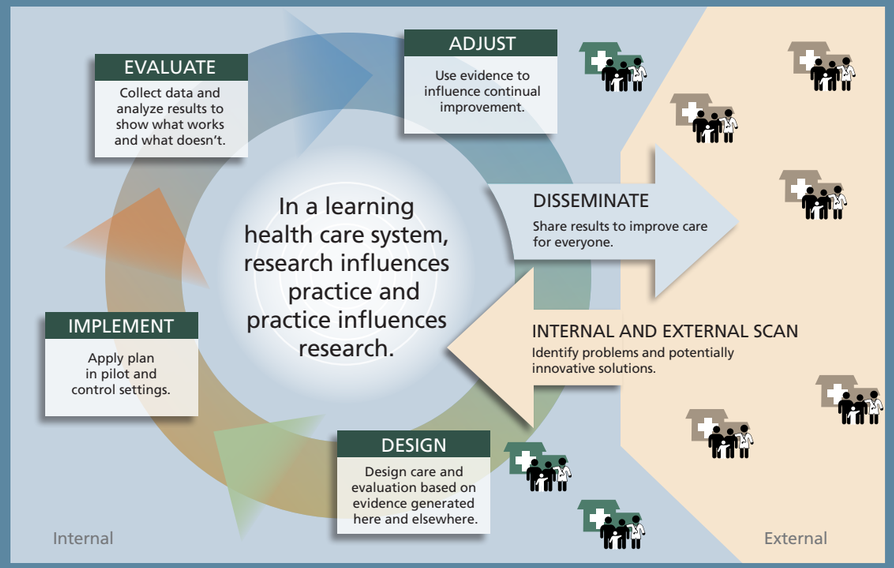
GroupHealth®
RESEARCH INSTITUTE

Bridging the gap between research and patient care

2011 ANNUAL REPORT

"We have an opportunity and a moral duty to rescue American health care the only way it can be rescued–by improving it."

Donald M. Berwick, MD, MPP
Senior Fellow, Center for American Progress



Cover photo:
Assistant Investigator Sascha Dublin, MD, PhD, is one of several Group Health Research Institute faculty who also practice medicine at Group Health. Dr. Dublin, who holds a five-year Paul B. Beeson Career Development Award in Aging Research from the National Institute on Aging, is a primary care doctor whose research focuses on medication safety in older adults.

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Eric B. Larson, MD, MPH

Like building a bridge, conducting health research is an optimistic act. We start by identifying gaps that can stop progress in its tracks. Then we forge a solid and expanding base of knowledge that all stakeholders—patients, clinicians, purchasers, policymakers, and others—can use to reach their goals.

At Group Health Research Institute (GHRI), 2011 was a good year for bridge building. We made major strides in our evolution as a "learning health care system"—where research and practice are meaningfully integrated, and advances in science are designed to catalyze advances in care. Our progress is driven largely by:

- ***Collaboration among Group Health researchers, clinicians, administrators, and patients.*** Together we conduct non-proprietary, public-interest research within an integrated health system and develop real-world innovations that serve both Group Health and the nation.
- ***An interdisciplinary approach among highly engaged faculty and staff.*** We form teams of physician scientists, health services researchers, epidemiologists, biostatisticians, and behavioral health experts from GHRI and other institutions to address the country's most common health problems.
- ***Partnerships in multi-site research networks.*** Groups such as the HMO Research Network, the Food and Drug Administration's Mini-Sentinel Initiative, and the Breast Cancer Surveillance Consortium add statistical power, diversity, and expertise.
- ***Committed sponsorship.*** Funders such as the National Institutes of Health, the Agency for Healthcare Research and Quality, the Group Health Foundation, and the Robert Wood Johnson Foundation continue to support our work.

2011 was also a time of great uncertainty over federal funding for health care and research. Still, GHRI ended 2011 with annual grant revenue slightly higher than ever before and a stable outlook for the coming year. Today's economic and political climate makes future resources tough to predict. But the U.S. health care system is rife with gaps in knowledge that GHRI and its partners aim to address.

We see, for example, vast data stores that can be mined to inform better approaches to care. We recognize the distance between high health care spending and needs that go unmet when the health care system wastes resources or misaligns incentives. We see how some Americans are harmed by too much treatment while others can't get the most basic services.

At GHRI, we're bridging gaps to innovate and improve care, knowing we can help the nation build a better health care system.

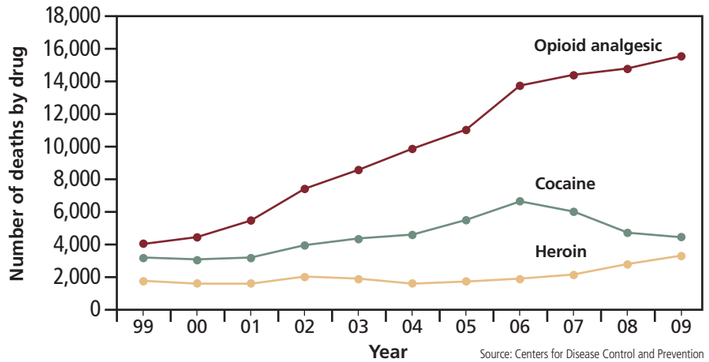
Eric B. Larson, MD, MPH
Executive Director, Group Health Research Institute
Vice President for Research, Group Health

Opioid-prescribing safety: Finding real-world solutions for a nationwide epidemic

In April 2011, federal officials called for "urgent action" to curb a national epidemic of prescription drug abuse. The evidence was clear: Fatal overdoses involving prescribed opioids quadrupled from 1999 to 2009, climbing to almost 16,000 U.S. deaths annually—more than cocaine and heroin overdoses combined. What wasn't clear was how to combat this growing threat. But thanks to Group Health's pioneering opioid-prescribing safety initiative—and a corresponding evaluation led by GHRI Senior Investigator Michael Von Korff, ScD—we're quickly learning new ways to improve patient safety.

Drug overdose deaths

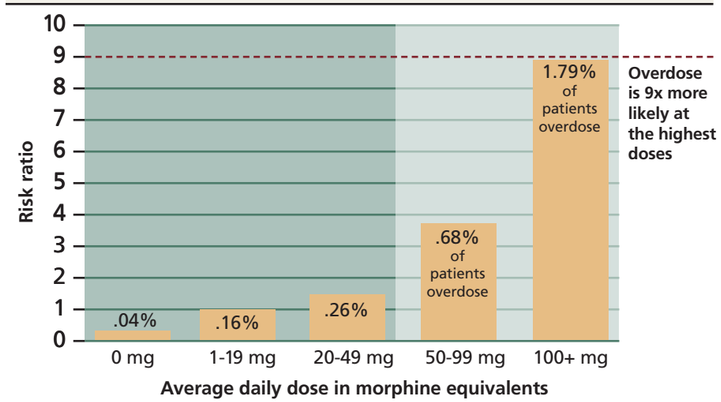
Prescribed opioids compared to cocaine and heroin



Source: Centers for Disease Control and Prevention

Opioid overdose risk (fatal & non-fatal)

By average daily dose of medically prescribed opioids



Dunn et al., *Annals of Internal Medicine,* 2010

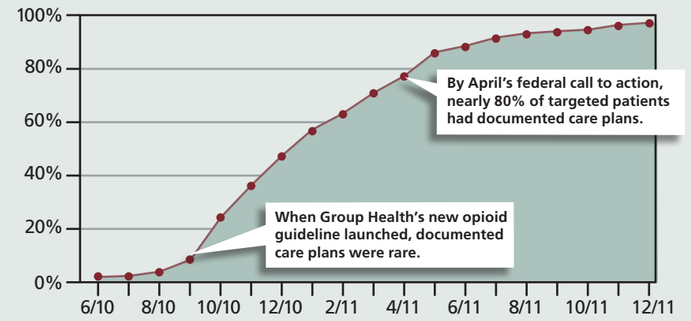
Launched in September 2010—seven months before the federal call to action—Group Health's initiative aims to standardize opioid use for chronic non-cancer pain without creating undue restrictions on clinically appropriate prescribing. Claire Trescott, MD, Group Health's medical director of primary care, developed the initiative with help from clinical leaders, primary care doctors, nurses, pharmacists, and pain specialists, including Dr. Von Korff and Group Health Chief of Physical Medicine and Rehabilitation Randi Beck, MD.

The initiative was inspired by observations from two sources: standard patient monitoring and findings Dr. Von Korff published in 2010 that linked higher opioid doses to greater risk of fatal and nonfatal overdose, increased rates of depression, and more fractures in seniors. The initiative addresses these risks with a new clinical guideline requiring standardized care plans for all chronic pain patients who receive opioids long term (not including patients with cancer).

Drs. Von Korff and Beck also teamed up to create an online training course to help primary care providers implement the new guideline. Funded by a Partnership for Innovation grant from the Group Health Foundation, the course explains the standardized care plans and other key practice changes—such as designating one physician to be responsible for any opioid prescription lasting longer than 90 days and requiring urine screening to test for other drugs in high-risk patients. A key aim is to get doctors and patients working together to clarify goals and expectations.

Mobilizing a learning health care system

Care plans for Group Health patients prescribed opioids long term



Drs. Von Korff, Trescott, and Beck published early results from Group Health's groundbreaking opioid-prescribing safety initiative in the August 2011 *Health Affairs.* Their co-author was Group Health Medical Director of Clinical Knowledge Development & Support Michelle Seelig, MD, MPH (not pictured).

"We're prescribing lower doses of opioids overall, and we're doing much more urine drug screening," says Dr. Trescott. "We're also having honest, in-depth discussions about opioids with our patients before treatment starts. The system has been fair, respectful, honest, and transparent."

Before the new clinical guideline launched, few of Group Health's 7,000 patients with long-term opioid prescriptions had documented care plans. By the end of 2011, 96 percent of them did—extraordinary results that are helping answer the nation's call for promising solutions to the prescription drug-abuse epidemic. But it doesn't end there.

"When we make changes in real-world practice and study them, we not only learn ways to address a particular problem, we learn strategies that can be generalized to other important practice changes and other systems," explains Dr. Von Korff. "It's learning that reaches well beyond Group Health."

He and his research team are pursuing federal funding to continue evaluating the initiative's impact on standardization of care and the rate of adverse events.

How did Group Health's new opioid guideline produce such stunning results so quickly—outpacing the federal call to action?

"Our care-delivery system, research institute, and foundation collaborated—pooling our knowledge, skills, and resources," explains Dr. Von Korff. "It's a powerful example of a learning health care system acting quickly to address important problems."

Helping Group Health harness opportunities for swift bidirectional learning—where evidence informs practice and practice informs evidence—is integral to the work of Associate Medical Director of Research Translation Robert J. Reid, MD, PhD, who assumed this role early in 2011. Also a GHRI associate investigator, Dr. Reid leads Group Health's ongoing evaluation of the patient-centered medical home rollout in primary care—while keeping his eyes peeled for other opportunities to study care innovations in real-world practice.

A prime example: When the organization undertook a comprehensive clinic facility redesign initiative in 2011, Dr. Reid and his research team used funds from Group Health and GHRI to quickly develop a baseline assessment—and are now seeking external funding to support follow-up data collection and analysis.

Breast cancer screening: A trio of innovators shines light on the evidence women need

Few would argue the value of screening mammography in preventing deaths from breast cancer. But serious questions remain about how best to balance screening's benefits with its potential harms, including false-positive test results, overdiagnosis leading to invasive treatment for non-life-threatening conditions, and repeated exposure to medical radiation.

The uncertainty has both the U.S. Preventive Services Task Force and the Institute of Medicine calling for better evidence about screening outcomes and the myriad factors that affect them. Through groundbreaking research with the Breast Cancer Surveillance Consortium (BCSC), GHRI Senior Investigators Diana Miglioretti, PhD, and Diana S.M. Buist, PhD, MPH, and Assistant Investigator Rebecca Hubbard, PhD, provided that evidence in 2011.

The BCSC is a national network of seven mammography registries with links to tumor and/or pathology registries. Established in 1994, it is the nation's largest longitudinal collection of breast imaging data—a one-of-a-kind resource that lets researchers worldwide answer timely questions about benefits and risks of breast cancer screening.

One recent example: while annual mammograms have long been standard for women with a personal history of breast cancer, only scant evidence had supported the practice. But with the BCSC's comprehensive data, Dr. Miglioretti—the Consortium's co-principal investigator—worked with Dr. Buist and colleagues from the University of Sydney in Australia on the first-ever study to assess screening mammography outcomes rigorously for women who'd had breast cancer before. Examining 12 years of data from more than 110,000 mammograms, they found that yearly screening detected second breast cancers at an early stage—results they published February 23, 2011 in the *Journal of the American Medical Association.*

In April 2011's *Radiology,* Dr. Buist and BCSC colleagues published evidence from the largest study of U.S. radiologists to date, showing that interpreting more screening mammograms helps radiologists do a better job of determining which suspicious breast lesions are cancer. They also found that reading *diagnostic* mammograms helped improve interpretive accuracy of screening exams. The findings have important policy implications: The Food and Drug Administration currently requires that only 960 *screening* mammograms be read over two years. By comparison, European and Canadian requirements range from 2500 to 5000.

"Based on our data, increasing volume requirements and including a minimal requirement for diagnostic interpretation would likely help radiologists find more cancers early and reduce the number of false-positive findings," explains Dr. Buist, who leads Group Health's breast cancer registry.

False positives lead to $1.6 billion in health care costs each year—while causing stress and anxiety for millions of women. That's why Dr. Hubbard and colleagues used BCSC data to examine false-positive results from screening mammograms for 169,000 women. In the October 18, 2011 *Annals of Internal Medicine,* they reported that, on average, more than half of women screened yearly for a decade had a false-positive result—and that having prior mammograms for comparison cut the odds of a false-positive in half. Screening every two years instead of annually lowered the false-positive rate by a third. Starting screening at age 50 instead of age 40 also lowered the lifetime risk of false positives.

"The BCSC's goal is to take screening recommendations from one-size-fits-all to personalized," Dr. Miglioretti explains. Thanks to the Consortium's new $20 million Program Project grant from the National Cancer Institute, that goal is within reach.

GHRI's statistical leadership brings data to life

Integral to the BCSC's success is its ability to collect, store, and analyze data across diverse registries. By 2011's close, the BCSC database included 9.5 million mammograms, 2.3 million women, and 114,000 breast cancer cases. Those quantities keep rising, as do the numbers of grant applications and publications supported by BCSC data—more than 70 and 400, respectively, to date. Most important, BCSC data play an essential role in breast cancer screening policy decisions and clinical recommendations. How do data achieve such influential reach?

"Our Statistical Coordinating Center—or SCC—pools the data from participating registries," explains Dr. Miglioretti, a nationally recognized biostatistician and the SCC's principal investigator. "We establish and evaluate data collection, help individual sites and outside researchers with analysis, and develop new statistical techniques." Recognizing the SCC's broad influence, NCI awarded the team a five-year, $7.5 million contract in 2011 to make BCSC data more widely available.

Dr. Miglioretti and her team are not alone in bringing GHRI's data savvy to national consortia. Associate Investigator Jennifer Nelson, PhD, serves as co-lead of the methods core for the Food & Drug Administration's Mini-Sentinel, a collaboration of 25 organizations building a national electronic medical product safety monitoring system. Many GHRI investigators, biostatisticians, and programmers have also made fundamental contributions to the HMO Research Network's virtual data warehouse—a standardized federated data system that supports and streamlines multi-center research projects.

Above: Drs. Miglioretti, Buist, and Hubbard made news in 2011 with cutting-edge research from the Breast Cancer Surveillance Consortium (BCSC) that shed light on important factors affecting breast cancer screening outcomes. Several other GHRI faculty play a key role in the BCSC research program, including Research Associate Erin Aiello Bowles, MPH, and Senior Biostatistician Laura Ichikawa, MS (not pictured).

Out in front: Findings from 'first-ever' studies in 2011

Massage, yoga, and stretching: Discovering paths to back pain relief

Chronic back pain is a common condition with many treatments, but it's hard to find solid evidence about which work best and cause the fewest side effects. In 2011, Senior Investigators Daniel Cherkin, PhD, and Karen Sherman, PhD, MPH, led two studies on alternative treatments for chronic low back pain that made strides toward better answers—while also making headlines.

In the July 5 *Annals of Internal Medicine*, their team reported on the first back pain study to compare structural and relaxation (Swedish) massage. Their randomized controlled trial of 400 Group Health patients showed that both types of massage worked equally well to ease chronic low back pain, while causing few side effects. The team followed that with the largest U.S. randomized controlled trial of yoga to date, studying 228 adults—mostly Group Health patients.

They confirmed findings from their previous research by again linking yoga classes to better back-related

> "Yoga classes and intensive stretching classes worked equally well."

function and diminished symptoms. In an *Archives of Internal Medicine* report e-published October 24, they also described surprising results: Intensive stretching classes had worked equally well.

Findings from the two path-breaking studies were featured by media outlets nationwide, including *The New York Times, National Public Radio, ABC News,* and *CNN*.

Drug safety research guides therapy for Alzheimer's

You wouldn't hit the brakes on your car while pressing the gas—or wash down a sleeping pill with espresso. Yet many patients taking common Alzheimer's disease medications called cholinesterase inhibitors are also prescribed drugs with anticholinergics properties, including some medicines for allergies, urinary incontinence, and depression. The problem? The two types of drugs antagonize each other such that neither medication works.

Until a 2011 study led by GHRI Associate Investigator Denise Boudreau, PhD, RPh, and e-published in the *Journal of the American Geriatrics Society*, little was known about how often patients use the two types of drugs simultaneously and the harms this might cause. With colleagues from Kaiser Permanente Colorado—GHRI's longtime HMO Research Network partner—Dr. Boudreau analyzed electronic pharmacy records from nearly 6,000 patients aged 50 or older who took cholinesterase inhibitors between 2000 and 2007. The team found that more than one-third took the cholinesterase inhibitors while also taking other drugs that may oppose them—and one-quarter of those did so for more than a year. But they found no link between concurrent use and nursing home admissions or death.

While the latter finding is reassuring, Dr. Boudreau emphasizes that using both medicines at once is, "at the very least, suboptimal clinical practice." And with a price tag of up to $180 for one month of cholinesterase inhibitor medication, curbing that practice could help reduce waste in health care spending.

"We hope this study will support sound therapeutic decision making for Alzheimer's patients, their families, and their providers," says Dr. Boudreau. "Having clearly agreed-upon goals for therapy and

a plan for monitoring effects and side effects is a good first step."

Group Health is among many health systems nationwide that are working to improve prescribing for patients with complex chronic conditions such as Alzheimer's.

Visit us at:
GroupHealthResearch.org
to learn more about new findings and ongoing studies.

Shared decision making: Videos turn up the volume

With obesity dangerously on the rise in the United States, it's not surprising that bariatric surgeries have increased 20-fold since 1996: from 9,400 to more than 220,000. The surgery can help severely obese people improve obesity-linked diseases such as type 2 diabetes, but its long-term outcomes remain uncertain.

"When a treatment has many pros and cons—as bariatric surgery does—individual patient preferences should play an even larger role than usual in treatment decisions," says GHRI Associate Investigator David Arterburn, MD, MPH.

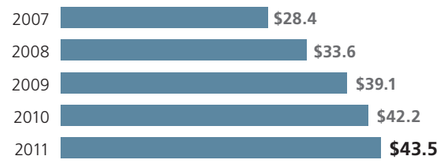
Publishing in *Obesity* in August 2011, Dr. Arterburn and colleagues from GHRI, Harvard, and the University of Washington reported on the first-ever randomized controlled trial of shared decision making for weight loss surgery. In shared decision making, patients receive information about possible risks and benefits of different treatment choices and talk with their care providers about the side effects and outcomes they are most comfortable with. Then they make the choice that's right for them.

According to Dr. Arterburn's findings, using a video-based decision aid can enhance the shared decision-making process: Among 152 Group Health patients considering bariatric surgery, those who watched such a video made choices that were more in line with their preferences, needs, and values. They also knew more about the treatment's risks, benefits, and likely outcomes than did those who only read an educational booklet.

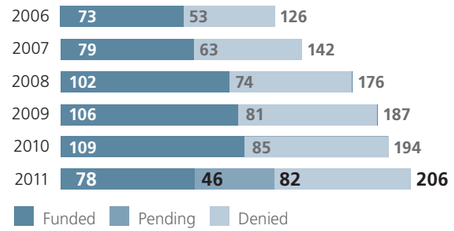
GHRI's multi-disciplinary research spans these areas:

- Aging & geriatrics
- Alternative approaches to healing
- Behavior change
- Biostatistics
- Cancer control
- Cardiovascular health
- Child & adolescent health
- Chronic illness management
- Health informatics
- Health services & economics
- Immunization & infectious diseases
- Medication use & patient safety
- Mental health
- Obesity
- Preventive medicine
- Women's health

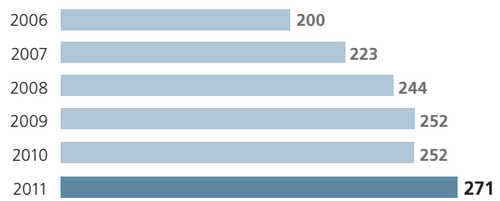
Grant dollars awarded
in millions as allocated by year



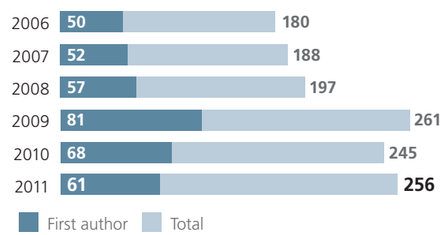
Number of grants submitted



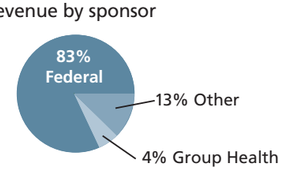
Active grants



Publications in peer-reviewed journals



GHRI revenue by sponsor



Stability in a time of uncertainty: Group Health research addresses effectiveness and value

In an era of uncertainty for health care, federally funded research, and many other sectors of our nation's economy, GHRI ended 2011 with annual grant revenues slightly higher than it had in 2010—and a stable outlook for 2012.

Much of our strength comes from grants for research in areas where we've long excelled. Our programs in cancer control, for example, have been tremendously successful, attracting many large awards for studies that can help determine the best approaches to prevention, screening, and early diagnosis. We also continue to break new ground in areas such as healthy aging, chronic illness care, mental health, vaccines, patient safety, and more. Meanwhile, we are bolstering our capacity in critical areas of health services research—partnering with others at Group Health and elsewhere to become a model learning health care system.

Selected major findings:

A sample of research articles published in 2011

Aging & geriatrics

Atrial fibrillation, the most common kind of irregular heartbeat, was associated with greater risk of dementia. *(Journal of the American Geriatrics Society)*

Depression at age 50 or older is linked to an increase in dementia and may be an early sign of the condition. *(Archives of General Psychiatry)*

Cancer

Using computer-aided detection in breast cancer screening did not significantly improve cancer-detection rates—but did raise the proportion of false-positive mammograms. *(Journal of the National Cancer Institute)*

Digital and film mammograms detected cancer at similar rates in women age 50 to 79 in a cohort study of health organizations across the United States. *(Annals of Internal Medicine)*

Cancer patients need more integrated, patient-centered early care, according to patient interviews and focus groups. Suggested solutions include providing patients with a care manager, computerized care integration and support, and reforming provider reimbursement. *(Quality & Safety in Health Care)*

Cardiovascular health

Universal cholesterol screening for children and teens could result in 200,000 children and teens taking cholesterol-lowering drugs long-term, possibly causing side effects without necessarily preventing heart disease or death. *(Journal of the American Medical Association)*

Chronic illness

King County Steps to Health—a community-based initiative to prevent chronic disease—has helped address health disparities. *(Health Education and Behavior)*

Among thousands of Group Health patients with diabetes, those who also have depression are admitted to intensive care more often. *(Psychosomatics)*

Health information technology

According to the first randomized trial of its kind, using either a phone- or a Web-based smoking cessation intervention boosted quit rates, although study participants used phone services more often. Older age and the belief that certain treatments could improve success predicted greater utilization across groups. *(Nicotine & Tobacco Research)*

Mental health

Online messaging can deliver organized follow-up care for depression effectively and efficiently. *(Journal of General Internal Medicine)*

A culturally tailored, Spanish-language version of Group Health's phone-based cognitive behavioral therapy intervention was well accepted and linked to lower depression scores in a pilot study of 1000 Latino patients in primary care. *(Psychiatric Services)*

Obesity and depression both dramatically increased health care costs, but they mainly acted separately. *(Journal of General Internal Medicine)*

Vaccines

A study of inactivated 2009 H1N1 vaccine in pregnant women reported an antibody response likely to give protection, with antibody also transferred to the fetus through the placenta. *(Journal of Infectious Diseases)*

Women's health

Birth control pills may reduce a woman's bone density. A study showed impacts on bone density were small, depended on the woman's age and the hormone dose, and did not appear until about two years of use. *(Journal of Clinical Endocrinology & Metabolism)*

Healthy women who took the antidepressant escitalopram had fewer and less severe menopausal hot flashes than did those who took a placebo. *(Journal of the American Medical Association)*

For GHRI's entire bibliography, go to:
grouphealthresearch.org/research/publications/bibliography.aspx

Financial Statement

Revenue	
Federal grant and contract revenue	$37,262,284
Other sponsored revenue	$6,227,169
Group Health Cooperative support	$1,656,870
Total revenues	**$45,146,323**
Expense	
Personnel expenses	$27,786,111
Other expenses	$17,360,212
Total expenses	**$45,146,323**
Net gain/loss	**$0**

Research Advisory Board 2011

The Group Health Research Advisory Board assesses the quality, innovation, and relevance of Group Health research in enhancing quality of care and consumer value.

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