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RESEARCH ARTICLE

Patient Centered Care

How Do Quality Information and Cost Affect Patient Choice of Provider in a Tiered Network Setting? Results from a Survey

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Objective. To assess how quality information from multiple sources and financial incentives affect consumer choice of physicians in tiered physician networks.

Data Source. Survey of a stratified random sample of Massachusetts state employees.

Study Design. Respondents were assigned a hypothetical structure with differential copayments for “Tier 1” (preferred) and “Tier 2” (nonpreferred) physicians. Half of respondents were told they needed to select a cardiologist, and half were told they needed to select a dermatologist. Patients were asked whether they would choose a Tier 1 doctor, a Tier 2 doctor, or had no preference in a case where they had no further quality information, a case where a family member or friend recommended a Tier 2 doctor, and a case where their personal physician recommended a Tier 2 doctor. The effects of copayments, recommendations, physician specialty, and patient characteristics on the reported probability of selecting a Tier 1 doctor are analyzed using multinomial logit and logistic regression.

Principal Findings. Relative to a case where there is no copayment differential between tiers, copayment differences of U.S.\$10–U.S.\$35 increase the number of respondents indicating they would select a Tier 1 physician by 3.5–11.7 percent. Simulations suggest copayments must exceed U.S.\$300 to counteract the recommendation for a lower tiered physician from friends, family, or a referring physician. Sensitivity to the copayments varied with physician specialty.

Conclusions. Tiered provider networks with these copayment levels appear to have limited influence on physician choice when contradicted by other trusted sources. Consumers’ response likely varies with physician specialty.

Key Words. Tiered physician networks, provider choice, quality information

Tiered provider networks are implemented by health plans to encourage consumers to seek care from “preferred” physicians while permitting wide choice of physician. In a tiered provider network: (1) physicians in plans’ networks are sorted into tiers according to their performance on cost-efficiency and quality

measures, and (2) patients are given information about physician tier rankings along with a financial incentive (higher copayments are charged for visits with physicians in lower performing tiers) to encourage them to choose top-tiered physicians. This network design aims to improve the efficiency and quality of the health care system both by encouraging consumer choice of higher tiered physicians and by motivating providers to attain a higher tier ranking.

The use of tiered provider networks raises important and largely unanswered questions. Do tiered physician networks influence consumer choice of physician, and how do consumers respond when the quality information provided through tiered provider networks conflicts with that from other trusted sources? Does consumer response vary with the copayment differential across tiers or physician specialty? Do individual characteristics affect how consumers respond to tiered provider networks? This information could help health plans design effective tiered physician networks and payers and policy makers consider whether to support the implementation of tiered physician networks more broadly.

This paper reports on a survey of consumers enrolled in a health plan with a tiered physician network. The survey was designed to ascertain awareness and experience with the tiered network,¹ and also to delve into how cost and quality information would affect consumer choice of physicians in a tiered network setting. The survey included an experiment in which respondents were randomly assigned to one of six sets of hypothetical tiered physician networks; hypothetical tiers varied according to the type of specialist that was tiered and the copayment differential between the tiers. Respondents were asked about their choice of physician from among the tiers both with and without quality information on physicians from additional sources. The results are informative not only about the likely impact of tiered networks but also the cost required to entice consumers to choose a physician in their health plan's preferred tier when they have disconfirming information from friends, family, or a referring physician on the quality of a physician in a lower rated tier.

BACKGROUND

It is well known that cost sharing decreases quantity demanded (Newhouse and the Insurance Experiment Group 1993; Zweifel and Manning 2000).

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However, the majority of work on demand responsiveness studies price changes that affect *all* physician services, not just a select group (i.e., lower-tiered physicians). Earlier papers on tiered hospital networks do not provide evidence on the impact of tiers on consumer behavior or whether cost savings were realized (Fronstin 2003; Robinson 2003; Mays, Claxton, and White 2004).

If physicians were perfect substitutes, any price disadvantage would cause all consumers to desert a physician. However, the market for physician services is regarded as being monopolistically competitive, implying that because of differences in location, quality, or taste, consumers do not consider physicians to be perfect substitutes (McGuire 2000). These two conditions imply that consumer demand for visits with physicians whose price has changed relative to other physicians (i.e., physicians in the lower performing tier) should be more responsive than demand response to a price change for all physician services, but that some consumers will continue to choose the higher priced physicians because of imperfect perceived substitutability. Using data from the RAND Health Insurance Experiment, Marquis (1985) found that a patient's coinsurance rate (where seeing a more costly physician requires a higher out-of-pocket payment) does not affect the probability that a patient chooses a lower cost physician (a general practitioner in private practice) versus a higher cost physician (a specialist). However, unlike a copayment, which is known with certainty in advance of a visit, physician prices are often unknown, perhaps making ex-ante price comparison difficult.

Tiered networks are used to influence consumer demand for other health care services. For example, two- or three-tiered formularies are a form of tiered network that are widely used for prescription drugs. With a formulary, patients pay lower copayments when they purchase drugs that are "preferred" by their health plan; "preferred" status is generally granted to lower cost drugs (generics and brand drugs for which manufacturers offer the health plan discounted pricing). Studies show that consumers respond to cost sharing in tiered pharmaceutical formularies in part by switching to lower tiered drugs and reducing demand for higher tiered drugs (Huskamp et al. 2003, 2005; Rector et al. 2003; Goldman, Joyce, and Zheng 2007).

Charging differential copayments across tiers is not the only mechanism through which a tiered physician network may influence consumer choice of physician. Tiered physician networks also purport to deliver quality information about physicians to consumers. Consumers indicate that they value quality information about their providers (Lubalin and Harris-Kojetin 1999), but in

practice, surveys reveal that consumer-directed reports on quality have been difficult to understand and use and have not been able to attract consumer attention (Jewett and Hibbard 1996; Schneider and Epstein 1998; Hibbard 2008). Surveys also find that consumers prefer quality information on providers from an independent, unbiased source, and to reflect the views of “people like me” (Lubalin and Harris-Kojetin 1999). Previous analyses of the survey data reported here found that one-third of consumers did not trust the tiered provider network in their health plan to identify better physicians (Sinaiko and Rosenthal 2010). However, some studies of actual consumer choice following the release of quality report cards, particularly those that control for patients’ prior beliefs about quality, find evidence of statistically significant changes in market share toward higher rated providers (Cutler, Huckman, and Landrum 2004; Mukamel et al. 2004/2005; Dranove and Sfekas 2008).

One reason for a tepid consumer response to quality reports may be that consumers have other sources of information that they value more. Several surveys report that consumers are more likely to speak with friends, family, or a physician when selecting a provider than they are to use published quality reports (Hoerger and Howard 1995; Robinson and Brodie 1997; Kaiser Family Foundation/AHRQ 2000; Harris 2003). Hoerger and Howard (1995) find that pregnant women who have higher coinsurance rates are less likely to rely on friends and family members and more likely to spend more time searching for prenatal care providers than other pregnant women, perhaps indicating some heterogeneity in price sensitivity among consumers.

Two recent studies analyzed patient-level claims data and find some evidence that consumers switch to preferred providers when the price differential between tiers is large (e.g., approximately U.S.\$400) (Scanlon, Lindrooth, and Christianson 2008; Rosenthal, Li, and Milstein 2009). There are no published studies that use observational data to assess the impact of a tiered provider network with smaller cost-sharing differentials. Moreover, there is unlikely to be real-world data that include sufficient variation in certain attributes of tiered networks, such as the copayment difference across tiers, or that include measures of consumers’ exposure to quality information on physicians from different sources. This study uses an experimental approach to estimate the impact of cost and quality information on consumer choices in a tiered network setting where the copayments required of patients are modest both in level and in the magnitude of their difference across tiers. A well-designed experimental study can provide precise and unbiased estimates of these effects (Shadish, Cook, and Campbell 2002), and this study design has

been used previously to assess the effect of quality information on consumers' health plan choices (Harris 2002) and the impact of patient characteristics on health-seeking behavior (Adamson et al. 2003).

STUDY CONTEXT

This study focuses on Massachusetts state employees who were enrolled in one of six Group Insurance Commission (GIC) health plans, each of which had a tiered physician network. The GIC covers approximately 300,000 public employees, retirees, and their dependents and offers a range of health plan choices to beneficiaries. From 2004 to 2006 the GIC worked with its health plan vendors to construct tiered networks for physicians at the individual level based on a standard set of cost-efficiency and quality performance profiles; tiered physician networks were employed in all plans by July 2007.² The difference in copayment required from patients for a Tier 1 physician versus a Tier 2 physician was modest; in most plans a copayment of either U.S.\$10 or U.S.\$15 to see a Tier 1 physician and U.S.\$10 more for patients choosing a Tier 2 physician was required. Despite GIC efforts to inform its members about these tiered physician networks, in 2008 only half (49.5 percent) of enrollees had knowledge of the tiered networks in their health plan, and only 19 percent knew one of their doctors' tier ranking (Sinaiko and Rosenthal 2010).

DATA AND METHODS

The data for this analysis were collected through a survey of a stratified random sample of 4,200 Massachusetts state employees (stratification based on health plan). State employee enrollment varied across plans³; stratification allows for analysis of a more representative sample of enrollees across plans without dramatically increasing the sample size. Any active (nonretired) employee who lived in Massachusetts and had selected one of the GIC health plans with a tiered physician network in 2007 was eligible for the sample.⁴ The survey was administered via U.S. mail; responses were submitted via mail or Internet. Data were collected from March 2008 to June 2008. To increase response, we sent a reminder postcard and two reminder survey mailings, and survey respondents were entered into a lottery to win one of four prizes of U.S.\$500.

Experiment Design

As part of the survey, respondents were randomly assigned to one of six groups (Figure 1), shown a set of hypothetical physician tiers, and then asked about choice of physician. Survey text indicated that “your health plan has told you the doctors in Tier 1 have lower costs and higher quality and the doctors in Tier 2 have higher costs and lower quality”; this language is similar to that used by the GIC and its health plans to describe their tiered networks in printed materials. Half of respondents were randomly assigned to selecting a cardiologist because they had a heart condition (Groups 1–3 in Figure 1), while the remaining respondents were directed to make an appointment with a dermatologist for a routine skin check (Groups 4–6). These two conditions were chosen to induce variation in the seriousness of the condition for which the respondent needed to make an appointment, and to maintain realism (these specialties were tiered in the majority of GIC health plans during the study period). The copayments for office visits in the hypothetical tiered networks were similar to those in respondents’ actual health plans. For respondents selecting cardiologists (and likewise for those selecting a dermatologist),

Figure 1: Hypothetical Tiered Physician Networks

| | | Type of physician that is tiered: | |
|---|-------------|-----------------------------------|---------------|
| | | Cardiologist | Dermatologist |
| Co-payment difference (Tier 1 / Tier 2)* | \$15 / \$15 | Group 1 | Group 4 |
| | \$15 / \$25 | Group 2 | Group 5 |
| | \$15 / \$50 | Group 3 | Group 6 |

*Tier 1 is the top-performing (or preferred) tier

one-third were presented a set of tiers with no differential cost sharing (Tier 1 copayment U.S.\$15/Tier 2 copayment U.S.\$15), one-third were presented physician tiers with a U.S.\$10 differential across tiers (Tier 1 copayment U.S.\$15/Tier 2 copayment U.S.\$25), and the remaining third of respondents saw physician tiers with a U.S.\$35 differential (Tier 1 copayment U.S.\$15/Tier 2 copayment U.S.\$50).

Choice Questions

Respondents were asked to consider the hypothetical tiers and select a physician for a new appointment; this first choice scenario is referred to as the “base case.” Respondents who faced a vignette that included differential cost-sharing (Groups 2, 3, 5, and 6 in Figure 1) were asked about the importance of both the physician’s tier ranking and of the copayment differential to their choice. All respondents were then asked about their choice of physician for a new appointment when they have a recommendation from a friend or family member for a Tier 2 (the lower ranked) doctor, and when that recommendation is from their personal physician.

Statistical Analysis

Differences in choice of physician across groups exposed to different hypothetical tiers are examined using logit and multinomial logit models that control for gender, race (white or nonwhite), age category (age 18–44, 45–54, and 54 and older), household income (less than U.S.\$50,000, U.S.\$50,000–U.S.\$100,000, and greater than U.S.\$100,000), education level (high school degree or less, some college, or college degree and more), self-reported health status (excellent or very good, good, and fair or poor), type of coverage (individual or family), whether the respondent has seen a specialist in the last year, whether the respondent has used the Internet to search for health information in the last year, and plan fixed effects.⁵ Standard errors are bootstrapped. These models do not include response categories with low frequency of response, measured as 1 percent of the sample or less. Specifically, in all scenarios we excluded the few cases where the respondent indicated that he or she would choose “a(nother) Tier 2 physician.” Results are reported as predicted probabilities adjusted for these covariates.

A second set of models analyzes the effect of a physician’s tier ranking on choice of physician in comparison with a recommendation from a friend, family member, or personal physician. Data on respondent choice of physician both with and without these external recommendations were pooled

and used to estimate a logit model of the probability of selecting a Tier 1 doctor

$$P(Y_i = 1) = \beta_0 + \beta_1 pT2_i + \beta_2 FF_i + \beta_3 Doc_i + \beta_4 Cardio_i + \mathbf{X}_i \beta_5 + \gamma_i + \varepsilon_i \quad (1)$$

where Y_i is a binary variable indicating whether the respondent said he or she would choose a Tier 1 physician, $pT2_i$ is the price the individual faces to see a Tier 2 physician (in dollars), FF_i is a dummy variable indicating whether one has a competing recommendation for a Tier 2 doctor from a friend or family member, Doc_i a dummy variable indicating a recommendation for a Tier 2 doctor from one's personal doctor, and $Cardio_i$ indicates whether someone is selecting a cardiologist in the hypothetical scenario. \mathbf{X}_i is a vector of personal coefficients, including gender, race, age category, household income, self-reported health status, and type of coverage, and γ_i are plan fixed effects. Standard errors are clustered on individuals; marginal effects are reported. The coefficients are used to estimate the percentage of people who would switch to a top-tiered physician following increases in the copayment differential between tiers of U.S.\$10, U.S.\$25, and U.S.\$35. These results are also used to simulate the copayment required to fully offset a recommendation for a Tier 2 doctor from a friend, family member, or personal doctor. Specifically, the model is used to determine the price of a visit to a Tier 2 doctor that, when combined with a competing recommendation for a Tier 2 doctor from a friend or family member (or personal doctor), produces the same predicted probability of a respondent selecting a Tier 1 doctor as is observed without the competing recommendation.

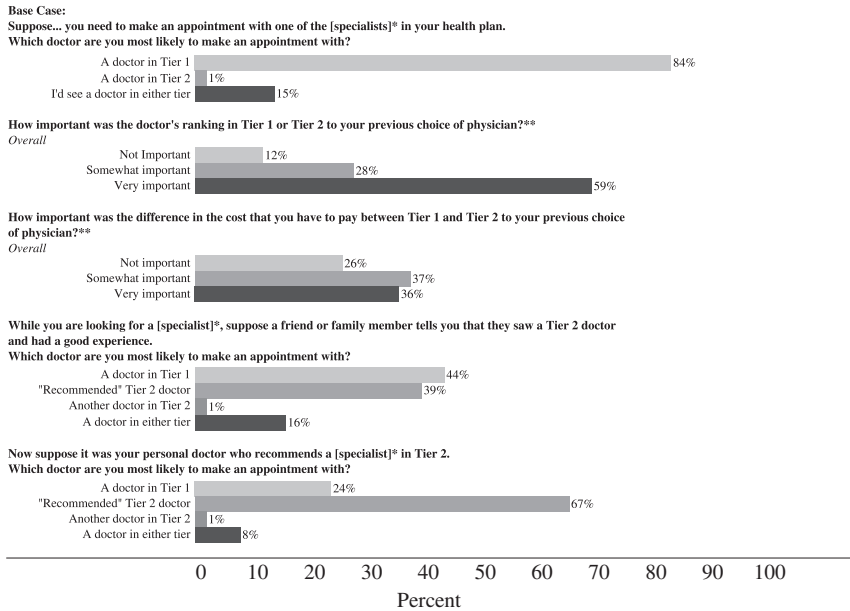
There were 64 undeliverable surveys and 1,972 unique responses giving an adjusted response rate of 48 percent. Thirty-nine cases with missing data on key stratifying variables (age, gender, zip code) were dropped from the analysis, giving a final sample size of 1,933. Nonrespondents were more likely to live in a zip code with a high percentage of minority residents,⁶ and to have enrolled in one of the HMO plans. In comparison with the population of active state employees, along with the differences in plan enrollment due to our sampling strategy respondents were more likely to be older workers and female.⁷ There were no significant differences between early and late respondents to the survey. Results are weighted for nonresponse and poststratification on age, gender, plan, coverage type, and minority population by zip code. The adjusted response rate among respondents in each of the six hypothetical groups ranged from 44 to 49 percent ($n = 300\text{--}338$). Overall, the survey was successful in achieving balance across experimental conditions on observable characteristics.⁸

RESULTS

Quality Information from Multiple Sources

In the base case, the vast majority of survey respondents (84 percent) indicated that they would choose a Tier 1 (top-tier) physician (Figure 2), 15 percent replied they would select either a Tier 1 or a Tier 2 physician, and only 1 percent said they would choose a Tier 2 physician. Survey respondents whose hypothetical tiered network included a copayment differential were more likely to report that the doctor’s tier ranking was “very important” to their choice of physician (59.4 percent) than was the copayment differential (36.3 percent).⁹ Respondents who selected a Tier 1 doctor in the base case were more likely to find the doctor’s ranking “very important” (65 versus 14 percent, $p < .001$) and to find the copayment differential “very important” (41 versus 17 percent, $p < .001$) than were people who selected “either a Tier 1 or Tier 2 doctor.”

Figure 2: Respondent Choice of Physician (Weighted Frequencies)



*Specialist was randomly assigned to be either cardiologist or dermatologist

**Asked of respondents whose hypothetical setting included a co-payment different between Tier 1 and Tier 2

With a recommendation from a friend or family member for a Tier 2 (lower tiered) physician, 44 percent of respondents selected a Tier 1 physician, 39 percent chose the recommended Tier 2 doctor, and 16 percent chose a doctor in either tier (Figure 2). When respondents were told that their personal doctor recommended a Tier 2 doctor, 24 percent of respondents said they would most likely choose a Tier 1 doctor, 67 percent said they would choose the recommended Tier 2 doctor, and 8 percent chose a doctor in either tier.

Variation in Physician Specialty and Copayment Differential

Table 1 presents results on choice of physician across groups exposed to different hypothetical tiers. In the base case, there was no difference in the probability of selecting a Tier 1 physician across groups (panel 1). With a recommendation from a friend or family member for a Tier 2 physician, respondents selecting a dermatologist and who faced a U.S.\$35 copayment differential were more likely to choose a Tier 1 physician than were respondents making an appointment with a dermatologist but who faced a U.S.\$0 copayment differential (60 versus 46 percent, $p = .001$) or a U.S.\$10 copayment differential (60 versus 42 percent, $p < .001$) (panel 4, columns 4–6). With a recommendation from one's personal doctor for a Tier 2 physician, respondents selecting a dermatologist and who faced a U.S.\$35 copayment differential were more likely to select a Tier 1 physician than were respondents making an appointment with a dermatologist but who faced a U.S.\$10 copayment differential (34 versus 22 percent, $p = .001$) or respondents facing a U.S.\$0 copayment differential to select a Tier 1 physician (34 versus 20 percent, $p < .001$) (panel 5, columns 4–6).

With a recommendation from a friend or family member for a Tier 2 physician, respondents selecting a cardiologist and who faced a U.S.\$0 copayment differential were more likely to select a Tier 1 physician than were other respondents choosing a cardiologist but who faced a U.S.\$10 copayment differential (52 versus 39 percent, $p = .003$) or a U.S.\$35 copayment differential, but the latter is not significant (52 versus 45 percent, $p = .10$) (panel 4, columns 1–3). When the recommendation for a Tier 2 physician was from their personal doctor, respondents choosing a cardiologist were equally likely to say they would choose a Tier 1 physician, regardless of the copayment differential across tiers (panel 5, column 1–3).

There was some difference in response between groups choosing different specialties but facing the same copayments. Specifically, among respondents facing the highest copayment differential (U.S.\$35), those making an

Table 1: Choice of Physician, by Experiment Group

| Panel | Base Case | Cardiologist | | | | | | Dermatologist | | | | | | Statistical Significance |
|-------|--|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|---------------|--|--|--|--|--|--------------------------|
| | | U.S.\$15/ U.S.\$15 (1) | U.S.\$15/ U.S.\$25 (2) | U.S.\$15/ U.S.\$25 (3) | U.S.\$15/ U.S.\$50 (4) | U.S.\$15/ U.S.\$25 (5) | U.S.\$15/ U.S.\$50 (6) | | | | | | | |
| | Suppose ... you need to make an appointment with one of the [specialists]* in your health plan. Which doctor are you most likely to make an appointment with? | | | | | | | | | | | | | |
| (1) | A doctor in Tier 1 I'd see a doctor in either tier | 88% 12% | 86% 14% | 84% 16% | 83% 17% | 82% 18% | 86% 14% | | | | | | | |
| | How important was the doctor's ranking in Tier 1 or Tier 2 to your previous choice of physician.† | | | | | | | | | | | | | |
| (2) | Not Important Somewhat Important Very Important | — — — | 14% 26% 60% | 14% 26% 59% | — — — | 14% 34% 52% | 13% 30% 57% | | | | | | | c |
| | How important was the difference in the cost that you have to pay between Tier 1 and Tier 2 to your previous choice of physician.† | | | | | | | | | | | | | |
| (3) | Not Important Somewhat Important Very Important | — — — | 42% 38% 20% | 26% 40% 34% | — — — | 24% 42% 34% | 10% 28% 62% | | | | | | | a,b,c |
| | While you are looking for a [specialist]*, suppose a friend or family member tells you that they saw a Tier 2 doctor and had a good experience. Which doctor are you most likely to make an appointment with? | | | | | | | | | | | | | |
| (4) | A doctor in Tier 1 "Recommended" Tier 2 doctor A doctor in either tier | 52% 32% 17% | 39% 44% 17% | 45% 37% 18% | 46% 42% 12% | 42% 42% 17% | 60% 28% 13% | | | | | | | a,b,c |

continued

Table 1. Continued

| | Cardiologist | | | Dermatologist | | | Statistical Significance |
|--|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------------------|
| | U.S.\$15/ U.S.\$15 (1) | U.S.\$15/ U.S.\$25 (2) | U.S.\$15/ U.S.\$50 (3) | U.S.\$15/ U.S.\$15 (4) | U.S.\$15/ U.S.\$25 (5) | U.S.\$15/ U.S.\$50 (6) | |
| <i>Note: Suppose it was your personal doctor who recommends a [specialist]* in Tier 2.</i> | | | | | | | |
| <i>Which doctor are you most likely to make an appointment with?</i> | | | | | | | |
| (5) | A doctor in Tier 1 | 26% | 20% | 24% | 22% | 20% | 34% |
| | “Recommended” Tier 2 doctor | 63% | 70% | 66% | 71% | 71% | 58% |
| | A doctor in either tier | 11% | 10% | 10% | 7% | 8% | 7% |

Note. Probabilities adjusted for age, gender, household income, education level, race, health status, coverage type, use of Internet for health information, specialist visits, and plan fixed effects based on logistic regression models with bootstrapped standard errors.

*Specialist was randomly assigned to be either cardiologist or dermatologist.

^aNot asked of respondents whose hypothetical scenario had a U.S.\$0 copayment different between Tier 1 and Tier 2.

^bResponse level of at least two groups choosing a cardiologist significantly different at $p < .05$.

^cResponse level of at least two groups choosing a dermatologist significantly different at $p < .05$.

^dResponses of at least one group choosing a cardiologist significantly different than responses of those choosing a dermatologist at the same copayment level, $p < .05$.

appointment with a dermatologist were more likely to choose a Tier 1 doctor than were respondents choosing a cardiologist when they have a recommendation from a friend or family member for a Tier 2 physician (60 versus 45 percent, $p < .001$) (panel 4) and when the recommendation was from their personal doctor (34 versus 24 percent, $p = .01$) (panel 5).

There was little difference in the importance of the doctor's tier ranking to choice of physician across most groups; however, among respondents facing a U.S.\$10 differential across tiers, those choosing a dermatologist were less likely to report that the doctor's ranking was "very important" than were respondents selecting a cardiologist (52 versus 60 percent, $p = .028$) (panel 2). Respondents who were selecting a dermatologist were more likely to respond that the copayment difference was "very important" to their choice than were respondents selecting a cardiologist and facing the same copayment differential (34 versus 20 percent, $p < .001$; 62 versus 34 percent $p < .001$) (panel 3). As expected, among respondents choosing a physician from the same specialty, those who faced a U.S.\$35 copayment differential were more likely to say that the copayment differential was "very important" than were respondents who faced a U.S.\$10 copayment differential (34 versus 20 percent $p < .001$; 62 versus 34 percent $p < .001$) (panel 3).

Potential Impact of Tiered Networks on Choice

Analyses of pooled data on respondent choices both with and without other recommendations indicate that higher prices for Tier 2 physicians increased the probability that a consumer selected a Tier 1 physician (the marginal effect of the coefficient on price is positive and significant) (Table 2). These results suggest that implementing tiered provider networks with differential copayments at levels ranging from U.S.\$15 to U.S.\$50 will influence 3.5–11.7 percent of consumers to select a top-tiered physician.

The coefficients on dummy variables indicating a consumer has either a friend or family member's recommendation for a Tier 2 physician or a personal doctor's recommendation for a Tier 2 are negative and significant, indicating that the presence of these recommendations decreases the probability that a consumer will select a Tier 1 doctor. A simulation based on these coefficients identifies that the price of a Tier 2 physician must rise to U.S.\$290 for the price effect to just counteract the recommendation for a Tier 2 physician from a friend or family member. When the recommendation is from a patient's personal physician, the countervailing price must be U.S.\$440.

Table 2: Logit Regression of the Probability of Choosing a Tier 1 Physician and Estimated Demand Response to Copayment Changes

| <i>Independent Variables</i> | |
|---|----------------------|
| Price Tier 2 doctor | 0.0071* (0.0029) |
| F/F Tier 2 recommendation | - 1.854** (0.069) |
| Doctor Tier 2 recommendation | - 2.910** (0.080) |
| Choosing cardiologist (dermatologist omitted cat) | - 0.158+ (0.085) |
| Other patient characteristics [†] | Yes |
| Plan fixed effects | Yes |
| _cons | 1.43** (0.22) |
| Pseudo R-square | 0.21 |
| N | 5,108 |

| <i>Tier 2 Copayment Change</i> | <i>% Consumers Who Would Switch to Top Tier</i> |
|----------------------------------|---|
| <i>Estimated Demand Response</i> | |
| From U.S.\$15 to U.S.\$25 | 3.5 |
| From U.S.\$25 to U.S.\$50 | 8.3 |
| From U.S.\$15 to U.S.\$50 | 11.7 |

Note. Marginal effects reported; standard errors in parentheses.

[†]Patient characteristics include gender, age, race, household income, type of coverage, and self-reported health status.

+ $p < .10$;

* $p < .05$;

** $p < .01$.

Impact of Individual Characteristics

There was very little difference in response across most individual characteristics; comparisons that are significant at the 5 percent level or better are reported below. In the base case, minorities were significantly more likely to select a Tier 1 physician (89 versus 84 percent $p = .02$) and enrollees in the indemnity health plan were significantly less likely than enrollees in other plans to select a Tier 1 physician (78 versus 86 percent $p = .003$).¹⁰ Respondents who reported that the medical care they received in the last year was good, fair, or poor were less likely to select the Tier 2 physician recommended by their personal doctor than were respondents who rated their past medical care as

very good or excellent (61 versus 69 percent $p = .01$). Respondents more likely to find the cost-differential across tiers “very important” to their choice in the base case were those with household incomes less than U.S.\$50,000 relative to those in higher income households (51 versus 31 percent, $p < .001$), and minorities relative to whites (49 versus 35 percent, $p < .001$).

DISCUSSION

These results suggest that 3.5–11.7 percent of consumers would be influenced to choose a top-tiered physician at price differences of U.S.\$10–U.S.\$35. Although individuals with lower incomes and minorities were more likely to report that the copayment differential was very important to their selection of a physician, they were no more likely to choose a top-tiered physician. Moreover, while nearly 90 percent of consumers would select a Tier 1 physician in the base case, almost half would switch to a physician in a lower performing tier if he or she was recommended by a friend or family member, and two-thirds would switch if the recommendation was from another physician.¹¹ Although the base case result indicates that respondents understood that despite being less expensive, Tier 1 includes higher performing physicians and that they value tiering to some degree, simulations based on these survey data suggest that much higher price levels, of U.S.\$290 and U.S.\$440, would be required to counteract recommendations for lower ranked physicians from friends/family and from physicians. Previous research finds that approximately half of consumers rely on a friend/family recommendation and between 12 and 22 percent consult with other doctors when choosing a physician (Hoerger and Howard 1995; Harris 2003).

These findings have important implications for the perception of a health plan’s tiered provider network within the provider and general communities. Providers who view tier rankings as signals of the quality and efficiency of their peers and use them to guide their referrals can improve efficiency through their influence over consumers’ visits with other physicians. Community members who incorporate tier information into physician recommendations for friends and family can likewise have the same effect. The flip side, however, is that physicians (or community members) whose perceptions of physician quality are in conflict with tiered network rankings, or with the performance metrics and reporting systems established by health plans more generally, may significantly limit the impact of health plan generated quality information on consumer behavior if they do not refer patients to higher performing physicians. It is unlikely that imposing copayment differentials across tiered

networks on the order of U.S.\$300, the level suggested here that would be necessary to influence patients to disregard recommendations for low-performing providers from trusted sources, would be feasible. Rather, health plans should engage in efforts to achieve physician and community buy-in of the quality and cost-efficiency metrics underlying tiered network designs.

The impact of tiered provider networks appears to vary by specialty of the physicians who are tiered. In comparison with those who chose a cardiologist because they were told they had a heart condition, respondents choosing dermatologists for a routine skin check were sensitive to the copayment differential across tiers. These results suggest that the financial incentive in tiered physician networks has a different effect on consumers depending on the type of physician who is tiered and/or the perceived severity of the condition for which they were seeking care. Further exploration of this finding, in particular teasing out whether consumers are more likely to view certain types of physicians as substitutes, or whether consumers searching for potentially “life-saving” medical care respond to cost and quality information differently than those who needed an appointment for a more minor concern, can improve the design of tiered physician networks in the future.

A hypothetical setting provides certainty that respondents were aware of the different options and cost differences across tiers; these results can help interpret a finding of weak consumer response in an observational setting. This experiment also used variation in copayment differentials to quantify the trade-off consumers make between financial incentives and quality information from concentrated sources like family and friends. Of course, responses to hypothetical questions may be different than those observed in the real world. Hypothetical vignettes do not impose the full set of costs that influence actual consumer choice of physician, such as search costs, location, and capacity constraints. However, because this information is missing equally for physicians in both tiers, it should not systematically bias respondents’ choice of physician from one tier over the other. Moreover, respondents to this survey who were more dissatisfied with their own medical care are less likely to rely on their physician’s recommendation when choosing a physician, which is similar to patterns of consumer use of information related to choice of physician reported elsewhere (Harris 2003). Nonetheless, these experimental findings should be considered in conjunction with studies of consumer response to tiered physician networks based on observational data, once these data are available.

Generalizability may be limited because the survey was conducted among employees who all live in and work for the state of Massachusetts. However, there is wide variety in the types of jobs held by state employees

(e.g., managerial, administrative, janitorial) and the locations where people work (e.g., the capital city of Boston, rural Western Massachusetts). While much of what we have learned about employer-sponsored health insurance stems from studies conducted at one employer, caution should be taken when applying these findings to other populations.

This study estimates the likely impact of tiered provider networks on consumer behavior across two specialties and over a range of copayment differentials, and it provides estimates of how consumers respond to cost and quality information provided through these network designs both with and without a conflicting signal of physician quality from friends, family, or a referring physician. Future work should continue to explore the potential for tiered provider networks to influence individual choices as a means for improving the quality of health care and reducing its cost.

NOTES

1. Sinaiko and Rosenthal (2010) report on an analysis of consumer awareness and experience with tiered physician networks based on these survey data.
2. See Sinaiko and Rosenthal (2010) for more detail.
3. See Appendix Table SA1.
4. The indemnity plan offered two PPO-type plans and one “Basic” plan; our survey sample was only drawn from the “Basic” plan.
5. These last two variables were found to be associated with greater consumer awareness of tiered physician networks (Sinaiko and Rosenthal 2010).
6. Percent minority population by zip code was assigned using U.S. Census Bureau data; zip codes with missing census data were imputed using that of the next highest zip code. High minority zip codes are those among the quartile of zip codes with the highest percentage of minority residents in our sample.
7. See Appendix Table SA1.
8. See Appendix Table SA2.
9. Respondents whose hypothetical tiered physician network did not include a copayment differential were not asked these questions because the only difference across tiers was physician quality.
10. Respondents who said that they did not trust the tiered physician network in their own health plan to identify better doctors were less likely to respond that they would choose a Tier 1 physician than were respondents who did or did not know whether they trusted the tiered provider networks for this information (71 versus 84 percent, $p < .001$).
11. These latter two choice questions ask consumers to choose from among a panel of Tier 1 physicians and a specific Tier 2 doctor who is “recommended” by another source. The former implicitly imposes higher search costs. This may slightly reduce the likelihood that a consumer selects a Tier 1 physician.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:

Table SA1: Respondent and GIC Active Employee Characteristics.

Table SA2: Descriptive Statistics, by Experiment Group.

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