Potential Effects of Medicare Payment Policy Changes on Hospitalization-based Outcomes Research

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Introduction

- In January 2011, The US Centers for Medicare and Medicaid Services (CMS) implemented bundling of separately billable dialysis services (including injectable medications like erythropoiesis stimulating agents [ESAs]). In June 2011, the ESA labels were revised, lowering the therapeutic range to reduce cardiovascular events. Both of these actions contributed to significant declines in ESA use in the dialysis population.
- In a separate policy change, CMS instituted a new policy on hospital readmission in 2011 designed to help improve quality of care and reduce costly re-hospitalizations.
- In this policy, a readmission is defined as an admission to an acute care hospital within 30 days of a discharge from the same or another acute care hospital.
- Readmission measures are adopted for specific conditions. The conditions were acute myocardial infarction (AMI), heart failure (HF), and pneumonia (PN) for 2012.
- Payment penalties are then issued to hospitals with higher readmission rates for AMI, HF, or PH hospitalizations. Penalty is applicable for all discharges of the hospital and readmission rate and the corresponding penalty are updated once a year.

Objectives

- To evaluate whether hospital admission practices changed in the ESRD and the non-ESRD Medicare populations after CMS implemented the re-admission policy.
- To illustrate one potential challenge in the interpretation of results using a recent study of changes in erythropoiesis stimulating agent (ESA) prescribing practices following a labeling change and its putative effects on clinical outcomes in the end-stage renal disease (ESRD) population.

Methods

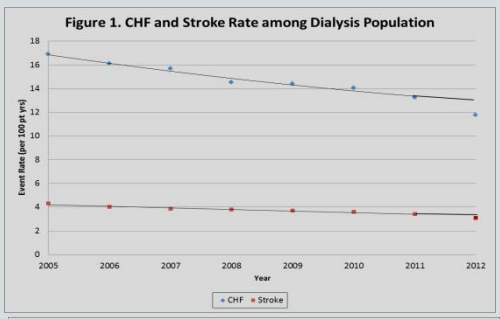
- ESRD data from the CMS were used and included information from the ESRD Medical Evidence Form, the ESRD Death Notification Form, and Medicare Parts A and B claims, as well as data on transplantation and Medicare coverage.
- We created annual cohorts of prevalent and incident patients for the years 2005-2012, including patients who received peritoneal dialysis or in-center hemodialysis between January 1, 2005, and December 31, 2012, aged at least 18 years, with 9 months on dialysis and 6 months with Medicare as primary payer (MPP) for both Parts A and B.
- Patients were followed from January 1 of each year or day 1 of the first calendar month after criteria were met to the earliest date of death, loss of MPP, modality change, kidney transplant, or years end.
- We estimated event rates for HF and stroke among annual cohorts of patients. The rates were calculated as the total number of events divided by the total of follow-up time in each cohort year with unit per 100 patient-years (pt-yrs).
- HF was defined from claims with primary diagnosis code 428 (ICD-9 CM diagnosis code) and stroke was defined from claims with ICD-9 CM diagnosis code 430 (subarachnoid hemorrhage), 431 (intracerebral hemorrhage), 433.x1 (occlusion of basilar artery), 434 [cerebral artery occlusion (excluding 434.x0 that specifies “without mention of cerebral infarction”)], and 436 (acute cerebrovascular disease) in the first 3 coding position on claims.
- The 5% Medicare random sample data was used as the non-ESRD comparator population. The annual cohorts include patients who were 65 years or older and with Medicare as the MPP any time in the year and the follow-up was from January 1 or day 1 of the first calendar month after criteria were met, each year, to the earliest date of death, loss of MPP, or years end. The analyses for non-ESRD Medicare cohorts are paralleled with those for ESRD cohorts.
- The yearly observed event rates are plotted from 2005 to 2012 with Lowess smoothed curves by cohort. The smoothed curves are estimated based on the observed event rates 2005-2011 and extended to 2012.

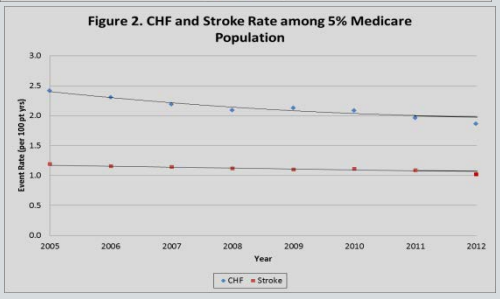
Results

- Size of the ESRD study cohort increased gradually over the years, from 235,883 in 2005 to 285,433 in 2012 (see Table 1).
- Size of the non-ESRD study cohort decreased slightly over years, from 1,429,296 in 2005 to 1,355,219 in 2012.
- Demographic characteristics in both populations did not change materially over time.
- In the dialysis population, rates of HF decreased consistently from 2005-2011: from 16.9 in 2005 to 13.2 per 100 pt-yrs in 2011, a more abrupt decline was evident in 2012 (Figure 1. The dots are the observed rates and the curves are the Lowess smoothed curves).
- In the non-ESRD Medicare population, a similar trend in HF rates was observed: consistent decrease from 2.4 per 100 pt-yrs in 2005 to 2.0 in 2011, and a relative larger drop in 2012 (Figure 2).
- A similar pattern can be seen with stroke in both population, though the declines in 2012 were not as substantial as that for HF (Figures 1 and 2).

Table 1: Patient Characteristics

	ESRD Population								5% Medicare Population							
Calendar Year	2005	2006	2007	2008	2009	2010	2011	2012	2005	2006	2007	2008	2009	2010	2011	2012
N (Thousand)	236	238	241	248	252	264	276	285	1,429	1,398	1,353	1,331	1,316	1,335	1,338	1,355
Mean Age (SD, Years)	62.2	62.2	62.2	62.2	62.1	62.2	62.3	62.3	75.8	75.9	75.9	75.9	75.9	75.8	75.8	75.6
Age group																
18-44 years	14.7	14.5	14.3	14.2	14.1	13.8	13.5	13.4								
45-64 years	37.6	38.4	38.9	39.5	40.1	40.5	40.8	41.2								
65-74 years	24.7	24.3	24.2	24.1	23.9	23.8	23.8	23.9	51.0	50.8	50.8	51.2	51.5	52.3	52.6	53.7
75-84 years	18.8	18.4	18.0	17.5	17.0	16.8	16.7	16.4	35.7	35.6	35.1	34.4	33.8	32.9	32.4	31.5
85+ years	4.2	4.4	4.6	4.8	4.9	5.0	5.1	5.1	13.2	13.6	14.1	14.4	14.7	14.8	15.0	14.8
Gender																
Female	46.7	46.4	46.2	45.9	45.8	45.8	45.7	45.7	58.5	58.4	58.2	58.0	57.8	57.5	57.2	56.9
Male	53.3	53.6	53.8	54.1	54.2	54.2	54.3	54.3	41.5	41.6	41.8	42.0	42.2	42.5	42.8	43.1
Race																
White	43.2	42.4	42.1	41.7	41.2	40.8	40.6	40.2	87.4	87.4	87.5	87.4	87.2	86.9	86.6	86.4
Black	38.2	38.7	38.7	38.6	38.6	38.8	38.8	38.6	7.8	7.7	7.6	7.5	7.5	7.6	7.7	7.7
Other Race	18.6	18.9	19.2	19.7	20.2	20.4	20.7	21.2	4.8	4.8	5.0	5.1	5.3	5.5	5.7	6.0
Ethnicity																
Hispanic	13.6	13.8	14.0	14.4	14.7	14.8	14.9	15.1	1.8	1.8	1.7	1.7	1.7	1.7	1.8	1.7
Non-hispanic	86.4	86.2	86.0	85.6	85.3	85.2	85.1	84.9	98.2	98.2	98.3	98.3	98.3	98.3	98.2	98.3
ESRD Cause																
Diabetes	43.1	43.4	43.7	43.9	44.1	44.3	44.3	44.4								
Hypertension	29.2	29.2	29.1	29.1	29.0	29.2	29.4	29.5								
GN	11.7	11.3	11.0	10.7	10.4	10.1	9.8	9.7								
Other	16.0	16.1	16.3	16.4	16.4	16.4	16.5	16.4								





Conclusions

- Substantial declines in the HF rate were seen in 2012 for both the ESRD population and the non-ESRD Medicare population after CMS implemented the hospital readmission reduction program.
- Although stroke was not included in the applicable conditions for the program in the study period, declines were also observed suggesting a possible reaching effect.
- Payment policy revisions can have important effects on provider behavior including diagnosing, management, and billing for diseases. Those factors should be considered by researchers when using administrative claim data.

funded by a grant from Amgen