CONSUMER ENGAGEMENT AND INFORMATION USE IN CONSUMER-DIRECTED HEALTH CARE

by

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Consumer-directed health plans (CDHPs) aim to reduce health spending by increasing patients' cost burden. CDHPs make information available to consumers on health conditions and providers for decision-making. There is evidence that consumers, especially the poorer and less healthy ones, may be less motivated to seek information and have lower ability to understand it. Using data from employees at a large manufacturing employer, this research sought to determine: 1. whether enrollment in a CDHP increases patient engagement; and 2. which CDHP enrollees are most likely to seek health information. I find that there was no relationship between CDHP enrollment

and patient motivation after three years of enrollment. CDHP enrollment was associated with increased cost information seeking. Gender and employee status (hourly/salaried) were associated with seeking information on doctor quality among CDHP enrollees, but there was no relationship between demographics and seeking information on cost or hospital quality in this group.

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CHAPTER I

INTRODUCTION AND LITERATURE REVIEW

Consumer-directed health plans (CDHPs) are an increasingly popular option in the private health insurance market in the United States. CDHPs aim to reduce health care expenditures by providing consumers with financial incentive to become involved in purchasing decisions regarding their care (Buntin et al., 2006). Partly as a result of the backlash against managed care and soaring costs, insurers are shifting the focus of their price controls from physicians to consumers (Robinson, 2004). It appears that CDHP enrollments are on the rise, although current enrollment is relatively small. One estimate is that they will make up 25% of the private health insurance market by 2010 (Cross, 2005).

These plans have four characteristics: 1. High deductibles; 2. personal spending accounts, funded either exclusively by the employer or jointly with the employee; 3. a "gap" after the personal account is spent and before the deductible is met; and 4. greater access to health care and provider information, intended to help consumers choose the highest quality and most efficient care (Greene, Hibbard, Dixon, & Tusler, 2006). Proponents believe that CDHPs will encourage more efficient use of care due to the

increased burden of cost on the consumer and the increased availability of health information.

There are four key criticisms of CDHPs. The first is that consumers, particularly the low income, will forgo necessary care as cost-sharing increases. Researchers often point to the RAND Corporation's Health Insurance Experiment (RAND HIE), a randomized study of the effects of consumer cost-sharing on health care utilization. The study, conducted during the 1970s and 80s, found that increased consumer cost-sharing led to decreased utilization of both necessary and unnecessary care (Manning, Newhouse, Duan, Keeler, & Leibowitz 1987). Emerging evidence suggests this to be the case for current-day CDHP enrollees as well (Hibbard, Greene, & Tusler forthcoming; Greene, Hibbard, Murray, Teutsch, & Berger, 2008). For example, Greene et al. found that enrollees in a high-deductible CDHP were significantly more likely to discontinue prescription medications for hypertension and high cholesterol than were enrollees in a lower-deductible CDHP or a PPO (Preferred Provider Organization).

Second, the literature shows evidence of favorable selection into CDHPs. "Favorable selection" refers to the evidence that CDHP enrollees are healthier, younger, better educated, have higher incomes, and are less likely to be African-American than those in traditional plans (Greene et al., 2006; Marquis et al., 2006; LoSasso, Rice, Gabel, & Whitmore, 2004; Fowles, Kind, Braun, & Bertko, 2004; Tollen, Ross, & Poor, 2004). Not all studies have found evidence of favorable selection along each of these measures, however (for example, Parente, Feldman, & Christianson, 2004). There is evidence that favorable selection will result in "risk pooling," the process by which market forces

create an uneven burden of cost based upon health status (Geyman 2007; Marquis et al., 2006; Tollen et al., 2004). Those in conventional plans would pay more as their ranks become sicker, and those in CDHPs would pay less for health care because they are relatively less ill as a group.

Third, there is concern that CDHPs will harm socioeconomically disadvantaged consumers. Through simulation, McNeill (2004) demonstrated that enrollment in a CDHP benefits the relatively young and healthy, but disadvantages the old and ill, in terms of building up a spending account balance and thus avoiding the "gap." (McNeill also found, however, that the young are not able to capitalize on this advantage because of relatively short job tenure and the fact that spending accounts do not provide investment opportunities.) Jacobs and Claxton (2008), in a comparison of relatively wealthy insured households and poor uninsured households, found that the poor households did not have enough assets to cover the cost of a CDHP in the case of a serious health problem.

Finally, there is evidence that most consumers do not have the ability to make cost-effective health care decisions (i.e., distinguish between necessary and unnecessary care) in a CDHP. At least one study has found information availability lagging behind the demand placed on consumers to make cost-effective decisions (Regopolous, Christianson, Claxton, & Trude, 2006). When the information is available, many people lack the health literacy skills to understand it. Paasche-Orlow et al. (2005) estimate that about one-quarter of Americans have "low health literacy," according to the Healthy People 2010 definition of health literacy: "the degree to which individuals have the

capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions" (http://www.healthypeople.gov/). Even assuming increased availability of information, it remains undetermined whether a decent majority of consumers will be able to access and understand it (Miller, 2007; Volandes & Paasche-Orlow, 2007; Bloche, 2007). Bloche says, "The potential of health information tools to improve decision making by even the most savvy patients has been oversold." Health information is particularly complex and carries its own burden of comprehension.

The implications of the gap between availability and comprehension are great. Limited health literacy has been shown to be a more powerful predictor of health status than race or education (Volandes & Paasche-Orlow, 2007). In order to remain healthy, people have to know which care is appropriate to forgo and which care is necessary. According to Volandes & Paasche-Orlow, the health impact of having limited health literacy is on the order of having diabetes.

Compounding this problem is evidence that consumers with lower socioeconomic characteristics and in worse health are less proactive and knowledgeable with regard to health care and utilizing information. Greene et al. (2006) found that white-collar, salaried CDHP enrollees were more likely to have taken a proactive role in selecting their health care plan (creating spreadsheets, crunching numbers) and blue-collar, hourly enrollees were more likely to have taken a "less systemic" role in their selection (taking a friend's recommendation, choosing the plan with the best-sounding name). In a similar vein, Fowles et al. (2004) found that those in poor health reported significantly more difficulty choosing a health care plan.

There has been relatively little scholarly work on CDHP enrollees' engagement in health care decision making and use of health information. Dixon (forthcoming) found that enrollees in a low-deductible CDHP were more likely to use health care cost information, but not information on quality or general information. My research has two goals: 1. to examine how enrollment in a CDHP influences consumer engagement; and 2. to determine which CDHP enrollees are more likely to become engaged and seek and find health-related information. Specifically, I examine if there are differences in the impact of CDHPs by race, gender, employee type (hourly vs. salaried), and age. This study will add to the literature on the efficacy and equality of consumer-directed health care. Because increased patient decision-making is a hallmark of the consumer-directed health care movement, it is vital that we understand the extent to which patients use the information provided for them. Further, this study is one of the first to look empirically at the issue of equity in information use.

CHAPTER II

METHODOLOGY

Data and Sample

Data for this study came from a longitudinal survey of employees of a large manufacturing company. The survey was administered, on the Internet and via telephone, three times: in the summers of 2004, 2005 and 2006. Respondents were asked about their engagement in health care decision making and their use of health information during the past year. To be eligible for the baseline survey, employees had to have worked for the employer for at least one year, and be younger than 60 years old. CDHP enrollees were oversampled, as were salaried employees and those between 45 and 60 years old. The sample was higher educated, more likely to be white, and in better health than the U.S. population as a whole (Dixon, forthcoming). The survey included questions about health status, patient motivation and information use, and use of medical care.

There were three primary insurance plan types in this dataset: two CDHPs and one PPO. The CDHPs were first introduced in 2004, and differed only in deductible levels. The higher deductible CDHP had the lower annual premium. This plan had deductible levels and out-of-pocket maximums typical of products comparable to the

national average. The lower deductible CDHP had a higher annual premium, but the size of the "gap" between the PCA and the deductible was only one-third the size of the "gap" in the higher deductible plan. In 2004, 31% of respondents were enrolled in the high-deductible CDHP, 28% were enrolled in the low-deductible CDHP, and 41% were enrolled in the PPO.

Dependent Variables

To examine the impact of CDHPs on patient engagement, I used the following five dependent measures of engagement: "Compared to last year": "How much do you think about cost when deciding to get medical care?" "How much do you use health information to help make health care choices?" "How 'in charge' of your health care are you?" "How aware are you of health care costs?" and "How aware are you of quality differences in hospitals?" These questions were developed for this survey and pre-tested in the field.

A second set of dependent variables were used to examine which consumers are most likely to seek and be able to find health information. I first compared the percentages in each plan type who reported trying to find information on doctor or lab costs, doctor quality, or hospital quality in 2005. Next, I examined the demographics of the CDHP enrollees who reported trying to find this information. Finally, I examined the demographics of the CDHP enrollees who reported being able to find all of the information they had sought.

Analytic Approach

To answer the first research question examining the impact of CDHPs on consumer engagement, I conducted bivariate analysis. I examined consumer engagement only among those respondents who were enrolled in the same plan all three years of the study ("nonswitchers"), in order to better gauge the effects of time enrolled. There were 636 nonswitchers, 513 of whom were enrolled in either the high-deductible or the low-deductible CDHP. I analyzed the consumer engagement variables first by plan type, then by demographics for CDHP enrollees only.

To examine the second research question of which CDHP enrollees seek and find health information, I examined the information-seeking variables by demographic subgroup. Specifically, I examined race (white/non-Hispanic or non-white/Hispanic), gender, employee type (hourly or salaried), and age (<35, 35-49, 50-60). For this analysis, I present data from the 2005 survey, but results were similar for 2004 and 2006.

CHAPTER III

RESULTS

Respondent Characteristics

An analysis of the dependent variables by plan type (Table 1) shows some evidence of favorable selection into the CDHPs, in terms of employee type, age and whether respondents had at least one chronic health condition. (Neither chronic conditions nor children in the home were included in the main analyses of this paper.) For example, those with one or more chronic health condition comprised 53% of respondents as a whole, but only 40% of those in the high-deductible CDHP. Fifty-three percent of the sample were hourly employees (a reasonable proxy for lower socio-demographic status, as in Greene et al., 2006). But hourly employees made up just 46% of the high-deductible CDHP.

Table 1. Sample Characteristics, by Plan Type

	High-deductible CDHP (%)	Low-deductible CDHP (%)	PPO (%)	Total (%)
Race				
White	83.1	89.8	86.3**	86.3
Non-White	16.9	10.2	13.7	13.7
Gender				
Male	68.4	52.6	61.0***	60.9
Female	31.6	47.4	39.0	39.1
Employee Type				
Hourly	46.5	56.7	56.4***	53.4
Salaried	53.5	43.3	43.6	46.6
Age				
<35	19.1	14.7	12.9***	15.3
35-49	46.9	39.7	35.1	40.1
50-60	34.0	45.6	52.0	44.6
One or more chronic illnesses	40.3	56.1	61.0***	53.2
One or more children in the home	41.6	25.0	26.0***	30.6

*p<.05 **p<.01 ***p<.001 for differences between plan types

Consumer Engagement and Health Plan Type

In 2004, there was the greatest increase in awareness of health care costs among all consumers (34% of respondents, Table 2). Just over a quarter (27%) reported an increase in thinking about health care costs, and roughly the same amount reported being more "in charge" of their health care (24%). Fewer consumers reported an increase in seeking and using health information (11%), and an increase in awareness of quality differences among hospitals (13%).

Contrary to expectations, we do not observe the high deducible CDHP enrollees increasing engagement relative to the others. In fact, there is no clear relationship between which plan consumers were enrolled in and their overall motivation. We might expect to see the largest increases in motivation items for CDHP enrollees the first year the CDHPs were offered (2004). In 2004, low-deductible CDHP enrollees did report the highest increase in every item except awareness of quality differences in hospitals. For example, 27% of low-deductible CDHP enrollees reported an increased sense of being "in charge" of their health care, compared with 19% in the high-deductible plan and 17% in the PPO.

Table 2. Percent Reporting Increase in Consumer Engagement, Compared to Previous Year, by Plan

Patient Engagement Measures n=636	2004	2005	2006
Thinking about cost when deciding to get medical care			
High Deductible CDHP	23.6	18.2	20.3**
Lower Deductible CDHP	31.2	18.2	25.0
PPO	25.2	13.0	35.0
Seeking out and using health information to make healthcare choices			
High Deductible CDHP	9.3	14.4	12.7
Lower Deductible CDHP	12.7	13.5	18.8
PPO	8.9	13.0	19.5
How "in charge" of health care			
High Deductible CDHP	19.0*	19.1*	18.6
Lower Deductible CDHP	26.8	23.3	21.4
PPO	17.1	10.6	21.1
Awareness of health care costs			
High Deductible CDHP	28.7*	22.0	23.6*
Lower Deductible CDHP	39.1	31.3	31.2
PPO	35.8	24.4	35.8
Awareness of quality differences in hospitals			
High Deductible CDHP	11.4	12.3	8.9
Lower Deductible CDHP	14.5	13.5	14.9
PPO	20.3	12.2	13.8

*p<.05 **p<.01 ***p<.001 for differences between plan types in each year

We might be more interested, however, in results for the high-deductible CDHP group, as its rates more closely approximated the national average for CDHPs. High-deductible CDHP enrollees reported the lowest increase in three of the five motivation items (thinking about cost, awareness of cost, and awareness of quality differences in

hospitals) and the second-least increase in the remaining two items (seeking out and using information, "in charge" of health care). The differences between plan types in 2004 were statistically significant ($p<.05$) for being "in charge" of health care, and awareness of health care costs.

By 2006, PPO enrollees reported the largest or second-largest increase in these items. High-deductible CDHP enrollees, by contrast, reported the smallest increase in every patient motivation item. The only significant differences between plan type groups were the two cost-related items (thinking about cost when deciding to get care, and awareness of health care costs).

CDHP Engagement by Demographics

In the analysis of increase in consumer engagement by demographics, only gender had a significant association with any of the motivation items (Table 3). Females were more likely to report an increase on each of these, but only awareness of health care costs (40% vs. 30%) and increased awareness of differences in hospital quality (17% vs. 10%) reached the level of statistical significance ($p<.05$). Another non-significant trend was hourly employees' being more likely to report an increase on most of these items. The same analysis on the 2006 data produced similar results (Appendix). In 2006, there were no significant associations between demographics and increase in reporting consumer engagement.

Table 3. Percent Reporting Increase in Consumer Engagement in 2004, by Demographic Group (CDHP nonswitchers).

n=513	Thinking about cost	Seeking out and using information	"In charge" of health care	Awareness of health care costs	Awareness of quality differences in hospitals
Race					
Non-White	27.8	13.0	20.4	35.2	18.5
White	27.7	10.9	23.5	34.2	12.4
Gender					
Male	26.6	10.1	21.4	30.2*	10.4*
Female	29.3	12.7	25.9	40.5	17.1
Employee Type					
Hourly	26.1	11.6	25.3	36.1	13.7
Salaried	29.2	10.6	21.2	32.6	12.5
Age					
<35	28.6	8.9	25.0	37.5	8.9
35-49	27.8	13.0	24.7	29.1	14.3
50-60	27.0	9.6	21.7	38.3	13.0
Total	**27.5**	**11.0**	**23.4**	**34.2**	**13.2**

*p<.05 **p<.01 ***p<.001 for differences between demographic groups

Information Seeking

To begin the information seeking analysis, I first examined which consumers reported trying to find information on doctor or lab costs, doctor quality, and hospital quality, by plan type. In general, relatively few patients tended to seek information on health issues. In 2005, low-deductible CDHP enrollees were most likely to report seeking information on doctor or lab costs (17%, Table 4), followed by high-deductible CDHP enrollees (13%) and PPO enrollees (11%). There was no significant difference by plan type in reporting seeking information on doctor quality or hospital quality. Overall,

15% of respondents reported seeking information on doctor or lab costs, 17% reported seeking information on doctor quality, and 11% reported seeking information on hospital quality.

Table 4. Tried to Find Information on Given Item, by Plan Type (2005) (all respondents).

n=1555	Doctor or lab costs	Doctor quality	Hospital quality
High-deductible CDHP	13.4	15.6	9.3
Low-deductible CDHP	17.2*	18.6	11.3
PPO	10.9	15.5	11.4
Total	**14.7**	**17.1**	**10.7**

*p<.05 **p<.01 ***p<.001 for differences between plan types for each type of information

Table 5 presents analysis examining whether there were differences in information use among CDHP enrollees by socio-demographic characteristics. Neither race nor age was related to information seeking. Males were significantly less likely to report seeking information on doctor quality than were females (15% vs. 21%). Employee type and seeking information on doctor quality was the only other significant relationship in the demographic analysis of information seeking. Salaried employees were more likely to seek this information (21% vs. 14%).

Of all the CDHP enrollees who reported seeking health information, just over half were able to find all the information they sought on doctor or lab costs (Table 6). This could be because factual information on costs is more readily available to providers, and

more objective (less controversial). Just over one-third were able to find all the information they sought on doctor quality and hospital quality. There were no significant differences by demographics, except with regard to finding hospital quality information by race. More than two-thirds of non-whites who sought this information were able to find it, compared with one-third of whites.

Table 5. Tried to Find Information on Given Item, by Demographics (2005, CDHP enrollees only).

n=1214	Doctor or lab costs	Doctor quality	Hospital quality
Race			
Non-White	16.6	21.9	12.6
White	15.7	16.9	10.3
Gender			
Male	14.5	15.1**	10.1
Female	17.8	21.3	11.2
Employee Type			
Hourly	15.3	14.2**	8.9
Salaried	16.3	20.6	12.0
Age			
<35	14.8	21.5	9.4
35-49	15.9	18.6	8.9
50-60	16.2	15.3	11.8
Total	**15.8**	**17.5**	**10.3**

*p<.05 **p<.01 ***p<.001 for differences between demographic groups

Table 6. Found All Information Sought on Given Item (% of people who tried to find information), by demographics (2005, CDHP enrollees only).

n=192	Doctor or lab costs	Doctor quality	Hospital quality
Race			
Non-White	56.0	48.5	68.4**
White	52.7	35.0	33.0
Gender			
Male	52.8	35.5	36.5
Female	53.5	38.8	40.7
Employee Type			
Hourly	49.4	44.6	46.2
Salaried	56.3	32.3	32.9
Age			
<35	50.0	40.6	28.6
35-49	54.5	33.3	30.2
50-60	52.8	36.9	41.5
Total	**53.1**	**35.9**	**36.1**

*p<.05 **p<.01 ***p<.001

CHAPTER IV

DISCUSSION

My results failed to confirm proponents' hopes of CDHPs' sparking consumer engagement. Relative to other plans, there was no describable pattern in CDHPs' effects on any of the measures of engagement. Likewise, I found low levels of use of informational resources among all plan types, the use of which might be expected to increase engagement and the feeling of being "in charge." My results do corroborate Dixon's (forthcoming) results that those in the low-deductible CDHP were most likely to begin using cost information.

One explanation for the lack of difference in information-seeking among plan types is that all three plans were provided by the same company; by 2006, this provider was making its informational resource available to all members, regardless of plan type. At any rate, consumers who sought the types of information included in this study were a fairly small minority, and those who actually found it were a much smaller group. Perhaps providers' or employers' creating incentives for use of informational resources would increase their use.

Retchin (2007) proposes another policy option to diminish the information asymmetry in CDHPs: "medical decision advisors" who help patients find, use, interpret and synthesize health-related information. This would be a separately-trained workforce of people especially skilled at navigating medical decisions. Retchin compares these advisors to genetic counselors, who do not provide clinical care, but are trained in critical thinking, communication skills and counseling.

Limitations

This study relied on survey data and is subject to the limitations inherent to such data. Respondents were asked to self-report and quantify attitudes, feelings and actions from the past year. As such, the validity of their responses is subject to recall bias. In addition, it is possible some respondents, aware of the aims of CDHPs, provided responses indicating an exaggerated increase in consumer engagement and information seeking (demand bias). Further, this study looks at only one setting: a large employer in the Midwest whose socio-demographics are somewhat higher than those of the U.S. as a whole.

Conclusion

Future research with this population might include an examination of the extent to which consumers seek information on health conditions, rather than just cost and quality of services. It is likely that in today's culture of "cyberchondria," more people are accessing this type of information than information on cost and quality, especially on the

Internet. Several years after the start of this project, with more insurance providers making more information available, it would also be interesting to compare format, content, and reading level of this information with patient engagement. Adding chronic condition status to the analyses in this study could provide substantial insight. Another avenue for future research is the introduction of "second-generation" CDHPs, in which members select packages for chronic conditions during open enrollment. This minimizes critics' concern that consumers are unable to make health care decisions at the time of diagnosis.

In this fairly middle class sample of employees of a large manufacturing employer, I observed relatively little variation between plan types in either patient motivation over time or information seeking cross-sectionally. These results contrast with concerns about CDHPs' harmful effects on the disadvantaged. But while there was no harm detected in this setting and along these measures, I observed no systematic benefit for the disadvantaged. This study did support arguments against consumers' motivation to seek health-related information and their ability to find such information. Because consumer engagement and information use are the hallmarks of proponents' hopes for consumer-directed health care, it is important to be cognizant of the extent to which consumer-directed plans actually stimulate these behaviors.

Appendix A

Percent Reporting Increase in Item, Compared to Previous Year, by Demographics (non-switcher CDHP enrollees, 2006)

	Thinking about cost	Seeking out and using information	"In charge" of health care	Awareness of health care costs	Awareness of quality differences in hospitals
Race					
Non-White	27.8	16.7	24.1	37.0	16.7
White	22.2	15.9	19.6	26.6	11.5
Gender					
Male	23.1	14.9	19.2	26.9	12.0
Female	22.4	17.6	21.5	28.8	12.2
Employee Type					
Hourly	25.5	16.3	19.9	29.1	14.7
Salaried	20.2	15.6	20.2	26.3	9.5
Age					
<35	25.0	13.6	9.1	22.7	11.4
35-49	25.6	18.9	23.9	27.8	10.0
50-60	19.0	12.8	17.4	27.1	13.2
Total	**22.8**	**16.0**	**20.1**	**27.7**	**12.1**

*p<.05 **p<.01 ***p<.001

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