pain has failed, and the role of medicine in the present epidemic must be critically examined.”⁴⁵

With no treatment answer in the medical model, there seems to be no positive direction to provide to either patients or physicians that will improve outcomes. Even efforts focused on the primary prevention of the onset of low back pain have shown no long-term benefits.⁴⁶ Management goals within such a scenario would have to focus on holding down costs through treatment request denials, but such utilization review practices have lost support because of the resulting erosion of patient and provider satisfaction.

What, then, is the solution? How should an organization responsible for cost-effectively maintaining the health of a population treat this illness, while reducing costs and narrowing treatment gaps? The solution is to look beyond the medical model, which does not provide answers, to the biopsychosocial model, which widens the view of LBP and its determinants. Once LBP is conceptualized within this model, the foundation of a proactive disease management program can be established.

The fundamental error inherent within the medical model—and corrected by the biopsychosocial model—is that LBP is conceptualized solely as a symptom of tissue or structural damage and therefore should be diagnosed and treated solely by medical means. The problems with this approach are threefold:

1. The medical model communicates to the patient

that pain signals continuing physical damage and is therefore a cue to stop activity and rest, which is usually detrimental to recovery and is especially costly in workers’ compensation cases.⁴⁷

2. The medical model depends on the premise that the disease or the illness is primarily due to a physical pathology and that symptoms are proportionate to that physical pathology. Such a premise fuels a search for a physical cause of pain—a search that may uncover “defects,” which become objects of anxiety and perhaps ultimately, the targets of expensive and ineffective treatments. Studies show that images of age-matched spines from asymptomatic individuals exhibit as many “defects” as those who do have pain.^{c,10,48} Treatment of the defect, therefore, is ineffective because the pain may not be caused by the discovered defect.

3. A myopic focus on tissue or structural damage in LBP patients ignores the results of the scores of studies that have linked the onset of back pain and the duration of disability to psychosocial issues. The medical model may be routine to providers, but, in many cases, the path to patient improvement lies beyond this traditional treatment model.

The Biopsychosocial Model

Over the last 10 to 15 years, there has been a growing understanding of the mechanisms of pain and the pathways to disability related to LBP. This new understanding includes not only biological dimensions of the medical model but also social, emotional, and cognitive variables. These dimensions, along with the biological, have been coalesced into what is referred to as the biopsychosocial model.

The biopsychosocial model focuses on illness (a patient’s total experience of the condition) rather than disease. It is based on the premise that a person’s experience of, and subsequent recovery from, illness or pain is influenced by psychological and social factors as well as physical factors. A simple explanation of LBP within this model, as put forth by Waddell,⁷ is as follows: A physical injury (perhaps caused by lifting a heavy object) occurs; and the resulting pain is interpreted cognitively, resulting in a corresponding emotion. The interpretation in and of itself can promote or suspend recovery. For example, a belief that a “herniated disc” has occurred is likely to elicit more anxiety, depression, and avoidance behavior than is the perception of a simple back sprain. Furthermore, this cognitive process takes place within an ongoing social context that is constantly providing feedback, which further affects patient expectations, behavior, and recovery.

^c The developers of the AHCPR guideline reviewed many studies clarifying the relationship between imaging findings and low back problems. They conclude that “In general, x-ray findings correlate poorly with low back problems” and “Degenerative discs, bulging discs, and even herniated discs are part of the aging process for the spine, and may be irrelevant findings.”

In theory, the possible feedback loops between all elements of the biopsychosocial model are exceedingly complex; however, research has found a finite set of variables that exhibit strong relationships to the onset of LBP and to delayed recovery. The non-biological patient characteristics that predict chronic low back problems and the development of disability mostly fall into five categories: pain attitudes and behaviors, cognitive interpretations and distortions, emotional states, work environment, and social support. Although a comprehensive review of this research is beyond the scope of this article, a few illustrative findings are listed here to demonstrate the importance of these psychosocial factors.

Pain Attitudes and Behaviors

Pain behaviors are what a patient attributes his pain to; how he describes his pain; and the behaviors associated with the pain.⁴⁹ Studies show that the degree to which a patient magnifies pain levels via grimaces, inactivity, limping, overreacting, and even pain drawings is a useful aid in distinguishing symptoms and signs of physical disease from those of distress and illness behavior.⁵⁰ Greenough, Taylor, and Frasier, for instance, showed that spinal fusion surgery patients with non-exaggerated drawings of their pain were more likely to have successful surgery compared with those whose drawings were inconsistent with physical findings.⁵¹ Gaines and Hegeman showed that patients exhibiting Waddell's non-organic signs (signs of distortion of their pain experience) had a four-times length-

ier period of absence from work than did patients who did not exhibit these signs.⁵²

Cognitive Interpretation and Distortion

The characteristics that fall under this category all derive from the fact that pain has a sensory dimension, based on the actual nociception, and a cognitive dimension, which is a function of the patient's interpretation of this sensation. This interpretation determines where the patient will fall on a behavioral continuum, from continuing activities as usual, regardless of the pain, to avoiding all activities that cause pain. Numerous studies show that a high level of fear lessens activity (fear avoidance) and subsequently delays recovery. Waddell found that fear-avoidance beliefs about work are strongly related to disability and work lost in the past year.⁵³ Al-Obaidi et al. showed that anticipation of pain and fear avoidance beliefs about physical activities were the strongest predictors of variation in physical performance.⁵⁴ And in a unique experimental investigation, Vlaeyen et al. showed that pain-related fear perpetuates pain and pain disability through muscular reactivity.⁵⁵ These studies and many others comprise a growing body of evidence that shows that in some chronic pain patients, pain-related fear may be more disabling than pain itself.

Emotional States

There is controversy in the field regarding the extent to which depression and anxiety are causative factors in the development of LBP, and to what extent having LBP causes depression and anxiety.⁵⁶ Although both causative path-

New Market Fundamentals and How to Apply Them in a Medical Practice

A home study program offering 32 hours of ACCME Category I CME

Gain a competitive edge by learning the concepts and practical insights that keep a medical practice financially and clinically fit while remaining a long-term provider of cost-effective care to defined populations.

Course resources include 16 audiocassettes; manual with notes and visuals to match audiocassettes; 16 lessons, each with learning objectives, outlines, exercises, and self-tests to help you study, learn, and measure progress; a 296-page textbook; and access to an exclusive online chat room to get in touch with faculty who can answer questions and provide assistance.

Five Reasons to Enroll

- Build a competitive advantage that enhances your practice revenue.
- Expand and accelerate reaching your educational horizons in the comfort of your own home or office.
- Discover how to be proactive in a slowing economy.
- Assimilate tactics that focus on the costs and consequences of delivering medical care in markets that are influenced by empowered patients and contractual agreements.
- Learn to evaluate whether or not participation in a managed care plan is profitable for you.

Who Should Take this Course?

This program is custom designed for physicians, medical administrators, practice management executives, managed care executives, other clinicians, and nurse practitioners within private practices, group practices, network IPAs, and PPO clinics.

Course Fee: \$295

(The 296-page textbook, "A Physician's Guide to Managed Care Medicine," also is available separately for \$49.)

For more information call The Healthcare Foundation at 804-527-1905.

ways are likely to be true, the importance of emotional states in the onset and prolongation of LBP is clear. Feyer et al. showed that psychological distress preceded the occurrence of new episodes of back pain and was an independent risk factor for the onset of the illness.⁵⁷ Adams et al. showed that psychological distress predicted serious back pain.⁵⁸ In an interesting study, Burns et al. found that for patients with chronic LBP, a combination of stress-induced reactivity of the lower paraspinal muscles and depression led to exacerbations of their pain symptoms.⁵⁹ It's also clear that being depressed makes the physical activity and self-care necessary for recovery more difficult.

Work Environment

Work environment variables also have been proven to be important in predicting the onset of acute LBP. Bigos et al. found that work satisfaction was the best predictor of back injury reporting among all psychological variables.⁶⁰ Similarly, Williams et al. found that work satisfaction may protect against chronic pain and disability after an acute event; and dissatisfaction may heighten risk of chronicity.⁶¹ Feuerstein and Thebarg showed that reported work stress could discriminate between patients with chronic pain disorders who work and those who do not.⁶² And in general, negative work-related attitudes such as low satisfaction with work and a perceived inadequacy of income are independent risk factors for workers to seek consultation for low back pain.^{63,64}

Social Support

Social support variables also play an important role. Although for many health problems positive interpersonal support promotes recovery, for LBP the wrong kind of support can be problematic. For example, solicitous spouses have been shown in studies to correlate with increased pain reports and inactivity⁶⁵ and to predict pain severity⁶⁶ and physical disability.⁶⁷ Doctors, like all major players in a patient's life, can also support, with good intentions, the wrong behavior and the wrong conceptualization of LBP.

Three Principles of a Proactive Disease Management Program

Within the biopsychosocial model, three guiding principles can be used in moving individuals cost-effectively through the LBP episode and as a foundation of an innovative and effective disease management program.

Principle 1: In the absence of any "red-flag"^d indications, provide early or acute phase treatment that meets the patient's need for information, reassurance, and pain relief.

This first principle can be divided into two components. The first involves communication between the physician and the patient, and the second involves providing pain relief. Regarding the latter component, the developers of the Agency for Health Care Policy and Research (AHCPR) guideline suggest that nonsteroidal antiinflammatory drugs (NSAIDs) and acetaminophen provide symptom relief, and are suitable for treating patients with acute LBP. Spinal manipulation within the first month of symptoms was deemed helpful by the guideline developers. However, a more recent study, confirming a marginal benefit for chiropractic vs. an educational booklet, questioned the cost-effectiveness of the treatment.⁶⁸

Providing information and reassurance is good counsel for all provider/patient interactions. The communication between physicians and patients can be a source of motivation, incentive, reassurance, and support as well as an opportunity for revision of expectations of both the patient and physician.⁶⁹ Reassurance and the effective transfer of information can be particularly valuable to sufferers of back pain and can be the beginning of a reframing of the problem within the broader biopsychosocial model. Past studies have shown that up to 70 percent of LBP patients believe that a serious underlying illness is driving the pain,⁷⁰ a misconception in the vast majority of cases that can be corrected through proper communication.

Specifically, a number of studies have shown that comprehensive and positive communication can improve the cost-effectiveness of treatment. Deyo and Diehl showed that patients who did not receive an adequate explanation of their low back problems wanted more diagnostic tests and were less likely to want the same doctor again, compared with patients who received an adequate explanation.⁷¹ Thomas showed that patients receiving a positive consultation (informed of a definite diagnosis and told confidently that they will be better in a few days) had greater recovery at two weeks than did patients receiving a more negative consultation.⁷² And Burton and Waddell showed that in the acute phase, carefully selected and presented information about back pain can have a positive effect on patient's beliefs and clinical outcomes.⁷³

Throughout the early phases of LBP, patient encounters represent opportunities to guide the course, and the costs of the episode. Individuals seeking treatment do so because of a perception and interpretation of the significance of the symptoms, on the availability and expectations of treatment, and on learned and cultural patterns of illness behavior. Patient counsel should address the reasons driving the patient into the healthcare system.

^d The AHCPR Low Back Problems Guideline stresses the importance of a careful medical history and physical examination to rule out "red flags." "The primary purpose [of the medical history and physical examination] is to seek medical history responses or physical examination findings suggesting a serious underlying condition such as fracture, tumor, infection, or cauda equina syndrome."

Positive communication helps to relieve patient anxiety about symptoms and establish appropriate treatment expectations. Proper information, reassurance, and caring support can help reduce patient demand for health-care services, reduce avoidance behavior, increase satisfaction, and improve outcomes.

Principle 2: During the acute phase, and in the absence of “red flags,”^d be conservative with diagnostic tests and expensive treatments.

All decisions in the treatment of LBP—at least within the first month—should be tempered by the awareness that, from a population-management perspective, most treatments for LBP likely will have negative cost-benefit implications. The developers of the AHCPR low back pain guideline, for instance, felt that evidence refuted the use of many common procedures for LBP, such as oral steroids, colchicine, antidepressants, TENS, spinal traction, biofeedback, trigger point, and ligamentous and facet point injections.¹⁰ They also found little evidence to support the use of most other commonly performed procedures.

Two recent studies in an HMO population confirmed that educating physicians about conservative care can have a significant impact on the costs of care related to LBP within a health maintenance organization, while maintaining clinical outcomes. The studies showed that primary care physician education regarding LBP management and the establishment of a back care program can reduce use of imaging, specialty referrals, and spine surgery rates without compromising patient satisfaction levels.^{74,75}

Principle 3: In slow-to-recover patients, begin considering and addressing the behavioral or psychosocial issues that may be delaying recovery.

Chronic LBP occurs in 7.7 percent of patients who seek care for acute low back pain, with unremitting pain for 22 months in 4.7 percent.⁷⁶ Chronic pain should signal to the physician that “something is wrong, somewhere in the biological, psychological, or social aspects of the patient’s life.”⁷⁷ By focusing on only one aspect—the biological—the medical model is ignoring the possible contribution of the non-biological variables that may be delaying recovery. Failure to address patients’ beliefs and attitudes, stress, job satisfaction levels, or general psychological distress could result in ineffective treatment and continual chronic pain.

Focus on psychosocial issues becomes even more imperative when surgery is being considered. Many unsuccessful surgeries can be avoided by providing

presurgical psychological testing. Psychological variables are strong predictors of surgical success. Studies have shown that surgical success is more strongly predicted by the results of a Minnesota Multiphasic Personality Inventory (MMPI) than from physical findings.⁷⁸ In both this research and other, the best prediction equations of surgical success appear to be a combination of psychosocial and physical findings, a true biopsychosocial result.⁷⁹

Comprehensive rehabilitation programs that include behavioral or psychosocial components appear to be the most successful in increasing activity, restoring function, and returning sufferers to work. One meta-analysis of 65 studies suggested that comprehensive programs are 17 times more cost-effective, representing the potential to save billions of healthcare dollars.⁸⁰

The three disease management principles work in tandem. The second objective becomes possible because the first principle provides the patient with the reassurance and the information to wait for recovery, and to avoid entering a negative psychosocial feedback loop that may delay recovery. If natural recovery does not occur within normal recovery times, the third principle of the disease management program provides positive proactive techniques for removing or reducing the psychosocial roadblocks that may be delaying recovery. As a whole, this approach works by redirecting and redefining the curative effort, rather than solely by denying services, which leads to frustration and resentment.

Steps in Implementing an Effective Low Back Problem Disease Management Program:

Describing in detail a process to develop and implement a biopsychosocial low back problem management program within a managed care setting is beyond the scope of this article. Nevertheless, the following steps should be considered when translating science into practice.

A. Develop baseline information to understand system costs and the care delivery process related to low back pain. This information can be used to identify opportunities for improvement, to set goals, to monitor and measure improvement, and to identify practitioners who are cost effectively managing the illness, and those who are not. Practitioners with a good history of managing the illness can assist in guideline development and in changing the behavior of less efficient providers.

B. Develop evidence-based guidelines or algorithms to guide program development and implementation: The Agency for Health Care Policy and Research’s (AHCPR) 1994 guideline on Acute Low Back Problems in Adults provides a suitable—albeit slightly outdated—starting point in guideline development.^e

^e Bigos S, Bowyer Q, Braen G et al. Clinical practice guideline number 14: Acute Low Back Problems in Adults. Rockville, MD: U.S. Dept of Health and Human Services, Agency for Health Care Policy and Research, Public Health Service. December 1994; AHCPR Publication No. 95-0642.

Searches of post-1994 literature can be used to supplement the guideline and to answer additional clinical and economic questions. Research focusing on psychosocial issues should be included and highlighted. Practitioners from the following specialties should be considered for representation on the guideline development team: Internal medicine, neurosurgery, orthopedics, occupational medicine, physical and rehabilitation medicine. A dynamic behavioral medicine specialist with a good understanding of the biopsychosocial model and low back problems should play a key role in guideline development and program implementation. See G. Ellrodt et al.'s 1997 article for a comprehensive review of steps in developing clinical guidelines and treatment guidelines that run off of them.^f

C. Use the guidelines and the three central principles stated in this article as road maps to develop provider behavioral change programs for providers. Providers who are inefficiently managing low back problems should be educated on how to move patients cost-effectively through the acute phase and into full recovery. A behavioral change program for providers focusing on how to provide information, reassurance and pain relief; on the conservative use of diagnostic tests, surgery and other procedures; and on the potential role of psychosocial issues in patients with delayed recovery and surgical success can effectively improve the efficiency of low back problems treatment. (Based on literature review, systematic practice-based interventions such as academic detailing are among the most effective techniques for changing provider behavior.^g) The radical departure of the lessons of the biopsychosocial model for the treatment of LBP from customary medical practice provides an engaging educational backdrop for physicians and other healthcare providers. Yet, for this education to have a system wide impact, alternative resources and interventions for slow-to-recover LBP patients that are consistent with the principles delineated in this paper need to be identified if they exist, created if they do not, and publicized to the appropriate providers.

Solid institutional support during all the above steps will be necessary to create an effective, scientifically sound LBP disease management program that might contradict many of the usual practices and conceptions of the medical model.

Conclusion

The disease management approach suggested in this paper is based on the biopsychosocial model of low

back problems. When LBP is conceptualized within this model and the existing research is reviewed, it is clear that LBP also meets the third criterion: there are proactive cost-effective interventions that reduce treatment gaps and improve care. From this perspective, LBP presents a more suitable disease management opportunity than it has been historically judged.

The links between non-biological factors and illness onset and delayed recovery has been established for decades. Over the past 10 years, this recognition has been bolstered by many well-designed studies.⁸¹ Why, then, is there reluctance to move from an ineffective model to one that shows significantly more promise? Surely, the reluctance stems primarily from the long-term familiarity with the medical model as a means to “fix” and to “cure” pain, and insecurity with the biopsychosocial model.

Although the literature indicating the psychosocial role in the onset and persistence of LBP is imperfect and incomplete, it does unarguably prove the connection. Psychosocial variables (as well as biological ones) cause LBP patients to enter the healthcare system and play a large factor in delaying recovery. With this said, relying solely on the medical model for treatment can be compared to searching for lost keys under a street lamp because that is where the light is best. It may be convenient to look under the light, but the keys (or the answers) likely lie elsewhere.

The costs and inefficiencies inherent in the treatment of low back pain document that there is great opportunity for improvement. Yet, as Cherkin notes, “tinkering with the current mess will not be enough.”¹⁷ In order for substantial improvements to be made, organizations responsible for the care of populations with LBP need to explore an existing, but neglected paradigm, the biopsychosocial model. Well-designed, multidimensional LBP disease management programs that include measurement plans that assess health outcomes, cost-effectiveness, and patient and provider satisfaction levels will help change the model of LBP management. **JMCM**

Bill Barr is employed with Novartis Pharmaceuticals Corp., East Hanover N.J. (This article is written completely independent of Novartis involvement.)

Jeffrey Migneault is a researcher at the Boston University School of Medicine and consultant on health and behavior in private practice under the name Health Behavior Consultants Inc.

References

1. Hart LG, Deyo RA, Cherkin DC. Physician office visits for low back pain: frequency, clinical evaluation, and treatment patterns from a U.S. national survey. *Spine*. 1995;20:11-19.

^f Ellrodt G, Cook D, Lee J, Cho M, et al. Evidence-Based Disease Management. *JAMA*. 1997;278(20):1687-1692.

^g Davis DA, Thomson MA, Oxman AD, Haynes RB. Changing physician performance. A systematic review of the effect of continuing medical education strategies. *JAMA* 1995;247(9):700-5.

2. Deyo, R.A. Principal Investigator. Back Pain Outcomes Assessment Team (PORT) Grant No. HS06344, Rockville MD: U.S. Dept of Health and Human Services, Agency for Healthcare Policy and Research. 9/89-02/95.
3. Sternbach RA. Survey of pain in the United States: the Nuprin pain report. *Clin J Pain*. 1986;2:49-53.
4. Carey TS, Evans AT, Hadler NM, et al. Acute severe low back pain: a population-based study of prevalence and care seeking. *Spine*. 1996;21:339-344.
5. Anderson G. The epidemiology of spinal disorders. In: Frymoyer JW, Ed. *The adult spine: principles and practice*. New York: Raven Press, Ltd. 1991;107-146.
6. Loney PL, Stratford PW. The prevalence of low back pain in adults: a methodological review of the literature. *Phys Ther*. 1999;79:384-396.
7. Waddell G. A new clinical model for the treatment of low back pain. *Spine*. 1987;12:632-644.
8. Frymoyer JW, Duret T. The economics of spinal disorders. In: Frymoyer JW, Ed. *The adult spine: principles and practices*, 2nd edition. Philadelphia: Lippincott-Raven Publishers. 1997;51-62.
9. Weiss KB, Gergen PJ, Hodgson TA. An economic evaluation of asthma in the United States. *N Engl J Med*. 1992;326:862-866.
10. Bigos S, Bowyer O, Braen G et al. Clinical practice guideline number 14: Acute Low Back Problems in Adults. Rockville, MD: U.S. Dept of Health and Human Services, Agency for Health Care Policy and Research, Public Health Service. December 1994; AHCPR Publication No. 95-0642.
11. Murphy PL, Volinn E. Is occupational low back pain on the rise? *Spine*. 1999;24:691-697.
12. Williams D, Feuerstein M, Drubin D, Pezzullo J. Health care and indemnity costs across the natural history of disability in occupational low back pain. *Spine*. 1998;23:2329-2336.
13. Antonakes JA. Claims cost of back pain. *Best's Review*. 1981;9:36.
14. Hashemi L, Webster BS, Clancy EA. Trends in disability duration and costs of workers compensation low back pain claims (1988-1996). *J Occup Environ Med*. 1998;40:1110-1119.
15. Murphy PL, Volinn E. Is occupational low back pain on the rise? *Spine*. 1999;24:691-697.
16. Quebec Task Force on Spinal Disorders. Scientific approach to the assessment and management of activity-related spinal disorders. A monograph for clinicians. Report of the Quebec Task Force on Spinal Disorders. *Spine*. 1987;12(7S):S1-S59.
17. Cherkin DC. Primary care research on low back pain: the state of the science. *Spine*. 1998;23:1997-2002.
18. Cherkin DC, MacCornack FA, Berg AO. The management of low back pain; A comparison of the beliefs and behaviors of family physicians and chiropractors. *West J Med*. 1988;149:75-80.
19. Cherkin DC, Deyo RA, Wheeler K, Ciol MA. Physician views about treating low back pain: the results of a national survey. *Spine*. 1995;20:1-9.
20. Elam KC, Cherkin DC, Deyo RA. How emergency physicians approach low back pain: choosing care options. *J Emerg Med*. 1995;13:143-150.
21. Allen C, Glasziou P, DelMar C. Bed rest: a potentially harmful treatment needing more careful evaluation. *Lancet*. 1999;354:1229-1233.
22. Malmivaara A, Hakkinen U, Aro T, et al. The treatment of acute low back pain — bed rest, exercises or ordinary activity. *N Engl J Med*. 1995;332:351-355.
23. Bortz WM. The disuse syndrome. *West J Med*. 1984;141:691-694.
24. Sandstrom J, Hansson T, Jonson R, Roos B, Anderson BGJ. The bone mineral content of the lumbar spine in patients with chronic low back pain. *Spine*. 1985;10:158-160.
25. Cherkin DC, Deyo RA, Wheller K, Ciol MA. Physician variation in diagnostic testing for low back pain: who you see is what you get. *Arthritis Rheum*. 1994;37:15-22.
26. Schroth WS, Schectman JM, Elinsky EG, Panagides JC. Utilization of medical services for the treatment of acute low back pain: conformance with clinical guidelines. *J Gen Intern Med*. 1992;7:486-491.
27. Taylor VM, Deyo RA, Cherkin DC, Kreuter W. Low back pain hospitalization: recent United States trends and regional variations. *Spine*. 1994;19:1207-1212.
28. Graves EJ. Detailed diagnosis and procedures. National Hospital Discharge Survey, 1990. National Center for Health Statistics. *Vital Health Stat* 12. 1992;113:1-225.
29. Graver V, Haaland AK, Magnaes B, Loeb M. Seven-year clinical follow-up after lumbar disc surgery; results and predictors of outcome. *Br J Neurosurg*. 1999;13:178-184.
30. Daneyemez M, Sali A, Kahraman S, Beduk A, Seber N. Outcome analysis in 1072 surgically treated lumbar disc herniation. *Mimim Invasive Neurosurg*. 1999;42:63-68.
31. Davis RA. A long-term outcome analysis of 984 surgically treated herniated lumbar discs. *J Neurosurg*. 1994;80:415-421.
32. Weber H. Lumbar disc herniation. A controlled, prospective study with ten years of observation. *Spine*. 1983;8:131-140.
33. Hoffman RM, Wheeler KJ, Deyo RA. Surgery for herniated lumbar discs: A literature synthesis. *J Gen Intern Med*. 1993;8:487-496.
34. Loupasis GA, Stamos K, Katonis PG, et al. Seven- to 20-year outcome of lumbar discectomy. *Spine*. 1999;24:2313-2317.
35. Larequi-Laubert T, Vader JP, Burnand B, et al. Appropriateness of indications for surgery of lumbar disc herniation and spinal stenosis. *Spine*. 1997;22:203-209.
36. Birkmeyer NJ, Weinstein JN. Medical versus surgical treatment for low back pain: evidence and clinical practice. *Eff Clin Pract*. 1999;2:218-227.
37. Cherkin DC, Deyo RA, Loeser JD, et al. An international comparison of back surgery rates. *Spine*. 1994;19:1201-1206.
38. Katz, JN. Lumbar spinal fusion. Surgical rates, costs and complications. *Spine*. 1995;20(Suppl 24):76S-77S.
39. Taylor VM, Deyo RA, Ciol M, Kreuter W. Surgical treatment of patients with back problems covered by workers compensation versus those with other sources of payment. *Spine*. 1996;21:2255-2259.
40. Malter A, McNeney B, Loeser J, Deyo R. Five year reoperation rates after different types of lumbar spine surgery. *Spine*. 1998;23:814-820.
41. Franklin GM, Haug JN, Heyer NJ, McKeefrey SP, Picciano JE. Outcome of lumbar fusion in Washington State workers compensation. *Spine*. 1994;19:1897-1903.
42. Keller RB, Atlas SJ, Soule ND, Singer DE, Deyo RA. Relationship between rates and outcomes of operative treatments for lumbar disc herniation and spinal stenosis. *J Bone Joint Surg Am*. 1999;81:752-762.
43. Carey TS, Garrett J, Jackman A, Sanders L, Kalsbeek W. The outcomes and costs of care for acute low back pain among patients seen by primary care practitioners, chiropractors and orthopedic surgeons: the North Carolina Back Pain Project. *N Engl J Med*. 1995;333:913-917.
44. Shekelle PG, Markovich M, Louie R. Comparing the costs between provider types of episodes of back pain care. *Spine*. 1995;20:221-226.
45. Vlaeyen J. Chronic low back pain: assessment and treatment from a behavioral rehabilitation perspective. Amsterdam: Swets and Zeitinger. 1991.
46. Daltroy LH, Iversen MD, Larson MG, et al. A controlled trial of an educational program to prevent low back injuries. *N Engl J Med*. 1997;337:322-328.
47. Deyo RA, Diehl AK, Rosenthal M. How many days of bed rest for acute low back pain? *N Engl J Med*. 1986;315:1064-1070.
48. Wood KB, Garvey TA, Gundry C, Heithoff KB. Magnetic resonance imaging of the thoracic spine: evaluation of asymptomatic individuals. *J Bone Joint Surg Am*. 1995;77:1631-1638.
49. Keefe F, Block A. Development of an observation method for assessing pain behavior in chronic low back pain patients. *Behav Ther*. 1982;13:363-375.
50. Main CJ, Waddell G. Behavioral responses to examination: a reappraisal of the interpretation of "nonorganic signs". *Spine*. 1998;23:2367-2371.
51. Greenough CG, Taylor LJ and Fraser RD. Anterior lumbar fusion: a comparison of noncompensation patients with compensation patients. *Clin Orthop*. 1994;300:30-37.
52. Gaines WG Jr., Hegemann KT. Effectiveness of Waddell's nonorganic signs in predicting a delayed return to regular work in patients experiencing acute occupational low back pain. *Spine*. 1999;24:396-400.
53. Waddell G, Newton M, Henderson I, Somerville D, Main C. A fear avoidance beliefs questionnaire (FABQ) and the role of fear-avoidance beliefs in chronic low back pain and disability. *Pain*. 1993;52:157-168.
54. Al-Obeidi SM, Nelson RM, Al-Awadhi S, Al-Shuwaie N. The role of anticipation and fear of pain in the persistence of avoidance behavior in patients with chronic low back pain. *Spine*. 2000;25:1126-1131.
55. Vlaeyen J, Seelen H, Peters M, de Jong P, Aretz E, Beiseigel E, Weber W. Fear of movement/(re)injury and muscular reactivity in chronic low back pain patients: an experimental investigation. *Pain*. 1999;82:287-304.
56. Gatchel RJ. Psychological disorders and chronic pain: Cause-and-effect relationships. In: Gatchel RJ, Turk DC, Eds. *Psychological approaches to pain management: a practitioner's handbook*. New York: Guilford Press. 1995;33-52.
57. Feyer AM, Herbison P, Williamson A, et al. The role of physical and psychological factors in occupational low back pain: a prospective cohort study. *Occup Environ Med*. 2000;57:116-120.
58. Adams MA, Mannion AF, Dolan P. Personal risk factors for first-time low back pain. *Spine*. 1999;24:2497-2505.
59. Burns JW, Wiegner S, Berleth M, Kiselica K, and Pawl R. Linking symptom-specific physiological reactivity to pain severity in chronic low back pain patients: a test of mediation and moderation models. *Health Psychol*. 1997;16:319-326.
60. Bigos S, Battie M, Spengler D. A prospective study of work perceptions and psychosocial factors affecting the report of back injury. *Spine*. 1991;16:1-6.
61. Williams RA, Pruitt SD, Doctor JN, et al. The contribution of job satisfaction to the transition from acute to chronic low back pain. *Arch Phys Med Rehabil*. 1998;79:366-374.
62. Feuerstein M, Theborge RW. Perceptions of disability and occupational stress as discriminators of work disability in patients with chronic pain. *J Occup Rehabil*. 1991;1:185-195.
63. Papageorgiou AC, Macfarlane GJ, Thomas E, Croft PR, Jayson MI, Silman AJ. Psychosocial factors in the workplace — do they predict new episodes of low back pain? Evidence from the South Manchester Back Pain Study. *Spine*. 1997;22:1137-1142.
64. Thomas E, Silman AJ, Croft PR, Papageorgiou AC, Jayson MI, Macfarlane GJ. Predicting who develops chronic low back pain in primary care: a prospective study. *BMJ*. 1999;318:1662-1667.
65. Lousberg R, Schmidt AJ, Groenman NH. The relationship between spouse solicitude and pain behavior: searching for more experimental evidence. *Pain*. 1992;51:75-79.
66. Kerns RD, Haythornthwaite J, Southwick S, Giller EL Jr. The role of marital interaction in chronic pain and depressive symptom severity. *J Psychosom Res*. 1990;34:401-408.
67. Romano JM, Turner JA, Jensen MP, et al. Chronic pain patient-spouse behavioral interactions predict patient disability. *Pain*. 1995;63:353-360.
68. Cherkin D, Deyo R, Battie M, Street J, Barlow W. A comparison of physical therapy, chiropractic manipulation, and provision of an educational booklet for the treatment of low back pain. *N Engl J Med*. 1998;339(15):1021-1029.
69. Kaplan SH, Greenfield S, Ware JE. Assessing the effects of physician-patient interactions on the outcomes of chronic disease. *Med Care*. 1989;27S:S110-S127.
70. Strecher VJ, DeVellis BM, Becker MH, Rosenstock IM. The role of self-efficacy in achieving health behavior change. *Health Educ Q*. 1986;13:73-92.
71. Deyo RA, Diehl AK. Patient satisfaction with medical care for low-back pain. *Spine*. 1986;11:28-30.
72. Thomas KB. General practice consultations: is there any point in being positive? *BMJ*. 1987;294:1200-1202.
73. Burton AK, Waddell G, Tillotson KM, Summerton N. Information and advice to patients with back pain can have a positive effect: a randomized controlled trial of a novel educational booklet in primary care. *Spine*. 1999;24:2484-2491.
74. Klein BJ, Radecki RT, Foris MP, Feil EI, Hickey ME. Bridging the gap between science and practice in managing low back pain: a comprehensive spine care system in a health maintenance organization setting. *Spine*. 2000;25:738-740.
75. Branthaver B, Stein GF, Mehran A. Impact of a medical back care program in

utilization of services and primary care physician satisfaction in a large, multispecialty group practice health maintenance organization. *Spine*. 1995;20:1165-1169.

76. Carey TS, Garrett JM, Jackman AM. Beyond the good prognosis: examination of an inception cohort of patients with chronic low back pain. *Spine*. 2000;25:115-120.

77. Gatchel R, Gardea M. Psychosocial issues: their importance in predicting disability, response to treatment, and search for compensation. *Neurological Clin*. 1999;17:149-166.

78. Spengler, D.M., Freeman, C., Westbrook, R., Miller, J.W. Low-back pain following

multiple lumbar spine procedures: Failure of initial selection? *Spine*. 1980;5:356-360.

79. Block, A.R. *Presurgical Psychological Screening in Chronic Pain Syndromes*. New Jersey: Lawrence Erlbaum Associates, Inc; 1996.

80. Flor H, Fydrich T, Turk D. Efficacy of multidisciplinary pain treatment centers: A meta-analytic review. *Pain*. 1992;49:221-230.

81. Gatchel RJ, Turk DC, Eds. *Psychological approaches to pain management: a practitioners handbook*. New York: Guilford. 1996.

ADVERTISEMENT

Managed Care Under Pressure: Results of the 2001 Medical Directors Survey

Peter G. Goldschmidt, MD, DrPH, DMS, Jenny C. Liao, MPH, Kelly Edmond-Moore

Summary

This fifth annual survey provides medical directors with a unique perspective on healthcare trends and managed care's future. A list of 2,073 medical directors was compiled from various sources, principally clients of Medical Care Management Corp. and members of the National Association of Managed Care Physicians, the survey's joint sponsors. The survey drew 65 (3.3%) respondents.

Key Points

- Increasing cost is the most significant trend for 2001—as it was last year—according to 83% of respondents, including those who mentioned cost increases to employers and employees, pharmacy cost increases, or managed care's inability to manage costs.
- Other top trends are increased government regulations (a previous top trend), increasing use of the Internet/Web, and the passing on of cost increases to employees.
- Lack of incentives for cost-effective healthcare and unrealistic expectations are the health system's most important problems, according to respondents.
- Practical changes that would most improve America's healthcare system are holding patients accountable for costs and educating patients on appropriate care.
- The public's greatest concern about healthcare services is the cost/affordability of healthcare; patients' most pressing concerns about managed care are access/barriers to care and the complexity of health plan rules/restrictions.
- Respondents were split over managed care's most important goal: contain the cost of care, improve the quality of care in terms of patient outcomes, or optimize trade-offs among goals.
- More than one-third of respondents agreed that a defined contribution health plan (DCHP) is no more than a device for employers to shift healthcare cost increases to employees; over one-third disagreed; the rest were undecided.
- Respondents agreed that under a DCHP, employers will have to insist that employees purchase at least a minimal catastrophic health insurance plan; otherwise some individuals will be tempted to trust providence, with potentially catastrophic consequences. They also agreed that DCHPs will change the way insurance is marketed to consumers, and that the development of decision-support tools is critical to the success of the DCHP approach.
- Respondents disagreed with the following ideas: present-day managed care organizations, HMOs, PPOs, etc., will have no useful role in a world of DCHPs; DCHPs will lead to the end of managed care as we know it; and DCHPs will result in higher quality healthcare.
- Managed care can no longer contain costs. But there is no obvious alternative. Consumer-driven systems, such as DCHPs, may eventually replace managed care. But, for now, it soldiers on, under increasing pressure.

MANAGED CARE is under pressure on all fronts. Consumers bridle at restrictions; employers worry about accelerating costs. From the start, managed care has been synonymous with cost contain-

ment. By the mid-1990s, employers' healthcare costs had largely stabilized. Managed care was credited with containing the seemingly unstoppable growth in healthcare expenditures.¹ Since then, cost

increases accelerated as health plan members and providers balked at the types of restrictions imposed by managed care. The resulting backlash gave rise to a patchwork of state laws designed to curb various types of managed care abuses, and, ultimately, to the federal patients' bill of rights. Now, employers' healthcare costs are increasing by more than 10%, and, in some cases, approaching, 20% per year,^{2,3} many times the rate of general inflation. These are employers' greatest concerns about healthcare², and a growing percentage of the nation's largest employers are passing on cost increases to employees.⁴ Increasingly, employers are eyeing some form of defined contribution health plan (DCHP) as a possible alternative to the current concept of a defined benefit health plan⁵. Health Maintenance Organizations (HMOs)—the warhorses of managed care—have been surpassed by Preferred Provider Organizations (PPOs) as the most common type of managed care plan, because of their inherent flexibility and less rigid controls. But PPOs are less well-equipped to contain costs than are HMOs.² Meanwhile, to remain competitive, HMOs are becoming less restrictive. If open managed care plans cannot contain costs, will employers select PPOs and HMOs that revert to stricter controls? Or, will they turn to DCHPs as a more palatable alternative? If DCHPs catch on, will they hasten the decline of HMOs? Will MCOs as we have come to know, if not love, then have a future?

Medical directors play an important, and often unheralded, role in managed care plans' efforts to assure and improve the quality of care, contain costs, and achieve managed care's myriad other goals, including politically acceptable trade-offs among these various goals. The annual Medical Directors Survey is a tool to find out what the nation's medical directors are thinking. The results reported here pertain to the fifth annual survey, covering 2000/2001. These surveys are sponsored jointly by Medical Care Management Corp. (MCMC) and the National Association of Managed Care Physicians (NAMCP).⁶

Survey Methods

This year's questionnaire was developed in two iterative steps. First, a set of questions of interest to medical directors and the survey's sponsors was developed. Second, a 131-member survey advisory group (consisting of medical directors nominated by MCMC and NAMCP) were asked to review and to answer questions to provide the basis for structuring responses; 5% responded. Finally, the questionnaire was edited to allow respondents to complete it within 15 minutes, and formatted for printing. To facili-

tate comparison of responses to previous surveys, last year's top-five structured responses to a continuing question were included if they were not among those developed for this year's survey. Since survey advisory group members were among the survey population, they were asked specifically to respond to the final questionnaire, even if they had completed an earlier version.

The survey population consisted of the nation's medical directors. For purposes of this survey, a medical director is a physician who is employed by a managed care organization, self-insured employer, or other organization to serve as the administrative head of the organization's medical component (for example, chief medical director), or to support the head of this component (for example, associate medical director), or is a consultant to such an organization (consulting medical director). Also included were medical directors (or their equivalent) of such specialty managed health plans as dental, and mental and behavioral healthcare organizations. These medical directors decide or advise health plans on such matters as medical benefits, coverage decisions, and clinical practice policies. This population excludes medical directors of hospitals, long-term-care facilities, and other provider institutions.

The list of the nation's medical directors was updated this year using the following three sources:

- Client lists of MCMC
- Membership lists of NAMCP
- Medical directors nominated by survey advisory group members.

The resulting database contained the names of a total of 2,073 medical directors. There was at least one person from all 50 states and the District of Columbia. This group comprised the survey population. These medical directors received an anonymous survey packet (questionnaire, cover letter, and postage-paid business reply envelope in which to return the questionnaire) in February 2001. Response intake closed at the end of March 2001, with 65 responses received from medical directors and 74 packets returned as undeliverable (for a response rate of 3.3%).

Each returned questionnaire was edited prior to keying responses into a database for analysis. For example, if a respondent chose multiple responses when only one was permitted (for example, patients' most pressing concern about managed care), one was selected at random. If respondents chose more than the maximum permitted number of responses, the maximum number of responses was selected at random from among the given responses. This procedure ensured that respondents' views were weighted equally in tabulations. A commercial ser-

Exhibit 1: Respondents' Demographic Characteristics

Characteristic	Percentage
Gender	
Male	83%
Female	17%
Total	100%
Age	
34 years or younger	0%
35-44 years	15%
45-54 years	47%
55-64 years	19%
65 years or older	19%
Total	100%
Number of years in managed care practice	
2 years or fewer	3%
2-5 years	18%
6-10 years	31%
11-15 years	21%
16 years or more	27%
Total	100%
Percentage of week serving as medical director	
Less than 20%	3%
20-40%	5%
40-60%	5%
60-80%	3%
80-99%	8%
100%	76%
Total	100%
Type of organization	
Health Maintenance Organization	52%
Multi-product Health Insurer/MCO	21%
Preferred Provider Organization	8%
Physician Hospital Organization	6%
Indemnity Health Insurer	5%
Other	8%
Total	100%

vice was contracted to key and key-verify survey responses. A commercially available statistical software package, STATA-5.0, was used to prepare frequency distributions and cross-tabulations, and to perform statistical analyses.

Exhibit 1 shows respondents' demographics. Almost all (83%) were male. The median age was 52.2 years, and the median experience in managed care practice was almost 10 years. The great majority (76%) were full-time medical directors. Half of respondents (52%) were in HMOs, with the remainder spread among various types of managed care organizations: 21% were with multi-product line health insurers, 8% with PPOs, 6% with PHOs, and 6% with an indemnity health insurer.

More than 80% of respondents mentioned one of the following six broad activities as taking up most of their time:

- UR/UM (utilization review/utilization management), precertification review, coverage decisions (mentioned by 39% of respondents as taking up the most time; 57% mentioned only UR/UM, and

35% mentioned coverage decisions as taking 20% or more of their time per week)

- General administration/paperwork (14%;19%)
- Committees (13%;57%)
- Policy development/planning (5%; 31%)
- Reporting to management (5%; 20%)
- Patient care (5%; 12%). See Exhibit 2.

Responses to this year's survey were essentially the same as those of previous years. The most time-consuming activities, are still UR/UM, general administration/paperwork, and committees. More HMO medical directors (44%) reported that UR/UM coverage decisions took up the most time per week compared to those with other types of organizations (34%). Both full- and part-time medical directors spent a lot of time on UR/UM coverage decisions (33% of full-time medical directors said it was the activity that took up the most time, compared to 43% of part-time medical directors). Full-time medical directors mentioned general administration/paperwork more often as occupying most of their time than did their part-time colleagues (16% vs. 7%). Conversely, part-time medical directors mentioned committees as taking up time more often than their full-time counterparts (29% vs. 7%).

The profile of respondents to the 2000/2001 survey, with respect to demographics, type of organization, and time distribution was largely identical to previous surveys.⁷⁻¹⁰ This year's survey respondents did include a larger percentage of females than previous years (although their representation was still small), and, on average, respondents were somewhat older and more experienced in managed care than last year's survey respondents. A greater proportion of respondents this year were with HMOs (52%, compared to 35%-45% in previous years). It is not known how many of this year's survey respondents also responded to previous surveys.

Results

Trends

The most significant trend for 2001 was increasing/accelerating costs, mentioned by 83% of respondents (including those who mentioned cost increases to employers and employees, pharmacy/drug cost increases, and managed care's inability to manage costs), when they were asked to identify the three most significant events, changes, or trends that will emerge in 2001 that will most affect America's healthcare system in the subsequent five years; 17% also mentioned employers passing cost increases to employees. Far behind were increasing government regulations (including

DIVE

Into a New Season of CME Conferences

BROUGHT TO YOU BY THE MEDICAL DIRECTORS INSTITUTE

MEDICAL DIRECTORS SPRING UPDATE

April 5-6, 2002
Four Points by Sheraton, San Antonio, Texas

Conference Session Highlights:

- Employer Issues
- Predictive Risk Models
- The Future of Electronic Medical Records
- Show Me the Money!
- HIPAA
- A Disease Management Approach to the Treatment of Benign Prostatic Hyperplasia
- Genomics—The Economics of the Genetic Revolution
- Your Future as a Medical Director

Earn 12.5 Hours Category 1 CME credits

Fees: \$395 (members of NAMCP, ACMCM, AAIHDS, WIMC); \$595 (non-member); \$495 (join The Medical Directors Institute and attend at the member rate)

Tell your colleagues about this opportunity! Call 804-527-1905 for information or to request brochures. Register online at www.namcp.com (click on Medical Directors Spring Update).

(Contact the hotel directly at 210-223-9461, prior to March 5, 2002, for the special conference rate of \$105 per night.)

MEDICAL DIRECTORS TRAINING ACADEMY

June 19-23, 2002
Hyatt Regency Oak Brook, Oak Brook, Illinois

Conference Session Highlights:

- Being a Medical Director: A Call to Leadership
- Medical Management
- Pharmacy Management
- Communication Skills for Medical Directors
- Leadership Through Change
- Time Management
- Conflict Management and Resolution
- Medical Economics
- Managed Care Operations
- Internet Primer for Medical Directors
- Medical Informatics
- Mastering the Art of Negotiation

Earn 29 Hours Category 1 CME credits

Fees: \$995 (members of NAMCP, ACMCM, AAIHDS, WIMC); \$1,195 (non-member); \$1,095 (join The Medical Directors Institute and attend at the member rate)

Register online at www.namcp.com (click on Medical Directors' Training Academy), or call 804-527-1905 for more information.

(Call the hotel directly at 630-573-1234 by June 3, 2002, for the special conference rate of \$134 per night.)

The Medical Directors Spring Update and the Medical Directors' Training Academy have been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education through a joint sponsorship of NAMCP, ACMCM, and AAIHDS. NAMCP is accredited by the Accreditation Council for Continuing Medical Education to sponsor continuing medical education for physicians. NAMCP designates these continuing medical education activities as credit toward the AMA Physician's Recognition Award. Each physician should claim only those hours of credit that he/she actually spent in the educational activity.

backlash against managed care and HMO/MCOs being held accountable/liable), patients' rights legislation/regulations, 37%, and expanded use of the Internet/Web (including health information systems and privacy issues/information sharing), 29%. This year, 71% (20 of 28 trends listed) were mentioned by at least 5% of respondents, about the same percentage as last year (when 24 trends were listed). Only eight specific trends were mentioned by about 20% of respondents (see Exhibit 3). They were:

- Healthcare costs increasing/accelerating (mentioned by 37% of respondents this year; not among the most significant trends previously)
- Pharmacy/drug cost increases (29% this year; 31% last year; not among the most significant trends before that)
- Cost increases to employers (25%; 21% last year; not among the most significant trends before that)
- Cost increases to patients: premiums, out of pockets, etc., (20% this year; 32% last year; 41% the year before that)
- Economic downturn (18% this year; not among the most significant trends previously)
- Increased government regulation (17%; 23% last year; 43% previous year, 47% the year before that)

- Employers passing cost increases to employees (17%; not among the most significant trends previously).

Concerns about increasing/accelerating costs dominated this year's most important trends. The economic downturn made the list. Cost increases to patients and increased government regulation continued to recede in importance. Trends seen in previous years, such as consolidations, acquisitions, and mergers among MCOs (the top trend for 1996/97, when 61% of respondents mentioned it) were nowhere in sight this year. Also fading fast was the trend of HMOs/MCOs liability/patients' right to sue, proliferating law suits (mentioned by 8% of respondents this year compared to 19% last year).

Lack of incentives for cost-effective healthcare and unrealistic expectations are the health system's most important problems, according to respondents. This year, seven problems were mentioned by at least 5% of respondents; they accounted for 82% of all responses (last year, it was 77%; the previous year, 71%; and the year before that, 55%), indicating a greater consensus than ever before (see Exhibit 4). Problems mentioned by more than 5% of respondents were as follows (only half were mentioned often in previous years):

- Alignment of incentives/arrangements to encour-

Exhibit 2: Activity on Which Medical Directors Spend the Most Time Per Week

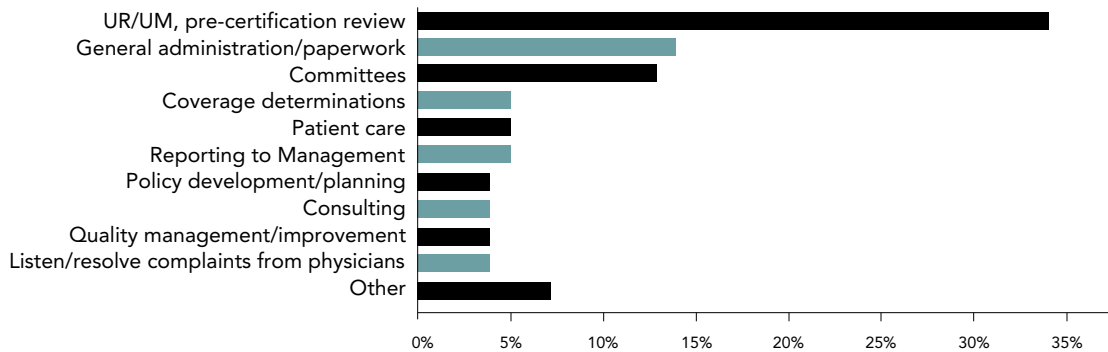
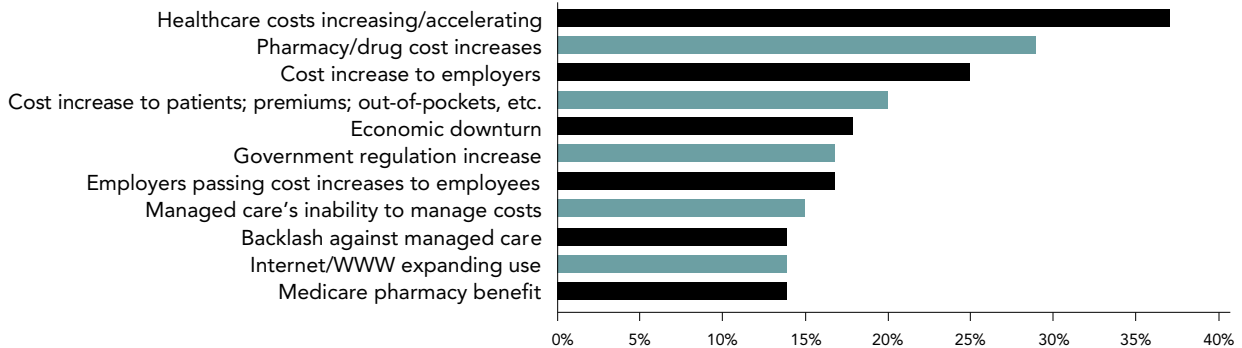


Exhibit 3: Most Significant Events, Changes, or Trends in 2001*

*Respondents were asked to identify up to three events, changes, or trends.



Can't Come to Us? We'll Come to You

**On-Site Programs Offer Continuing Education
to Your Healthcare Delivery System Professionals**

Our educational programs are structured for both small and large groups. These programs can be tailored to your marketplace on any issue in managed care, including business and clinical topics.

Our programs are brought to you by fully trained conference management staff able to comply with your scheduling needs. You *customize* the length and content, based on the specific needs of your audience.

Our faculty members are experts in their field!

Programs available but *not* limited to:

- Clinical Management
- Practice Management
- Leadership Skills
- Financial Management
- Health Systems Management

CME and CEUs available.

**For more information call Katie Headley at 804-527-1905, or e-mail kheadley@namcp.com
On-site programs are brought to you by NAMCP, ACMCM, AAIHDS, AAMCN, and IHPM.**

age cost-effective healthcare (20%; not among last year's most important problems)

- Discrepancy between patient wants/needs (14%; 8% last year, 14% previous year)
- Expectations about healthcare/system unrealistic (12%; 11% last year, not among the most important problems before that)
- Uninsured increasing/lack of universal access (21% last year; 11% the previous year, 6% the year before that)
- Healthcare cost increases (11%; 8% last year, 9% previous year).
- Lifestyle issues, e.g., tobacco use, obesity (8%; not among last year's most important problems)

- Prescription drug increases (6%; not among last year's most important problems).

This year's problems were somewhat different from those mentioned most often in previous surveys. Misalignment of incentives and unrealistic expectations topped the list. Lifestyle issues emerged for the first time as a most important problem. Last year's problems missing from this year's list were lack of healthcare accountability, consumer discontent with health plans, and lack of evidence-based decision-making. Unrealistic expectations was the problem mentioned most often by HMO respondents (18% selected it); misalignment of incentives was cited by other respondents (25%).

Exhibit 4: Most Important Problem Confronting the Healthcare System

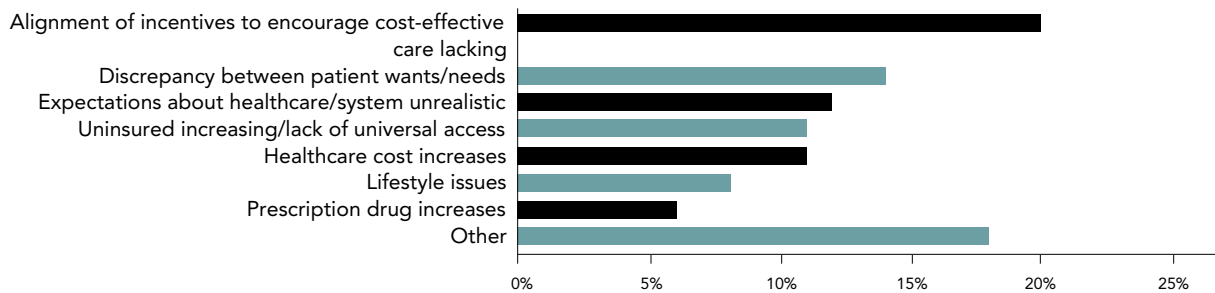


Exhibit 5: Practical Change to Improve Healthcare System

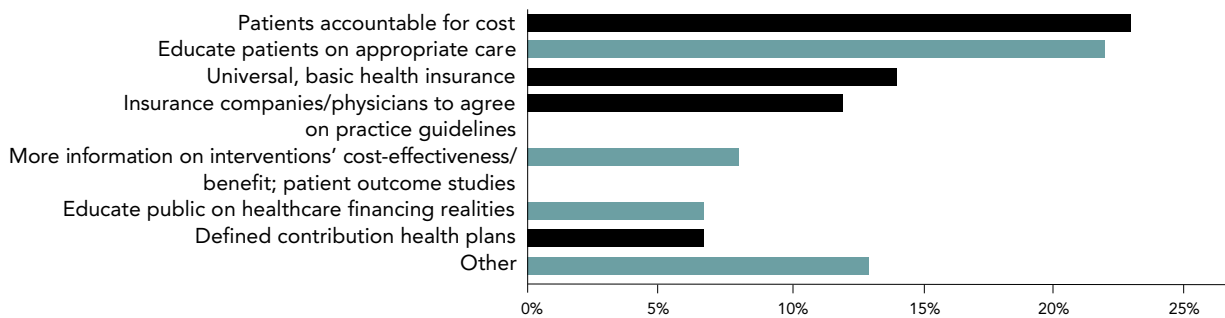
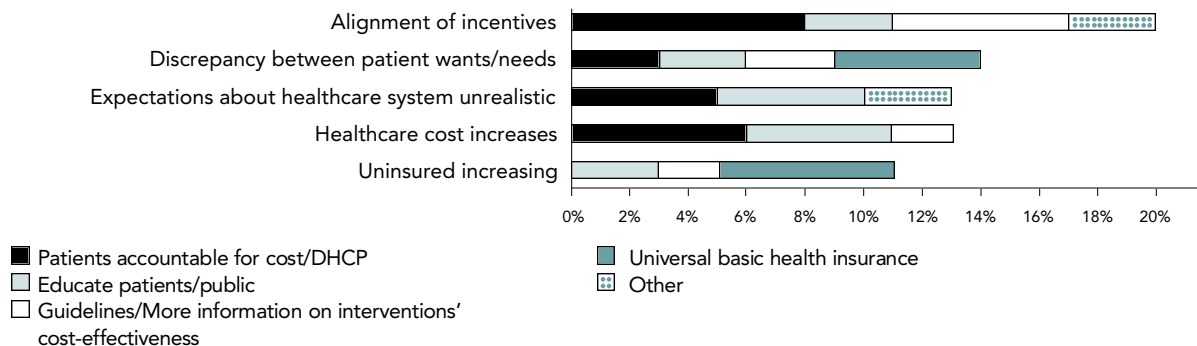


Exhibit 6: America's Healthcare System: Most Important Problems by Change to Improve System



The seven practical changes that would most improve America's healthcare system, according to at least 5% of respondents, are shown in Exhibit 5. This year (as last), holding patients accountable for costs topped the list (23%; 28% including DCHP). It was followed by educating patients on appropriate care (22%; 27% including educating the public about healthcare financing realities), coming to an agreement on practice guidelines (12%; 20% including more information on interventions' cost-effectiveness), and universal basic health insurance (14%). This year, holding patients accountable for costs gained at the expense of universal basic health insurance.

The nation's most important healthcare problems would be aided by the same solutions, according to respondents. The problem of misalignment of incentives would be solved primarily by patients being accountable for costs, changes in practice guidelines, and patient/public education. The discrepancy between patients' wants and needs could be bridged by the same solutions, aided by universal, basic health insurance. Unrealistic expectations and cost increases could be addressed by patients being accountable for costs and patient/public education. Healthcare cost increases might be moderated by patients being accountable for costs/DCHP and patient/public education. Clearly, increases in the number of uninsured would be aided by universal, basic health insurance, as well as patient/public education and practice guidelines (see Exhibit 6).

Medical directors said that the public's greatest concerns about healthcare services today are:

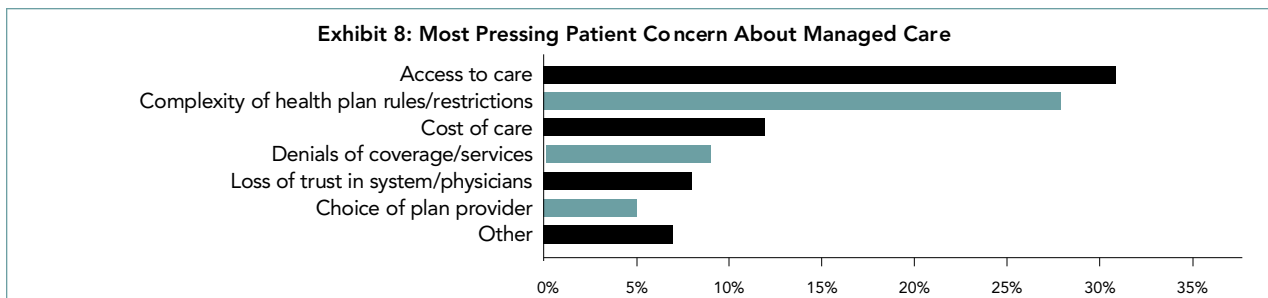
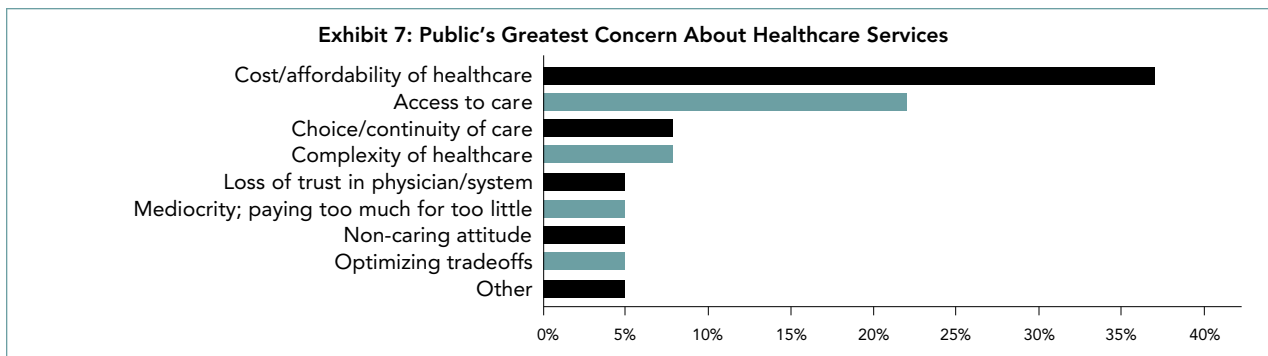
- Cost/affordability of healthcare (37% of responses; 30% last year; 35% previous year; 21% the previous two years before that)
- Access to care (22%; 31% last year; 17% previous year; 20% and 18% in years before that)
- Choice/continuity of care/provider (8%; 19% last year; 32% previous year; 24% and 26% in years before that)
- Complexity in health plan rules/restrictions (8%; not among last year's greatest concerns).

The above-mentioned concerns accounted for 75% of responses (compared to 80% for last year's top responses). Cost emerged more strongly as the top concern, and choice continued to recede (see Exhibit 7).

Patients' most pressing concern about managed care continues to be access to care, according to almost half of respondents, but the complexity of health plan rules was a close second (see Exhibit 8). Respondents assessed patients' most pressing concerns as:

- Access/barriers to care (mentioned by 31% of respondents this year; 48% last year; 35% previous year; 25% and 24% in years before that)
- Complexity of health plan rules/restrictions (28%; 12% last year; 9% previous year; 13% year before that).
- Cost of care/benefits limitations/reductions (12%, both this year and last; 20% previous year; 19% and 11% in years before that).

Loss of trust in physician/system, denials of coverage/service, and choice of plan/provider continue to



be pressing concerns (but each was mentioned by less than 10% of respondents). According to HMO respondents, the cost of care is patients' most pressing concern (33% selected it); non-HMO respondents selected access to care (38%). This was a reversal from last year, when HMO respondents overwhelmingly mentioned access to care as patients' greatest concern and non-HMO respondents selected a wide variety of concerns, including access to care.

Respondents continued to split into three main groups over what they considered the most important goal of managed care (see Exhibit 9). Containing costs emerged as managed care's most important goal, displacing "optimize trade-offs," which was last year's top goal. Here is how responses were divided:

- Contain/manage cost of care (33% of mentions; 24% last year; 33% previous year; 23% and 25% in years before that).
- Improve quality of care in terms of patient outcomes (27%; 25% last year; 28% previous year; 33% and 31% in years before that)
- Optimize trade-offs among goals (24%; 35% last year; 23% previous year; 37% and 38% in years before that).

Defined Contribution Health Plans

Managed care as we know it arose primarily from employers' desire to contain the cost of health benefits provided to employees. In the last several years, employee health benefit costs have increased sharply, and the rate of growth seems to be accelerating. Rising health benefit costs are generating interest in the broad concept of DCHPs. Basically, under a DCHP, an employer defines—that is, caps—the contribution it is willing to make toward an employee's (and his/her dependents') healthcare costs. The employee is responsible for selecting the mix of health insurance, health plan, and other healthcare elements that best meet his/her needs and desires. Employers may assemble various health plan options for insurance, care, and the other elements of a complete healthcare plan for employees to choose among. In turn, employees may or may not be limited to choices among employer-assembled plans/elements.

Employers may contract with vendors to assemble these options and assist employees in building a complete healthcare plan drawn from elements available on the

open market, and/or to provide other services to facilitate employees' healthcare decision-making. Employers may permit employees to retain some or all of the unused part of the employer's annual contribution, for example, in some type of healthcare savings account or as a cash payment. This year's survey asked respondents to rate their agreement or disagreement with 31 separate statements about DCHPs (see Exhibit 10).

Respondents split over the statement, "DCHP is no more than a device for employers to shift healthcare cost increases to employees," with 43% agreeing with the statement and 35% disagreeing (the rest chose the five-point scale mid-point). Respondents with an HMO were roughly split in this regard, but tended toward disagreement (33% agreed; 39% disagreed). However, other respondents tended toward agreement (53% agreed; 31% disagreed).

Respondents agreed most strongly with the following three statements (in order of strength of agreement based on mean score of a five-point scale, from 1 (agree strongly) to 5 (disagree strongly):

- Under a DCHP, employers will have to insist that employees purchase at least a minimal catastrophic health insurance plan; otherwise some individuals will be tempted to trust to providence, with potentially catastrophic consequences (1.83).
- DCHP will change the way insurance is marketed to consumers (1.84).
- Development of decision-support tools (for example, to assist employees to create an appropriate mix of healthcare plan elements, select among catastrophic coverage insurance plans, choose among providers, select appropriate treatments, stay healthy) is critical to the success of the DCHP approach (2.06).

Respondents disagreed most strongly with the following three statements (in order of strength of disagreement based on mean score):

- Present-day managed care organizations, HMOs, PPOs, etc., will have no useful role in a world of DCHPs (3.97).
 - DCHPs will lead to the end of managed care as we know it (3.66).
 - DCHPs will result in higher quality healthcare (3.34).
- Additional findings included the following:
- A majority of respondents (52%) who agreed

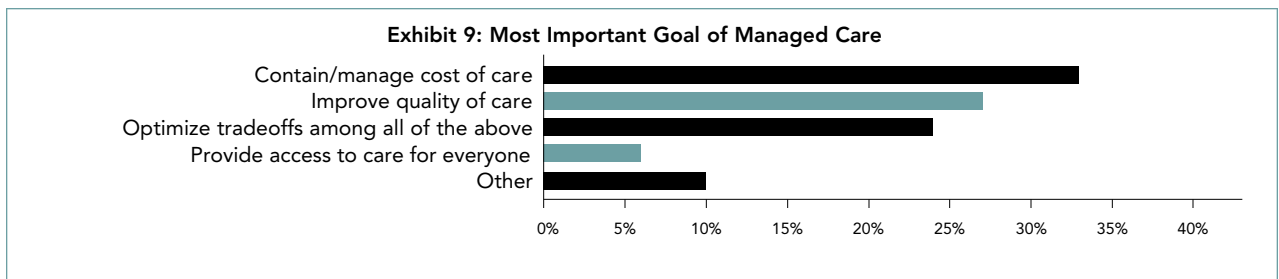
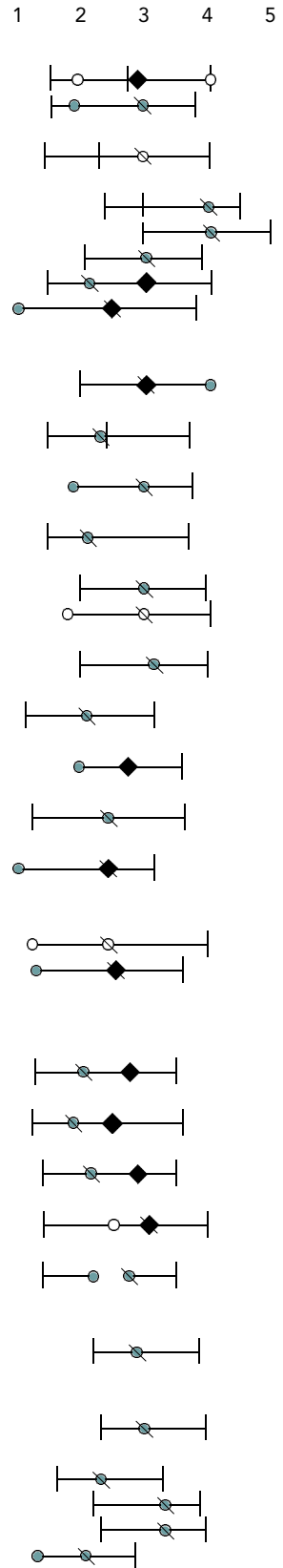


Exhibit 10: Defined Contribution Health Plan

Extent: 1=Agree Strongly 5=Disagree Strongly

Statement:

- a. DCHP is no more than a device for employers to shift healthcare cost increases to employees.
- b. Employees will only accept a DCHP if an employer allows them to keep the unused part of the employer's contribution, for example, in a healthcare savings account.
- c. If the economy sours (e.g., profits dwindle, demand slackens, unemployment rises), employers will rush to implement a DCHP in an attempt to contain their health benefit costs.
- d. DCHP will lead to the end of managed care as we know it.
- e. Present-day managed care organizations, HMOs, PPOs, etc., have no useful role in a world of DCHPs.
- f. The tax code is a significant barrier to employers switching to a DCHP.
- g. Employees lack the sophistication, education, interest to manage their healthcare under a DCHP.
- h. Development of decision-support tools (for example, to assist employees to create an appropriate mix of healthcare plan elements, elect among catastrophic coverage insurance plans, choose among providers, select appropriate treatments, stay healthy) is critical to the success of the DCHP approach.
- i. DCHP works only for employees/individuals who are essentially well; it can't work for individuals with chronic diseases or expensive medical needs.
- j. If employers' annual employee health benefit costs increase exceed 10% in each of the next two to three years, employers will inevitably switch to a DCHP.
- k. Employers will switch to a DCHP to avoid the hassles associated with administering a traditional (i.e., defined benefits) health plan.
- l. If employers perceive that they may be liable for the medical decisions of health plan providers, they will either switch to a DCHP or offer no health benefits.
- m. By the end of 2010, most employers will have switched to a DCHP.
- n. Employers' switch to DCHPs will fuel medical care cost inflation because, among other things, individuals lack employers' collective purchasing power.
- o. Under a DCHP, when individuals become responsible for allocating health benefit dollars, they will drive market efficiencies in the provision of medical/health care.
- p. Employers who want to switch to DCHP will have to encourage/support the development of the infrastructure necessary to help employees to make wise healthcare choices.
- q. The emergence of DCHPs will encourage employers who do not presently offer health benefits to do so by offering their employees a defined contribution.
- r. If large employers begin to switch to a DCHP, the marketplace will respond by developing the mechanisms and tools for employees to make wise healthcare choices.
- s. Under a DCHP, employers will have to insist that employees purchase at least a minimal catastrophic health insurance plan; otherwise, some individuals will be tempted to trust in providence, with potentially catastrophic consequences.
- t. The DCHP approach would work well for Medicare beneficiaries.
- u. The DCHP approach could be used to provide universal healthcare coverage, if the government were to require all employers to make a minimum contribution; the government were to make an income-related contribution to unemployed individuals' accounts and those whose small employers provide only the mandated minimum contribution.
- v. Ways can be found to make a DCHP work for individuals with chronic conditions or expensive medical needs.
- w. Prevention would inevitably suffer under a DCHP because, for example, most individuals would want only to protect against, or would only seek care in the event of, sickness.
- x. Under a DCHP, ways can be found to encourage individuals to maintain and to improve their health and to use appropriate preventive services.
- y. DCHPs will improve the efficiency of healthcare by putting resources and choices into individuals' hands.
- z. The existence of cost-effective "dispute resolution" services to handle disputes that might arise, for example, between consumers and health plans (e.g., with respect to coverage decisions), patients and providers (e.g., with respect to informed consent, terms of service), is essential to the success of a DCHP.
- aa. Access to Internet-based transaction, information, and other services necessary to enable employees to make wise healthcare choices and to arrange healthcare services are essential to the success of a DCHP.
- bb. Under a DCHP, individuals will sacrifice timely treatment for short-term savings; subsequent care needed will cost more.
- cc. DCHP promotes employee/consumer choice.
- dd. DCHP is the best hope for containing the nation's healthcare costs.
- ee. DCHP will result in higher quality healthcare.
- ff. DCHP will change the way insurance is marketed to the consumer.



○ Mode (<33% of respondents) ◆ Mean (if different from the mode)
 ● Mode (33% to 49% of respondents) | Median
 ─── Standard deviation

that “DCHP is no more than a device for employers to shift healthcare cost increases to employees” also agreed that “If employers’ annual employee health benefit cost increases exceed 10% in each of the next 2–3 years, employers will inevitably switch to a DCHP.” Only 30% of respondents who disagreed with the first agreed with the latter statement.

- A majority of respondents (50%) who disagreed with the idea that “DCHP is no more than a device for employers to shift healthcare cost increases to employees” agreed that “Under a DCHP, when individuals become responsible for allocating health benefit dollars they will drive market efficiencies in the provision of medical/healthcare.” However, a majority of respondents (52%) who agreed with the first statement disagreed with the second statement.

- Most (86%) of respondents who agreed that “Development of decision support tools...is critical to the success of the DCHP approach” also agreed that “Employers who want to switch to a DCHP will have to encourage/support the development of the infrastructure necessary to help employees to make wise healthcare choices.”

- Respondents who agreed that “DCHP works only for employees/individuals who are essentially well; it can’t work for individuals with chronic diseases or expensive medical needs,” were nearly split on whether or not “Ways can be found to make a DCHP work for individuals with chronic conditions or expensive medical needs;” 36% agreed ways can be found; 36% disagreed (the rest chose the five-point scale mid-point). Almost all respondents (88%) who disagreed with the idea that a DCHP can’t work for individuals with chronic disease or expensive medical needs indicated that ways can be found to make a DCHP work for individuals with such conditions or needs.

- There was a substantial negative correlation between respondents’ agreement with the statements “Employers’ switch to DCHPs will fuel medical cost inflation because, among other things, individuals lack employers’ collective purchasing power” and “Under a DCHP, when individuals become responsible for allocating health benefit dollars they will drive market efficiencies in the provision of medical/healthcare.” Respondents who agreed that the switch will fuel inflation tended to disagree that consumers will drive market efficiencies, and vice versa.

- Respondents who agreed that “DCHPs will improve the efficiency of healthcare by putting resources and choices in individuals’ hands,” also tended to agree that “Under a DCHP, when individ-

uals become responsible for allocating health benefit dollars, they will drive market efficiencies in the provision of medical/healthcare.”

- A majority of non-HMO respondents (65%) agreed that “The DCHP approach could be used to provide universal healthcare coverage...;” only 34% of respondents with an HMO did so. Similarly, 54% of non-HMO respondents agreed that “If employers’ annual employee health benefit cost increases exceed 10% in each of the next 2–3 years, employers will inevitably switch to a DCHP;” only 34% of HMO respondents did so. Further, 68% of non-HMO respondents agreed that “If large employers begin to switch to a DCHP, the marketplace will respond by developing the mechanism and tools for employees to make wise healthcare choices;” only 44% of HMO respondents did so.

- A majority of respondents with an HMO (58%) agreed that “DCHP promotes employee/consumer choice;” 90% of other respondents did so.

- Only 13% of non-HMO respondents disagreed that “If the economy sours...employers will rush to implement a DCHP in an attempt to contain their health benefit costs;” 30% of respondents with an HMO disagreed.

- A majority of HMO respondents (66%) agreed that “Prevention would inevitably suffer under a DCHP...” compared to 48% of non-HMO respondents. Unsurprisingly, the percentages were reversed with respect to “Under a DCHP, ways can be found to encourage individuals to improve their health and to use appropriate preventive services” (47% of HMO respondents agreed vs. 65% of others). Generally, 84% of respondents who disagreed with the idea that “Prevention would inevitably suffer under a DCHP...” agreed that “Under a DCHP, ways can be found to encourage individuals to improve their health and to use appropriate preventive services.” However, only 36% of respondents who agreed that “Prevention would inevitably suffer under a DCHP...” also agreed that “Under a DCHP, ways can be found to encourage individuals to improve their health and to use appropriate preventive services.”

Discussion

Survey results may represent a biased view for two reasons. First, only a small fraction of the medical directors identified responded (3.3%). Second, it’s possible that not all of the nation’s medical directors were identified. Respondents’ profiles were remarkably similar for all five surveys conducted to date. Nevertheless, comparisons must be interpreted cautiously because it is not known what percentage of respondents who

completed this year's questionnaire also participated in previous years' surveys.

Increasing/accelerating healthcare costs dominated this year's most significant trend. It was mentioned by 83% of respondents (including those who mentioned cost increases to employers and employees, pharmacy/drug cost increases, and managed care's inability to manage costs); 17% also mentioned employers passing the cost increases on to employees. Far behind were increasing government regulations and expanded use of the Internet/Web. The current economic downturn also made the list. Cost increases to patients, increased government regulation, and HMOs/MCOs liability/patients' right to sue continued to recede in importance.

There was more agreement than ever among respondents about the nation's most important problems. The two top problems are "lack of incentives for cost-effective healthcare" and "unrealistic expectations." This year's top problems were somewhat different than those mentioned most often in previous surveys. Lifestyle issues emerged for the first time among the top problems. Missing from this year's list were lack of healthcare accountability, consumer discontent with health plans, and lack of evidence-based decision-making. According to respondents, all of the nation's most important healthcare problems would be aided, for the most part, by the same practical changes. This year (as last), holding patients accountable for costs was the perceived practical change that would most improve America's healthcare system, followed very closely by educating patients on appropriate care.

Universal basic health insurance faded to third place.

Cost/affordability of healthcare re-emerged as the public's greatest concern in medical directors' minds; last year it was access to care. This year, as last, access to care continued to be patients' greatest concern, according to respondents. However, complexity of health plan rules/restrictions was mentioned almost as often. According to HMO respondents, the cost of care was patients' most pressing concern; last year, it was access. This year, non-HMO respondents selected access to care, a reversal of last year's results.

Unsurprisingly, this year, a plurality of medical directors viewed cost containment as managed care's most important goal. However, once again, they split almost equally into three main groups, indicating a continued divergence of views on this central issue. "Improve quality of care in terms of patient outcomes" was again mentioned second most often and "optimize trade-offs" was mentioned third most often (it was mentioned most often last year). Once again this year, few respondents chose "providing access to care for everyone or distributing/rationing care equitably" as managed care's most important goal. This finding remains remarkably constant.⁷⁻¹¹

The most remarkable finding regarding respondents' opinions about defined contribution health plans (DCHPs) was the dichotomy of their purpose. Over one-third of respondents agreed that a DCHP is no more than a device for employers to shift healthcare cost increases to employees; over one-third disagreed; the rest were undecided. HMO respondents were roughly split in this regard, but tended toward disagreement; a majority of other

ADVERTISEMENT

respondents agreed with the statement. Respondents agreed that DCHPs promote employee/consumer choice and will change the way insurance is marketed to consumers. According to the average medical director, if employers perceive that they may be liable for the medical decisions of health plan providers, they will either switch to a DCHP or offer no health benefits, and they will have to insist that employees purchase at least a minimal catastrophic health insurance plan. Otherwise some individuals will be tempted to trust to providence, with potentially catastrophic consequences. The development of decision-support tools, and the existence of cost-effective "dispute resolution" services to handle disputes that might arise, are both critical to the success of the DCHP approach. Respondents also noted that if large employers switch to a DCHP, the marketplace will respond by developing the mechanism and tools for employees to make wise healthcare choices. Respondents disagreed with the ideas that present-day managed care organizations, HMOs, PPOs, etc., will have no useful role in a world of DCHPs, that DCHPs will lead to the end of managed care as we know it, and that DCHPs will result in higher quality healthcare.

Respondents who agreed that a DCHP works only for employees/individuals who are essentially well (and it can't work for individuals with chronic diseases or expensive medical needs) were split on whether or not ways can be found to make a DCHP work for individuals with chronic conditions or expensive medical needs. Almost all respondents who disagreed with the idea thought that ways could be found to make a DCHP work for individuals with such conditions or needs.

Respondents who agreed that the switch to DCHPs will fuel medical cost inflation tended to disagree with the idea that consumers will drive market efficiencies, and vice versa. Unsurprisingly, respondents who agreed that DCHPs will improve the efficiency of healthcare by putting resources and choices in individuals' hands also tended to agree that under a DCHP, when individuals become responsible for allocating health benefit dollars, they will drive market efficiencies in the provision of medical healthcare. A majority of respondents, particularly those working in HMOs, agreed that prevention would inevitably suffer under a DCHP, and relatively few of these respondents thought ways could be found under a DCHP to encourage individuals to improve their health and to use appropriate preventive services. But, most respondents who disagreed with the idea that prevention will inevitably suffer, thought that under a DCHP, ways could be found to

encourage individuals to improve their health and to use appropriate preventive services.

Managed care replaced fee-for-service arrangements because of its potential to contain costs. But, as a result, it largely replaced an insurance model, often with substantial co-payments and deductibles, for a financing mechanism with nominal, if any, consumer co-pays, further insulating consumers from costs. For a while, it succeeded in managing cost, rather than care, by imposing strict supply-side controls and negotiating discounts from providers. Patients' resentment and demand for choice led to patients' rights legislation and class action suits that weakened managed care, as well as a switch to health plans with less strict controls.

Providers, aided by their consolidation, struck back in their negotiations with health plans. Patients' demands and providers' fees began to rise; cost increases accelerated. Managed care may have succeeded in effecting a one-time shift in the upward slope of healthcare costs. But, perhaps, the effect was merely to create a short-term blip in the long-term historical trend, which has now re-emerged, to continue its relentless upward climb. What next?

The quest for a new way to meet employees' healthcare needs is under way at a time when MCO membership is at an all-time high (92% in 2000, for employer-sponsored health plans compared to 89% in 1999).² The focus is now on lowering the demand for care and increasing the efficiency of its provision, for example, through disease management programs¹², because of the failure of, and the difficulty of reimposing, supply-side restraints. Can a renewed interest in managing care and clinical quality save the day? Does the answer lie in a consumer-driven system in which individuals have to make trade-offs between cost and quality? In an attempt to stem the tide of rising prescription drug costs¹³, some employers have already introduced tiered co-pays²; some health plans are considering surcharges for high-cost academic medical centers¹⁴. Will DCHPs emerge as the next new approach? Such a system can only work if consumers have sound information about costs and quality. Will the generation of this information require, and result in, even more fundamental changes in healthcare?

Managed care clearly was seen as a replacement for fee-for-service. But, there is no clear successor to managed care. Until then, employers will continue to rely on managed care and managed care will soldier on. Perhaps, at employers' insistence, managed care will revert to stricter controls. But, perhaps, devolving responsibility to employees and patients, for example in the form of a DCHP, looks more attractive. Employers can fix their contribution and limit

their liability. But, contrary to current expectations, costs may increase (as individual employees demand more and lack collective purchasing power), and employee satisfaction may decrease (because they may have to pay more while negotiating the system's complexities).¹⁵ Always lurking in the background, as a potential solution of last resort, is a government-mandated single-payer system of healthcare financing. Managed care must reinvent itself to survive as the dominant mode of healthcare financing and organization, at a time when the public's confidence in MCOs is on a par with tobacco companies'.¹⁶ Only time will tell the extent to which managed care can survive current pressures. The nation's medical directors will help shape the evolution of the nation's healthcare delivery system, and current pressures will doubtless shape the nature of their work. **JMCM**

Peter G. Goldschmidt, MD, DrPH, DMS is president of Medical Care Management Corp., a medical consulting company, based in Bethesda, Md. Jenny C. Liao is assistant director of the Medical Care Ombudsman Program, and Kelly Edmond-Moore is an associate at Medical Care Management Corp.

If you are a medical director who did not receive the 2000/2001 Medical Directors Survey and would like to

receive future surveys, please fax your name, affiliation, address, telephone and fax numbers to 804-747-5316 .

References

1. Fuchs VR. Managed care and merger mania. *JAMA* 1997;277:920-921.
2. Prince M. Employers looking beyond managed care. *Business insurance* 2001; August 13;1,25.
3. Appleby J. Healthcare costs going out of control, report says. *USA Today* 2001; March 8;3B.
4. Twersky O. Corporation curbing employee healthcare benefits. Available at: <http://dailynews.yahoo.com>. Accessed May 7, 2001.
5. Cenicerio R. Employees seek plan choice. *Business insurance* 2001; June 25;3,29.
6. Medical Care Management Corporation (Bethesda, MD) provides a wide range of programs to assist health insurers, managed care organizations, self-insured employers, physicians, and patients to manage medical care. The National Association of Managed Care Physicians (Richmond, VA) is the professional association of physicians in managed care.
7. Goldschmidt PG, Liao JC. Trends in managed care: Results of the 1996/ 97 medical directors survey. *Journal of Managed Care Medicine* 1998;2(1):36-43.
8. Goldschmidt PG, Liao JC. Trends in managed care: Results of the 1997/ 98 medical directors survey. *J Managed Care Medicine* 1998;2(2):12-20.
9. Goldschmidt PG, Liao JC, Edmond K. Managed care under siege: Results of the 1999 medical directors survey. *J Managed Care Medicine* 1999;4(1):24-39.
10. Goldschmidt PG, Edmond-Moore K, Liao JC. Managed care in transition: Results of the 1999/ 2000 medical directors survey. *J Managed Care Medicine* 2000;5(1):32-42.
11. Goldschmidt PG, Ip A. How doctors and employers view managed care: results of a NAMCP/ NBCH survey. *Managed Care Medicine* 1996;3(5):19-28.
12. Freudenheim M. A changing world is forcing changes on managed care. *The New York Times* 2001; July 2.
13. Pear R. Spending on prescription drugs increase by almost 19 percent. *The New York Times* 2001; May 8.
14. Kowalczyk L. HMOs eyeing surcharges for high-end care. *Boston Globe* 2001; August 28;A1.
15. Prince M. Managing costs of healthcare. *Business insurance* 2001; July 9;3,21.
16. Skidmore S. Health and insurance: Studies show managed care service under the weather. Available at: www.jacksonville.com. Accessed June 18, 2001.

ADVERTISEMENT

ADVERTISEMENT

ADVERTISEMENT

ADVERTISEMENT