ORIGINAL ARTICLE

Advanced Imaging Utilization and Cost Savings Among Medicare Shared Savings Program Accountable Care Organizations: An Initial Exploratory Analysis

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Abstract

Introduction: The purpose of this study was to explore associations between CT and MRI utilization and cost savings achieved by Medicare Shared Savings Program (MSSP)-participating accountable care organizations (ACOs).

Methods: Summary data were obtained for all MSSP-participating ACOs (n = 214 in 2013; n = 333 in 2014). Multivariable regressions were performed to assess associations of CT and MRI utilization with ACOs' total savings and reaching minimum savings rates to share in Medicare savings.

Results: In 2014, 54.4% of ACOs achieved savings, meeting minimum rates to share in savings in 27.6%. Independent positive predictors of total savings included beneficiary risk scores ($\beta = +20{,}265{,}720$, $P = .003$) and MRI events ($\beta = +19{,}964$, $P = .018$) but not CT events ($\beta = +2{,}084$, $P = .635$). Independent positive predictors of meeting minimum savings rates included beneficiary risk scores (odds ratio = 2108, $P = .001$) and MRI events (odds ratio = 1.008, $P = .002$), but not CT events (odds ratio = 1.002, $P = .289$). Measures not independently associated with savings were total beneficiaries; beneficiaries' gender, age, race or ethnicity; and Medicare enrollment type ($P > .05$). For ACOs with 2013 and 2014 data, neither increases nor decreases in CT and MRI events between years were associated with 2014 total savings or meeting savings thresholds ($P \geq .466$).

Conclusion: Higher MRI utilization rates were independently associated with small but significant MSSP ACO savings. The value of MRI might relate to the favorable impact of appropriate advanced imaging utilization on downstream outcomes and other resource utilization. Because MSSP ACOs represent a highly select group of sophisticated organizations subject to rigorous quality and care coordination standards, further research will be necessary to determine if these associations are generalizable to other health care settings.

Key Words: Utilization, cost, accountable care organizations, Medicare, health policy

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INTRODUCTION

Fragmentation is a well-recognized concern of the US health care system [1-3], leading to higher costs and lower-quality care. Most patients currently receive their care from a wide variety of primary care providers and specialists in an array of clinical settings, including offices and hospitals, with reimbursement from numerous payers [1]. As a result of this lack of coordination, individual providers and practices are not fully accountable for their patients' care. This in turn both hinders the promotion of public health and contributes to greater costs through unnecessary, and often duplicative, use of health care resources [1]. New integrated delivery systems are therefore increasingly promoted as a means of simultaneously achieving higher quality and lower cost for populations at large [4].

The Patient Protection and Affordable Care Act directly addressed this goal by creating the Medicare Shared Savings Program (MSSP) [5]. The MSSP

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establishes an operational framework for accountable care organizations (ACOs) within the Medicare system and has since become the largest existing ACO program [5,6]. ACOs represent voluntarily formed groups of physicians, hospitals, and other providers that together cooperate in providing coordinated care for a defined Medicare fee-for-service beneficiary population; in turn, they assume accountability for that populations' cost and quality of care [1,5,7]. For the ACO to share in any of its achieved savings to the Medicare program, however, it must (1) achieve a threshold minimum savings rate and (2) satisfactorily meet a variety of quality performance benchmarks [8]. ACOs participating in the MSSP option with the greatest possible savings, however, also become liable for losses if the savings and quality benchmarks are not achieved. This alignment of financial incentives, leveraged with support and infrastructure that CMS provides to ACOs participating in MSSP, are postulated to yield better care and reduced costs that cannot be achieved in a traditional fragmented system [1].

The MSSP maintains strict eligibility requirements for participating ACOs, and an extensive review and approval process exists for organizations seeking inclusion [8]. The requirements strongly favor advanced organizations with an established track record of integrated care (entailing substantial upfront capital, personnel, and infrastructure investment, as well as a robust organizational and governance structure) [8]. MSSP-participating ACOs are subsequently held to ongoing reporting and compliance standards, with periodic audits [9]. As a result, MSSP-participating ACOs represent unique health care organizations, ostensibly best positioned to achieve optimal care delivery.

CMS has publicly released data regarding enrolled ACOs since the onset of the program [10]. Using such data, a recent analysis demonstrated a small but statistically significant improvement in screening mammography rates among ACOs in the MSSP between 2013 and 2014 [6]. CMS also includes CT and MRI utilization for MSSP-participating ACOs among the limited data fields that it has currently made public. Because such advanced imaging modalities have received considerable attention as potential drivers of overall health care costs [11,12], ACOs might be expected to attempt to reduce CT and MRI utilization to reduce overall expenditures and thus meet their savings thresholds. In this study, we used recently released CMS data to explore associations between CT and MRI utilization and ACO savings in the early years of the MSSP.

METHODS

Because this study did not use identifiable private protected health information, it did not constitute human subjects research and did not require institutional review board approval. Data were obtained from the recently available Shared Savings Program Accountable Care Organizations (ACO) Public Use File (PUF) maintained by CMS [10]. This PUF provides summary data at the organizational level for ACOs in the MSSP. Individual beneficiary-level data are not included. Data for performance years 2013 (214 ACOs) and 2014 (333 ACOs) were accessed for purposes of this analysis.

The following parameters within the PUF were extracted for each ACO in 2014:

- Total assigned beneficiaries were included.
- Total assigned beneficiaries in person-years, representing the number of assigned beneficiaries adjusted downward for those with <12 months of eligibility, were included.
- Total assigned beneficiaries in person-years with aged–dual, aged–nondual, end-stage renal disease, and disabled enrollment types were included; based on these, the percent beneficiaries with an enrollment type of aged (whether dual or nondual Medicaid eligibility) was computed.
- Average final prospective CMS-Hierarchical Condition Categories risk score for assigned beneficiaries with aged–nondual enrollment type. Risk scores are normalized for each enrollment category so that average national risk scores are 1.0 for each group, though on different scales and not comparable across groups [10]. Risk score for aged–nondual enrollment was extracted to represent the most prevalent enrollment type.
- Per capita expenditures per assigned beneficiary were included.
- Total assigned female beneficiaries were included, reflecting the most prevalent gender, from which the percentage of all beneficiaries was computed.
- Total assigned non-Hispanic white beneficiaries were included, reflecting the most prevalent race or ethnicity, from which the percentage of all beneficiaries was computed.
- Total assigned beneficiaries with age 65 to 74 were included, reflecting the most prevalent age group, from which the percentage of all beneficiaries was computed.