

**Strategies for Translating
Health Services Research to
Policy and Practice: Selected
Case Studies of Investigator-
Initiated Research Funded by
AHRQ**

December 8, 2008

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PREFACE

This report was developed as part of a larger study for the Agency for Healthcare Research and Quality (AHRQ) on how grant-funded research on health care costs, productivity, organization, and market forces can be used in the policy process. The case studies in this report illustrate a diversity of approaches used in linking research and policymaking. The grants upon which these case studies were based were selected because they were perceived by funders to have been widely disseminated and used in the policy process.

The case studies are intended for at least two audiences: researchers and those who use or fund research. Researchers may find it useful to see how colleagues use various techniques to make their findings relevant for different audiences. Research users and funders may find the cases help them to learn more about (1) the many steps required to link researchers to policymakers or other users and (2) the role of researchers, users, and intermediaries in this process.

For more information on the larger study and underlying concepts, see (1) “Pathways to the Use of Health Services Research in Policy” by Marsha Gold, an article that will be published in *Health Services Research* and is currently available at www.hsr.org, and (2) the complete report for this project, which may be found on the Mathematica Policy Research website (www.mathematica-mpr.com). The citation for the complete report is Gold, M., T. Lake, K. Stewart, T. Krissik, and K. Barrett. “Evaluation of Effectiveness of AHRQ’s Grant-Supported Research on Health Care Costs, Productivity, Organization, and Market Forces: Final Report to AHRQ.” Washington, DC: Mathematica Policy Research, December 2008.

We hope that these case studies and findings will encourage discussion on the linkages between research and policy and promote an enhanced understanding of how to strengthen these linkages.

Marsha Gold, Sc.D.
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July 2009

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OVERVIEW

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CASE STUDIES OF SELECTED AHRQ GRANT-FUNDED RESEARCH PROJECTS ON HEALTHCARE COSTS, PRODUCTIVITY, ORGANIZATION AND MARKET FORCES

by

Tim Lake
Tara Krissik
Kate Stewart

The Institute of Medicine defines health services research as an interdisciplinary field that investigates the structure, organization, and processes of health services delivery and financing, as well as its effects on people and populations (Gray et al. 2003). Research on health care costs, productivity, organization, and markets is a core component of this discipline because it addresses how the organization and financing of care influences system performance. From its origins in the National Center for Health Services Research, the Agency for Healthcare Research and Quality (AHRQ) has always played a central role in financing research in this field (Gray et al. 2003; Coalition for Health Services Research 2005, 2006a). But little information exists on what types of research have been supported, what has been learned, and how it has been used.

To address this gap, AHRQ contracted with Mathematica Policy Research, Inc., (MPR) in 2006 to review systematically grant-funded research on health care costs, productivity, organization, and market forces. Working with AHRQ we identified 149 relevant grant-funded projects (see Krissik et al. 2007). As one component of the evaluation, we conducted case studies of seven of these projects. We specified the seven grants because they represent examples of various ways in which grant-funded research projects in this area are disseminated publicly and used in decision making. The case studies focused on the following questions about the selected grant-funded projects:

- What were the goals of the research in each grant-funded project and what research methods were used?
- What were the key findings of the research?
- How were findings disseminated to potential users of the information, and what role did the research play in the policy process?
- What factors contributed to, or interfered with, the effect of the findings on adoption of policy or process?
- What are the lessons learned from the case studies for enhancing use of research in private and public policymaking?

The selected cases were intended to describe and illustrate the various pathways through which research is used to inform relevant policy or managerial decisions, and to generate lessons about research dissemination and translation of research findings to use in policymaking. Although we focus on AHRQ-funded research, the grants were often part of broader research and dissemination

efforts pursued by investigators through multiple funding sources. These seven case studies complement other components of our evaluation, including work that identified pathways through which research findings get applied to policy concerns (Gold 2008) and a web-based survey of all 149 grants that were identified as relevant to this evaluation. (Stewart et al. 2008).

In the following sections, we describe our methods for the seven case studies and summarize our findings. We then discuss each of the seven case studies in more detail in the remainder of this document.

A. Methods

Case Study Selection. We selected these cases from two main sources. First, we took advantage of our in-depth analysis of nine randomly selected grants from Phase I of our evaluation to assess whether any appeared particularly successful in terms of publication and other forms of dissemination. (Krissik et al. 2007) Second, we sought the recommendations of five AHRQ project officers (Michael Hagan, William Encinosa, Bernard Friedman, Ryan Mutter, and Amy Taylor) in identifying additional cases.

We selected the grant projects to study to achieve diversity in terms of (1) grant size and topical focus, (2) illustrative pathways for dissemination and translation to policy, and (3) uses for private and public policy decision making. This process yielded seven case studies:

- The Effect of Clinic Payment and Structure on Costs (Kralewski, University of Minnesota)
- Rural Response to Medicare+Choice: Change and its Impact (Mueller, University of Nebraska Medical Center)
- Prescription Drug Cost-Sharing: Affordability/Safety (Hsu, Kaiser Foundation Research Institute)
- Asthma Quality in Varying Managed Medicaid Plans (Lieu, Harvard Pilgrim Health Care)
- Quality Measures and Managed Care Markets (Luft, University of California San Francisco)
- Structuring Markets and Competition in Health (Newhouse, Harvard Medical School)
- Quality of Care for Children with Special Needs in Managed Care (Shenkman, University of Florida)

Two of the grants (Kralewski and Mueller) were identified through our examination of the nine randomly selected grants in Phase I. The remaining five were identified through project officer recommendations. Two of the grants (Luft and Newhouse) were significantly larger than the others and were funded through a program project grant, or P01, which included a solicitation for projects focusing on “managed care and markets.” The P01 grant was intended to establish new research

centers, nested within one or more research organizations, that would build expertise and research knowledge in the topical area through multiple research projects conducted under the grant.¹

The seven grants ranged in size from \$203,000 to \$5.3 million. The grants were funded between 1998 and 2006, with the length of the studies ranging from two to five years. The substantive focus of the grants also ranged widely, falling into three categories: (1) effects of competition or financial incentives on health plan or provider behaviors including payment on provider practice patterns, (2) effects of health managed care structures on delivery of services within health plans, such services to children with special needs, and (3) effects of financial incentives on consumer decision-making including use of prescription drugs. The research covered a variety of population groups including adults and children and those covered by both private and publicly-sponsored health insurance programs. The seven projects were granted to investigators at various types of institutions in different areas of the country, including universities, independent research organizations, and health plan affiliated organizations.

Data Collection and Analysis. Each case was developed based on a review of grant publications—grant applications, final project reports, and selected journal articles—and discussions with the principal investigators and key users of the findings. We conducted approximately five telephone discussions for each case, guided by a semi-structured protocol. Draft write-ups of the each case study were shared with the respective principal investigators after they were completed, with a request for feedback on the accuracy of stated facts.

B. KEY FINDINGS FROM THE CASE STUDIES

Dissemination, Translation and Targeted Audiences. Each of the grants generated useful, policy-relevant results that were published in peer-reviewed journals. Each project was also notable in the extent to which principal investigators went beyond journal publication and disseminated results to relevant audiences through oral presentations, participation in meetings, and other types of publications. Some results supplemented findings in the existing research literature, while others provided new information in a largely unexamined area. Depending on the topical focus and the particular results from each study, the target audiences varied widely from national or state policymakers, health care industry representatives, purchasers, or consumer representatives. Some target audiences were narrow (e.g., Medicaid officials within one state) and some were broad (e.g., a wide variety of stakeholders interested in the effects of competition on quality of care).

The case studies illustrate a variety of pathways for translating research into use for decision makers (see Gold 2008), with most demonstrating how multiple pathways can be used within a single project. For example, the study led by Kralewski illustrated how intermediaries or end users can play important roles in both shaping research designs to answer important questions and facilitating dissemination results to end users. He worked with the Medical Group Management Association to disseminate of results on effects of payment on physician practice patterns to member medical groups. Research conducted within the Newhouse grant provided an example of a “big bang” research project that generated new findings in an area not previously studied in much detail; specifically, the project examined the effects of incentive-based formularies on drug selection

¹ The remaining five studies were funded through investigator-initiated R01 grants.

and use. This led to publication of findings in a highly visible journal, which provided useful information to both private and public policy decision makers and spurred follow-on research in the area. Work by Chernew and McLaughlin, as part of the P01 grant led by Luft, showed how research projects can contribute to a growing body of research, while also developing the expertise of less experienced researchers pursuing a research career in that field.

Other projects illustrated how results from studies can be targeted to specific users to maximize their use. In particular, Shenkman worked closely with Florida Medicaid program officials to disseminate results on the effects of Medicaid managed care on children with special needs. Similarly, through his work with the Rural Policy Research Institute, Mueller engaged congressional staff affiliated with the Rural Health Coalition and Rural Health Caucus in disseminating results on the impact of Medicare+Choice policy on rural areas.

Factors Affecting Dissemination. Commonly identified factors affecting whether studies affected dissemination including

- ***The Extent to Which Potential Users of the Research Are Aware (or Even Involved in Design) of the Research Prior to the Conduct of the Research.*** This involvement helps shape the relevance of the findings and also builds anticipation for the results by users.
- ***The Extent to Which Interested Users, Funders, or Intermediaries Are Able to Assist with Dissemination to Other Parties.*** Sometimes users or other stakeholders may go beyond informal consultation or involvement in research design and have a more active role in dissemination, such as sponsorship of conferences or publications or dissemination to members of influential organizations.
- ***Prominence and Reputation of Both the Investigators and the Journals in Which Results Are Published.*** Publication of findings in prominent journals can generate publicity on its own, including media attention, and can provide a platform for further dissemination. At the same time, investigators who are already prominent in their field are most readily able to communicate their findings when participating in related professional activities (e.g., presentation at policy conferences) or when being sought out for the opinions by the media or policymakers on relevant policy topics.

Key Lessons. Each case study has its own lessons for improving the use and usefulness of research on health care costs, productivity, and market forces. As we describe in the remaining sections of this document, some common lessons include the importance of (1) developing relationships with potential users, (2) understanding how results might be used for different policy decisions and the timing of those decisions, (3) fitting each research project within a broader “stream” of research conducted by the investigator and contributing to a broader body of research conducted by other investigators, and (4) developing expertise—and a reputation for expertise—of the investigators, which enhances both the quality of ongoing research and visibility of the research among policymakers.

PRESCRIPTION DRUG COST-SHARING: AFFORDABILITY/SAFETY

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CASE STUDY

PRESCRIPTION DRUG COST-SHARING: AFFORDABILITY/SAFETY

Principal Investigator: John Hsu, MD, MBA, MSCE

Funding Period: 8/1/03 – 7/31/06

ABSTRACT

The research conducted under this grant provided critical evidence about the effects of prescription drug cost-sharing for elderly populations. The investigators compared claims and survey data of elderly enrollees with and without caps on prescription drug spending in Kaiser Permanente's Northern California Medicare+Choice program to understand how drug cost-sharing was associated with changes in health and health care spending. The results, showing that drug cost-sharing was associated with greater use of emergency rooms and non-elective hospitalizations, death, worsened health indicators, and no change in overall health spending, were published in the *New England Journal of Medicine* and widely presented at academic and professional conferences.

BACKGROUND

This research was undertaken in a context in which increased concern was focused on the absence of a prescription drug benefit within Medicare. A key issue for consideration involved how to design the benefit package—including how to structure cost-sharing. The primary rationale for patient drug cost-sharing is to promote cost-effective drug utilization. However, there are reasons to believe that drug cost-sharing may have unintended consequences for vulnerable populations. Prior research reported that limits on drug coverage for vulnerable populations resulted in declines in adherence both to essential and non-essential medications^{1,2} and increased use of nursing homes³ and emergency department visits,² which likely lead to higher overall program costs. Additional studies had found lower adherence among chronic disease patients in tandem with greater cost-sharing.^{4,5,6} Because many of the elderly have chronic conditions, for which they require daily drug therapy, they may be at risk for adverse outcomes under certain drug cost-sharing benefit designs. However, few studies had explored the effects of prescription drug cost-sharing in elderly populations.

Before implementation of the Medicare Prescription Drug and Modernization Act of 2003 (MMA), elderly Medicare beneficiaries not eligible for prescription drug coverage from Medicaid or other public programs may have obtained some drug coverage through retiree health benefits or enrollment in a Medigap or Medicare+Choice health plan. The extent of this coverage varied across employers and health plans.*

* Medicare has a history of allowing beneficiaries to receive their Medicare benefits by enrolling in a private plan—historically, a health maintenance organization or similar coordinated care plan. Such plans typically integrate Medicare coverage with coverage by Medicare supplemental policies (i.e., Medigap). These plans are paid a capitated amount by

This research took advantage of Kaiser Permanente’s experience with offering drug benefits to Medicare beneficiaries in northern California through Medicare+Choice to learn more about the effects of cost-sharing on Medicare beneficiaries’ medical care utilization and health status. Kaiser historically offered a relatively comprehensive benefit that imposed no dollar limits on the amount of coverage. In 2001, Kaiser instituted a \$1,600 annual prescription drug benefit cap for Medicare+Choice enrollees and, in 2002, it lowered the annual cap to \$1,000. Enrollees had varying levels of cost-sharing for prescription drugs before they reached the cap. After this, enrollees became responsible for paying 100 percent of their drug costs. However, Kaiser’s Medicare+Choice population also included beneficiaries not affected by the caps because they had supplemental employer insurance that provided coverage for prescription drugs beyond the Kaiser caps. For this reason, prescription drug cost-sharing for these enrollees was much lower, compared to beneficiaries without supplemental coverage.

RESEARCH GOALS

This study evaluated both the clinical and economic consequences of prescription drug caps in an elderly Medicare population enrolled in Kaiser Permanente’s northern California Medicare+Choice plan in 2002 and 2003. The specific goals of the study were to evaluate whether prescription drug caps were associated with:^{7,8}

- Increased rates of emergency department (ED) visits, hospitalizations, and mortality
- Adverse physiologic outcomes in patients taking drugs for hypertension, hyperlipidemia, and diabetes
- Lower total medical costs to the health plan
- Lower costs for prescription drugs, hospitalizations, ED, and outpatient clinic care

STUDY DESIGN

The study used a prospective cohort design to compare outcomes of Kaiser Permanente’s elderly Medicare+Choice enrollees subject to the caps versus enrollees not subject to the caps due to supplemental insurance. Specifically, the investigators used multivariable longitudinal regression analyses to compare drug consumption, hospitalizations, ED visits, outpatient visits, death, and pharmacy and medical costs between elderly Medicare patients subject to the cap and those not affected by it, adjusting for insurance-related characteristics (e.g., length of time enrolled in Kaiser Permanente), demographic, and health status characteristics. Using similar longitudinal regression-adjusted analyses, the investigators also compared drug adherence and physiological outcomes for

(continued)

Medicare for Part A and B benefits. If they can provide benefits for less than they are paid by Medicare, they are required to use the savings to enhance benefits, offset Medicare cost-sharing, or offset premiums for supplemental services. Before Medicare covered prescription drugs, many plans used some of these savings to offer a prescription drug benefit. The scope of this benefit diminished as Medicare tightened its payments under the Medicare+Choice program, enacted in the Balanced Budget Act of 1997, and ultimately superseded by Medicare Advantage, which was authorized by the Medicare Prescription Drug and Modernization Act of 2003; this Act authorized the Medicare drug benefit, effective 2006.

elderly beneficiaries treated with drugs for hypertension, hyperlipidemia, and diabetes by cap status. All regression models included a variable for the predicted propensity score for benefit caps to further adjust for differences between patients subject and not subject to the cap.^{7,8}

PRINCIPAL FINDINGS AND RESULTING PUBLICATIONS

Among enrollees subject to the cap, 13 percent exceeded it in 2003. Patients subject to the cap had consistently worse outcomes than patients with supplemental coverage, including significantly higher rates of ED visits, non-elective hospitalizations, and death. Although they had fewer outpatient visits and lower drug spending compared to patients not subject to the cap, there was no significant difference in total medical spending in 2003 between patients subject and not subject to the caps. Among patients treated with drugs for hypertension, hyperlipidemia, and diabetes, drug consumption was 15 percent lower (95% CI: (11.4, 18.1)), 27 percent lower (95% CI: (23.1, 30.4)), and 21 percent lower (95% CI: (14.3, 26.6)), respectively, for patients subject to the caps. Drug spending also was significantly lower for patients with caps. Physiological outcomes as measured by systolic blood pressure, LDL cholesterol, and glycated hemoglobin levels were significantly worse for patients subject to the caps.⁸

The findings from this research were published in the June 1, 2006 edition of the *New England Journal of Medicine*, “Unintended Consequences of Caps on Medicare Drug Benefits.” Additional papers generated by this grant were published in *Health Services Research* and *Clinical Therapeutics*.^{9,10}

POLICY RELEVANCE AND TARGET AUDIENCES

Previous research documented an association between limited or no drug coverage and adverse outcomes, but few studies had empirically analyzed the effects of drug cost-sharing on health outcomes and plan expenditures among an elderly Medicare population. This study provided evidence that drug caps led to lower adherence and increased hospitalization and ED use, as well as worse physiological outcomes in patients treated for hypertension, high cholesterol, and diabetes. Although pharmacy costs were lower for patients subject to the caps, there was no difference in overall medical expenditures due to higher use of ED and hospital care.⁸ These results were important for decision makers and advocates involved with the design of prescription drug benefits for elderly and non-elderly populations.

In addition to other researchers and academics, the target audiences for this study included:¹¹

- **Federal policymakers involved with Medicare Part D.** These results are particularly relevant to Medicare Part D decision makers, because the population studied was composed of elderly Medicare beneficiaries. Although the study was not published until the first year of Medicare Part D implementation, and it would not have had an impact on the design of the drug benefit, it may be relevant to evaluating the potential effects of the “donut hole,” a feature of the design of Medicare Part D that requires beneficiaries

to pay the full amount for prescription drugs between an initial set of benefits after the deductible is reached and catastrophic coverage.[^]

- **Advocates and key stakeholders.** These include persons and organizations interested in issues relevant to prescription drug and health care benefits.
- **Organizations that provide drug benefits to elderly and non-elderly populations.** These organizations may use the results of the study to help make decisions about prescription drug benefits. Although the population studied included elderly patients only, the results may be applicable to other populations.

DISSEMINATION

The *New England Journal of Medicine (NEJM)* generally is recognized as one of the top medical journals in the United States, and results published in this journal often are widely published in shorter articles by major newspapers, magazines, and trade publications aimed at general audiences. In this case, both the *Washington Post* and the *Wall Street Journal*¹² published articles about the study based on the *NEJM* article,¹³ as did several specialty journals.^{14,15} In addition, the Kaiser Family Foundation Daily Health Policy Report of June 1, 2006 featured the results of the study, as well as interviews with Dr. Hsu and Dr. Ken Thorpe, a professor of health policy at Emory University who wrote an accompanying editorial in the *NEJM* on the study results.¹⁶ The Kaiser Daily Health Policy Reports generally are read widely by health care policymakers. Dr. Hsu also was contacted by policymakers at the Medicare Payment Advisory Commission (MedPAC) and the Centers for Medicare & Medicaid Services (CMS) to discuss the findings of the *NEJM* paper further.

Dr. Hsu won AcademyHealth’s “Article of the Year” award for the *NEJM* paper in 2007. This helped to bring further attention to this research among AcademyHealth conference participants. AHRQ also provided some dissemination support for this research by interviewing Dr. Hsu about the study and uploading the interview on the AHRQ website as a video blog.¹⁷

Other avenues of dissemination included multiple presentations at academic, policy, and trade conferences, such as International Health Economics Association, AcademyHealth, International Society for Pharmaceutical and Outcomes Research, and HMO Research Network.¹⁸

FACTORS AFFECTING TRANSLATION

Publishing the research in the *NEJM* and the subsequent attention the paper received helped to make this research highly visible. However, it is unclear as to whether any specific policy changes occurred directly as a result of this research. Many policy decisions depend not only on the science

[^] By statute, the Medicare standard benefit has a first dollar-deductible (\$250 in 2006). After that, beneficiaries pay 25 percent up to an initial coverage limit (\$2250 in 2006). Beneficiaries then pay all the costs of prescription drugs until they reach the true out-of-pocket cost limit (\$2510 in 2006). After that, they pay only nominal cost-sharing. The gap between initial coverage and catastrophic coverage is colloquially referred to as the “donut hole.” Beneficiaries can receive prescription drug coverage from either free-standing prescription drug plans or Medicare Advantage plans that also integrate Part A and B benefits. The statute allows firms to offer actuarially equivalent or expanded benefits, financing any differences in either costs with additional premiums or offsets from savings on Part D or, for MA, Parts A and B.

underlying the issue, but on political and other constraints that policymakers must consider. In particular, the results of the study were published during the first year of Medicare Part D, and while the results garnered substantial attention, including calls from MedPAC and CMS,¹¹ they may not have been able to affect Medicare policy, due to other program constraints.

Given the time and resource constraints that policymakers must consider, this type of research project often can be considered successful, even if it serves only to inform policymakers at the time of dissemination. The ability to provide policymakers and the public with good information is important in itself.¹¹ This information may be added to the body of knowledge on the topic and used in the future to inform or alter public policies.

Another factor that aided the dissemination of study results was the principal investigator's commitment to respond quickly to press inquiries. Specifically, Dr. Hsu noted that it is critical for researchers to understand the deadlines under which journalists typically work and the types of information they need. The more that researchers are able to respond quickly to press inquiries, provide clear and concise statements about the research, and illustrate points, the more likely it is that their work will be disseminated widely in the press.¹¹ Understanding target audiences was also a key factor noted in facilitating use of the research. The investigators presented the results of their research at more than 20 conferences that included research, policy, and clinical audiences, which helped to increase their knowledge about the specific research, as well as to gain broader visibility in the field for research on prescription drug issues.

KEY LESSONS FOR ENHANCING THE USE OF RESEARCH IN POLICYMAKING

This grant illustrates nicely how a well-conceived and conducted study may be disseminated broadly through publication in a prestigious journal and the resultant attention receives. It also demonstrates how research may inform policymakers and other decision makers, even if no immediate action is perceptible. It may have been only the first of several key studies evaluating the effect of prescription drug cost-sharing on elderly Medicare beneficiaries that will continue to inform policymakers in years to come.

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Hsu, J., M. Price, J. Huang, R. Brand, V. Fung, B. Fireman, R. Hui, J. Newhouse, and J. Selby. “Drug Benefit Restrictions: Economic Effects of Generic-Only Coverage for Patients on Statin Drugs.” IHEA Conference, Copenhagen, Denmark, 2007.

Fung, V., J. Huang, R. Brand, and J. Hsu. “Racial/Ethnic Differences in Adherence to Hypertension Medication and Treatment Intensification and Blood Pressure Control in Medicare Enrollees.” AcademyHealth Annual Research Meeting, Orlando, FL, 2007.

Wang, H., J. Huang, V. Fung, and J. Hsu. “Switching to Generic Statins: A Natural Experiment.” HMORN Annual Conference, Portland, OR, 2007.

Fung, V., J. Huang, R. Brand, B. Fireman, J. Newhouse, J. Selby, and J. Hsu. “Racial/Ethnic Disparities in Hypertension Medication Adherence and Blood Pressure Control.” HMORN Annual Conference, Portland, OR, 2007.

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Fung, V., R. Brand, J. Newhouse, and J. Hsu. “Loss of Brand-Name Drug Coverage: Inhaled Steroid Use by Medicare Beneficiaries with Asthma.” AcademyHealth Annual Research Meeting, Seattle, WA, 2006.

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**THE EFFECTS OF WITHHOLD PAYMENTS ON MANAGED CARE PLANS ON
COSTS OF CARE IN MEDICAL GROUP PRACTICES**

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CASE STUDY

THE EFFECTS OF WITHHOLD PAYMENTS FROM MANAGED CARE PLANS ON THE COSTS OF CARE IN MEDICAL GROUP PRACTICES

Principal Investigator: John E. Kralewski, Ph.D.
Funding Period: April 1, 1999 – March 31, 2001

ABSTRACT

This grant funded one aspect of a stream of research focused on the performance of medical group practices. The research funded by this grant focused on the effects of withhold payments from managed care plans on costs of care in medical groups. Other projects included, for example, a 2008 study of the factors influencing physician use of e-prescribing after their group practice adopts that technology. All of the related studies were conducted with the main stakeholders and have influenced the policies and administrative procedures in their organizations.

BACKGROUND

For more than 10 years, Dr. Kralewski's research agenda has focused on studying the cost and quality of care in medical group practices. He believes that the structure of medical group practices is a key element in creating cost-effective physician practice styles.¹ AHRQ and other organizations (including Blue Cross Blue Shield of Minnesota and the Medical Group Management Association [MGMA]²) have funded a number of Dr. Kralewski's studies in this area. The AHRQ grant focused on withhold payment was funded after he had conducted studies related to (1) the organizational characteristics of medical group practices in a managed care environment, and (2) the effects of payment methods on the costs of care in medical group practices. Both studies were funded by Blue Cross Blue Shield of Minnesota and utilized data from that organization.^{3,4} The AHRQ grant allowed Dr. Kralewski to build on the findings from his previous studies by assessing the effects that "withholds" have on the subsequent use of resources to care for patients in a group practice. The contracts that some group practices have with managed care organizations (MCOs) allow the MCO to withhold a portion of a practice's payment until costs are within a certain target rate.

After this study, Dr. Kralewski received funds via AHRQ's Integrated Delivery System Research Network (IDSRN) program. As a partner on the IDSRN, he conducted a study to assess the influence of physician financial incentives in medical group practices on clinical errors. Findings indicated that the culture of the group practice influences quality more than payment.⁵ MGMA then funded the researchers to develop a culture measurement instrument, which is now being used by researchers and medical group practice managers as a research tool. The most recent study using the instrument was focused on use of e-prescribing technologies in medical group practices. Through the AHRQ's Integrated Delivery System Research Network (IDSRN), Dr. Kralewski also studied the impact of payment policies on the cost, content, and quality of care in group practices.

RESEARCH GOALS

The withhold study sought to gather better information about what medical group practices can do to bring about more cost-effective practice styles among physicians. Specifically, this study assessed the effects that an MCO's withholding of a portion of a clinic's payment has on patient care in that clinic. The study also examined the influence of clinic organization and culture on costs, and on the effects of withholds. Two associated studies also were conducted: the effects of clinic structure and payment on prescription drug use, and disease prevention practices for women.⁶ The e-prescribing study further demonstrated that the practice culture is a major factor influencing physician performance.

STUDY DESIGN

The study was built on data obtained from the earlier studies on group practices' organizational characteristics and the effects of payment methods. Organizational data from 1995 were available from a survey of 156 clinics providing services for a Blue Cross MCO, as well as cost data on 86 clinics from 1995. For the new study, Dr. Kralewski and his colleagues collected data that allowed them to capture 1997 costs for 109 clinics. Cost and patient data were obtained from Blue Cross records. These data were analyzed to determine the relationship between how a clinic was paid (payment method) and cost of care. Site visit interviews with administrators, medical directors, and clinicians in 10 group practices were also conducted to study the internal management of costs.

PRINCIPAL FINDINGS AND PUBLICATIONS

The potential of withhold payments to support cost-effective medical care in medical group practices is unclear. Findings indicated that withholding a portion of the payment to high cost group practices had a significant negative effect on lab and x-ray use, but those savings were not large enough to influence overall costs of care. Withholding part of the clinic's payment did not influence hospital and professional costs significantly. Interviews with group practice administrators revealed that while it appeared that payment withholds from one health plan had little effect on costs, the cumulative effect from multiple health plans did lower costs.⁷

The study also validated findings from earlier studies indicating that those group practices with a higher share of their physicians' compensation based on a share of the clinic's net revenue was more sensitive to method of payment including withholds.⁸ It also validated earlier studies that had shown that practices with a higher proportion of primary care physicians and more female physicians had higher costs, and those with more experienced physicians and those using more clinical guidelines and physician profiles had lower costs.⁹ The two associated studies on prescription drug errors and disease prevention practices for women indicated that, while several clinic-level cost management programs had a negative effect on the use of prescription drugs, clinic payment methods had no such effect. Nor did clinic payment affect the provision of prevention services for women.

Dr. Kralewski has published his research findings extensively in peer-reviewed journals, including *Health Services Research*, *Health Care Management Review*, *Medical Care*, *Journal of Ambulatory Care Management*, *American Journal of Managed Care*, *Managed Care*, *Journal of Healthcare Management* and *Medical Care Research and Review*.

POLICY RELEVANCE AND TARGET AUDIENCE

Dr. Kralewski's research is targeted on the performance of medical group practices, and has the potential to influence payment and other administrative policies in these organizations. By collaborating with MGMA, the researcher is able to disseminate his findings directly to this target audience. During a long history of collaboration, MGMA has helped Dr. Kralewski frame research questions of interest to its members. The organization collects data on its members about all aspects of practice management, which they then allow Dr. Kralewski to use as a basis for many of his studies. MGMA views Dr. Kralewski's research as policy and practice relevant, as it is aimed toward trying to improve performance on costs and quality by changing certain aspects of group practices (e.g., the organizational structure, financial incentives, etc.).¹⁰

Dr. Kralewski's findings illustrate the ways in which the design of payment methods within a group influences physician ordering and costs of care. Although it was unclear from the withhold study what role target payments with withhold provisions have in supporting cost-effective medical care, the study did find that group practices can lower costs and improve quality by structuring the practice to maximize physician financial incentives and provide a clinical environment that supports cost-effective clinical decision making.

Through qualitative analysis, the withhold study provided insight into the factors that limit the influence of withhold payments in reducing costs. Such factors include resistance generated within some practices that view withhold penalties as highly political (and some large practices are able to negotiate contracts that preclude withholds). Further, withholds are often a very small part of a practice's total revenue, so there is little incentive to attempt to change their physician practice styles. Finally, in group practices that are part of a large care system, the system administrators often cannot determine which of their group practices are not cost-effective, so they do little in response to the withholds except to try to negotiate better contracts. Dr. Kralewski found that, when more health plans employ a withhold system, and/or it becomes a significant part of overall revenue for a provider, this system clearly has a negative effect on costs.¹¹

Dr. Kralewski's research also demonstrates those characteristics of group practices that make them more responsive to external financial incentives. Group practices that tend to be most responsive to withholds are those that (1) are physician owned; (2) are of medium size; (3) have full-time administrators and medical directors; and (4) tie their physicians' compensation to net revenue, and incorporate any withholds in their physicians' compensation.

The research provides key insights into the impact of payment systems on medical group practices, and it is clear that these targeted stakeholders are aware of the findings. What is less clear is whether group practices actually have used the knowledge to make changes to their physician practice styles. Dr. Kralewski and the collaborating organizations have only limited information about practice changes or direct use of the findings resulting from dissemination of the research. MGMA distributed the information on the withhold study to its members, but does not have a system set up has for interpreting any impact of the information.

DISSEMINATION

In addition to publishing his findings in peer-reviewed journals to raise the profile of his research, Dr. Kralewski has utilized his relationships with organizations such as MGMA to disseminate his research. He has presented several times at MGMA's annual meetings to

approximately 1,000 association members at each meeting. His study findings also have been disseminated in issue briefs that MGMA sent to approximately 6,000 group practices. MGMA republishes findings from the research in their newsletter and a journal that reach all of its members.

MGMA also provides information from these studies to their government affairs office in Washington. The government affairs office provides information to Congress, the Centers for Medicare and Medicaid Services (CMS), and other agencies. However, MGMA was not aware of Dr. Kralewski's research being disseminated to policymakers in this way.¹²

The Minnesota Medical Association (MMA) collaborated with Dr. Kralewski on the earlier study that involved a survey of clinics, and also assisted with dissemination. MMA published the study results in its monthly magazine, *Minnesota Medicine*, which is sent to all 11,000 MMA members, legislators, and state agency officials.¹³

AHRQ also has helped to disseminate results of Dr. Kralewski's research, especially the qualitative case study findings. He has presented three of his studies to audiences at AHRQ, including to health care providers and administrators at AHRQ's Annual Patient Safety and Health Information Technology conference, and to a wider audience at AHRQ's Annual Meeting. He also has benefited from his collaboration with Blue Cross Blue Shield by presenting at the insurer's National Institute for Health Care Management Meetings.¹⁴

FACTORS AFFECTING TRANSLATION

Key Relationships. Dr. Kralewski's collaborative relationships with MGMA, Blue Cross Blue Shield of Minnesota, and the MMA contributed to the use of this research. These organizations provided his team with data and access to the target audience. Dr. Kralewski and his colleagues were able to make users aware of their findings by presenting findings at the organizations' meetings, and disseminating their findings in their publications. A close working relationship with medical practices was key to success of this stream of research.

Reputation of the PI. Another factor contributing to the potential use of this research is Dr. Kralewski's reputation. He is well-regarded by the organizations with which he has worked, and his research on medical group practices is considered solid and of high quality.¹⁵ Developing research on medical group practices for more than a decade, he has built a strong base of knowledge for those interested in this topic. Some of the collaborators with whom we spoke said that Dr. Kralewski's research likely had a substantial impact on advancing knowledge in this area.

Difficulty of the Topic. The topic of this research may have been an impediment to its use. One of the collaborating organizations indicated that research on organizational factors affecting performance of medical groups is difficult and time-consuming, and that there is no way to track what the group practices do with the research once they have it.¹⁶ Also, some changes in group practices are difficult to make. The interviewee pointed out that relevant changes in policy and market behavior (e.g., pay-for-performance) were occurring during the time Dr. Kralewski's conducted this research, as well as afterward, but there is a lack of evidence that the research played a role in these changes because of a lack of monitoring of potential effects. It is very difficult to attribute any changes in group practices to research.

Importance of Withholds. The specific topic of the impact of withhold payments on group practices may have limited the use of the findings in practice. As discussed earlier, some group practices negotiate contracts that preclude withholds, or the withholds comprise such a small amount of their total revenue that the payments do not make much difference. For these practices, the withhold study would not have much impact. Health plans, however, might still be interested in these findings and could use the knowledge when developing payment strategies.

Generalizability. This research is targeted to medical group practices in the private sector, which may limit its applicability to public policymakers. Less than one-third of practicing physicians are employed in group practice settings with at least three physicians. The remaining two-thirds of physicians operate in solo practices, medical schools, managed care organizations, hospitals, or community health centers.¹⁷ However, there is sustained interest in the group practice model as a organizational approach for delivering medical services. Moreover, the findings are broadly applicable to designing incentives in other sites of health care delivery.

KEY LESSONS FOR ENHANCING THE USE OF RESEARCH IN POLICYMAKING

When asked about lessons for facilitating the use of research, Dr. Kralewski emphasized the need for well designed projects with strong methodologies that generate trust among those who should be using the findings. Policymakers and practice administrators often find research projects to be irrelevant to their needs or find that they can't trust the findings. Building strong relationships with the field of practice enhances the relevance of the research and often sharpens the research questions. These relationships also insure dissemination of the findings and application in practice and policy arenas. Dr. Kralewski also stressed the need for research streams that include a series of related projects designed to enhance health care in today's setting but to also further the knowledge base that will be relevant to yet unknown future issues. A strong knowledge base about how medical group practice organization structures influence the cost and quality of care will serve administrators and policymakers well when new challenges replace those currently being addressed.

ENDNOTES

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² MGMA is an association that aims to improve the performance of medical group practices. It serves 22,000 members who manage 12,500 organizations, in which almost 270,000 physicians practice. Members work in medical practices and ambulatory care organizations of all sizes and types, including integrated systems and hospital- and medical school-affiliated practices.

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¹³ Telephone interview with Janet Silversmith, Director of Health Policy, Minnesota Medical Association, May 1, 2008.

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ASTHMA CARE QUALITY IN VARYING MANAGED MEDICAID PLANS

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CASE STUDY

ASTHMA CARE QUALITY IN VARYING MANAGED MEDICAID PLANS

Principal Investigator: Tracy Lieu

Funding Period: 9/1/99 – 3/31/03

ABSTRACT

The research conducted under this grant included a multisite evaluation of practice site policies associated with improved outcomes for Medicaid-insured children with asthma. The investigators found that policies to promote cultural competence, improve continuity of care, and use asthma reports to clinicians were associated with increased use of preventive medications and better parent ratings. The results were published widely in policy and clinical journals and presented at various conferences. The most recent asthma guidelines cite the research's findings about cultural competence, and suggest the findings as potentially helpful for improving quality of care.

BACKGROUND

Medicaid managed care has expanded rapidly since the early 1990's.¹ At the time this research was conducted, there was little evidence for the effects of Medicaid managed care on outcomes among Medicaid children. Researchers and policymakers worried that the payment mechanisms used by many managed care programs (i.e., capitation, either fully or partially capitated payments) might be reducing incentives to provide high-quality care to patients with chronic conditions that require more intensive services. There was particular concern for vulnerable populations with chronic diseases, including children and the elderly.^{2,3}

The Asthma Care Quality Assessment (ACQA) study, conducted by researchers working in collaboration with health plans to provide coverage for Medicaid patients and seek to promote child health, evaluated the quality of care provided to asthmatic children enrolled in Medicaid managed care plans in California, Washington and Massachusetts. In particular, the investigators evaluated how the characteristics of Medicaid managed care organizations may have improved health care and patient satisfaction outcomes, including preventive medication use and better parent care ratings. Characteristics of practice sites hypothesized to affect these outcomes included policies to promote cultural competence, continuity of care, communication with non-English speaking and low-literacy patients, case management, reports to clinicians, support for self-care, and the use of guidelines, as well as organizations' structural features (e.g., size, share of patients with Medicaid, and payment policies) and clinician and parent management strategies for quality of care.⁴

The investigators focused on asthmatic children for several reasons. Asthma is one of the most common chronic diseases among children, as well as the most common reason for their emergency room visits and hospitalizations.^{5,6} At the time of the study, evidence suggested that poor and minority children may be even more susceptible to adverse outcomes attributable to lower quality medical care.⁷ Previous research also had documented variations in quality of asthma care for Medicaid-insured populations.⁸ The investigators hypothesized that asthmatic children enrolled in

Medicaid managed care would be responsive to variations in quality of care, allowing them to identify various organizational factors that promote high-quality care.

RESEARCH GOALS

The goals of the study were to:⁹

1. Assess the quality of care provided to asthmatic children enrolled in Medicaid
2. Identify practice site characteristics and managed care structural features associated with improved quality of care
3. Identify clinician and parent characteristics that promote improved asthma management

STUDY DESIGN

This study was a prospective cohort study of asthmatic children ages 2 to 16 years old enrolled in any of five Medicaid managed care organizations in California, Washington, and Massachusetts, and followed for one year. Asthmatic children were identified based on physicians' diagnosis of asthma or prescription of anti-asthmatic medications in the one year prior to the study; asthma status and eligibility was confirmed through interviews with parents. Parents were interviewed at baseline and followup about the child's asthma status and medication use. They also were asked to provide reports about their child's care and ratings of care, as well as information on family demographics and structure. Primary care physicians of asthmatic patients were surveyed at baseline and followup with self-administered questionnaires about various asthma care practices and their experiences with financial incentives and referral policies that might affect asthma care. Practice sites were surveyed one time about their size, type (e.g., community health center, private office, HMO); practice site policies; and patient populations. In addition, the investigators obtained data from computerized claims systems. Quality of care was measured by preventive medication use, parent ratings of care, one-year change in children's asthma physical status, preventive medication prescribing, and hospitalizations.^{4,10}

PRINCIPAL FINDINGS AND RESULTING PUBLICATIONS

Practice site policies to promote cultural competence, such as recruiting ethnically diverse and bilingual nurses and providers, offering cross-cultural or diversity training, and providing appropriate printed materials for specific populations, were associated significantly with increased rates of preventive medication use and better parent care ratings. Policies to improve continuity of care also were associated with increased use of preventive medications. Use of asthma reports to clinicians was associated significantly with improved preventive medication prescribing patterns, as well as better parent ratings and patient physical status at followup. Other organizational factors, such as practice site size, type, payment, and share of patients insured by Medicaid, had no identifiable association with improved quality of care.⁴

Analyses of care processes used by the practice sites included in this study found substantial variation across sites. Further, this variation was not attributable to the managed care organization to which the site belonged, but rather to the practice site itself.¹¹ These results suggest that interventions to improve quality of care for asthmatic children enrolled in Medicaid managed care should be targeted to practice sites rather than to broader managed care organizations.¹¹

This study led to multiple publications in such peer-reviewed journals as *Pediatrics*, *Archives of Pediatric and Adolescent Medicine*, *Journal of Asthma*, *Annals of Allergy, Asthma and Immunology*, *Journal of Health Care for the Poor and Underserved* and *Health Services Research*.^{4,10,11,12,13,14,15,16,17}

POLICY RELEVANCE AND TARGET AUDIENCES

This study identified specific organizational factors associated with better quality of care, particularly policies to promote cultural competence, improve continuity of care, and use asthma reports to clinicians. This information may be of particular use to clinicians, practice site managers, and managed care organizations interested in improving quality of care and outcomes among vulnerable populations.

Three target audiences, in addition to research audiences, were identified as potential users of this information:¹⁸

1. Clinicians
2. Clinical policymakers, i.e., those providers and practice managers who work in clinical sites and make decisions about internal operations policies
3. Health care systems policymakers, including decision makers at the local and state levels

DISSEMINATION

The project did not have a particular overarching dissemination plan at its inception, although all parties understood that the investigators would publish in peer-reviewed journals that would reach their target audiences.¹⁸

Though not planned at the start, the study findings also were disseminated publicly in various ways. In addition to the peer-reviewed publications, the authors presented their findings at various conferences, including the pediatric academic societies' annual meetings. They also were invited to speak at several conferences by AHRQ, including a conference the "National Initiative for Health Care Quality (NIHCQ)" conference.^{18,19} AHRQ also used the results of this research in their Knowledge Transfer Learning Network, a network of five to six states who had received grants from the Centers for Disease Control and Prevention (CDC) to reduce disparities in asthma outcomes.

AHRQ also disseminated the results of this research, along with other relevant studies on low-income asthmatic children, in a "Research in Action" brief posted on the AHRQ website.²⁰ Contacts at AHRQ thought that the findings from this research also may have been disseminated to America's Health Insurance Plans (AHIP) members because AHIP has a fairly extensive asthma program, but a search of their website found no references to this research.²¹

Results were disseminated to selected individuals at all managed care organizations participating in the research study. At Kaiser Permanente, for example, the director of research reviewed all papers before they were submitted for publication. The investigators also made sure that other leaders in the development of asthma quality guidelines in the participating organizations saw the results of the study.¹⁸

The findings from this research on cultural competence also have been cited in recent guidelines to improve asthma management. In particular, recent documents suggest that policies to improve cultural competency and performance feedback for physicians treating Medicaid-insured children may help improve asthma management by clinicians.^{22,23} Such inclusion seems likely to encourage greater awareness of the relevance of adopting the kinds of successful cultural competency policies identified in this study.

FACTORS AFFECTING TRANSLATION

The wide dissemination of findings to various audiences and their inclusion in guidelines enhanced the likelihood that they would be used. Because practice sites and managed care organizations were provided with the findings, they were in a position to make changes. Regrettably, we do not know whether this occurred, given that no formal examination of this question was included in the study, and the authors are not aware of any parallel data that address this point. Some practice sites already were using policies to promote cultural competence, so the results suggest reinforcement of existing strategies rather than a change.¹⁸

Many researchers and policymakers are concerned about disparities in health care. The findings about cultural competence and other organizational-level factors associated with improved quality may continue to inform researchers and policymakers seeking potentially actionable findings with which to address disparities in health care.²⁴ However, the non-randomized nature of the study may limit its acceptance in clinical practice. In particular, policymakers may find it difficult to encourage practice sites to change practice patterns based solely on a correlational study rather than a randomized trial.¹⁹ This reduced the authority of the guidelines.

KEY LESSONS FOR ENHANCING THE USE OF RESEARCH IN POLICYMAKING

This research likely reached broad audiences through multiple publications in the peer-reviewed literature, presentations by the lead investigators, citations in AHRQ reports and publications, and the recent asthma care guidelines. This research clearly demonstrates how widespread publication on various findings in multiple journals may be used and further cited by multiple sources, generally adding to the existing body of knowledge.

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¹⁹ Telephone interview with Denise Dougherty, May 1, 2008.

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QUALITY OF CARE AND MANAGED CARE MARKETS

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CASE STUDY

QUALITY MEASURES AND MANAGED CARE MARKETS

Principal Investigator: Michael Chernew/Catherine McLaughlin

Funding Period: 7/15/00 – 6/30/05

ABSTRACT

This study examined the relationships between employer choice of health plans, the level of health care competition in local markets, and health plan quality performance. A series of articles were published on the findings, in journals including *Health Affairs*, *the Journal of Health Economics*, and *Medical Care*, followed by other dissemination activities including presentations at both academic and government sponsored conferences. The results provided empirical data informing policy debates about the extent of meaningful competition in the market and whether competition may increase or decrease health care quality. The grant-funded research also helped advance the career of a junior researcher on the study who has since continued to develop research expertise in the area of quality of care and competition. The study was undertaken as part of a larger effort involving two other projects in the area of managed care and competition. See Appendix A for a description of all research activities funded under the grant.

BACKGROUND

Employers and policymakers are increasingly concerned about purchasing quality health care for employees, as well as containing costs. Existing evidence suggested that increased competition among HMOs led to lower premiums compared to markets with less competition. However, there was little evidence about the effect of competition on market behaviors such as choice of plans based on quality, or ultimately on quality performance itself.

RESEARCH GOALS

The research that was the focus in this case study was divided into two projects within the larger grant. The projects addressed two related issues: 1) whether purchasers (employers) make health plan choices on the basis of health plan performance scores, and 2) whether health plan competition in markets is associated with variation in health plan performance.

Project 1. In the first project (McLaughlin, principal investigator), investigators created a data set that included HMOs that were available to, and offered to employees, by large employers in multiple markets in the U.S. along with these HMOs' CAHPS and HEDIS performance scores. The data set also included information on the health care markets in which those HMOs operated. The investigators developed multivariate models that predicted employer choice among HMOs as a function of absolute performance on CAHPS and HEDIS scores and as a function of performance relative to HMO competitors, while controlling for other health plan and market features. The investigators also examined the composition of HMO provider networks to assess the degree of provider overlap among competing plans; in particular they estimated the probability that a provider participating in one HMO also participated in one or more competitor HMOs in the same market.

Project 2. In the second project (Chernew, principal investigator), investigators created a data set with CAHPS and HEDIS scores for HMOs linked to information on the level of health plan competition in markets they operated. Competition was defined in terms of the level of dispersion versus concentration of enrollment in local HMOs (Herfindahl-Hirshman Index) in a market, defined as metropolitan statistical area (MSA); that is, markets where enrollment is dispersed relatively evenly among many HMOs is considered more competitive than markets where enrollment is concentrated in a small number of HMOs. Performance was measured using CAHPS and HEDIS scores for those HMOs. They used a Multiple Indicator Multiple Cause (MIMC) model to estimate the association between market competition levels and the performance scores of HMOs in those markets.

PRINCIPAL FINDINGS

In project 1, the researchers found that employers considered performance measures a significant factor in choosing among health plans. Employers were found to be more likely to offer health plans with relatively high performance ratings, all else being equal, whether measured in terms of clinical performance (HEDIS) or consumer assessments of care (CAHPS). They also found that the likelihood of plan offerings by employers was also associated with other plan characteristics, such as older plans, non-profit plans, and broader provider network plans. Primary results from this research were published in the *Journal of Health Economics* in 2004. While noting data and methodological limitations, the authors conclude that the findings provide some reassurance to policy makers and stakeholders that employers—possibly acting as agents for their employees—do consider performance in making health plan choices, and may not necessarily opt for the cheapest plans with increased competition if they are also of low quality.

In project 2, the researchers found that there was little relationship between the level of competition in local markets and performance measures of the plans operating in those markets. In particular, there were few statistically significant associations found in multivariate modeling between a) market-level measures of competition and b) health plan measures of performance. For a few measures, performance was significantly lower in more competitive markets. At the same time the authors found that HEDIS, not CAHPS, were higher in markets with greater managed care penetration (as opposed to market competition, perhaps because providers feel greater pressure to perform on these managed care performance measures when more of their patients are enrolled in managed care). The authors concluded that although the study was not designed to draw causal inferences, the findings from the study imply a need for “reassessing the belief that competition will inherently improve quality.” The results of this study were published in the *Medical Care* in 2005.

Based on related research conducted under project 1, published in *Health Affairs* in 2004, the investigators concluded that competitive effects on quality may be limited by other market structural issues such as a large degree of overlap in provider networks among plans operating in the same market. Because many or all plans in a market have overlapping provider networks, no plans have much opportunity to differentiate themselves with respect to quality, and thus plans may focus competition on non-quality factors, such as premiums and benefits. Follow-up research also found that managed care penetration level (rather than competition) is associated with higher performance measures, although not with improvement in these measures over time. The researchers also undertook follow-up qualitative research, interviewing health plans about why they think that competition has had a limited effect on quality.

POLICY RELEVANCE & TARGET AUDIENCES

The research funded under this grant made important contributions to the debate about the potential for harnessing competition, especially at the health plan level, to achieve quality improvement. They also provide insight into whether employers, in particular, can be agents in driving improvements in quality. On the one hand, the findings do not appear to support the argument that increased competition necessarily leads to improvements in quality. Other market conditions may impede improvements that might arise through competition. On the other hand, the finding that employers take performance measures into account in purchasing decisions may reassure those who worry, conversely, that competition can have detrimental effects on quality.

The findings are of interest to a relatively broad range of audiences, including private purchasers, health plans, and consumer advocates, as well Congressional, federal and state government agencies concerned with competition and quality of care issues. The Congressional Budget Office (CBO) and the Federal Trade Commission (FTC) were examples of agencies that are active users of this research and other related studies on competition. In its federal budget “scoring” activities, CBO attempts to account for market or behavioral-based responses to federal reforms that may encourage or regulate competition, and it relies on this type of research for estimating those responses. As a regulator of anti-competitive behavior, the FTC uses research that both defines and measures competition and attempts to measure its effects on market performance. At the same time, private purchasers, health plans, and those involved in quality measurement and quality assurance, also had strong interests in the results, as they sought to increase quality of care in their organizations or for the populations they serve. In our interviews, potential users of the research noted that findings did not directly determine specific decisions about particular policies or programs under development or consideration; instead they were broadly informative about complex dynamics in health care markets, helping policy makers shape policy directions in a more informed way.

DISSEMINATION

Initial dissemination of results from these studies occurred principally through articles in the health services and health economic journals noted above (see full list in references at the end of this case study). These publications provided the basis for other dissemination activities that included follow-up papers and issue briefs, participation in conferences sponsored by AcademyHealth, AHRQ, the FTC and elsewhere, Congressional testimony, and informal discussions with stakeholders and policymakers. For example, Dennis Scanlon presented results from project 2 at a conference held by the FTC in 2004 entitled “Health Care Information and Competition.” The conference was designed to bring in academic and government researchers to present a series to help inform FTC staff understand the complex relationships between information, competition, and quality of care.

Dissemination has also come in the form of follow-on research and collaboration with other stakeholders or researchers. For example, as part of the efforts to get health plan executives’ reactions to existing quantitative findings, the executives were given summaries of the quantitative research. The researchers also collaborated with staff at the National Committee for Quality Assurance, an organization charged with accrediting health plans and other organizations, in developing measures of quality using CAHPS and HEDIS data—raising the visibility of the analysis with this organization.

Dissemination activities benefited from having prominent investigators on the project who are active in national research and policy-making circles. The principal investigators (McLaughlin and Chernew) have national reputations for work in this area, and often consult with policy makers on issues in this topic area in either formal or informal capacities.¹ In their positions, the investigators had opportunities to present results informally to others with decision-making responsibilities. For example, one of the principal investigators, Michael Chernew, was recently appointed to the Medicare Payment Advisory Commission, a Congressional agency that advises on Medicare policy issues. He also serves as a member of a research advisory panel at the National Committee for Quality Assurance, has held leadership roles at the Coalition for Health Services Research, and is a member of the Commonwealth Fund's Commission for a Higher Performing Health System. The other principal investigator, (Catherine McLaughlin) was the Vice-Chair of the Citizens Health Care Working Group, a federal nonpartisan committee, and is on the editorial board of several health services research journals, serves as a member of such committees and boards as the Institute of Medicine, the National Academy of Social Insurance, and the American Hospital Association's Health Research and Educational Trust, and has served as associate director of Robert Wood Johnson Foundation's Clinical Scholars and Scholars in Health Care Policy Research programs.

The grant also provided important support for a third researcher on the study (Dennis Scanlon) at an early point in his career and participation in the research helped advance his career focus on research in this area during the grant period. Dr. Scanlon began participating in the research study at about the time that he took a faculty position at Pennsylvania State University, having begun this area of research as a doctoral student at the University of Michigan. His doctoral dissertation, completed in the late 1990s, focused on the effects of competition on quality of care, and continued collaboration on the grant with Drs. McLaughlin and Chernew allowed him to pursue a leading research career in this area. Dr. Scanlon now sits on a research advisory committee of the Leapfrog group, which promotes quality of hospital care, is the member of editorial board of multiple health services journals, and has since led research projects focused on related projects including regional value-based purchasing efforts and nursing home quality sponsored by the Robert Wood Johnson Foundation and the Center for Health Care Strategies.

FACTORS AFFECTING TRANSLATION

The research sought to develop understanding of the relationships between market behavior and information on quality of care. Based on interviews conducted for this case study, the primary factors affecting success of the research were:

1. ***Providing Solid Empirical Findings Adding to An Overall Body of Research that Can Help Policymakers and Stakeholders Understand Complex Relationships Between Market Competition and Quality of Care.*** For example, the research demonstrated that employers take quality into account in purchasing health plans on the basis of various performance measures. However, other market factors, such as overlap in health plans' provider networks, may reduce plan variation in performance and

¹ One of the researchers, Michael Chernew, is now at the Harvard Medical School. The other, Catherine McLaughlin has taken a position at Mathematica Policy Research, Inc., but maintains an appointment at the University of Michigan.

constrain plans' ability to make changes in operations in response to employer preferences about quality. Broad and overlapping provider networks may be in response to employer preferences for ensuring broad access to providers for their employees.

2. ***Using Opportunities to Informally Present Findings and Broader Lessons from the Research in National or Local Policy Forums.*** The research and policy expertise of the principal investigators and their participation in policy and research organizations as well as their involvement in policy forums and deliberations provided them opportunities to present lessons from the research in key policy discussions.
3. ***Supporting the Career Development and Enhancing the Expertise of Researchers Who Then Serve as Sources of Information and Expertise for Policymakers and Other Decision-Makers.*** This grant was central to the career development of one of the junior researchers on the project, allowing him to continue to develop further research and expertise in the areas of competition and quality.
4. ***Contributing to Methodological and Data Development for Ongoing Study of Competition and Quality.*** This included further development and refinement of the use of both market and plan measures to characterize health care markets, such as managed care plan characteristics, market concentration levels, and managed care penetration, and methods for using multiple performance measures (such as HEDIS and CAHPS) for assessing overall health plan performance.

KEY LESSONS FOR ENHANCING THE USE OF RESEARCH IN POLICYMAKING

This case study provides an example of a highly-successful health services research project that combined traditional peer-reviewed publications, proactive dissemination of findings to policy makers, and participation in policy leadership activities by the investigators. Together, these research translation activities added empirical information to a broad policy debate about whether and how competition may enhance health care quality in health care markets.

A key lesson from the case study is that both formal and informal dissemination activities may be mutually supportive of one another. Publication and peer review in respected journals can enhance the rigor and scientific acceptance of the results, which in turn can support other dissemination activities targeted to policymakers and enhance investigators' research and policy leadership careers. At the same time, the reputation of investigators for research expertise allowed them opportunities to share their results with policymakers in informal ways, and has also facilitated further pursuit of empirical research in the area of health care competition and quality.

APPENDIX A

Under this AHRQ grant-funded study, a team of researchers at University of California-San Francisco, University of Michigan, and Brigham and Women’s Hospital/Harvard Medical School sought to understand whether increased competition had an impact on quality of care demanded by employers, quality of care delivered by insurance companies, advertising strategies used by insurance companies, and health care outcomes among patients, particularly racial and ethnic minorities.

The research project was large and multifaceted, with total funding of \$5.3 million. Unlike most of the case study RO1 grants addressed in our evaluation, this grant was structured as a “program project” or PO1 grant, awarded in response to applications to a specific program announcement in 1999 (www.ahrq.gov/news/press/pr1999/mfmcare.htm). The program announcement indicated AHRQ’s intention to spend up to \$11 million to support two to three centers of excellence for health care markets and managed care research. The announcement noted: “the studies conducted by these centers will help public policymakers understand, monitor, and anticipate how changes in the nation’s market-driven health care system affect costs, access to services, and quality of care. Some of the studies are expected to look at the impact of these changes on rural and minority populations.”² These grants were also intended to encourage development of expertise, knowledge and collaboration among a group of researchers in multiple institutions, and it led to a number of other highly visible findings produced through other projects.

This grant funded study was organized into four research projects tied to the goals above, researchers collaborated closely on methods and data:

Project 1: Health Plan Performance and Employer Choice of Plan (Team Leader: Catherine McLaughlin): To what extent does information on health plan performance and quality affect employers’ decisions about which plans to offer? There has been concern that employers in competitive markets focus solely on cost in determining which plans to offer; this may lead to a “race to the bottom,” whereby employees are offered only low-cost, poor quality plans. This study evaluated whether employers use available information on health plan performance and quality to decide which plans to offer.

Publications

Chernew, M.E., Gowrisankaran, G., McLaughlin, C.G., Gibson, TB. Quality and Employers' Choice of Health Plans. *Journal of Health Economics*, Volume 23, Issue 3, May 2004, Pages 471-492

Chernew, M.E., Wodshis, W. Scanlon, D.P., McLaughlin, C.G., “Overlap in HMO Physician Networks.” *Health Affairs*, March/April 2004, 23(2): 91-101

Project 2: Health Plan Quality and Market Forces (Team Leader: Michael Chernew): To what extent is increased competition in the health insurance market associated with improved quality scores over time? Many policy makers and academics have advocated for increased competition to lower prices and improve quality. This study was

² Another case study of research conducted by researchers at Harvard University (principal investigator: Newhouse) was also funded through this program announcement.

designed to evaluate whether improved quality of care may be driven by increased market competition.

Publications

Scanlon DP, Swaminathan SS, Chernew ME, Bost J, Shevock J. Competition and health plan performance: evidence from HMO insurance markets. *Medical Care* 2005; 43(4):338–346.

Scanlon DP, Swaminathan S, Chernew ME, Lee W. Does competition improve health care quality? (Revise and resubmit at *Health Serv Res*)

Scanlon DP, Swaminathan S, Chernew ME, Lee W. Competition in health insurance markets: limitations of current measures for policy analysis. *Med Care Res Rev* 2006 Dec; 63(6Suppl):37S-55S.

Scanlon DP, Swaminathan S, Chernew ME, Lee W. Market and plan characteristics related to HMO quality and improvement. *Med Care Res Rev* 2006 Dec; 63(6 Suppl):56S-89S.

Swaminathan S. Persistence of HMO performance on childhood immunizations: are good HMOs always good and bad HMOs always bad? (Revise and resubmit at *Health Serv Res*)

Presentations

“HMO Competition and Quality Improvement.” AEA/ASAA, Washington DC 2003

“US HMO Performance: Which Plans are Improving?” IHEA, San Francisco, 2003

“Competition and Health Plan Performance: Evidence from Managed Care Insurance Markets,” Allied Social Science Associations 2004 annual meeting, San Diego, 2004

“Predictors of HEDIS performance and Improvement,” FTC Conference on Healthcare Information and Competition

Project 3: Do Health Plan Advertising Strategies Reflect Market Incentives? (Team Leader: Adams Dudley): To understand whether market factors affect health plan advertising strategies, particularly strategies to attract better risks. Health plans competing on price and quality may have an incentive to enroll the best risks to maintain profitability. This study evaluated whether health insurance companies responded to changing market structures by trying to engage in propitious risk selection through advertising campaigns. A component of the evaluation included analysis of whether advertising campaigns were targeted to minorities.

Publications

Mehrotra, A, Grier, SA, Dudley, RA. The Relationship Between Health Plan Advertising and Market Incentives: Evidence of Risk Selective Behavior. *Health Affairs*, 2006;25(3):759-65.

Mehrotra A, Grier SA, Dudley RA. Methods for analyzing health plan ads in health services research. (In preparation)

Poster Presentation

Mehrotra A, Grier S, Dudley RA. The Relationship Between Health Plan Advertising and Market Incentives. Abstract Poster 1269-1, June 23-25, Washington DC 2002 Annual Research Meeting of the Academy for Health Services Research and Health Policy,

Project 4: Market Changes and Minorities: National and Community Perspective (Team Leaders: Haas and Phillips): To evaluate market-level and organizational factors that contribute to differences in access to care and health status by racial and ethnic minorities. This study was designed to understand how various area-level, managed care market-level and health plan characteristics may affect access to care and quality of care. This study may identify potential policy-levers to improve care for minorities. The study also expanded in scope from the initial proposal to evaluate the effect of Medicare Part D on medication costs for vulnerable populations.

Publications

Baker LS, Phillips KA, Haas JS, Liang SY, Sonneborn D. The effect of area managed care market share on cancer screening. *Health Serv Res* 2004; 39:1751- 1772.

Gellad WF, Huskamp HA, Phillips KA, Haas JS. How the new Medicare drug benefit could affect vulnerable populations. *Health Aff* 2006; 1:248-255.

Gellad WF, Huskamp HA, Phillips KA, Haas JS. Angiotensin receptor blockers on the formularies of Medicare drug plans. *J Gen Intern Med* 2007; 22(8):1172-5.

Grier SA, Mehrotra A, Dudley RA. The use of race and ethnicity in health plan advertisements: is there evidence of risk selection? (In preparation)

Haas JS, Fitzmaurice G, Brawarsky P, Liang SY, Hiatt RA, Klabunde CN, Brown ML. Association of regional variation in physicians' colorectal cancer screening recommendations with individual use of colorectal cancer screening (*Prev Chronic Dis*, in press).

Haas JS, Lee LB, Kaplan CP, Sonneborn D, Phillips KA, Liang, SY. The role of race/ethnicity, socioeconomic status and health insurance on the risk of obesity in children and adolescents. *Am J Public Health* 2003; 93:2105–2110.

Haas JS, Phillips KA, Baker LS, Sonneborn D, McCulloch CE. Is the prevalence of gatekeeping in a community associated with individual trust in medical care and continuity of care? *Med Care* 2003; 41:660-668.

Haas JS, Phillips KA, Gerstenberger EP, Seger AC. Potential savings from substituting generic drugs for brand-name drugs: Medical Expenditure Panel Survey, 1997-2000. *Ann Intern Med* 2005; 142:891–897.

Haas JS, Phillips KA, Sonneborn D, McCulloch CE, Baker LC, Kaplan CP, Perez-Stable EJ, Liang SY. Variation in access to health care for different racial/ethnic groups by the racial/ethnic composition of an individual's county of residence. *Med Care* 2004; 42:707-714.

- Haas JS, Phillips KA, Sonneborn D, McCulloch CE, Liang SY. The effect of managed care insurance on the use of preventative care for specific ethnic groups in the United States. *Med Care* 2002; 40:743–751.
- Haas JS, Swartz K. The relative importance of worker, firm, and market characteristics for racial/ethnic disparities in employer sponsored health insurance (*Inquiry*, in press).
- Liang ST, Phillips KA, Haas JS. Measuring managed care and its environment using national surveys: a review and assessment. *Med Care Res Rev* 2006 Dec; 63(6 Suppl):9S-36S.
- Liang SY, Phillips KA, Tye S, Haas JS, Sakowski J. Does patient cost sharing matter? Its impact on recommended vs controversial cancer screening services. *Am J Manag Care* 2004; 10:99-107.
- Phillips KA, Haas JS, Liang SY, Baker LC, Tye S, Kerlikowske K, Sakowski J, Spetz J, Sonneborn D. Do gatekeeper requirements affect cancer screening utilization? *Health Serv Res* 2004; 39:153-178.
- Phillips KA, Liang SY, Haas JS, Stebbins M, Aldredge BK. Prescription drug dispensing limits and patterns. *Manag Care Interface*; 2005; 18(7):41–46.
- Phillips KA, Stotland NE, Liang SY, Spetz J, Haas JS, Oren E. Out-of-pocket expenditures for oral contraceptives and number of packs per purchase. *J Am Med Womens Assoc* 2004; 59:36-42.
- Sakowski J, Phillips KA, Liang SY, Haas JS. Willingness to recommend a health plan: who is dissatisfied and what don't they like? *Am J Manag Care* 2004; 10:393-400.
- Tye S, Phillips KA, Liang SY, Haas JS. Health plan characteristics as predictors of screening mammography: moving beyond the typologies of managed care. *Health Serv Res* 2004; 39:179-206.

Other Publications

- Luft, Harold S.; Rappaport, Karen M.; Yelin, Edward H.; Aubry, Wade M. “Evaluating Medical Effectiveness for the California Health Benefits Review Program.” *Health Services Research*, 41(3, Part II):1007-1026, June 2006.
- Luft, Harold S. Ph.D.; Dudley, R. Adams. “Measuring Quality in Modern Managed Care.” *Health Services Research*, 38(6, Part I):1373-1379, December 2003.
- Miller, Robert H.; Luft, Harold S. “HMO Plan Performance Update: An Analysis of The Literature, 1997–2001.” *Health Affairs*, Jul/Aug2002, Vol. 21 Issue 4, p63, 24p

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RURAL RESPONSE TO MEDICARE+CHOICE: CHANGE AND ITS IMPACT

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CASE STUDY

RURAL RESPONSE TO MEDICARE+CHOICE: CHANGE AND ITS IMPACT

Principal Investigator: Keith Mueller, Ph.D.

Funding Period: August 1, 1999 – April 30, 2003

ABSTRACT

This grant was used to examine the viability of Medicare+Choice (M+C) in rural areas, highlighting trends and significant barriers that have persisted despite the incentives of expanded federal payments. The principal investigator (PI) built on his historical base of work and connections in rural health to communicate the results directly to a broad spectrum of Congressional staff and others with an interest in federal policy in this area.

BACKGROUND

The Rural Policy Research Institute (RUPRI) is a university-affiliated organization whose mission includes providing objective information on rural issues to federal policymakers. As director of the RUPRI Center for Rural Health Policy Analysis, Dr. Mueller and his colleagues have been studying the role of managed care in rural areas since 1995. The researchers began to establish relationships with members of Congress when they completed studies on the volatility and variation in Medicare managed care payment rates and were asked to provide information to Congressional committees about the impact of health policy on rural America.^{1,2}

When the Balanced Budget Act (BBA) of 1997 was passed, it sought to encourage plans to locate in rural areas less well served by M+C's predecessor Medicare HMO contracting program. A key strategy was to reconfigure payment so as to create a minimum "floor" payment in rural counties; for many of these counties, the floor represented a significant increase in payment relative to prior rates. Dr. Mueller was also President of the National Rural Health Association when the BBA was enacted, which further strengthened his interest in studying rural M+C issues. He applied for a grant from AHRQ, and so began his ongoing work on geographic variation in M+C enrollment.

RESEARCH GOALS

In applying for the AHRQ grant, the PI's objectives were to ascertain (1) whether M+C plans were indeed offering plans in rural markets, and (2) what factors drive rural managed care enrollment and penetration. Dr. Mueller and his research team aimed to predict the reasons for expecting particular models of M+C—including provider-sponsored organizations (PSOs) or health management organizations (HMOs)—to grow in rural areas. They also wanted to develop hypotheses concerning the consequences of rural provider participation in M+C. These hypotheses focused on the following outcomes: adoption of new management strategies in marketing, finance, information systems, and negotiations; development of processes for quality assurance; changes in the volume of uncompensated care; and, effects on local control and economic activities.³

STUDY DESIGN

The AHRQ study involved quantitative and qualitative research, and had three components: (1) empirical modeling to explain patterns of enrollment in M+C plans across rural counties throughout the nation, (2) interviews with key informants in each state to obtain a qualitative measure of provider activities as related to the development of managed care plans in rural areas, and (3) case studies to detect the consequences of changes made to develop and increase participation in managed care plans.

Data were taken from a set of unique U.S. county-based files compiled and maintained by RUPRI, which contained more than 1,400 variables with data merged from various sources, including: the Area Resource File, the Department of Agriculture, the Centers for Medicare and Medicaid Services (CMS), and the U.S. Census Bureau. The researchers also completed interviews with key informants in 43 states, and conducted case studies of health plans in four states. M+C enrollment data were entered into the RUPRI database and were used to produce annual updates that tracked enrollment of rural beneficiaries into managed care plans. In addition to data tables and graphs, analysis included maps showing enrollment and changes in enrollment over time.

PRINCIPAL FINDINGS AND PUBLICATIONS

The researchers concluded that M+C had failed to serve rural America. Although enrollment increased in the early years following the BBA of 1997, it later declined and, in 2002, fewer rural beneficiaries were enrolled in Medicare HMOs than prior to the BBA. Empirical modeling to determine why the M+C program has failed in the U.S. showed that market conditions were more important than the amount of Medicare payments in determining firms' decisions to enter and exit rural areas. Those conditions included the market share obtained by the plan, the number of beneficiaries enrolled, and the length of time a plan was active in a given area. Plans that exited rural areas were more likely to be for-profit and have fewer enrollees and a lower market share.

Resistance by local providers was a major factor cited by health plans and key informants as inhibiting the growth of managed care plans in many rural areas. Rural physicians were perceived as being resistant to criteria-based medicine, unwilling to recognize practice limits, and less accepting of new technology. Other barriers plans cited to participating in M+C included difficulty in negotiating payment rates with local providers and burdensome federal regulations—specifically, requirements for quality measurement and reporting not applicable in the rural market.⁴

Dr. Mueller and his colleagues published these findings in numerous issue briefs developed by RUPRI, and in more traditional peer-reviewed publications, such as *Health Services Research* and the *Journal of Rural Health*.

POLICY RELEVANCE AND TARGET AUDIENCE

From the start, the researchers sought not only to study M+C in rural areas, but also to generate findings that would be of interest and shared with policymakers interested in influencing federal legislation on this topic. In particular, the PI identified as targets the U.S. Senate Rural Health Caucus, the U.S. House of Representatives Rural Health Coalition, and CMS. Although this study ended before the Medicare Advantage (MA) legislation was enacted in 2003, the topic of Medicare and M+C was a hot topic at the time, and Dr. Mueller's findings informed Congress of the reasons for success or failure of M+C in rural areas.

Dr. Mueller's colleagues believe that these results have been quite influential, and that policymakers have paid a great deal of attention to the data on enrollment and payments. Our interviews confirm that staff in key Congressional offices were very aware of the research conducted under this grant, and found it policy-relevant. Policymakers had expected that enrollment in M+C would expand in rural areas after the BBA was enacted, but Dr. Mueller's research proved otherwise, a significant finding. Policymakers had ongoing concerns about what was occurring with managed care in rural areas, and the study findings contributed to their knowledge. The research became available in 2001 and 2002, as the Medicare Modernization Act (MMA) of 2003 was being considered. Dr. Mueller's research likely contributed to the formation of this legislation, although how directly this occurred is unclear. One possible instance is that the MMA increased payments to all Medicare Advantage (formerly M+C) plans, including those in rural areas. Dr. Mueller also indicated to us that his research influenced a specific provision in the MMA that required Medicare preferred provider organizations (PPOs) certified in 2006/2007 to offer services on a regional basis, and not county-by-county.⁵

The Congressional staffers with whom we spoke had high regard for Dr. Mueller and his research. The Senate Finance Committee has used his analyses, and asked the researcher to run county-level data when they were evaluating MA payment policies. The committee then sent the data to the Congressional Budget Office (CBO) to assist with program estimates and scoring proposals.⁶ The Senate Finance Committee also has used Dr. Mueller's research to evaluate Part D plans in rural areas, and to understand what else was occurring in rural areas. A Senate staffer with whom we spoke described how Dr. Mueller's research helped influence the recent U.S. farm bill.⁷ His research identified which rural hospitals were eligible to receive assistance for telehealth/medicine. He identified which facilities were most at risk, and which of the underserved needed the most federal assistance. The staffer said that legislators crafted policy using this information.

DISSEMINATION

RUPRI has been a key facilitator of dissemination for Dr. Mueller, and has helped him to reach his target audience. A director at RUPRI defined the organization's role as "the intersection between research, policy analysis, and practice."⁸ RUPRI staff pull together information that they believe policymakers can use. Although it is not a lobbying organization, RUPRI interacts actively with Congress. As mentioned earlier, Dr. Mueller directs the RUPRI Center for Rural Health Policy Analysis, one of eight Rural Health Research Centers funded by the federal Office of Rural Health Policy (ORHP). The Center's specific objectives include conducting original research and independent policy analysis that provides policymakers with a more complete understanding of the implications of health policy initiatives, and disseminating policy analysis to ensure that policymakers will consider the needs of rural health care delivery systems in the design and implementation of health policy.⁹

Dr. Mueller and his co-researchers on this grant also were members of RUPRI's Rural Health Panel. The Panel consists of academics who provide science-based, objective policy analysis to federal policymakers. One of Dr. Mueller's co-researchers remarked that the Panel is very committed to getting their research findings out to key legislative staff in Congress (e.g., the Rural Health Care Coalition and Rural Health Caucus).¹⁰ The Panel determines the key issues to address before Congress, after which RUPRI's Washington, D.C. office helps translate the information and disseminate it to policymakers and their staff through issue briefs. These policy briefs are distributed through office visits and mailing lists. RUPRI's D.C. staff also work as liaisons between the Panel

and policymakers, and help to arrange meetings between Panel members and Congressional staff. They target committee members to whom they send information, and remain in constant communication with committee staff on research findings and new issues as they emerge. The RUPRI staff also help to facilitate formal briefings, for which RUPRI researchers present their findings to legislators and their staff.

RUPRI takes a “snowballing” approach to dissemination, in which they talk to staffers viewed as key players, after which these staff suggest other staffers to contact.¹¹ The constant communication about what the research shows versus the concerns that the House and Senate hear about often helps to shape the research conducted by Dr. Mueller and his RUPRI colleagues. In addition to active dissemination to Congress, RUPRI uses more passive modes, such as posting papers, summaries, and presentations on the RUPRI website. They hope that policymakers will use their website as a key source of information on rural health. The method of dissemination depends on the issues studied, and what attention the study may receive. RUPRI and ORHP determine whether and how to disseminate certain studies rather than others.¹²

In addition to the dissemination by RUPRI and the peer-reviewed publications mentioned earlier, Dr. Mueller also has disseminated his study findings at national conferences such as those of the International Health Economics Association, the National Rural Health Association, and the Gerontological Society of America.

FACTORS AFFECTING TRANSLATION

Availability of Well-Positioned Intermediary. Dr. Mueller’s relationship with RUPRI greatly enhanced the use of this research. Most researchers do not have the infrastructure that RUPRI provides.¹³ This organization gives researchers funding for dissemination activities, and is funded by the federal government specifically to provide information to Congress and other federal stakeholders. RUPRI has easy access to Congress. RUPRI and Dr. Mueller have a mutually supportive relationship, with Dr. Mueller benefiting from the access that RUPRI provides, while RUPRI feels that it would be “weaker” without Dr. Mueller because his reputation as an excellent researcher gives RUPRI a good reputation as well.

Active Interest of PI in Reaching Policymakers. The PI’s personal interest in facilitating the use of this research also has played an important role in the ability of this project to reach policymakers. The PI uses hard work and determination to disseminate his research findings to policymakers; colleagues say he is very successful at seeking connections between research and policy. He actively communicates his findings to Congressional staff, as well as to CMS and other federal agencies. Congressional staff view him as “an objective and independent source of information and analysis.” As one of Dr. Mueller’s colleagues told us, “Few researchers want to hang out on the Hill and talk policy with staffers, but Keith does. The combination of his interest in talking to policy staff, as well as his qualifications and competency, facilitated getting the research findings out there and used.”¹⁴

Existence of a Defined Target Audience. The fact that this research targeted a clear audience was also a key factor in its dissemination. As one researcher said, “Rural health stakeholders are well-organized and easy to target. They’ve bonded and have established policy networks that are easily identifiable, and this makes dissemination fairly easy.”¹⁵ By specifically targeting dissemination toward the Rural Health Caucus and Rural Health Coalition, Dr. Mueller and RUPRI have an audience already interested in rural health issues. There are drawbacks to this

strategy, however. We spoke with one Congressional staffer who is not involved in the Rural Health Coalition or Rural Health Caucus, and she thought that every member of Congress should be on RUPRI's dissemination list. She was disappointed that RUPRI did not seem to disseminate information to staffers other than those involved with the Rural Health Caucus or Coalition, since those members who do receive RUPRI's resources may not have as much influence as a larger body of legislators.

Timeliness of Results. The timeliness of the study results appears to have been important for their use. The research findings were published in time to coincide with the development of MMA (although again, it is not clear how influential the findings were). In general, Dr. Mueller conducts research on topics of current interest to policymakers, and is able to disseminate his findings quickly, with the assistance of RUPRI. Congressional staff laud the researcher's responsiveness and say that the timing of his research is key. As one staffer said, other researchers reach out to Congress and then produce a 25-page white paper that no one has time to read. Dr. Mueller, on the other hand, produces short, targeted briefs that are very useful to staff.

Competition. The development of legislation involves input from a number of competing sources (e.g., constituents, lobbyists, researchers, etc.). Dr. Mueller's research may have gotten into the hands of policymakers, but it is unclear whether his findings have had any more influence than other sources also trying to inform federal policy. As one researcher indicated, unless a study produces "dramatic" results, it is difficult to attribute legislation to any specific research study, because so many voices are trying to be heard. The barrier of competing interests is of no fault of the researcher, but rather is in the nature of the political process.

KEY LESSONS FOR ENHANCING THE USE OF RESEARCH IN POLICYMAKING

Establish Relationships with Users. Dr. Mueller has established relationships with key staff members on many Congressional committees. He has reached out to policymakers and says that he has used hard work and perseverance to establish contacts. He relies heavily on this "open, face-to-face communication." He advises that, once a researcher has sent his or her study findings to policymakers, it is essential for that person to be accessible and responsive to any questions or requests for information.

Present Findings Appropriately for Audience. Policymakers and their staff do not have time to read lengthy reports. If research is targeted to this audience, reports should be short and readable. Dr. Mueller says that a researcher should be able to describe what he or she has learned in 20 words or less. None of Dr. Mueller's issue briefs are more than four pages long. Also, it is critical to be able to state findings concisely either in writing or verbally. Dr. Mueller advises researchers to identify one or two key points in current policy debates that are relevant to their research findings, and then communicate these to appropriate policymakers in half a page or less.

Consider Timeliness of Study Results. Producing a study on a topic of importance in current policy debates may help to facilitate the use of research findings. Findings must be disseminated in a timely manner, which is often difficult when policy issues change rapidly.

ENDNOTES

¹ McBride, T., Penrod, J., and K. Mueller, “Volatility in Medicare AAPCC Rates: Trends in U.S. Counties, 1990 – 1997.” *Health Affairs*, September/October, 1997.

² Telephone interview with Dr. Mueller, June 7, 2007.

³ AHRQ Grant Application, No. 1R01HS10183-01, PI: Keith Mueller.

⁴ Final Report to AHRQ, Grant No. R01HS10183, PI: Keith Mueller.

⁵ Telephone interview with Dr. Mueller, March 20, 2008.

⁶ Telephone interview with Shawn Bishop, U.S. Senate Finance Committee, May 19, 2008.

⁷ Telephone interview with Dr. Janelle Krishnamoorthy, Aide to U.S. Senator Tom Harkin, July 2, 2008.

⁸ Telephone interview with Brian Dabson, President and CEO of RUPRI, April 16, 2008.

⁹ RUPRI website, www.rupri.org <last accessed in July 2008>.

¹⁰ Telephone interview with Dr. Andrew Coburn, May 21, 2008.

¹¹ Coburn interview.

¹² Dabson interview.

¹³ Coburn interview.

¹⁴ Coburn interview.

¹⁵ Coburn interview.

**STRUCTURING MARKETS AND COMPETITION IN HEALTH CARE: ROLE OF
INCENTIVE BASED FORMULARIES ON DRUG SELECTION AND USE**

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CASE STUDY

STRUCTURING MARKETS AND COMPETITION IN HEALTH CARE: ROLE OF INCENTIVE-BASED FORMULARIES ON DRUG SELECTION AND USE

Principal Investigator: Haiden Huskamp, Harvard University
Funding Period: 7/5/00 – 6/30/05

ABSTRACT

This project assessed the effects of incentive-based formularies (varying copayments for benefit coverage of different tiers of drugs) on the use and costs of prescription drugs. Findings confirmed that such financial incentives influence consumers' choice of drugs. The results, published in the *New England Journal of Medicine (NEJM)*, came at a critical time in the development of national policy, with the enactment of the Medicare Part D drug benefit. The results were influential in discussions about the design of the new Medicare benefit, and they also informed private sector decisions about using such financial incentives in drug benefit packages. The project was undertaken as part of a larger grant that funded several other projects in the area of managed care and competition. The goal of the larger grant was to encourage the development of expertise, knowledge, and collaboration among a group of researchers; it led to a number of other highly visible findings produced through other projects. (See Appendix A for a description of the broader grant.)

BACKGROUND

The project was conducted through Harvard University, in collaboration with Medco, a major pharmacy benefit manager (a “carve out organization”).¹ Medco manages pharmacy benefits for health plan and purchaser/employer clients throughout the United States, covering about 65 million Americans. Harvard researchers (led by Dr. Haiden Huskamp) and Medco agreed to partner on a study to assess the effects of formularies on prescription drug use and costs, based on an agreed-upon study design and data-sharing approach. For its part, Medco obtained agreements from selected employer clients in order to allow the firm to share the data with Harvard researchers. There were no financial arrangements between Harvard and Medco; formal arrangements were limited to a data use agreement for data sharing. Medco leadership was interested in the project because they believed the results could inform their decision making about approaches to managing prescription drug use.

¹ Carve-outs are organizations that contract with health plans or purchasers to manage and provide particular types of health care services—usually non-physician or hospital services—covered by health benefit plans. Carve-outs are most commonly used for mental health or substance abuse services (sometimes referred to as managed behavioral health organizations) or prescription drugs (often referred to as pharmacy benefit managers).

The study design involved a “pre-post” comparison of experiences of employees in two firms that had their prescription coverage changed to an increased use of incentive-based formulary coverage. One employer had coverage changed from a one-tier formulary, requiring the same copayment for all drugs, to a three-tier formulary, with increasing copayments for each successive tier. Less expensive generics were placed in the first tier, and had the lowest copayments; preferred brand-name drugs were placed in the middle tier, with higher copayments; and non-preferred brand-name drugs were placed in the third tier, with the highest copayments. The second employer changed from a two-tier (generics in one tier; brand names in the other) to a three-tier formulary, which involved moving non-preferred brand name drugs into a third, highest-copayment tier. In essence, for both employers, copayments were increased for highest cost, brand name drugs; the list of drugs available did not change. These changes then were compared to experiences of employees who had no change in coverage during the same period; that is, a “difference-in-difference” design. Harvard University researchers conducted the analysis, with Medco staff contributing to study design decisions and consulting on data issues.

PRINCIPAL FINDINGS AND KEY PUBLICATIONS

Principal findings were published in the *NEJM* in December 2003 (Huskamp et al. 2003). They showed that the use of an incentive-based formulary (switching from a one-tier formulary to a three-tier formulary) significantly increased the likelihood that consumers switched to lower cost prescription drugs from higher cost drugs used for the same clinical purpose. However, the formulary also significantly increased the probability that consumers ceased taking certain drugs altogether. In addition, the results also indicated a major shift in spending from health plans to consumers as a result of the changes in coverage.

The study results showed that consumers using relatively high-cost cholesterol-lowering drugs (statins) who changed from one-tier formulary to three-tier incentive based formulary were substantially more likely (49 percent vs. 17 percent) to switch to lower-cost versions of these drugs after implementation of the incentive-based formulary, compared to consumers experiencing no change in coverage. Similar results were shown for other drugs, including ACE inhibitors and proton pump inhibitors.

Despite effects on consumer choice of drugs, the study showed mixed results in terms of effects on overall spending on these drugs. Overall spending under the incentive-based formulary was 3 percentage points less for proton pump inhibitors, compared to a comparison group, but not significantly different for the other drugs studied. Distributional effects between purchasers and consumers, however, were more notable. The results indicate that, on average, purchasers—rather than consumers—accrued financial savings from the incentive-based formularies. As many consumers switched to lower cost drugs, there were substantial reductions in purchaser spending for specific drugs affected by coverage changes (58 percent for ACE inhibitors, 15 percent for proton pump inhibitors, and 14 percent for statins), compared to slight increases in spending for these drugs when there was no change in coverage for the comparison groups. At the same time, because many consumers did not switch to lower cost drugs and thus paid higher copayments, monthly spending by consumers under the new incentive-based formulary arrangements increased by 142 percent for ACE inhibitors, 148 percent for proton pump inhibitors, and 117 percent for statins.

Finally, consumers switching from a one-tier formulary to three-tier incentive-based formulary were significantly more likely than those in the comparison group to discontinue use of relevant

drugs altogether (16 vs. 6 percent for ACE inhibitors; 32 vs. 19 percent for proton pump inhibitors; and 21 vs. 11 percent for statins).

POLICY RELEVANCE AND TARGET AUDIENCES

Potential users of the research interviewed said that this case study was highly relevant to both private and public decision making about prescription drug benefits. They said that decision makers and stakeholders—including health plans, purchasers, pharmacy benefit managers, and consumer organizations in the private sector, as well as staff in Congressional and federal agencies—have become aware of the tradeoffs involved in using incentive-based formularies in prescription drug benefit plans. This awareness was due partly to information produced from this study. On one hand, incentive-based formularies can have significant effects in encouraging consumers to shift from higher- to lower-cost drugs offering the same clinical benefits. On the other hand, a concern was that findings showed significant proportions of consumers ceased using certain drugs altogether, and that cost burdens for consumers increased overall.

The research also was used to support analysis of specific policies. The Congressional Budget Office took the research findings on effects on spending into account as part of its budget estimates for the Medicare prescription drug benefit. In particular, the findings informed a variety of factors that CBO considered in its “scoring” approach including enrollment by beneficiaries, participation by private plans, and beneficiary behavior in using drugs within plans under different benefit arrangements. In addition, according to Congressional staff interviewed, the study’s findings as to the effects of incentives on the distribution of costs among plans and consumers also provided a key piece of information for assessing the “Low Income Subsidy” component of the Medicare prescription drug legislation. This legislation was designed to protect lower income beneficiaries from the burden of higher cost sharing arrangements, given that these beneficiaries might be most likely to discontinue taking medications when faced with significant copayments.

The study also encouraged other researchers to undertake additional research to confirm the findings. Most of these studies reached similar conclusions, studying different populations and using somewhat different methods. This, in turn, increased the credibility and long-term impact of the original research conducted under the AHRQ grant. It also had the effect of increasing the external reputation of the Harvard researchers who undertook the research in this area, and led to several other related and highly visible studies, some of which were also conducted as part of the AHRQ grant funding. For example, they were able to examine carve-outs, formularies, and consumer behavior issues in other areas of prescription drug use, including for mental health drugs and drugs for children with attention deficit disorder.

Key audiences for the research findings included the leadership of health plans, purchasers, pharmacy benefit managers (carve-out organizations), and consumer organizations (unions) in the private sector, as well as staff in Congressional and federal agencies involved in the design of the new Medicare prescription drug benefit.

DISSEMINATION

The primary vehicle for dissemination was the publication of results in the *NEJM*. The prestige and large readership of the journal generated high visibility for the findings. In addition to its primary role as a source of information, publication in the *NEJM* generated visibility and interest that led the authors to many follow-up opportunities for further dissemination of the findings and

discussions of their implications. The authors actively pursued these opportunities in a variety of settings, including presentations at conferences, interviews with the press, and consultations with staff at government agencies. As examples, the investigators consulted often with staff at the Medicare Payment Advisory Commission and CBO in analyzing potential changes resulting from the Medicare Part D legislation. Study findings were presented at the AcademyHealth meetings, and distributed in the Robert Wood Johnson Foundation's Health Care Financing and Organization (HCFO) finding brief. Dr. Huskamp participated in numerous meetings and conferences such as an annual meeting of the International Society of Pharmacoeconomics and Outcomes Research, the International Research Pharmacy Cost Management Conference, and an Invitational Summit for State Policymakers on Part D Implementation hosted by AcademyHealth and Rutgers Center for State Health Policy. Dr. Huskamp's work was widely cited in a variety of trade press and she was often quoted in stories covering the Medicare Part D legislation.

Medco's active involvement in the research process also contributed to the dissemination to individual private sector users. In particular, Medco staff said that the *NEJM* article was published at essentially the same time as the annual benefit review cycle Medco conducts with its purchaser clients; Medco staff examined prescription drug benefits for possible changes in the coming year. Medco highlighted the study to all of its clients, and used the results to inform their discussions.

FACTORS AFFECTING RESEARCH TRANSLATION

Key factors facilitating the research in this project were:

1. The researchers' ability to partner with an organization (Medco) that had the ability and willingness to provide access to necessary data, and also was interested in using the results, and able to do so.
2. The researchers' ability to publish the results in a highly visible journal at a time when interest in the subject studied was high.
3. Timing and targeting of the study so that it was of maximum interest at a time of active policy development. The study focused on a question that was of interest to both private and public policymakers, but for which little prior research existed. It also generated its results around the same time legislation was passed that expanded coverage for prescription drugs for Medicare beneficiaries, and just prior to implementing regulations for the new law.

The researchers and users we interviewed did not identify many factors impeding use of the research, in part because the results became relatively well known and, given the timing of the release of the results, the uses were immediately apparent to stakeholders.

KEY LESSONS FOR ENHANCING THE USE OF RESEARCH IN POLICYMAKING

Those interviewed noted that, in some ways this was an unusual study, because the results were generated and highly publicized at a key moment in the decision making/policy process. They recognized that this is the ideal and may be hard to anticipate or obtain. Research takes time, and it is not always certain at the outset which questions will be relevant when the research is completed. Access to highly visible journals such as *NEJM* also is very limited, since few health services research articles are published each year, and then only certain high-profile topics are likely to draw reviewer and editorial interest.

The other lesson was that, while prestigious publication carries the strong potential to generate study interest, the use of results also depends on how actively researchers are willing to follow up. Although the researchers involved in the study originally were focused on publication in journals as the primary method for dissemination, other dissemination activities that occurred almost as consequence of the *NEJM* publication were instructive to the researchers as illustrating the value of these activities in facilitating the use of research. These activities included disseminating issue briefs, presenting at conferences, writing “perspective” pieces, and testifying at legislative hearings. Those interviewed for this case study noted that funders increasingly require plans for dissemination in advance of research being conducted, and believe that this requirement is a good development. Overall, the researchers and users see peer-reviewed publication as a balancing act because, while it can be challenging and time-consuming with no guarantee of success, it nonetheless provides credibility and visibility to the research that cannot be provided through other dissemination vehicles.

APPENDIX A: OVERVIEW OF THE BROADER GRANT PROJECT

This study was part of a five-year, \$4.5 million project AHRQ funded through Harvard University (Joseph Newhouse was PI) to examine the effects of managed care and health care competition on health care markets. The project was one of the two grants featured in our case studies that were awarded as part of an AHRQ “program project,” or PO1 grant.²

Managed care—that is, health care provided through HMOs, PPOs, and other types of managed care plans—grew steadily throughout much of the 1980s and 1990s. Key features of managed care include limited networks of providers, negotiation of fees and/or risk-sharing arrangements with providers, and incentives (primarily achieved through differences in benefit coverage) for consumers to use provider networks. In this decade, managed care arrangements remain a powerful force in health care markets throughout the United States, although growth has not continued as it did in the early to mid-1990s.

The research goals for the study included (1) creating a better conceptual understanding of how managed care affected medical care markets, (2) advancing statistical methods in understanding this range of problems, and (3) carrying out a number of empirical studies to examine the effects of managed care. In addition, after the grant began, supplementary funding was awarded to examine the effect of variation in reimbursement on utilization of cancer chemotherapy.

A key focus of the grant was to achieve synergy, cross-cutting expertise, and cross-fertilization of ideas, theory, and data through multiple projects sharing common theoretical and statistical “cores.” The grant allowed a broad team of researchers to collaborate with one another while pursuing work on several individual projects. Overall, the project included economic theory and statistical “core” projects, plus six targeted research projects focused on particular topics, as well as a supplementary chemotherapy reimbursement study.

PROJECT SUMMARIES

Economic Theory Core. The purpose of this core project was to apply principal-agent methods to contracting in health care, particularly from the standpoint of a regulator seeking efficient services from a health plan, or a health plan buying from a health care provider. A series of papers was produced related to optimal risk adjustment, the importance of “predictability” of health care expenditures, the importance of payment policy in the context of multiple payers, and the effects of pay-for-performance. An innovative line of research begun under this particular core is the idea of regarding a quality report as a policy instrument, based on principal-agent methodology. One of the major findings is that summary quality reports can be as powerful as risk adjustment in contending with selection incentives.

² A 1999 program announcement indicated AHRQ’s intention to spend up to \$11 million to support two to three centers of excellence for health care markets and managed care research. The announcement noted: “the studies conducted by these centers will help public policymakers understand, monitor, and anticipate how changes in the nation’s market-driven health care system affect costs, access to services, and quality of care. Some of the studies are expected to look at the impact of these changes on rural and minority populations.”

Key Publications

Ellis, R.P. and T.G. McGuire. "Predictability and predictiveness of health care spending." *Journal of Health Care Economics*, vol. 26, no. 1, 2007, pp. 25-48.

Glazer, J. and T.G. McGuire. "Setting Health Plan Premiums to Ensure Efficient Quality in Health Care: Minimum Variance Optimal Risk Adjustment." *Journal of Public Economics*, 2002a, pp. 153-173.

Glazer, J. and T.G. McGuire. "Multiple Payers, Commonality, and Free-Riding in Health Care: Medicare and Private Payers." *Journal of Health Economics*, vol. 21, 2002b, pp. 1049-1069.

Glazer, J. and T.G. McGuire. "Optimal Quality Reporting in Markets for Health Plans." *Journal of Health Economics*, vol. 25, 2006, pp. 295-310.

Glazer, J. and T.G. McGuire. "Optimal Risk Adjustment." In *Elgar Companion to Health Economics*, edited by Andrew Jones. Edward Elgar Publishing, 2006.

Glazer, Jacob, Thomas G. McGuire, and Joseph P. Newhouse. "Using Performance Measures to Motivate 'Report-Averse' and 'Report-Loving' Agents." *Journal of Health Economics*, vol. 26, no. 6, December 2007, pp. 1170-1189.

Rosenthal M.B., and R.G. Frank. "What Is the Empirical Basis for Paying for Quality in Health Care?" *Medical Care Research & Review*, vol. 63, no. 2, 2006, pp. 135-157.

Statistical Core. The purpose of this core was to identify and apply statistical methods to prominent and common research problems in the study of market behavior and managed care. This core focused on statistical methodology for making causal inferences about effects in situations where subjects are not randomized to treatments (e.g., drugs, health plans, and other providers). A series of papers was produced related to robust methods for assessing the causal effects of multi-valued treatments on health outcomes, applications of regression and propensity score methods to studies of the quality of care of health plans rather than purely methodological development, a statistical exploration of racial disparities, and quality and utilization differences between for-profit and not-for-profit Medicare plans.

Key Publications

Normand S.L.T., R.G. Frank, and T.G. McGuire. "Inference in Quasi-Experimental Designs." 2006 (working manuscript).

Schneider E.C., A.M. Zaslavsky, and A.M. Epstein. "Racial Disparities in the Quality of Care for Enrollees in Medicare Managed Care." *JAMA*, vol. 287, no. 10, 2002, pp. 1288-1294.

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- Tchernis R., M. Horvitz-Lennon, and S.L.T. Normand. "On the Use of Discrete-Choice Models for Causal Inference." *Statistical Medicine*, vol. 24, 2005, pp. 2197-2212.
- Tchernis R., S.L.T. Normand, J. Pakes, P. Gaccione, and J.P. Newhouse. "Selection and Plan Switching Behavior." *Inquiry*, vol. 43, no. 1, 2006, pp. 10-22.
- Trivedi A.N., A.M. Zaslavsky, E.C. Schneider, and J.Z. Ayanian. "Trends in the Quality of Care and Racial Disparities for Enrollees in Medicare Managed Care." *New England Journal of Medicine*, vol. 353, no. 7, 2005, pp. 692-700.
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- Zaslavsky A.M., E.C. Schneider, and A.M. Epstein. "Racial Disparities in the HEDIS Measures of Health Care Quality." *Proceedings of the American Statistical Association, Joint Statistical Meetings*. American Statistical Association, 2002, pp. 3933-3938.

Project 1: Market Structure and Physician Performance (Project Leaders: Rosenthal & Landon)

Methods: Used data from the Community Tracking Survey to study the effect of market features, such as competition and other organizational arrangements, on physician perceptions of quality and satisfaction with their practices. Researchers also analyzed data from CAHPS and undertook preliminary work to study the impact of incentive formulary adoption on a large commercial MCO, using pharmacy and medical claims.

Results: Physician satisfaction levels declined marginally between 1997 and 2001. The strongest predictors of satisfaction were measures of clinical autonomy and physicians' ability to obtain services for their patients. Exposure to managed care was weakly related to satisfaction. Nearly half of all physicians reported that formularies negatively impacted the quality and efficiency of care. Fee-for-service (FFS) Medicare beneficiaries rated experiences with care higher than did managed care beneficiaries, but differences varied across states. Managed care enrollees reported fewer problems with paperwork, information, and customer service, and were more likely to report having received recommended preventive services.

Key Publications

- Frank, R.G. "Behavioral Economics and Health Economics." NBER Working Paper No. 10881. November 2004.
- Landon B.E., J. Reschovsky, and D. Blumenthal. "Changes in Career Satisfaction among Primary Care and Specialist Physicians, 1997-2001." *JAMA*, vol. 289, no. 4, 2003, pp. 442-449.

Landon B.E., J.D. Reschovsky, H.H. Pham, and D. Blumenthal. "Leaving Medicine: The Consequences of Physician Dissatisfaction." *Medical Care*, vol. 44, no. 3, 2006, pp. 234-242.

Landon B.E. "Career Satisfaction among Physicians." *JAMA*, vol. 291, no. 5, 2004, p. 634.

Landon B.E., J.D. Reschovsky, and D. Blumenthal. "Physicians' Views of Formularies: Implications for Medicare Drug Benefit Design." *Health Affairs*, vol. 23, no. 1, 2004, pp. 218-226.

Landon B.E., A.M. Zaslavsky, S.L. Bernard, M.J., Cioffi, and P.D. Cleary. "Comparison of the Performance of Traditional Medicare and Medicare Managed Care." *JAMA*, vol. 291, no. 14, 2004, pp. 1744-1752.

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Project 2: Structure of Hospital Networks (Project Leader: Ma)

Methods: This project was concerned with provider contracting in a managed care environment, focusing on the issues of how plans select providers, as well as inducing them to supply services efficiently.

Results: Four papers were produced: Lien, Ma, and McGuire (2004) addressed the issue of what mechanism a provider can use to influence the quantity used by a patient. Lien, et al. (2006) pursued a detailed study of provider-patient behavior. Chone and Ma (2005) and Biglaiser and Ma (2003) explored information issues in provider contracting.

Key Publications

Biglaiser G. and C.A. Ma. "Price and Quality Competition under Adverse Selection: Market Organization and Efficiency." *RAND Journal of Economics*, vol. 34, 2003, pp. 266-286.

Chone P. and C.A. Ma. "Asymmetric Information from Physician Agency: Optimal Payment and Healthcare Quantity." 2005. Paper under review.

Fleming, E., H. Lien, C.T. Ma, and T.G. McGuire. "Managed Care and Trends in Hospital Care for Mental Health and Substance Abuse Treatment in Massachusetts: 1994-1997." *Journal of Mental Health Policy and Economics*, vol. 6, 2003 pp. 3-12.

Lien H.M., C.A. Ma, and T.G. McGuire. "Provider-Client Interactions and Quantity of Health Care Use." *Journal of Health Economics*, vol. 23, no. 6, 2004, pp. 1261-1283.

Lien H.M., M. Lu, C.A. Ma, and T.G. McGuire. "Treatment Progress and Patient Compliance in Therapy for Alcohol Abuse." Paper under review.

Ma, C.A. "Managed Care and Shadow Price." *Health Econ Letters/Health Econ*, vol. 13, 2004, 199-202.

Project 3: Increased HMO Penetration and the Quality of Care for Cardiac Disease (Project Leader: Guadagnoli)

Methods: Intended to answer the question, “Did the spread of managed care within the Medicare program have effects that spilled over into the traditional FFS Medicare program and, if so, what were the consequences for quality of care?” Earlier work suggested that managed care penetration reduced spending in traditional Medicare. For this project, Meara et al. used data on more than 100,000 Medicare beneficiaries in the mid-1990s who were hospitalized with a diagnosis of acute myocardial infarction and had coronary angiography.

Results: Among patients with angiography, the researchers found small and statistically insignificant reductions in the use of coronary angiography as managed care penetration increased. Among patients for whom angiography is not effective, there was a decline in the number undergoing the procedure as managed care penetration increased. A higher penetration of managed care thus had a modest spillover effect on reducing inappropriate procedures in the Medicare population, and no measurable effect on appropriate procedures.

Key Publications

Meara E.R., M.B. Landrum, J.Z. Ayanian, B.J. McNeil, and E. Guadagnoli. “The Effect of Managed Care Market Share on Appropriate use of Coronary Angiography among Traditional Medicare Beneficiaries.” *Inquiry*, vol. 41, no. 2, 2004, pp. 144-158.

Project 4: Carve-Outs and Cost Shifting (Project Leaders: Huskamp & Alegria)

Methods: Designed to examine the impact of benefit carve-outs for different types of services (e.g., mental health, substance abuse, and prescription drugs) and to explore cost shifting across different health care sectors resulting from benefit carve-outs. Due to unanticipated data problems, the researchers changed their original analyses so as to analyze the impact of pharmacy benefit carve-outs and tiered formulary arrangements. Data came from a large pharmacy benefit manager on several commercially insured populations and enrollees in retiree health plans, and from the Veterans Administration (VA). The researchers also decided to examine promotional strategies of drug manufacturers.

Results: An examination of the closed VA formulary found it to be effective in shifting prescription behavior toward the selected drugs, achieving price reductions from manufacturers, and decreasing drug spending. An examination of the three-tier formulary implementation of two large firms showed that enrollees covered by the employer that implemented a higher copayment increase experienced slower growth in drug spending than the comparison group (see case study). Among members of retiree health plans, those subject to a three-tier formulary were more likely to change to a lower-tier drug, have gaps in use, or discontinue use entirely. Other papers produced from this project related to the use of formularies for psychotropic drugs, the impact of generic drug entry, mental health disparities, and the treatment of depression. This project also examined cost shifting associated with the behavioral health carve-out for a population in Puerto Rico.

Key Publications

Alegria, M., Z. Cao, and T. McGuire. “Carve-Outs and Cost-Shifting under Puerto Rico’s Health Care Reform: Selecting whom to Shift.” Paper under review.

- Alegria, M., R. Frank, and T. McGuire. "Managed Care and Systems Cost Effectiveness: Treatment for Depression." *Medical Care*, vol. 43, no. 12, 2005, pp. 1225-1233.
- Alegria, M., D. Perez, and S. Williams. "The Role of Public Policies in Reducing Disparities in Mental Health Status for People of Color." *Health Affairs*, vol. 2, no. 3, 2003, pp. 51-64.
- Domino, M.E. and H.A. Huskamp. "Does Provider Variation Matter to Health Plans?" *Journal of Health Economics*, vol. 24, no. 4, 2005, pp. 795-813.
- Huskamp H.A. "Managing Psychotropic Drug Costs: Will Formularies Work?" *Health Affairs*, vol. 22, no. 5, 2003, pp. 84-96.
- Huskamp H.A., P.A. Deverka, A.M. Epstein, R.S. Epstein, K.A. McGuigan, and R.G. Frank. "The Impact of Incentive Formularies on Prescription Drug Utilization and Spending." *New England Journal of Medicine*, vol. 349, no. 2, 2003, pp. 2224-2232.
- Huskamp H.A., A.M. Epstein, and D. Blumenthal. "The Impact of a National Prescription Drug Formulary on Prices, Market Share, and Spending: Lessons for Medicare?" *Health Affairs*, vol. 22, no. 3, 2003, pp. 149-58.
- Huskamp H.A., P.A. Deverka, A.M. Epstein, R.S. Epstein, K.A. McGuigan, A.C. Muriel, and R.G. Frank. "The Impact of Three-Tier Formularies on Treatment of Attention-Deficit/Hyperactivity Disorder in Children." *Archives of General Psychiatry*, vol. 62, no. 4, 2005, pp. 435-441.
- Huskamp H.A., R.G. Frank, K.A. McGuigan, and Y. Zhang. "The Impact of a Three-Tier Formulary on Demand Response for Prescription Drugs." *Journal of Economics & Management Strategy*, vol. 14, no. 3, 2005, pp. 729-753.
- Huskamp H.A., P.A. Deverka, M.B. Landrum, R.S. Epstein, and K.A. McGuigan. "The Effect of Three-Tier Formulary Adoption on Medication Continuation and Spending among Elderly Retirees." Revised, submitted for publication.
- Huskamp H.A., J.M. Donohue, C. Koss, E.R. Berndt, and R.G. Frank. "Generic Entry, Product Reformulation, and Pharmaceutical Promotion." Working paper (to be submitted for publication).
- McGuire T.G. "Setting Prices for New Vaccines (in Advance)." *International Journal of Health Care Finance Economics*, vol. 3, 2003, pp. 207-24.

Project 5: Selection and Risk Adjustment in Private Employers' Health Plans (Project Leader: Newhouse)

Methods: Earlier work emphasized that, if premiums change, some individuals would change plans based on expected health insurance costs; these plan changes need not be only marginal, because, due to random variation, premium changes could be far from zero. To test this hypothesis, the researchers used data on 81,000 individuals collected by MedStat. They compared the 1998 spending of those who had been in the same plan in 1999 with those who changed plans. Such a study rarely had been done on the under-65 population.

Results: Results were consistent with the hypothesis that those switching plans were driven by expected spending. Mental health spending stood out because of the spending contrasts between those who switched to the more generous plan and those who did not. Those switching to the more generous plans spent almost three times more on mental health than those who stayed in the more restrictive plans. The findings are consistent with the concept that individuals who anticipate high future mental health spending defer use until they join a more generous plan.

Project 6: Explaining Managed Care Penetration in Rural Areas (Project Leader: Newhouse)

Methods: Originally designed to explain why managed care plans had not entered rural markets, the project's premise was that Congress had mistakenly identified the cause of lack of entry of HMOs in rural areas as low reimbursement rather than the provider market structure. Timeliness and the complexity of the project did not allow the researchers to carry out the full extent of the proposed project. The researchers defined market areas by locating providers geographically. To examine changes in physician location since 1979, they worked with data from 23 states chosen because of their low physician-population ratios and their disproportionately rural population.

Results: The number of physicians in the 23 states doubled from 1979 to 1999. More targeted specialties had not yet diffused to the smallest towns. Measures of access confirmed that metropolitan area residents had better access to physicians. Physician-population ratios in rural counties near metropolitan areas were lower than in counties not near metropolitan areas, a finding that seemed contrary to the view that physicians prefer to be near cities. Distances traveled and caseload models that allowed patients to cross county lines showed markedly less disparity between metropolitan and rural areas than measures that did not allow such crossing.

Key Publications

Rosenthal, Meredith B., Alan Zaslavsky, Joseph P. Newhouse, "The Geographic Distribution of Physicians Revisited." *Health Services Research*, vol. 40(6, Part I): December 2005, pp. 1931-1952.

Supplementary Project: Medicare Reimbursement and Cancer Chemotherapy

Methods: Studied Medicare beneficiaries with metastatic cancer to estimate the effect of the profit potential on chemotherapy treatment (prior to the MMA, Medicare reimbursed physicians for chemotherapy drugs at rates substantially higher than the costs physicians paid for the drugs). Data came from the Surveillance, Epidemiology, and End Results (SEER) program, and Medicare-linked claims.

Results: Reimbursement incentives did not appear to affect oncologists' decisions to administer chemotherapy to elderly metastatic cancer patients. Once a decision to give chemotherapy was made, however, physicians who received more generous Medicare reimbursements administered more expensive treatment regimens.

Key Publications

Jacobson, Mireille, A. James O'Malley, Craig C. Earle, Juliana Pakes, Peter Gaccione, and Joseph P. Newhouse. "Does Reimbursement Influence Chemotherapy Treatment for Cancer Patients?" *Health Affairs*, vol. 24, no. 2, March/April 2006, pp. 437-443.

Hsu, J., M. Price, J. Huang, R. Brand, V. Fung, R. Hui, B. Fireman, J. Newhouse, and J. Selby
“Unintended Consequences of Caps on Medicare Drug Benefits.” *New England Journal of
Medicine*, vol. 354, no. 22, June 1, 2006, pp. 2349-2359.

Presentations

“Does Reimbursement Influence Chemotherapy Treatment for Cancer Patients?”
2003 Annual American Economics Association Meetings
2003 National Bureau of Economic Research Health Care Program Meeting
Harvard Medical School Department of Health Care Policy P01 Seminar

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QUALITY OF CARE OF CHILDREN WITH SPECIAL NEEDS IN MANAGED CARE

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CASE STUDY

QUALITY OF CARE FOR CHILDREN WITH SPECIAL NEEDS IN MANAGED CARE

Principal Investigator: Elizabeth Shenkman, Ph.D.

Funding Period: July 1, 1998 – June 30, 2002

ABSTRACT

This study examined the relationship between the organizational features of managed care organizations (MCOs) and access to specialty care for children with special health care needs (CSHCN). Findings indicate that certain MCO organizational characteristics do influence CSHCN's access to such care. Utilizing her well-established connections with state agencies, the principal investigator (PI) was able to disseminate her research to state policymakers.

BACKGROUND

While most children are relatively healthy, a small percentage of them have conditions, such as juvenile diabetes, cerebral palsy, or attention deficit disorder, which classify them as CSHCN. Although there is no uniform definition of CSHCN, the Maternal and Child Health Bureau defines the population as “those children who have or are at increased risk for a chronic physical, developmental, behavioral, or emotional condition and who also require health and related services of a type or amount beyond that required by children generally.”¹ Because these needs are specialized, and could result in greater vulnerability, public programs historically have been an important source of insurance and health services for CSHCN. There are three federally funded public health care programs serving CSHCN—Title V, Medicaid, and the State Children's Health Insurance Program (SCHIP). Medicaid is the single largest source of health insurance for CSHCN.² Compared to private plans, Medicaid usually has a unique package of benefits designed for chronic needs, and requires little or no cost sharing.

In the 1990s, many state Medicaid and SCHIP programs began looking to managed care as a way to improve access to care while controlling expenditures. Typically, no special arrangements have been made for CSHCN, and they are enrolled into managed care along with the other Medicaid and SCHIP beneficiaries.³ There is concern in the child health community about the impact of managed care, particularly on CSHCN. The capitated, patient-based focus of managed care could encourage emphasis on coordination and patient-centered care. On the other hand, there is the possibility that access to care for CSHCN may be constrained in these managed care environments.⁴ Many MCOs use primary care providers (PCPs) as gatekeepers for referrals. In particular, there are concerns that MCOs may limit access to the specialty services many CSHCN find important. No existing studies addressed this issue previously, although a few examined outcomes for children with particular chronic conditions such as asthma or diabetes.

After the implementation of Medicaid managed care, Dr. Shenkman and her research team conducted studies related to children's health care use within managed care, including analyses related to CSHCN. They also conducted evaluations of the Florida Healthy Kids Program, established by the Florida Legislature in 1990 and now the largest component of the state's SCHIP

program. Florida's SCHIP program is designed to provide coverage to uninsured children who are not Medicaid eligible and cannot afford private insurance. When the announcement for this particular AHRQ grant was published, Dr. Shenkman indicated that it aligned perfectly with her interests.⁵ She was able to build on her earlier work and capitalize on connections she had made in the states of Florida and Texas when evaluating their child health programs.

RESEARCH GOALS

This study aimed to understand how managed care features are related to certain health care quality outcomes for CSHCN. The analysis assessed the effect of selected organizational features of eight Florida MCOs on the care received by CSHCN enrolled in SCHIP. In particular, the researchers wanted to examine the relationship between specific MCO characteristics and CSHCN's (1) use of health care services, (2) specialty care referrals, and (3) families' experience with their children's medical home.⁶ The researchers viewed the examination of health care use as a critical component of quality assessment for CSHCN because of the perception that MCOs might restrict access to services. Access to specialty care is especially important to CSHCN, and there was concern that managed care was a constraint. In addition, ensuring that all children, particularly CSHCN, have a medical home is a national goal outlined in the *Healthy People 2010* report.⁷ Access to a medical home is especially important for CSHCN because of the complexity of their care, but little was known previously about how MCO characteristics influence parents' experiences with their children's medical homes.

STUDY DESIGN

The researchers employed a quasi-experimental design, with data collected prospectively over a two-year period. Data were drawn from a population of 2,223 children who were enrolled in Florida's SCHIP program, had a diagnosis indicative of a chronic condition, and were experiencing consequences from those conditions. Eight MCOs were used in the analysis because of their stability in the SCHIP program and their location in large town and metropolitan areas.⁸ At the beginning of the study, 11 MCOs participated in the Healthy Kids Program, but a few subsequently dropped out. All of the MCOs in the study used PCPs as gatekeepers. SCHIP required the MCOs to provide the same benefits package and copayment structure, but they could use different organizational strategies to deliver care. The researchers drew on four main data sources for the study: child-level enrollment information, child-level health care claims/encounter data, parent telephone survey data, and MCO administrator interview data.

Dr. Shenkman and her colleagues selected MCO characteristics to study based on their potential association with the receipt of specialty care. The following characteristics were included: (1) characteristics of the provider network, (2) use of prior authorization procedures for specialty referrals, (3) presence and type of disease management programs, and (4) ownership status of the MCO. The researchers also included information about each child's PCP such as provider type (e.g., pediatrician, family practitioner), provider compensation (e.g., fee-for-service [FFS], capitation), and child-specific information (e.g., socioeconomic status).

Using the data, the researchers examined the relationship between MCO characteristics and CSHCN's outpatient use rates, inpatient admissions, emergency room visits, outpatient specialty use, and families' experiences with their children's medical homes. Each analysis included sociodemographic variables that might influence the outcomes (i.e., child's age, gender, family

income, race, ethnicity, and the number of months the child was enrolled in the program). There was no comparison group, because the sample included only CSHCN in managed care plans.

PRINCIPAL FINDINGS AND PUBLICATIONS

All sociodemographic variables except months of enrollment, ethnicity, and place of residence were significantly related to outpatient use rates for CSHCN. White children had significantly higher outpatient rates than African-American children. Inpatient use rates were not significantly associated with income, months of enrollment, place of residence, and ethnicity. For emergency room use, Hispanic children had higher rates of use than non-Hispanic children.

For the specialty care use analysis, certain child-level characteristics and MCO organizational characteristics were associated with greater specialty care use among CSHCN. African-American children were 55 percent less likely than white children to receive an outpatient physician specialty visit.⁹ The number of months the child was enrolled also was significant, with the child's odds of having a specialty visit increasing by 5.4 percent for each additional month of enrollment. Three of the five MCO characteristics were significantly related to the odds of a child having a specialist visit. Children cared for in MCOs with (1) a lower percentage of PCPs paid FFS (versus capitation), (2) a greater percentage of pediatricians in the PCP network, and (3) offers of financial incentives for meeting quality of care standards, all had higher odds of outpatient physician specialist visits.

Findings from the medical home analysis indicated that African-American parents were about half as likely as white parents to report that their provider treated them compassionately or followed up with them after a specialty visit. A surprising finding was related to the MCO characteristic variables because the higher the percentage of pediatricians in the network, the less likely it was for the parent to give a positive report about (1) provider availability, (2) access to primary care services, (3) compassionate care from their PCP, and (4) receipt of comprehensive services. The researchers thought it likely that there were underlying community-level or practice setting characteristics that might explain this finding. Another finding was that the higher the percentage of PCPs paid FFS, the more likely it was that the family would report better provider availability and compassionate care. This result was not surprising to the researchers, since providers in FFS environments face fewer constraints in ordering services when compared to providers in capitated environments.

Dr. Shenkman published the results from this research grant in *Pediatrics and Health Services Research*, and also presented her findings at an AHRQ conference.

POLICY RELEVANCE AND TARGET AUDIENCE

The information from this research could be used to improve the structure of managed care arrangements for CSHCN. Dr. Shenkman stated that her findings regarding FFS, capitated payments, and specialty referrals support additional examination of blended payment systems.¹⁰ Blended payment systems could encourage capitated PCPs to manage CSHCN more comprehensively, rather than making specialty referrals that may be discretionary. The study findings also indicate that providing financial incentives for meeting quality-of-care standards and ensuring access to pediatricians in the network also are important factors that affect the receipt of specialty care. Dr. Shenkman indicated that her research suggests that MCOs choosing to use these strategies would provide better access to specialty care for CSHCN. She hoped that the study findings could help state governments to improve their contracts with MCOs.

The research findings were targeted to state programs (e.g., Medicaid, SCHIP), MCOs, and researchers. Dr. Shenkman has developed long-term, solid relationships with policymakers in Florida and Texas, which facilitates her ability to reach these two target audiences. Specifically, since 1991, she has had a contract with Florida's Healthy Kids Program to conduct evaluations of the program. She also advises Florida's Medicaid agency (Agency for Health Care Administration) about its Medicaid contracts, and has evaluated Florida's Title V program and a special waiver project in the state designed to provide palliative care for children with life limiting conditions. Dr. Shenkman noted to us that some of her earlier research was used as the basis for lowering the premium amount required for SCHIP enrollees in Florida. Her research showed that premium subsidies should reach more low-income families, and the state responded.¹¹

Dr. Shenkman also has provided evaluation and technical assistance to Texas' Medicaid agency (the Health and Human Services Commission [HHSC]) for their CSHCN population and SCHIP programs. Texas legislation enacted in 2003 required HHSC to show that CSHCN patients received high-quality care under Medicaid managed care, and HHSC contracted with Dr. Shenkman to help them evaluate whether the programs have met these requirements. In addition, as part of her work in Texas, she conducted a survey of SCHIP enrollees that led to legislation to lower premiums and increase co-payments after the results showed that certain populations were unwilling to pay the SCHIP premium but would pay a co-payment at the point of service. State staff also indicated that HHSC had had no prior experience with risk-adjustment payment to providers until Dr. Shenkman helped educate them and the Legislature. Her information then was applied directly to new risk-adjustment systems in the Medicaid program.

DISSEMINATION

In addition to publishing her results in peer-reviewed journals, the PI capitalized on her relationship with agencies in Florida and Texas to further facilitate dissemination of her findings to target audiences. She was invited to present her results from the AHRQ grant before staff in Florida's Agency for Health Care Administration and the Texas HHSC.

A director at Florida Healthy Kids thought the research from this grant was likely useful to the state Department of Health's children's medical health program, as well as her agency, because both organizations are interested in understanding access issues for CSHCN. Although neither Florida Healthy Kids nor Texas HHSC have used the research yet, the director in Florida thought it possible that they would use the findings in the future to help develop better contractual agreements with health plans so that they could provide better access for CSHCN. She also said that the research could help her program identify areas of concern and of which they had not been aware (e.g., the importance of financial incentives for receipt of specialty care).¹²

Furthermore, Dr. Shenkman was able to build on the research she conducted for this grant. She subsequently received another grant from AHRQ to examine access and quality of care for adolescents (including those with special needs) in Florida's Healthy Kids Program. Results from this study were published in peer-reviewed publications, including *Health Affairs* and *Health Services Research*, and also led to an invitation by the Florida governor's office to present the results of this work to a joint session of the Legislature. In addition, Dr. Shenkman received funding from the Robert Wood Johnson Foundation to continue her research on MCO characteristics and CSHCN.

FACTORS AFFECTING TRANSLATION

Relationship with States. The main factor that facilitated the use of this research was the PI's long history of collaboration with the Florida and Texas Medicaid agencies. Staff in both states regard their relationship with Dr. Shenkman as positive and productive. These relationships helped Dr. Shenkman to disseminate her research findings to her target audience.

Economic Conditions. Addressing issues raised by this study typically requires some additional resources. Legislators are more likely to support such changes when the state budget is not facing a shortfall. The economy was in better shape in the late 1990s, when Florida was just starting its SCHIP program; this circumstance made it more feasible to gain legislative support for responding to the research findings by lowering premiums in SCHIP. When funds became tighter, the Legislature responded much less positively to the findings of another study, probably because of their resource implications.

Study Limitations. Study limitations also may have hampered use of the research highlighted in this case study. The study does not provide clear benchmarks for assessing whether the specialty care received by CHSCN actually was needed.¹³ The results could not determine definitively as to whether specialty care use had been appropriate, or whether some referrals had been unnecessary. It is possible that some pediatricians made unnecessary referrals; policymakers may have been interested in this information. The MCOs in the study also provided limited information about their specialty networks, and were unable to give the number of specialists available to CHSCN, which also might have been useful information to policymakers.

KEY LESSONS FOR ENHANCING THE USE OF RESEARCH IN POLICYMAKING

Relationships with Policymakers are Critical. The PI has utilized her relationships with state policymakers to facilitate data access for her research and help develop policy-relevant questions. Her longstanding relationships with policymakers provide a forum for getting her research into the public domain. Dr. Shenkman cautioned that researchers must recognize the difficulties inherent in balancing a commitment to policymakers (e.g., technical support, writing reports) with academic commitments (e.g., publishing). Having relationships gives valuable access to legislatures and state agency leaders, but there are no academic career benefits.

An Understanding of the Current Environment Is Important. If a researcher's target audience is state or federal policymakers, it is important to understand the fiscal situation of a particular state, because that may affect whether the research is useful to policymakers. If a researcher's findings recommend increasing the costs of a program, they are unlikely to receive a warm reception. During times of difficult fiscal conditions, policies often are based on available resources. Tailoring results or key points to the state's current budget environment may enhance the likelihood of the research being used.

Translation Makes a Difference. The state Medicaid staff with whom we spoke said that Dr. Shenkman knows how to communicate easily with policymakers, and she explains research questions and methods very easily. The policymakers in Texas and Florida hold Dr. Shenkman in high regard as an objective researcher, an effective communicator and educator, and an expert in the multiple dimensions of health policy. These attributes significantly improve the possibility that her research will be utilized.

ENDNOTES

¹ McPherson, M. et al. “New Definition of Children with Special Health Care Needs.” *Pediatrics*, vol. 102, no 1, July 1998, pp. 137-139.

² Peters, C.P. “Children with Special Health Care Needs: Minding the Gaps.” *National Health Policy Forum Background Paper*. June 27, 2005.

³ Hill, I., Lutzky, A.W., and R. Schwalberg. “Are We Responding to their Needs? Early Experiences Serving Children with Special Health Care Needs under SCHIP.” The Urban Institute. Occasional Paper No. 48, 2001.

⁴ AHRQ Grant Application, No. U01HS09949-01, PI: Elizabeth Shenkman.

⁵ Telephone interview with Dr. Shenkman, May 1, 2008.

⁶ A medical home is a comprehensive approach to providing medical care involving care managed and coordinated by a personal physician. The American Academy of Pediatrics characterizes a medical home as “accessible, continuous, comprehensive, family-centered, coordinated, compassionate, and culturally effective.” (American Academy of Pediatrics. “The Medical Home: Medical Home Initiatives for Children with Special Needs Project Advisory Committee.” *Pediatrics*, vol. 110, no. 1, July 2002, pp. 184-186.)

⁷ U.S. Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. 2nd ed. Washington, DC: U.S. Government Printing Office, 2002.

⁸ AHRQ Grant Application.

⁹ Final Report to AHRQ, Grant No. U01HS09949-02, PI: Elizabeth Shenkman.

¹⁰ Shenkman, E., Wu, S., Nackashi, J., and J. Sherman. “Managed Care Organizational Characteristics and the Quality of Care for Children with Special Health Care Needs.” *Health Services Research*, 2005.

¹¹ Shenkman, E., Bucciarelli, R., Wegener, D.H., Naff, R., and S. Freedman. “Crowd Out: Evidence from the Florida Healthy Kids Program.” *Pediatrics*, vol. 104, no. 3, 1999, pp. 507-513.

¹² Telephone interview with Jennifer Kiser-Lloyd, Director of External Affairs for Florida Healthy Kids, May 16, 2008.

¹³ Shenkman, E., Tian, L., Nackashi, J., and D. Schatz. “Managed Care Organization Characteristics and Outpatient Specialty Care Use among Children with Chronic Illness.” *Pediatrics*, vol. 115, no. 6, 2005, pp. 1547-1554.

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