

# CERTs

ANNUAL REPORT

YEAR **6**



Centers for  
Education &  
Research on  
Therapeutics



**Agency for Healthcare  
Research and Quality**

*Advancing Excellence in Health Care*



U.S. Department  
of Health and  
Human Services

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## Vision

To serve as a trusted national resource for people seeking to improve health through the best use of medical therapies.

## Mission

To conduct research and provide education that will advance the optimal use of drugs, medical devices, and biological products.

# Values

**Public Interest.** Research must be conducted to answer important questions that otherwise may not be addressed, with higher priority given to projects that offer better opportunities to achieve our mission and vision.

**Public-Private Partnership.** For results to apply to the “real world,” the research must reflect a collaboration of groups with different perspectives and resources: patients, health care providers, government, academia, delivery systems, payers, purchasers, and manufacturers of medical products.

**Multidisciplinary Alliances.** The best research harnesses the collective expertise of medical practitioners, biostatisticians, clinical pharmacologists, health services researchers, clinical epidemiologists, pharmacists, clinical researchers, and others involved in health care.

**Communication.** The information from the CERTs must be made readily available to all relevant audiences.

**Education.** Education of current and future health care providers, policymakers, and patients is critical to improving health.

**Public Policy.** Policymakers must be provided with the best available evidence upon which to base policies.

**Accountability.** Americans should expect the CERTs to be a trusted resource when they need answers to questions about therapies.

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# Letter from the Agency for Healthcare Research and Quality



Dear Colleague:

The Agency for Healthcare Research and Quality (AHRQ) is pleased to present this report outlining the activity and progress of the Centers for Education & Research on Therapeutics (CERTs) in their sixth year. AHRQ is the health services research agency of the Federal Government. Since 1999, AHRQ's mission has included sponsoring the CERTs, which were established as national research centers focusing on the safest and most effective ways to use medical therapeutics: drugs, biological products, and medical devices. The CERTs also serve as an educational resource and, through their unique network of partnerships, a catalyst for groups interested in improving the safe and effective use of therapeutics.

People benefit from medical therapeutics throughout their life. Some CERTs projects focus on specific ages, such as assessment of the cost effectiveness of a medicine for premature infants and studies concerning better ways for children with type 1 diabetes to monitor their blood glucose, and in the elderly, surveys of nursing directors to look for ways to prevent hip fractures in nursing home residents through techniques such as dietary supplementation and hip protectors. Other research addresses conditions, such as lupus, HIV, or heart problems, that affect people of many ages. Still other projects apply to all Americans. Examples are investigating the growing problem of antibiotic-resistant bacteria and collaborating with the Food and Drug Administration on monitoring the safety of drugs on the U.S. market.

Some of the most fascinating CERTs activities involve surveys and other interactions to take the pulse of the clinician community. Do physicians measure the QT interval before they prescribe drugs that can produce an irregular heartbeat? Do providers suggest Vitamin D supplementation for breastfed babies? How did physicians respond to patient requests for antibiotics after the anthrax scare of 2001? Other studies compare people's self-reports with actual administrative records. Investigators found, for instance, that refill records did not support patients' reports that they took medicine as directed by their provider. Other studies look at how the system works in an effort to pinpoint weak links that lead to errors. For example, some of the causes of medication errors are simple basic problems with handwritten prescriptions, such as using inappropriate abbreviations or unclear recording of decimals.

We look forward to more progress from the CERTs in our mutual effort to ensure that medical therapeutics offer the best possible benefit to the American public and even the world.

Sincerely,

A handwritten signature in black ink that reads "Carolyn M. Clancy MD". The signature is written in a cursive, flowing style.

Carolyn M. Clancy, MD  
Director

# Letter from the Steering Committee



Dear Fellow Citizens:

The Centers for Education and Research on Therapeutics (CERTs) are honored to present this report to share the results from our sixth year of work. Our contributions to research and education continue to focus on topics that directly enhance health care and improve health for the American people. With more than 250 studies in progress, we continue to fulfill our dual mission of exploring the benefits and risks of medical therapies and informing patients, providers, and policy-makers about our findings for their use to improve care.

Although it contains only a brief synopsis of some of our current research and education projects, this snapshot of CERTs progress helps illustrate how medical research can improve everyday health care practice today, while also helping to point the way toward broad and long-term solutions for some of our most vexing challenges ahead. In the pages which follow, you'll learn about CERTs research examining issues ranging from ways to control the increasing incidence of bacterial resistance to antibiotics to approaches which document, predict, and manage the risks of adverse reactions to commonly prescribed medications.

A very special feature of the CERTs is the emphasis on collaboration with academic research institutions, government agencies, managed-care organizations, pharmaceutical and medical device companies, physicians and health care practitioners, and others. These crucial partnerships give the CERTs the ability to tap a broad array of resources in addressing emerging issues related to therapeutics and ensure that our findings address real needs in real time. For instance, our access to some of the state-of-the-art linked databases of large managed-care and insuring organizations makes it possible to undertake large

population-based observational (epidemiological) studies of issues which matter to you, for example, the relative frequency of conditions or complications arising from prescribed drugs or other treatments. And, at the policy level, we partner with many national professional research and educational organizations to work toward an aligned and effective nationwide effort.

As knowledge about curing or preventing health problems continues to grow, the resources for providing care are often stretched thin. An important part of the CERTs mission is to contribute to the evidence base to help with decisions about the best ways to spend scarce resources. Of course, we're proud of the track record of peer-reviewed publication in the scientific literature; however, beyond publication, we continue to look for effective ways of communicating the information that emerges from CERTs studies and integrating it with other related findings on the same subject. Our goal is that the knowledge uncovered by this research will quickly translate into improved health care for the American people.

Sincerely,

Hugh H. Tilson, MD, DrPH  
Chair, on behalf of the CERTs Steering Committee:

*Lynn A. Bosco, MD, MPH; Robert M. Califf, MD; Georges Benjamin, MD, FACP; Marc L. Berger, MD; Barbara A. Blakeney, MS, APRN, BC, ACP; Susan N. Gardner, PhD; Harry A. Guess, MD, PhD; James G. Kotsanos, MD, MS; Judith M. Kramer, MD, MS; Richard Platt, MD, MS; Wayne A. Ray, PhD; Kenneth G. Saag, MD, MSc; Marcel E. Salive, MD, MPH; David G. Schulke; Paul J. Seligman, MD, MPH; Scott R. Smith, RPh, PhD; Steven L. Solomon, MD; Brian L. Strom, MD, MPH; Myrl Weinberg, CAE; Raymond L. Woosley, MD, PhD*

# Chairman's Tribute to Harry Guess, MD, PhD

On January 1, 2006, the CERTs program lost one of its true champions, and I lost a treasured personal and professional friend of 25 years, Harry Guess, MD, PhD. For over 2 years Harry served as a member of the CERTs Steering Committee and as principal investigator for the University of North Carolina at Chapel Hill (UNC) CERTs center.

Throughout his career Harry was dedicated to science, learning, teaching, mentoring, and discovery. Having had the joy of teaching and working at his side, I marveled at his enormous mathematical and logical mind (his PhD was in advanced mathematics) and his equal measure of common sense and straight talk. He contributed these attributes generously to the CERTs program, helping the UNC CERT to make unprecedented inroads into the "E" (Education) in CERTs, particularly in terms of the translation of therapeutics into practical systems and incentives for pediatricians to adopt them, e.g., through professional recertification.

He was board certified in pediatrics, public health, and in general preventive medicine, and was recently awarded the Sustained Scientific Excellence Award by the International Society for Pharmacoepidemiology, where he dazzled, amused, and charmed us with his acceptance speech. Over his career, he co-authored more than 150 research articles and served on the editorial boards of numerous research journals. Following a distinguished career at Merck, where he embodied the practice of public health in the private sector, he became a tenured professor of Epidemiology

in the School of Public Health and Pediatrics in the School of Medicine at UNC-Chapel Hill and the Director of the GlaxoSmithKline Center of Excellence in Pharmacoepidemiology at UNC.

In addition to his work on CERTs, Harry was also the principal investigator of the UNC Primary Research Site in the National Institutes of Health Patient Reported Outcomes Measurement Information System (PROMIS) network, part of a large NIH roadmap initiative to study the dynamic assessment of patient-reported chronic disease outcomes.

I know I speak for all of us in expressing how deeply we appreciate the many contributions he made to the scientific community, and specifically to the CERTs program and to our personal lives. How we miss him!

**Hugh H. Tilson, MD, DrPH**  
CERTs Steering Committee Chair



**Dr. Harry Guess 1940–2006**

# Introduction

The Centers for Education & Research on Therapeutics (CERTs) program serves the American people by providing valuable information to health care providers, patients, and policymakers about the benefits, risks, and appropriate use of medical therapies. The CERTs mission is to uncover this information and to make it widely known.

The CERTs program consists of a network of research centers, a coordinating center, a steering committee, and numerous partnerships with public and private organizations dedicated to improving the quality and safety of therapeutics. In this report, projects are grouped into three main categories: (1) advancing knowledge about therapeutics, (2) informing health care providers, patients, and policymakers about that knowledge, and (3) improving aspects of the health care system related to therapeutics.

CERTs projects cover diverse topics, ranging from the emergence of antibiotic-resistant bacterial infections to the role of the news media in communicating medical risks. As we complete our sixth year of work, we remain involved in research related to some of the most challenging medical issues of the day. The centers are also taking a leading role in educating health care providers and the public on the effects of the drugs, devices, and biological products that play such an important role in our health care system. These activities include research on educational efforts ranging from public-information campaigns to Web-based instruction. The CERTs program is committed to finding the most effective ways to provide information to policymakers, health care workers, and the public alike.

This report highlights the various CERTs research and educational projects completed over the past year, as well as several projects in progress.

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The CERTs program is administered as a cooperative agreement by the Agency for Healthcare Research and Quality (AHRQ) in consultation with the U.S. Food and Drug Administration (FDA). The CERTs receive funds from both public and private sources, with AHRQ providing core financial support.

## Examples of Medical Therapies

THERAPY	EXAMPLES
Drugs	Prescription medications; over-the-counter medicines
Medical devices	Coronary stents; blood glucose monitors
Biological products	Vaccines; blood products

## The Centers\*

CENTER	EMPHASIS
Duke University Medical Center	Therapies for disorders of the heart and blood vessels
HMO Research Network	Use, safety, and effectiveness studies of therapeutics, using health plans for defined populations
University of Alabama at Birmingham	Therapies for musculoskeletal disorders
University of Arizona Health Sciences Center	Detection and prevention of adverse drug interactions
University of North Carolina at Chapel Hill	Therapies for children
University of Pennsylvania School of Medicine	Therapies for infection; reduction in antibiotic resistance
Vanderbilt University Medical Center	Prescription drug use in Medicaid and veteran populations

\*In fiscal year 2006 (outside the timeframe for this report), four additional centers were added: Rutgers, The State University of New Jersey: Mental health; University of Iowa: Older adults; University of Texas MD Anderson Cancer Center and Baylor College of Medicine: Consumers and patient adherence; Weill Medical College of Cornell University: Medical devices.

# CERTs Progress

## Advancing Knowledge

CERTs researchers are committed to learning more about the benefits, risks, and appropriate use of current medical therapies. The optimal use of medical therapies is a critical component in the improvement of health care. In this section, we discuss our latest findings on a number of topics, including the use of antibiotics, bacterial resistance, blood glucose monitoring in children, and the risks of side effects with commonly used medications.

### ANTIBIOTIC USE AND THE RISK OF BACTERIAL RESISTANCE<sup>1,2</sup>

CERTs researchers conduct many studies on the use of antibiotics to fight infectious diseases and the challenges that can result from the rising rates of bacterial resistance. Several of these studies examine how antibiotics should be used. Others evaluate how they are used. Still other studies evaluate approaches to reducing unnecessary use.

### Long-Term Treatment for Acne

With the increasing incidence of infections caused by antibiotic-resistant organisms, concern is growing about the overuse of antibiotics. Very few studies have evaluated the long-term use of antibiotics in those who are relatively healthy. **Acne** is an illness of relatively healthy young adults, and long-term treatment with antibiotics such as tetracycline is common and accepted medical practice. Using a database in the United Kingdom, a CERTs research team identified more than 118,000 people diagnosed with acne between 1987 and 2002. Seventy-two percent received either topical or oral antibiotic treatment for more than 6 weeks.

The patients receiving **antibiotics** were twice as likely to develop an upper respiratory tract infection as patients not receiving antibiotics.<sup>1</sup> It is not known why patients on antibiotics are more likely to develop an upper respiratory tract infection. However, it has been shown that these patients are more likely to be colonized by group A streptococcus. Antibiotics used for acne can be immune modulating and could affect the likelihood of infection. In addition, several studies have recently shown that changes in the prevalence of one microorganism can alter the infectivity of another. Additional studies are needed to more clearly differentiate these possible mechanisms. These results, carried widely by the news media, suggest that long-term use of antibiotics may be associated with increased risks of developing an infectious illness.

### Treatment for Inflammatory Bowel Disease

Intestinal bacterial flora plays a central role in the etiology of inflammatory bowel diseases. Antibiotic therapy alters bacterial flora, and as such, could influence the natural history of inflammatory bowel diseases, either increasing or decreasing the risk of exacerbation. One CERTs study examined historical data from patients with the **inflammatory bowel diseases** Crohn's disease and ulcerative colitis to examine the impact of antibiotic therapy on disease course.

The patients with Crohn's disease who had taken antibiotics within the past 60 days were less likely to start new inflammatory bowel disease therapies compared with patients who had not taken antibiotics during this interval, suggesting that new flares of Crohn's disease were less likely following a period of recent antibiotic therapy. Among patients suffering from ulcerative



colitis, those who had taken antibiotics in the previous 60 days were neither more nor less likely to initiate new inflammatory bowel disease therapies.<sup>2</sup> While this study does not justify the use of antibiotics as a primary treatment of Crohn's disease, it suggests that when used for other reasons, antibiotics are unlikely to exacerbate quiescent inflammatory bowel disease.

### **RESISTANCE TO ANTIBIOTICS IN CHILDREN AND YOUNG ADULTS<sup>3,4</sup>**

Several CERTs studies have focused on current trends in antibiotic use and the growing problem of antibiotic resistance in children and young adults.

#### **Infections in Young Adults**

CERTs researchers studied a group of college students to determine how many had throats colonized with bacteria that are often the cause of **bacterial pharyngitis**. They also wanted to determine if colonization was more likely in late winter and early spring, typically considered "prime time" for sore throats and other respiratory ailments. While they did not find significant seasonal differences, they did find an overall increase in the rate of colonization of *Streptococcus pyogenes* and *Staphylococcus aureus* when compared with previously reported rates. Colonization rates increased both in students who had symptoms of infection and in those who did not. In fact, the rate of colonization for *Streptococcus pyogenes* was higher than had been found in some previous studies of *Streptococcus pyogenes* infection (also called pharyngitis or Strep throat). In addition, most of these colonizing organisms were resistant to tetracycline antibiotics.<sup>3</sup>

This study implies that it may be difficult to differentiate college students who are colonized with *Streptococcus pyogenes* from those having an infection needing antibiotics. Furthermore, the results of this study show that in college students the baseline rate of colonization by *Streptococcus pyogenes* is much higher than previously suspected. The results of this study are an important reference point for future studies that examine, for example, the impact of treating college students with antibiotics for a sore throat.

#### **Infections in Children**

Children born with life-threatening heart disease often face surgery within the first few weeks of life. After surgery, a chest infection called **mediastinitis** can develop. While this complication is rare, it can be fatal. A CERTs research team designed a study to examine children, birth to 18 years of age, who develop mediastinitis and to find ways to reduce the risk of developing this infection.

The incidence of mediastinitis found in this study, about 1.4 percent, was similar to the rate in previous studies of adults. However, one-third of the infections were due to gram-negative bacilli (GNB), a higher percentage than previously found in studies of children. Researchers believe the higher number of GNB infections is due, at least in part, to the fact that the study included infants—a group often exposed to GNB immediately before or after birth. Sometimes surgeons do not close the patient's sternum immediately after surgery so that they can gain quick access to the area in case of internal complications. Researchers identified that this delay in closing the patient's sternum was associated with an increased risk of GNB infection.

This is concerning because GNB are frequently resistant to antibiotics.<sup>4</sup> Results of this study provide important baseline information about the incidence, responsible microorganisms, and risk factors associated with mediastinitis in children. Researchers can use this information to design future studies of therapeutic interventions and prevention strategies.

Because **antibiotic resistance** is widespread in children and can make treatment of common infections more difficult, one CERTs study looked at the impact of antibiotic resistance on the management of childhood infections. Researchers tracked the frequency of antibiotic-resistant bacteria and antibiotic treatments in children with urinary tract infections. They found that resistant bacteria were quite common, that the frequency of resistance was affected by multiple factors, and that antibiotic resistance increased the risk of **treatment failure**. Additional studies on urinary tract infections and bacteria known to cause skin infections and diarrhea are underway.

### **BLOOD GLUCOSE MONITORING IN CHILDREN**

**Type 1 diabetes mellitus** is a severe chronic disease in which the body does not produce insulin. It can occur at any age but is usually diagnosed in children and young adults. Type 1 diabetes accounts for about 3 percent of new cases of diabetes each year, with 1 new case diagnosed annually for every 7,000 children. Complications can be serious, including cardiovascular disease, blindness, and kidney disease. To avoid these complications, it is important to maintain good control of blood glucose by systematic and accurate monitoring of blood glucose levels.

A CERTs research team is conducting a study to establish the safety and efficacy of continuous **blood glucose-monitoring devices** in children with diabetes. Initial data suggest that continuous monitoring devices can improve control of their blood glucose levels. These results could be important in helping children with diabetes manage their condition well and increase their chances to live long, active, and healthy lives.

To learn more about medications that can interact with methadone, visit [www.arizonacert.org/methadone-card.pdf](http://www.arizonacert.org/methadone-card.pdf)

A CERTs program resource

### **RISK OF HEART RHYTHM DISTURBANCES DUE TO MEDICATIONS<sup>5</sup>**

Some medications affect the rhythm of the heart by prolonging the QT interval, the time it takes for the electrical activity of the heart to return to baseline between each beat. This, in turn, can increase the risk of torsades de pointes, a rapid, irregular heartbeat that can be fatal.

#### **Methadone**

Methadone is a synthetic narcotic medication that is less addictive than morphine or heroin. Physicians prescribe it as a substitute for other drugs in addiction-treatment programs and for chronic pain management. Methadone has been on the market for more than 45 years, and although it is safer to use than heroin, it can cause serious side effects, including death.

Physicians generally believed that methadone-related deaths are caused by overdoses, with death resulting

from respiratory depression. However, now researchers know that methadone can cause irregularities in the rhythm of the heart. A CERTs research team examined data from the U.S. Food and Drug Administration (FDA) Adverse Events Reporting System to learn more about heart rhythm irregularities and deaths that occur during methadone use. Specifically, they looked at risk factors and methadone dosages in relation to QT-interval prolongation on the electrographic heart tracings and life-threatening episodes of torsades de pointes.

Although many serious **heart rhythm abnormalities** due to methadone occurred at high dosages, almost one-third of incidents occurred with recommended or low dosages. Additional risk factors reported for other medications known to cause torsades de pointes were also associated with the cases involving methadone. These factors include female sex, low levels of magnesium or potassium in the blood, and drugs known to block methadone metabolism. Given these results, more research is needed to fully understand the risks and how to prevent life-threatening heart rhythms in patients who are taking methadone.

### High-Risk Use of QT-Prolonging Medications

Another CERTs study used a sample of 2 million health plan members from 10 health maintenance organizations (HMOs) to identify potential drug interactions involving QT-prolonging medications.

This study found that approximately 5 percent of patients taking a QT-prolonging medication also take either another QT-prolonging medication(s) or another medication that can cause an interaction between the two, thus raising the risk of a dangerous **heart rhythm**

To learn more about medications that can affect the QT interval or cause torsades de pointes, visit [www.qtdrugs.org](http://www.qtdrugs.org)

A CERTs program resource

**abnormality.** Ninety percent of these drug interactions occurred in patients who had at least one other risk factor for this heart rhythm abnormality, making the risk of the drug interaction potentially even higher. Most of the potential drug interactions identified in this study involved **amitriptyline** (Elavil).<sup>5</sup>

Educating physicians and developing automatic alerts or warning systems to target high-risk combinations might reduce the risks associated with QT-prolonging medications.

### RISK OF CHURG-STRAUSS SYNDROME FROM ASTHMA DRUGS<sup>6</sup>

**Churg-Strauss Syndrome (CSS)** is a potentially life-threatening disorder in which inflammation of the blood vessels can cause multi-organ damage, often in the presence of an unusually large number of eosinophils, a type of white blood cell. This rare syndrome can be associated with asthma, sinus infections, or allergic reactions to pollens or other allergens.

Previous research suggests a possible link between CSS and specific medications used to treat asthma; however, it is difficult to find enough cases of CSS to study because the disease is rare. The estimated annual incidence in the United States is 1 to 3 cases per 100,000 adults each year. One way of advancing CSS research is to identify cases through epidemiological reviews of large numbers of patients at risk of developing CSS.

CERTs researchers reviewed patient claims data from the HMO Research Network and figured out how to identify confirmed CSS cases.<sup>6</sup> As a result of this study, researchers can make better use of existing data to learn more about the factors that trigger this rare condition.

## **RISKS AND BENEFITS OF TREATMENTS FOR LUPUS<sup>7</sup>**

**Systemic lupus erythematosus (SLE)**, often referred to simply as lupus, is an autoimmune disease that leads to inflammation and damage to various bodily tissues. It is characterized by flare-ups of the disease followed by periods of wellness, or remission. When symptoms flare up, physicians typically prescribe various drugs to minimize lasting damage; however, several medications can themselves cause damage. For example, corticosteroids, often prescribed for lupus patients, have been associated with an increased risk of cataracts, osteoporosis, and strokes, among other conditions. We know that many more women than men have lupus. Lupus is three times more common in African American women than in Caucasian women and is also more common in women of Hispanic, Asian, and Native American descent.

A CERTs research team devised a study to investigate whether using **hydroxychloroquine (HCQ)**, an **antimalarial medication**, was associated with less damage to the major body systems during a flare-up of SLE when compared with not treating with HCQ. They looked at 518 patients who had been suffering from SLE for 5 years or less, measured the damage they had accrued from the disease at the beginning of the study, and followed up on these assessments yearly.

Researchers divided patients into two groups—those who were taking HCQ at the beginning of the study and those who were not. The use of HCQ at baseline was associated with significantly less damage to the body during the study, but this benefit was limited only to patients who had no damage at the beginning of the study. Because HCQ can have other favorable effects on health, including possible protection against osteoporosis in some patients and reduction of blood cholesterol levels, physicians should consider HCQ for routine SLE treatment, especially for patients who have not sustained damage early in the course of the disease.<sup>7</sup>

## **Informing Providers and Patients**

The CERTs program is dedicated to ensuring that its research results get into the hands of the public, health care providers, and policymakers. In this section, we discuss projects aimed at increasing physician awareness of drug risks and prescribing guidelines. In addition, we describe the latest research on promoting and preserving bone health in children and the elderly.

### **INCREASING AWARENESS OF DRUG RISKS TO MINIMIZE ADVERSE REACTIONS<sup>8,9</sup>**

#### **Drug Therapy and the QT Interval**

In order to minimize the risk of torsades de pointes, a type of irregular heartbeat that can be fatal, it is important for physicians to know how to measure the QT interval on an electrocardiogram, which drugs and other factors can prolong the QT interval, and how to prescribe medications appropriately in light of QT prolongation risks.

Understanding the QT Interval—A Duke CERTs Educational Program is an online training module for health care providers. It is available at [qtmodule.mc.duke.edu](http://qtmodule.mc.duke.edu)

A CERTs program resource

In a survey of health care providers, CERTs researchers found that a significant number of practitioners cannot correctly measure the QT interval or identify factors and medications that can prolong the QT interval. This is a particular problem for health care providers who frequently prescribe QT-prolonging medications. These results strongly suggest a need for physician education in this area.<sup>8</sup>

To address this need, CERTs researchers developed an interactive **online educational module** to teach health care providers about the meaning and measurement of the QT interval, factors and medications that can prolong the QT interval, and how to assess the risks and benefits of medications known to affect the QT interval.

### **Non-Steroidal Anti-Inflammatory Drug (NSAID) Prescribing Guidelines**

CERTs researchers conducted a study to evaluate adherence to NSAID prescribing guidelines at veterans' health care centers. The study included more than 700,000 veterans, of whom about 43 percent were considered at high risk for upper **gastrointestinal (GI)**

An online continuing medical education course called *Safer Use of NSAIDs* is available at [www-cme.erep.uab.edu/nsaids/nsaids.html](http://www-cme.erep.uab.edu/nsaids/nsaids.html)

A CERTs program resource

**side effects.** Compliance with prescribing guidelines was generally low. Only 27 percent of patients with GI risk factors received medications in compliance with the current prescribing guidelines—either an NSAID combined with a drug designed to protect the GI system or a specific type of NSAID known to lessen the chance of GI side effects.<sup>9</sup> These findings suggest the need for future studies to focus on what occurs when the guidelines are not followed and on defining ways to improve provider adherence.

To encourage a healthy start in life for infants and young **children**, CERTs researchers collaborated with the Center for Children's Healthcare Improvement to find gaps in health care for newborns and to develop **educational tools and resources** to help close these gaps.

Currently, this partnership is focusing on ways to work with the American Academy of Pediatrics to prevent severe hyperbilirubinemia in newborns, to provide better support for breastfeeding mothers, and to ensure that communication between parents and health care providers continues when newborns go home from the hospital. This collaboration will also address safety concerns for infants, such as sleep position, maternal depression, the use of car seats, and the prevention of shaken baby syndrome.

### **ASSESSING VITAMIN D SUPPLEMENTATION PRACTICES**

In response to increases in the incidence of **rickets** caused by Vitamin D deficiency among infants and toddlers in the United States, CERTs researchers conducted a study between October 2002 and March

2003 of attitudes and practices of U.S. pediatricians and family physicians related to Vitamin D supplementation in infants.

The survey found no consensus about **Vitamin D supplementation** among about 2,000 primary care providers. Almost half did not recommend Vitamin D supplementation under any conditions. Of those who did recommend supplements, many began at a late age and/or did not continue the supplementation for an adequate length of time. The study also found that family physicians were much less likely to recommend Vitamin D supplementation than were pediatricians. Because Vitamin D supplementation can help prevent nutritional rickets, primary care providers need to instruct mothers to give Vitamin D supplements to their breastfed infants.

### **ASSESSING ISSUES RELATED TO HIV CARE<sup>10-13</sup>**

As more effective treatments for human immunodeficiency virus (HIV) become available, many HIV patients find themselves living with a complex, chronic condition instead of facing a rapidly terminal illness. Recent advancements in therapeutics suggest new approaches to providing the best possible medical care.

#### **Risks in Changing Treatment Regimens**

Changing treatment regimens involves risk—patients can suffer negative side effects from a new medication, develop resistance to new drugs, or even miss doses as they adjust to an unfamiliar routine. However, current treatment guidelines recommend that doctors change treatment routines as soon as the level of HIV in the blood increases, even if the levels are very low.

A CERTs research team studied a group of **HIV patients** to determine what happened when very low levels of the virus were detected in the blood and to examine the risks of not changing therapy once low levels of the virus were found.

The nature of the U.S. health care system leaves insufficient time for quality patient education during medical visits. To supplement health information given by providers, patients are increasingly using the Internet to seek information about diseases and treatments. CERTs researchers systematically evaluated Internet Web sites and developed a “Webliography,” or list of Web sites that provide reliable medication information for health care consumers. The list and a downloadable brochure will soon be available on the University of Arizona CERTs Center Web site.

With enhanced detection of low virus levels, they found that low levels of the virus did not necessarily progress to high levels that would put the patient’s immune system at greater risk. In fact, increases to high levels occurred in only about one-third of the 79 cases examined. Another one-third had less severe increases in viral activity, while the final one-third had undetectable levels of the virus at the end of the followup period.<sup>10</sup>

#### **Prescribing Patterns for HIV Patients**

**Protease inhibitors** are a class of medications that have greatly improved the treatment of HIV infection. Unfortunately, they can raise levels of **cholesterol** in the blood, putting patients at risk of heart disease. In many cases, patients taking protease inhibitors are given prescriptions for lipid-lowering medications such as statins. However, some statin drugs interact with

protease inhibitors so as to increase the risk of dangerous side effects.

CERTs researchers examined the use of protease inhibitors and statins in a large group of HIV patients to determine how often physicians prescribed **combinations of drugs that are not recommended**. Specifically, researchers wanted to see if prescribing patterns had changed after the publication of preliminary guidelines for combining these drugs. They found that the number of combinations of drugs that are not recommended decreased significantly after the release of the preliminary guidelines but remained relatively high.<sup>11</sup> CERTs researchers believe that further continued education will be required for physicians to further reduce the use of combinations of protease inhibitors and statins.

### **Patient Compliance with HIV Treatment**

Improvements made in HIV treatment are quickly offset if patients do not take their **prescribed medications**. Two CERTs studies used pharmacy records to determine whether patients who reported that they took their medicines in a timely fashion actually did so, and whether the method of dispensing the medicines would help patients follow their treatment routine.

One study compared 110 patients' own accounts of whether they took their medicines each day with records of how often they had their prescriptions refilled, and correlated each of these measures with the amount of HIV in the blood. According to the pharmacy records, only 27 percent of the patients had complied 100 percent with their prescribed treatment, although 67 percent of the patients reported 100 per-

cent compliance for themselves. The study also found that pharmacy-reported compliance correlated more strongly with changes in HIV level than did patient-reported compliance. Patients who regularly refilled their prescriptions were more likely to have a drop in HIV blood levels.<sup>12</sup>

The same investigators searched for links between the method of refilling prescriptions and how well HIV patients followed their treatment routines. This study compared patients who (1) refilled prescriptions by visiting the pharmacy, (2) had their medications delivered by mail, and (3) obtained their refills from a pharmacist but had them packaged in **daily pill organizers**. Compliance was significantly lower in the group who picked up their prescriptions compared with the mail-order and pill-organizer groups, but the latter two groups did not differ substantially from each other. The rate of good compliance ( $\geq 85$  percent) was highest for those who received the pill organizers, followed by the mail-order group.<sup>13</sup> These findings suggest that some methods of prescription refills and packaging may improve adherence to treatment.

### **IMPROVING OSTEOPOROSIS CARE<sup>14-15</sup>**

#### **Racial Disparities in Treatment**

CERTs researchers looked at racial disparities in health care for **osteoporosis**. They conducted a telephone survey among 1,424 older women. Of the 251 women who suffered a bone fracture after age 45, **African Americans** were 60-percent less likely than Caucasians to have received a bone-density scan and 80-percent less likely to have been prescribed medication for osteoporosis.

These findings are of particular interest, given that fractures result in more disability, longer hospital stays, and higher overall mortality among African American women than among Caucasian women, even though the incidence of osteoporosis is lower among African American women. Researchers concluded that reducing disparities in osteoporosis care could substantially reduce the burden of osteoporosis and fractures among high-risk African American women.<sup>14</sup>

### **Glucocorticoid-Induced Osteoporosis**

**Glucocorticoids**, steroid hormones that have anti-inflammatory properties, are often prescribed for diseases such as rheumatoid arthritis and lupus. In addition to their benefits, they can have negative side effects such as osteoporosis. A CERTs research team used databases from a national managed-care organization to evaluate how well physicians take steps to prevent **osteoporosis** in patients taking glucocorticoid drugs.

Despite increases in screening for and treating glucocorticoid-induced osteoporosis, prevention measures remained low, especially among men and African American patients of both sexes. This study also found significant differences in prevention efforts between various types of physicians. Rheumatologists, for example, were almost twice as likely as family and general practitioners to measure bone mass in patients for whom they prescribed glucocorticoid medications. Patients of gastroenterologists were significantly less likely to receive osteoporosis-specific prescription drugs than were patients of internal medicine physicians. Similar variations among physician specialties were found in other preventive measures, such as recommending the use of over-the-counter calcium and Vitamin D supplements.<sup>15</sup>

## **Improving the System**

CERTs researchers continue to seek new ways to improve the health care system related to therapeutics. Research in this area includes examination of the cost effectiveness of treatments as well as ways to address medical errors and improve patient safety.

### **ADDRESSING MEDICAL ERRORS AND PATIENT SAFETY<sup>16-18</sup>**

#### **Preventing Medication Errors Involving Children**

One of the most common forms of medical errors in children involves medications. In medication therapy for infants and children, it is especially important to take weight and age into account when determining appropriate formulations and dosages. Careful attention to these factors is crucial because if negative reactions occur, children cannot always communicate symptoms to their parents or caregivers.

Although knowledge about medication errors has increased substantially, not enough is known about medication errors in children. CERTs researchers undertook an analysis of such errors over a 5-year period. They found that the older, commonly used agents (such as insulin, morphine, fentanyl, vancomycin, and gentamicin) still were associated with a substantial number of harmful errors in children. Dosing errors resulted from confusion between drug weight or volumes and drug dosage, flawed programming of infusion pumps to deliver drug dosages per minute rather than per hour, and inappropriate recording of patient weights in pounds instead of kilograms.

Researchers pinpointed several problem areas, such as the inappropriate use of abbreviations on order

forms and the omission of a leading zero before the decimal point. Drug storage also presented problems, given that many products have brand or generic names that are similar to other products, leading to mix-ups. Ready-to-use doses for children could reduce the risk of dosing errors. The use of patient-controlled medication pumps or other complex delivery systems needs particular attention. Independent double-checks of the medication and of the infusion-pump settings are highly recommended.<sup>16</sup>

### **Monitoring the Safety of Drugs**

One major responsibility of the FDA is monitoring the safety of drugs currently on the U.S. market. The Adverse Event Reporting System is its principal resource for surveillance, and it depends largely on health care professionals and consumers voluntarily reporting cases where medications may have caused a negative side effect. Unfortunately, the system is limited by underreporting, incomplete data about those who have been affected, biases in reporting, and limited information about the population in which the drug is being used.

In order to improve the current **surveillance system**, two CERTs research studies are taking place in collaboration with the FDA. Using data from eight managed-care organizations in the HMO Research Network, researchers are testing several possible ways to improve the detection of adverse drug reactions. Study results should be available in 2006.

### **Preventing Adverse Drug Events**

In order to understand which risk factors can lead to adverse drug reactions in outpatient settings, a CERTs team conducted interviews with primary care patients

An online educational module called *Preventable Adverse Drug Reactions: A Focus on Drug Interactions* is available at [www.arizonacert.org/medical-pros/education/module01.htm](http://www.arizonacert.org/medical-pros/education/module01.htm)

A CERTs program resource

taking medications at home. They found numerous factors that patients believe contribute to adverse drug events, many of which could be prevented through patient and provider education.

While extensive research in health literacy, medication adherence, and provider-patient communication has examined many important factors that lead to adverse drug events at home, results suggest that additional psychological and practical issues in patients' lives play important roles in medication safety. Such factors range from communication problems during office visits—stemming from distractions, time constraints, and patients' beliefs or emotions—to barriers at home, including lack of motivation or ability to fill prescriptions or follow instructions, forgetting, limited resources, and choices to deviate from prescribed regimens due to personal and pragmatic reasons. Thus, health care providers and patients should consider these multiple potential obstacles when making decisions about prescribing and taking medications safely at home.

Another area of importance is the prescription and dispensing of drugs in combinations that can have dangerous interactions. Despite the computerized alert mechanisms for pharmacies and pharmacy benefit managers, large numbers of patients are exposed to potentially harmful interactions. CERTs researchers have been trying to quantify the harm of such “drug-drug” interactions and are beginning to look for ways to prevent them. These investigators found that during



a 25-month period, an estimated 2.5 million Americans were exposed to a potential clinically significant drug-drug interaction.<sup>17</sup> A companion study observed how pharmacists respond to automated alert warnings about certain dangerous drug-drug combinations. Researchers found that pharmacists frequently override alert messages, spending 1 minute or less evaluating the alerts.<sup>18</sup>

Experts often suggest computerized physician order entry (CPOE) as one way to reduce errors. CERTs researchers are completing a study of the alert system used by the Department of Veterans Affairs. Data from this study will be used to improve CPOE and pharmacy systems with respect to drug-drug interaction alerts.

## **EVALUATING THE COST EFFECTIVENESS OF DRUGS<sup>19-21</sup>**

### **Premature Infants**

As pressure mounts on Medicaid budgets, it is increasingly important that the dollars available for medical care be put to the best use. CERTs researchers designed a study to assess the cost effectiveness of palivizumab, an expensive medication used to prevent serious lower respiratory tract infections in premature infants. The North Carolina Medicaid Program spent more than \$12 million on palivizumab in 2003.

The study compared the health care costs in NC Medicaid over a 7-month period, including the winter months, of infants born 5 to 8 weeks prematurely. One group received palivizumab as a preventive measure, while the other group did not. Although the group receiving the medication had fewer hospitalizations during this period, the cost of the drug outweighed

the money spent to treat respiratory infections in these children. Researchers suggested that the North Carolina Medicaid Program reconsider its budgetary allocation for this medication and look toward less-expensive ways of preventing respiratory infections in babies at risk.<sup>19</sup>

### **Coronary Patients**

Recent clinical trials have suggested extending the length of time that patients receive an antiplatelet drug, **clopidogrel**, because it can help prevent cardiovascular events after angioplasty or stent placement. CERTs researchers studied whether it would be worth the added expense to extend therapy with clopidogrel from the usual practice of 1 month to 12 months after a coronary procedure.

Using clopidogrel for a full year, rather than for only 1 month, would extend the lives of enough people to make it an economically attractive option compared with currently accepted treatment. However, for patients without prescription drug insurance coverage, the cost of the medication must be taken into account and evaluated in the context of each patient's particular risks and other medications already prescribed.<sup>20</sup>

### **Rheumatoid Arthritis and Inflammatory Diseases**

Glucocorticoids are an affordable therapy for the treatment of rheumatoid arthritis (RA) and many other chronic inflammatory diseases. An estimated 1 million Americans use them on a regular basis. As noted previously, however, glucocorticoids can have serious adverse effects, including bone loss leading to fractures. In evaluating the cost effectiveness of these drugs, it is important to include not only their purchase price,



which is relatively low compared with other medications used for RA, but also the cost of treating adverse events that result from taking the drugs.

CERTs researchers undertook a study to estimate the costs of adverse effects associated with glucocorticoid use. Although costs varied depending on specific adverse effects attributed to glucocorticoids, in general, glucocorticoid users spent more on treatment of adverse drug effects and had a higher mortality rate than other RA patients. Over a 2-year period, for every dollar spent on glucocorticoids for RA patients, an additional \$0.20 to \$0.70 was spent on the treatment of adverse events associated with these drugs. In the same 2-year period, there were 1 to 8 additional deaths for every 1,000 glucocorticoid users compared with people with RA who did not use these drugs. Researchers recommended that patients, providers, and policymakers take these factors into account when making decisions about treatment for RA.<sup>21</sup>

#### **GAPS IN MEDICAID COVERAGE: EFFECT ON HOSPITAL UTILIZATION<sup>22</sup>**

Asthma is the most common chronic respiratory disease among children and adolescents, affecting

between 3 percent and 7 percent of children in the United States. Certain groups of children are at high risk for complications from asthma, leading to emergency department visits, hospitalizations, or even death. These high-risk children include many who are served by Medicaid programs.

A CERTs study examined high-risk children with asthma who were enrolled in a Medicaid managed-care program to determine what effect gaps in insurance coverage might have on emergency-room visits or hospitalizations for asthma, respiratory illnesses, croup, and other disorders. Researchers found that children with asthma who had gaps in Medicaid coverage had no increase in asthma-related emergency department visits and hospitalizations. In fact, they had fewer non-respiratory emergency visits and hospitalizations than did children who had no gaps in Medicaid coverage.<sup>22</sup>

These results surprised researchers, who suggested several possible reasons for the unexpected outcomes. Families whose children had more severe illnesses might have worked harder to avoid gaps in coverage. Some families may have had access to private insurance during the enrollment gaps, or the gaps in

coverage might have been too short to interfere significantly with a child's access to care. Families without Medicaid coverage also might have avoided seeking medical care because they could not afford to pay for it. These and other possible reasons need further study in order to detect and remove barriers to better care for children with asthma.

### **PROTECTING THE PUBLIC FROM BIOTERRORISM<sup>23</sup>**

After the attacks of September 11, 2001, and the anthrax attacks that occurred in the ensuing weeks, the threat of bioterrorism put new demands on the health care system. Many people who feared anthrax exposure requested prophylactic doses of antibiotics. To better understand how such a situation can impact the health care system, CERTs researchers surveyed emergency physicians in Pennsylvania to find out whether they had received patient requests for antibiotics because of the fear of anthrax exposure and, if so, whether they had prescribed them.

Most of the respondents had received requests for antibiotics, and one-quarter had prescribed them in response to such a request.<sup>23</sup> Although antibiotics are an important tool for responding to a true anthrax exposure, their inappropriate use causes concern. The overuse of antibiotics can have serious public-health ramifications, ranging from potential adverse effects on individual patients to the increased risk of antibiotic resistance, depletion of supplies, and increased costs to insurers and patients.

Health care providers and policymakers must carefully consider how to handle public demands for medications after perceived exposure to bioterrorist threats. Emergency physicians suggest that improving public communication to reduce fear could help. This study underscores conclusions drawn after the attacks of 2001—that cities with a strong working relationship between public-health officials and health care providers are better prepared to respond to demands for treatment for possible exposure after a bioterrorist incident.



## Referenced Projects

### ADVANCING KNOWLEDGE

CENTER	PROJECT	PAGE
University of Pennsylvania School of Medicine	Antibiotic use in long-term acne treatment	9
University of Pennsylvania School of Medicine	Antibiotic therapy for bowel disease	9
University of Pennsylvania School of Medicine	Connections between antibiotic use to treat acne and sore throats among young adults	11
University of Pennsylvania School of Medicine	Infections after cardiac surgery in children	11
University of North Carolina at Chapel Hill	Impact of antibiotic resistance on the management of childhood infections	12
University of North Carolina at Chapel Hill	Blood glucose monitoring for juvenile diabetes	12
University of Arizona Health Sciences Center	Heart rhythm irregularities and deaths that occur during methadone use	12
Duke University Medical Center	Safe use of QT-prolonging drugs	13
HMO Research Network	Use of epidemiological reviews to identify cases of Churg-Strauss syndrome in patients taking asthma drugs	13
University of Alabama at Birmingham	Hydroxychloroquine reduces damage in systemic lupus erythematosus	14

## INFORMING PROVIDERS AND PATIENTS

CENTER	PROJECT	PAGE
Duke University Medical Center	Survey of health care practitioners' knowledge of the QT interval	14
Vanderbilt University Medical Center	Adherence to prescribing guidelines for NSAID therapy	15
University of North Carolina at Chapel Hill	Vitamin D supplementation practices of U.S. pediatricians and family practitioners	15
University of Pennsylvania School of Medicine	Observation study of viral load	16
Vanderbilt University Medical Center	Dangerous drug combinations for HIV patients taking protease inhibitors	16
University of Pennsylvania School of Medicine	Patient compliance with treatment regimen	17
University of Pennsylvania School of Medicine	Links between method of refilling prescriptions and improved compliance with treatment routine	17
University of Alabama at Birmingham	Racial disparities in osteoporosis care	17
University of Alabama at Birmingham	Practice patterns in glucocorticoid-induced osteoporosis prevention	18

## IMPROVING THE SYSTEM

CENTER	PROJECT	PAGE
University of North Carolina at Chapel Hill	Harmful medication errors in children	18
HMO Research Network	Enhanced identification of adverse drug reactions	19
University of Arizona Health Sciences Center	Community pharmacy factors associated with drug interactions	19
University of Arizona Health Sciences Center	Community pharmacists' responses to drug-drug interaction alerts	19
University of North Carolina at Chapel Hill	Respiratory infections in premature infants	21
Duke University Medical Center	Cost-effectiveness of extended clopidogrel therapy after angioplasty or stent placement	21
University of Alabama at Birmingham	Modeling costs of glucocorticoid treatment	21
Vanderbilt University Medical Center	Effects of loss of Medicaid coverage on children with asthma	22
University of Pennsylvania School of Medicine	Impact of bioterrorism on antimicrobial prescribing	23

# CERTs Program Resources

ADHD Online Toolkit for Providers, Patients, and Families: Web Tool  
[nichq.org/resources/toolkit](http://nichq.org/resources/toolkit)

Arthritis Outcomes Initiative Resource for Patients and Families: Web Resource  
[www.engalitcheff.uab.edu](http://www.engalitcheff.uab.edu)

Arthritis Self-Help for Patients: Web Site  
[www.arthritispatient.cme.uab.edu/](http://www.arthritispatient.cme.uab.edu/)

Beta-Blocker Fact Sheet  
[dukecerts.dcri.duke.edu](http://dukecerts.dcri.duke.edu)

Drug Interaction Card: Reference Guide  
[www.drug-interactions.com](http://www.drug-interactions.com)

Drugs That Prolong the QT Interval and/or Induce Torsades de Pointes  
[www.qtdrugs.org](http://www.qtdrugs.org)

Duke Heart Center Dosing Guide 2005  
[dukecerts.dcri.duke.edu/providers/arrhythmias/publications/dosing\\_guide\\_2005.pdf](http://dukecerts.dcri.duke.edu/providers/arrhythmias/publications/dosing_guide_2005.pdf)

Head and Chest Colds: Patient Education Brochure  
[www.cceb.upenn.edu/cert/consumers.html](http://www.cceb.upenn.edu/cert/consumers.html)

Medications That Interact with Methadone: Web Resource  
[www.arizonacert.org/methadone-card.pdf](http://www.arizonacert.org/methadone-card.pdf)

Osteoporosis Management Online Case-Based Disease Management Program  
[www2.edserv.musc.edu/osteo/index.lasso](http://www2.edserv.musc.edu/osteo/index.lasso)

Over-the-Counter Medicine “Interaction” Cabinet: Web Tool  
[www.arizonacert.org/consumers/MCsurvey/router.asp](http://www.arizonacert.org/consumers/MCsurvey/router.asp)

Preventable Adverse Drug Reactions—A Focus on Drug Interactions: Education Module  
[www.arizonacert.org/medical-pros/education/module01.htm](http://www.arizonacert.org/medical-pros/education/module01.htm)

Safer Use of Nonsteroidal Anti-Inflammatory Drugs: Online Continuing Medical Education Course  
[www.cme.erep.uab.edu/nsaids/nsaids.html](http://www.cme.erep.uab.edu/nsaids/nsaids.html)

Saving Lives with Beta-Blockers: Duke CERTs CyberSession  
[dukecerts.dcri.duke.edu](http://dukecerts.dcri.duke.edu)

Tools and Techniques of Improved Medication Use for Health Care Professionals: Web Resource  
[www.ahip.org/redirect/improvedmedicationuse.htm](http://www.ahip.org/redirect/improvedmedicationuse.htm)

Treating Congestive Heart Failure with Beta-Blockers: Patient Education Videotape  
[dukecerts.dcri.duke.edu](http://dukecerts.dcri.duke.edu)

Treating Congestive Heart Failure with Beta-Blockers: What You Can Do To Help Yourself Feel Better: Patient Education Brochure  
[dukecerts.dcri.duke.edu](http://dukecerts.dcri.duke.edu)

Understanding the QT Interval—A Duke CERTs Educational Program: Web-Based Education Module  
[qtmodule.mc.duke.edu](http://qtmodule.mc.duke.edu)

**NOTE:** For additional information about CERTs program resources, please contact the CERTs Coordinating Center at [certs@mc.duke.edu](mailto:certs@mc.duke.edu).

# CERTs Partnerships and Collaborations

Public-private partnership remains one of the core values of the CERTs program. Collaboration among many groups is essential in carrying out the mission to conduct research and provide education to advance the optimal use of drugs, medical devices, and biological products. In addition to the many partnerships that enable the CERTs centers to study issues concerning therapeutics, the CERTs collaborate with other public and private organizations on initiatives to support and enhance program projects.

## Partnerships to Advance Therapeutics (PATHs)

Established by the CERTs in 2001, the PATHs program is a means to cultivate partnerships among organizations interested in promoting the safe and effective use of therapeutics.

Every year, the CERTs host a meeting for PATHs partners. Participating organizations represent patients, health care providers, government, academia, delivery systems, payers, purchasers, and manufacturers of medical products. The theme for the fifth annual meeting was PATHs Success Stories: Present and Future. PATHs partners shared information on successfully completed projects.

The PATHs meeting also provides a forum for organizations to plan and implement goals related to the

improvement of therapeutics. This year, participants discussed long-term goals, developed by AHRQ in conjunction with the CERTs. The goals were based on the prevention of: (1) infectious disease, (2) cardiac disease, and (3) gastrointestinal side effects of drugs. At the meeting, small-group breakout sessions identified project ideas and potential partners for each goal to be considered by the PATHs partners.

### Annual PATHs Meeting Highlights

**heartBBEAT for life®**—a national campaign to educate heart-attack survivors, caregivers, and health care providers about why long-term use of cardiac medications is important. As a result of this project, three continuing medical education (CME) activities were created to provide the most current evidence on beta-blocker therapy after heart attack, to help practitioners better understand the barriers to adherence, and to provide information that can help motivate patients to continue with beta-blocker therapy.

**Caring for Children with ADHD: A Resource Toolkit**—for children with attention deficit/hyperactivity disorder (ADHD). It includes tools for patients, families, and health care providers and is available at [nichq.org/resources/toolkit](http://nichq.org/resources/toolkit).

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The PATHs program is an integral part of the CERTs program and exemplifies the value of public-private partnership. A registry of PATHs partner projects can be accessed through the CERTs Web site at: [www.certs.hhs.gov/partners/paths/regist/](http://www.certs.hhs.gov/partners/paths/regist/)



## PATHs Partners

We would like to thank the following organizations for participating in *PATHs Success Stories: Present and Future*:

Academy of Managed  
Care Pharmacy

AcademyHealth

Agency for Healthcare  
Research and Quality

American Academy of Pediatrics

American Academy of  
Pharmaceutical Physicians

American Association of  
Colleges of Pharmacy

American Association  
of Retired Persons

American College of Cardiology

American College of Clinical  
Pharmacology

American College of  
Clinical Pharmacy

American Health  
Quality Association

American Society for Clinical  
Pharmacology and Therapeutics

American Society of  
Health-System Pharmacists

American Society of Health-System  
Pharmacists Foundation

America's Health Insurance Plans

Association of American  
Medical Colleges

Centers for Disease Control  
and Prevention

Centers for Medicare &  
Medicaid Services

Council for Affordable  
Quality Healthcare

Denver Health Medical Center

Department of Veterans Affairs

Drug and Therapeutics  
Information Service

Eli Lilly and Company

Institute of Medicine

International Society  
for Pharmacoepidemiology

Merck & Co., Inc.

National Committee for  
Quality Assurance

National Consumers League

National Council on Patient  
Information and Education

National Institutes of Health

National Pharmaceutical Council

Patients and Consumers Coalition

Pharmaceutical Research and  
Manufacturers of America

UMWA Health & Retirement Funds

United States Pharmacopeial  
Convention, Inc. (USP)

U.S. Food and Drug Administration

## Government Day

Each year on Government Day, CERTs researchers have an opportunity to discuss research projects and opportunities for collaboration with individuals from government agencies. The theme for the CERTs 4th Annual Government Day was *Communication Strategies To Inform Consumers, Providers, and Other Decisionmakers*.

At this year's Government Day, individuals presented and discussed various government and CERTs initiatives to identify potential collaborative opportunities for CERTs and Federal organizations related to communicating medical information. Several opportunities to work

together to support national priorities were presented. Projects related to communicating therapeutics benefit and safety information were highlighted. Important questions addressed in the presentations were how to communicate research findings and products and how to adapt and implement them to make a difference.

Specific projects pertaining to the use and evaluation of national education strategies were also presented. Potential collaborations discussed for research and education ranged from the use of communication strategies targeted to patients, parents, and providers over the Internet to one designed to promote appropriate antibiotic use in children.



## Conclusion

Health care in the United States offers a rich array of treatments. Each year, the number of safe and effective therapies available to Americans continues to grow. But with any treatment comes some degree of risk, and the purpose of the CERTs is to learn about risks as well as benefits and to disseminate that information as widely and effectively as possible.

To that end, our work examines the use of medical products—drugs, medical devices, and biologics—assessing strengths and examining any weaknesses. Whether the challenge is combating bacterial resistance to antibiotic drugs or addressing an increase in prevent-

able conditions such as rickets, CERTs researchers are undertaking projects on a wide range of topics with the aim of improving everyday medical care for the American people.

As we assess our sixth year of work, we are aware that our mission is as vital and compelling as ever. We look forward to increasing the scope of our work, as we continue to advance knowledge of medical therapeutics in ways that will inform health care providers, patients, policymakers, and others, leading to improvements in health care for all Americans.

# The CERTs Organization

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Web: [www.certs.hhs.gov/centers/vanderbilt.html](http://www.certs.hhs.gov/centers/vanderbilt.html)

\*In fiscal year 2006 (outside the timeframe for this report), four additional centers were added: Rutgers, The State University of New Jersey: Mental health; University of Iowa: Older adults; University of Texas MD Anderson Cancer Center and Baylor College of Medicine: Consumers and patient adherence; Weill Medical College of Cornell University: Medical devices.

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# Principles of CERTs

## Public-Private Partnerships

**Issues of Public Interest.** CERTs is a national initiative to foster the optimal use of therapeutics through research and education activities that are in the public interest but would not otherwise be done.

**Public-Private Partnership.** CERTs is a public-private partnership on two levels: (1) between the U.S. Department of Health and Human Services and the CERTs centers and (2) between CERTs centers as representatives of the government-sponsored CERTs program and other research-sponsoring organizations. In the latter relationship, the CERTs centers seek useful, appropriate interactions with private organizations to support and enhance education, research, and demonstration projects. AHRQ works with the centers to establish appropriate agreements to optimize use and sharing of resources.

**Conflicts of Interest.** Public-private partnerships typically present the potential for conflicts of interest. While these potential conflicts of interest cannot be completely avoided or eliminated, a CERTs center has an obligation to disclose fully and to manage conflicts

in a manner that minimizes the risk of those conflicts, while at the same time permitting as much progress as possible to achieve CERTs goals within the constraints of maintaining respected research activity.

**Academic Integrity.** As academic researchers, individuals conducting projects under the CERTs umbrella make the final decision about study design, analysis, conclusions, and publication in any partnership with other organizations and ensure that their work complies with their respective institutions' conflict-of-interest rules.

**Activities.** CERTs activities are defined as projects supported in whole or in part by AHRQ funds under the CERTs demonstration program. Activities such as the review of potential conflicts of interest are subject to processes established for the CERTs program. Individuals affiliated with the centers also conduct education and research activities outside of CERTs that are not subject to CERTs processes.

# CERTs Project Partners

We gratefully acknowledge the following organizations for their expertise and support of CERTs research and education projects:

Academic Medicine and  
Managed Care Forum

AccessCare, Inc.

Advanced Medical  
Technology Association

Aetna Inc.

Agency for Healthcare  
Research and Quality

Agouron Pharmaceuticals, Inc.

Alabama Department  
of Public Health

Alabama Practice-based  
Continuing Medical Education  
and Research Network

American Academy of Family  
Physicians

American Academy of Pediatrics

American Association of  
Colleges of Pharmacy

American College of Cardiology

American College of Clinical  
Pharmacy

American College of Rheumatology

American Heart Association

American Pharmaceutical  
Association Foundation

American Pharmacists Association

America's Health Insurance Plans

Amgen

Arizona Area Health  
Education Centers

Arthritis Foundation

Arthritis Foundation,  
Alabama Chapter

Arthritis Foundation,  
Maryland Chapter

AstraZeneca

Aventis, Inc.

Berlex, Inc.

Bowman Gray School of Medicine

Brigham and Women's Hospital

Bristol-Myers Squibb Company

Bureau of TennCare

Caremark

Center for Health Care  
Policy and Evaluation

Centers for Disease  
Control and Prevention

Centers for Medicare  
& Medicaid Services

Children's National Medical Center

Cincinnati Children's  
Hospital Medical Center

Columbus Children's Hospital

Community Health Centers

Conceptis Technologies

Council for Affordable  
Quality Healthcare

Crohn's & Colitis

Foundation of America

Department of Veterans Affairs

Duke Clinical Research Institute

Duke Heart Center

Duke Infection Control  
Outreach Network

Duke University  
Department of Psychology

Duke University Health System

Eli Lilly and Company

Express Scripts, Inc.

Fallon Community Health Plan

Genentech, Inc.

General Practice Research  
Database/EPIC

Georgetown University

GlaxoSmithKline

Group Health Cooperative  
of Puget Sound

Harvard Pilgrim Health Care

Harvard School of Medicine

Harvard School of Public Health

Harvard Vanguard  
Medical Associates

Health Resources  
and Services Administration

HealthPartners

Henry Ford Health System

IMS Health

Infectious Diseases  
Society of America

Institute for Healthcare  
Improvement

Institute of Medicine

Integrative Pain Center of Arizona

International Society  
for Pharmacoepidemiology

Iowa Women's Health Study

Janssen Pharmaceutica

John A. Hartford Foundation

Kaiser Permanente Colorado

Kaiser Permanente Georgia  
Kaiser Permanente  
Northern California  
Kaiser Permanente Northwest  
La Frontera Hope Center  
Massachusetts Department  
of Public Health  
Massachusetts Division  
of Medical Assistance  
Medco Health Solutions  
Medical Review  
of North Carolina, Inc.  
Medtronic, Inc./Diabetes Manage-  
ment Subsidiary MiniMed, Inc.  
Nanogen, Inc.  
National Committee for Quality  
Assurance  
National Initiative for Children's  
Healthcare Quality  
National Institutes of Health/  
National Cancer Institute  
National Institutes of Health/  
National Institute of Allergy and  
Infectious Diseases  
National Institutes of Health/  
National Institute of Arthritis and  
Musculoskeletal and Skin Diseases  
National Institutes of Health/  
National Institute of Diabetes &  
Digestive & Kidney Diseases  
National Institutes of Health/  
National Institute of General  
Medical Sciences  
National Institutes of Health/  
National Institute of Mental Health  
National Institutes of Health/  
National Institute of Nursing  
Research

National Institutes of Health/  
National Institute on Aging  
National Institutes of Health/Office  
of Research on Women's Health  
National Patient Safety Foundation  
North Carolina Association  
of Pharmacists  
North Carolina Department of  
Health and Human Services  
North Carolina Medicaid  
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Ortho-McNeil Pharmaceutical, Inc.  
Pediatric Research  
in Office Settings  
Pennsylvania Department  
of Public Health  
Pennsylvania Pharmaceutical  
Assistance Contract for the Elderly  
Pfizer Inc.  
Pharmaceutical Research and  
Manufacturers of America  
Pharmacogenetics Network  
Premier  
ProVantage Health Services, Inc.  
QED Solutions, Incorporated  
Robert Wood Johnson Foundation  
Roche Laboratories, Inc.  
RTI Health Solutions  
RTI International  
Society for Healthcare  
Epidemiology of America  
Society for Women's  
Health Research

Society of Thoracic Surgeons  
TAP Pharmaceutical Products, Inc.  
Tennessee Department of Health  
UCLA/RAND Center for Adolescent  
Health Promotion  
United States Pharmacopeial  
Convention, Inc.  
UnitedHealth Group  
UnitedHealthcare  
UnitedHealthcare of Alabama  
University of Arizona National  
Center of Excellence in Women's  
Health  
University of Illinois at Chicago  
University of Massachusetts  
Medical School  
University of Pennsylvania  
Health System  
University of Texas Health Science  
Center at San Antonio  
U.S. Department of Health  
and Human Services/Office  
on Women's Health  
U.S. Food and Drug Administration  
U.S. Food and Drug Administration/  
Office of Women's Health  
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Walgreen Co.  
WellPoint, Inc.  
Whitehall-Robins Inc.  
Wyeth-Ayerst Laboratories  
Wyeth

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October 1, 2004 - September 30, 2005

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