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Quality and Consumer Decision Making in the Market for Health Insurance and Health Care Services

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This article reviews the literature relating quality to consumer choice of health plan or health care provider. Evidence suggests that consumers tend to choose better performing health plans and providers and are responsive to initiatives that provide quality information. The response to quality and quality information differs significantly among consumers and across population subgroups. As such the effect of quality information on choice is apparent in only a relatively small, though perhaps consequential, number of consumers. Despite the wealth of findings on the topic to date, the authors suggest directions for future work, including better assessment of the dynamic issues related to information release, as well as a better understanding of how the response to information varies across different groups of patients.

Keywords: *consumer choice; health insurance; hospitals; quality; quality reporting*

In a decentralized health care system like that of the United States, consumer choices of health plans and health care providers determine cost and quality outcomes. Because of an array of information problems and other institutional features of health care markets, there is concern that consumers do not make optimal choices. Therefore, it is often believed that initiatives designed to provide consumers with better information will help them to make better decisions and may lead to better clinical and economic outcomes. Whether such consumer-oriented policies can succeed depends on how well consumers make choices.

In this article, we evaluate the state of knowledge regarding the relationship between quality and consumer choice of health insurance plans and health care providers. We focus solely on the choice between health plan and providers and do not consider the evidence on whether consumers purchase some insurance (versus

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remain uninsured) or whether they opt to seek treatment at all (versus forgo treatment). Moreover, while we would like to draw normative conclusions about how well consumers make their choices, such inferences cannot easily be supported by the literature. Instead, we restrict this review to the relationship between quality and choice and the extent to which efforts to provide more information about quality may influence consumer decisions.

The scope of this article is admittedly broad. This is due to our focus on consumer choice of both health plans and health care services and because there is a wide range of quality dimensions studied and methodologies employed. We review the full range of findings to date on these issues. However, this reduces our ability to analyze any specific area of consumer choice in great depth.

The choice of health plan is very different from the choice of a health care provider or service. Consumers typically choose a health plan prior to becoming ill and consider the provider panel and financial issues related to copayments when making that choice. Moreover, employers often affect the choice set available to consumers and the cost of each option. In contrast, provider choice typically occurs in the relatively short time frame following the diagnosis of an ailment and in consultation with one, if not more, physician agent(s). Quality of care is more salient for this choice because a specific clinical service is often involved and logistical issues such as travel or waiting time are more important. To account for these differences, we focus on consumer behavior in each market separately. However, we apply the same conceptual model of consumer choice to each and discuss issues of agency in a general setting that could be applied to both markets.

This review draws from work in a variety of fields including the medical, economics, and health services literature. Studies employ a wide range of methodologies including empirical studies of behavior and alternate approaches such as focus groups and surveys. We present the relevant results from differing applications and methodologies highlighting consistencies across settings and research designs as well as discussing contradictions between studies. References were located by a search of the literature using the PubMed, HSRProj, Google Scholar, and the Social Science Citation Index search tools. Search terms included consumer choice of health insurance, consumer choice of health plans, consumer choice of health care providers, and consumer choice in health care. Additional articles were located using references from reviewed literature that were clearly related to consumer choice in the relevant markets. We restrict our attention to studies of consumer choice in the United States. We take this approach both to narrow down what is already a very large literature and to focus on results that are most relevant to policy makers in the United States who are considering consumer-oriented policy changes. Given the breadth of fields applicable to this topic as well as the depth of study on some issues, we have also relied on prior reviews of the literature that capture the state of knowledge on specific topics at a point in time. In particular, we only consider a few specific studies prior to 1997 as they are generally covered by Scanlon, Chernew, and Lave (1997).

New Contribution

This article reviews an extensive literature and provides a framework to synthesize the disparate results concerning consumer choice in markets for health services and health insurance plans. We review literature from medicine, economics, and health services research employing a variety of methodologies to investigate consumer behavior. By reviewing a wide body of work, we provide a general understanding of the state of the literature on health plan and provider choice. In addition, we suggest avenues for future research likely to be fruitful in extending the literature and informing health policy.

A Theoretical Model of Quality and Consumer Choice

Understanding consumer behavior in any market is a difficult task for analysts and policy makers. The markets for health plans and providers present further challenges due to the complexity of the good, the uncertain nature of health, and the potential for each consumer to have varying tastes for different dimensions of quality. To facilitate an understanding of consumer choice in this environment, we adopt the simple utility maximizing model from neoclassical economics.

Our model of consumer choice specifies that individuals, given the information available to them, determine their best option. They base their decision on their preferences for the attributes of each choice option including quality and price. The model assumes that consumers are rational in that they understand the different features of a health plan (premium, breadth of the network, quality of providers, cost sharing, and cost containment provisions, etc.) or a provider (price to the patient, quality, location, etc.) and how they value all of these attributes. Consumers are not assumed to have perfect foresight of their health status, rather they maximize expected utility over the different possible states of the world. We recognize that these assumptions may be strong and that information deficiencies or imperfections in decision making may lead consumers not to choose the option that would maximize their utility. Nevertheless, the model offers a convenient framework to discuss the way in which attributes of health plans or health care providers affect choice. Moreover, the empirical expression of this model underlies a substantial amount of the related research.

Agency and Consumer Choice

A characteristic of consumer choice in both of the markets we consider is that decisions are likely to be made in consultation with an outside advisor. Decision making in this environment is best understood using a principal-agent model.

The role of agency in health care is well established and the associated literature is beyond the scope of this article (see McGuire, 2000, for a comprehensive review of theory and evidence). The need for an agent to facilitate choice of health plan or provider stems from the asymmetry of information that characterizes decisions in health care markets (Arrow, 1963). Consumers rely on agents when choosing medical providers because they cannot easily observe quality. They rely on agents in choosing health plans because purchasing insurance through employers may facilitate risk pooling and lower administrative costs.

At the heart of the issue of agency are the incentives facing the agent and the degree to which they are aligned with the principal (the consumer). If the agency relationship has completely aligned incentives, we refer to the situation as perfect agency. On the other hand, it may well be the case that the objectives of the agent do not align with the goals of the consumer.

In the case of provider choice, the most relevant agency relationship is that of the physician agent supporting a patient in selecting a specialist or hospital. One important conflict of interest (imperfect agency) may arise when physicians have ownership in hospitals and clinics. Laws against self-referral (the federal Stark law as well as state-level regulations) have limited this opportunity for physicians who refer Medicare and Medicaid patients. However, the rise of the specialty hospital industry has created situations in which surgeons can hold equity in the hospitals at which they perform surgery, calling this assumption into question (Government Accountability Office, 2003; Nallamothe et al., 2007).

The agency relationship in health plan choice is a different one altogether. In this case, the most relevant relationship is between the firm and employees. The firm selects health plan options and provides information on the options to the employee. The employer functions within the constraints of the labor market. If the labor market is perfectly competitive, firm behavior is likely to approach perfect agency for their employees. Any effort to offer plans that are not in the best interest of the employee would make their compensation offer less appealing, causing employees to move to other firms (as in the compensating wage differentials model of Rosen, 1986). This assumes that employees value benefits fully as a form of compensation. The literature on the topic suggests that this is generally true with respect to health benefits (see Gruber, 2000).

It is unclear, however, whether employers act as good agents and, assuming employees have heterogeneous preferences, which group of employees employers best serve. The literature has frequently taken the median employee as the consumer whose utility is maximized by the firm. It is also quite plausible that employers response to marginal workers, high-wage workers, or workers in unions may be varied.

In both health plan and provider markets, the agency relationship is a determinant of consumer choices. This does not mean, however, that the utility maximizing model is inappropriate. The model simply must be expanded to incorporate preferences of agents if they are not perfectly aligned with consumers.

Empirical Models of Demand

In this section, we provide a brief overview of the issues present in estimating and analyzing consumer choice. To analyze data on consumer choice, utility maximization is often translated into discrete choice empirical models. The most common approach to modeling the effect of consumer information on health plan and provider choice has been to estimate models for consumers with varying choices sets, information regimes, or individual attributes. This can be accomplished within the conditional choice framework in which the analyst estimates a model of the likelihood of choosing a plan or provider as a function of observable health plan or provider traits (McFadden, 1981). With sufficient data, one can estimate the trade-off of specific plan or provider attributes and price, thereby providing a measure of the value of (willingness to pay for) a health plan or provider characteristics. Often, adjustments must be made to recognize that some plans are more similar to each other than to the rest of the choice set. For example, health maintenance organizations (HMOs) may resemble one another more than a preferred provider organization (PPO). Models such as the nested logit (McFadden, 1981), which account for this lack of independence, thus produce more realistic substitution patterns by allowing the modeler to select a priori nests and allocate plans to each one. Consumers are then modeled as deciding between nests. Conditional on selecting a nest, consumers choose between alternate options within each nest. If the nest structure is correct, then substitution patterns predicted by the model will more closely resemble those actually observed. A drawback to the nested logit framework is the fact that the nest structure is selected by the researcher and cannot be easily analyzed relative to unobserved alternate nest structures (though one can compare the approach to the situation without nests). However, evidence in the literature to date suggests the nested logit specification is appropriate for modeling consumer choice of health plans (Feldman, Finch, Dowd, & Cassou, 1989).

An alternative to the nested logit framework, if one has sufficient data, is to allow more individual flexibility in substitution patterns. This approach is referred to as the *random coefficients model of demand* and has been developed in recent years to model demand without relying assumptions about plan substitution patterns. To this end, the analyst adds observable consumer attributes and makes assumptions about unobserved attributes in estimating the substitution patterns across plans. This approach has shown promise in a variety of demand settings from automobiles (Berry, Levinson, & Pakes, 1995) to breakfast cereal (Nevo, 2001). Particularly relevant to this study is the work of Harris and Keane (1999) who apply this approach to consumer choice of health plans. Applying random coefficients models and other tools of empirical industrial organization to modeling, consumer decision making may allow researchers to address a number of important outstanding questions and is likely to be a fruitful area of future research (Ackerberg, Benkard, Berry, & Pakes, 2007, provide a comprehensive introduction to these tools).

Quality as a Determinant of Choice

Choice of Health Plan

Quality is a multidimensional concept and, subsequently, measures of quality come in a variety of forms. Broadly speaking, they can be separated into health outcome measures (mortality rates, etc.), process measures (adherence to best practices for clinical care such as screening rates, etc.), structural measures (information technology, breadth of provider network), and, finally, consumer satisfaction scores (i.e., wait times, service, overall impression).

One of the most prominent process-based reporting efforts is the Healthcare Effectiveness Data and Information Set (HEDIS) produced by the National Committee on Quality Assurance (NCQA). HEDIS focuses on three broad areas of assessment: quality of care, access to care, and member satisfaction (health outcomes measures are less frequent in the health plan setting because of case-mix differences across plans). The HEDIS score is designed to allow large purchasers to consider comparable information and cost when making plan choices (Hibbard & Jewett, 1996). In addition to the administrative or medical record data gathered by the HEDIS system, consumer data is gathered using the Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey, which largely measures consumer perceptions about the quality of the health plan and the care provided.

Consumers obtain information on plan quality from a litany of sources. These include informal sources such as friends, coworkers, or families. The information gained from these sources may reflect experiences others had with the plan or general reputation. Because of a perception that these informal information sources were insufficient, considerable efforts have been made to construct and disseminate report cards to better inform consumers about plan and provider performance (HEDIS, etc.).

In reviewing the literature, it is important to distinguish between two broad, related questions. First, are plan choices related to plan quality? Second, are plan choices influenced by the release of quality report cards? The second question is particularly important because it addresses the merits of the efforts to release plan performance data. However, because of the existence of informal information sources and the incompleteness of even the best plan performance measurement systems, it is essential to recognize that even if there were no response to report cards individuals may still choose higher quality plans based on alternate information sources.

Moreover, studies also differ in their approach to understanding consumer learning and taste for quality and quality measures. Some rely on surveys or focus groups. Others rely on revealed preferences using econometric analysis to draw inferences based on observed enrollment patterns or provider choices. The potential for results that vary by study methodology is important to consider. The results of Hibbard and Jewett (1996) emphasize these potential differences. In their study, they use focus groups to determine what quality factors consumers report that they consider in

making decisions about health care providers and plans. They then offer the participants two hypothetical plans. Consumer choice of plan runs contrary to many of the reported preferences. In our review of health plan choice, we consider all types of studies but, given the potential for different findings, we generally separate those findings within sections.

Do Consumers Choose High-Quality Plans?

Focus groups and survey work suggest many consumers are not sufficiently aware of plan attributes to make informed choices. For example, Hibbard, Jewett, Engelmann, and Tusler (1998) surveyed Medicare beneficiaries to understand their knowledge of the difference between Medicare HMOs and standard coverage. The authors find that 30% of interviewees knew very little about the difference and only 11% had sufficient information to make informed choices. This finding suggests that without intervention (such as report card information), many consumers are not sufficiently informed to use quality to aide in their choices.

Nevertheless, some consumers are informed and others, though not aware of specific performance metrics, may be aware broadly of plan reputation that can be correlated with these measures and lead to a positive relationship between plan performance and likelihood that a plan will be chosen. In fact, the existing literature suggests that consumer choice, even in the absence of report cards, is positively associated with performance. For example, Jin and Sorensen (2006) examined the relationship between published report card data and plan choice. They were able to control for unpublished data on quality that was collected by the plans but not reported to consumers. They find that the coefficients on unpublished plan quality are also positive and significant with respect to plan choice. Similarly, Dafny and Dranove (2005) reported that consumers showed a propensity to switch into higher quality plans without report cards suggesting a quality response with and without formal reporting mechanisms. These results are indicative of consumer demand for higher quality health plans even when formally reported quality measures are not available.

The breadth of provider network is another important dimension of plan quality (Beaulieu, 2002; Capps, Dranove, & Satterthwaite, 2003; Dafny & Dranove, 2005; Feldman et al., 1989; Harris & Keane, 1999). Ho (in press) found hospital network restrictions to be a welfare loss based on consumer willingness to pay for choice. However, Feldman et al. (1989) studied 3,000 consumers employed by 17 firms in Minneapolis and found that preferences for plans with broader networks declined as plans were offered for a longer time.

Do Consumers Respond to Health Plan Report Cards?

A number of articles examine how consumers use report card data (if at all). For example, survey work examining whether consumers take time to evaluate and understand the report of CAHPS data found that on average, consumers spent only

30 minutes reviewing the information. Between 10% and 40% of the consumers that read the quality information reported that it had a large influence on their decision (Farley Short et al., 2002).

Most of the econometric literature finds a positive and statistically significant consumer response to quality following release of report cards (Beaulieu, 2002; Chernew, Gowrisankaran, McLaughlin, & Gibson, 2004; Chernew, Gowrisankaran, & Scanlon, 2001; Dafny & Dranove, 2005; Harris, 2002; Jin & Sorensen, 2006; Scanlon, Chernew, McLaughlin, & Solon, 2002; Wedig & Tai-Seale, 2002) though Abraham, Feldman, Carlin, and Christianson (2006) is an exception finding no effect of quality on plan switching. This work spans a wide range of populations including the privately employed (Abraham et al., 2006; Beaulieu, 2002; Chernew et al., 2001, 2004; Harris, 2002; Scanlon et al., 2002), Medicare (Dafny & Dranove, 2005), and federal employees (Jin & Sorensen, 2006; Wedig & Tai-Seale, 2002). One population that may stand in contrast are Medicaid enrollees. Farley, Elliott, et al. (2002) and Farley, Short, Elliott, et al. (2002) did not find an effect of information on plan switching when studying Medicaid recipients.

The response to the release of widespread quality information is typically concentrated among a relatively small group of consumers. Most studies have found fewer than 10% of enrollees switch plans in response to the release of report card data on plan quality (Beaulieu, 2002; Chernew et al., 2001, 2004; Farley Short et al., 2002; Jin & Sorensen, 2006; Scanlon et al., 2002; Wedig & Tai-Seale, 2002).

Beaulieu (2002) found that a 1-point increase in quality (as measured by a plan's HEDIS score) increased the likelihood that a consumer will choose a given plan by 10%. Scanlon et al. (2002) found a significant response among a group of General Motors employees to the overall quality measures of a plan (as measured by a HEDIS-based performance score). Jin and Sorensen (2006) estimated the value of quality data provided to federal employees (measured as consumers' willingness to pay for it) to be US\$3.39 per Federal Employees Health Benefits Program enrollee.¹ Chernew et al. (2001), studying a report card released by a private employer, found a much higher value of information (about US\$20). These estimates are not necessarily in conflict. The value of information depends on the information itself and the environment surrounding plan choice. Report cards that reveal information that is less congruent with prior beliefs will be worth more as will report cards released in a setting with lower plan switching costs.

To account for such learning, Dafny and Dranove (2005) estimated a model that allows them to study the effect of multiple report card releases. They estimated a nested logit model of health plan choice among all Medicare beneficiaries between 1994 and 2002. Twice in this period (1999 and 2000), beneficiaries were provided quality report cards on the HMO choices they had. They find a relatively important role for report card learning compared to the informal information that had been accrued without report cards. The report card effect in the 2 years following release was roughly equal to the cumulative learning from outside sources during the entire

sample period.² The findings above suggest, implicitly, that at least a portion of consumers received, read, and synthesized and acted on the quality information reported.

Do Employers Respond to Health Plan Quality?

There is much less literature on the relationship between quality and employer selection of health plan than on the analogous relationship for consumers. However, the employer, as one of the primary agents for a consumer, can be highly deterministic in consumer choice of health plans. Thus, the extent to which employers consider quality and/or work with employees to release and interpret quality information on plan choices is fundamental in determining the consumer choice of health plan.

A number of studies rely on survey data to assess employer use of quality information. Hibbard, Jewett, Legnini, and Tusler (1997) found that among large employers 78% had access to HEDIS data, between 25% and 71% had access to outcomes data, and 75% had access to patient satisfaction data for health plans. Furthermore, 59% report actually using satisfaction data in making plan choices. Gabel, Hunt, and Hurst (1998) also surveyed employers but found lower rates of quality information use. The authors find 35% of employers had quality data on health plans. Importantly, though, this survey includes a range of employer sizes. Large employers are far more likely to have and use information in health plan choice. Marquis and Long (1995) found that quality information is used by 60% of respondents to the Robert Wood Johnson Foundation Employer Health Insurance Survey when they select plans for their employees. Similarly, 77% of employers in a 1997 KPMG/Peat Marwick survey reported that the number and quality of physicians was important in plan selection (Chernew et al., 2004). Ginsburg and Sheridan (2001) reported that large health insurance purchasers collected quality information though they argued that firms may not have sufficient resources to synthesize and utilize these data in choosing health plans.

Chernew et al. (2004) examined the relationship between employer plan offerings and plan quality statistically. The authors find that employers are significantly more likely to offer plans that have better absolute and relative HEDIS and CAHPS rankings. For CAHPS performance, they find that a one standard deviation increase in the sum of the CAHPS rating would result in a 3.4% increase in the probability that a plan is offered. For HEDIS scores, they find a 5.2% increase in offer probability.³

A related literature examines the relationship between heterogeneity of workers and heterogeneity of employer plan offerings. This is particularly important in understanding agency when populations differ within and across industries. Both Bundorf (2002) and Moran, Chernew, and Hirth (2001) found that employers with more heterogeneous workforces offered a wider array of plan options. This suggests employers are responsive to worker preferences and is consistent with the evidence that employer decisions to offer higher quality plans reflects worker preferences.

What Types of Quality Information Do Consumers Value Most?

The variety of quality information available to consumers and the complexity of the health plan choice process beg the question "What types of data are actually used when making a health plan choice?" Studies that focus on what consumers value, either through revealed preference or survey, find generally that information on access to specific doctors and specialists, costs (out-of-pocket premiums and copays), quality of providers, provider communication skill and courtesy, and administrative burden of a plan (paper work, etc.) are valuable (Edgman-Levitan & Cleary, 1996; Gibbs, Sangl, & Burrus, 1996; Hibbard & Jewett, 1996; Lake, Kvam, & Gold, 2005; Lubalin & Harris-Kojetin, 1999). The evidence on specific process measures of performance is mixed. Some research finds that consumers want information on plan performance on quality measures such as rates of preventative screening or HEDIS scores more generally (Hibbard & Jewett, 1996; Tumlinson, Bottigheimer, Mahoney, Stone, & Hendricks, 1997). On the other hand, when asked to enroll in hypothetical plans, enrollment patterns were not reflective of these data but instead more responsive to technical quality measures (Hibbard & Jewett, 1996). In fact, models of consumer choice tend to suggest that process measures of this type have a smaller effect on consumer demand than do assessments of consumer satisfaction (Dafny & Dranove, 2005; Schultz, Thiede Call, Feldman, & Christianson, 2001). This inconsistency, between stated preference and actual behavior, demonstrates the care one must take in interpreting survey results regarding how information affects choice. One can also incorporate survey data with actual consumer behavior. Harris and Keane (1999) combined survey data on reported consumer preferences with revealed choice of health plan and found that accounting for reported tastes in observed choices improved the accuracy of estimates substantially.

Moreover, consumers report that they value the response of "people like me," when selecting health plans (Lake et al., 2005). Focus group studies suggest that consumer attributes that define "like me" are geographic area, age, household composition, and socioeconomic status (Edgman-Levitan & Cleary, 1996; Hibbard, Slovic, & Jewett, 1997; Lubalin & Harris-Kojetin, 1999; McGee, Sofaer, & Kreling, 1996).

Details of the way in which information is provided may also matter for consumer choice. Abraham et al. (2006) found that employee awareness of quality information on health plan options was increased significantly by the form in which the employer distributed it. Among firms in the Buyers Health Care Action Group, the distribution of booklets with quality information increased awareness among employees. However, they do not find evidence that this increased awareness resulted in switching between plans. Hibbard, Harris-Kojetin, Mullin, Lubalin, and Garfinkel (2000) showed that framing health plan choice as risk protection (as opposed to quality alone) led consumers to respond more to the underlying plan quality measures.

Selecting a health plan asks a consumer to weigh numerous types of benefits against different, uncertain costs. Given the complexity of the choice, consumer

decision making could be aided by the simultaneous provision of different types of plan information. For example, the Medicare Program, when releasing report card information on Medicare Managed Care plans (a booklet entitled *Medicare and You*), provided information on plan options, costs and benefits, patients' rights, and a worksheet to facilitate plan comparisons as well as CAHPS performance reports. Harris-Kojetin, McCormack, Jael, and Lissy (2001) found that beneficiaries who received both the program information and the CAHPS data reported that neither would be sufficient as a stand-alone information source.

Alternatively, some types of information may be more salient than other types of information. For example, Dafny and Dranove (2005) observed Medicare enrollee behavior empirically and found that CAHPS data on consumer satisfaction was the primary driver of demand with regard to formally presented quality information (the *Medicare and You* booklet). Consumers did not respond to HEDIS-based process measures such as mammography rates.

How Do Consumer Attributes Affect Plan Choice?

Consumers from different population subgroups may value health plan quality attributes and respond to information on health plan quality differently. For example, Harris and Keane (1999) studied a group of Medicare beneficiaries in the Twin Cities area. They found that accounting for differences in consumer tastes greatly altered their findings for valuations of different plan attributes. Without accounting for latent differences in taste for quality between consumers, their estimates suggested that consumers prefer less choice of providers. In the alternate version, this counterintuitive result is reversed by accounting for the attributes different consumers report that they value, suggesting the presence of variation in taste for quality and quality attributes in the population. One distinction among groups is that certain populations may value different aspects of quality information differently. For example, gender is a determinant of the health plan attributes valued by consumers. Tumlinson et al. (1997) found that women value information on preventative screening services more than men.

Socioeconomic differences may also affect how different groups respond to information. There is some evidence that racial and ethnic minorities place greater trust in formally reported quality information from a neutral third party (Harris, 2003). Education is also a relevant metric in considering both the response of consumers to plan data as well as the awareness of such information. Abraham et al. (2006) studied a health care purchasing coalition in Minnesota and found that an additional education category (such as completing college rather than high school) increased the probability of seeing quality information by 7.4%. The authors also find that consumers with a chronic disease were more likely to be aware of quality information on health plans.

The effects of income on the use of quality information may explain why the results of Farley Short et al. (2002), Farley, Elliott, et al. (2002), and Farley, Short,

Elliott, et al. (2002), in contrast to much of the other literature, did not find an effect of report cards on plan choice in a Medicaid population. Interestingly, the authors find that individuals without exposure to quality information moved from lower to higher quality plans as much as those with quality data. This finding underscores the potential for consumers to learn from institutional and market factors outside of the scope of formal reporting even in low-income groups.

Consumer preferences and use of information also varies across geographic regions. The authors find that the level of trust of quality information ranged from 24% to 77% across regions in the CAHPS demonstration project. Institutional factors that vary between locations also play a role in consumers' attitudes toward plan design.

These results emphasize the differences that may arise in consumer behavior with respect to quality and plan choice. Consumers with different socioeconomic status, race, ethnicity, gender, or existing plan options respond in very different ways to the introduction of information on health plan options. There is also evidence of the potential for quality reports to inform some of these specific consumer groups and lead to better informed health plan choices.

Are the Effects of Report Cards Linear?

The literature consistently finds a nonlinearity in consumer response to quality measures. This is true both in response to the release of information on quality and in the absence of quality data. Consumers are willing to pay a significant amount to move away from the lowest quality plans to the average. This is true in the private market for health plans (Scanlon et al., 2002) as well as the Medicare HMO market (Dafny & Dranove, 2005). However, the same willingness to pay to move from the average plan to an above average plan is not observed. That is not to say that consumers do not prefer higher quality at all levels but rather that the utility gain is diminishing as they move to higher quality plans.

Is Quality Information More Valuable for New Consumers or Individuals Already in the Market?

Some studies of health plan choice have focused on the relative response of incumbent consumers compared to new enrollees when presented information on health plan quality. Because incumbent employees have already made health plan choices, generally without formal quality ratings, separating these responses provides insight into consumer choice in the absence of formal reporting mechanisms. We would expect incumbents to be less responsive to information because of switching costs and because they have experience with their plans and have voluntarily chosen them.

The majority of studies find a stronger response to report card information on health plan quality from new enrollees than incumbent employees (Jin & Sorensen, 2006; Strombom, Buchmueller, & Feldstein, 2002; Wedig & Tai-Seale, 2002). Jin

and Sorensen (2006) estimated the value of HEDIS quality data and found that they were significantly more valuable to new employees than to those with longer tenure. New enrollees whose choice was influenced by the information had an average gain of US\$588.67 from the report card data. On the other hand, incumbent consumers, who had the option of sticking with their existing plan, did not gain from the release of report card data. However, there are notable exceptions including Beaulieu (2002) who found that more experienced employees had a greater response to the release of HEDIS scores by Harvard University. Finally, Scanlon et al. (2002) did not find a differential response between existing and new employees at GM when choosing plans.

How Does Quality Information Affect Consumer Response to Price?

Some evidence suggests that consumers are more price responsive in the presence of public information on quality. Specifically, Jin and Sorensen (2006) found that consumers responded more to price when information was available on plans' NCQA quality ratings. They attributed this difference in part to the potential for premiums to serve as a measure of quality in the absence of formal reporting mechanisms. Where this is the case, quality information can have the effect not only of allowing consumers to select their most preferred plan based on their preferences but also to reduce the role of a price as a proxy for unobserved quality.

Choice of Provider

What Do Consumers Buy When They Select a Provider?

To account for the organizational complexity of health care markets, we adopt a relatively loose definition of provider in understanding consumer behavior. A provider is any individual or firm that a consumer (or his or her agent) can select for an element of care. We are interested in understanding how quality affects the choice of provider, be this selecting a surgeon, hospital, or primary care physician.

The process of care often demands the choice of numerous providers performing different functions making the relevant measures of quality difficult to define. For example, the attributes that a patient looks for when selecting a provider to manage a chronic disease are likely to be very different from those that determine a high-quality surgeon. The most common types of provider quality measures are either process or outcome measures. Process measures are determined by the adherence of a provider to a specified set of practices that are believed to produce high-quality output. These are most frequently used in the context of health production in which the patient has an important role such as chronic disease management (Rosenthal, Frank, Zonghe, & Epstein, 2005). Outcome measures, on the other hand, are measures of the actual health produced. The most common outcome measure is the

risk-adjusted mortality rate (RAMR) often computed for specific procedures such as bypass surgery. The RAMR is a feasible measure when mortality is sufficiently common to allow performance differences between providers to be identifiable. In addition to these observable (to the analyst) measures of quality, consumers value other components of care such as provider location or demeanor of a physician.

What Do Consumers Say They Want?

Consumers report desiring a variety of attributes when selecting a health care provider although, as with plan choices, one should keep in mind the differences between survey responses and revealed preferences. Survey studies of quality and provider choice are generally consistent with the notion of a complex consumer choice process in which individuals weigh observable measures of quality as well as difficult to measure attributes in making a decision. They also confirm the important role of physician agents in choice. Harris (2003) analyzed consumer use of information and found that consumers who were already in the health care system were unlikely to use information provided to them. It was argued that they instead relied on their physician agent in making provider decisions. Results also indicate that individuals who use information are more likely to search for multiple doctors and that consumers value both technical quality of care and unobserved provider attributes such as interpersonal skills. Razzouk, Seitz, and Webb (2004) found that the most relevant variables in physician selection are patient satisfaction and provider accessibility. Arora, Singer, and Arora (2004) found that physician manner was important in choice as well as office staff quality.

A consistent result with respect to provider choice (in the survey literature and, particularly, in studies of observed consumer choice) is the importance of location. Patients report valuing local access to providers (Razzouk et al., 2004). Models that include distance also find a strong effect of proximity on the probability that a patient selects a hospital (Adams, Houchens, Wright, & Robbins, 1991; Burns & Wholey, 1992; Chernew, Scanlon, & Hoy, 1998; Luft et al., 1990; McGuirk & Porell, 1984).

A special case of provider choice is the selection of a primary care physician. In general, the choice of provider is made with the aid of a physician agent but this may not be true when selecting a primary care physician because this is the first point of contact within the provider community. McGlone, Butler, and McGlone (2002) studied the relevant quality metrics that determined consumer choice of a primary care physician. The authors find that physician reputation and manner, qualification, and willingness to value patient opinion determine a high-quality primary care physician. Office atmosphere and travel distance are also important determinants.

Revealed preference literature that directly addresses whether consumers choose high-quality health care providers is somewhat limited. This is due in part to the difficulty in measuring quality in the absence of quality information gathering and reporting efforts. Dranove and Sfekas (2008) found that consumers in New York do

not have beliefs (prior to the release of report card information) that are consistent with hospitals' true qualities. Thus, one may think that in the absence of quality reports choices would be unrelated to quality. However, several studies find evidence for a relationship between hospital choice and quality in the absence of report cards (Chernew et al., 1998; Luft et al., 1990). These studies use a range of quality measures including mortality and complications rates, nurses per bed, whether the hospital offers catheterization and revascularization, and affiliation with academic medical centers.

Taken together, it appears that consumers, in the absence of any specific knowledge of their disease status, look for convenient, generally well-qualified, and responsive primary care physicians. This finding is also consistent with consumer use of subjective, experience-based quality measures. These results all point to an effect of quality on consumer choice in the absence of formal reporting.

Do Consumers Respond to Provider Quality Report Cards?

A large literature has developed on consumer response to provider quality report cards. The results paint a mixed picture of the level of the response and the likely mechanism. The literature on the topic includes a range of methodological approaches including surveys of consumers, their agents and the providers being rated (Hannan, Stone, Biddle, & DeBunno, 1997; Jewett & Hibbard, 1996; Robinson & Brodie, 1997; Schneider & Epstein, 1996, 1998), statistical studies of the effect of information on demand (Cutler, Huckman, & Landrum, 2004; Dranove, Kessler, McClellan, & Satterthwaite, 2003; Dranove & Sfekas, 2008; Mennemeyer, Morrissey, & Howard, 1997; Mukamel, Weimer, Zwanziger, Gorthy, & Mushlin, 2004), and randomized experiments.

Generally, surveys of consumers and referring physicians find that report cards are difficult for consumers to understand and remember and that only a minority of referring physicians report using them. Jewett and Hibbard (1996) conducted focus group interviews and found that consumers have difficulty understanding quality indicators in general and are particularly confused by aggregate quality measures and whether high or low ratings are preferable. Schneider and Epstein (1998) addressed consumer choice with report card information by directly surveying individuals who underwent CABG (Coronary Artery Bypass Graft) in Pennsylvania on their knowledge and use of quality information. Only 20% of patients were aware of the report cards and of that group only a little more than half (12% of the total population) knew about the report cards prior to surgery. However, on describing the guide to consumers, almost 58% reported that they would have used those data had they known they were available. The authors find a likely impediment to use is the short time frame in which to select a surgeon and geographic barriers to selecting specific surgeons.

In an additional study, Schneider and Epstein (1996) addressed the agency relationship by surveying cardiac surgeons and cardiologists to determine their response to the implementation of the CABG report card program. Of the 50% of cardiologists in the state, only 10% report that mortality rates were "very important"

in determining the appropriate cardiothoracic surgeon for their patients. Furthermore, 89% reported that the performance report cards had minimal influence on their decisions and 59% of cardiologists reported having difficulty finding surgeons willing to operate on severely ill patients. Hannan et al. (1997) conducted a similar study of New York State cardiologists. They found a more positive response though those who reported that quality information was a strong influence on their behavior remained relatively low. A total of 67% of cardiologists found the reports to be very or somewhat useful and 38% said the data had somewhat or very much affected their referral patterns.

Despite suggestions from the survey literature that provider report cards may not have been used sufficiently to have an effect, studies of revealed consumer behavior tend to find that these initiatives had a statistically significant impact on consumer choices (whether the level of impact is socially optimal remains an outstanding question). The most studied of these programs are the efforts to report risk-adjusted surgeon and hospital performance for CABG surgery in New York and Pennsylvania that began in the early 1990s.⁴ The magnitude of the effect varies (Cutler et al., 2004; Dranove et al., 2003; Dranove & Sfekas, 2008; Hannan et al., 1997; Mennemeyer et al., 1997; Mukamel & Mushlin, 1998; Mukamel, Weimer, Gorthy, & Mushlin, 2002). One exception is Vladeck, Goodwin, Myer, and Sinisi (1988), who studied a very early report card release and did not find a discernable effect of mortality rates on demand for hospital services.

Mennemeyer et al. (1997) studied the effect of reported hospital-specific mortality rates (published by the Health Care Financing Administration for every hospital treating Medicare patients) and found a statistically significant, though small in magnitude, effect of the mortality rates on consumer choice of hospitals. Press reports on mortality rates, however, had a large effect on consumer choice. Mukamel and Mushlin (1998) found that hospitals and surgeons with lower RAMR for CABG surgery had increased growth in market share in New York following the release of quality report cards. Studying the same program, Cutler et al. (2004) found an effect of report card information on the demand for CABG surgery at specific hospitals. They found a statistically significant reduction of five surgeries per month (10% of the average hospitals volume) following a low-quality indication. The authors also find that healthier patients, those with lower switching costs and the ability to travel, are more likely to move following a change in reported performance at a hospital. This provides some evidence that quality improvements were driven by consumer response rather than surgeon selection of healthier patients (though they do not rule out a supply side effect).

Dranove et al. (2003) directly estimated the welfare consequences of report cards for CABG in New York and Pennsylvania. They found evidence that patients did have better matches with providers, a gain from the release of information. However, their results also indicate the presence of selection by surgeons against sicker patients, higher resources use (presumably to avoid outcomes that may affect

quality scores), and worse outcomes. The authors argue that these costs outweigh the benefit of additional consumer information, making the initiative a social loss in aggregate.

Dranove and Sfekas (2008) also studied the effect of CABG report cards in New York State. They estimated a model that allowed them to account for consumers' prior beliefs about provider quality thus differentiating the incremental effect of the information provided by report cards. The authors find that hospital market share is significantly affected by report card news that provides positive information. They estimate that a hospital can expect to receive approximately a 5% larger market share for a one standard deviation improvement in reported RAMR.⁵

Is Response to Provider Quality Consistent Across Subgroups of Consumers?

Like health plan choice, consumer choice of providers also varies across population subgroups. Race, gender, and other demographic variables influence patient choice through a variety of mechanisms. In addition, because distance matters, any segmentation in location of residence by demographic traits may lead to a correlation in choices by patients in a given group. Finally, concordance of patient and provider traits may also matter in determining choice (i.e., specific subgroups prefer to be treated by physicians from the same group).

The literature suggests that demographic factors are influential in the eventual selection of a provider as well as the process of and information used in selection. A set of survey-based studies have focused on specific subgroups and their response to provider quality information. Harris (2003) found that minority patients are more likely to use information from formal sources. These patients also exhibit strong consumer activism by using information to make provider choices and by leaving physicians with whom they are dissatisfied.

An alternate approach to the survey-based models has been to analyze observed behavior across subgroups. Rothenber, Peason, Zwanziger, and Mukamel (2004) reviewed discharge data from New York State from 1996 to 1997 and found that African Americans and Asian or Pacific Islanders were on average treated by surgeons with higher risk-adjusted mortality rates. The differences are explained to some degree by the hospital selected by minority patients, education level and income of the patients, home zip code, and the fact that minorities are more likely to visit low-volume surgeons.

Mukamel et al. (2004) analyzed similar data and found that less educated consumers of all races and African American consumers of all education levels were significantly more likely than more educated consumers to get care from lower quality surgeons prior to the release of quality report cards. Following the report card initiative, however, the probability of being seen by a low-quality surgeon declined for Black patients and, controlling for income, was unrelated to race. This underscores

the potential for formal reporting initiatives to address some disparities in care, a topic we return to in direction for future research. Dranove and Sfekas (2008) also found that White patients were less responsive than other races to the release of report cards on hospital quality in cardiac surgery.

Are the Effects of Quality on Consumer Choice of Provider Linear?

As with consumer response to health plan quality, there is evidence of a nonlinear effect of report card information on demand. Consumer behavior exhibits a strong response to low-quality scores for a provider but the willingness to pay for quality improvement is far smaller when moving from average to high-quality performers. Along these lines, Cutler et al. (2004) did not find a significant effect of a high-quality score on the demand for services at a given hospital but found a significant negative response to a low-quality score. Taken together, this is evidence of a nonlinear response to quality level in selecting hospitals for CABG surgery. Similarly, Dranove and Sfekas (2008) found that the response to information was asymmetric. Negative news on hospital quality had a larger effect on market share than did positive information.

Do Managed Care Plans Influence the Relationship Between Quality and Provider Choice?

There is very little evidence examining managed care, quality, and provider choice. Chernew et al. (1998) studied this issue by estimating a model of consumer choice of hospital based on insurance type. The authors find that HMOs were more likely to contract with high-quality providers. Patient flows were sensitive to proximity but this effect was lessened for patients enrolled in HMOs. The authors also find a high degree of dispersion across HMOs in their likelihood of offering high-quality providers in their network.

Mukamel et al. (2002) found mixed evidence that managed care organizations responded to a variety of measures of quality when contracting with cardiac surgery programs in New York State. In downstate New York, the authors find a significant inverse relationship between RAMR and a high-quality score (a discrete measure of significantly better RAMR than expected reported in the state's report cards) and probability of a managed care contract. However, in upstate New York, the relationship between quality measures and probability of selection was only significant with respect to low-volume outlier status.

Dranove and Sfekas (2008) addressed the issue of insurance effects on choice of providers. They found that Medicare and Medicaid enrollees did not respond differentially to the release of quality information on providers. This result provides some evidence that the indemnity coverage of federal and state programs has a similar effect to private managed care on consumer choice of provider.

Future Direction for Research on Consumer Choice in Health Care

In this section, we explore gaps in the literature that should inform analysis of consumer choice and policy makers going forward. The focus here is on unanswered questions related to consumer choice itself as well as associated health policy issues.

Causal effect of quality on plan or provider choice. Much of the work examining quality and choice of health plan or health care provider is descriptive. We do not know if changes in quality explicitly alter consumers' choices. How many more patients do plans and providers get if their quality improves? This is complicated by the fact that choice is based on relative quality. If quality rises for all providers, provider choice may not be affected. Implementing empirical methods that are based in an explicit (structural) model of how consumers make choices or exploiting quasi-experimental settings to test for a response can address these challenges. Overcoming methodological hurdles to make causal inference is a prerequisite to making normative conclusions and for specific policy recommendations.

Dynamic issues related to information release. The majority of the studies of consumer response to changes in information on health plan and provider quality focus on the impact immediately following information release. The short-term focus aids empirical identification but fails to address how information programs can be designed to best achieve long-run impact or the optimal timing of report card releases. For example, report cards may have a diminishing effect over time if each new release provides less incremental information. Moreover, relatively little is known about the stability of true (or reported) performance though there has been some work in this area for providers (Luft & Romano, 1993). If performance varies over time, performance scores may be unstable, which may influence their credibility and impact, particularly because decisions based on report cards take effect well after the data used to create them are generated.

Further complicating this issue is learning and refinement by the agencies administering information (public or private) that improves the risk adjustment and other important factors making information more valuable over time. Estimating models of consumer learning explicitly would be a valuable addition to the current literature. There has been some work to date that has dealt with learning (and learning over time; Dafny & Dranove, 2005; Dranove & Sfekas, 2008). These studies find that accounting for learning affects results, suggesting this line of inquiry should be continued and expanded.

Supply versus demand side response. One of the enduring questions in this literature is the degree to which quality improvement is motivated by demand side pressure or

an intrinsic desire of providers to improve their quality scores (supply side effects). The paradoxical finding that the demand side response seems to be relatively small (at least as reported in surveys on use) but overall quality improvements following report card programs are large suggests that both consumer and supplier effects are important. Extending work to model consumer and firm behavior theoretically will provide an underlying model of demand and supply side mechanisms at work and could direct future empirical work. By the same token, empirical research should look to distinguish the effect of consumer response to quality from the supply side response. Understanding the relative magnitudes of the effects and the mechanisms by which quality change occurs would be invaluable in designing health policy that relies on the public release of quality information.

Switching costs. Consumer response to quality information may be influenced by switching costs. Evidence suggests switching costs for providers and health plans are an important market feature. These costs may also vary by subgroup. Work that estimates the magnitude of switching costs and the role of these costs in dampening response to quality information would move the literature forward and inform policy initiatives that rely on consumer choice. Switching costs have particularly significant implications for antitrust policy. If consumers face high switching costs to move between either health plans or providers that offer higher quality, firms are in a much better position to provide inferior quality or charge excessively high prices. Switching costs may also differ across consumers (between or within subgroups). Policy makers may need to pay particular attention to markets where switching costs are high. For example, if switching costs are high for Medicare beneficiaries, competition and quality reporting may not be effective in the Medicare Advantage or Part D market. Thus, there may be reason to be concerned that the currently low prices for plans could lead to price increases in coming years.

Choice in a high-deductible environment. Most of the studies of quality information pertain to a setting in which patients are well insured. Current trends suggest that in the future patients may pay a greater share of the cost of insurance or care. In these settings, the role of quality information may vary from that observed in existing studies. Initial evidence suggests that consumers in consumer driven health plans (CDHPs) are satisfied with and use available information (Christianson, Parente, & Feldman, 2004; Fowles, Kind, Braun, & Bertko, 2004; Parente, Feldman, & Christianson, 2004). Empirical studies examining the role of quality information in choice of CDHPs are lacking and must account for the difficulty of nonrandom selection into these types of plans (Christianson et al., 2004; Shearer, 2004). Research on this specific setting (and how choice differs relative to consumer behavior in more traditional insurance models) is critical to understand the potential quality impact of consumer-directed policies.

Behavioral economics of consumer choice. The assumption of rational decision making on the part of consumers may not hold in the case of health care consumption

decisions either for health plans or for providers. Incorporating results from behavioral economics could help us to understand individual consumers' ability to make choices in the high-stakes, low-probability settings that characterize health care. For example, prospect theory (Kahneman & Tversky, 1979) argues that individuals are not expected to be utility maximizers when it comes to highly unlikely events. This is important in selecting a health plan because a consumer must determine the optimal plan given the probability of a specific disease. The chance the average consumer becomes ill with a specific serious disease in any year is very low. Prospect theory argues that they will underweight that chance and thus the value of a plan that treats it well. This thinking may be one explanation for the relatively small response to quality measures that include screening rates and treatment for specific diseases. Frank (2004) reviewed the applications of behavioral economics in health care and motivated a number of applications in consumer choice.

Conclusion

In this article, we have reviewed the relevant literature on quality and consumer choice of health plans and providers. Econometric studies find mixed evidence regarding the relationship between plan or provider choice and quality when consumers are not provided with formal quality information. The provision of quality report cards for health plans, however, does seem to affect consumer plan choice though the magnitude of the effect is modest. We also find evidence for a variable response to quality and quality information across population subgroups.

Existing research is not yet able to assess whether quality information will enable market-based solutions to provide high-quality care. We do not know the extent to which quality reporting leads to quality improvement. We do not know if barriers to processing information, such as switching costs or decision imperfections suggested by behavioral economics, will prevent decentralized systems from generating desirable quality. We are not sure how to manage quality release programs over time or which populations are particularly sensitive, or insensitive, to quality reporting. Finally, we are not sure how consumers will respond to quality information when they are required to pay more for their care than they have traditionally paid. Answers to all of these questions are important as we assess health system reform and the different strategies that may be used to encourage high-quality care.

Notes

1. The relatively low value per enrollee reflects the small number of enrollees who actually changed plans. The authors argue that aggregated across enrollees, the total welfare gain is sufficient to warrant the cost of the NCQA quality reporting initiative.

2. The effect of outside learning was strongest in regions in which *U.S. News and World Report* released quality information on HMOs.

3. These numbers are based on the relative improvements in plan performance because they include plan fixed effects. The model that includes absolute performance yields similar results.

4. Similar report card programs for cardiac surgery are now in use in many states including California, Massachusetts, Florida, and New Jersey as well as at the country level in the United Kingdom. However, these programs (with the exception of New Jersey on a limited basis) have not been studied in nearly as much detail.

5. However, the authors find that despite the magnitude the effects of quality information consumers do not exhibit a sufficient demand side response to induce socially optimal quality investments by providers.

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