Analysis of Value-Based Payment and Acute Care Use Among Medicare Advantage Beneficiaries

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Introduction

Medicare is increasingly shifting from fee-for-service reimbursement toward value-based models that reward improving quality and controlling spending. While researchers have evaluated these models in traditional Medicare, less is known about value-based models in Medicare Advantage (MA), despite greater penetration of value-based payment in MA and continued growth of the MA program. In this study, we examined the association between value-based payment and acute care use in a national population of MA beneficiaries.

Methods

This cohort study was reviewed by the Humana Healthcare Research Human Subject Protection Office, deemed not human participants research, and informed consent was waived. The study followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guideline.

We identified beneficiaries enrolled in plans offered by a large MA organization from January 1, 2017, to December 31, 2019, and categorized them according to the payment model for their attributed primary care organization: fee-for-service (FFS); shared savings with upside-only financial risk (upside-only risk); and shared savings with upside and downside financial risk (2-sided risk). Further detail is provided in the eMethods in the Supplement.

We used claims data to identify hospitalizations, observation stays, and emergency department (ED) visits from January 1, 2019, to December 31, 2019. We segmented these outcomes into avoidable and all-cause events (eMethods in the Supplement). Next, we used quasi-Poisson regression models to estimate the association between payment model and acute care use, adjusting for age, sex, race, low-income subsidy, Rx-Risk-V score, and hospital referral region. The Rx-Risk-V score is a pharmacy claims–based comorbidity index and was chosen to avoid any potential bias from differences in documentation practices. To aid interpretability, we calculated adjusted rates of acute care use per 1000 patients, by payment model. Analyses were conducted between May 2021 and August 2021 using SAS Enterprise Guide v8.2 (SAS Institute). All P values were from 2-sided tests, and results were deemed significant at P < .05.

Results

In a study population of 489,796 MA beneficiaries, value-based payment was significantly associated with lower acute care use (Table). Compared with FFS, beneficiaries cared for under 2-sided risk models had lower rates of hospitalizations, observation stays, and ED visits. For example, the adjusted rate of ED visits per 1000 patients for 2-sided risk models was 375.8 (95% CI, 370.9-380.7) compared with 434.1 (95% CI, 426.5-441.9) for FFS. For all outcomes, there was no significant difference in acute care use between beneficiaries cared for under upside-only risk models and FFS.

The association between value-based payment and decreased acute care use was most pronounced for measures of avoidable acute care use. Compared with FFS, 2-sided risk models were
associated with a 15.6% (95% CI, 14.2%-17.0%) relative reduction in avoidable hospitalizations, compared with 4.2% (3.4%-4.9%) for all-cause hospitalizations (Figure).

**Discussion**

In this study of MA beneficiaries, advanced value-based payment arrangements (ie, 2-sided risk models) were associated with lower rates of acute care use, especially those events that are potentially avoidable. These findings are consistent with evaluations of value-based payment in traditional Medicare and serve to expand the evidence base around value-based payment models in Medicare Advantage. The lack of significant differences between FFS and upside-only risk models suggests that downside financial risk may play a key role in effective value-based payment arrangements.

This study had limitations. Given the retrospective design, there is potential for residual confounding. Furthermore, it is likely there is some selection bias around which primary care organizations engage in value-based payment models. For example, groups that have invested in

| Table. Adjusted Rates of Acute Care Use for Medicare Advantage Beneficiaries by Payment Modela |
|-------------------------------------------------------------------------------------------------|
| **Beneficiaries** | Payment model (patients, No. [%]) |  |
| | Fee-for-service (81 140 [16.6%]) | Upside-only risk (158 762 [32.4%]) | Two-sided risk (249 894 [51.0%]) |
| Hospitalizations per 1000 beneficiaries (95% CI) |  |  |  |
| All-cause | 159.2 (155.0-163.5) | 159.7 (156.1-163.3) | 152.5 (149.7-155.5)b |
| Avoidable | 21.8 (20.4-23.2) | 21.9 (20.7-23.2) | 18.4 (17.5-19.3)b |
| Observation stays per 1000 beneficiaries (95% CI) |  |  |  |
| All-cause | 85.7 (82.9-88.5) | 85.7 (83.3-88.1) | 79.2 (77.4-81.1)b |
| Avoidable | 10.7 (9.9-11.7) | 9.7 (9.0-10.4) | 9.5 (9.0-10.2) |
| ED visits per 1000 beneficiaries (95% CI) |  |  |  |
| All-cause | 434.1 (426.5-441.9) | 423.0 (416.6-429.5) | 375.8 (370.9-380.7)b |
| Avoidable | 26.8 (25.3-28.4) | 24.3 (23.1-25.6) | 21.0 (20.1-22.0)b |

Abbreviation: ED, emergency department.

- Adjusted for age, sex, race, low-income subsidy, comorbidities, and hospital referral region.
- Indicates statistically significant difference from fee-for-service at the P < .05 level.
- Avoidable hospitalizations and observation stays were determined based on standardized definitions available from the Agency for Healthcare Research and Quality Preventable Quality Indicators. Avoidable ED visits, determined using a validated claims-based algorithm, included those in which emergency department care was required based on the complaint or procedures performed and resources used, but the emergent nature of the condition was potentially preventable and avoidable if timely and effective ambulatory care had been received during the episode of illness.

Across all 3 categories of use, the relative differences in avoidable and all-cause events were statistically significant at the P < .05 level. Data were adjusted for age, sex, race, low-income subsidy, comorbidities, and hospital referral region. Avoidable hospitalizations and observation stays were determined based on standardized definitions available from the Agency for Healthcare Research and Quality Preventable Quality Indicators. Avoidable ED visits, determined using a validated claims-based algorithm, included those in which emergency department care was required based on the complaint or procedures performed and resources used, but the emergent nature of the condition was potentially preventable and avoidable if timely and effective ambulatory care had been received during the episode of illness.
tools and infrastructure to manage chronic disease and population health may be more willing to bear financial risk. Our findings suggest that organizations engaging in advanced value-based payment models in MA deliver differential outcomes to the MA beneficiaries under their care. Further research is needed to elucidate the activities of value-based primary care organizations that are associated with reductions in acute care use.

ARTICLE INFORMATION
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Author Contributions: Dr Powers had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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Conflict of Interest Disclosures: Dr Gondi reported receiving personal fees from Humana, Inc, being previously employed at Commonwealth Care Alliance, and Humana, and serving as Advisor at 8VC outside the submitted work. Dr Drzayich Antol reported having equity holdings with Humana Inc. Dr Boudreau reported receiving grants from Yale University outside the submitted work. Dr Shrank reported being on the Board of Directors at GetWell Network outside the submitted work. Dr Powers reported having equity holdings with Humana and prior employment by Anthem and Fidelity Investments outside the submitted work. No other disclosures were reported.

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SUPPLEMENT.
eMethods.