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Abstract

Objective—Outpatient observation stays are increasingly substituting for standard inpatient hospitalizations. In 2013, the Centers for Medicare and Medicaid Services adopted the controversial Two-Midnight Rule policy to curb long observation stays and better define the use of hospital-based observation services versus inpatient hospitalizations. We sought to determine the extent to which Medicare beneficiaries exposed to long observation stays (48 hours) are clinically similar to those with short observation stays (< 48 hours) as this has relevance to the Two-Midnight Rule.

Methods—Using 100% Medicare claims data from 2008 – 2010, we identified all long observation stays (48 hours) admitted through the emergency department (ED) and report beneficiary characteristics as well as crude and risk-adjusted rates of 30-day mortality, 30-day readmissions, and 30-day return ED visits stratified by observation stay length.

Results—Seven percent of 2.8 million observation stays were greater than 48 hours. Beneficiaries with long observation stays tended to be older, female, non-white, urban residents, with a greater number of comorbid conditions. Crude rates increased with observation stay length for all 3 outcomes. However, after directly standardizing the rates, we observe the reverse trend, as all adjusted rates decrease stepwise with observation stay length beyond 48 hours in a dose-response pattern.

Conclusions—Patients with observation stays lasting 48 hours or longer are a clinically distinct population. Our findings support the conceptual underpinnings of the Two-Midnight Rule, but suggest that observation versus inpatient determinations should be based on actual length of stay rather than prospective prediction to reduce the administrative ambiguity this policy has created.

Keywords

Observation Stays; Medicare; Two-Midnight Rule; Outcomes

Introduction

Outpatient observation stays are increasingly substituting for standard inpatient hospitalizations. From 2007 to 2009, Medicare observation stays grew by 25% to over 1 million annually.[1] Moreover, the length of observation stays is increasing, often exceeding the 48 hours considered an appropriate upper limit by the Centers for Medicare and Medicaid Services (CMS).[1,2] While advocates find observation stays useful for condition-specific, protocol-driven applications,[3] assigning patients to observation can have substantial consequences for patients, providers, hospitals, and payers. On average, Medicare pays hospitals $5,142 for a short-stay hospitalization and $1,741 for an observation stay, but if federal auditors determine that an inpatient hospitalization was unwarranted, the hospital's claim may be denied.[4] Simultaneously, consumer advocates remain concerned about patients' out-of-pocket costs, because the 20% co-insurance associated with outpatient observation (Part B) occasionally exceeds the inpatient deductible (Part A).[4]

CMS regulations mandate that physicians determine patient assignment to observation or inpatient status prospectively at the time of admission. While intended to be a decision based only on an assessment of the patient's medical needs, in practice, it frequently depends on additional non-clinical factors like expected length of stay and the degree of documentation supporting the billed claim. In October 2013, to clarify whether short hospital stays should be observation or inpatient status and curb long observation stays, CMS adopted the "Admission and Medical Review Criteria for Hospital Inpatient Services Under Medicare Part A," also known as the Two-Midnight Rule. This rule states that any patient expected to remain in the hospital less than two midnights should be assigned to observation, while any patient expected to remain in the hospital beyond two midnights should be considered an inpatient. A survey conducted by the Society of Hospital Medicine found that 47% of physicians surveyed suggested that the rule has harmed patient care.[5] The administrative cost of complying with the rule has been estimated to exceed $2.5 billion a year,[6] prompting the Medicare Payment Advisory Commission to recommended repealing the Two-Midnight Rule and replacing it with a financial penalty on hospitals with high rates of short-stay

hospitalizations.[7] Consequently, CMS implemented the rule gradually through December 2015, adopting a "probe and educate" process and making additional minor revisions[8]

Central to this policy discussion is the extent to which patients placed in observation are clinically distinct from patients admitted for short-stay hospitalizations and should therefore be subject to varying approaches to reimbursement. To date, the evidence is mixed with some studies supporting[9] and others refuting this premise.[10] Therefore, to better inform the Two-Midnight Rule debate, our objective was to determine whether long observation stays represent a clinically distinct patient group by examining the characteristics and health outcomes associated with these stays relative to those with shorter observation stays.

Methods

Using 100% Medicare claims data from 2008 – 2010, which precedes implementation of the Two-Midnight Rule, we identified all observation stays originating through the emergency department (ED) using a combination of revenue center codes (0760 or 0762) and Healthcare Common Procedure Coding System codes (G0378 or G0379) and flagged long observation stays (> 48 hours) using the actual number of hours a patient was under observation as reported in the units field of the claim. Under the Two-Midnight Rule, any stay beyond 48 hours would be classified as inpatient. Next, we examined beneficiary demographic characteristics stratified by observation stay length. Then, we calculated crude 30-day rates of mortality, readmissions, and return ED visits stratified by observation stay length. Finally, we calculated directly standardized rates adjusting for factors that were available in the claims data and that we hypothesized a priori were likely to be associated with our outcomes of interest and/or the likelihood of experiencing a long observation stay. These factors included: age, gender, race, chronic conditions, weekend admission, season, rurality, and census region, using those with observation stays < 48 hours as the standard population. This study was approved by the University of Iowa Institutional Review Board.

Results

We identified nearly 2.8 million observation stays, of which approximately 7% were long observation stays. Demographic characteristics of beneficiaries with an observation stay are shown in Table 1, stratified by observation stay length. Consistent with prior research, we find that individuals with long observation stays tend to be older, female, non-white, urban residents, with a greater number of chronic conditions.[2] Often, these characteristics do not merely distinguish individuals around the 48 hour threshold, but are actually associated with increasing observation stay length beyond 48 hours.

In Figures 1a through 1c, we present crude and adjusted 30-day rates for mortality, readmission, and return ED visits, respectively. For all three outcomes, we observe that the crude rates increase with observation stay length. For example, among those with an observation stay < 48 hours, the crude 30-day mortality rate is 1.9%, the crude 30-day readmission rate is 13.1%, and the crude 30-day return ED visit rate is 12.3%. By comparison, among those with an observation stay lasting more than 120 hours, the corresponding rates are 5.3% for mortality, 18% for readmission, and 14.9% for return ED

visit. However, after directly standardizing the rates, we observe the reverse trend, as all adjusted rates decrease stepwise with observation stay length in a dose-response pattern.

Limitations

Our study is subject to limitations. Administrative claims lack detailed clinical data. Therefore, we cannot say with certainty whether the physician made the appropriate decision to place the patient in observation status rather than admitting them. Similarly, we cannot determine that the 30-day outcomes we examine are causally related to the reason for the index observation stay. While we do construct adjusted rates of our outcomes, it is possible that unobserved differences remain between patients with differing observation stay lengths for which we are unable to adjust. These might include hospital characteristics and factors related to social support of the patient. Finally, our analyses rely on relatively old data. However, this intentionally permits us to conduct our analyses prior to the implementation of the Two-Midnight Rule. We speculate that following the implementation of the Two-Midnight Rule, the majority of these long observation stays would be classified as inpatient admissions.

Discussion

Our data show that patients with long observation stays are clinically distinguishable from patients with short observation stays. The increase in crude rates for mortality, readmission, and return ED visits associated with the length of observation stays in excess of 48 hours demonstrates that these patients are sicker and generally subject to worse outcomes than individuals with shorter observation stays. This is further supported by the reversal of the trend once we risk adjust the rates, suggesting that these longer stays were likely clinically warranted.

Under current Two-Midnight Rule policy, all of the long observation stay cases would be classified as inpatient admissions. This policy change appears to be supported by our analysis in which these clinically warranted longer hospital stays may otherwise have been prematurely truncated under the old policy. However, the Two-Midnight Rule creates additional administrative ambiguity. Not only does the policy require physicians to predict how long the patient will stay in the hospital, but that length of stay can be influenced by seemingly non-clinical external factors such as time of day and day of the week when a particular patient presents.[10,11]

Based on the strong trends we observe in our data, we recommend that the distinction between observation and inpatient hospitalization be based on actual length of stay rather than prospective prediction. Medicare claims already record the number of hours a patient is under observation, so this would remove the administrative and clinical complexity of the observation versus inpatient decision, eliminate variation in billing based on when the patient presents to the ED, and reduce confusion related to long observation stays. A potential unintended consequence of this would be hospitals intentionally gaming the system to keep patients just past the length of stay threshold to ensure DRG-based reimbursement.

However, this scenario could also be monitored with outlier hospitals penalized for this behavior.

Our analysis suggests there is a clinically distinct population of patients, previously assigned to outpatient observation, who warrant receipt of care beyond 48 hours in the hospital, supporting the conceptual underpinnings of the Two-Midnight Rule. However, basing this determination on actual length of stay rather than a prospective prediction would reduce the administrative ambiguity this policy has created, and ensure that Medicare policy treats all beneficiaries equitably.

Acknowledgments

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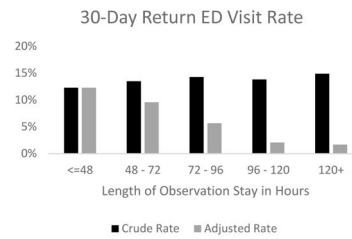
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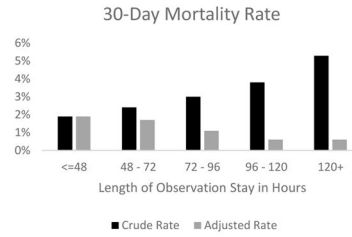
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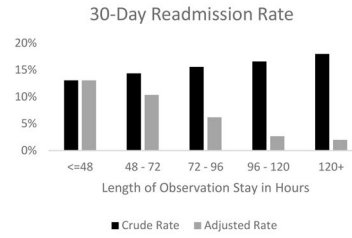
Figure 1c

Figure 1.
Figure 1a. Crude and Adjusted 30-Day Mortality Rate, by Observation Stay Length
Figure 1b. Crude and Adjusted 30-Day Readmission Rate, by Observation Stay Length
Figure 1c. Crude and Adjusted 30-Day Return ED Visit Rate, by Observation Stay Length
Source: Authors' analysis of 2008 – 2010 Medicare claims data.

Table 1

Demographic Characteristics Stratified by Length of Observation Stay

	Normal observation care (95% CI)	Long observation care (95% CI)	48–72 hours (95% CI)	72–96 hours (95% CI)	96–120 hours (95% CI)	120+ hours (95% CI)
Age (in years)	77.4 (61.8–93.1)	79.1 (63.2–95.1)	78.9 (63.0–94.9)	79.5 (63.5–95.4)	79.9 (63.9–95.8)	80.1 (64.2–95.9)
Male (%)	40.0 (40.0–40.1)	34.3 (34.1–34.5)	34.9 (34.6–35.1)	33.1 (32.6–33.6)	32.0 (31.1–32.9)	32.6 (31.5–33.7)
Black (%)	8.1 (8.1–8.1)	10.5 (10.4–10.6)	10.2 (10.0–10.3)	11.4 (11.0–11.7)	11.5 (10.9–12.1)	11.9 (11.1–12.6)
White (%)	87.7 (87.6–87.7)	84.9 (84.7–85.0)	85.1 (84.9–85.3)	84.1 (83.7–84.5)	84.2 (83.5–84.9)	84.3 (83.4–85.1)
Other Race (%)	4.3 (4.2–4.3)	4.6 (4.6–4.7)	4.7 (4.6–4.9)	4.6 (4.3–4.8)	4.3 (3.9–4.7)	3.9 (3.4–4.3)
Average count of chronic conditions	5.6 (0.0–11.1)	6.2 (0.6–11.9)	6.2 (0.6–11.8)	6.4 (0.7–12.0)	6.6 (0.8–12.4)	6.6 (0.8–12.3)
Rural (%)	28.1 (28.1–28.2)	21.0 (20.8–21.2)	21.5 (21.3–21.7)	18.2 (17.8–18.6)	16.8 (16.0–17.5)	17.9 (17.0–18.8)
Midwest (%)	27.9 (27.8–28.0)	27.4 (27.2–27.6)	28.0 (27.8–28.2)	26.7 (26.2–27.2)	24.9 (24.0–25.7)	22.3 (21.3–23.3)
Northeast (%)	11.6 (11.6–11.7)	13.1 (12.9–13.2)	13.5 (13.3–13.6)	12.4 (12.0–12.7)	12.4 (11.8–13.1)	11.2 (10.5–12.0)
South (%)	42.3 (42.2–42.4)	41.4 (41.2–41.7)	40.5 (40.3–40.8)	43.1 (42.5–43.6)	45.3 (44.4–46.3)	48.3 (47.1–49.5)
West (%)	13.7 (13.6–13.7)	13.7 (13.6–13.9)	13.6 (13.4–13.8)	13.4 (13.1–13.8)	13.0 (12.4–13.6)	14.3 (13.4–15.1)
N	2,603,542	194,860	140,882	34,896	10,634	6,921

Source: Authors' analysis of 2008 – 2010 Medicare claims data.

Note: 95,630 events have a missing value for hours of observation. However, 76,598 of these can be grouped into either normal or long observation care using the length of their claim in days. Thus, these individuals are included in the two leftmost columns, but are excluded from the hour-specific columns.