
Patient Selection in the ESRD Managed Care Demonstration

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The Centers for Medicare & Medicaid Service's (CMS) end stage renal disease (ESRD) managed care demonstration offered an opportunity to assess patient selection among a chronically ill and inherently costly population. Patient selection refers to the phenomenon whereby those Medicare beneficiaries who choose to enroll or stay in health maintenance organizations (HMOs) are, on average, younger, healthier, and less costly to treat than beneficiaries who remain in the traditional Medicare fee-for-service (FFS) sector. The results presented in this article show that enrollees into the demonstration were generally younger and healthier than a representative group of comparison patients from the same geographic areas.

INTRODUCTION

The notion of preferable or favorable patient selection into Medicare HMOs is not new. Indeed, abundant evidence accumulated over the past two decades has helped illuminate the phenomenon whereby those Medicare beneficiaries who choose to enroll or stay in HMOs are, on average, younger, healthier, and less costly to treat than beneficiaries who remain in the traditional Medicare FFS sector (Greenwald et al., 2000; Call et al., 2001;

Call et al., 1999; Riley et al., 1996; Maciejewski et al., 2001; Lichtenstein et al., 1991; Hellinger et al., 2000; Eggers and Prichoda, 1982; Riley, Rabey, and Kasper, 1989). The issue of patient selection, either favorable or unfavorable, has critical implications for the accuracy of payment methods because capitated payments to Medicare HMOs are largely based on average expenditures under FFS (Greenwald, Levy, and Ingber, 2000). From a budgetary perspective, favorable selection means that HMOs enroll beneficiaries whose expected costs are lower than the costs of beneficiaries who remain in the FFS sector (Call et al., 1999). From an analytic perspective, it is crucial to control for differences in health status when comparing outcomes (such as mortality or quality of life) of HMO and FFS patients.

Previous studies conducted to assess selection effects in Medicare HMOs have, by and large, focused on the Medicare population as a whole. CMS' ESRD demonstration offered an opportunity to scrutinize selection issues among a chronically ill and inherently costly population. It is of considerable interest to know whether the selection biases seen in the general population hold true in a population with a substantial burden of illness; that is, do the healthier chronically ill enroll at higher rates in Medicare HMOs than the sicker chronically ill? Understanding selection as it pertains to chronically ill populations will be especially important as risk-adjusted payment methods are devised for such populations and the ESRD population in particular.

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Under the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA), Medicare ESRD beneficiaries are not permitted to enroll in HMOs unless they were enrolled in an HMO prior to the onset of ESRD. To test the notion of whether this enrollment ban is justified, Congress required CMS to conduct a managed care demonstration for ESRD patients. The intent was to see whether extension of an integrated system of care to ESRD beneficiaries was operationally feasible, efficient, and able to produce outcomes comparable to the current FFS system.

The Medicare ESRD demonstration started at three sites across the country: Health Options, Inc. (HOI), a subsidiary of Blue Cross®/Blue Shield® of Florida, based in Miami, Florida; Kaiser Permanente Southern California Region (Kaiser), based in Los Angeles, California; and Xantus Health Care Corporation, based in Nashville, Tennessee. The demonstration was initiated in September 1996 and the sites began enrolling patients in 1998. Only the Kaiser (California) and HOI (Florida) sites remained operational for the duration of the demonstration, which stopped enrolling new patients in early 2001. By that time, Kaiser had enrolled a total of 1,649 beneficiaries and HOI had enrolled a total of 967 beneficiaries (including, for both sites, those who later disenrolled or died).

The two fully participating demonstration plans were based on different models of care. The Kaiser demonstration plan was a closed-practice plan for specialist and inpatient care. At the outset, the majority of outpatient dialysis services were provided under fee-based provider contracts, although over the course of the demonstration, Kaiser built or acquired its own dialysis centers. Although Kaiser had an extensive network of community nephrologists and

centers participating in the demonstration, some patients were required to switch nephrologists and dialysis centers and all were required to use Kaiser-owned hospitals. The Florida site had primarily fee-based contracts with the majority of its providers, with the exception of capitation arrangements made with primary care nephrologists and certain specialists. Like Kaiser, HOI required that patients receive care from network providers, which meant that in some cases patients needed to switch nephrologists or dialysis units in order to enroll in the demonstration. It appears that at both sites the majority of enrollees did not switch providers in order to join the demonstration (i.e., their pre-demonstration provider was also a demonstration provider); close observers of the demonstration (including both providers and patients) noted that the potential requirement to switch providers was likely one of the primary deterrents to increased patient participation. A key feature of the demonstration at both sites was that, in most cases, the nephrologist served as the patient's primary care provider.

Enrollment into the demonstration was strictly voluntary. At the start of enrollment for each demonstration site, adult chronic renal failure patients with Medicare primary insurance who were residents in the demonstration service area counties were indirectly recruited through demonstration health plan marketing materials mailed by CMS. Subsequently, the demonstration sites were also given opportunities to market directly to ESRD patients and staff at local dialysis facilities. Patients who were already enrolled in the Kaiser Medicare-risk HMO plan were listed and randomized by CMS and given the opportunity to join the demonstration on a two-for-one basis (i.e., for every two new enrollees, Kaiser could enroll one of its

existing managed care patients in the demonstration plan).¹ These Kaiser patients are referred to as rollover patients. A range of extra benefits, such as coverage for prescription drugs, were offered to enrollees and marketed as a benefit of joining the demonstration. Oppenheimer et al. (2003) fully describes marketing, enrollment practices, and benefit offerings in the demonstration, Kaiser's rollover patients also received a richer benefit package after joining the demonstration. Enrollment commenced in February and June 1998 for the California and Florida demonstration sites, respectively. Active recruitment and intake were continuous for at least 1 year at both sites, with enrollment continuing until the end of the 3-year demonstration period. Participants could disenroll at any time.

This article reviews the demographic and health status profiles of patients who enrolled in the ESRD demonstration and a comparison sample of ESRD patients in the traditional Medicare FFS program. Additionally, we briefly present characteristics of disenrollees as well as managed care penetration rates by various demographic characteristics as other perspectives from which to assess patient selection.

DATA AND METHODS

The evaluation of the demonstration entailed collection of patient-level clinical data, outcomes, and quality of life data. Of key importance in this type of evaluation is to define appropriate comparison groups. In this case we endeavored to compare the experiences of demonstration patients with the experiences of the general, underlying ESRD population to identify any differences that could be attributed to the demonstration. This comparison served

¹ While the Florida site had very few ESRD patients in its health plan prior to the demonstration, the California site had approximately 2,000 ESRD patients in its regular Medicare-risk plan at the outset.

two purposes: first, it enabled us to determine whether the group of patients who chose to enroll in the demonstration was representative of the general ESRD population. Second, as a result, we were able to account for these differences in our analyses, and thus more accurately interpret other evaluation findings. To assess patient selection, the comparison group employed was a nationally representative sample of U.S. in-center adult hemodialysis patients from the Dialysis Outcomes and Practice Patterns Study (DOPPS) (Young et al., 2000). To increase sample size for focused geographic comparison analyses, we broadened our selection of DOPPS patients from the demonstration service areas to include those residing anywhere within California or Florida.

Although the demonstration sites enrolled patients undergoing peritoneal dialysis and patients with functioning grafts (kidney transplants), the vast majority of enrolled patients were hemodialysis patients (Table 1). Because of inherent differences in health status and expected differences in outcomes according to treatment modality, it was important to analyze each group separately. Due to the low numbers of peritoneal dialysis and functioning transplant patients in the demonstration, all analyses presented here are based on the hemodialysis patient population only, with the exception of the penetration rate study.

Data collection strategies included medical record abstractions, in-person interviews, and electronic data transfers from the demonstration organizations. Three data collection instruments were developed by the evaluators, which borrowed liberally from the questionnaires developed for DOPPS. Included were a clinical assessment form for recording data from the medical record, a patient questionnaire for assessing patient satisfaction and quality

Table 1
End Stage Renal Disease Managed Care Demonstration Enrollees, by HMO Site and Modality at Time of Enrollment

Modality	Kaiser		HOI	
	Enrollees	Percent	Enrollees	Percent
Total	1,649	100	967	100
Hemodialysis	1,353	82	900	93
Peritoneal Dialysis	169	10	48	5
Functioning Transplant	127	8	19	2

NOTES: HMO is health maintenance organization. Kaiser is Kaiser Permanente Southern California Region, based in Los Angeles, California. HOI is Health Options, Inc., a subsidiary of Blue Cross®/Blues Shield® of Florida, based in Miami, Florida.

SOURCES: Shapiro, J.R., Centers for Medicare & Medicaid Services, Dykstra, D.M., Pisoni, R., and Held, P.J., University Renal Research and Education Association, Beronja, N., The Lewin Group, Gaylin, D.S. and Oppenheimer, C.C., National Opinion Research Center, and Rubin, R.J., Georgetown University School of Medicine, 2003.

of life, and a termination form for recording the date and reason for departure from the demonstration. These instruments were used to collect both baseline and longitudinal data. Detailed data collection at the time of enrollment was successfully completed for 1,292 enrollees (678 at Kaiser and 594 HOI patients). Due to restrictions in the scope of data collection for the study, data collection was limited to the first approximately 1,500 enrollees; among this sample we achieved a response rate of 85 percent. Among disenrollees (not including deaths), termination forms were completed for 31 disenrollees at Kaiser and for 53 disenrollees at HOI (response rate of 82 percent).

As presented in this article, chi-square and *t* test statistics were used to detect baseline differences in proportions or means. Statistical significance was interpreted at the $p < 0.05$ level for a two-tailed test. All statistical estimation was performed using SAS® version 8.0 (SAS® Institute, Inc., 1997). Logistic regression models were used to estimate the odds of having a fistula for the primary vascular access at study start. DOPPS patients in Florida and California were used for comparison to the respective demonstration sites in those States. Poisson regression models were used to determine the relative rate of hospitalization for demonstration patients versus DOPPS comparison patients,

adjusting for baseline comorbid and demographic factors. These included: age, sex, race, ethnicity, time with ESRD, body mass index, serum albumin, cancer, coronary artery disease, congestive heart failure, left ventricular hypertrophy, other cardiac conditions, cerebrovascular disease, hypertension, drug abuse, chronic obstructive pulmonary disease, peripheral vascular disease, need for assistance to walk or transfer, and nursing home status. Whether or not the patient died during the followup period was also an adjustment covariate in the regression models. This was because of the high correlation between death and hospitalization, as well as the fact that, unlike the comparison patients, demonstration patients were guaranteed survival during the pre-demonstration period (i.e., no possibility for deaths).

Standard *t*-tests were used to detect differences in characteristics between disenrollees and non-disenrollees (i.e., continuous enrollees) and Poisson regression was used to estimate unadjusted rates of days spent in the hospital between these two groups.

Penetration rates were calculated by taking the number of plan enrollees and dividing that number by the number of eligible persons (i.e., the total number of individuals who had the option of enrolling, whether they chose to do so or not). Data on enrollees came from the study's primary

Table 2
End Stage Renal Disease (ESRD) Managed Care Demonstration and Comparison Group
Demographic Characteristics

Characteristic	California		Florida	
	Demonstration	Comparison ¹	Demonstration	Comparison ¹
Sample Size (<i>n</i>) ²	678	771	594	1,072
Mean Age (Years)	57.9	*61.4	60.4	*63.4
Time Since ESRD Onset (Years)	3.46	*1.84	3.83	*1.95
Race			Percent	
Other than White	39.4	36.7	48.1	*36.1
Hispanic	27.0	28.9	24.8	*8.6
Male	62.2	**55.2	62.5	**57.7
Years of School (Mean)	12.8	*12.3	12.1	12.2
Household Income			Percent	
≤\$10,000	27	33	43	**37
\$10,001-\$40,000	62	48	48	49
>\$40,000	11	18	8	14

* $p < 0.001$ versus same-State.

** $p < 0.050$ versus same-State.

¹ Same-State Dialysis Outcomes and Practice Patterns Study.

² Sample sizes reported here apply to all analyses presented in this article, unless otherwise noted.

SOURCES: Shapiro, J.R., Centers for Medicare & Medicaid Services, Dykstra, D.M., Pisoni, R., and Held, P.J., University Renal Research and Education Association, Beronja, N., The Lewin Group, Gaylin, D.S. and Oppenheimer, C.C., National Opinion Research Center, and Rubin, R.J., Georgetown University School of Medicine, 2003.

data collection efforts previously mentioned. Data on the number of eligible persons came from the Medicare enrollment database.

RESULTS

Characteristics

Comparisons between the demonstration and same-State DOPPS patients were made with respect to a number of demographic, comorbid, and disability-related characteristics (Tables 2 and 3). In contrast to the comparison patients, demonstration patients from both sites were proportionately younger and more frequently male. In Florida, a higher proportion of Hispanic and other than white patients enrolled in the demonstration. Enrollees in the Kaiser demonstration had higher average education levels than the California DOPPS comparison. Household income was reasonably similar for respondents in both the demonstration and comparison groups.

The average count of comorbidities and disabilities was similar in California for demonstration and DOPPS comparison patients (3.9 versus 4.2) and lower among Florida demonstration compared with DOPPS comparison patients (3.4 versus 4.4, $p < 0.001$). However, in California, among 22 comorbid conditions measured, comparison patients experienced 11 of the characteristics at statistically significantly higher rates than demonstration patients. Conversely, California demonstration patients experienced only four of these characteristics at higher rates, and one of these—hypertension—is known to have protective effects (Foley, Herzog, and Collins, 2002). In Florida, comparison patients experienced 10 of the characteristics at higher rates than demonstration patients. Florida demonstration patients experienced two of these characteristics (including hypertension) at higher levels. Comparison patients at both sites experienced all three measures of disability at higher rates compared

Table 3

End Stage Renal Disease Managed Care Demonstration and Dialysis Outcomes and Practice Patterns Study (DOPPS) Comparison Group Baseline Comorbidity and Disability Rates

Characteristic	California		Florida	
	Demonstration	DOPPS ¹	Demonstration	DOPPS ¹
Sample Size (n)	678	771	594	1072
Comorbid Conditions				
Average Number of Comorbidities	3.9	4.2	3.4	*4.4
			Percent	
Coronary Artery Disease/ Coronary Heart Disease	35.1	**40.8	43.5	45.5
Myocardial Infarction	15.9	15.9	19.6	20.2
Cardiac Arrest	2.1	2.7	1.2	2.3
Left Ventricular Hypertrophy	19.6	*27.9	19.3	20.9
Cardiac Dysrhythmia	26.2	**19.5	18.1	*29.2
Cardiomegaly by X-ray	29.7	30.6	16.7	**23.4
Pericarditis	5.6	**2.3	3.1	3.5
CVD, CVA, TIA	14.8	**18.9	15.3	18.2
Peripheral Vascular Disease	23.7	20.3	29.4	**25.2
Hypertension	93.7	*84.9	92.6	*85.2
Diabetes	48.4	51.7	45.9	47.4
On Insulin (Among Diabetics)	53.1	*69.1	52.1	*72.8
COPD	7.0	**11.3	9.0	**13.1
History of Pulmonary Edema	30.0	*21.3	13.1	*21.8
Current Smoker	9.6	*17.5	5.4	*15.5
History of Cancer	6.3	**9.5	8.6	**12.4
Appears Undernourished	3.0	*14.8	2.1	*8.8
Alcohol Dependence	3.2	**6.4	1.7	**4.5
Drug Dependence	2.5	*6.9	1.9	2.9
HIV Positive	0.6	0.9	1.4	1.0
AIDS	0.6	0.8	0.4	0.7
Serum Albumin(mean g/dl)	3.85	*3.52	3.89	*3.56
Disability Measures				
Walks with Assistance	20.2	*41.1	17.7	*36.1
Transfers with Assistance	9.1	*22.1	3.8	*17.0
Live-in Nursing Home	1.0	*8.9	0.6	*7.5

* $p < 0.001$ versus same-State demonstration.

** $p < 0.050$ versus same-State demonstration.

¹ Same-State DOPPS.

NOTES: CVD is cardiovascular disease. CVA is cerebrovascular accident. TIA is transient ischemic attack. COPD is chronic obstructive pulmonary disease. HIV is human immunodeficiency virus. AIDS is acquired immunodeficiency syndrome. g/dl is grams per deciliter.

SOURCES: Shapiro, J.R., Centers for Medicare & Medicaid Services, Dykstra, D.M., Pisoni, R., and Held, P.J., University Renal Research and Education Association, Beronja, N., The Lewin Group, Gaylin, D.S. and Oppenheimer, C.C., National Opinion Research Center, and Rubin, R.J., Georgetown University School of Medicine, 2003.

with demonstration patients. Many of the characteristics experienced at higher levels by comparison patients were those associated with serious complications, such as difficulty ambulating and malnourishment.

Hospitalization Rates Before Demonstration Enrollment

In addition to measures of comorbidity, the level of prior hospitalization for demonstration patients was also used as an indicator of health status at the time of enrollment. Based on Clinical Assessment Form data abstracted from patient medical

charts, patients at both the Kaiser (California) and HOI (Florida) demonstration sites had a significantly lower rate of hospitalization in the 6 months before enrollment relative to the comparison patients (Figure 1 and Table 4), consistent with their lower risk factors. The total number of days spent in the hospital during the 6 months before enrollment was also collected on the Patient Questionnaire. Estimates of these measures based on patient recall were significantly correlated with data from the Clinical Assessment Form (Pearson $R=0.53$).

Figure 1
Prior Inpatient Hospital Days Per Patient Year (PPY) at Risk

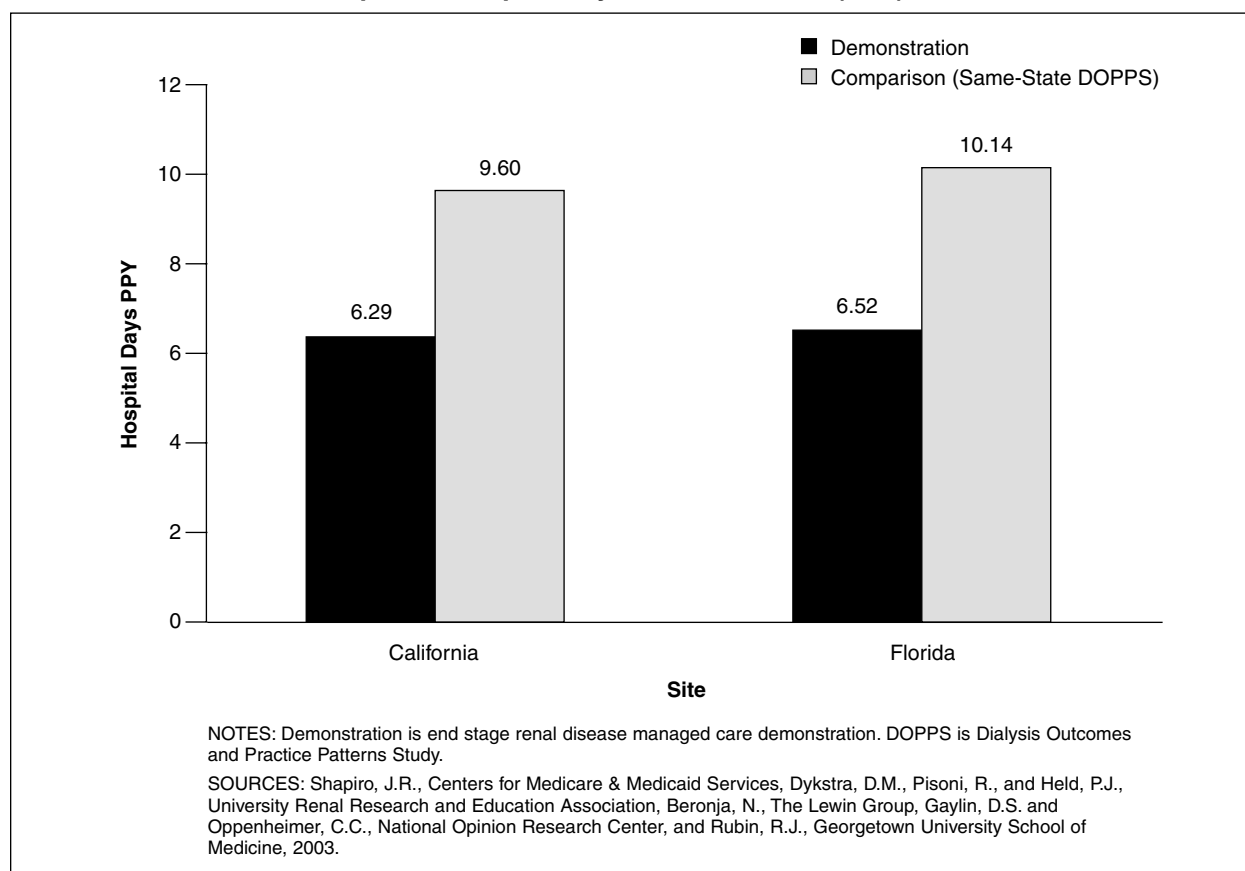


Table 4
Relative Rate of Hospitalization for 6 Months prior to End Stage Renal Disease Managed Care Demonstration Versus Same-State Dialysis Outcomes and Practice Patterns Study (DOPPS) Comparison

Comparison	Relative Rate (Unadjusted)	P-value	Relative Rate (Adjusted ¹)	P-value
Kaiser Versus California Comparison ²	0.65	0.0003	1.05	0.655
HOI Versus Florida Comparison ²	0.63	0.0002	0.94	0.603

¹ Adjusted for a standard set of covariates and deaths recorded in the DOPPS sample.

² Same-State DOPPS.

NOTES: Kaiser is Kaiser Permanente Southern California Region, based in Los Angeles, California. HOI is Health Options, Inc., a subsidiary of Blue Cross®/Blues Shield® of Florida, based in Miami, Florida.

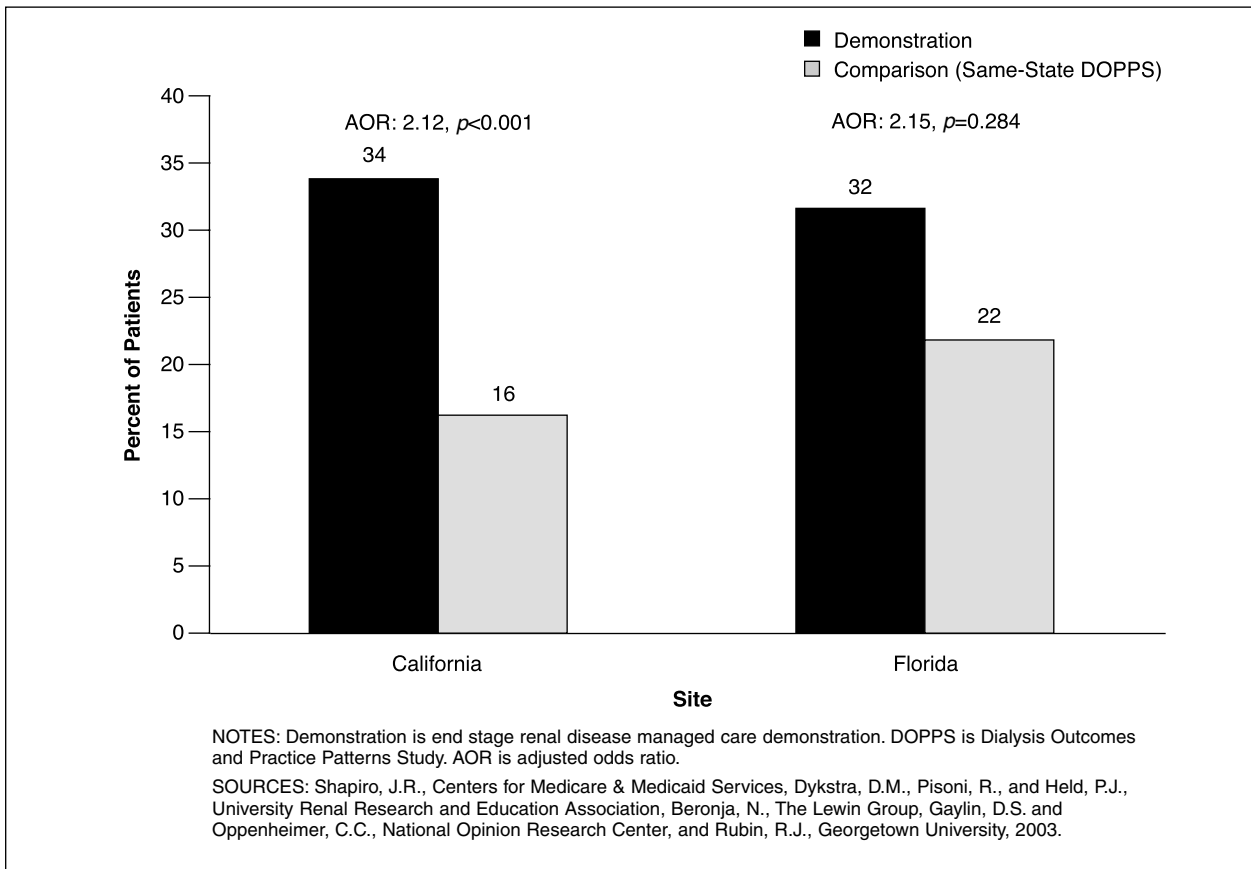
SOURCES: Shapiro, J.R., Centers for Medicare & Medicaid Services, Dykstra, D.M., Pisoni, R., and Held, P.J., University Renal Research and Education Association, Beronja, N., The Lewin Group, Gaylin, D.S. and Oppenheimer, C.C., National Opinion Research Center, and Rubin, R.J., Georgetown University School of Medicine, 2003.

After adjustment for a variety of risk factors, differences in prestudy hospital rates for demonstration versus comparison (DOPPS) patients were no longer apparent (Table 4), showing that any real differences in the hospitalization for demonstration patients pre-enrollment versus comparison patients were fully explained by their healthier status.

Also of interest are comparisons between newly enrolled demonstration patients and those who had been in the Kaiser plan previously (Kaiser rollover). Kaiser rollover patients experienced significantly less hospitalization than the patients newly enrolled in Kaiser and HOI (adjusted relative rate of 0.540 for Kaiser rollover, $p=0.001$).

Figure 2

Percent of Patients with Arteriovenous Fistulas at Enrollment and Adjusted Odds of Fistula Use



Vascular Access

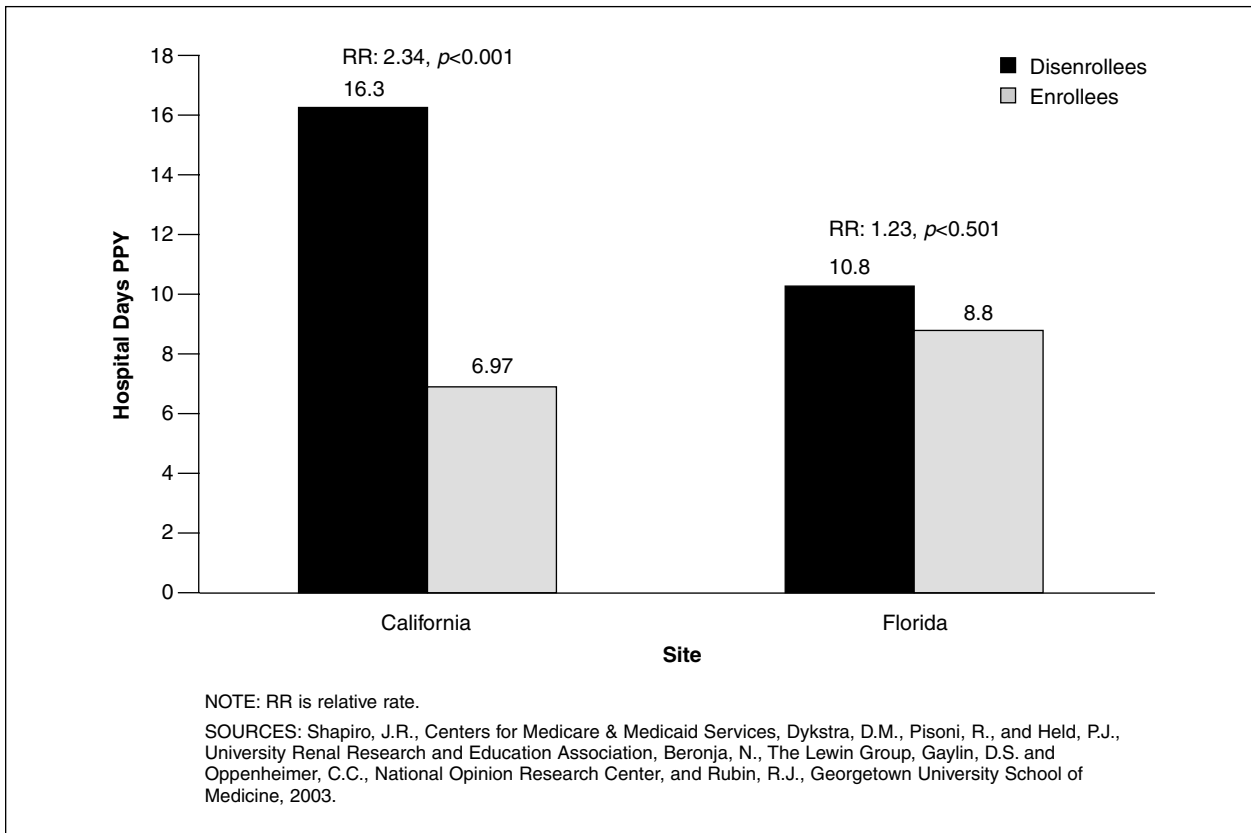
Another measure of selection to the demonstration is the type of vascular access hemodialysis patients had at enrollment. Patients with arteriovenous (AV) fistulas tend to experience better outcomes than those with synthetic or bovine grafts, and for this reason, fistulas are recommended over grafts for permanent vascular access by the Dialysis Outcomes Quality Initiatives guidelines (Schwab et al., 1997).

Figure 2 shows the unadjusted percentages of patients with an AV fistula in the demonstration and the DOPPS comparison sample. The likelihood of having an AV fistula versus a graft was estimated among demonstration and comparison patients using a logistic regression model, with

adjustment for a variety of risk factors, such as years with ESRD. To account for potential trends in fistula use over time, we also adjusted for the year of study entry, because some of the DOPPS comparison patients joined DOPPS prior to the start of the demonstration (Young et al., 2000). Demonstration patients in California were more than twice as likely to have a fistula than comparison patients. This increased odds for Kaiser was somewhat driven by the existing Kaiser rollover patients, who were 44 percent more likely ($p=0.051$) to have a fistula when they were rolled into the demonstration than the new Kaiser demonstration patients. (It is worth noting that when rollover patients are removed from the analysis, slightly higher fistula prevalence among new Kaiser patients is still evident.)

Figure 3

End Stage Renal Disease Managed Care Demonstration Hospital Days and Unadjusted Relative Rates Per Patient Year (PPY) at Risk



The demonstration patients in Florida were also more likely to have a fistula than their DOPPS counterparts; however, this difference was not statistically significant.

Characteristics and Experience of Disenrollees

Exploring the characteristics and experience of demonstration voluntary disenrollees (i.e., excluding deaths) can also reveal selection patterns. Baseline age, total number of comorbidities, and days in the hospital prior to enrolling in the demonstration were similar between continuous enrollees and disenrollees at both sites (data not shown). Figure 3 shows enrollee and disenrollee days spent in the hospital during the demonstration. Results

from Poisson regression models indicate that Kaiser disenrollees ($n=31$) had a statistically significantly higher demonstration hospitalization rate (unadjusted) compared with continuous enrollees. Although disenrollees at HOI ($n=53$) had, per patient year, an additional 2 days in the hospital compared with enrollees, rates were statistically similar across the two groups.

Managed Care Penetration

HMO penetration rates offer an alternative perspective from which to examine patient selection. Such penetration rates (enrollees divided by eligibles) are typically used to indicate the uptake of the managed care option, and if traced over time can indicate potential growth of the market

Table 5
Penetration Rates by Age, Race, Sex, and Modality Level at Kaiser Permanente and Health Options, Inc., End of Year 2

Characteristic	Kaiser Permanente Year 2 Penetration Rate		Health Options, Inc., Year 2
	Including Rollovers	Excluding Rollovers	Penetration Rate
Age			
Under 21 Years	0.7	0.2	1.2
21-39 Years	5.1	3.1	9.1
40-64 Years	6.3	4.0	13.1
65-84 Years	4.5	1.9	9.8
85 Years or Over	2.3	0.9	9.8
Race¹			
Asian	2.5	1.2	2.3
Black	5.4	2.5	10.3
White	5.1	2.9	7.0
Other	10.3	7.8	6.8
Sex			
Female	4.4	2.2	9.4
Male	6.0	3.7	12.4
Modality			
Hemodialysis	6.9	4.0	15.5
Peritoneal Dialysis	7.0	3.8	9.2
Functioning Graft	2.5	1.2	1.1
Medicaid Eligibility			
Dually Eligible	1.7	NA	5.9
Medicare Only	9.3	NA	13.3

¹ Year 1 penetration for Florida; Year 2 race data for Florida not available (NA).

SOURCES: Shapiro, J.R., Centers for Medicare & Medicaid Services, Dykstra, D.M., Pisoni, R., and Held, P.J., University Renal Research and Education Association, Beronja, N., The Lewin Group, Gaylin, D.S. and Oppenheimer, C.C., National Opinion Research Center, and Rubin, R.J., Georgetown University School of Medicine, 2003.

for HMO services. In the context of evaluating patient selection, penetration rates are useful for examining the variation in penetration by patient characteristics.

The Kaiser demonstration in California achieved an overall demonstration penetration rate of 5.2 percent at the end of the second year of the demonstration if rollover patients are included in our calculation, or 3.0 percent if rollover patients are excluded. HOI in Florida achieved an overall demonstration penetration rate of 11.1 percent at the end of the second year. Consistent with the selection results previously presented, a review of penetration rates by age, race, sex, modality, and income level subgroups reveals numerous areas in which demonstration enrollment was disproportionate to the distribution of characteristics among the eligible population (Table 5). As indicated, when examined by age group, penetration was highest for both sites among the age group 40-64. At Kaiser, penetration was

highest among the other race category²; at HOI, it was highest among Black enrollees. At both sites penetration was higher among males compared with females. When examined by modality, Kaiser experienced equal penetration among both hemodialysis and peritoneal dialysis patients. In contrast, HOI experienced much higher penetration among hemodialysis patients. Both sites experienced relatively low penetration among functioning graft patients. Finally, both sites had substantially lower penetration among beneficiaries who were eligible for both Medicaid and Medicare compared with Medicare-only beneficiaries.

DISCUSSION

The demonstration provided the first opportunity to systematically evaluate selection into HMOs among a chronically

² The race of individuals with Hispanic ethnicity were typically classified as white or black. Thus, Hispanics do not account for the high penetration in the other race category.

ill population. Demonstration enrollees were, as expected, generally younger and healthier than a representative group of comparison patients from the same geographic areas.

Specifically, demonstration patients were approximately 3 to 3.5 years younger than comparison patients. In both sites enrollees were predominantly male; the reason more young males chose a managed care option may be related to other risk-taking behaviors not measured by this study. Of key importance was the finding that across 25 disease- and disability-related conditions, demonstration enrollees tended to experience these conditions at considerably lower rates.

We also assessed selection by reviewing pre-enrollment hospitalization rates. The lower (unadjusted) pre-enrollment hospitalization among demonstration patients (6.3 versus 9.6 days in California and 6.5 versus 10.1 days in Florida) was explained entirely by differences in demographic and comorbid risk factors. In other words, after adjusting for these factors, rates of prior hospitalization were similar for demonstration and FFS comparison patients. This result underscores the importance of examining systematic differences in health status across the groups; without taking such differences into account it would be highly inaccurate to attempt to attribute further evaluation findings (such as mortality outcomes) to the intervention (i.e., managed care).

In addition to having fewer hospital episodes prior to enrollment, demonstration patients were also more likely than other FFS patients to have a functioning fistula when they enrolled in the demonstration, even after accounting for various risk-factor differences. Prior research suggests that vascular access via an AV fistula is associated with seeing a nephrologist early in the progression of the disease (often

referred to as early referral) (Goransson and Bergrem, 2001; Joseph and Adler, 2001). Early referral itself is highly associated with positive health outcomes and better health status, such as lower age, higher likelihood of a predialysis transplant, better metabolic status at the start of dialysis, and a shorter duration of the initial hospital stay (Goransson and Bergrem, 2001). The finding that a higher proportion of demonstration patients had functioning fistulas at the time of enrollment may indicate that demonstration enrollees started undergoing nephrologist-supervised treatment at an earlier stage in their disease, perhaps another indication of patient selection.

Comparisons of continuous enrollees in the demonstration to voluntary disenrollees (i.e., excluding those who died) reveals that patient selection effects continue to appear even after initial enrollment. While baseline age, total comorbidities, and pre-demonstration hospital days were similar between the two groups, demonstration disenrollees spent more days in the hospital during the demonstration. At Kaiser, the relative rate of days in the hospital among disenrollees was more than twice that of continuous enrollees. At HOI, the number of hospital days among disenrollees was also slightly higher than enrollees, but the difference was not statistically significant. These results seem to suggest that participants who experience health problems subsequent to enrolling in an HMO may be more inclined to return to FFS.

The penetration rates provide another means of reviewing patient selection. If patient selection (either favorable or unfavorable) had not occurred, then penetration rates should have been approximately the same across patient subcharacteristics. For example, we would have seen the same penetration rate for males as for females, for white persons as for other than white

persons, and so on. Because favorable patient selection did occur, we see marked differences in penetration rates by patient characteristics, such as age, race, sex, modality, and dual-eligibility status.

It is understandable why favorable patient selection into managed care occurs. One explanation is that patients who choose to change their health insurance are not likely to be experiencing an acute hospital episode or other serious condition. Opportunities to change fundamentals, such as health insurance are not likely to receive much attention during such periods. Additionally, Wynia et al. (2002) found that many primary care physicians report encouraging patients to join or avoid capitated plans according to the patient's health status. In fact, recommendation of their doctor was one of the top reasons reported by demonstration patients in Florida for joining or staying in the demonstration. Notably, comparison patients who were eligible for, but did not join, the demonstration overwhelmingly (>88 percent) reported that they were unaware of the demonstration (Pifer, 2003).

Another explanation for favorable patient selection that has been discussed in policy settings has been that of purposeful selection of healthier beneficiaries by the managed care plans. Extensive monitoring by the evaluators of the demonstration revealed no evidence or indication of such behavior by the demonstration plans. In this case, the patient selection that occurred appeared to result from patient self selection.

Patient selection out of managed care occurs because individuals experiencing higher-than-average health concerns may want to return to a system of care that they are more used to and comfortable with. Additionally, the higher hospital days

among disenrollees raises questions about their perceptions of the quality of care these individuals received during the demonstration. However, a lack of data on reasons for disenrollment and the relatively small number of disenrollees prohibits us from exploring whether quality concerns specifically prompted decisions to disenroll.

The finding that favorable patient selection occurs among chronically ill individuals, in this case ESRD patients, has important implications for Medicare payment policy. Prior research has shown that failure to adjust adequately for differences in the expected cost of enrollees due to differences in health status could result in systematic overpayment (or underpayment) to HMOs (Maciejewski et al., 2001). An ESRD risk-adjustor model is under development by CMS; these results highlight the importance of such models and the need for better understanding the predictors of health care cost.

Nevertheless, we believe that patient selection may not be a valid criterion for a decision by Congress on whether to drop the current prohibition against ESRD beneficiaries freely enrolling in Medicare HMOs—a decision the demonstration was designed to help evaluate. Favorable selection is a reality across the Medicare+Choice program. The key factor is whether outcomes are comparable among ESRD patients in HMOs versus those treated in the FFS system. Such determinations are only possible taking into account the characteristics of those who enrolled in the demonstration (versus those who did not) and controlling for any differences. Future analyses of outcomes under the demonstration, including those focusing on mortality and hospitalization, will take into account patient selection.

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