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The Initial Impact of Medicare's New Prospective Payment System for Kidney Dialysis

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Background: Medicare implemented a new prospective payment system (PPS) on January 1, 2011. This PPS covers an expanded bundle of services, including services previously paid on a fee-for-service basis. The objectives of the new PPS include more efficient decisions about treatment service combinations and modality choice.

Methods: Primary data for this study are Medicare claims files for all dialysis patients for whom Medicare is the primary payer. We compare use of key injectable medications under the bundled PPS to use when those drugs were separately billable and examine variability across providers. We also compare each patient's dialysis modality before and after the PPS.

Results: Use of relatively expensive drugs, including erythropoiesis-stimulating agents, declined substantially after institution of the new PPS, whereas use of iron products, often therapeutic substitutes for erythropoiesis-stimulating agents, increased. Less expensive vitamin D products were substituted for more expensive types. Drug spending overall decreased by ~$25 per session, or about 5 times the mandated reduction in the base payment rate of ~$5. Use of peritoneal dialysis increased in 2011 after being nearly flat in the years prior to the PPS, with the increase concentrated in patients in their first or second year of dialysis. Home hemodialysis continued to increase as a percentage of total dialysis services, but at a rate similar to the pre-PPS trend.

Conclusion: The expanded bundle dialysis PPS provided incentives for the use of lower cost therapies. These incentives seem to have motivated dialysis providers to move toward lower cost methods of care in both their use of drugs and choice of modalities.

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INDEX WORDS: Dialysis; bundled payment; prospective payment; cost; medications.

As authorized by the Medicare Improvements for Patients and Providers Act of 2008, Medicare implemented a new prospective payment system (PPS) for kidney dialysis-related services on January 1, 2011.[1] This PPS covers an expanded bundle of services, including services previously paid on a fee-for-service basis. This report presents an early examination of the impact of this recently implemented kidney dialysis PPS. This timely information has relevance to the Centers for Medicare & Medicaid Services (CMS) as it seeks to monitor and understand the responses to the PPS, ensure access to and quality of care delivered, decide future payment rates, and inform the design of other bundled payment systems. Similarly, this study will inform private payers who are not yet paying for dialysis services on a bundled basis, dialysis providers as they seek to ascertain the responses of other providers, and manufacturers of the medications used by dialysis patients.

The kidney dialysis PPS replaced a hybrid payment model that paid prospectively for a narrower bundle of services directly related to the dialysis treatment (the composite rate) and paid for injectable medications and additional laboratory tests on a fee-for-service basis (separately billables). The new PPS includes these formerly fee-for-service items in the bundle, paying a base rate of $229.63 per dialysis treatment with case-mix adjustments for patient age, body surface area, low body mass index, onset of dialysis (first 120 days), and a set of acute and chronic comorbid conditions. Adjustments also are made for area wages, small facility size, self-dialysis training, and high-cost outlier cases.

The new payment system had at least 2 major objectives. First, there was concern about the lack of incentive for efficiency in the use of separately billable medications and laboratory tests. Over time, these separately billable services became the primary

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profit center for most dialysis units, and one of these medications (erythropoietin) has become Medicare's largest drug expense. These concerns became heightened as new clinical data questioned the safety of managing anemia with high target treated hematocrits.[2-4] Not only did the prior payment system create incentives for high use of injectable medications, it also created incentives for potentially inefficient substitution across agents (eg, using too much erythropoietin relative to iron in managing patients' anemia and preferentially using higher cost iron or vitamin D products). Second, the percentage of US patients receiving home dialysis (peritoneal dialysis [PD] and home hemodialysis [HD]) had been steadily declining despite beliefs that home modalities were appropriate and desirable for a larger percentage of patients.[5] Because a significant portion of dialysis facilities' revenues were derived from separately billable medications and patients on home therapies tend to use substantially fewer of these medications, the prior payment system was implicated as an important cause of this decline. Bundling medications and laboratory tests potentially addresses both these issues. Because payments would no longer depend on use, facilities would have an incentive to reduce use and select the most efficient mix of services. The bundled payment rate does not differ across modalities and reflects the average across all modalities (which is dominated by in-center HD, with >90% of patients and the highest use of separately billable services). Therefore, bundling improves the relative profitability of home therapies.[6]

The aim of this report is to examine several important aspects of dialysis-related care before and after implementation of the expanded PPS in 2011. Given the changes in the incentive structure facing dialysis providers, we hypothesize that use of injectable medications will decline, average hematocrit will decline, and use of home therapies will increase. We further hypothesize that these changes will not occur instantaneously because it takes time to adapt practice patterns, establish new steady-state levels of anemia management, and change long-term decisions, such as a patient's dialytic modality. Finally, observed changes in use are expected to reflect clinical and economic factors. In particular, safety concerns led the US Food and Drug Administration (FDA) to issue a revised package insert for erythropoiesis-stimulating agents (ESAs) in 2011, which may have led to further changes in anemia management protocols.

METHODS

The primary data for this study are the Medicare claims files for dialysis patients. Patients with end-stage renal disease (ESRD) are defined as patients for whom a Medical Evidence Form establishing kidney failure (CMS Form 2728) had been filed or one or more paid Medicare dialysis facility claims (bill type 72X) was identified. The Medicare claims database was queried in order to extract claims for these identified dialysis patients for months that include Medicare payments for dialysis. For these patients, dialysis facility claims (type 72X claims) are summarized at the monthly level. Prior to implementation of the bundled payment system in 2011, these claims captured actual payments for the use of injectable medications. In 2011, claims continued to report use. However, aside from the relatively small number of facilities that opted to transition into the new payment system, claims no longer reflected payments for specific medications. Both incident and prevalent patients are included in any month in which Medicare is their primary payer. We examine monthly 2011 claims under the bundled PPS and compare use of key injectable medications with monthly rates that prevailed when those drugs were separately billable (January to December 2010). Comparisons are based on 2 specific measures of monthly use of drugs: (1) the percentage of patient-months in which any use of each medication was reported and (2) the ratio of absolute quantity of each medication relative to the quantity that was used in December 2010, the last month under the old payment system. Similar comparisons were made for 5 classes of providers, members of each of the 3 largest dialysis organizations, members of other smaller dialysis organizations, and independent dialysis providers. Facility ownership type was determined using end-of-year data from the Standard Information Management System (SIMS) to identify facility type for 2010 and 2011.

We also use a combination of revenue center codes and condition codes on claims to ascertain each patient's primary dialysis modality each month and compare the distribution of modalities in 2011 to those for each year from 2007 through 2010. Months in which multiple modalities were reported were excluded. These months represented <1% of all patient-months in each year. For each year, we report the distribution of modalities for patients whose onset of ESRD occurred during that year, whose onset of ESRD occurred during the prior year, or whose onset occurred 2 or more years before that year. Identification of onset of ESRD is based almost entirely on CMS Form 2728. In the rare event when there is no CMS Form 2728 for a patient, the start of dialysis was determined using SIMS patient event files or the first identified dialysis claim. The data include 351,146 unique patients in 2010 and 360,266 unique patients in 2011.

RESULTS

Absolute percentages of monthly dialysis claims reporting any use of injectable medications covered in the bundled PPS are listed in Table 1, comparing the prebundle period (2010) to the postbundle period (2011). Most patients continued to receive ESAs (erythropoietin and darbepoetin) after the bundle was implemented, but the percentage of patient-months during which these drugs were administered declined about 4.6 percentage points. The data also show some increased reliance on iron in anemia management protocols because the percentage of patients receiving any intravenous iron supplement increased about 5.5 percentage points. Further, the mix of iron products changed as more patients received iron sucrose and fewer received the more expensive formulations (sodium ferric gluconate and ferumoxytol). For vitamin D products, overall use declined about 2.9 percentage points, and there was a dramatic shift away from the more expensive paricalcitol toward the less expensive