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Utilization of Services in Medicare Advantage versus Traditional Medicare since the Passage of the Medicare Modernization Act

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Abstract

Enrollment in Medicare Advantage has grown rapidly from 2003 to today. For the years 2003–2009, we compared individual-level Healthcare Effectiveness Data and Information Set (HEDIS®) data collected from all plans on service utilization by patients enrolled in Medicare Advantage HMO plans with comparable claims-based measures for matched samples from traditional Medicare. Controlling for self-reported health, health plan enrollees had lower rates of ambulatory visits and hospitalizations initially that converged by 2008 and fewer emergency department visits and ambulatory procedures (~25–30%). Health plan enrollees received fewer hip or knee replacements (lower by ~10%) but more coronary bypass surgery. Our study suggests utilization of services may be more appropriate in Medicare Advantage.

Keywords

Medicare; managed care; utilization

Introduction

After several years of declining growth and health plan exits, the Medicare Modernization Act of 2003 reinvigorated Medicare's managed care program (Medicare Advantage), principally by increasing payments to participating health plans. These payments encouraged many more health plans to participate in Medicare and made the program more attractive to beneficiaries because competition among plans and regulations led plans to pass along most of the extra payments to beneficiaries in the form of enhanced benefits or lower premiums (1–3). From 4.6 million enrollees in 2003, enrollment in Medicare Advantage plans paid on an at risk basis grew to 12.8 million by 2012, encompassing 26% of Medicare beneficiaries(4).

Health maintenance organizations (HMOs) constitute 65 percent of Medicare Advantage enrollment. Relative to traditional Medicare, HMOs may be able to treat a given patient with greater efficiency while attaining equal or superior quality through their flexibility in enrollee benefits, network contracting, and coordination of care (5). Plans may actively manage the provider networks through which they deliver care and employ programs to promote the delivery of appropriate services and avoid excessive utilization. In addition, health plans use a variety of financial incentives to physicians to influence the quality and quantity of services delivered. These are all hallmarks of integrated care. By contrast, in traditional Medicare physicians make clinical decisions for their patients with little or no oversight.

An important measure of the impact of integrated care is the utilization of services. Surprisingly, no recent studies have compared use of services in Medicare Advantage and traditional Medicare, largely because comparable data across the two systems of care have not been readily available. In this study we compared Medicare Advantage utilization rates from 2003 through 2009 with corresponding rates among traditional Medicare beneficiaries

who were matched to the geographic distribution and demographic characteristics of Medicare Advantage HMO enrollees.

Study Data and Methods

Data

Medicare Advantage—Since 1998, all Medicare Advantage plans have been required to report data annually to CMS on individual-level Healthcare Effectiveness Data and Information Set (HEDIS®) measures of utilization, including a confidential identifier for each beneficiary that can be linked to the beneficiary summary file (6). We obtained data for the years 2003–2009 submitted to CMS by participating health plans for beneficiaries age 65 or older enrolled in Medicare Advantage HMO plans for the full year. Health plans were defined as CMS contracts, a health plan unit operating in a single state or up to three adjoining states. We excluded small numbers of preferred provider organizations (PPO), legacy health plans that were reimbursed on a cost basis rather than the usual capitated amount, and special needs plans that serve non-representative beneficiaries. In addition we excluded private fee-for-service (PFFS) plans because they are not required to report HEDIS data to CMS and because unlike HMOs, they are not integrated and do not manage care. Finally, we also excluded health plans with fewer than 500 enrollees, which accounted for less than 0.2% of enrollees in all years. After exclusions, our analytic sample included data from 120 and 280 health plans in 2003 and 2009 respectively.

The data included information on overall rates of medical and surgical hospitalizations, outpatient visits, ambulatory surgery/procedures (including procedures performed in hospital outpatient departments or ambulatory surgery centers such as colonoscopies or knee arthroscopy), emergency department visits and 12 specific surgical procedures (Exhibit 1). Each health plan collected data according to National Committee for Quality Assurance (NCQA) specifications, although unlike quality of care data reported to CMS, these data are not subject to random audit (7).

Some plans failed to submit some data elements for some years, were not present in all years, or submitted data that appeared erroneous. Our approach to removing implausible data is described in the Technical Appendix(8).

Traditional Medicare—To create a matched comparison sample for each health plan, we used traditional Medicare enrollment and claims files from complete claims data provided by CMS to the National Bureau of Economic Research for a random 20% sample of traditional Medicare beneficiaries. We identified all persons who were continuously enrolled in Medicare Part A and Part B and were at least 65 years of age as of January 1 of the applicable study year. We excluded residents of long stay nursing homes, whom we identified using a validated algorithm (9), because these beneficiaries rarely enroll in Medicare Advantage plans other than special needs plans (10), and Medicare beneficiaries with end stage renal disease. We also excluded enrollees who died during or within 3 months after each study year (identified using similar methods for traditional Medicare and Medicare Advantage enrollees) because many of these beneficiaries enroll in the Medicare hospice benefit for which HEDIS utilization measures are not available. We applied NCQA specifications to count the number of times each person underwent each procedure.

CAHPS Surveys—We used data from the Medicare Consumer Assessments of Healthcare Providers and Systems (CAHPS®) surveys to adjust our results for residual differences in health status that might remain after demographic and area-level matching. The Centers for Medicare and Medicaid Services has conducted the CAHPS survey in Medicare Advantage since 1997 and in traditional Medicare since 2000. We obtained CAHPS data from CMS for

2003, 2004, and 2007–2009; surveys were not collected for traditional Medicare in 2005 or for either group in 2006. CAHPS surveys are conducted by mail with telephone follow-up for random samples of at least 600 enrollees per Medicare Advantage HMO and in a nationally representative sample of traditional Medicare beneficiaries. Annual survey samples eligible for our analyses over the time period ranged from 66,813–131,104 for Medicare Advantage and from 103,162–152,444 for traditional Medicare.

Beneficiary Characteristics—We obtained information on the race/ethnicity, age, sex, and ZIP code of residence of beneficiaries from the Medicare Beneficiary Summary File.

Statistical Analyses

We compared utilization in each Medicare Advantage plan with a traditional Medicare sample matched by geographic distribution and demographic characteristics and then aggregated these results to obtain national estimates that were weighted by the enrollment of Medicare Advantage plans. Matching on geography controlled for variation in practice patterns within Medicare across regions (11, 12). By matching at the zip code level where possible, we also controlled for unmeasured socioeconomic characteristics associated with residence at this level of geography. The Appendix further describes the matching process (8).

We further adjusted the Medicare Advantage utilization estimates to reflect the different distribution of health status in the matched traditional Medicare population using the CAHPS survey data. We created nationally matched cohorts, weighted for non-response, of Medicare Advantage and traditional Medicare CAHPS respondents and calculated the distributions of self-reported general health status and mental health status in each of these sectors (each rated on a 5-point scale ranging from poor to excellent). Using the linked Medicare Advantage CAHPS and HEDIS data, we estimated coefficients reflecting the association of health status in Medicare Advantage with each utilization measure. We used these coefficients to project the utilization differences that might be expected due to health status differences between traditional Medicare and Medicare Advantage, and subtracted these from the unadjusted differences.

For each utilization measure, we calculated the unadjusted and adjusted Medicare Advantage mean, the matched traditional Medicare mean, the difference, and their respective standard errors. (Due to the large sample sizes, the standard errors are all too small to be depicted in the figures.) We examined the overall results and those for two groups of health plans: plans that participated for the entire six year study period ($n=99$, mean 2009 enrollment= 39,400) and those new to Medicare Advantage at any time after 2003 ($n=181$, mean 2009 enrollment= 5,997). Our study protocol was approved by the Harvard Medical School Human Studies Committee and the CMS Privacy Board.

Study Limitations

Our study is subject to several limitations. It was not designed to determine the specific management features of health plans affecting utilization. In addition, we lacked data on diagnoses among Medicare Advantage enrollees, which might have influenced decisions to pursue certain procedures, and precluded us from calculating a standard risk adjustment score such as the one that CMS uses to determine health plan payments. Although we did incorporate an adjustment for health status, this adjustment was based on data from Medicare Advantage alone and it is possible that a similar adjustment based on traditional Medicare data might have led to slightly different results. The utilization data health plans submitted to CMS were not fully audited and may not have been completely reported since these data did not affect payment. In addition, these data represent serial cross sections of

enrollees, rather than longitudinal panels. We also lacked data from PFFS plans, in recent years a substantial fraction of Medicare Advantage enrollment. Finally, we were unable to determine whether differences in rates of utilization were appropriate and we are not able to control for other secular trends such as the introduction of Part D in 2006.

Study Results

Our study sample grew from 3.1 million Medicare Advantage HMO enrollees in 2003 to 5.7 million in 2009. Demographic characteristics of the Medicare Advantage enrollees, the overall traditional Medicare population, and the matched traditional Medicare population for the first and last years of the study period are presented in Exhibit 2. Health plan enrollees were younger and more likely to be black or Hispanic and to live in the Pacific and mid-Atlantic regions. After matching, there were no observable differences in these characteristics between the Medicare Advantage and traditional Medicare cohorts.

In contrast, matched enrollees in Medicare Advantage reported better general health status and mental health status; the prevalence of poor or fair health was 21.3% in Medicare Advantage in 2009 compared with 24.4% in traditional Medicare. These differences were predictors of lower Medicare Advantage utilization for most measures. A summary of the health status differences by year can be found in Appendix Exhibit A2 (8).

Overall Utilization

Appendix Exhibit A4 summarizes results for selected measures, including ratios of utilization in Medicare Advantage (unadjusted and adjusted for health status) to those in the matched traditional Medicare sample (8). Overall adjusted utilization rates for emergency department use, inpatient medical days, and outpatient visits are summarized in Exhibit 3. Emergency room visits were about 25–35% lower in Medicare Advantage, and this difference was relatively stable across the study period. Inpatient medical days were about 20–25% lower in Medicare Advantage throughout the time period. In contrast, as seen in the Appendix, inpatient surgical days initially were lower in Medicare Advantage, but by 2007 adjusted rates in health plans were similar (8). Notably, surgical days were lower in plans that were new. Similarly, outpatient visit rates were initially about 10% lower in Medicare Advantage, but these rates converged by 2009. Finally, ambulatory surgery/procedure use, also shown in the appendix, was substantially lower in Medicare Advantage than in traditional Medicare, with adjusted ambulatory utilization 25% lower in 2003 (8). These differences narrowed to 7% by 2008.

Utilization of Specific Services

To illustrate, we present utilization of two cardiovascular and two orthopedic procedures in Exhibits 4 and 5 respectively. Utilization of CABG surgery was consistently higher for Medicare Advantage enrollees regardless of period of plan entry, although newer plans had higher rates than existing plans in 2007 that equalized in 2008 and 2009. In contrast, rates of PTCA were initially lower in Medicare Advantage but converged for established plans from 2007–2008 before ending slightly lower in 2009. Rates of cardiac catheterization were fairly similar in the earlier years but were about 5% higher in new plans in 2009 (8).

Rates of elective knee replacements were approximately 10% lower in Medicare Advantage for existing plans and were closer to 20% lower for new entrants in 2007, 2008, and 2009 (Exhibit 5). Rates of elective hip replacement showed similar patterns (8). In contrast, rates of reduction of femur fractures, a non-discretionary procedure that might be an indicator of population frailty, were higher in Medicare Advantage than in traditional Medicare with larger differences observed for plans that were later entrants.

Discussion

We conducted a comprehensive comparison of utilization rates in Medicare Advantage HMO plans and traditional Medicare for enrollees with similar demographic and geographic distributions. We adjusted for residual differences in unmeasured health status using data on self-reported health from the CAHPS survey. We found that utilization rates in some major categories including emergency departments and ambulatory surgery/procedures were substantially lower in Medicare Advantage in all years. Utilization of some services such as hip and knee replacement was also lower in Medicare Advantage, but coronary bypass surgery was more common in Medicare Advantage. To our knowledge, no national studies have compared Medicare Advantage and traditional Medicare utilization in the past decade.

Our findings have important implications for policy. With the 2010 passage of the Patient Protection and Affordable Care Act (ACA), the attention of federal policymakers has shifted to controlling the seemingly inexorable growth in health care spending (13). Proponents of managed care have argued that integrated health plans can deliver care more rationally than traditional fee-for-service care, using their ability to tailor their provider networks to the needs of their population and to impose pre-approval requirements and utilization review to limit the use of procedures (14). Medicare Advantage health plans operate under strong financial incentives to decrease the utilization of services, consistent with some of our findings. Although we could not assess the appropriateness of services, some of our findings suggest utilization of services may be more appropriate within Medicare Advantage. For instance, relative to beneficiaries in traditional Medicare, Medicare Advantage enrollees are more commonly treated with cardiac bypass surgery, in accord with current guidelines (15, 16). Additionally, lower rates of emergency department use suggest that health plans may be treating patients in less costly primary care or urgent care settings.

Finally, the integrated approach used by Medicare Advantage plans appears to be successfully controlling utilization of the most discretionary services such as hip and knee replacement and outpatient surgery/procedures, while maintaining utilization of nondiscretionary services such as reduction of femur fractures. It is also notable, however, that differences in overall utilization rates that were observed earlier in the study period had dissipated for outpatient visit rates and narrowed for hospital days by the end of the study period. Potentially, new entrants to the Medicare Advantage market may not have been as oriented towards managing health care costs as the longer-standing Medicare HMO plans. Nonetheless, careful monitoring of Medicare Advantage beneficiary experiences, disenrollment rates, and quality of care will remain important for CMS and policymakers, particularly given the differences we observed for more established versus less established plans.

One possible explanation for our finding of generally lower utilization in Medicare Advantage is favorable selection, meaning the enrollment of generally healthier enrollees, as suggested by prior research (1). To minimize the impact of selection in our analysis, we matched Medicare Advantage and traditional Medicare enrollees by age, sex, race/ethnicity and geographic area, usually at the zip-code level, which created cohorts with similar sociodemographic characteristics. Indeed, health services research commonly uses census data at this level to impute these characteristics (17–20). We also used CAHPS data available for both Medicare Advantage and traditional Medicare respondents to adjust utilization for residual differences in health status of beneficiaries in the two programs. Although Medicare Advantage data on the specific clinical conditions that CMS uses to adjust payments to health plans are not publicly available, patient-reported measures such as ours have been shown to predict future utilization (21, 22).

The Medicare Modernization Act of 2003 substantially increased payments to Medicare Advantage plans and changed the way plans were paid. These policy changes resulted in a large influx of plans into the program and large increases in enrollment. They also resulted in increased spending for the Medicare program (23, 24). Because of competition among plans and Medicare regulations, most of these extra payments and the savings from the reduced utilization we documented in this study were passed through to beneficiaries in the form of lower premiums, less cost sharing, and benefits for non-covered services (3). Some benefit also likely accrued to the plans in the form of higher profits and to providers in the form of higher prices (25, 26).

The federal government recently launched a demonstration program of Accountable Care Organizations (ACOs) within the Medicare program, hoping to achieve savings while improving quality of care. ACOs are organizations of providers that, similar to Medicare Advantage plans, will be accountable for the costs of care delivered to a population of patients. Unlike Medicare Advantage plans, ACOs participating in the Medicare program will be paid under the traditional Medicare fee schedule, but will share savings or losses relative to a projected budget that would be similar to projected traditional Medicare spending. As a result, the financial incentives facing ACOs resemble those facing Medicare Advantage plans. However, ACOs will rely on close relationships with their member physicians to control utilization whereas HMOs may depend more on benefit design and utilization review. Nonetheless, in order to succeed, ACOs will need to develop substantial new capacities in the areas of care management and coordination and will face challenges in their efforts to change physician behavior, particularly given the continued underlying use of the Medicare fee schedule to determine provider payments.(27)

Conclusions

In this large national comparison of utilization patterns in Medicare Advantage and traditional Medicare over 6 years, utilization of many services in Medicare Advantage was lower than in traditional Medicare. Supporters of Medicare Advantage argue that managed care will lead to more efficient utilization of services, typically meaning less utilization of discretionary services, and more use of recommended services. Although our findings are generally consistent with this view, research with more detailed clinical data and health outcomes, including survival and functional status, as well as more systematic data on the management practices of health plans is needed to assess potential explanations for differences in care.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Exhibit 3.

Ratio of Overall Utilization for Adjusted Medicare Advantage Compared to Traditional Medicare by Length of Plan Participation in Medicare

Source: Authors' analyses of Medicare claims data and utilization data submitted by Medicare Advantage plans to CMS.

Exhibit 4.

Ratio of Adjusted Medicare Advantage versus Medicare TM Utilization, Cardiac Procedures
 Source: Authors' analyses of Medicare claims data and utilization data submitted by Medicare Advantage plans to CMS.

Exhibit 5.

Ratio of Adjusted Medicare Advantage versus Medicare TM Utilization, Orthopedic Procedures

Source: Authors' analyses of Medicare claims data and utilization data submitted by Medicare Advantage plans to CMS.

Exhibit 1

Utilization Measures

Clinical Category	Specific Measure
Cardiovascular Procedures	Cardiac catheterization Coronary artery bypass grafting (CABG) Percutaneous transluminal coronary angioplasty (PTCA) Carotid endarterectomy
Orthopedic Procedures	Reduction of femur fracture Total hip replacement Total knee replacement
General Surgical Procedures	Open/laparoscopic cholecystectomy Closed cholecystectomy
Gynecologic Surgical Procedures	Abdominal hysterectomy Vaginal hysterectomy
Cancer Surgery	Prostatectomy
Ambulatory Utilization	Outpatient visits Emergency department visits Ambulatory surgery/procedures Observation admissions
Inpatient Utilization	Inpatient discharges Inpatients days Surgical discharges Surgical days Medical discharges Medical days

Source: National Committee for Quality Assurance

Exhibit 2

Descriptive Statistics for Traditional Medicare (TM), Medicare Advantage (MA) and Matched Traditional Medicare to Medicare Advantage Cohorts, 2003, 2009*

		2003			2009		
		TM	MA	Matched	TM	MA	Matched
Sample Size (N)		5,045,507	3,122,705		4,835,983	5,657,216	
Gender	M	41.9%	46.7%	46.7%	43.1%	41.5%	41.5%
	F	58.1%	53.3%	53.3%	57.0%	58.5%	58.5%
Race	White	88.3%	85.1%	85.1%	87.9%	81.8%	81.8%
	Black	7.6%	8.0%	8.0%	7.4%	10.1%	10.1%
	Hispanic	1.5%	2.6%	2.6%	1.5%	3.0%	3.0%
	Other	2.7%	4.3%	4.3%	3.2%	5.1%	5.1%
Age	65–74	51.8%	56.4%	56.4%	52.5%	49.4%	49.4%
	75–84	36.9%	35.5%	35.5%	33.9%	37.1%	37.1%
	85+	11.3%	8.1%	8.1%	13.5%	13.5%	13.5%
Region	New England	5.3%	6.5%	6.5%	5.4%	4.6%	4.6%
	Mid Atlantic	13.7%	19.5%	19.5%	12.8%	20.3%	20.3%
	East North Central	18.1%	6.6%	6.6%	16.6%	8.1%	8.1%
	West North Central	8.0%	3.4%	3.4%	7.6%	5.5%	5.5%
	South Atlantic	21.1%	12.9%	12.9%	21.7%	13.7%	13.7%
	East South Central	7.1%	1.8%	1.8%	6.9%	3.5%	3.5%
	West South Central	10.9%	4.8%	4.8%	11.2%	7.8%	7.8%
	Mountain	5.5%	8.7%	8.7%	5.9%	9.0%	9.0%
	Pacific	10.4%	35.8%	35.8%	11.8%	27.4%	27.4%
SES	% Age 65 Below Poverty	9.7%	9.0%	8.9%	9.5%	9.3%	9.3%
	% Urban	73.0%	91.1%	91.3%	72.4%	88.7%	88.44

* TM is traditional Medicare. MA is Medicare Advantage. SES is socioeconomic status. All differences between TM and ME different at the p<.001 level. There were no statistically significant differences after matching.

Source: Authors' analyses of Medicare claims data and utilization data submitted by MA plans to CMS.