

Patient post-discharge transitions impose costly burdens on Medicare

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Abstract

Post-discharge transitions, particularly readmissions to hospitals, is an increasing focus of payers, particularly CMS. CMS's Hospital Readmission Reduction Program (HRRP) was started in 2012 to address this issue; however, HRRP focuses on 30-day readmissions for only a select range of conditions. Using the CMS Limited Data Set for 2017 we examine transitions to different sites of care in the twelve months following discharge and find that of the 16 percent of patients that have an admission in a year, 41% experience a readmission to inpatient hospital within a twelve-month period. Readmissions are particularly prevalent among patients with behavioral health diagnoses. Readmission rates are higher in some southern states (but not uniformly so) as well as among lower-income and less-educated populations.

Introduction

Reducing avoidable hospital readmissions arising from poor post-discharge care is a common goal of multiple stakeholders. Improving the patient recovery journey offers an opportunity to improve patient outcomes, lower health care costs, and increase patient satisfaction. A 2015 Commonwealth Fund study indicated that the annual cost of all unplanned US hospital readmissions was estimated to be between \$15 to \$20 billion for approximately 35 million discharges [1].¹ A comprehensive paper by Jencks et al using 2003-2004 data [2] provided considerable detail about readmissions in the Medicare population: "Almost one fifth (19.6%) of the 11,855,702 Medicare beneficiaries who had been discharged from a hospital were re-hospitalized within 30 days, and 34.0% were re-hospitalized within 90 days; 67.1% of patients who had been discharged with medical conditions and 51.5% of those who had been discharged after surgical procedures were re-hospitalized or died within the first year after discharge." While there is considerable literature on readmissions for specific conditions as well as discussion of the Medicare Hospital Readmission Reduction Program (HRRP), we were unable to find a more recent and comprehensive article similar to the Jencks paper.

Patients who are readmitted drive a disproportionately large amount of health care costs; readmissions among the Medicare population are especially prevalent [3, 4]. Medicare spending in 2017 for the more than 15 percent of beneficiaries who were readmitted was 60% higher than among the non-readmitted [5]. In the year following discharge, 41% of Medicare patients who were discharged home from a hospital transitioned to higher-cost settings such as nursing homes

¹ HCUPnet, Healthcare Cost and Utilization Project. Agency for Healthcare Research and Quality, Rockville, MD. <https://hcupnet.ahrq.gov/>. For more information about HCUP data see <http://www.hcup-us.ahrq.gov/>

or skilled nursing facilities (SNFs) and/or were readmitted to hospital. For these patients, the post-discharge journey too often results in poor outcomes and avoidable readmissions that result from quality gaps and insufficient post discharge support [6, 7].

Background

There are different definitions of readmission, depending on elapsed time between discharge and readmission to the hospital and the reason for the readmission. One commonly-used definition is that of the Centers for Medicare and Medicaid Services (CMS) through its Hospital Readmission Reduction Program (HRRP), a program that dates from 2012, which defines readmission as a Medicare patient who is admitted to the same or another acute care facility for an unplanned readmission within 30 days of an initial hospital discharge [8]. Readmissions have declined since 2012 when CMS implemented the HRRP.

CMS has initiated several programs aimed at reducing unplanned readmissions. HRRP is a pay-for-performance program that assesses a discrete set of quality-of-care measures and imposes financial penalties for excess patient readmissions for select diagnoses within 30 days of discharge. In 2020 CMS fined more than 2,500 hospitals for excess patient readmissions [9]. CMS's approach to the issue of high readmission rates is an attempt to transfer risk to providers through Alternative Payment arrangements (bundled payments, accountable care organizations, STARS ratings for Medicare Advantage plans and Hospital Quality Star ratings. The HRRP can result in a significant financial penalty to a hospital (as [9] reports). However, readmissions is just one of many STAR measures so the financial implication is minor. In addition, CMS removed all-cause readmissions from the STAR calculation in 2020 for the 2021 year (it is now a reported measure instead). For participating provider organizations in the Medicare Shared Savings program all-cause readmissions (ACO 8) forms part of the Care Coordination/Patient Safety Measures (2020). This domain (which contributes 25% of an ACO's overall score) has four measures, meaning that readmissions contribute only 6.25% of the overall MSSP ACO's quality score. Readmissions form 22% of the Hospital quality Star ratings based on 11 readmission measures (mostly for specific conditions such as cardiac or hip/knee surgery). While ratings are used by patients and referring physicians to select sites of care, unlike MA STAR ratings they bear no direct financial penalty for low-performing institutions. While there has been some reduction in unplanned readmissions in Medicare in recent years, the number of initiatives and lack of coordination has not significantly reduced the problem.

Prior research shows considerable variation in readmission rates across hospitals and diagnoses. Many avoidable readmissions are attributable to care gaps and inadequate follow-up. Readmissions are notably high for heart failure patients who are not seen for follow-up within seven days after discharge [10]. Comorbid mental health and/or substance abuse diagnoses are also associated with more readmissions and higher costs among commercially insured populations [3]. Medicare Advantage (MA) plans have been associated with better quality of care than traditional Medicare. As compared to those with traditional Medicare fee-for-service, beneficiaries enrolled in MA have lower hospital-level readmission rates. [11-13].

Patients who transition through different post-discharge sites of care result in high costs throughout the first year following discharge [3, 13]. Patient-oriented post discharge

interventions that include patient education, support, and engage patients in self-management improve clinical financial outcomes and result in savings [4, 13, 14].

The Jencks et al study [2], however, drew attention to the fact that while 30-day readmissions were relatively high in the Medicare population, almost twice as many patients were readmitted within 90 days and almost three times as many within a year of discharge. While CMS's focus on 30-day readmissions is important and has improved the quality of post-discharge care, it is not the complete picture. Fragmented post-discharge care contributes to the poor clinical and financial outcomes associated with avoidable readmissions. Moreover, gaps exist in current data with which payers, providers and policy makers can address the problem. This study aims to fill these gaps by analyzing the Medicare Limited Dataset (LDS) to describe the drivers of care transitions and to quantify the costs during the first year following hospital discharge in the Medicare fee-for-service population.

Data

We analyzed the Medicare LDS Analytical File (Medicare 5% File) for 2107 and 2018. This file is a random sample of Medicare Claims containing the experience of about 2.9 million patients per year. We excluded approximately 30% of all Medicare beneficiaries who are enrolled in managed care plans (Medicare Advantage (MA) and Preferred Provider Organizations) and whose data are potentially incomplete due to the nature of provider contracts. The remaining 2.0 million members are enrolled in traditional Medicare and their de-identified data are available for analysis. We identified site(s) of care and calculated Medicare expenditures for inpatient, outpatient, professional, emergency department, physician office visits, hospital outpatient visits, hospice, SNF, home health and durable medical supplies. Outpatient pharmaceutical data are not included in the 5% files, although inpatient and outpatient infused drugs are paid under Medicare Part B and are included.

Member Summary Statistics	2017 (All)	2017 (Admitted Members)	2017 (Readmitted Members)
Member Count	2,012,413	311,586	138,194
Average Age	70	73	73
Average Member Months	11.3	10.5	10.7
Percentage Male	46.9%	45.6%	46.7%
Medical Spend PMPM	\$955	\$3,488	\$5,917

Methodology

Readmissions

Our methodology differs from the Hospital Readmissions Reduction Program because we follow patients for 12 months from discharge rather than the 30 days of HRRP. HRRP also focuses on

30-day readmission for select diagnoses such as acute myocardial infarction, congestive obstructive pulmonary disease, coronary artery bypass graft, heart failure, hip arthroplasty, and pneumonia, whereas our study is more inclusive including all cause readmissions for up to 12 months post discharge.

Objective

We identified patients with inpatient stays during the calendar year 2017. The algorithms used to identify discharged patients and transitional sites of care are provided in Appendix 1. The initial (discharged) population represents 311,586 members or 16% of the data set.²

For each member identified we assigned the discharge date from the inpatient admission as the index date. For patients with more than one admission in the year the index date is the first discharge date. We tracked patients for the 12-month period following admission to one of the different discharge sites of care (home, home health, SNF, and Hospice) based on the discharge status coded on the (first) inpatient claim.

We recorded each patient's experience (i.e. cost, utilization, presence of mental health issue, sites of service utilized) during the 12 months following the index date, divided into 3 periods: 1-30 days, 31-90 days, and 91-365 days.

Institutional review board approval was not required for this study which used de-identified CMS administrative claims data.

Results

Our analysis found that healthcare expenditures totaled \$21.6 billion annually, or \$955 per member per month. The average cost of an admission (allowed charge) in 2017 was \$12,947. The average allowed charge of a readmitted member was \$19,815.

Figure 1 illustrates the patient cost distributions in the 12 months post-discharge. Of the 16% of FFS members who are admitted per year, 41% experience a readmission within 12 months post-discharge. However, these readmitted patients account for over two-thirds of the cost of all discharged patients during those 12 months. On the other hand, two-thirds of discharged patients remain in the home/self-care setting post discharge and account for less than 10% of the total cost. Frequencies of membership and cost are more consistent for those who seek care in the SNF (6%–8% of member count and spend), hospice (12-14% of member count and spend) or home health (4%–11% of member count and spend) settings, but these cohorts make up a small portion of those discharged.

² Excludes patients that are discharged deceased from hospital.

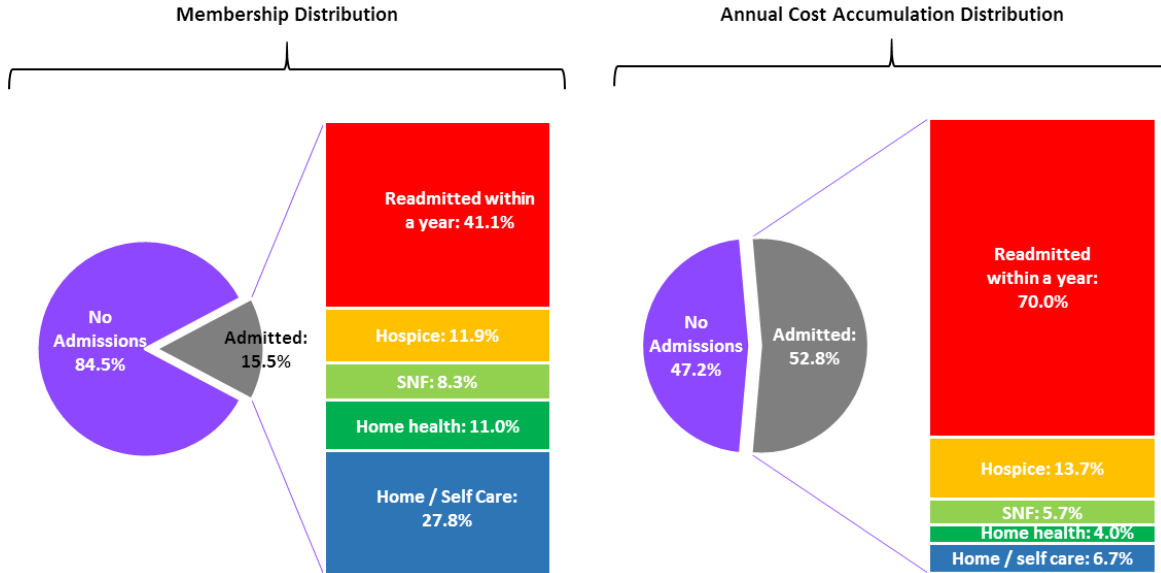


FIGURE 1 Membership and cost distributions of patients post-discharge.

Figure 2 shows the journey of a patient discharged home. The analysis shows that 53% of discharged patients (165,459; green bar) are discharged to home (without home health support). During the first 30 days post discharge more than 15% of these patients transition to other settings of care, as indicated by the oranges and red bars. A total of 22 patients terminate coverage (denoted by “Other”). Over the balance of the year more patients transition, resulting in transitions of 52% of the patients initially discharged home; only 48% of patients discharged home remain home without transitioning to a more intensive place of service.

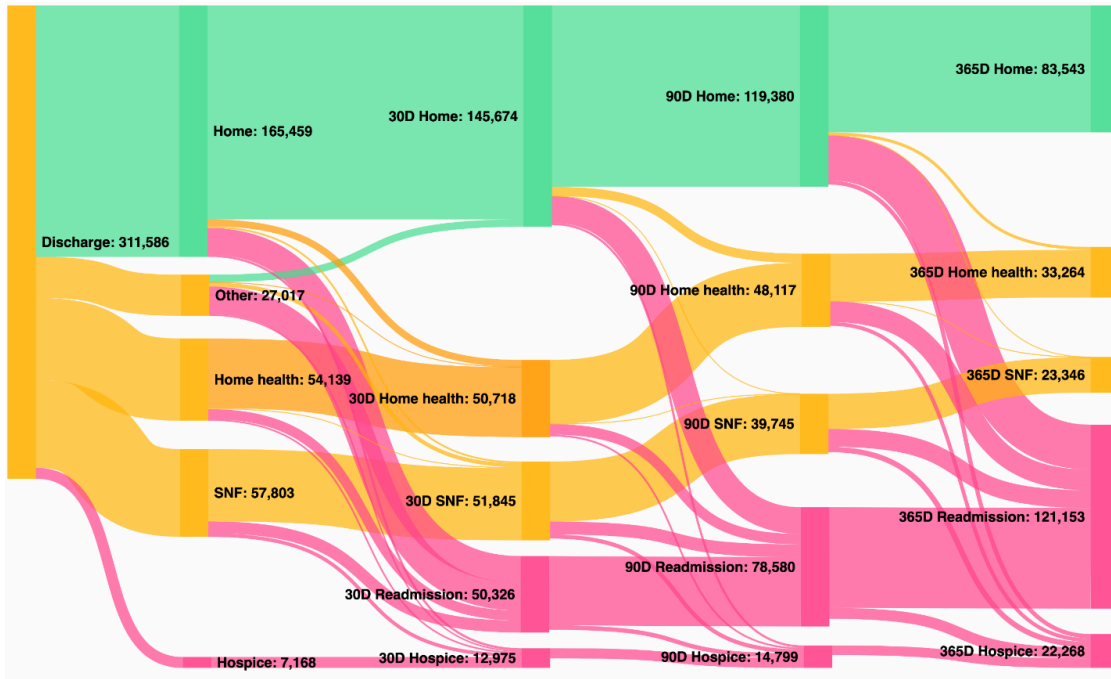


FIGURE 2 Twelve month patient journey for patients post-discharge

Figure 3 shows the relative cost of the transitioning patients. The green bars (aggregate cost of patients discharged home who do not transition) are now relatively minor compared with those of transitioning patients (orange and red bars). This pattern is most significant by the end of 365 days – patients who are readmitted cost \$8.4 billion in aggregate compared to patients who remain at home, costing \$0.8 billion.

On an annual basis, of patients discharged from a hospital, approximately 75% have a mental or behavioral health condition. Seventy percent of patients (34,960 out of 50,326) readmitted within 30 days of discharge have a mental or behavioral health diagnosis.

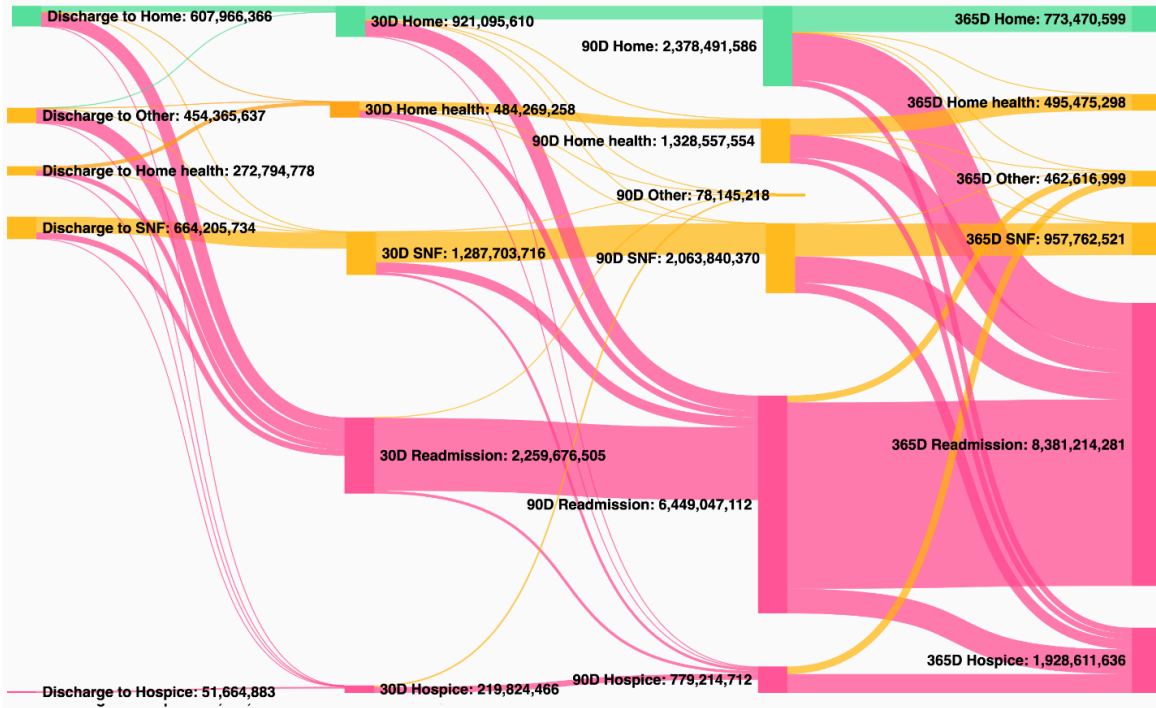


FIGURE 3 Relative cost of transitioning patients

Figure 4 shows the variation in 30-day readmission rates by state. Some southern states have readmission rates that are higher than other northern and mid-western states but southern rates are not uniformly higher, while Pennsylvania and Massachusetts have higher readmission rates than some southern states. The 30-day readmission rate is 55% higher in the 5 states with the highest readmission rates (NV, TX, AR, LA, PA) compared to the 5 states with the lowest readmission rates (ID, OR, MT, AK, UT).

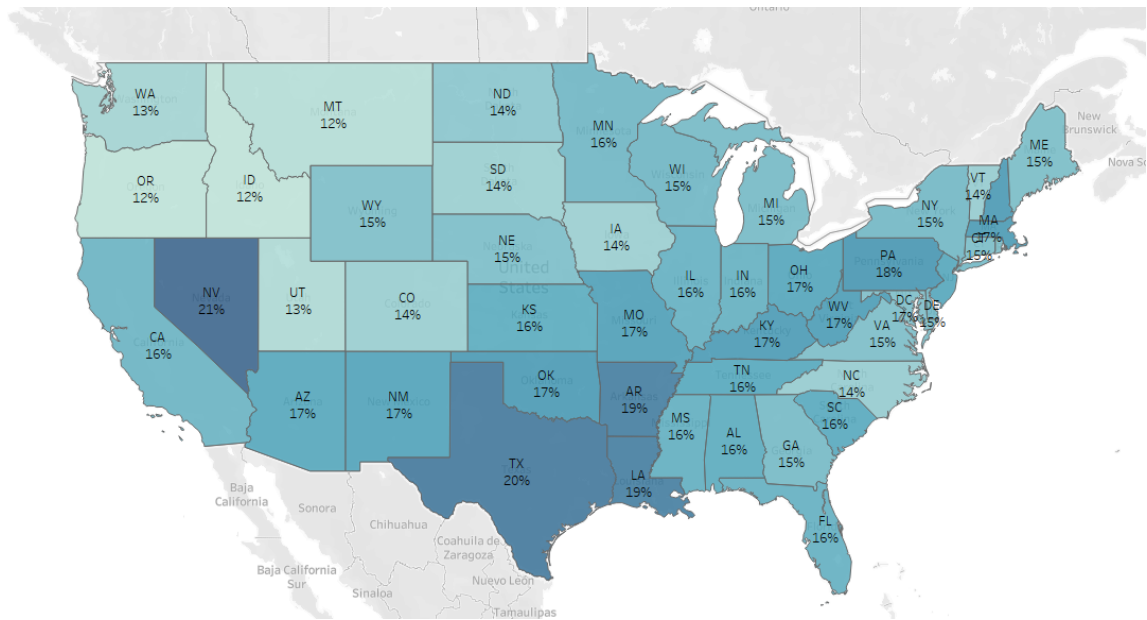


FIGURE 4 Readmission variation by State

The Effect of Social Determinants on Readmissions

We added household income and education level to the dataset using census data at the SSA state-county code level. Income was summarized into 5 levels. Figure 5 shows the decreasing relationship of 30-day readmission rates as income increases. The difference between the readmission rates for the highest and lowest income levels (15.4% vs 17.4%) is statistically significant. The same relationship is observed between readmissions and percentage of adults with a high school or higher education (Figure 5). The last segmentation analyzed was race which is sourced from the demographics provided within the CMS LDS dataset. Figure 5 also shows the discrepancy in 30-day readmission rate by race is most noticeable when comparing that of white to black (almost 10% higher).



FIGURE 5 Readmission rates by education level, income level, and race

Discussion

The problem for key Medicare stakeholders is that fragmented care, inadequate patient follow-up, and lack of effective mental and behavioral health treatment all contribute to poor quality, suboptimal outcomes and unnecessarily high costs. To quantify costs related to transitions and understand the extent of these problems, this study analyzed a national claims database to understand the Medicare patient’s post-discharge journey in the twelve months following hospital discharge, as well as drivers of care transitions.

Key findings are that a small percentage of patients with hospitalizations drive a disproportionately large amount of population healthcare cost as shown in Figure 1. Costly patient journeys following an inpatient stay often involve transitions from the discharge site of care to other settings and subsequent moves across sites as in Figures 2 and 3. These transitions have significant implications for cost. Forty-one percent of the 16% of hospitalized Medicare members are readmitted within a year accounting for nearly two thirds of the cost of all discharged Medicare patients.

Three fourths of discharged Medicare patients in our dataset have a mental or behavioral health condition; 70% who are readmitted within 30 days of discharge have such a diagnosis (defined in

Appendix 2). Our findings concur with prior research that patients with comorbid mental illness are at higher risk for 30-day all cause readmissions than those without MH disorders [3, 15].

Medicare patients often lack scheduled follow up care and need help with medication compliance and other self-management skills. Patient support and follow up care help ensure quality and are particularly important for those with diminished mental acuity and comorbidities that impede a patients' ability to self-manage and adequately engage with the healthcare system. Coordination and support matter. Compared to traditional fee-for-service Medicare (TM), beneficiaries with Medicare Advantage, which has been associated with better quality of care than TM, have lower hospital-level readmission rates [11, 16, 17].

Facilitating communication, collaboration, and care coordination is particularly essential during the first year for those discharged to home [18, 19]. Assistance with scheduling follow up appointments or ordering medication can decrease readmission by 50% and also improve patient satisfaction [12, 20-22]. Post-discharge care management and transition models encompassing proven strategies are associated with measurable patient improvement and satisfaction. Proper care coordination, patient engagement, and behavioral and mental health support, can foster post-discharge recovery and reduce costs.

Reducing costly readmissions involves a complex set of tasks, technologies, and interventions employing a variety of specialized team members. Effective services span across settings, reduce preventable adverse events, and engage patients in their own care. As a result, readmissions can be mitigated, more desirable clinical outcomes achieved, higher patient satisfaction reported, and healthcare expenditure reduced.

Limitations

As with any administrative claims-based study the absence of clinical information results in an inability to identify patients by clinical severity. A more comprehensive view of a patient's condition and circumstances would allow us to determine the appropriateness or otherwise of a patient's post-discharge treatment.

Conclusion

Hospitalizations are difficult to prevent in a Medicare population; however, the subset of Medicare patients who are readmitted drive the majority of spending. Cognitive decline and comorbid mental health diagnoses impede recovery. Understanding contributing factors associated with readmissions, variability of care transitions and cost post-discharge provides significant opportunities for intervention. Investment in effective patient-oriented interventions that augment care management can achieve positive outcomes in the Medicare population.

Appendix

Appendix 1: Discharge Location Definitions

CMS Patient Discharge Status Code	Discharge Category Roll-Up
1	Home / self care
2	Other Facility
3	SNF
4	Other Facility
5	Other Facility
6	Home health
7	Home / self care
20	Death
21	Home / self care
43	Other Facility
50	Hospice
51	Hospice
61	SNF
62	Other Facility
63	Other Facility
64	Other Facility
65	Other Facility
66	Other Facility
69	Other discharge status
70	Other Facility
81	Other discharge status
82	Other discharge status
83	Other discharge status
84	Other discharge status
86	Other discharge status
87	Other discharge status
88	Other discharge status
89	Other discharge status
90	Other discharge status
91	Other discharge status
92	Other discharge status
93	Other discharge status
94	Other discharge status
95	Other discharge status

Appendix 2: MESA Definitions

ICD-10 Parent Codes	ICD-10 Description
F0	Mental disorders due to known physiological conditions
F1	Mental and behavioral disorders due to psychoactive substance use
F2	Schizophrenia, schizotypal, delusional, and other non-mood psychotic disorders
F3	Mood [affective] disorders
F4	Anxiety, dissociative, stress-related, somatoform and other nonpsychotic mental disorders
F5	Behavioral syndromes associated with physiological disturbances and physical factors
F6	Specific personality disorders

Appendix 3: Cost Tables Used

CMS Claims Table	Study Use
Carrier_Clms_2017 Carrier_Clms_2018	Physician costs post-discharge
HHA_Clms_2017 HHA_Clms_2018	Home Health costs post-discharge
Hospice_Clms_2017 Hospice_Clms_2018	Hospice costs post-discharge
Inp_Clms_2017 Inp_Clms_2018	Inpatient costs post-discharge
Output_Clms_2017 Output_Clms_2018	Outpatient costs post-discharge
SNF_Clms_2017 SNF_Clms_2018	SNF costs post-discharge

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