

## **FINAL PROGRESS REPORT**

### **Information about Quality in a Randomized Evaluation (INQUIRE)**

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**Inclusive Dates of Project:** 9/30/2000 - 8/31/2004

**Federal Project Officer:** Denise Burgess

**Acknowledgment of Agency Support:**

The project described was supported by grant number 5R18HS010985 and its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Agency for Healthcare Research and Quality.

**Grant Award Number:** 5R18HS010985

## **Structured Abstract (200 words maximum)**

### **Purpose/Scope**

To identify factors associated with consumers' use of information about health plan and medical group performance; to determine how and why consumers use such information during open enrollment; to design and test two innovative programs for disseminating quality information; and to evaluate their impact through randomized controlled trials.

### **Methods**

Phase 1 was a prospective cohort study of randomly sampled CalPERS (California Public Employees Retirement System) members, surveyed before and after open enrollment. Phases 2 and 3 were cluster-randomized controlled trials of an educational/motivational intervention and a web-based personalized decision-making tool. Both interventions were designed to make quality information usable and salient, thereby improving consumer decision-making and increasing plan-switching.

### **Results**

In phase 1, we confirmed the importance of concepts from the health belief model (health status, cues to action, perceived susceptibility, perceived benefits/barriers) as determinants of report card usage. In phases 2 and 3, we found nonsignificantly increased plan-switching in both intervention groups. The educational/motivational intervention substantially increased use of quality information and marginally increased consideration of switching, but it led to more consumers reporting a "big problem" finding a suitable plan. The web-based intervention was accessed by only 1.8% of consumers, but users reported that it was useful and influenced decision-making.

### **Key Words**

quality of care, report cards, consumer decision-making, randomized controlled trial, evaluation, open enrollment, health belief model, consumer behavior, internet, information

## **Purpose (Objectives of the study)**

In recent years, there has been considerable interest in generating information about healthcare quality and disseminating it to consumers. This development has both practical and theoretical justifications. On the practical level, consumers express a strong interest in having access to quality information and report that comparative information is useful in making healthcare decisions. From the theoretical standpoint, arming consumers with this information may create a more competitive, responsive healthcare marketplace by forcing rival providers and plans to focus on quality instead of cost alone.

Nonetheless, it remains unclear whether quality information actually has a measurable impact on consumers' knowledge, decision-making abilities, switching behaviors, expectations of care, or satisfaction. Although most respondents to consumer surveys value quality information, only a minority actually report using it in making their healthcare decisions. Do consumers actually use quality information in choosing health plans and providers, and if so, how? Do personal characteristics affect whether and how consumers use quality information? Most importantly, can conceptual models of health behavior and recent findings from the literature on communication and cognitive psychology be applied to make healthcare report cards more salient to consumers and, thereby, increase their impact on healthcare markets? Our study was designed to address these questions through the following specific aims:

- 1. To identify factors independently associated with consumers' self-reported use of employer-disseminated information about health plan and medical group performance.** These factors included respondents' demographic characteristics (e.g., age, sex, educational attainment, ethnicity), health status and chronic disease burden, cues to action from recent healthcare experiences, perceived susceptibility to quality-of-care problems, and perceived benefits and barriers associated with use of quality-of-care information.
- 2. To characterize whether, how, and why consumers use employer-disseminated information about health plan and medical group performance during open enrollment.** This objective was addressed both in an observational setting where such information was routinely available and in an experimental setting where such information was available only through a special intervention.
- 3. To design, pilot test, and implement two innovative programs for disseminating information about health plan and hospital/medical group quality.** The first program was designed to educate and motivate consumers by increasing their perceived susceptibility to quality-of-care problems, increasing the perceived benefits of using quality information, reducing the perceived barriers to using such information, and enhancing their self-efficacy related to choosing health plans and medical groups. The second program was designed to offer customized, easily evaluable information about health plan and medical group quality through a web-based consumer decision-making tool.
- 4. To evaluate the impact of these interventions on consumers through randomized controlled field trials, comparing each intervention program with "usual care" (i.e., existing quality information).** Measures of impact included overall health plan switching (e.g., actual switching or contemplation thereof) and switching to a higher-quality plan. Intermediate measures were of perceived susceptibility to quality-of-care problems, perceived benefits of using quality information, perceived barriers to using such information, and self-efficacy related to choosing health plans and medical groups. We designed the Phase 2 trial to include a full set of intermediate measures whereas the Phase 3 trial was designed to maximize power for analyzing the primary outcome(s).

## Scope (Background, Context, Settings, Participants, Incidence, Prevalence)

For competition to work effectively in healthcare markets, consumers must have access to valid, understandable comparative information on health plans and providers. Although such information is increasingly available to consumers through the efforts of the National Committee for Quality Assurance, the National Quality Forum, and the federal and state governments, it remains unclear whether consumers are actually able to use it in their decision-making. Few studies have *prospectively* evaluated factors related to the use of quality information during open enrollment. Despite the widespread interest in carefully developing and disseminating quality information for healthcare consumers, few studies have formally evaluated these practices or examined whether they actually promote informed decision-making. Determining whether quality information truly “counts” for consumers and patients has emerged as a practical and relevant concern, if only to justify the time, money, and effort that are being expended to develop, process, and distribute these reports.

Several prior studies examined the role of healthcare quality reports in consumer decision-making. A large survey of American consumers found that, though most respondents value quality information, only a minority actually use it in making decisions. In a natural experiment involving State and University of Minnesota employees, the only significant effect of comparative plan reports was an increase in perceived knowledge of benefits among employees with single coverage. Another nonrandomized study involving three corporations belonging to the Pacific Business Group on Health showed that employees who received a health plan report card were more likely to use it than those who did not and that users were more likely to perceive differences in quality among plans and to rate survey results as an important factor in decision-making. In a longitudinal analysis of national data from General Motors, the release of plan performance data neither strongly nor consistently affected consumers’ actual health plan choices. A report from the Minneapolis-St. Paul Buyers Health Care Action Group on satisfaction and service quality in local “care systems” was helpful primarily to new enrollees and consumers who were changing “care systems.” Medicare beneficiaries who were randomly assigned to receive informational materials were *less* likely to switch plans (among new beneficiaries), but they expressed more confidence in their selection than beneficiaries who did not receive such materials (after adjusting for demographic characteristics, knowledge, and health status).

### Phase 1

We began the INQUIRE project with a desire to better understand the range of factors associated with consumers’ use of employer-disseminated information about health plan and medical group performance. Specifically, we decided to apply theoretical models of health behavior change, which are based on studies of smoking and dietary habits, to elucidate how consumers’ health-related beliefs affected their use and interpretation of healthcare quality information. Our goal was to identify modifiable beliefs that could provide a focus for subsequent interventions, which we proposed to implement and evaluate in Phases 2 and 3 using random allocation to minimize confounding bias.

Researchers have used the Health Belief Model (HBM) for nearly five decades to understand individual preventive behaviors and adherence to physician-recommended regimens. In the history of attempts to predict, to explain, and to influence health-related behaviors and attitudes, the Health Belief Model may have generated more research than any other model. Furthermore, this model has been more extensively corroborated than other behavioral models based on a diversity of settings, populations, health conditions, health-seeking behaviors, and approaches for assessing patient perspectives and behavioral outcomes. For these reasons, the Health Belief Model may help us to understand which individuals utilize quality information and how report card producers can make quality information more salient for consumers.

In brief, the Health Belief Model posits that individual interpretations interact with physiological factors and situational constraints (such as demographic, clinical, and organizational characteristics) to affect health behaviors. According to the HBM, preventive behaviors derive from individuals' perceptions of their susceptibility to illness, severity of illness, benefits of the proposed behavior change, and barriers to its adoption. These components have been organized into three dimensions: Individual Perceptions; Modifying Factors; and the Likelihood of Action. We apply this model to help explain why individuals engage in the preventive behavior of reviewing an employer-sponsored health plan quality report card to help select high-quality health plans and medical groups.

The Health Belief Model includes demographic (e.g., age, gender, race/ethnicity) and sociopsychological variables (e.g., family and work characteristics) as factors that affect the individual's perceived threat of illness. Individual perceptions, while modified by sociodemographic factors, are critical in that a patient's *perceived susceptibility* to illness as well as the *perceived severity* of illness are hypothesized to affect the likelihood of preventive action. In our adaptation of this model, individuals may differ in their perceived susceptibility to poor quality care as well as in the perceived consequences of such care. Poor general health status and high chronic disease burden should be associated with greater perceived "seriousness," which should increase the likelihood of preventive action.

H1.1 Health Status: *Individuals with poor general health status and high chronic disease burden are more likely to use quality information than individuals in better health.*

To the extent that an individual perceives himself or herself as being "at risk" of receiving poor quality care if he or she makes a bad decision, he or she should be more likely to take preventive action (such as reviewing a health plan report card). Perceived susceptibility to poor care may stem from a generalized belief that there is great variation in quality of care across plans or providers or from personal experiences (described below).

H1.2 Perceived Susceptibility: *Individuals who believe that there is variation in quality among health plans and medical groups perceive themselves as being more susceptible to receiving poor care and are, therefore, more likely to use quality information than individuals without this belief.*

Social cues to action act as "messages" about the potential health problem and may stimulate preventive action (such as reviewing a health plan report card). We consider cues to include one's own adverse experiences and unsatisfying interactions with the healthcare system, experiences of family and friends, and articles or stories in the news media.

H1.3 Adverse Events: *Individuals who have had an adverse experience with their current health plan or medical group or who were exposed to negative events through the media are more likely to use quality information than individuals without such cues to action.*

H1.4 Satisfaction: *Individuals who have low satisfaction with their healthcare providers or plan are more likely to use quality information than satisfied individuals.*

The likelihood of taking preventive action is also affected by the *perceived benefits* of behavior change and the *perceived barriers* to change. In the case of accessing healthcare quality information, the individual must perceive that doing so will confer a benefit to one's health. Perceived barriers include the costs (in time, money, inconvenience, and social disapproval) of a preventive behavior as well as perceptions that the information is useless, invalid, incomprehensible, or irrelevant.

*H1.5 Perceived Benefit: Individuals who believe that they can improve their own (or their family's) quality of care by using quality information are more likely to do so than those who do not share this belief.*

*H1.6 Perceived Barrier – Difficulty: Individuals who perceive that performance information is difficult to understand or use are less likely to use quality information than those who do not share this belief.*

*H1.7 Perceived Barrier – Inapplicability: Individuals who perceive that performance information is inapplicable to their own circumstances are less likely to use quality information than those who do not share this belief.*

Self-efficacy includes patients' beliefs about how capable they are to perform the activities that will bring about expected outcomes. Self-efficacy is specific to each health-related behavior and to the circumstances or setting in which that behavior must be changed.

*H1.8 Self-efficacy – Confidence: Individuals who feel confident in their ability to select a health plan or medical group that will provide a high-quality of care are more likely to use quality information than individuals without such confidence.*

*H1.9 Self-efficacy – Skills and Knowledge: Individuals who believe that they have the skills and knowledge necessary to use performance information are more likely to use quality information than individuals who do not share this belief.*

## **Phase 2**

In Phase 2, we applied the lessons from Phase 1 to design, implement, and evaluate an intervention designed to educate and motivate consumers to use information about health plan and medical group quality during open enrollment. This intervention included (1) a mailing with the *California HMO Report Card*, *California's HMO Guide*, and a motivational letter “negatively framed” to arouse concerns about healthcare quality; and (2) toll-free telephone and email hotlines staffed by counselors providing advice around enrollment decisions. Our objective was to change observable consumer behavior (e.g., selection of health plans and medical groups) by increasing perceived susceptibility to quality-of-care problems, increasing the perceived benefits of using quality report cards, decreasing perceived barriers to using these report cards, and enhancing self-efficacy related to health plan and medical group choice. The following hypotheses were tested in a cluster-randomized controlled trial conducted in partnership with PacAdvantage, a small business purchasing pool in California (further described below):

*H2.1 Overall switching: An educational/motivational intervention, which is designed to increase the use of quality-of-care information and to facilitate informed decision-making during open enrollment, will lead to increased overall switching (or active consideration of switching) across plans.*

*H2.2 Direction of switching: An educational/motivational intervention, which is designed to increase the use of quality-of-care information and to facilitate informed decision-making during open enrollment, will promote switching from poorer-rated health plans to better-rated plans among those who switch.*

*H2.3 Use of information: An educational/motivational intervention, which is designed to increase the use of quality-of-care information and to facilitate informed decision-making during open enrollment, will actually increase the use of such of information.*

*H2.4 Perceived susceptibility: An educational/motivational intervention, which is designed to increase the use of quality-of-care information and to facilitate informed decision-making during open enrollment, will increase consumers' perceived susceptibility to quality-of-care problems.*

*H2.5 Perceived benefits: An educational/motivational intervention, which is designed to increase the use of quality-of-care information and to facilitate informed decision-making during open enrollment, will increase the perceived benefits of using such information.*

*H2.6 Perceived barriers: An educational/motivational intervention, which is designed to increase the use of quality-of-care information and to facilitate informed decision-making during open enrollment, will decrease the perceived barriers to using such information.*

H2.7 Self-efficacy: *An educational/motivational intervention, which is designed to increase the use of quality-of-care information and to facilitate informed decision-making during open enrollment, will increase consumers' self-efficacy related to selecting health plans and medical groups by incorporating information about both cost and quality to make better choices.*

### **Phase 3**

In Phase 3, we applied the lessons from Phase 1 (and from ongoing research in the field) to design, implement, and evaluate a password-protected website (<http://www.QualityCareChoices.org>) offering personalized, easily evaluable information about the quality of health plans and physician organizations. Our objective was to change observable consumer behavior (e.g., selection of health plans and medical groups) by decreasing perceived barriers to using these report cards. Specifically, we focused on (1) improving interpretability by presenting the available information in an easily evaluable manner with rankings of health plan or medical group performance, and (2) improving salience by offering information tailored to each individual's self-identified health concerns. The following hypotheses were tested in a cluster-randomized controlled trial conducted in partnership with PacAdvantage, a small business purchasing pool in California (further described below):

H3.1 Overall switching: *Access to a web-based, personalized decision-making tool during open enrollment facilitates informed decision-making and, thereby, leads to increased overall switching across plans.*

H3.2 Direction of switching: *Access to a web-based, personalized decision-making tool during open enrollment facilitates informed decision-making and, thereby, leads to increased switching from poorer-rated health plans to better-rated health plans, among those who switch.*

## Methods (Study Design, Data Sources/Collection, Interventions, Measures, Limitations)

### Phase 1

In 2001, the California Public Employees Retirement System (CalPERS) Health Benefits Program offered members and contracting employers 10 health maintenance organizations (HMOs), two self-funded preferred provider organizations (PPOs), and three special PPOs for members who belonged to specific employee associations. The largest participating plans were Kaiser (359,208 enrollees), Health Net (225,771 enrollees), and PacifiCare (112,726 enrollees). To help its members select from among these options, CalPERS provided HMO and PPO Quality Performance Reports and Member Satisfaction Survey Reports, in both internet (<http://www.calpers.ca.gov/health/plan/quality>) and paper (“Health Plan Decision Guide”) formats. These reports assigned one (below average), two (average), or three (above average) stars to each HMO or PPO on 11 HEDIS and nine CAHPS measures. In 2002, CalPERS discontinued offering four of these HMOs (Aetna, Cigna, Lifeguard), forcing over 8% of its members to select a new health plan during open enrollment.

We created a stratified random sample of 2,500 CalPERS members, including 500 members who were required to switch health plans because they belonged to one of four plans that were no longer offered. To ensure a similar range of plan choices for all sampled members, we excluded from our sampling frame all nonresidents of California, all members under 18 years of age, and all members of three employee associations that sponsor their own PPOs (California Association of Highway Patrolmen, California Correctional Peace Officers Association, and Peace Officers Research Association of California). To improve statistical power to ascertain factors associated with plan-switching, we oversampled members with a higher likelihood of switching health plans during Open Enrollment based on their anticipated monthly premium increase. The frequencies and bivariate results reported below have been weighted in accord with the sampling design, and the sampling stratification variable was included in all multivariate models.

Following the “Total Design Method” described by Dillman, we conducted three rounds of mailings before open enrollment and included a small financial incentive (\$5 cash). We received usable responses from 1,592 individuals (64% of the total sample; 69% of those who received the survey and were eligible to complete it). Respondents to the Pre-OE survey were surveyed again after open enrollment. The response rate to the Post-OE survey was 81.3% (N=1,294).

The Pre-OE questionnaire included demographic characteristics (e.g., gender, age, educational attainment, family size, race, ethnicity, language preference, and income) and plan characteristics (type of coverage, length of time in plan), measures of healthcare utilization and health status, satisfaction with current health plan, and likelihood of switching plans. Other items included those pertaining to perceived barriers to choice, perceived benefits, self-efficacy related to health plan choice, and perceived susceptibility to receiving poor-quality care from a health plan. The Post-OE questionnaire asked whether the respondent had “read or reviewed” the CalPERS quality report card and how useful the report card was for selecting a health plan. A small subset of the opinion items from the Pre-OE questionnaire was repeated in the Post-OE questionnaire. CalPERS provided data on the individuals’ employment characteristics (public agency employer or state government; retired or active) and health plan choice prior to and following OE.

CalPERS members who responded were compared to those who did not return completed questionnaires. In both the Pre-OE and Post-OE survey, the response rate was higher for retirees than for active workers (PreOE response rate: retirees 76.9%, active 58.2%,  $p<0.001$ ; Post-OE response rate: retirees 88.6%, active 77.2%,  $p<0.001$ ). In the Pre-OE survey only, the response rate was slightly higher for members affiliated with State government agencies than for members affiliated with other public agencies (67.1 vs 60.1,  $p<0.001$ ).



In the Post-OE survey only, the response rate was higher among optional choice members than among those who were forced to switch to a new health plan (82.4% versus 77.9%,  $p < 0.05$ ).

We first examined report card utilization with descriptive bivariate analyses using chi-square test. Variables tested include demographic variables (age, gender, education, years in CalPERS, single versus family coverage, marital status, children in household, household income), employment characteristics, health plan variables, self-reported health status and chronic condition measures, pre-OE satisfaction with health plan (using CAHPS and other measures), recent self-reported healthcare utilization, and forced choice due to discontinuation of the current plan. To test the study hypotheses, we developed a multivariate logistic regression model with self-reported usage of the quality report card as the dependent variable. A model was developed that included sampling stratification variables, sociodemographic (e.g., gender, age, education, and income) and employment characteristics, plan-level factors, and utilization variables. Measures pertaining to the health belief model hypotheses were added to this core model to ascertain their additional predictive value.

## **Phase 2**

For Phases 2 and 3 of the INQUIRE study, circumstances forced us to seek a new partner organization. Specifically, the health plans with which CalPERS contracted demanded 15-30% premium increases for 2003. As a result, CalPERS fundamentally changed its healthcare purchasing strategy. In essence, they abandoned the "consumer choice" model, which is where the smart purchaser creates a level playing field on which different health plans compete on both cost and quality, in favor of a "partner" model, which is where the purchaser partners with one or two plans to manage both care and costs more aggressively. Under this model, CalPERS members had only two HMO options: Blue Shield and Kaiser. Contracts with other health plans were either terminated (i.e., HealthNet, PacifiCare, Health Plan of the Redwoods), voluntarily canceled, or closed to new members. As a result of this strategic decision, CalPERS was no longer an appropriate laboratory for testing the impact of educating and motivating consumers about health plan choice. Our discussions with key stakeholders and our focus groups involving CalPERS members confirmed that the choice between a single group-model HMO (i.e., Kaiser) and a single network-model HMO (i.e., Blue Shield) was not likely to be influenced by information about quality of care. Most employed Californians have friends or family members who belong to Kaiser; these experiences made people feel knowledgeable about Kaiser, even if they had not actually been Kaiser members. In addition, Kaiser delivers most services through its own hospitals and clinics, which are not as conveniently located for many CalPERS members as the extensive network of providers that contract with Blue Shield.

These considerations led us to develop a new partnership with the Pacific Business Group on Health, which managed the now-defunct PacAdvantage program. PacAdvantage, also known as Pacific Health Advantage or the Health Insurance Plan of California (HIPC), was a nonprofit purchasing pool established by the legislature in 1992 to offer affordable health benefits to small employers in California. It provided health coverage for about 147,000 members working for about 11,000 small employers statewide. Employers participating in PacAdvantage had to employ at least two eligible employees but no more than 50 (or 100 at the time of annual re-qualification). They were required to enroll at least 70% of their eligible employees in PacAdvantage (or 100% if they had fewer than four eligible employees), and to contribute at least 50% of the lowest available premium for each enrollee. No employee or dependent could be turned down because of health, age, or occupation; this "guaranteed coverage" provision led to adverse selection, which may in turn have led to the program's demise in 2006. PacAdvantage members went through annual open enrollment approximately 2 months before the anniversary of their acceptance into PacAdvantage (except for employers who joined PacAdvantage before July 1999, who all had open enrollment in May).

Enrollment decisions, benefits, and premiums were “locked in” for the subsequent year.

PacAdvantage represented a suitable laboratory for testing the impact of educating and motivating consumers about health plan choice because it offered four HMO brands in most California markets (i.e., HealthNet, Kaiser, and Blue Shield statewide, plus regional nonprofit plans in metropolitan Sacramento, Los Angeles, San Francisco, and San Diego). Each HMO in turn offered three products: (1) a “standard” plan with \$30 outpatient and \$1,000 inpatient copayments; (2) a “plus” plan with \$20 outpatient and \$500 inpatient copayments; and (3) a “preferred” plan with \$10 outpatient and \$100 inpatient copayments. PacAdvantage members also had a choice of a mixed “open access” HMO/PPO, at least two PPOs (with \$20 or \$30 outpatient copayments and \$500 or \$1,000 annual “per individual” deductibles), and a three-tier point-of-service plan. This structure led to a rather complex choice matrix; for example, a PacAdvantage member in Sacramento had to choose among 18 different products from four different companies.

We designed a cluster-randomized, controlled trial of a two-part educational/motivational intervention to enhance use of quality data by PacAdvantage members during open enrollment. The intervention entailed: (1) a mailing with the *California HMO Report Card*, *California’s HMO Guide*, and a motivational letter “negatively framed” to arouse concerns about healthcare quality; and (2) a toll-free telephone hotline and email hotline staffed by counselors providing advice around enrollment decisions. Based on guidance from focus groups and previous research, both components were designed to educate, motivate, and empower consumers. Our counselors were instructed to “activate” consumers by: (1) educating them about quality information and other available resources, (2) motivating them to use this information to get better healthcare for themselves and their families (moving from the “passive patient” to the “active consumer”); and (3) answering any general questions related to quality of care and health plan or medical group choice (without offering specific recommendations). Individuals in the “usual care” group received no mailings, but they had access to standard print and internet resources, including PacAdvantage’s PacPlanChooser website, that focused on the price-benefits trade-off across health plan options.

The unit of randomization for this study was the health insurance broker, within which were nested a variable number of small employers and eligible employees. After excluding employers that had informed PacAdvantage of their intent to leave the program, we generated a stratified random sample of the 1,579 brokers with small business clients (which had a total of 26,249 eligible employees) who were scheduled for open enrollment during May-July 2003. Thirty brokers with more than 90 eligible employees were excluded from the initial sampling frame because of the practical need to treat all eligible employees within a cluster similarly and the inefficiency that would result from sampling such large clusters (given a plausible range of 3-7% for within-cluster correlation). Stratification was used to ensure balanced cluster-size distributions between the study arms, to maximize the number of clusters (thereby enhancing statistical efficiency), and to enrich the study sample with brokerages covering high proportions of employees with relatively high likelihoods of switching. Specifically, we sampled all 548 brokers with 1-4 eligible employees, 120 of 679 brokers with 5-20 eligible employees, 36 of 214 brokers with 21-40 eligible employees, and eight of 108 brokers with 41-90 eligible employees. Within the middle two size strata, we substratified and oversampled brokers that had high proportions of eligible employees who were aged 38 years or younger or who had more than three health plan choices. Brokers were blindly and randomly allocated to four study arms based on our original plan to test two different interventions simultaneously in a factorial design. However, only two of these arms (with 178 brokers each) were retained in the sample because the web-based intervention was not ready for implementation (see Phase 3 below). To preserve sufficient power in evaluating the educational/motivational intervention alone, a second allocation of brokers was performed in late May using 14 of the 30 previously excluded brokers and 244 of the 837 previously unsampled brokers that had 1-60 eligible employees scheduled for open enrollment in June and July.

As a result, an additional 68 brokers were randomized to the control group, and an additional 81 brokers were randomized to the intervention group.

Eligible employees (EEs) in both groups were surveyed by mail within 2 months after open enrollment (but not before open enrollment). As in Phase 1, a \$5 cash incentive was included with the first mailing, and two subsequent follow-up mailings were sent to nonrespondents. In this phase, the second follow-up mailing was actually a postcard invitation to complete an abbreviated web-based version of the survey form. All participants' actual choices were captured from enrollment data. We compared plan-switching between the intervention and control groups, both overall and after categorizing switches as quality-increasing, quality-decreasing, or neutral. We also compared self-reported use of quality information, reasons for switching, outcome expectations, contemplation of switching, ease of selecting a plan, and self-efficacy. Generalized estimating equations, with stratifying variables as predictors, were used to account for the complex stratified sample design.

### **Phase 3**

Whereas our Phase 2 trial focused on educating and motivating consumers to use quality information, our Phase 3 trial focused on delivering personalized or customized information. This study was a cluster-randomized, controlled trial to test whether access to a password-protected website (<http://www.QualityCareChoices.org>) that offered personalized information about the quality of health plans and physician organizations would affect switching behavior during open enrollment. The target population again consisted of commercially insured small business employees who were accessed through California's PacAdvantage program in 2005. Eligible employees were 18 to 64 years of age, resided in a county with at least two health plan choices in PacAdvantage, and had gone through open enrollment during a 3-month study period in 2005. Employees with COBRA (post-employment) coverage and employees of groups that had announced their intent to leave PacAdvantage were excluded. Our sample included all 9,173 eligible employees nested within 651 health insurance brokers. To ensure approximately equal sample sizes in the intervention and control groups, brokers were stratified into 5 groups based on the number of eligible employees. Within each stratum, half of the brokers were randomly assigned to the intervention group and half were randomly assigned to the control group.

We had no communication with the control group at any level. A package was mailed to all employees in the intervention group in the first week of their open enrollment to invite them to visit our QualityCareChoices website. The package included an invitation letter explaining the study, a unique PIN number to log on to the website, information about the site, and an actual sample quality report customized to the subjects' age group and gender. A reminder postcard was sent to all subjects 2 weeks after the primary package. Employers and brokers assigned to the intervention group received an informational package encouraging them to refer their employees to the QualityCareChoices site, but they did not receive password access (unless they were also in the employee database).

The QualityCareChoices website was designed to allow users to generate easily evaluable, customized comparative reports on health plan and physician organization performance. To populate the website database, we obtained 79 current quality measures from the California Cooperative HEDIS [Health Plan Employer Data and Information Set] Reporting Initiative (including measures of enrollee experience based on the Consumer Assessment of Health Plans Survey and HEDIS measures of care processes), the National Committee for Quality Assurance (e.g., accreditation and other Quality Compass measures), and the California Department of Managed Health Care (e.g., consumer contacts with the California HMO Help Center). Each of these measures was mapped *a priori* to one or more health concerns or domains, as described below. The website was written in JAVA Servlets and JSP computer languages.

To use the website, an employee entered his or her preassigned PIN number, which became inactive after he or she created a username and password for future access. The next step was to choose health plans or physician organizations to be compared, searching by either organization name or by county. Employees then chose their health-related concerns from a list of 33 domains (list available upon request). Based on the selected concerns, a comparative report was generated. Each report included a detailed comparison of health plans or physician organizations on all of the measures mapped to an individual's selected concerns, preceded by a summary bar graph with overall scores computed by equally weighting these measures. In this way, each employee received a personalized ranking of the performance of the health plans or medical groups available to him or her (based on his/her zip code of residence). Employees were prompted to save or print each generated report; they could then generate new reports based on different concerns or share their username/password with family members.

In addition, all website users were encouraged to fill out a short online questionnaire. We asked both closed and open-ended questions about the user's experience with our website and its influence on the user's choice of health plan or medical group.

The main outcome variable was whether a subject switched to a new health plan during the 2005 open enrollment based on enrollment data subsequently received from PacAdvantage. As potential predictors of switching to a new health plan, we considered the following variables: assignment to the intervention group, age, gender, median household income in the five digit zip code of the employee's residence, high versus low likelihood of access to the internet at work, number of choices of health plans during the open enrollment period, baseline health plan, and family structure (from health insurance records). The likelihood of access to the internet at work was defined based on an employer's Standard Industrial Classification (SIC) codes.

Our primary analysis was based on intent-to-treat, comparing all persons randomized to the intervention group with all persons randomized to the control group (after excluding those whose employers dropped out of PacAdvantage). Bivariate analyses were performed using the Rao-Scott chi-squared correction to adjust for the cluster design effect. We used generalized estimating equations to estimate the effect of the intervention on switching to a new health plan, after adjusting for the demographic and insurance-related characteristics of our subjects. For continuous variables, we assessed the model specification of a linear relationship between the variables and the log-odds of using the website. In a secondary analysis, we evaluated the interaction between group assignment and usage of the QualityCareChoices website to determine whether actual usage of the site (among those who were given access to it) was associated with switching. Usage of the website was tracked through the unique PIN number that each subject in the intervention group received, as recorded in a server at UC Davis. Finally, we used propensity score analysis (PSA) to remove suspected selection bias in website usage while exploring whether the effect of the intervention was limited to subjects with a higher-than-average likelihood of using the website. All analyses were performed using SAS 9.1.

## Results (Principal Findings, Outcomes, Discussion, Conclusions, Significance, Implications)

### Phase 1

The primary dependent variable in Phase 1 was whether, following open enrollment (OE), the respondent indicated that he or she had read or reviewed the CalPERS quality report card. Overall, 16.8% of respondents said that they had used the report card. Individuals in the forced choice group were significantly more likely to report that they had used the report card than individuals in the optional choice group (38% versus 15%,  $p < 0.001$ ). About 51% of the forced-choice and 40% of the optional-choice consumers who reviewed the report card said that they spent more than 30 minutes with it. Forced switchers were also more likely to find the quality report useful in deciding which plan to select (45% versus 35%,  $p < 0.001$ ). Among the optional-choice respondents, those who actually switched health plans were more likely to have used the quality report than those who did not (31% versus 14%,  $p < 0.001$ ).

Most respondents were female and married (or living as married) with a mean age of 54.4 years. Younger respondents aged 18 to 40 years were significantly less likely to use the report card than respondents aged 41 to 60 years (11.1% versus 17.3%,  $p < 0.01$ ); respondents aged 61 to 70 years were the most likely to use it (22.2%). A majority of respondents had at least some college education; those with some college education reported greater use of the report card than those with less education (17.4% versus 7.8%,  $p < 0.05$ ). Over half of respondents reported annual family incomes between \$30,000 and \$75,000. Individuals with incomes under \$30,000 per year indicated marginally greater report card usage than higher income individuals (19.9% versus 13.6%,  $p < 0.10$ ). Respondents who mainly spoke a language other than English at home were more likely to use the report card than English speakers (24.9% versus 14.1%,  $p < 0.05$ ).

Longer membership in CalPERS (greater than 5 years) was significantly associated with report card usage (19.1% versus 10.7%,  $p < 0.01$ ), whereas length of time in a current health plan was not related to usage. Individuals enrolled in non-Kaiser HMOs at baseline were the most likely to use the report (20.7%), followed by PPO members (15.4%) and Kaiser members (13.0%). Individuals facing moderate premium increases of \$25-\$49 per month were the most likely to use the report (21.5%), while those facing changes of \$1-\$24 per month were the least likely to use it (10.8%). Respondents who had at least one nonroutine healthcare visit, such as an urgent care visit, emergency room visit, or hospital stay in the past year, were less likely to use the report card ( $p < 0.05$ ) than those without such visits, but no other measure of healthcare utilization was significantly related to report card usage.

Next, we added variables to a multivariate model based on concepts from the health belief model. These concepts included perceived susceptibility, perceived severity, cues to action, perceived benefits, and perceived barriers. To operationalize perceived susceptibility, we captured both self-reported measures of health status (personal susceptibility) and beliefs regarding variability in provider performance (general susceptibility). Three measures of health status were tested: self-reported health in the past year (6-point scale of “poor” to “excellent”); presence of one or more of 19 chronic health conditions, or report of having seen a doctor for a chronic condition over the past year, or taking medication to treat a chronic condition; and a 3-item physical function index ( $\alpha = 0.70$ ) indicating the need for help with personal care, routine needs, or the presence of a condition that “seriously interferes with one’s independence.” Only self-reported health status was significantly related to report card use; individuals who described their baseline health as “poor” or “fair” were more likely (OR=1.51, 95% CI 1.06-2.14) to consult the report card during OE than those who described their health as “good,” “very good,” or “excellent.”

With respect to general susceptibility, individuals who believe that quality varies among providers and plans should feel more susceptible to poor care and were, thus, expected to make greater use of the report

card than individuals who believe that quality is similar across providers and plans. Five items asked respondents to indicate whether they thought there were “big differences” in the quality of care among local hospitals, health plans, medical groups, primary care doctors, and specialists. An index of these items ( $\alpha=0.80$ ) was not significantly related to report card use; however, two of the individual items were positively associated with using the report card; specifically, respondents who believed that there were large differences in the quality of local medical groups ( $OR=2.18$ , 95% CI 1.38-3.45) and local specialists ( $OR=1.70$ , 95% CI 1.08-2.70) were more likely to use the report card than those who did not share these beliefs.

In our application of the health belief model, adverse experiences with a health plan and advice to switch from trusted sources represent cues to action (i.e., to use available information about health plan quality). CAHPS items were used to measure satisfaction with current plan and providers. An index ( $\alpha=0.78$ ) was created to identify individuals who were dissatisfied (rating 8 or less on a 10-point scale, on which 10 is the ‘best possible’ plan or provider) with three or more domains of healthcare (primary care, specialist care, healthcare overall, or health plan). Adjusting for other factors, these individuals were more likely to use the report card than those who were more satisfied ( $OR=1.64$ , 95% CI 1.17-2.30). Similarly, an index ( $\alpha=0.73$ ) was created to identify individuals who reported “big” or “small” problems in at least four of six aspects of the care-seeking process (e.g., finding a physician, getting an appointment, having to switch doctors, getting a referral to a specialist, getting necessary test or treatment, or getting help from health plan customer service). These individuals were also more likely to use the report card than those who reported fewer problems ( $OR=1.57$ , 95% CI 1.02-2.41). Respondents were asked whether they had made a complaint to their health plan’s customer service department, experienced a medical error or adverse event in the past year, or had heard negative stories about their health plan in the media. None of these indicators of adverse events were significantly related to report card use, although having heard negative media reports was marginally associated ( $OR=1.59$ , 95% CI 0.99-2.56).

The perceived benefit of using quality information was measured as a Likert-scaled agreement with the statement that using the quality report card “will help me select a plan that improves my healthcare.” Respondents who agreed or strongly agreed with this statement were more likely to use the report card than those who did not ( $OR=2.22$ , 95% CI 1.44-3.43). Prior beliefs that potentially acted as barriers to using quality information were measured through a Likert-scaled agreement with three statements about quality information: “too difficult to use,” “not applicable to me or my situation,” or “a waste of time for me.” Of the three perceived barriers, which may be summarized as difficulty, inapplicability, and uselessness, only inapplicability was significantly associated with a lower likelihood of using the report card ( $OR=0.54$ , 95% CI 0.35-0.84).

Based on the health belief model, we also hypothesized that self-efficacy would be positively associated with using quality information. We operationalized self-efficacy as confidence in one’s ability to choose a health plan or medical group that “improves care,” or as self-reported knowledge and skills related to choosing a health plan or medical group or using quality-of-care information. None of the three indicators of confidence was associated with report card usage. One of the three “skills and knowledge” items was significantly associated with using the report card—individuals who agreed that they “felt informed” about their health plan choices prior to open enrollment were more likely to use the report card than individuals who did not ( $OR=3.2$ , 95% CI 1.5-6.8). We developed an index of all six items to characterize individual self-efficacy; high efficacy was defined as agreement with at least four of the six statements of self-confidence or self-reported knowledge and skills ( $\alpha=0.71$ ). Although respondents with high self-efficacy were more likely to use the report card than those with lower self-efficacy, this difference was not statistically significant ( $OR=1.65$ , 95% CI 0.77-3.57).

This study demonstrated that individuals who are forced to choose a new health plan, due to the circumstances of their employment or the discontinuation of previous options, are particularly receptive to employer-disseminated information about quality of care. We found a significant interaction between forced switching and tenure in CalPERS, such that employees who had been CalPERS members for at least 5 years were particularly likely to use the report card if they were forced to switch. Consumers facing larger premium increases were also more likely to use the report card than those facing smaller premium increases, but this effect was not consistent across the entire cost spectrum. Employees with some college education were consistently more likely to use the report card, whereas those 40 years of age or less were less likely to use it. These findings are not surprising, given the reduced salience of quality information to young, healthy consumers and the cognitive burden associated with interpreting fairly complex information.

Negative experiences and dissatisfaction with plans and providers do appear to serve as “cues to action,” making consumers somewhat more interested in quality information. However, these effects were relatively modest and inconsistent across measures of patient satisfaction and experience.

Health beliefs appear to play a modest role in the use of quality information. The perception that one is in poor health, rather than any objective measure of health status, seems to be stimulate consideration of quality in plan selection. Believing (before open enrollment) that quality varies among local providers, particularly among local medical groups and specialist physicians, also appears to increase consumers’ interest in quality-of-care information. This finding may reflect an assumption that doctors, not plans, are responsible for quality of care. Our results also lend some support to the argument that prior beliefs about the benefits of, and barriers to, using quality-of-care information can be important predictors of actual use of such information. We found that, if an individual believes that quality information will be helpful, then they are more likely to use it. On the other hand, if they believe it will be irrelevant to their circumstances, then they will not attempt to use it. Dissemination efforts can incorporate these findings by emphasizing the potential benefits of using quality information, perhaps through testimonials as to its effectiveness. To decrease barriers, information should be simplified and customized to make it relevant to individual characteristics and health needs.

Self-efficacy prior to open enrollment had little impact on self-reported use of quality information. For example, feeling “well informed about my health plan choices” prior to open enrollment was associated with use of the report card, but items pertaining to self-confidence and self-assessed skills were not. We are reluctant to dismiss the potential relevance of self-efficacy because of several limitations in our study design. First, nearly all of our respondents had previous experience using health plan report cards from CalPERS or other employers. As a result, respondents’ perceptions of the consequences of not using quality information, and the benefits of using it, may be biased by previous experiences. Second, using single indicators or simple indexes to measure each component of the HBM, as we did, limits respondent burden but necessarily limits the fullness and complexity of conceptual domains in the model.

## **Phase 2**

Overall, 292 brokers with 1,835 eligible employees were randomized to the educational/ motivational intervention group, and 246 brokers with 1,578 eligible employees were randomized to the control group. About 30.2% of eligible employees in the intervention group, and 37.1% of eligible employees in the control group, dropped out of PacAdvantage during the open enrollment period. At baseline, there were no systematic differences between the intervention and control groups. Only 22 intervention group members used our toll-free advice line and 3 used our electronic mailbox with a broad array of questions and concerns.

By the end of Open Enrollment, 9.2% of intervention group members and 7.0% of control group members switched plans (NS). About 21% of intervention group switchers versus 35% of control group switchers moved to a higher rated plan (based on the total number of stars assigned across four domains in the *HMO Report Card*); 27-28% in both groups moved to a lower rated plan. According to the post-OE survey, which had an estimated response rate of 41%, intervention group members were marginally more likely to have considered switching (35% versus 28%,  $p=0.07$ ) than control group members.

Despite the lack of effect on our primary outcome, the educational/motivational intervention substantially increased use of information about quality of care. For example, *California's HMO Guide* was reviewed by 40% of responding employees in the intervention group versus 10% in the control group ( $p<0.001$ ). The *California HMO Report Card* was reviewed by 38% of responding employees in the intervention group versus 8% in the control group ( $p<0.001$ ). Conversely, the intervention appeared to reduce use of health plan member services (7% versus 9%,  $p=0.02$ ). Responding employees in the intervention and control groups did not differ in their use of comparative information about health plan benefits, the PacPlan Chooser website, the state's HMO Help Center, and other resources. Counter to our original hypothesis, intervention group members were more likely to report a big problem finding a suitable plan than control group members (15% versus 9%,  $p=0.002$ ), and switchers in the intervention group were marginally more likely to express concern that their quality of care would suffer as a result of switching (8% versus 1%,  $p=0.07$ ).

Finally, we used the post-OE survey to test several hypotheses (specified above) regarding the pathways by which the intervention could have affected primary and secondary outcomes. These hypotheses were derived from the application of the health belief model, as described under Phase 1 above. We found no effect of the intervention on perceived differences in quality among either health plans (described as “big” by 47% of intervention and 48% of control subjects, “small” by 31% of intervention and 30% of control subjects, and “none” by 7% of intervention and 4% of control subjects) or medical groups (described as “big” by 31% of intervention and 35% of control subjects, “small” by 35% of intervention and 34% of control subjects, and “none” by 7% of intervention and 5% of control subjects). We also found no effect of the intervention on the perceived benefits of, or barriers to, using quality-of-care information. Finally, we found no effect of the intervention on self-efficacy, which was operationalized as confidence in one's ability to choose a health plan (78% of intervention versus 81% of control subjects) or medical group (80% of both intervention and control subjects), or feeling well informed about one's health plan (71% of intervention versus 69% of control subjects) or medical group (66% of intervention versus 65% of control subjects) choices.

Educational/motivational interventions designed to increase perceived benefits and to decrease perceived barriers with negative framing may increase consumers' use of quality information, but they are unlikely to affect actual choices in the marketplace. Consumers are reluctant to act on quality information, given competing concerns about cost and access. Indeed, we found limited evidence from our post-OE survey that quality-related information may even trigger some distress. A significantly higher percentage of respondents in the intervention group reported that it was “a big problem” to “find a health plan that suited you.” This finding, together with our finding that marginally more subjects in the intervention group expected that their quality of care would worsen as a result of switching plans, suggests that consumers perceived a difficult trade-off between quality and other factors, such as cost or convenience. Presenting these trade-offs clearly, with negative framing, may have increased consumers' anxiety and, thereby, complicated their decision-making process.

### **Phase 3**

Our sample consisted of 9,173 small business employees who received their health coverage through PacAdvantage and were randomized to receive (or not to receive) access to the QualityCareChoices website.



At baseline, there were no systematic differences between the intervention and control groups. At randomization, over half of the employees were enrolled in Kaiser Permanente (N=4,809, 52.4%) while the rest were in HealthNet (N=2,290, 25%), Blue Shield (N=1,376, 15%), Universal Care (N=614, 6.7%), or Western Health Advantage (N=84, 0.9%). Most employees were enrolled in an HMO plan (N=8,129, 88.6%). A total of 4,211 employees (46%) had two or three health plan choices available during open enrollment whereas 1,627 (17.7%) and 3,335 (36.4%) had four and five choices, respectively. Based on Standard Industrial Codes, about half of the employees in our sample (N=4,561, 50.3%) had a high likelihood of having access to the internet at work.

Of the 9,173 employees in our 2005 sample, 3,167 (34.5%) worked for employers that dropped out of PacAdvantage the following year. These dropouts were not anticipated by PacAdvantage, and, therefore, they could not be excluded before randomization; employers that had announced their intentions to drop out before open enrollment were excluded from randomization. There were no statistically significant differences in the identifiable characteristics of employees whose employers stayed in PacAdvantage versus employees whose employers dropped out.

Several employee characteristics were associated with switching to a new health plan during open enrollment in 2005. Men were nonsignificantly more likely to switch than women (6.7% versus 5.3% respectively,  $P=0.056$ ). The probability of switching to a new health plan was lowest among subjects enrolled in Kaiser Permanente (0.9%) compared with subjects enrolled in other health plans ( $P<0.0001$ ) such as Blue Shield (15.2%), HealthNet (10.3%), Universal Care (8.5%), and Western Health Advantage (7.3%). Employees enrolled in an HMO plan had a lower switching rate than those enrolled in a Point of Service plan or a Preferred Provider Organization plan (5.3% versus 13.3% and 10.3%, respectively).

In multivariate analysis, the only significant predictors of switching to a new health plan included age (OR=0.99; 95% CI 0.97-0.99) and enrollment in Kaiser Permanente at baseline (OR=0.10; 95% CI 0.03-0.35). Employees randomized to the intervention group had 12% higher odds of switching (OR=1.12; 95% CI 0.84-1.49) than employees randomized to the control group. However, the odds of switching was increased 2.9 times (OR=2.9; 95% CI 1.5-5.5) among intervention group members who actually used the QualityCareChoices site versus only 1.1 times (OR=1.11; 95% CI 0.83-1.49) among those who did not. We also found no difference in switching rates between the intervention and control groups across four strata based on propensity to visit the website (estimated from a logistic regression model that included age, gender, median household income at the zip code level, baseline health plan, number of plan choices, employer type, and employer dropout).

Seventy-six employees (1.8%) used the QualityCareChoices website (of whom 58 stayed in PacAdvantage) to generate a total of 135 report cards (119 for health plans and 16 for medical groups). Thirty-five employees generated multiple reports on either health plans and/or medical groups, while 11 generated at least one of each. Only five employees did not save any of their generated reports, and another five asked to be removed from the study. We received eight telephone calls from subjects who either lost their PIN numbers or had questions related to the website. The most frequently visited page of the website was the online survey page (57 hits); however, only 36 surveys were submitted. The “more information” page (49 hits) was ranked second, with the most visits being to its “glossary section” (33 hits). The overall plan-switching rate was 17% among the 58 persons who used the website and stayed in PacAdvantage versus 6% among the 2,852 persons who were randomized to the intervention group but did not use the site.

We next examined factors associated with use of the QualityCareChoices website among the 4,505 employees who were randomly assigned to the intervention group. We excluded the 7% (297) of employees whose invitation letters were undeliverable after confirming that those with undeliverable

letters were more likely to drop out of PacAdvantage (49% versus 31%,  $P < 0.001$ ), more likely to have coverage only for the employee (81% versus 68%,  $P < 0.001$ ), and younger (mean 38 years versus 41 years,  $P < 0.001$ ) than those who presumably received their letters. In multivariate analysis, the significant predictors of visiting the QualityCareChoices website included age (OR=1.03; 95% CI 1.01-1.05), working for an employer that was judged more likely to provide internet access (OR=1.70; 95% CI 1.04-2.78), enrollment in Kaiser Permanente at baseline (OR=0.13; 95% CI 0.03-0.65), and having five choices of health plans instead of two or three (OR=0.43; 95% CI 0.22-0.84).

To generate comparative reports, users needed to select their health-related concerns. All of the 10 most frequently chosen concerns related to health plan services and structure. There were no differences between men and women in the percentage selecting any specific concern. However, those who selected “pregnancy care,” “child immunization,” or “may need care for an urgent problem” were significantly younger than those who did not select these concerns. Those who selected “may need telephone advice” were significantly younger than those who did not (mean age [S.D.] 41.6 [11.2] versus 48.6 [9.4] years). There was no other significant association between selected concerns and family structure, current health plan, number of choices of health plans, web access propensity, and median household income. Employees who selected “may need brand name medicine,” “may need special care or treatment,” or “may need specialist care or treatment” were significantly more likely to switch than those who did not select these concerns.

Twenty-five (43%) of the 58 employees who visited the website and stayed in PacAdvantage submitted the online questionnaire. We did not find any significant difference in family structure, current health plan, number of choices of health plans, web access propensity, and median household income between respondents to the online questionnaire and nonrespondents who also visited the website. Based on the survey, 52% of respondents visited the website to learn about the website itself, 42% to get information to compare health plans, and 12% to learn about their health insurance coverage.

Respondents were asked to “rate quality of care in your current health plan” based on the report card they generated through the QualityCareChoices website. Six employees reported that their health plan was the best available; five of these employees had, in fact, generated a report card demonstrating this ranking (one employee’s current plan had the second best rank in the generated report). In response to a question on the extent to which the information received through the website influenced the user’s choice of health plan, only nine respondents said “no” or “very little influence,” 12 said “very high” or “high” influence, and 12 endorsed an intermediate option. Among the seven respondents who switched to a new health plan, four (57%) reported “very high” or “high” influence.

## **List of Publications and Products (Bibliography of Outputs from the study)**

### **Journals**

Three manuscripts are currently under review.

Marshall MN, Romano PS, Davies HTO. How do we maximize the impact of the public reporting of quality of care? *Int J Qual Health Care* 2004;16(Suppl 1):i57-i63.

Garcia JA, Paterniti DA, Romano PS, Kravitz RL. Patient preferences for physician characteristics and the quality of patient care. *Ethn Dis* 2003;13:259-267.

### **Books**

None

### **Scientific and Technical Reports**

None

### **Grant or Contract Reports**

Current document only.

### **Dissertations and Theses**

Sadeghi, B. Tailored reports on quality of health care to promote informed choice (dissertation). Davis (CA): University of California Davis; 2007.

### **Conference Proceedings and Abstracts**

Romano PS, Rainwater JA, Garcia JA, Mahendra G, Tancredi DJ. Consumers' use of quality information when selecting a health plan. *Second Annual Health Care Quality and Outcomes Research Conference*; 2004 May 11; Berkeley, CA.

Rainwater JA, Garcia JA, Romano PS. Consumers' use of quality information when selecting a health plan. *2004 Annual Research Meeting of AcademyHealth*; 2004 June 8; San Diego, CA.

Romano PS, Rainwater JA, Garcia JA, Mahendra G, Tancredi DJ. Consumers' use of quality information when selecting a health plan. *21<sup>st</sup> International Conference of the International Society for Quality in Health Care*; 2004 October 22; Amsterdam, Netherlands.

Rainwater JA, Romano PS, Garcia JA, Mahendra G, Tancredi DJ. Switching health plans and the role of cost, quality, and health beliefs. *2005 Annual Research Meeting of AcademyHealth*; 2005 June 27; Boston MA.

Romano PS, Rainwater JA, Garcia JA, Mahendra G, Tancredi DJ, Keyzer JM. A randomised controlled trial of an educational and motivational intervention to enhance consumers use of health plan and medical group quality data. *22<sup>nd</sup> International Conference of the International Society for Quality in Health Care*; 2005 October 26-28; Vancouver, Canada.

Romano PS, Rainwater JA, Garcia JA, Mahendra G, Tancredi DJ, Keyzer J. A randomized controlled trial of an educational and motivational intervention to enhance consumers' use of health plan and medical group quality data. *29<sup>th</sup> Annual Meeting of the Society of General Internal Medicine*; 2006 April 28; Los Angeles, CA. *J Gen Int Med* 2006; 21(s4):6.

Romano PS, Rainwater JA, Garcia JA, Mahendra G, Tancredi DJ, Keyzer J. A randomized controlled trial of an educational and motivational intervention to enhance consumers' use of health plan and medical group quality data. *2006 Annual Research Meeting of AcademyHealth*; 2006 June 27; Seattle, WA.

Sadeghi B, Rainwater JA, Garcia JA, Hogarth MA, Tancredi DJ, Paterniti DA, Romano PS. A cluster randomized trial of a web-based tool to promote informed decision-making among small business employees in California. *Fifth Annual Health Care Quality and Outcomes Research Conference*; 2007 May 22; Oakland, CA.

Sadeghi B, Rainwater J, Garcia J, Hogarth M, Tancredi D, Paterniti D, Romano P. A stratified cluster randomized trial of a web-based decision-making tool to promote informed decision-making among small business employees in California. *2007 Annual Research Meeting of AcademyHealth*; 2007 June 4; Orlando, FL.

Sadeghi B, Hogarth M, Garcia J, Rainwater J, Tancredi D, Simon J, Paterniti D, Romano P. Factors associated with use of computerized tailored information on quality of health plans during Open Enrollment for small business employees in California. *2007 Annual Research Meeting of AcademyHealth*; 2007 June 4; Orlando, FL.