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"Lesser-of" Payment Policies and the Use of Physicians' Services Among Dual-Eligible Beneficiaries

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Abstract

Most dual-eligible beneficiaries—people enrolled in both Medicare and Medicaid—are eligible for Medicaid through their enrollment in the Qualified Medicare Beneficiary (QMB) program, which requires that states pay for Medicare cost sharing. Since 1997, states have gradually implemented policies under which they pay the lesser of Medicare cost sharing and the amount, if any, by which Medicaid's payment rate for the service exceeds Medicare's payment rate. Consequently, physicians in most states receive roughly 80 percent of the Medicare rate for primary care services provided to QMBs.

For this analysis, we used difference-in-difference-in-differences models and administrative data from 1999 to 2012 to assess how the implementation of "lesser-of" payment policies over that period affected QMBs' access to care in comparison with that of Medicare-only beneficiaries. We found that lesser-of policies were associated with a 5 percent reduction in the number of new primary care visits and a 7 percent reduction in the likelihood of such visits among QMBs. Both the number and the likelihood of total and established patients' primary care visits fell by about 3 percent. However, we were unable to discern spillover effects on the use of acute care, including emergency room visits or hospitalizations. Those results suggest that continued monitoring of quality-of-care measures among dual-eligible beneficiaries may be warranted.

Keywords: dual-eligible beneficiaries, Medicaid payment policies, qualified Medicare beneficiaries

JEL Classification: I13, I18

Contents

Introduction

Health care spending has grown faster than the economy in recent decades. In 2017, spending on health care totaled more than $3.5 trillion, with Medicare spending accounting for about one-fifth of that total (Martin and others, 2018). During the half century that Medicare has existed, much attention has been paid to various demand- and supply-side policies that may contribute to controlling costs without affecting access to care or lowering the quality of care. Much of the supply-side focus has been on analyzing the effects of providers' payment policies on the provision of care.

For physicians' services, the introduction in the late 1980s of a system that uses the resource-based relative value scale was intended to reduce the costs associated with the previous cost-based method of reimbursement. Considerable research has focused on analyzing the effects of changes in physician reimbursement systems or in specific payment rates on the provision of care. Standard economic theory would suggest a decline in the provision of physician care when payment rates are reduced. A study by McGuire and Pauly (1991) indicates this is most likely to occur when the income effects associated with a payment-rate change for physicians are small, such as when the payment-rate change applies to patients that represent a small portion of a physician's practice. If the income effects are strong, the effect of a fee reduction in reducing the supply of care could be tempered, or the effect could even be positive.

Considerable research has been devoted to testing those theories, though most changes in Medicare payment rates available for study have been relatively small. For example, a study by Escarce (1993) examined the effects of reductions in Medicare's surgical fees that resulted from the Omnibus Budget Reconciliation Act of 1987, though the largest payment-rate change (for urological procedures) was only about 4 percent. One of the largest payment-rate changes was the subject of a study by Jacobson and others (2010), which evaluated the effects of Medicare payment cuts in the range of 10 percent to 13 percent for a set of specific services (such as administering chemotherapy drugs that treat cancer). Thus far, evidence on the direction and magnitude of physicians' responses to payment cuts has been mixed. For example, Escarce found a reduction in service volume following a fee cut, and Jacobson and others found an increase. There has been little opportunity for study of the effects of broad-based changes in physician payment rates of substantial magnitude because concerns about access to care have generally limited the size of changes. For example, in 2010, Medicare's sustainable growth rate (SGR) system for updating payment rates would have led to expected cuts of 21.3 percent in conversion factors for the physician fee schedule. Concerns about the effects of that change led to a series of postponements that lasted until 2015 and ultimately led to the replacement of the SGR system.

However, an often-overlooked fact is that a 20 percent decrease in physicians' fees *has* taken place for a subset of Medicare beneficiaries, namely dual-eligible beneficiaries.[1] Although some states pay full Medicare cost sharing on behalf of dual-eligible beneficiaries who are entitled to such assistance, most states have shifted to paying only enough cost sharing to ensure that providers are paid Medicaid rates for services they deliver to dual-eligible beneficiaries. In most cases, that results in providers' receiving payment only from Medicare, or 80 percent of Medicare rates for most physicians' services. That subset of Medicare beneficiaries has a wide variety of complex health care needs and high rates of poverty. Individuals dually enrolled in Medicare and Medicaid account for a relatively small share of Medicare and Medicaid enrollees but a significant share of expenditures. For example, in 2013, dual-eligible beneficiaries accounted for one-fifth of Medicare enrollees but at least one-third of spending (MedPAC and MACPAC, 2018).

This paper examines the effects of physician payment reductions on the use of physicians' services among dual-eligible beneficiaries over the 1999–2012 period.

Background on Medicare Crossover Policies

Most services provided by Medicare Parts A and B require cost sharing. For Part B (physicians' services), the cost-sharing amount is set at 20 percent of the Medicare payment rate after the beneficiary reaches the deductible, which ranged from $100 per year in 1999 to $140 in 2012. Many Medicare beneficiaries have supplemental health care plans that cover all or part of Medicare coinsurance, such as Medigap plans for those who purchase them and Medicaid for those with limited means. Medicare is the primary payer for all Medicare-covered services, but states are required to pay Medicare cost sharing for Medicare beneficiaries enrolled in the Qualified Medicare Beneficiary (QMB) program. A majority of dually eligible Medicare beneficiaries are enrolled in that program: In December 2016, 10.6 million people were enrolled in both Medicare and Medicaid, of which 7.0 million were enrolled in the QMB program (CMS, 2020).[2] Over our sample period, the share of Medicare beneficiaries who were dually eligible and the share of dual-eligible beneficiaries enrolled in the QMB program remained stable.[3]

Since the Balanced Budget Act of 1997 was enacted, states have had the explicit authority to set the payment policy for their Medicare cost-sharing responsibilities, and that type of policy is

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[1] We use the term "dual-eligible beneficiaries" in this paper rather than "dual-enrolled beneficiaries" to follow the literature; however, we recognize that not all individuals who are eligible for both Medicare and Medicaid participate in both programs.

[2] The QMB program is one of the four means-tested Medicare Savings Programs, which are described in more detail at https://tinyurl.com/2w3vefny.

[3] Those estimates are based on summary statistics published by the Centers for Medicare & Medicaid Services. See https://tinyurl.com/mju354vc.

referred to as the Medicare crossover policy. Some states pay providers the full amount of cost sharing—that is, they have implemented a "full" payment policy. Other states pay providers the lesser of Medicare cost sharing and the amount, if any, by which Medicaid's payment rate for the service exceeds Medicare's payment for that service—that is, they have instituted a "lesser-of" payment policy. In the case of most physicians' services, cost sharing is equal to 20 percent of the Medicare payment rate, and Medicare pays the remaining 80 percent. Providers are not allowed to bill patients for the remaining balance.

Between 1997 and 1999, the number of states with a lesser-of payment policy increased sharply from 12 states to 32 states (Nemore, 1999). By 2012, 39 states had implemented a lesser-of payment policy for physicians' services (MACPAC, 2013). Table 1 summarizes those lesser-of payment policies over the 1999–2012 period.[4] As can be seen in the table, from 1999 to 2012, 10 states retained a full payment policy over the entire period, whereas 29 states (including the District of Columbia) had a lesser-of payment policy in effect for the entire period. Of the 12 states that changed policy during this period, all but 2 (Oklahoma and Nebraska) changed from a full payment policy to a lesser-of payment policy.

In practice, physicians in most states with a lesser-of policy receive roughly 80 percent of the Medicare payment rate for services provided to dual-eligible beneficiaries who are enrolled in the QMB program. That is because Medicaid payment rates for physicians' services are generally much lower than Medicare payment rates. A study conducted by Zuckerman and Goin (2012) indicates that Medicaid primary care payment rates averaged 59 percent of Medicare rates in 2012, and only a few states with lesser-of policies in effect that year had Medicaid payment rates substantially above 80 percent. So changing from a full payment policy to a lesser-of payment policy for Part B generally means that, rather than receiving 100 percent of Medicare's payment amount, a physician receives 80 percent or so of the payment amount.[5] In the analysis described below, we therefore chose to assess the effects of lesser-of payment policies on the use of care among dual-eligible beneficiaries enrolled in the QMB program rather than the effects of the precise percentage of Medicare fees paid in states with a lesser-of payment policy.

Although many states changed their lesser-of policies between 1997 and 1999, we were not able to begin our analysis until 1999 for two reasons: The timing of the policy changes during that period was hard to ascertain, and Medicaid data on institutional status (see the discussion below)

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[4] We focused on lesser-of payment policies that are applicable to Medicare Part B because it is well known that Medicaid's physician fees are considerably lower than Medicare's fees (Zuckerman and Goin); the same is generally not true for hospital payment rates (Selden and others, 2015).

[5] This is true throughout our study period. Norton (1999) reports that the average Medicaid-to-Medicare primary care fee ratio was 62 percent in 1998, the year before our study period begins. At that time, only 7 states had fee ratios over 80 percent: Alaska (118 percent), Idaho (84 percent), Nevada (81 percent), North Carolina (83 percent), North Dakota (87 percent), Texas (146 percent), and Washington (83 percent).

were not available before 1999. We chose to end our analysis in 2012 because Medicaid data for many states were not available after 2012 and because the Affordable Care Act introduced a "fee bump" for the 2013–2014 period, during which time states with Medicaid-to-Medicare fee ratios below 100 percent were required to increase them to 100 percent (at the expense of the federal government). Although the effect of that change on dual-eligible beneficiaries is of substantial policy interest, we viewed that as a separate investigation. Especially because the fee-bump policy was explicitly announced as temporary, expiring at the end of 2014, any response to that policy, either for dual-eligible beneficiaries or for Medicaid-only beneficiaries, could be weakened because of the time-limited nature of the change. In fact, only 7 states fully maintained the fee bump after 2014 (Zuckerman, Skopec, and Epstein, 2017). Anticipating that outcome, physicians may not have reacted in the same way to the temporary fee bump as they would have to a permanent one.

Because we doubted that many physicians' practices were wholly dependent on dual-eligible beneficiaries over the 2009–2012 period, we expected that the income effects of a reduction in physicians' payment rates for dual-eligible beneficiaries might not be large. Therefore, in our analysis, we hypothesized that fee reductions associated with the implementation of a lesser-of payment policy for dual-eligible beneficiaries should decrease the supply (both the quantity and the intensity) of physicians' services provided. It might have been easier for a physician to reduce the quantity of services by not taking on new patients with a particular payment source rather than by reducing care to existing patients. In addition, studying the effect of managed care on practice patterns, Glied and Zivin (2002) found that although patients in managed care plans tended to receive different care from patients with fee-for-service (FFS) coverage, the differences occurred mostly across practices rather than within a practice. They found evidence consistent with the notion that practice patterns are set on the basis of a modal payer. Within a practice, patients with different insurance sources generally received similar care. Patients in managed care might have received different care because they were being treated in practices with more managed care patients and therefore a different modal payer. The study by Glied and Zivin provides further reasoning for our hypothesis that the effects of lesser-of payment policies on dual-eligible beneficiaries occurred more for new patients than for established patients. New patients might have ended up seeing physicians with different practice patterns than they would have if the state had a full payment policy. However, an established patient living in a state that changed policy might have experienced fewer changes in care provided within previously visited practices.

Despite the fact that most states have changed their payment policies so that physicians receive 80 percent of Medicare fees—rather than 100 percent—for services provided to dual-eligible beneficiaries, we know of only three studies that analyzed the effects of this change. Zheng and others (2017) used a single year of data (from 2009) for 20 states to examine the effects of lesser-of payment policies on the use of evaluation and management (E&M) services for dual-eligible beneficiaries enrolled in the QMB program compared with use by Medicare-only beneficiaries.

They found that full payment policies were associated with a 6.4 percent increase in the likelihood of using E&M services (relative to no payment for cost sharing). Although they used a control group of nondual-eligible Medicare beneficiaries, their use of a single year of data presents challenges to internal validity if other characteristics of states are correlated with both crossover policies and differences in the characteristics of dual-eligible beneficiaries relative to Medicare-only beneficiaries. In addition, although dual-eligible beneficiaries have been shown in other studies (for example, MedPAC and MACPAC) to have high use of care compared with Medicare-only beneficiaries, Zheng and others showed low mean use of care for dual-eligible beneficiaries relative to Medicare-only beneficiaries. That could be attributable to the authors' inclusion of people in long-term care who were disproportionately dual-eligible beneficiaries (CBO, 2013) and who may have had low use of physician care outside of the long-term care facility. Their inclusion of people in the End Stage Renal Disease (ESRD) program, who were disproportionately Medicare-only beneficiaries, may have accentuated their picture of low use of care among dual-eligible beneficiaries relative to Medicare-only beneficiaries and may have contributed to partly obscuring the effects of crossover policies. CMS (2015) and Mitchell and Haber (2004) used very similar approaches to Zheng and others for 17 states in 2009 (CMS) and for 9 states from 1996 to 1998 (Mitchell and Haber). Our study eliminated people in long-term care and in the ESRD program to yield a more meaningful comparison of care received by dual-eligible and Medicare-only beneficiaries. In addition, we used data for all but 4 states over 14 years, a period during which 12 states changed crossover policy. That allowed us to examine the effect of changes in crossover policy on the care of dual-eligible beneficiaries separate from other state characteristics that may have been related to the characteristics of dual-eligible beneficiaries or Medicare-only beneficiaries.

Methods and Data

Using Medicare and Medicaid administrative data, we estimated the effects of Medicare crossover policy on the utilization of Medicare services over the 1999–2012 period.

Statistical Analysis

To estimate the effects of lesser-of payment policies on the use of health care services, we used both a difference-in-differences (DD) approach and a difference-in-difference-in-differences (DDD) approach. Conceptually, the treatment group is the group affected by the policy—that is, dual-eligible beneficiaries in states that changed their crossover payment policy. In our DD approach, we compared the use of health care services in the treatment group before and after a change in lesser-of payment policy to changes in the use of health care services among dual-eligible beneficiaries in states that did not change lesser-of policies. We began with a simple DD model as specified in equation (1):

$$Y_{ist}=\alpha+\beta_1 LESSER_{st}+\beta_2 X_{ist}+\gamma_s+\theta_t+\varepsilon_{ist}, \quad (1)$$

where Y_{ist} is a measure of the use of health care services for person i in state s and year t; $LESSER_{st}$ is a dummy variable measuring whether a lesser-of policy has been in effect for at least a year in state s and year t; and X_{ist} represents personal characteristics and local-level demand- and supply-side characteristics. Equation (1) also includes state fixed effects (γ_s) and year fixed effects (θ_t). The inclusion of state fixed effects accounts for differences across states, including differences in Medicaid policies other than the crossover policy, that may affect the use of care among QMBs. Estimation of equation (1) compares pre- and post-policy changes in outcomes, netting out changes in states that did not change their policy.

To account for the possibility that health care use may be changing over time for all patients—including dual-eligible beneficiaries and other patients in a way that could be correlated with changes in lesser-of policies affecting dual-eligible beneficiaries—we then moved to a triple difference approach that compared changes in outcomes following the policy change for dual-eligible beneficiaries in states that did and did not change their policy to changes among Medicare-only beneficiaries. As specified in equation (2):

$$Y_{ist}=\alpha+\beta_1 LESSER_{st}+\beta_2 DUAL_{ist}+\beta_3 DUAL_{ist}\times LESSER_{st}+\beta_4 X_{ist}$$

$$+\theta_t YEAR_t\times DUAL_{ist}+\gamma_s STATE_s\times DUAL_{ist}+\mu_{st} STATE_s\times YEAR_t+\varepsilon_{ist}, \quad (2)$$

where $DUAL$ indicates an individual in the treatment group and β_3 is the DDD estimator of the policy effect—that is, the effect of a lesser-of payment policy on dual-eligible beneficiaries relative to Medicare-only beneficiaries. Equation (2) includes interaction terms between the state fixed effects and the $DUAL$ indicator, interactions between the $YEAR$ fixed effects and the $DUAL$ indicator, and full interaction terms between the state fixed effects and the $YEAR$ fixed effects. The use of Medicare-only beneficiaries as a control group allowed us to better capture potentially confounding, unmeasured events occurring at about the same time that a lesser-of policy went into effect. The assumption underlying this model is that no unmeasured state-specific event occurred at the same time that a lesser-of policy was implemented—that is, a policy affecting "pre-post" differences in outcomes differentially for dual-eligible beneficiaries relative to Medicare-only beneficiaries.

As discussed below, we examined two types of utilization measures: the number of visits (or inpatient stays) and whether a person had any visit (or stay). We used a negative binomial model for the first set of measures and linear probability models for the second. For negative binomial models, we reported marginal effects consisting of the mean change in the predicted outcome following the policy change for the treatment group (that is, QMBs in states with a lesser-of policy), while holding all other covariates at their observed values. All models allowed for correlation of errors within each state (Bertrand, Duflo, and Mullainathan, 2004).

Data and Sample Construction

We classified state crossover policies on the basis of two published reports and our own research. Nemore provided the crossover policy by state for 1999, and MACPAC provided the crossover policy for physicians' services for 2012. For state crossover policies in the intervening years, we conducted Internet searches and contacted states' Medicaid agencies and the Centers for Medicare & Medicaid Services. Between 1999 and 2012, 10 states changed from a full to a lesser-of payment policy and 2 states changed from a lesser-of to a full payment policy (see Table 1).

We used a 5 percent random sample of Medicare claims data for 1999 through 2012 to construct a 14-year panel of Medicare service use for both QMBs and Medicare-only beneficiaries. Because Medicaid programs are not required to cover Medicare cost sharing on behalf of dual-eligible beneficiaries who are not enrolled in the QMB program, we focused our analysis only on dual-eligible beneficiaries enrolled in the QMB program.[6] We identified dual and QMB status in one of two ways. For the 1999–2005 period, we used indicators in the Medicaid Analytic eXtract (MAX) data, which are administrative data files on Medicaid enrollees that include information on eligibility and service utilization. For those years, we linked Medicare records to MAX data in order to identify dual and QMB status, limiting our sample to QMBs with consistent demographic records in both files. For the 2006–2012 period, we used the Master Beneficiary Summary File (MBSF), because the MBSF began reporting monthly indicators of dual enrollment in 2006. To clearly differentiate service use between dual-eligible beneficiaries who were enrolled in the QMB program and Medicare-only beneficiaries, we included only Medicare enrollees with either zero months of Medicaid enrollment in a year ("Medicare-only beneficiaries") or 12 months of QMB enrollment in a year ("QMBs").

We constructed a sample of people for whom we could observe all use of physicians' services. That means we excluded enrollees in Medicare Advantage, those who were not enrolled in both Medicare Parts A or B for a full year, and those residing in long-term care facilities (as indicated in the MAX data). We excluded 4 states from the sample because their data were missing from the MAX data in 2012.[7] In addition, our sample excluded Medicare enrollees with end-stage renal disease. Our final sample size consisted of 20.3 million person-year observations for the full study population of QMBs and Medicare-only beneficiaries, of which about 2.4 million were QMBs. Our primary interest was in the effect of lesser-of policies on the use of physicians' services. We examined the effect of those policies on both the total number of visits to

[6] Although Medicaid programs are not required to cover Medicare cost sharing for non-QMB dual-eligible beneficiaries, some states may choose to do so. Therefore, we excluded non-QMB dual-eligible beneficiaries in order to conduct a clean analysis of lesser-of policies because we did not know whether and which Medicaid programs covered cost sharing for those beneficiaries during our study period.

[7] Those states are Colorado, Idaho, Kansas, and Rhode Island.

physicians per person and on the probability that a person had at least one visit.[8] We examined those measures for all visits and specifically for primary care visits.[9] Because we hypothesized stronger effects on visits by new patients compared with visits by established patients, we examined all measures separately for each of those categories of visits. In addition to examining the effects of lesser-of policies on the number of visits, we also measured effects on the intensity of visits. We did this in two ways. First, we examined the effects on the number of visits weighted by the number of relative value units (RVUs). Second, we examined average visit intensity (or RVU-weighted visits divided by the number of visits) as a dependent variable among those with at least one visit. Because relative value units are adjusted each year, we estimated one set of regressions using only RVUs from 1999 in addition to our main analyses using the annual RVUs.

In addition to the analyses described above, we considered whether lesser-of policies may have particular effects on QMBs with chronic conditions by examining several measures of recommended service use among people with diabetes (Parashuram, 2013). The first four are measures used by the National Committee for Quality Assurance to assess the quality of care delivered by health care plans to patients with diagnosed diabetes. Those measures consist of whether or not patients with diabetes have received four tests that the American Diabetes Association (ADA) recommends should be obtained at least annually: an HbA1c test (to test the severity of diabetes); a low-density lipoprotein (LDL) cholesterol test (to test for coronary complications); a dilated eye exam (to test for vision-related complications); and a nephrology test, specifically an ADA-recommended screening for microalbuminuria to prevent diabetic neuropathy. (Physicians recommend that diabetics with micro- or macroalbuminuria be treated with ACE inhibitors or ARBs). We examined a fifth possible measure of the quality of care for patients with diabetes consisting of the total number of diabetes-related E&M visits. We analyzed the effects of lesser-of policies on the chance that patients had any of those tests because all patients with diabetes should have at least one of those tests per year. We also analyzed the effects on the number of those tests because lesser-of policies may affect the probability of follow-up testing. Finally, to analyze possible spillover effects, we also examined the effects of crossover policies on the use of emergency department services, acute inpatient care, and preventable hospitalizations. We identified preventable hospitalizations using software from the Agency for Healthcare Research and Quality.[10]

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[8] Specifically, a visit to a physician is indicated by a code from the Healthcare Common procedure Coding System that is between 99201 and 99215 (inclusive). Only claims with allowed charges were included in our estimates. For reprocessed charges or payments to secondary payers, a claim was included if the allowed charge was greater than zero.

[9] Primary care visits are those to physicians in general practice, family practice, internal medicine, and geriatric medicine.

[10] In particular, we used version 6.0 ICD-9-CM from this site: https://tinyurl.com/7zvrmt8h.

As indicated above, we controlled for a variety of personal and local-level characteristics, X_{ist}, including an indicator for female, a set of indicator variables for age group, a set of indicator variables for race and ethnicity, a set of indicator variables for the number of chronic conditions, the share of our sample of Medicare beneficiaries enrolled in Medicare Advantage plans in the state (and its interaction with an indicator of QMB status), county-level average income per person in 2012 dollars, and the number of primary care physicians per 1,000 residents.[11] The number of chronic conditions came from the Chronic Conditions Data Warehouse file within the MBSF data, which identifies 27 chronic conditions on the basis of FFS claims. We collapsed those into 22 categories that met two requirements within a condition-specific reference period: sufficient coverage and sufficient FFS claims.[12]

Finally, we performed a variety of robustness checks. First, we tested robustness to alternative restrictions to the sample definition. In particular, we limited the analysis to one of two subsamples—people in the bottom third of the county distribution of per capita income and those age 65 or older—in order to perhaps increase the comparativeness of the treatment and control groups. Second, we stratified the sample according to the number of chronic conditions (at least three versus less than three) to see if results were stronger for those with more chronic conditions. Third, to test the validity of the parallel-trends assumption that underpins our analysis, we ran event study specifications for the number of visits. In particular, we modified the approach discussed above by replacing the interaction between the indicator variable for QMB status and the indicator for a lesser-of policy with a set of variables that create interactions between the indicator variable for QMB status and a set of indicators for the number of years before or since the policy's implementation. If the change to a lesser-of policy had a negative effect on the use of physicians' services, the estimated coefficients of the interaction terms would be negative after the change of policy. More important, the coefficients on the interaction terms before the policy change should be statistically indistinguishable from zero.

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[11] The categories are as follows: under 65, 65 to 74, 75 to 84, and 85 or older for age group; non-Hispanic White, non-Hispanic Black, Hispanic, non-Hispanic other, and missing for race and ethnicity; missing, zero, one, two, three, four, and five or more for the number of chronic conditions; under $30,000, $30,000 to $40,000, and $40,000 or over for the county-level per capita income; and under 0.6, 0.6 to 0.8, and 0.8 or over for the county-level number of primary care physicians per 1,000 people. County characteristics came from HRSA (2018). Medicare Advantage penetration by state and year were constructed from the MBSF data, using indicators of individual-level Medicare Advantage enrollment and state of residence for a given year.

[12] Five cancer conditions (breast, colorectal, endometrial, lung, and prostate) were combined into one condition of cancer, and we excluded the condition of "Alzheimer's Disease" because of the redundancy with the condition "Alzheimer's Disease and Related Disorders or Senile Dementia." We used the indicators for chronic conditions based on claims for services received through December 31 of the data year.

The reference period for determining sufficient coverage and claims is one year for most conditions and up to three years for a few conditions. See the following website for additional details: https://www.ccwdata.org/web/guest/user-documentation.

Our approach has some limitations. One key limitation is that the composition of our study population might have changed because of our exclusion of those enrolled in Medicare Advantage. Medicare Advantage penetration rates fell from 18 percent in 1999 to 13 percent in 2003, but those rates have risen steadily since then. By 2012, 27 percent of Medicare beneficiaries were enrolled in Medicare Advantage (Jacobson and others, 2015). Although recent evidence shows that dual-eligible beneficiaries and Medicare-only beneficiaries have similar propensities to enroll in Medicare Advantage, if the two groups had different patterns of enrollment over time that were correlated with changes to states' lesser-of policies, that could have affected our results (Levinson, 2018). Also, although the majority of our QMBs received full Medicaid benefits, the incentive to enroll in Medicaid and become a dual-eligible beneficiary might have changed after 2006 when Medicare introduced Part D, which offers drug benefits to those enrolled only in Medicare. On the one hand, Part D provides access to prescription drug coverage that might not have been affordable outside of Medicaid enrollment before 2006. On the other hand, partial Medicaid enrollment (for instance, enrollment in the QMB program without full Medicaid coverage) now granted access to deeply discounted prescription drug coverage through the low-income subsidy program, whereas partial Medicaid enrollment did not include any prescription drug benefits before 2006. Again, that might have affected our results if any compositional changes were correlated with the timing of changes in a lesser-of payment policy.

Summary Statistics

Table 2a shows that QMBs were not necessarily more likely than Medicare-only beneficiaries to use any physicians' services over our study period, though they were much more likely to use acute care services. On average, nearly 39 percent of QMBs, compared with 25 percent of Medicare-only beneficiaries, visited an emergency room, a difference of nearly 56 percent. The difference in the chance of any inpatient care was smaller, though dual-eligible beneficiaries were 62 percent more likely than Medicare-only beneficiaries to experience a preventable hospitalization.

Although Table 2a shows that QMBs were not necessarily more likely than Medicare-only beneficiaries to receive care from a physician, Table 2b shows that, compared with Medicare-only beneficiaries, they had more total visits.[13] The largest difference was for primary care visits. On average, QMBs had 3.4 primary care visits per year compared with 2.7 for Medicare-only beneficiaries, a 24 percent difference. QMBs had more total and primary care visits compared with Medicare-only beneficiaries as both new and established patients. In all cases, the percentage difference in RVU-weighted measures was slightly larger than the unweighted

[13] For summary statistics and all subsequent analysis, the counts of visits and stays are top-coded at the 99th percentile. In other words, among those with a positive count of utilization, we estimated the 99th percentile, and we assigned the value of the 99th percentile for those with values above the 99th percentile.

differences, implying that there were differences in intensity in addition to the number of visits, although most of the difference was attributable to the number of visits. Table 2c confirms that the differences in intensity of care received were small. Table 2d shows that, compared with the volume of use by Medicare-only beneficiaries, the volume of use of acute care was also larger for QMBs, especially for emergency room visits. QMBs had more than double the number of emergency room visits compared with Medicare-only beneficiaries.

The demographic characteristics of QMBs also differed from those of Medicare-only enrollees (see Table 3). QMBs were more likely to be female, younger, and in minority groups. The greater share of QMBs under age 65 indicates a greater share with disabilities. The difference in the presence of chronic conditions was small, though QMBs were more likely to be missing complete chronic condition data. That difference suggests that QMBs may have been more likely to have recently enrolled in Medicare or to have recently disenrolled from Medicare Advantage relative to Medicare-only beneficiaries; either factor would contribute to an incomplete look-back period for all of the chronic conditions included in the data.

Over the 2009–2012 period, QMBs lived in locations with different characteristics (see Table 3). Compared with Medicare-only beneficiaries, QMBs were more likely to live in areas with lower per capita income and fewer primary care physicians. QMBs were also more likely to reside in states with a substantially lower share of Medicare Advantage enrollees.

Results

The results of our analysis suggest that, over the 2009–2012 period, lesser-of payment policies reduced the number and intensity of visits to physicians by QMBs. The magnitude of those results was generally larger for new patients than for established patients.

Main Results

Table 4 summarizes the effects of lesser-of payment policies on the use of physicians' services over the 2009–2012 period. Results from both the DD model and the DDD model suggest a negative effect of lesser-of policies on the number of visits to physicians. However, the estimated magnitude of the effects and the precision of the estimates varied across models. In most cases, estimated effects in percentage terms were larger for new patients than for established patients, as hypothesized. For example, the DDD model suggested that the introduction of lesser-of payment policies decreased the unweighted number of physician visits among new patients by 0.020 visits per dual-eligible beneficiary. That represents a 4.8 percent reduction compared with the mean number of visits among QMBs before the introduction of lesser-of policies.[14] In

[14] Percentage effects were calculated by dividing the change in the number of visits by the mean number of visits in the year before the policy change. Specifically, the mean was calculated among QMB dual-eligible enrollees in a given cohort in states that switched payment policies in the year that the new policy was implemented.

comparison, the DDD model suggested that the number of established patient visits fell by an imprecisely estimated 1.6 percent. Results from the two specifications differ in that the DD model produced a more precise estimate for the reduction in overall patient visits and overall established patient visits, whereas the DDD model produced larger and more precisely estimated reductions in primary care visits. The magnitude of estimated effects on the number of physician visits weighted by RVUs was uniformly larger than the estimated effect on the unweighted number of visits, suggesting that the introduction of lesser-of payment policies affected both the number and intensity of visits over the study period.

Table 5 explicitly examines the effects of lesser-of payment policies on the intensity of visits (among beneficiaries with at least one physician visit). This table confirms that the introduction of lesser-of policies tended to decrease the intensity of visits. Point estimates were negative in all cases, and the DDD estimates were relatively precise. As in Table 4, using the DDD specification, the magnitude of the effects was larger for visits by new patients compared with visits by established patients. For example, the DDD estimates for outcomes calculated with annual RVUs imply that the introduction of lesser-of policies was associated with a 1.4 percent decrease in the intensity of primary care visits for new patients compared with a 0.7 percent decrease for established patient visits. Comparing Table 4 and Table 5, it seems that lesser-of policies tended to decrease both the quantity and intensity of visits, especially for QMBs seeking care from a new physician, although the effect on quantity was larger.

Table 6 examines the effects of lesser-of policies on the likelihood of any visit to a physician.[15] The patterns of results across specifications in this table are very similar to the patterns of results for the number of visits that are reported in Table 4. In general, the results suggest that, over the 2009–2012 period, the policies affected the likelihood of any visit in addition to the number of visits. Findings from both types of specifications indicate that visits by new patients were more responsive to the implementation of lesser-of policies. However, the DD specifications produced results that were more precisely estimated for the overall likelihood of visits and the likelihood of any established patient visits, whereas the DDD specifications produced results that were larger in magnitude and more precisely estimated for primary care visits. For example, results from the DDD model suggest that the introduction of lesser-of policies was associated with a 3.1 percent reduction in the likelihood that QMBs visited a primary care physician, compared with about 1.6 percent for any visits—indicating that primary care providers may have been particularly affected by the payment reduction. The estimated effect on the likelihood of any

[15] The supplemental table also shows estimated effects for control variables for the DDD model on any primary care visits. Estimated effects were not surprising. For example, over the study period, the chance of any primary care visit increased with the number of recorded chronic conditions. The chance of any visit was negatively associated with the managed care penetration rate though less so for dual-eligible beneficiaries than for Medicare-only beneficiaries. The chance of any primary care visit was positively associated with county per capita income and physician supply.

visits by new patients was also particularly strong. Results from the DDD model also suggest that the introduction of lesser-of policies decreased the chance of any physician visit among new patients by 4 percent and decreased the likelihood of any primary care visit among new patients by about 7 percent.

Table 7 considers the effect of lesser-of payment policies on the receipt of certain tests or visits among patients with diabetes. An estimated negative effect of lesser-of policies on nephrology tests was consistent across both models, although the magnitude of the estimated effects was smaller for the DDD model than for the DD model. Results from both models suggest a negative effect on the chance of any nephrology test and on the number of tests. The DDD model indicated that the introduction of lesser-of policies reduced the chance of any nephrology test by about 3 percent and reduced the number of tests by about 5 percent. The DD model suggested negative effects on HbA1c tests and E&M visits, though the outcomes produced by the DDD model were less precisely estimated and had smaller point estimates. The DDD model suggested that lesser-of policies reduced the number of LDL tests by 7 percent over the study period. In general, coefficients were larger in magnitude and more precisely estimated for the number of visits or tests than the overall likelihood of those tests or visits happening, suggesting that physicians may have been less likely to provide follow-up care in response to lower payment rates.

Table 8 illustrates the effects of lesser-of policies on the use of acute care, including emergency room care and inpatient care. Estimated effects were all small and imprecise, suggesting that reductions in access to physician care did not necessarily lead to adverse health outcomes requiring emergency room use or hospital admissions.

Robustness Checks

Table 9 reports results from robustness tests. For this table, we focused on the number of primary care visits—the outcome most affected by a change to lesser-of payment policies. We first examined whether the results were robust to limiting the analysis only to people in the lowest third of a county's per capita income distribution in both the treatment and the control groups. Applying that restriction either left the estimate unchanged (as was the case for the number of new primary care visits) or increased the strength of the estimates (as was the case for the other three outcomes pictured). Limiting the analysis to the elderly also either left the estimates unchanged or strengthened the estimates. Stratifying by the number of chronic conditions, we found that estimated effects were significant for both groups, though they were stronger among the group with at least three chronic conditions.

Table 10 presents results from the event study analysis. Except in one case, the policy-lead interactions were statistically indistinguishable from zero, as expected. The effects on any primary care visits seemed to occur quickly, though they grew over time, whereas the effects on the number of primary care visits mostly occurred with a lag, as expected.

Discussion and Conclusions

This paper finds that, over the 2009–2012 period, a movement toward lesser-of payment policies for Part B services for QMBs—which reduced physician payment rates by 20 percent in most cases—was associated with a reduction in both the number and the likelihood of physician office visits among QMBs. In many cases, the DD estimates exhibited somewhat different patterns of magnitudes and statistical precision across outcomes as compared with the DDD estimates. However, the DD estimates might have been less robust because they could not account for underlying trends or shocks that affected all Medicare beneficiaries over our study period. Our DDD specifications suggested that, over the study period, new patient visits and primary care visits were particularly sensitive to the implementation of lesser-of payment policies. In particular, our DDD specifications indicated that lesser-of payment policies were associated with a 5 percent reduction in the number of new primary care visits for QMBs and a 7 percent reduction in the probability that QMBs visited a primary care physician for the first time. The DDD specifications also suggested that, following the introduction of lesser-of payment policies, both the number and the likelihood of overall and established patients' primary care visits fell by about 3 percent.

Although the results for primary care visits by new patients, in particular, seem like a sizable effect, we were unable to discern spillover effects on the use of acute care, including emergency room visits or hospitalizations. Further work may be useful to assess the effects of lesser-of payment policies on measures of quality of care. For example, we did find evidence that testing among QMBs with diabetes is reduced with lesser-of payment policies. Whether that represents a reduction in the overuse of testing or a reduction in needed testing requires further investigation. We also found a larger reduction in office visits among QMBs with at least three chronic conditions. Further work comparing quality of care among people with Medicare-only coverage versus QMBs may be fruitful, especially in states with lesser-of payment policies.

The results of our study may have implications for the likely effects of any proposed changes in Medicare physician payment rates for Medicare-only beneficiaries. It should be noted, however, that effects on Medicare-only beneficiaries could differ if the income effects of a payment reduction were stronger for changes that affect the entire Medicare population. At present, Medicare payment rates for physician office visits are not much lower than those paid by private insurance. Recent studies have estimated that Medicare payment rates are roughly 85 percent to 90 percent of private insurance payment rates (Biener and Selden, 2017; Pelech, 2020). This contrasts with the situation for inpatient care. Although private insurance payment rates to hospitals were roughly 10 percent more than Medicare's payment rates over the 1996–2001 period, that difference has grown dramatically. From 2012 to 2013, private rates for hospital care were at least 75 percent higher than Medicare rates (Maeda and Nelson, 2018; Selden and others, 2015). So, even though Medicare payment rates for inpatient care have become much lower than private rates, the same is much less true of physician payment rates, except in the case of QMBs.

In many states, physicians may be getting only 65 percent of what they would get for private patients for treating a dual-eligible beneficiary. (Medicare pays 15 percent less than private insurance, and providers typically get 20 percent less than Medicare rates for treating QMBs in states with lesser-of payment policies.) The potential impact of this payment disparity on quality of care suggests that continued monitoring of quality-of-care measures may be warranted.

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Tables

Table 1. [Return to Text]

Crossover Payment Policy by State for Medicare Part B (Physicians' Services), 1999 to 2012

Policy	States
Lesser-of Payment Policy	AL, AZ, CO*, DC, DE, FL, GA, IL, KS*, KY, MA, MD, MI, MT, NC, NJ, NM, NV, OH, OR, PA, RI*, TN, TX, UT, VA, WA, WI, WV
Full Payment Policy	AR, HI, IA, ME, MO, MS, NY, SD, VT, WY
States That Switched Policies (Year)	AK (2008), CA (2000), CT (2000), ID* (2006), IN (2003), LA (2003), MN (2012), NE (2012), ND (2003), NH (2000), OK (2006)**, SC (2002)

* These states were dropped from the analysis because of missing Medicaid Analytic eXtract (MAX) data in 2012. (That is, we could not identify dual-eligibility status for beneficiaries in those states in 2012.)

** Of the 12 states that changed policy during the study period, all but 2 (Oklahoma and Nebraska) changed from a lesser-of payment policy to a full payment policy.

Table 2a. [Return to Text]

Mean Dependent Variables, 1999 to 2012

	QMB	Medicare-Only	Difference	
Any Use				
Physician	0.765	0.765	0.000	
	(0.004)	(0.004)	(0.004)	
New Patient	0.293	0.282	0.012	**
	(0.008)	(0.008)	(0.006)	
Established Patient	0.748	0.753	-0.005	
	(0.004)	(0.004)	(0.005)	
Primary Care Physician	0.611	0.627	-0.016	**
	(0.007)	(0.008)	(0.007)	
New Patient	0.105	0.079	0.026	***
	(0.007)	(0.004)	(0.005)	
Established Patient	0.596	0.615	-0.019	***
	(0.007)	(0.008)	(0.007)	
Emergency Department	0.386	0.248	0.138	***
	(0.016)	(0.003)	(0.013)	
Acute Inpatient Care	0.204	0.174	0.030	***
	(0.007)	(0.002)	(0.005)	
Avoidable Hospital Use	0.053	0.033	0.020	***
	(0.003)	(0.001)	(0.002)	
Testing and Visits Among Beneficiaries With Diabetes (N = 4,218,526)				
HbA1c	0.485	0.486	-0.001	
	(0.014)	(0.016)	(0.010)	
LDL	0.459	0.456	0.003	
	(0.025)	(0.020)	(0.018)	
Eye Exam	0.391	0.449	-0.058	***
	(0.011)	(0.009)	(0.009)	
Nephrology	0.399	0.410	-0.012	
	(0.018)	(0.012)	(0.014)	
E&M	0.523	0.528	-0.005	
	(0.006)	(0.007)	(0.005)	

The asterisks *, **, and *** indicate that the difference is statistically significant at the 10 percent, 5 percent, and 1 percent levels, respectively. The standard errors are clustered at the state level and are shown in parentheses.

E&M = evaluation and management; LDL = low-density lipoprotein; QMB = qualified Medicare beneficiary.

Table 2b. [Return to Text]

Mean Dependent Variables, 1999 to 2012

	Unweighted				RVU-Weighted			
	QMB	Medicare-Only	Difference		QMB	Medicare-Only	Difference	
Volume of Use								
Physician Visits	6.58	6.05	0.53	***	12.52	11.20	1.32	***
	(0.221)	(0.163)	(0.161)		(0.473)	(0.345)	(0.297)	
New Patient	0.44	0.40	0.04	***	1.42	1.22	0.20	***
	(0.020)	(0.015)	(0.013)		(0.076)	(0.053)	(0.047)	
Established Patient	6.14	5.65	0.49	***	11.09	9.98	1.11	***
	(0.204)	(0.152)	(0.153)		(0.401)	(0.299)	(0.259)	
Primary Care Visits	3.38	2.72	0.66	***	6.30	5.02	1.28	***
	(0.110)	(0.048)	(0.108)		(0.215)	(0.098)	(0.182)	
New Patient	0.12	0.09	0.04	***	0.40	0.27	0.13	***
	(0.010)	(0.004)	(0.008)		(0.037)	(0.015)	(0.026)	
Established Patient	3.26	2.63	0.63	***	5.90	4.75	1.15	***
	(0.102)	(0.046)	(0.102)		(0.182)	(0.088)	(0.160)	

The asterisks *, **, and *** indicate that the difference is statistically significant at the 10 percent, 5 percent, and 1 percent levels, respectively. The standard errors are clustered at the state level and are shown in parentheses.

QMB = qualified Medicare beneficiary; RVU = relative value unit.

Table 2c. [Return to Text]

Mean Dependent Variables, 1999 to 2012

	RVU-Weighted				1999 RVU-Weighted			
Average Intensity (Conditional Upon Any Use)	**QMB**	**Medicare-Only**	**Difference**		**QMB**	**Medicare-Only**	**Difference**	
Average Intensity for Physician Visits	1.92	1.87	0.05	***	1.49	1.47	0.02	***
	(0.016)	(0.012)	(0.012)		(0.012)	(0.009)	(0.006)	
New Patient	3.14	2.95	0.19	***	2.57	2.44	0.13	***
	(0.038)	(0.027)	(0.022)		(0.033)	(0.021)	(0.019)	
Established Patient	1.82	1.79	0.03	***	1.39	1.39	0.00	
	(0.013)	(0.010)	(0.011)		(0.009)	(0.007)	(0.005)	
Average Intensity for Primary Care Visits	1.92	1.92	0.00		1.48	1.50	-0.02	***
	(0.015)	(0.015)	(0.013)		(0.011)	(0.011)	(0.006)	
New Patient	3.27	3.16	0.11	***	2.73	2.65	0.07	***
	(0.036)	(0.032)	(0.021)		(0.031)	(0.025)	(0.019)	
Established Patient	1.85	1.87	-0.02		1.42	1.45	-0.03	***
	(0.014)	(0.013)	(0.014)		(0.008)	(0.009)	(0.007)	

The asterisks *, **, and *** indicate that the difference is statistically significant at the 10 percent, 5 percent, and 1 percent levels, respectively. The standard errors are clustered at the state level and are shown in parentheses.

QMB = qualified Medicare beneficiary; RVU = relative value unit.

Table 2d. [Return to Text]

Mean Dependent Variables, 1999 to 2012

	QMB	Medicare-Only	Difference	
Emergency Department Visits	0.89	0.41	0.47	***
	(0.051)	(0.007)	(0.046)	
Hospital Stays	0.35	0.27	0.08	***
	(0.015)	(0.005)	(0.012)	
Avoidable Hospital Use	0.07	0.04	0.03	***
	(0.004)	(0.001)	(0.003)	
Testing and Visits Among Beneficiaries With Diabetes				
HbA1c	1.01	1.04	-0.04	**
	(0.033)	(0.041)	(0.018)	
LDL	0.92	0.93	-0.01	
	(0.065)	(0.062)	(0.038)	
Eye Exam	0.93	0.98	-0.05	
	(0.069)	(0.048)	(0.045)	
Nephrology	0.95	0.93	0.02	
	(0.059)	(0.042)	(0.041)	
E&M	1.68	1.46	0.22	***
	(0.048)	(0.016)	(0.042)	
Sample Size	2,419,054	17,872,110		

The asterisks *, **, and *** indicate that the difference is statistically significant at the 10 percent, 5 percent, and 1 percent levels, respectively. The standard errors are clustered at the state level and are shown in parentheses.

E&M = evaluation and management; LDL = low-density lipoprotein; QMB = qualified Medicare beneficiary.

Table 3. [Return to Text]

Mean Independent Variables, 1999 to 2012

	QMB	Medicare-Only	Difference
Female	0.636	0.599	0.038 ***
	(0.010)	(0.003)	(0.010)
Age Group			
<65	0.440	0.081	0.359 ***
	(0.024)	(0.003)	(0.024)
65-74	0.264	0.427	-0.164 ***
	(0.012)	(0.005)	(0.012)
75-84	0.212	0.352	-0.140 ***
	(0.011)	(0.004)	(0.012)
85+	0.084	0.139	-0.055 ***
	(0.003)	(0.003)	(0.005)
Race/Ethnicity			
Non-Hispanic White	0.545	0.886	-0.341 ***
	(0.042)	(0.010)	(0.035)
Non-Hispanic Black	0.211	0.066	0.145 ***
	(0.029)	(0.007)	(0.024)
Hispanic	0.158	0.028	0.130 ***
	(0.040)	(0.007)	(0.033)
Non-Hispanic Other	0.084	0.019	0.065 ***
	(0.027)	(0.004)	(0.023)
Missing	0.002	0.001	0.000 **
	(0.000)	(0.000)	(0.000)
Number of Chronic Conditions			
None	0.145	0.120	0.024 ***
	(0.004)	(0.004)	(0.005)
1	0.118	0.115	0.003
	(0.004)	(0.003)	(0.003)
2	0.116	0.131	-0.015 ***
	(0.003)	(0.002)	(0.002)
3	0.114	0.137	-0.022 ***
	(0.002)	(0.001)	(0.002)
4	0.102	0.119	-0.017 ***
	(0.002)	(0.002)	(0.003)
5+	0.254	0.242	0.012
	(0.009)	(0.008)	(0.008)
N.A.	0.151	0.136	0.015 ***
	(0.005)	(0.003)	(0.006)
County per Capita Income in 2012 Dollars			
Low (<$30,000)	0.230	0.175	0.054 **
	(0.035)	(0.019)	(0.021)
Median ($30,000-$40,000)	0.426	0.448	-0.021
	(0.028)	(0.025)	(0.018)
High (>=$40,000)	0.341	0.374	-0.033
	(0.046)	(0.034)	(0.026)
County Primary Care Physicians per 1,000 People			
Low (<0.6)	0.380	0.367	0.014
	(0.040)	(0.025)	(0.023)
Medium (0.6-0.8)	0.323	0.305	0.019
	(0.039)	(0.021)	(0.025)
High (>=0.8)	0.296	0.329	-0.032 ***
	(0.026)	(0.026)	(0.009)
State-Level MA Penetration Rate	0.124	0.204	-0.080 ***
	(0.013)	(0.023)	(0.014)

The asterisks *, **, and *** indicate that the difference is statistically significant at the 10 percent, 5 percent, and 1 percent levels, respectively. The standard errors are clustered at the state level and are shown in parentheses. MA = Medicare Advantage; N.A. = not available.

Table 4. [Return to Text]

Effects of Lesser-of Payment Policies on the Number of Physician Visits

	Unweighted				RVU-Weighted			
	DD		DDD		DD		DDD	
All	-0.242**	[-3.5%]	-0.127	[-1.8%]	-0.682*	[-6.3%]	-0.302	[-2.8%]
	(0.113)		(0.100)		(0.355)		(0.186)	
New Patients	-0.021*	[-5.0%]	-0.020**	[-4.8%]	-0.072	[-6.0%]	-0.066**	[-5.5%]
	0.012		(0.010)		(0.045)		(0.027)	
Established Patients	-0.219**	[-3.4%]	-0.105	[-1.6%]	-0.600*	[-6.2%]	-0.223	[-2.3%]
	(0.104)		(0.093)		(0.310)		(0.168)	
Primary Care	-0.071	[-2.0%]	-0.110***	[-3.0%]	-0.269**	[-4.7%]	-0.229***	[-4.0%]
	(0.075)		(0.041)		(0.125)		(0.079)	
New Patients	-0.003	[-2.0%]	-0.008***	[-5.3%]	-0.017	[-3.5%]	-0.029***	[-6.0%]
	(0.003)		(0.002)		(0.011)		(0.006)	
Established Patients	-0.069	[-2.0%]	-0.102**	[-2.9%]	-0.247**	[-4.7%]	-0.195**	[-3.7%]
	(0.074)		(0.041)		(0.116)		(0.076)	

This table shows the marginal effects of a lesser-of policy under the DD model and of a lesser-of policy on dual-eligible beneficiaries relative to Medicare-only beneficiaries under the DDD model from generalized linear models with a negative binomial distribution and log link function. The marginal effects as a percentage of the pre-policy average are shown in square brackets. (The pre-policy average was calculated on the basis of the outcome values among QMBs in the year before the policy's implementation.) Controls included those for gender, age group, race/ethnicity, original reason for Medicare eligibility, number of chronic conditions, Medicare Advantage penetration rate by state, year, and dual status, and controls for county annual per capita income and the number of primary care physicians per capita. Additional controls for the DD model included state and year fixed effects; for the DDD model, they included dual-specific state fixed effects, dual-specific year fixed effects, and state-year fixed effects. Standard errors for the marginal effects are shown in parentheses under marginal effects.

The asterisks *, **, and *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

DD = difference-in-differences; DDD = difference-in-difference-in-differences; QMBs = qualified Medicare beneficiaries; RVU = relative value unit.

Table 5. [Return to Text]

Effects of Lesser-of Payment Policies on the Intensity of Physician Visits

	Annual RVUs				1999 RVUs			
	DD		DDD		DD		DDD	
All	-0.042	[-2.6%]	-0.013*	[-0.8%]	-0.034	[-2.3%]	-0.011**	[-0.7%]
	(0.034)		(0.007)		(0.026)		(0.005)	
New Patients	-0.037	[-1.3%]	-0.029***	[-1.0%]	-0.038	[-1.5%]	-0.025***	[-1.0%]
	(0.036)		(0.010)		(0.033)		(0.008)	
Established Patients	-0.041	[-2.7%]	-0.008*	[-0.5%]	-0.033	[-2.4%]	-0.007**	[-0.5%]
	(0.031)		(0.004)		(0.024)		(0.004)	
Primary Care	-0.053	[-3.3%]	-0.017**	[-1.0%]	-0.040	[-2.7%]	-0.013**	[-0.9%]
	(0.044)		(0.007)		(0.033)		(0.006)	
New Patients	-0.081*	[-2.6%]	-0.045**	[-1.4%]	-0.075*	[-2.7%]	-0.040***	[-1.4%]
	(0.047)		(0.019)		(0.040)		(0.015)	
Established Patients	-0.048	[-3.2%]	-0.011**	[-0.7%]	-0.039	[-2.8%]	-0.009*	[-0.7%]
	(0.039)		(0.005)		(0.030)		(0.005)	

This table shows the marginal effects of a lesser-of policy under the DD model and of a lesser-of policy on dual-eligible beneficiaries relative to Medicare-only beneficiaries under the DDD model from generalized linear models with a negative binomial distribution and log link function. The percentage change—the marginal effect divided by the pre-policy average—is shown in square brackets. (The pre-policy average was calculated on the basis of the outcome values in states that switched policy in the year of the policy's implementation.) Controls included those for gender, age group, race/ethnicity, original reason for Medicare eligibility, number of chronic conditions, Medicare Advantage penetration rate by state, year, and dual status, and controls for county annual per capita income and the number of primary care physicians per capita. Additional controls for the DD model included state and year fixed effects; for the DDD model, they included dual-specific state fixed effects, dual-specific year fixed effects, and state-year fixed effects. Standard errors for the marginal effects are shown in parentheses under marginal effects.

The asterisks *, **, and *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

DD = difference-in-differences; DDD = difference-in-difference-in-differences; RVU = relative value unit.

Table 6. [Return to Text]

Effects of Lesser-of Payment Policies on the Likelihood of Any Physician Visit

	DD		DDD	
All	-0.018***	[-2.4%]	-0.012**	[-1.6%]
	(0.006)		(0.006)	
New Patients	-0.012**	[-4.3%]	-0.011**	[-3.9%]
	(0.006)		(0.005)	
Established Patients	-0.018***	[-2.4%]	-0.012**	[-1.6%]
	(0.006)		(0.006)	
Primary Care	-0.008	[-1.4%]	-0.018***	[-3.1%]
	(0.010)		(0.006)	
New Patients	-0.003	[-2.5%]	-0.008***	[-6.7%]
	(0.003)		(0.002)	
Established Patients	-0.008	[-1.4%]	-0.018***	[-3.2%]
	(0.011)		(0.006)	

This table shows the marginal effects of a lesser-of policy under the DD model and of a lesser-of policy on dual-eligible beneficiaries relative to Medicare-only beneficiaries under the DDD model from generalized linear models with a negative binomial distribution and log link function. The marginal effects as a percentage of the pre-policy average are shown in square brackets. (The pre-policy average was calculated on the basis of the outcome values among QMBs in the year before the policy's implementation.) Controls included those for gender, age group, race/ethnicity, original reason for Medicare eligibility, number of chronic conditions, Medicare Advantage penetration rate by state, year, and dual status, and controls for county annual per capita income and number of primary care physicians per capita. Additional controls for the DD model included state and year fixed effects; for the DDD model, they included dual-specific state fixed effects, dual-specific year fixed effects, and state-year fixed effects. Standard errors for the marginal effects are shown in parentheses under marginal effects.

The asterisks *, **, and *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

DD = difference-in-differences; DDD = difference-in-difference-in-differences; QMBs = qualified Medicare beneficiaries.

Table 7. [Return to Text]

Effects of Lesser-of Payment Policies on Testing and Visits Among Patients With Diabetes

	Number				Any			
	DD		DDD		DD		DDD	
HbA1c	-0.051**	[-6.0%]	-0.016	[-1.9%]	-0.017**	[-4.0%]	-0.002	[-0.5%]
	(0.022)		(0.034)		(0.008)		(0.010)	
LDL	-0.071	[-8.9%]	-0.057***	[-7.1%]	-0.020	[-5.0%]	-0.007	[-1.8%]
	(0.051)		(0.020)		(0.013)		(0.008)	
Eye Exam	-0.005	[-0.6%]	0.001	[0.1%]	-0.007	[-1.9%]	-0.003	[-0.8%]
	(0.020)		(0.021)		(0.004)		(0.006)	
Nephrology	-0.088***	[-9.6%]	-0.045**	[-4.9%]	-0.026***	[-7.0%]	-0.012*	[-3.2%]
	(0.027)		(0.019)		(0.008)		(0.007)	
E&M	-0.095***	[-4.6%]	-0.015	[-0.7%]	-0.018***	[-3.3%]	-0.004	[-0.7%]
	(0.027)		(0.030)		(0.005)		(0.005)	

This table shows the marginal effects of a lesser-of policy under the DD model and of a lesser-of policy on dual-eligible beneficiaries relative to Medicare-only beneficiaries under the DDD model from generalized linear models with a negative binomial distribution and log link function. The marginal effects as a percentage of the pre-policy average are shown in square brackets. (The pre-policy average was calculated on the basis of the outcome values among QMBs in the year before the policy's implementation.) Controls included those for gender, age group, race/ethnicity, original reason for Medicare eligibility, number of chronic conditions, Medicare Advantage penetration rate by state, year, and dual status, and controls for county annual per capita income and the number of primary care physicians per capita. Additional controls for the DD model included state and year fixed effects; for the DDD model, they included dual-specific state fixed effects, dual-specific year fixed effects, and state-year fixed effects. Standard errors for the marginal effects are shown in parentheses under marginal effects.

The asterisks *, **, and *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

DD = difference-in-differences; DDD = difference-in-difference-in-differences; E&M = evaluation and management; LDL = low-density lipoprotein; QMBs = qualified Medicare beneficiaries.

Table 8. [Return to Text]

Effects of Lesser-of Payment Policies on the Use of Acute Care

	Number				Any			
	DD		DDD		DD		DDD	
ER Visit	-0.002	[-0.1%]	0.008	[0.4%]	-0.009	[-2.8%]	-0.002	[-0.6%]
	(0.011)		(0.006)		(0.007)		(0.005)	
Hospital Stays	-0.003	[-0.2%]	0.004*	[0.2%]	-0.002	[-1.0%]	0.001	[0.5%]
	(0.003)		(0.002)		(0.002)		(0.001)	
Preventable Hospitalizations	-0.000	[0.0%]	0.001	[1.3%]	-0.002*	[-4.0%]	-0.001	[-2.0%]
	(0.001)		(0.000)		(0.001)		(0.001)	

This table shows the marginal effects of a lesser-of policy under the DD model and of a lesser-of policy on dual-eligible beneficiaries relative to Medicare-only beneficiaries under the DDD model from generalized linear models with a negative binomial distribution and log link function. The marginal effects as a percentage of the pre-policy average are shown in square brackets. (The pre-policy average was calculated on the basis of the outcome values among QMBs in the year before the policy's implementation.) Controls included those for gender, age group, race/ethnicity, original reason for Medicare eligibility, number of chronic conditions, Medicare Advantage penetration rate by state, year, and dual status, and controls for county annual per capita income and the number of primary care physicians per capita. Additional controls for the DD model included state and year fixed effects; for the DDD model, they included dual-specific state fixed effects, dual-specific year fixed effects, and state-year fixed effects. Standard errors for the marginal effects are shown in parentheses under marginal effects.

The asterisks *, **, and *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

DD = difference-in-differences; DDD = difference-in-difference-in-differences; ER = emergency room; QMBs = qualified Medicare beneficiaries.

Table 9. [Return to Text]

Robustness Checks: Effects of Lesser-of Payment Policies on the Number of Primary Care Visits Under the DDD Model (Unweighted)

	All	Low-Income Counties	Higher-Income Counties	Elderly	Non-elderly	3+ Chronic Conditions	<3 Chronic Conditions
All	-0.110***	-0.186***	-0.065	-0.132***	-0.042	-0.185***	-0.073**
	(0.041)	(0.066)	(0.057)	(0.050)	(0.038)	(0.059)	(0.036)
New	-0.008***	-0.008***	-0.004	-0.008***	-0.007***	-0.014***	-0.003
	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
Established	-0.102**	-0.173***	-0.059	-0.124**	-0.035	-0.169***	-0.069**
	(0.041)	(0.062)	(0.056)	(0.049)	(0.038)	(0.059)	(0.035)
Any	-0.018***	-0.032***	-0.016**	-0.021**	-0.009	-0.024***	-0.017**
	-0.006	(0.012)	(0.007)	(0.008)	(0.008)	(0.007)	(0.007)

This table shows the marginal effects of a lesser-of policy under the DD model and of a lesser-of policy on dual-eligible beneficiaries relative to Medicare-only beneficiaries under the DDD model from generalized linear models with a negative binomial distribution and log link function. The marginal effects as a percentage of the pre-policy average are shown in square brackets. (The pre-policy average was calculated on the basis of the outcome values among QMBs in the year before the policy's implementation.) Controls included those for gender, age group, race/ethnicity, original reason for Medicare eligibility, number of chronic conditions, Medicare Advantage penetration rate by state, year, and dual status, and controls for county annual per capita income and number of primary care physicians per capita. Additional controls for the DD model included state and year fixed effects; for the DDD model, they included dual-specific state fixed effects, dual-specific year fixed effects, and state-year fixed effects. Standard errors for the marginal effects are shown in parentheses under marginal effects.

The asterisks *, **, and *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

DD = difference-in-differences; DDD = difference-in-difference-in-differences; QMBs = qualified Medicare beneficiaries.

Table 10. [Return to Text]

Event Study Specifications for the Number of Primary Care Visits Under the DDD Model

	Primary Care Visits			
	All	New	Established	Any Primary Care
One-Year Lead	-0.021	-0.003	-0.017	-0.011
	(0.053)	(0.002)	(0.057)	(0.009)
Two-Year Lead	-0.003	-0.007***	0.010	0.000
	(0.024)	(0.001)	(0.023)	(0.004)
Three-Year Lead	-0.017	-0.001	-0.015	-0.004
	(0.015)	(0.003)	(0.012)	(0.003)
One-Year Lag	-0.006	-0.005***	0.003	-0.007*
	(0.034)	(0.001)	(0.033)	(0.004)
Two-Year Lag	-0.027	-0.002	-0.025	-0.015***
	(0.032)	(0.002)	(0.033)	(0.005)
Three-Year Lag	-0.150***	-0.008***	-0.140***	-0.025***
	(0.046)	(0.001)	(0.047)	(0.007)

Standard errors (clustered by state) are shown in parentheses. Covariates are as explained in the text. Regression coefficients are reported from negative binomial models for counts and linear probability models for any visit.

The asterisks *, **, and *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

DDD = difference-in-difference-in-differences.

Supplemental Table. [Return to Text]

Effects of a Lesser-of Payment Policy on the Probability of Any Primary Care Visit Under the DDD Model

	Coefficient	Standard Error
Dual	-0.015**	(0.006)
Dual* Lesser of	-0.018***	(0.006)
Female	-0.052***	(0.003)
Age Group (Relative to Under 65)		
Age group 2 (65-74)	0.003	(0.004)
Age Group 3 (75-84)	-0.041***	(0.005)
Age Group 4 (85+)	-0.102***	(0.006)
Race/Ethnicity (Relative to non-Hispanic White)		
Non-Hispanic Black	-0.064***	(0.004)
Non-Hispanic Other	0.003	(0.013)
Hispanic	-0.041***	(0.009)
Missing	-0.039***	(0.006)
Original Reason for Eligibility Because of Age	0.042***	(0.002)
Number of Chronic Conditions (Relative to None)		
One	0.286***	(0.005)
Two	0.400***	(0.007)
Three	0.440***	(0.007)
Four	0.458***	(0.007)
Five	0.474***	(0.007)
Missing	0.320***	(0.007)
MA Penetration Rate	-0.128***	(0.040)
Dual* MA Penetration Rate	0.137**	(0.060)
County per Capita Income (Relative to "Low")		
Medium	0.049***	(0.007)
High	0.057***	(0.011)
Number of Primary Care Physicians per Capita at the County Level (Relative to "Low")		
Medium	0.013***	(0.004)
High	0.013***	(0.005)

Covariates not reported include dual-specific state fixed effects, dual-specific year effects, and state-year fixed effects.

The asterisks *, **, and *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

MA = Medicare Advantage.