

THE SENATE  
THE TWENTY-FIFTH LEGISLATURE  
REGULAR SESSION OF 2010

COMMITTEE ON HUMAN SERVICES  
Senator Suzanne Chun Oakland, Chair  
Senator Les Ihara, Jr., Vice Chair

NOTICE OF HEARING

DATE: Monday April 19, 2010  
TIME: 8:30am  
PLACE: Conference Room 229  
State Capitol  
415 South Beretania Street

A G E N D A

<p><b><u>HCR 13</u></b> <u>(HSCR1288-10)</u> <u>Testimony</u> <u>Status</u></p>	<p>EXTENDING THE DEADLINE FOR THE HOME FOR LIFE TASK FORCE TO REPORT ON ITS FINDINGS AND RECOMMENDATIONS FOR REDUCING BARRIERS TO AGING IN PLACE AND FACILITATING MULTIGENERATIONAL LIVING.</p>	<p>HMS</p>
<p><b><u>HCR 19</u></b> <u>(HSCR1290-10)</u> <u>Testimony</u> <u>Status</u></p>	<p>REQUESTING THE DEPARTMENT OF HUMAN SERVICES TO CREATE A DATABASE RESOURCE WEBSITE TO HOUSE REAL-TIME AVAILABILITY OF ALL JUVENILE SERVICES FROM THE LOWEST LEVEL OF CARE TO THE HIGHEST LEVEL OF CARE FOR THE APPROPRIATE PLACEMENT OF JUVENILES IN HAWAII.</p>	<p>HMS</p>
<p><b><u>HCR 199, HD1</u></b> <u>(HSCR1286-10)</u> <u>Testimony</u> <u>Status</u></p>	<p>REQUESTING THE DEPARTMENT OF HUMAN SERVICES TO CONSIDER CERTAIN FACTORS BEFORE ENTERING INTO CONTRACTS WITH MANAGED CARE ORGANIZATIONS THAT PROVIDE MEDICAID BENEFITS UNDER QUEST MANAGED CARE PLANS.</p>	<p>HMS</p>
<p><b><u>HCR 256</u></b> <u>(HSCR1335-10)</u> <u>Testimony</u> <u>Status</u></p>	<p>REQUESTING THE DEPARTMENT OF HUMAN SERVICES TO EXAMINE AND EVALUATE THE VERACITY, EXTENT, AND EFFECT OF CERTAIN ALLEGATIONS OF SHORTCOMINGS OF PROGRAMS FOR ADULTS WITH SPECIAL NEEDS.</p>	<p>HMS</p>
<p><b><u>HCR 262, HD1</u></b> <u>(HSCR1342-10)</u> <u>Testimony</u> <u>Status</u></p>	<p>REQUESTING THE ESTABLISHMENT OF THE WAIANAEO COAST HOMELESSNESS TASK FORCE TO DEVELOP A COMPREHENSIVE PLAN TO ADDRESS THE IMMEDIATE, SHORT-, AND LONG-TERM NEEDS OF THE HOMELESS AND THOSE AT-RISK OF BECOMING HOMELESS.</p>	<p>HMS</p>

**Decision Making to follow, if time permits.**

**FOR AMENDED HEARING NOTICES:** If the notice is an amended notice, measures that have been deleted are stricken through and measures that have been added are underscored. If there is a measure that is both underscored and stricken through, that measure has been deleted from the agenda.

**Persons wishing to testify should submit testimony in one of the following ways by 4:00 p.m. the day prior to the hearing:**

- By Email: Testimony may be emailed if less than 5 pages in length, to the Committee at [HMSTestimony@Capitol.hawaii.gov](mailto:HMSTestimony@Capitol.hawaii.gov) . Please indicate the measure, date and time of the hearing. Email sent to individual offices or any other Senate office will not be accepted.
- By Web: Testimony may be submitted online if less than 4MB in size, at <http://www.capitol.hawaii.gov/emailtestimony>.
- In person: 1 copy of their testimony to the committee clerk, Room 226, State Capitol.
- By fax: Testimony may be faxed if less than 5 pages in length, to the Senate Sergeant-At-Arms Office at 586-6659 or 1-800-586-6659 (toll free for neighbor islands), at least 24 hours prior to the hearing. When faxing, please indicate to which committee the testimony is being submitted and the date and time of the hearing.

**Please note: If you submit your written testimony after 4:00 p.m. the day prior to the hearing, please sign-in at the staff table to testify orally. A copy of your testimony may not be available during the hearing but will be posted online for the public after the hearing.**

If you require special assistance or auxiliary aids or services to participate in the public hearing process (i.e., sign or foreign language interpreter or wheelchair accessibility), please contact the committee clerk 24 hours prior to the hearing so arrangements can be made.

Please note: All testimony received by the Hawaii Senate will be posted on the Hawaii Legislature's Website. Documents made available through the Testimony hyperlink(s) above may not be posted until the start of the hearing.

**Public Folder.** A folder labeled "Public Folder" containing the testimonies for the hearing will be available for shared use by members of the public.

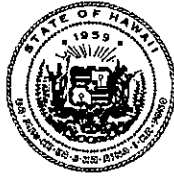
FOR FURTHER INFORMATION, PLEASE CALL THE COMMITTEE CLERK AT 586-6130.

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Senator Suzanne Chun Oakland  
Chair

**HCR 199**

LINDA LINGLE  
GOVERNOR



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HENRY OLIVA  
DEPUTY DIRECTOR

STATE OF HAWAII  
DEPARTMENT OF HUMAN SERVICES  
P.O. Box 339  
Honolulu, Hawaii 96809-0339

April 19, 2010

MEMORANDUM

TO: Honorable Suzanne Chun Oakland, Chair  
Senate Committee on Human Services

FROM: Lillian B. Koller, Director

SUBJECT: **H.C.R. 199, H.D.1– REQUESTING THE DEPARTMENT OF HUMAN SERVICES TO CONSIDER CERTAIN FACTORS BEFORE ENTERING INTO CONTRACTS WITH MANAGED CARE ORGANIZATIONS THAT PROVIDE MEDICAID BENEFITS UNDER QUEST MANAGED CARE PLANS**

Hearing: Monday, April 19, 2010, 8:30 a.m.  
Conference Room 229, State Capitol

PURPOSE: The purpose of this resolution is to request that the Department of Human Services (DHS) consider certain factors before entering into contracts with managed care organizations that provide Medicaid benefits under QUEST managed care plans.

DEPARTMENT'S POSITION: The Department of Human Services (DHS) cannot implement this resolution, as written, because it would not be permitted by federal law. We have proposed amended language for consideration below that will meet the purposes of this resolution.

DHS recognizes the importance of cost-sharing in helping to decrease inappropriate utilization of medical services and we have been interested in

implementing co-payments. The federal government has strict regulations regarding the amount of co-payments that an individual can pay, who can pay them, and for what services they can apply. The provisions of this resolution are inconsistent with federal requirements.

Implementing co-payments will require an 1115 waiver amendment which can take years to get approved by the federal Centers for Medicare and Medicaid Services. Co-payments cannot be implemented in our Medicaid programs without such federal approval. DHS continues to seek such approval.

DHS would also like to point out that it currently does require that each managed care health plan has a formulary for prescription drug coverage, and applies the medical necessity provision pursuant to section 432E-1.4, Hawaii Revised Statutes, to its health care coverage provided by managed care health plans.

DHS recommends that the following amendments be considered to replace the language on page 2, lines 8 - 43 and continuing to page 3, lines 1-2

“BE IT RESOLVED that the Department of Human Services shall continue to engage in on-going dialogue with the federal Centers for Medicare and Medicaid regarding applying co-payments to its members who are non-pregnant adults over eighteen years of age in its managed care health plans, and that the Department of Human Services submit an 1115 waiver amendment to allow for co-payments when allowed and advisable no later than April, 2011.

BE IT FURTHER RESOLVED that the Department of Human Services shall report to the Legislature on its dialogue with the federal Centers for Medicare and Medicaid regarding applying co-payments for Medicaid health plan members no

later than twenty days prior to the convening of the 2011 Regular Legislative Session.”

The Department understands that the Legislature is considering removing Section 1 of H.B. 2774, H.D.2, S.D.2 regarding co-payments, prescription drug formularies and the application of medical necessity in the QUEST managed care programs and is, instead, proposing an examination of co-payments through this resolution.

Thank you for this opportunity to testify.

# HMSA



An Independent Licensee of the Blue Cross and Blue Shield Association

April 19, 2010

The Honorable Suzanne Chun Oakland, Chair  
The Honorable Les Ihara, Jr., Vice Chair  
Senate Committee on Human Services

**Re: HCR 199 HD1 – Requesting the Department of Human Services to Consider Certain Factors Before Entering Into Contracts With Managed Care Organizations That Provide Medicaid Benefits Under Quest Managed Care Plans**

Dear Chair Chun Oakland, Vice Chair Ihara, and Members of the Committee:

The Hawaii Medical Service Association (HMSA) appreciates the opportunity to testify on HCR 199 HD1 which would require the Department of Human Services (DHS) to take into consideration some potential cost saving measures prior to entering into contracts with health plans to administer the QUEST plan. HMSA supports this proposal.

As you are aware, at the beginning of this year the Department of Human Services (DHS) stated that due to budgetary shortfalls, contracted QUEST plans could expect projected delayed payments beginning in April (potentially March) and extending through June. While we understand the budgetary restrictions the State is facing, DHS' decision would have significantly impacted a health plan's ability to pay for services. This caused great concern, not only for the QUEST plans, but for our members and participating providers as well.

We appreciate the Legislature's continued attention to this issue throughout the legislative session. However, long term solutions to address the funding issue for the QUEST program have not truly been addressed. We believe that the language in HCR 199 HD1 offers clear direction and guidance from the Legislature as to the path DHS should examine as we move forward.

Again we appreciate the dialogue that HCR 199 HD1 will surely open and hope that we can continue to strive towards finding workable solutions for problems the state's Medicaid system is facing today. Thank you for the opportunity to testify.

Sincerely,

A handwritten signature in black ink, appearing to read 'JD' followed by a flourish.

Jennifer Diesman  
Vice President  
Government Relations



## HAWAII MEDICAL ASSOCIATION

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Phone (808) 536-7702 Fax (808) 528-2376 www.hmaonline.net

**Monday, April 19, 2010, 8:30 AM**

To: COMMITTEE ON HUMAN SERVICES  
Senator Suzanne Chun Oakland, Chair  
Senator Les Ihara, Jr., Vice Chair

From: Hawaii Medical Association  
Gary A. Okamoto, MD, Legislative Co-Chair  
Linda Rasmussen, MD, Legislative Co-Chair  
April Donahue, Executive Director  
Lauren Zirbel, Government Affairs  
Dick Botti, Government Affairs

RE: HCR 199 REQUESTING THE DEPARTMENT OF HUMAN SERVICES TO CONSIDER CERTAIN FACTORS BEFORE ENTERING INTO CONTRACTS WITH MANAGED CARE ORGANIZATION THAT PROVIDE MEDICAID BENEFITS UNDER THE QUEST MANAGED CARE PLANS

Chairs & Committee Members:

The Hawaii Medical Association is in opposition to the proposal to require a co-payment for QUEST beneficiaries for office visits, ER visits, and prescriptions. Many QUEST patients have severe, chronic illnesses requiring multiple medications and regular monitoring by their physicians. General Assistance now pays only \$300 per month for living expenses, which is not enough to cover basic rent and personal needs like toilet paper and tooth paste, let alone co-pays even if they are only \$5.

This would impose an unreasonable hardship on QUEST patients, with the worst hardship falling on the ones with more severe health problems. There is plenty of evidence that co-pays that are significant in relation to income, as would be the case with the QUEST population, will deter necessary care more than unnecessary care. This will surely lead to significant morbidity and mortality for this population, resulting in increased use of emergency rooms and in-patient care. For every drug seeker who is deterred by a co-pay from asking for an unnecessary prescription, there will be two schizophrenics or diabetics who avoid necessary care and end up in the hospital, via the emergency room. This is not an effective way to save money.

Cost sharing for average income individuals has shown promise in deterring unnecessary care. This is not the case for impoverished segments of the population.

As the attached RAND Health Insurance Experiment notes:

"In general, the reduction in services induced by cost sharing had no adverse effect on participants' health. **However, there were exceptions. The poorest and sickest 6 percent of the sample at the start of the experiment had better outcomes under the free plan** for 4 of the 30 conditions measured. Specifically, free care improved the control of hypertension. The poorest patients in the free care group who entered the experiment with hypertension saw greater reductions in blood pressure than did their counterparts with cost sharing. The projected effect was about a 10 percent reduction in mortality for those with hypertension. Free care marginally improved vision for the poorest patients. Free care also increased the likelihood among the poorest patients of receiving needed dental care. Serious symptoms were less prevalent for poorer people on the free plan... **The**

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President - Robert Marvit, MD President-Elect - Morris Mitsunaga, MD Secretary - Thomas Kosasa, MD  
Immediate Past President - Gary Okamoto, MD Treasurer - Stephen Kemble, MD Executive Director - April Donahue



**study suggested that cost sharing should be minimal or nonexistent for the poor, especially those with chronic disease."**

Please also find attached a New England Journal of Medicine article entitled, "Increased Ambulatory Care Copayments and Hospitalizations among the Elderly." The article shows that higher co-pays lead to higher hospitalization rates in elderly and presumably sicker populations. The Conclusion states, **"raising cost sharing for ambulatory care among elderly patients may have adverse health consequences and may increase total spending on health care."**

Thank you for the opportunity to provide this testimony.



# The Health Insurance Experiment

## A Classic RAND Study Speaks to the Current Health Care Reform Debate

RAND RESEARCH AREAS

- THE ARTS
- CHILD POLICY
- CIVIL JUSTICE
- EDUCATION
- ENERGY AND ENVIRONMENT
- HEALTH AND HEALTH CARE
- INTERNATIONAL AFFAIRS
- NATIONAL SECURITY
- POPULATION AND AGING
- PUBLIC SAFETY
- SCIENCE AND TECHNOLOGY
- SUBSTANCE ABUSE
- TERRORISM AND HOMELAND SECURITY
- TRANSPORTATION AND INFRASTRUCTURE
- WORKFORCE AND WORKPLACE

**A**fter decades of evolution and experiment, the U.S. health care system has yet to solve a fundamental challenge: delivering quality health care to all Americans at an affordable price. In the coming years, new solutions will be explored and older ideas revisited. One idea that has returned to prominence is cost sharing, which involves shifting a greater share of health care expense and responsibility onto consumers. Recent public discussion of cost sharing has often cited a landmark RAND study: the Health Insurance Experiment (HIE). Although it was completed over two decades ago, in 1982, the HIE remains the only long-term, experimental study of cost sharing and its effect on service use, quality of care, and health. The purpose of this research brief is to summarize the HIE's main findings and clarify its relevance for today's debate.

Our goal is not to conclude that cost sharing is good or bad but to illuminate its effects so that policymakers can use the information to make sound decisions.

### Learning from Experiment: Conducting the HIE

In the early 1970s, financing and the impact of cost sharing took center stage in the national health care debate. At the time, the debate focused on free, universal health care and whether the benefits would justify the costs. To inform this debate, an interdisciplinary team of RAND researchers designed and carried out the HIE, one of the largest and most comprehensive social science experiments ever performed in the United States.

### Key findings:

- In a large-scale, multiyear experiment, participants who paid for a share of their health care used fewer health services than a comparison group given free care.
- Cost sharing reduced the use of both highly effective and less effective services in roughly equal proportions. Cost sharing did not significantly affect the quality of care received by participants.
- Cost sharing in general had no adverse effects on participant health, but there were exceptions: free care led to improvements in hypertension, dental health, vision, and selected serious symptoms. These improvements were concentrated among the sickest and poorest patients.

The HIE posed three basic questions:

- How does cost sharing or membership in an HMO affect use of health services compared to free care?
- How does cost sharing or membership in an HMO affect appropriateness and quality of care received?
- What are the consequences for health?

The HIE was a large-scale, randomized experiment conducted between 1971 and 1982. For the study, RAND recruited 2,750 families encompassing more than 7,700 individuals, all of whom were under the age of 65. They were chosen from six sites across the

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United States to provide a regional and urban/rural balance. Participants were randomly assigned to one of five types of health insurance plans created specifically for the experiment. There were four basic types of fee-for-service plans: One type offered free care; the other three types involved varying levels of cost sharing—25 percent, 50 percent, or 95 percent coinsurance (the percentage of medical charges that the consumer must pay). The fifth type of health insurance plan was a nonprofit, HMO-style group cooperative. Those assigned to the HMO received their care free of charge. For poorer families in plans that involved cost sharing, the amount of cost sharing was income-adjusted to one of three levels: 5, 10, or 15 percent of income. Out-of-pocket spending was capped at these percentages of income or at \$1,000 annually (roughly \$3,000 annually if adjusted from 1977 to 2005 levels), whichever was lower. The 95 percent coinsurance plan in the study closely resembled the high-deductible catastrophic plans being discussed today.

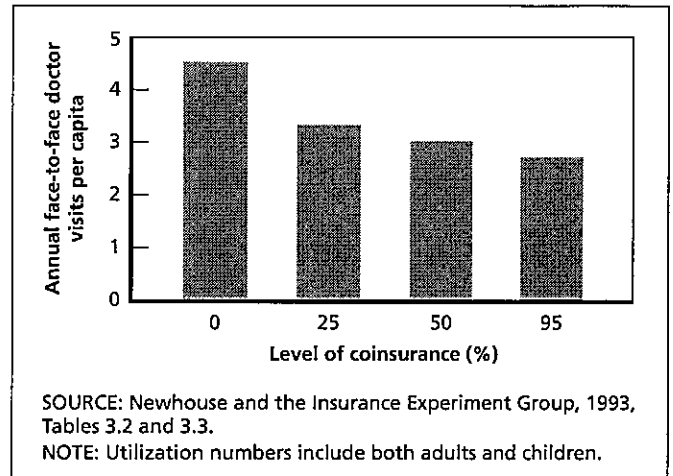
Families participated in the experiment for 3–5 years. The upper age limit for adults at the time of enrollment was 61, so that no participants would become eligible for Medicare before the experiment ended. To assess participant service use, costs, and quality of care, RAND served as the families' insurer and processed their claims. To assess participant health, RAND administered surveys at the beginning and end of the experiment and also conducted comprehensive physical exams. Sixty percent of participants were randomly chosen to receive exams at the beginning of the study, and all received physicals at the end. The random use of physicals at the beginning was intended to control for possible health effects that might be stimulated by the physical exam alone, independent of further participation in the experiment.

### Effects on Use of Health Services

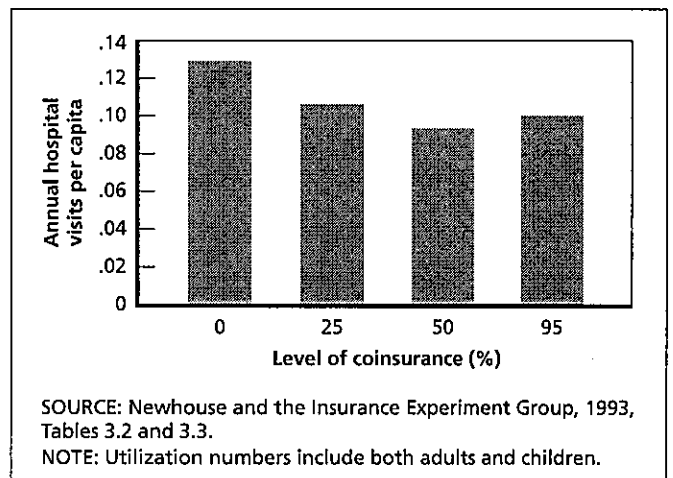
The results showed that cost sharing reduced the use of nearly all health services. Specifically,

- Averaged across all levels of coinsurance, participants (including both adults and children) with cost sharing made one to two fewer physician visits annually and had 20 percent fewer hospitalizations than those with free care. Declines were similar for other types of services as well, including dental visits, prescriptions, and mental health treatment (see Figures 1 and 2).
- Consumers in the HMO-style cooperative had 39 percent fewer hospital admissions than consumers with free care in the fee-for-service system, but they had similar use of outpatient services. Spending reductions under the HMO plan were comparable to the effects of a higher rate of coinsurance in the fee-for-service system.

**Figure 1**  
Participants with Cost Sharing Visited the Doctor Less Frequently



**Figure 2**  
... and Were Admitted to Hospitals Less Often

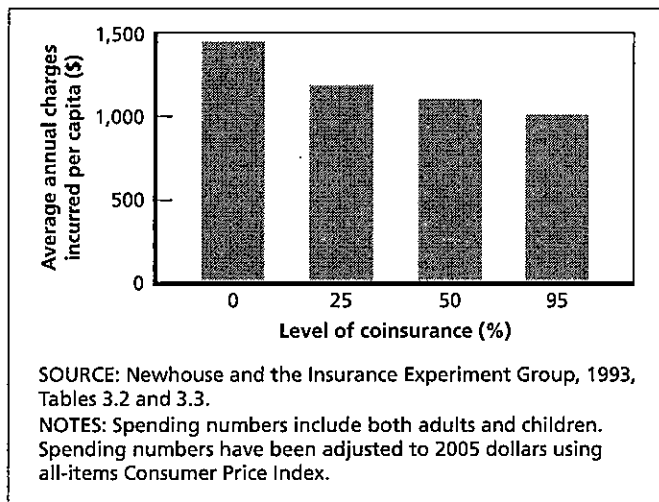


- Participants in cost sharing plans spent less on health care; this savings came from using fewer services rather than finding lower prices. Those with 25 percent coinsurance spent 20 percent less than participants with free care, and those with 95 percent coinsurance spent about 30 percent less (see Figure 3).
- Reduced use of services resulted primarily from participants deciding not to initiate care. Once patients entered the health care system, cost sharing only modestly affected the intensity or cost of an episode of care.

### Effects on Appropriateness of Care and on Quality of Care

The analysis also examined the appropriateness of the services reduced by cost sharing and the technical quality of care

**Figure 3**  
**Participants with Cost Sharing Spent Less on Health Care Services**



received by participants. Did cost sharing deter participants from seeking appropriate care to a greater or lesser extent than it deterred ineffective care? To answer this question, analysts grouped specific conditions into seven categories according to the degree to which outpatient care and therapies were known to be effective in treating each condition. The categories ranged from conditions for which care is highly effective to conditions for which care is rarely effective.

The analysis found that cost sharing reduced the use of effective and less-effective care across the board (see the table). For hospitalizations and prescription drug use, cost sharing likewise reduced more-effective and less-effective care in roughly equal amounts for all participants. The proportion of inappropriate hospitalizations was the same (23 percent) for cost-sharing and free-plan participants, as was the inappropriate use of antibiotics.

In addition to measuring the appropriateness of care sought by patients, the experiment measured the quality of care delivered. Analysts constructed process measures of the quality of ambulatory and dental care received by HIE participants. The process measures dealt with the appropriate use of visits and diagnostic tests by providers and the appropriate use of therapeutic interventions after participants sought care.

Two striking findings emerged: First, cost sharing did not significantly affect the quality of care received by participants. Clinically meaningful differences between the free plan and cost sharing plans appeared only for the process criteria dealing with the need for an office visit: 59 percent for free-plan participants versus 52 percent for those under

cost-sharing. Second, the overall level of quality for process measures was surprisingly low for all participants: criteria for quality were met only 62 percent of the time. These results were discouraging at the time. What is more, recent RAND work found that health care quality may not have improved significantly in the interim. Results of a 2003 nationwide study showed that quality criteria were met only 55 percent of the time.<sup>1</sup> Thus, despite tremendous technical progress that raises the potential value of care received, quality of care as a proportion of the best possible care has not improved in the past 20 years.

### Effects on Health

In general, the reduction in services induced by cost sharing had no adverse effect on participants' health. However, there were exceptions. The poorest and sickest 6 percent of the sample at the start of the experiment had better outcomes under the free plan for 4 of the 30 conditions measured. Specifically,

- Free care improved the control of *hypertension*. The poorest patients in the free care group who entered the experiment with hypertension saw greater reductions in blood pressure than did their counterparts with cost sharing. The projected effect was about a 10 percent reduction in mortality for those with hypertension.
- Free care marginally improved *vision* for the poorest patients.
- Free care also increased the likelihood among the poorest patients of receiving needed *dental care*.
- *Serious symptoms*<sup>2</sup> were less prevalent for poorer people on the free plan.
- Cost sharing also had some beneficial effects. Participants in cost sharing plans worried less about their health and had fewer restricted-activity days (including time spent in seeking medical care).

Likewise, patient satisfaction, another outcome of interest, was generally high and did not vary at different levels of cost sharing among the fee-for-service plans. While health outcomes at the HMO were no different than outcomes for those with free care, patient satisfaction was lower among participants initially assigned to the HMO. These partici-

<sup>1</sup> For a summary of this work, see "The First National Report Card on Quality of Health Care in America," RB 9053-2, available at [http://www.rand.org/pubs/research\\_briefs/RB9053-2/](http://www.rand.org/pubs/research_briefs/RB9053-2/).

<sup>2</sup> Defined as chest pain when exercising, bleeding (other than nosebleed or menstrual period) not caused by accident or injury, loss of consciousness, shortness of breath with light exercise of work, and weight loss of more than ten pounds (except when dieting).

**Cost Sharing Reduced the Use of Medical Services at all Levels of Effectiveness**

Medical Effectiveness Category	Predicted Percentage of Participants with at Least One Episode of Care in a Single Year, by Medical Effectiveness Category and Plan			
	Adults		Children	
	Free Care	Cost Sharing	Free Care	Cost Sharing
Highly effective				
Acute	28	19	32	23
Acute/chronic	17	13	19	16
Chronic	13	11	4	2
Quite effective	23	18	22	18
Less effective	25	19	13	10
Rarely effective	11	7	5	3
Rarely effective but equally effective with self-care or doctor	39	29	36	24

SOURCE: Lohr et al., 1986, p. 34.  
 NOTE: Percentages refer to participants who had at least one episode of care within the relevant diagnostic categories during a year of the experiment.

pants were less satisfied with care overall than either those who had previously chosen to be in the HMO or those who remained in the fee-for-service system.

Finally, the experiment examined whether shouldering more of their own health care costs leads people to take better care of themselves. It did not. Risky behaviors were not affected—rates of smoking and obesity, for instance, did not change.

**Implications for Today’s Health Care Reform Discussion**

Today’s health care environment differs in fundamental ways from the one in which the HIE took place. The science of medicine has changed across all dimensions. Managed care has become more prominent, as has prescription drug use. Doctors emphasize preventive care to a greater extent and know more about providing it. Given these and many other systemic changes, it is impossible to know whether a similar experiment undertaken today would produce similar results.

It is possible to take two contrasting perspectives on the HIE’s relevance to today’s health care debate. On the one hand, the study raises the possibility that cost sharing can be adapted to help achieve fundamental goals: containing costs and reducing waste without damaging health or quality of care. Would pairing some form of cost sharing and managed care allow us to exploit cost sharing’s benefits (reduced costs and unnecessary care, small overall health effects) while avoiding its negatives (reduction in needed care, some health effects for poorer and sicker patients)? The study suggested that cost sharing should be minimal or nonexistent for the poor, especially those with chronic disease.

On the other hand, the HIE showed that cost sharing can be a blunt tool. It reduced both needed and unneeded health services. Indeed, subsequent RAND work on appropriateness of care found that economic incentives by themselves do not improve appropriateness of care or lead to clinically sensible reductions in service use.<sup>3</sup>

In addition, cost sharing may not address the principal causes of cost growth. Cost sharing cuts expenditures by reducing visits but has little effect on the cost of treatment once care is sought. If, as is widely believed, cost increases are driven by treatment expense and new technologies, cost sharing can contribute to reducing costs at each point in time but may have little effect on the overall rate of cost growth.

Testing the effects of cost sharing in today’s environment and determining its usefulness as a tool for health system reform would require another large-scale demonstration. To our knowledge, no such demonstration has been conducted since the HIE. However, important nonexperimental work has been done in the interim using the HIE’s findings on the effect of cost sharing in more targeted insurance plans. A recent series of RAND studies showed that cutting prescription co-payments for patients who needed cholesterol-lowering drugs the most could improve their health and save more than \$1 billion annually in medical costs by increasing adherence and reducing the chance of hospitalization.<sup>4</sup> In

<sup>3</sup> For a summary of this work, see “Assessing the Appropriateness of Care: How Much Is Too Much?” RB-4522, available at [http://www.rand.org/pubs/research\\_briefs/RB4522](http://www.rand.org/pubs/research_briefs/RB4522).

this instance, reduced cost sharing led to greater savings and improved health.

As health reform reenters the national policy dialogue, RAND Health is once again providing a framework and objective analysis to inform the evaluation of options. The Comprehensive Assessment of Reform Efforts (COMPARE) initiative is developing a multidimensional framework within which a variety of proposed solutions to the problems in the U.S. health care system can be evaluated. RAND Health will use a variety of analytic tools including micro-simulation to explore the expected performance of the health care system over the next two decades in the absence of significant policy change (i.e., establish a base case). Proposals for change will be evaluated in comparison to the base case. This work continues the role that RAND Health began with the HIE by providing the facts and analysis necessary for informing health policy. ■

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<sup>4</sup> For a summary of this work, see "Cutting Drug Co-Payments for Sicker Patients on Cholesterol-Lowering Drugs Could Save a Billion Dollars Every Year," RB-9169, available at [http://www.rand.org/pubs/research\\_briefs/RB9169](http://www.rand.org/pubs/research_briefs/RB9169).

**This Research Highlight summarizes key findings from the RAND Health Insurance Experiment**

Robert H. Brook et al. "Quality of Ambulatory Care: Epidemiology and Comparison by Insurance Status and Income." *Medical Care*, May 1990, Vol. 28, No. 5, pp. 392-433.

Robert H. Brook, John E. Ware, William H. Rogers, Emmett B. Keeler, Allyson Ross Davies, Cathy Donald Sherbourne, George A. Goldberg, Kathleen N. Lohr, Patti Camp, and Joseph P. Newhouse. *The Effect of Coinsurance on the Health of Adults: Results from the RAND Health Insurance Experiment*. Santa Monica, Calif.: RAND Corporation, R-3055-HHS, December 1984.

Emmett B. Keeler. "Effects of Cost Sharing on Use of Medical Services and Health." *Medical Practice Management*, Summer 1992, pp. 317-321. Available online at <http://www.rand.org/pubs/reprints/RP1114/index.html>.

Kathleen N. Lohr, Robert H. Brook, Caren J. Kamberg, George A. Goldberg, Arleen Leibowitz, Joan Keesey, David Reboussin, and Joseph P. Newhouse. *Use of Medical Care in the RAND Health Insurance Experiment: Diagnosis- and Service-Specific Analyses in a Randomized Controlled Trial*. Santa Monica, Calif.: RAND Corporation, R-3469-HHS, December 1986.

Joseph P. Newhouse and the Insurance Experiment Group. *Free for All? Lessons from the RAND Health Experiment*. Cambridge, Mass.: Harvard University Press, 1993.

Bibliographical note: Work on the HIE began in 1973 and ended in 1982. The study led to over 300 publications, including journal articles, reports, and books. For a comprehensive bibliography of HIE-related publications, see <http://www.rand.org/health/projects/hie/hiepubs.html>.

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Abstracts of all RAND Health publications and full text of many research documents can be found on the RAND Health web site at [www.rand.org/health](http://www.rand.org/health). The RAND Corporation is a nonprofit research organization providing objective analysis and effective solutions that address the challenges facing the public and private sectors around the world. RAND's publications do not necessarily reflect the opinions of its research clients and sponsors. RAND® is a registered trademark.

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## HEALTH

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## SPECIAL ARTICLE

## Increased Ambulatory Care Copayments and Hospitalizations among the Elderly

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 ABSTRACT
 

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**BACKGROUND**

When copayments for ambulatory care are increased, elderly patients may forgo important outpatient care, leading to increased use of hospital care.

**METHODS**

We compared longitudinal changes in the use of outpatient and inpatient care between enrollees in Medicare plans that increased copayments for ambulatory care and enrollees in matched control plans — similar plans that made no changes in these copayments. The study population included 899,060 beneficiaries enrolled in 36 Medicare plans during the period from 2001 through 2006.

**RESULTS**

In plans that increased copayments for ambulatory care, mean copayments nearly doubled for both primary care (\$7.38 to \$14.38) and specialty care (\$12.66 to \$22.05). In control plans, mean copayments for primary care and specialty care remained unchanged at \$8.33 and \$11.38, respectively. In the year after the rise in copayments, plans that increased cost sharing had 19.8 fewer annual outpatient visits per 100 enrollees (95% confidence interval [CI], 16.6 to 23.1), 2.2 additional annual hospital admissions per 100 enrollees (95% CI, 1.8 to 2.6), 13.4 more annual inpatient days per 100 enrollees (95% CI, 10.2 to 16.6), and an increase of 0.7 percentage points in the proportion of enrollees who were hospitalized (95% CI, 0.51 to 0.95), as compared with concurrent trends in control plans. These estimates were consistent among a cohort of continuously enrolled beneficiaries. The effects of increases in copayments for ambulatory care were magnified among enrollees living in areas of lower income and education and among enrollees who had hypertension, diabetes, or a history of myocardial infarction.

**CONCLUSIONS**

Raising cost sharing for ambulatory care among elderly patients may have adverse health consequences and may increase total spending on health care.

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**E**CONOMIC THEORY AND EMPIRICAL EVIDENCE suggest that patients will use fewer health services when they have to pay more for them.<sup>1,2</sup> Increasing the copayment for ambulatory care, for instance, has been shown to reduce the number of outpatient visits.<sup>2-7</sup>

In response to rapidly rising health care costs, many public and private insurers have increased the patient's share of the cost of ambulatory care. The typical copayment for an office visit in employer-based health plans doubled between 2001 and 2006.<sup>8</sup> An expanding number of state Medicaid programs have introduced or raised outpatient cost sharing for their enrollees.<sup>9</sup> The proportion of Medicare enrollees in health plans requiring a copayment of more than \$15 for an outpatient visit increased from 0.3 to 24% for primary care visits and from 1.2% to 63% for specialist visits between 1999 and 2003.<sup>10</sup>

One concern about requiring copayments for ambulatory care is that they may deter patients from obtaining effective outpatient medical care, leading to greater offsetting use of acute care in the hospital. If this is true, then increasing the patient's share of the cost for ambulatory care may not reduce (or may even increase) total health care spending and may result in worse health outcomes. Elderly patients may be particularly sensitive to cost sharing because they have lower incomes, are more likely to be in poor health, and have greater out-of-pocket spending on health care than nonelderly populations.<sup>11,12</sup>

There have been remarkably few studies of the consequences of increasing copayments for ambulatory care, and even these studies have been limited because they have excluded elderly patients<sup>2</sup> or have evaluated concurrent changes in cost sharing for ambulatory care and prescription drugs.<sup>12,13</sup> We therefore examined the effect of increasing copayments for ambulatory care on the use of acute care in the hospital among a large, nationally representative cohort of elderly Medicare enrollees in managed-care plans. Using a quasi-experimental design, we compared longitudinal changes in the use of outpatient and inpatient care in Medicare plans that increased copayments for ambulatory care with concurrent trends in control plans — similar Medicare plans that did not change ambulatory care copayments. We also determined whether increased copayments for ambulatory care had differential effects

among enrollees with chronic disease, black enrollees, and enrollees from areas of lower socioeconomic status.

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## METHODS

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### DATA SOURCES AND STUDY POPULATION

We obtained individual-level data from the Medicare Healthcare Effectiveness Data and Information Set (HEDIS) maintained by the Centers for Medicare and Medicaid Services (CMS) for the years 2001 through 2006. Information about data collection, variable specifications, and CMS-sponsored audits has been published previously.<sup>14,15</sup> We matched 97% of the observations in the HEDIS data set to the Medicare enrollment file to determine the demographic characteristics of enrollees.

We obtained monthly information on health plan benefits for all Medicare plans from 2001 through 2006 from the CMS. This information included each plan's cost-sharing requirement for outpatient visits, prescription drugs, and inpatient hospitalizations. To obtain information on health plan characteristics, we linked these data to the Interstudy Competitive Edge database<sup>16</sup> or contacted the health plans directly.

We analyzed benefits for 172 Medicare plans with more than 1 year of participation in Medicare. From this sample, we identified 18 plans that between December 2001 and January 2006 raised copayments for ambulatory care without increasing cost sharing for prescription drugs. We hereafter refer to these plans as case plans.

We matched these 18 case plans to 18 control plans that changed neither copayments for ambulatory care nor coverage of prescription drugs during the identical years in which cost-sharing plans increased copayments for ambulatory care. Each case plan was matched to a control plan on the basis of census region, model type, and tax status. If a case plan could be matched with two or more control plans, we randomly selected one of the control plans. If a control plan was matched with a case plan, it could not serve as a control for another case plan.

After observations for Medicare beneficiaries younger than 65 years of age had been excluded, our main analytic sample included 1,522,067 observations for 899,060 beneficiaries who were enrolled during the period from January 2001 through December 2006.

**VARIABLES**

The main outcome variables were three measures of utilization of inpatient hospital care: the number of annual inpatient admissions, the number of annual inpatient days, and the probability of any use of inpatient care. Use of inpatient care was defined as including hospital stays for all medical and surgical acute care but excluded hospitalizations for mental health conditions. We also assessed the number of annual outpatient visits. We annualized utilization rates for 13% of observations from enrollees who were members of their plan for less than 12 months.

The primary independent variables were an indicator variable for whether the health plan increased copayments for ambulatory care, an indicator variable for time (0 in the year before the copayments were raised, 1 in the year after), and a term of interaction between these two variables.

Covariates included age (65 to 74 years, 75 to 84 years, or older than 84 years), sex, race or ethnic group (black, white, or other), proportion of persons 65 years of age or older who were living in the enrollee's ZIP Code area and had an income below the federal poverty level, proportion of persons 65 years of age or older who were living in the enrollee's ZIP Code area and had attended college (whether or not they graduated), and year in which the variables were measured.

**STATISTICAL ANALYSIS**

We used a difference-in-differences approach to assess the effect of increased copayments for ambulatory care on utilization of inpatient and outpatient services. This method accounts for secular trends in outcomes by subtracting the change in utilization in control plans from the concurrent change in plans that increased cost sharing (hereafter referred to as difference-in-differences estimates).

We fitted generalized linear models that included the independent variables and covariates described above. We included an indicator variable for the health plan to account for clustering of observations in health plans and used generalized estimating equations to account for multiple observations for one enrollee. Our model therefore estimates the mean within-plan effect of increased copayments for ambulatory care.

We used a one-part generalized linear model and an identity link with PROC GENMOD

(SAS).<sup>17,18</sup> Our results were not appreciably changed by using a two-part model (which first estimates the probability of any use of care among all enrollees and then estimates the magnitude of utilization for those persons who did receive services), using a log-link, or excluding observations from enrollees who were plan members for less than 12 months. All models were weighted by the number of months subjects were enrolled in their plan.<sup>17</sup>

To account for the exit of enrollees from health plans, we also analyzed data for a cohort of subjects who were continuously enrolled in their plan and assessed the baseline utilization patterns among those who exited the plan as compared with those who remained. This analysis was restricted to persons who were enrolled in a plan for at least 9 months and who did not die during the year before the copayment increase.

We separately estimated difference-in-differences effects for continuously enrolled beneficiaries in three strata of area-level income and education, for three racial or ethnic groups (white, black, other), and for subjects who had hypertension, diabetes, or myocardial infarction in the year before the copayment increase. Enrollees with these conditions were identified with the use of specifications for HEDIS effectiveness-of-care measures pertaining to hypertension, diabetes, and acute myocardial infarction.

To determine whether our results were sensitive to the inclusion of multiple years of data before copayments for ambulatory care were changed, we assessed utilization in eight plans in which no changes in benefits had been made in the 2 years before copayments for ambulatory care were increased and in eight concurrent control plans.

To determine national trends in the Medicare managed-care program, we assessed utilization in all plans with 2 or more years of participation in Medicare. Among the plans in this sample, utilization of inpatient care was stable during the study years, whereas annual outpatient visits increased by an average of 4.7% per year between January 2001 and December 2006. These trends in utilization were similar to those observed in control plans.

All analyses were performed with the use of SAS software, version 9.2. Results are reported with two-tailed P values or 95% confidence in-

tervals. The Brown University Human Research Protections Office and the CMS Privacy Board approved the study protocol.

## RESULTS

Case plans increased copayments for primary care visits by 95% (interquartile range, 50 to 150%) and increased copayments for specialist visits by 74% (interquartile range, 33 to 150%). The interquartile range for the absolute value of the increase was \$5 to \$10 for primary care copayments and \$5 to \$15 for specialty care copayments. Inpatient cost sharing increased in both case and control plans, although the increase was much larger in the case plans. As compared with enrollees in control plans, enrollees in case plans were more likely to be black and living in areas with slightly lower income and educational attainment (Table 1).

Over time, there was an increase in ambulatory visits in both the case and control plans (Table 2). However, the increase was smaller in case plans than in control plans. In contrast, case plans had significant increases in annual inpatient days, annual inpatient admissions, and the probability of any use of inpatient care, as com-

pared with control plans. Of the 18 case plans, 13 had declines in annual outpatient visits and 15 had increases in annual inpatient admissions, as compared with the concurrent trends in the matched control plans. (See Fig. 1 and 2 in the Supplementary Appendix, available with the full text of this article at NEJM.org.)

Among enrollees with at least 9 months of participation in their plans before the copayment increase, 12.2% exited the case plan after the increase. The concurrent dropout rate in control plans was 11.1% ( $P<0.001$ ) (Table 3). Enrollees who exited case plans had greater utilization of inpatient care than those who remained. In contrast, enrollees who exited controls plan had lower utilization of inpatient care than enrollees who remained (Table 3).

In a cohort of beneficiaries who were continuously enrolled in their plans, the rate of visits made for ambulatory care increased by a smaller amount in case plans than in control plans (Table 4). However, the use of inpatient care increased by a greater amount in case plans than in control plans. The number of annual inpatient admissions was lower among enrollees in case plans than among those in control plans before the copayment increase but was higher than the

Table 1. Cost Sharing and Enrollee Characteristics in Case and Control Medicare Plans.\*

Variable	Case Plans (N=18)		Control Plans (N=18)	
	Year before Copayment Increase	Year after Copayment Increase	Year before Case Plans Increased Copayment	Year after Case Plans Increased Copayment
Mean copayment (range) — \$				
Primary care	7.38 (5–15)	14.38 (10–25)	8.33 (0–15)	Unchanged
Specialty care	12.66 (5–25)	22.05 (10–40)	11.38 (0–25)	Unchanged
Inpatient care†	148.33 (0–670)	329.17 (0–1,200)	111.11 (0–500)	177.08 (0–900)
Age — yr	74.2±0.8	74.4±0.8	74.5±1.2	74.7±1.3
Female sex — %	59	59	57	57
Race — %				
White	81	81	91	91
Black	12	11	5	5
Other	7	8	4	4
Income below federal poverty level — %	10	10	9	9
College attendance — %	30	30	33	32

\* Plus-minus values are means ±SD.

† The amounts listed represent the expected copayments for a 4-day hospital stay.

Table 2. Change in Rates of Use of Outpatient and Inpatient Care in Case and Control Plans.\*

Variable	Case Plans			Control Plans			Between-Group Difference	
	Year before Copayment Increase	Year after Copayment Increase	Change	Year before Case Plans Increased Copayments	Year after Case Plans Increased Copayments	Change	Unadjusted	Adjusted (95% CI)
Annual outpatient visits per 100 enrollees	702.0	720.5	18.5	753.4	798.9	45.5	-27.0	-19.8 (-23.1 to -16.6)
Annual hospital admissions per 100 enrollees	25.3	27.6	2.3	25.8	26.1	0.3	2.0	2.2 (1.8 to 2.6)
Annual hospital days per 100 enrollees	133.5	145.9	12.4	125.6	126.7	1.1	11.3	13.4 (10.2 to 16.6)
Percentage of enrollees with any use of inpatient care	15.4	16.3	0.9	15.9	16.2	0.3	0.6	0.7 (0.5 to 1.0)

\* CI denotes confidence interval.

Table 3. Baseline Use of Care among Enrollees Who Exited and Those Who Remained in Case and Control Plans.\*

Variable	Case Plans		Difference (95% CI)	Control Plans		Difference (95% CI)	Between-Group Difference (95% CI)
	Exited Plan (N=43,641)	Remained in Plan (N=314,245)		Exited Plan (N=35,307)	Remained in Plan (N=281,505)		
Annual outpatient visits per 100 enrollees	571.3	694.8	-123.5 (-129.7 to -117.2)	526.8	752.8	-226.0 (-233.5 to -18.6)	102.6 (92.9 to 112.2)
Annual hospital admissions per 100 enrollees	22.0	20.2	1.8 (1.2 to 2.4)	18.9	20.9	-2.0 (-2.7 to -1.3)	3.8 (2.9 to 4.7)
Annual hospital days per 100 enrollees	107.1	95.5	11.6 (7.4 to 15.8)	86.8	91.0	-4.2 (-8.5 to 0)	15.8 (9.8 to 21.8)
Percentage of enrollees with any use of inpatient care	14.9	14.0	0.8 (0.5 to -1.2)	12.3	14.8	-2.6 (-3.0 to -2.2)	3.4 (2.9 to 3.9)

\* CI denotes confidence interval.

Table 4. Change in Rates of Use of Outpatient and Inpatient Care among Beneficiaries Who Were Continuously Enrolled in Case and Control Plans.\*

Variable	Case Plans			Control Plans			Between-Group Difference		
	Year before Copayment Increase	Year after Copayment Increase	Change	Year before Case Plans Increased Copayments	Year after Case Plans Increased Copayments	Change	Unadjusted	Adjusted (95% CI)	
Annual outpatient visits per 100 enrollees	699.3	747.1	47.8	766.2	825.5	59.3	-11.5	-10.2 (-13.4 to -7.0)	
Annual hospital admissions per 100 enrollees	20.2	28.5	8.3	20.9	27.3	6.4	1.9	2.0 (1.6 to 2.4)	
Annual hospital days per 100 enrollees	95.6	151.5	55.9	91.0	132.8	41.8	14.1	14.4 (11.3 to 17.7)	
Percentage of enrollees with any use of inpatient care	13.9	16.9	2.9	14.8	16.9	2.2	0.8	0.8 (0.6 to 1.0)	

\* CI denotes confidence interval.

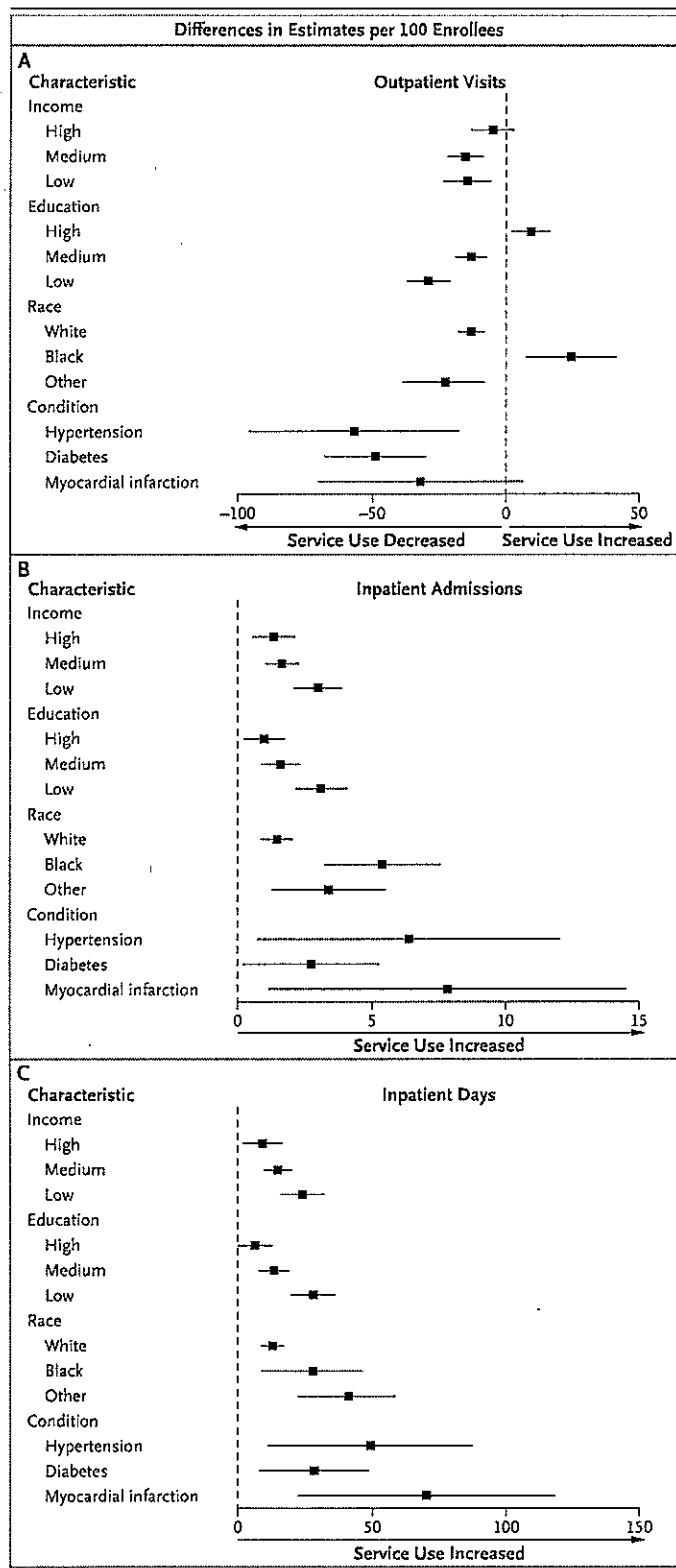
rate for enrollees in control plans after the copayment increase (adjusted difference-in-difference estimate, 2.0 admissions per 100 enrollees; 95% confidence interval, 1.6 to 2.4).

The effects of increased ambulatory cost sharing on utilization of care were increased for enrollees living in areas of low income and education and for enrollees who had diabetes, hypertension, or a history of myocardial infarction. Increases in the utilization of inpatient and outpatient care were greater among black enrollees in case plans than among black enrollees in control plans; difference-in-difference estimates for utilization of inpatient care were greater for black enrollees than for white enrollees (Fig. 1).

In a sensitivity analysis of eight case plans in which copayments for ambulatory care and for prescription drugs had been constant for 2 years before being increased, the mean ( $\pm$ SE) rates of annual inpatient admissions in case plans were 26.1 $\pm$ 1.0 per 100 enrollees 2 years before the copayment increase, 26.1 $\pm$ 1.0 per 100 enrollees 1 year before the copayment increase, and 27.9 $\pm$ 1.0 per 100 enrollees 1 year after the copayment increase. The corresponding rates in control plans were 27.3 $\pm$ 0.7, 27.7 $\pm$ 0.7, and 27.5 $\pm$ 0.7.

DISCUSSION

We examined the consequences of increasing copayments for ambulatory care in a large, nationally representative sample of elderly Medicare enrollees in managed-care plans. As compared with matched control plans in which copayments for ambulatory care were unchanged, Medicare plans that increased these copayments by an average of 95% for primary care and 74% for specialty care had a reduction in the number of outpatient visits but an increase in hospital admissions, in the number of days of hospital care, and in the proportion of enrollees who used hospital care. According to our estimates, for every 100 elderly enrollees exposed to this level of increased cost sharing for ambulatory care, there would be 20 fewer outpatient visits during the first year after the increase but more than 2 additional admissions for acute care and approximately 13 additional inpatient days in the year after the increase. The effects of copayment increases on the subsequent use of inpatient care were magnified for enrollees living in areas with low income and low educational levels, for black enrollees, and for



**Figure 1. Difference-in-Differences Estimates per 100 Enrollees for Annual Outpatient and Inpatient Services in Case Plans as Compared with Control Plans, According to Income, Education, Race, and Presence of Chronic Conditions.**

Estimates are shown for outpatient visits (Panel A), inpatient admissions (Panel B), and inpatient days (Panel C). Income denotes the percentage of persons in an enrollee's ZIP Code area who were 65 years of age or older and had an annual income below the federal poverty level. High refers to the ZIP Code areas in the highest quartile for income above the poverty level, medium to the middle two quartiles, and low to the lowest quartile. Education denotes the percentage of persons in an enrollee's ZIP Code area who were 65 years of age or older and had attended college. High refers to the ZIP Code areas in the highest quartile of college attendance, medium to the middle two quartiles, and low to the lowest quartile. "Service use increased" refers to an increase in the use of services in case plans as compared with the concurrent trend in control plans, and "service use decreased" refers to a decrease in the use of services in case plans as compared with the concurrent trend in control plans.

enrollees who had hypertension, diabetes, or a history of acute myocardial infarction as compared with the effects observed for the entire study cohort.

These changes occurred despite two trends that would have been likely to reduce utilization of inpatient care in plans that increased copayments for ambulatory care. First, enrollees with historically higher use of inpatient care exited the plan after copayments increased, whereas this pattern was reversed in control plans, which maintained lower copayments. This result is consistent with the expected selection effects in response to increased cost sharing — namely, sicker enrollees avoid health plans with higher copayments.<sup>19</sup> Second, health plans that increased copayments for ambulatory care simultaneously increased copayments for inpatient care, which has been found in other studies to discourage use of hospital care.<sup>7,20</sup> By examining the benefit structure of each health plan, we excluded the possibility that changes in utilization of inpatient care were the result of other changes in the insurance-benefit design in case or control health plans.

Few studies have assessed the consequences of increased outpatient copayments on subsequent utilization of inpatient care. In the RAND Health Insurance Experiment, persons who had to pay an annual deductible for outpatient care made fewer outpatient visits and also had fewer

inpatient admissions than did persons who received free care, suggesting that increased cost sharing for outpatient care does not promote greater use of hospital care.<sup>2</sup> However, the RAND experiment excluded elderly patients and ended in 1982. Therefore, these findings may not be generalizable to contemporary elderly populations. For example, the rates of use of inpatient care in our study were approximately twice as great as the rates reported for the cohort in the RAND experiment.

Our results are broadly consistent with the results of two studies of copayment increases for outpatient care among Medicaid and Medicare enrollees. The introduction of a \$1 copayment in California's Medicaid program in 1972 was associated with an 8% reduction in physician visits and a 17% increase in hospital days.<sup>13</sup> Similarly, the introduction of a \$10 copayment among elderly beneficiaries receiving supplemental insurance benefits through the California Public Employees Retirement System resulted in substantial declines in outpatient visits but increased utilization of hospital care.<sup>12</sup> In both studies, there was a concurrent rise in cost sharing for prescription drugs, making it difficult to isolate the effect of the new copayments for outpatient care.

Our findings are also consistent with an increasing body of research showing that uniform increases in cost sharing for prescription drugs without consideration of the value of the medication or the clinical and socioeconomic status of the affected patients can have deleterious effects on health.<sup>21-24</sup> The results also extend our previous work showing that elderly enrollees in managed-care plans reduce their use of effective medical care in response to copayments as low as \$10.<sup>25,26</sup>

According to the findings of the RAND Health Insurance Experiment and other studies of non-elderly insured populations, cost sharing has generally been thought to reduce total health care spending without harming health for the average person.<sup>2,27-32</sup> Our results, however, suggest that increasing copayments for ambulatory care among elderly Medicare beneficiaries may be a particularly ill-advised cost-containment strategy. Assuming an average reimbursement of \$60 for an outpatient visit,<sup>33</sup> seven annual outpatient visits per enrollee, and an average copayment increase of \$8.50 per visit, a Medicare plan would receive an additional \$5,950 in patient copayments and avert \$1,200 in spending on outpatient visits for every 100 enrollees, for a total of \$7,150 in savings for

the health plan. However, assuming an average cost of \$11,065 for hospitalization of a person 65 to 84 years of age in 2006,<sup>34</sup> our estimates suggest that expenditures for inpatient care will increase by \$24,000 for every 100 health plan enrollees in the year after copayments for ambulatory care are increased. Even if we used the upper bound of the 95% confidence interval for the estimate of outpatient visits, used the lower bound of the 95% confidence interval for the estimate of inpatient admissions, and doubled the average reimbursement for an outpatient visit, additional expenditures for hospital care would still exceed any savings from the copayment increase by a factor of nearly two.

The main limitation of our study is that enrollees were not randomly assigned to case and control plans. However, our findings were observed in a cohort of continuously enrolled beneficiaries, suggesting that our results were not biased by selective enrollment in and exit from health plans in response to changes in cost sharing. In addition, utilization of inpatient care was lower in case plans than in control plans during the year before the copayment increase, indicating that enrollees in case plans were not inherently more likely to use hospital care. However, we cannot fully exclude the possibility that unmeasured differences between case and control plans influenced our results.

We observed the use of care over a short period of time. Different patterns might have emerged if we had been able to follow a sizable cohort for more than 3 years. We were unable to match case plans with control plans in a geographic area smaller than a census region, given the relatively small number of Medicare plans in the country.

Our analysis did not include data on the diagnoses, procedures, and costs associated with hospital admissions and outpatient visits. We could not assess the timing of forgone outpatient visits in relation to hospital admissions. Finally, because of the small number of case plans, we were unable to evaluate separately the effects of increasing cost sharing for primary care visits as opposed to specialty care visits or the relationship between the magnitude of cost-sharing increases and subsequent use of hospital care.

In conclusion, increasing copayments for ambulatory care reduced the use of outpatient care among elderly enrollees in managed-care plans, but this decline was offset by an increase in hos-



pitalizations, particularly among enrollees with low socioeconomic status and those with chronic disease. Increasing copayments for ambulatory care among elderly patients may have adverse health consequences and may increase spending for health care.

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