

Hospital at Home services: An inventory of fee-for-service payments to inform Medicare reimbursement

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Abstract

Background: Hospital at Home (HaH) is a growing model of care with proven patient benefits. However, for the types of services required to provide an episode of HaH, full Medicare reimbursement is traditionally paid only if care is provided in inpatient facilities.

Design: This project identifies HaH services that could be reimbursable under Medicare to inform episodic care within fee-for-service (FFS) Medicare.

Setting: All data are derived from acute services provided from the Mount Sinai HaH program between 2014 and 2017 as part of a Center for Medicare and Medicaid Innovation (CMMI) demonstration program.

Participants: The sample was limited to patients with one of the following five admitting diagnoses: urinary tract infection ($n = 70$), pneumonia ($n = 60$), cellulitis ($n = 45$), heart failure ($n = 37$), and chronic lung disease ($n = 24$) for a total of 236 acute episodes.

Measurements: HaH services were inventoried from three sources: electronic medical records, Medicare billing and itemized vendor billing. For each admitting diagnosis, four reimbursement scenarios were evaluated: (1) FFS Medicare without a home health episode, (2) FFS Medicare with a home health episode, (3) two-sided risk ACO with a home health episode, and (4) two-sided risk ACO without a home health episode.

Results: Across diagnoses, there were 1.5–1.9 MD visits and 1.5–2.7 nursing visits per episode. The Medicare FFS model without home health care had the lowest reimbursement potential (\$964–\$1604) per episode. The Medicare fee-for-service within ACO models *with* home health care had the greatest potential for reimbursement \$4519–\$4718. There was limited variation in costs by diagnosis.

Conclusion and Relevance: Though existing payment models might be used to pay for many HaH acute services, significant gaps in reimbursement remain. Extending the benefits of HaH to the Medicare beneficiaries that are likely to derive the greatest benefit will require new payment models for FFS Medicare.

KEYWORDS

ACO, fee-for-service, Hospital at Home, Medicare, reimbursement

INTRODUCTION

Hospital at Home (HaH) is a model of acute care service delivery in the home that has existed for decades internationally and in the United States since the 1990s. The model results in fewer complications¹⁻⁵ and better patient satisfaction^{1,2,4,6-9} compared to traditional inpatient care for certain medical conditions. Despite the large, promising body of evidence of effectiveness, implementation and dissemination in the United States has been limited because of inadequate reimbursement mechanisms and misaligned incentives. Before 2014, HaH was available in the United States only through the Veterans Affairs Health Care System and Presbyterian Health Services, two settings in which the health system and health plan were affiliated.² In traditional Medicare, the types of services required to provide an episode of HaH are generally covered only when provided in inpatient hospital facilities.¹⁰ However, in the last 6 years, interest in HaH has grown. The number of healthcare organizations initiating HaH programs with specific payers, in the context of Accountable Care Organizations (ACOs), or through financial support from the health systems themselves has increased. Most of these programs rely on reimbursement strategies involving commercial payers, Medicare Advantage plans, and managed Medicaid plans. Cost savings analyses are promising, suggesting HaH can be provided for 19%–38% less than comparable, traditional inpatient services.^{2,11,12}

Following passage of Medicare Access and CHIP Reauthorization Act (MACRA) of 2015, the Centers for Medicare and Medicaid Services (CMS) began exploring Alternate Payment Models (APMs) that provide high quality care at lower cost.¹³ The Physician-Focused Payment Model Technical Advisory Committee (PTAC),¹⁴ which was created under MACRA, proposed two HaH APMs, one of which was submitted by the Icahn School of Medicine at Mount Sinai (ISMMS). The ISMMS “HaH Plus” (Hospital at Home Plus)¹⁵ was the first to receive PTAC’s unanimous recommendation for national implementation in September 2017. This proposal presented a model of HaH featuring a 30-day follow-up period post-discharge (HaH Plus) to reduce the likelihood of hospital readmissions and emergency department (ED) revisits during that critical period. The cost of delivering HaH Plus was estimated at \$11,875 (2015 dollars), of which \$7585 was the cost of the acute care episode.¹⁵ According to 2017 data, the average reimbursement to Mount Sinai

Key Points

- Even with new value-based payment, significant revenue gaps remain in paying for Hospital at Home (HaH) acute services in traditional Medicare.

Why Does this Paper Matter?

New payment models are needed to extend the benefits of HaH to most Medicare beneficiaries.

for the five least complex MS-DRGs in this study was \$10,722 (urinary tract infection, cellulitis, pneumonia, heart failure and chronic obstructive lung disease).¹⁶

Despite the PTAC recommendation, Medicare has yet to implement a payment mechanism for HaH. However, there has been a proliferation of other APMs such as ACOs and other risk-sharing models, generally built upon traditional fee-for-service (FFS) payments but also offering benefit enhancements as well as shared-savings incentives.¹⁷ Moreover, there is a growing recognition of the importance of APMs targeting High Needs¹⁸ patients who are at especially high risk for exacerbations of multiple chronic diseases, leading to repeated hospitalizations. Importantly, many of these types of hospitalizations were studied in the CMMI grant with the earlier-cited findings of improved care and lower cost. Thus, there is a need to explore whether these benefits could be garnered by ACOs and other related APMs. The goal of this project was to identify HaH services that could be reimbursable under scenarios built upon traditional FFS as well as benefit enhancements available in value-based models such as ACOs.

METHODS**HaH Program**

In 2014, ISMMS received a Center for Medicare and Medicaid Innovation (CMMI) award to implement HaH in a FFS payment environment. The model was conceived as

an acute period of HaH initiated from the ED, replacing the inpatient stay, plus a transitional period of 30 days. Individuals enrolled in the program were aged 18 or older, had FFS Medicare or a HaH-contracted insurance plan, lived in Manhattan and consented into the program. Patients in the ED were medically eligible for the HaH program if they had a qualifying acute medical condition that required inpatient care: community-acquired pneumonia (CAP), congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD) or asthma, urinary tract infection (UTI), cellulitis, deep vein thrombosis or pulmonary embolism, hyperglycemia, or hypertensive urgency. Patients also had to meet evidence-based standards establishing medical necessity for hospitalization.¹⁹ In addition to primary diagnosis, such standards consider, for example, the presence of multiple comorbidities increasing the complexity of management, require skilled nursing care and monitoring, and possibly repeat diagnostics or laboratory studies.

Patients were ineligible if they were likely to require intensive care or additional monitoring that could not be provided in the home. Home safety was assessed via questionnaire; those who could not care for themselves were required to have family or aide support. The CMMI grant funded salaries of all program staff, diagnostic and laboratory services, supplies and medications, and durable medical equipment (DME). Other costs were billed to Medicare (e.g., ED charges, outpatient medications filled during the stay, other post-acute care).

Sample

Patients were enrolled in HaH from September 1, 2014 through August 31, 2017. There were 320 HaH episodes; 23 started as observation at home and subsequently converted to HaH. The sample was then limited to patients with one of the five most common admitting diagnoses from the grant period: UTI ($n = 70$), CAP ($n = 60$), cellulitis ($n = 45$), CHF ($n = 37$), and COPD ($n = 24$) for 236 acute episodes total. This analysis is based on services provided during the acute period of HaH, and excluded any services provided in the transitional period.

Data sources

HaH services were inventoried from three sources: electronic medical records (EMR), Medicare billing and itemized vendor billing (e.g., pharmacy and labs provided by outside vendors to the HaH program and not billed to Medicare). Services provided by HaH's medical doctors

(MD), nurse practitioners (NP), registered nurses (RN), social workers (SW), and physical therapists (PT) were abstracted from the EMR. Finally, other services were derived from vendor invoices. Invoices included charges for rehabilitative therapies, home health (HH), infusion, patient transportation, DME, medical equipment delivery, laboratory testing, and medications administered by HaH personnel. For each patient, the number of personnel visits by healthcare provider type (e.g., MD, RN) and visit type (telephone, in person) was calculated. Time spent on HaH services not itemized per patient was estimated. These included patient pre-screening and overall screening time (neither of which currently have a reimbursement mechanism under Medicare), and ED facility and professional charges (the latter of which would be charged identically in a HaH episode as they are in a traditional ED visit resulting in an inpatient admission). Non-personnel expenses per patient were categorized as follows: medical equipment and supplies, laboratory fees, pharmacy, delivery services and patient transportation. Home radiology expenses were excluded from this analysis, as the frequency was low enough to not be considered meaningful to the cost scenarios. Table 1 details the service inventory categories by admitting diagnosis.

Analytic strategy

For each of the five most common admitting diagnoses, four reimbursement scenarios were evaluated: (1) FFS Medicare without HH episode, (2) FFS Medicare with HH episode, (3) two-sided risk ACO with HH episode, and (4) two-sided risk ACO without HH episode. We chose these four scenarios to retain the basic structure of FFS but demonstrate the possibilities in ACOs where shared savings is linked to quality and lowering costs. Benefit enhancements (waivers) are available to ACOs with the most flexibility given to those taking on downside financial risk such as Next Generation ACO participants. The benefit enhancements selected to demonstrate the ACO scenarios were telehealth²⁰ and home visits.²¹ Reimbursement for telehealth using the waiver of rural and originating site restrictions was made available as of 2020 to certain ACOs having prospective beneficiary attribution and downside risk.²² This allowed us to substitute physician and NP home visits for telehealth encounters in the ACO scenarios. The Next Generation ACO model as well as the follow-on Direct Contracting¹⁸ model includes the home visit benefit enhancement.²¹ This benefit enhancement allows the ACO to provide nine non-physician licensed clinician visits in a 90-day period following acute hospitalizations, observation stays and emergency room visits. This allowed us to substitute

TABLE 1 Hospital at Home service inventory by admitting diagnosis

Service	Unit	HaH service delivery inventory September 2014–August 2017 (mean count per patient)				
		UTI <i>n</i> = 70	Pneumonia <i>n</i> = 60	Cellulitis <i>n</i> = 45	CHF <i>n</i> = 37	COPD <i>n</i> = 24
Personnel						
Patient pre-screening ^a	Pre-screenings per patient	1.00	1.00	1.00	1.00	1.00
Patient screening ^b	Screenings per patient	1.00	1.00	1.00	1.00	1.00
Emergency department institutional	Pre-HaH events per patient	0.73	0.75	0.80	0.49	0.54
Emergency department professional	Pre-HaH visits per patient	0.73	0.75	0.80	0.49	0.54
Physician visit	Encounters per patient	1.61	1.45	1.93	1.84	1.67
Physician telemed. visit	Encounters per patient	0.10	0.13	0.07	0.00	0.04
Physician phone call	Encounters per patient	0.93	1.30	0.96	0.89	0.92
NP visit	Encounters per patient	2.61	1.92	2.58	2.68	1.50
NP telemed. Visit	Encounters per patient	0.04	0.00	0.04	0.00	0.00
NP phone call	Encounters per patient	0.34	0.33	0.42	0.43	0.13
Physical therapist visit	Encounters per patient	0.11	0.32	0.11	0.27	0.21
RN visit	Encounters per patient	4.03	3.03	4.96	3.41	2.25
RN phone call	Encounters per patient	0.11	0.37	0.16	0.08	0.50
Social worker visit	Encounters per patient	0.74	0.67	0.69	0.68	0.63
Social worker phone call	Encounters per patient	0.54	0.25	0.31	0.70	0.38
Physical therapist phone call	Encounters per patient	0.01	0.00	0.00	0.05	0.00
Occupational therapist visit	Encounters per patient	0.01	0.00	0.00	0.00	0.04
Speech therapist visit	Encounters per patient	0.01	0.00	0.00	0.05	0.04
Home health aide visit	Encounters per patient	0.00	0.00	0.00	0.03	0.00
Non-personnel						
Laboratory	Billable units per patient	2.93	2.42	2.31	5.73	1.21
Medical equipment and supplies	Items per patient	0.11	1.33	0.16	0.30	0.63
Pharmacy	Billable units per patient	1.40	1.08	1.36	0.78	0.46

^aPatient pre-screening activities consisted of chart review of patients potentially eligible for HaH and communication with the emergency department physician.

^bPatient screening activities consisted of preparing telemed. Kits, alerting HaH team to a potential admission, discussing the patient's condition, gauging the patient's interest, completing forms, holding an interdisciplinary admission coordination meeting, completing notes and orders, and ensuring transportation from the emergency department to home was secured.

some NP in-person visits with RN home visits in one of the ACO scenarios with the provider visits being telehealth encounters. Scenarios with a HH episode assumed the patient would meet eligibility for Medicare certified HH services. HH episodes were included as there are HH agencies building programs and training nurses to provide the acute level of nursing care needed in the home. See Table 2 for brief scenario descriptions and key assumptions.

For each diagnosis and scenario, the number and types of services delivered are listed. To estimate the optimal reimbursement under each model, modifications to the service inventory for each diagnosis were made. To

estimate maximum allowable reimbursement under the FFS Medicare *without* HH episode scenarios, RN home visits were replaced with NP visits, which can be billed; NP telemedicine visits were replaced with NP home visits; and physician telemedicine visits were replaced with in-person physician home visits. For the FFS Medicare *with* HH scenarios, services that might be reimbursed through the HH Resource Groups (HHRG) mechanism were grouped under a HH episode of care (Note: starting in January 2020, HHRG codes will be represented as Health Insurance Prospective Payment System (HIPPS) in Medicare claims. For the purposes of this analysis, pre-2020 codes are the basis for the prospective

TABLE 2 Description of reimbursement scenarios

	Reimbursement scenario	Description	Available waivers	Assumptions
1	FFS Medicare <i>without</i> a home health episode	Tallies all reimbursable clinical services paid for by Medicare. Skilled nursing provided by contracted/employed RNs	None	Skilled nursing care outside of a home health episode is not reimbursable by Medicare
2	FFS Medicare <i>with</i> a home health episode	Tallies all reimbursable clinical services, including skilled nursing care via a certified home health agency	None	Criteria for certified Medicare home health episode (skilled need and homebound) have been met and fully reimbursed by Medicare
3	Two-sided risk ACO FFS <i>without</i> a home health episode	Tallies all reimbursable clinical services paid for by Medicare that contribute to ACO's total cost of care benchmark. Skilled nursing provided by contracted/employed RNs	Telemedicine Home visits	ACO has applied for and approved for waiver use by CMS
4	Two-sided risk ACO <i>with</i> a home health episode	Tallies all reimbursable clinical services including skilled nursing care via a certified home health episode that contribute to ACO's total cost of care benchmark	Telemedicine	ACO has applied for and approved for waiver use by CMS. Criteria for certified Medicare home health episode (skilled need and homebound) have been met and fully reimbursed by Medicare

payment for certified HH services). In addition, individual instances of visits and calls by RNs, PTs, SWs, HH aides and occupational therapists were removed as these would all be provided by the home health agency (HHA); a new service, physician certification of HH need was added; and physician and NP telemedicine visits were replaced with home visits. The scenarios created for ACOs assume telemedicine and home-visit waivers were available. In the ACOs *without* HH episode scenarios, we replaced half of all NP and physician home visits with telemedicine visits. The RN visits became reimbursable to the physicians under evaluation and management codes via the home visit waiver. Lastly, in the ACO *with* HH scenarios, we removed all services reimbursable through the HHRG mechanism and replaced half of all NP and physician home visits with telemedicine visits. The original HaH CMMI demonstration used SWs in the home to assist with nonclinical needs. SW visits are not an independently reimbursable service in the home except in the case of mental health services and as part of the certified HH episode. Our scenarios used the home visit waiver in the ACO without HH scenario to reimburse for in-home SW.²³

A common procedural terminology (CPT) code was assigned to each service reimbursable under Medicare (see Table S1). Medicare reimbursement amounts were based on 2020 national payment amounts for each CPT code.²⁴ Because CPT codes were not available for all non-personnel items inventoried, the most common ones

reimbursable under Medicare were applied to all cases of each diagnosis. Medical equipment and supplies were included in the scenarios for a diagnosis if they were used in at least 25% of cases. Total Medicare reimbursement was calculated as the maximum allowable charge per service for a CPT code multiplied by the number of times that service was delivered across patients with each diagnosis. This number was broken out into total out-of-pocket cost to all patients and total cost to Medicare by multiplying by the coinsurance percentage of 20% and the remainder of 80%, respectively.

Reimbursement for a Medicare HH episode is based on a prospective payment where the level of payment is calculated in part on clinical, functional, and service use. The standardized patient assessment to derive a payment category was not indicated and thus not performed for subjects in this analysis. To estimate the payment for the HH episode,^{25,26} the average 2018 Medicare HH reimbursement (excluding any low utilization payment adjustment) regardless of diagnosis to a home care agency collaborating with the HaH program was used.

Average cost to patient, average cost to Medicare, and reimbursement per patient were calculated by dividing, respectively, total cost to patient, total cost to Medicare and total cost to all patients by the number of patients in each diagnosis category.

The most frequent non-personnel services in the laboratory, pharmacy, and medical equipment and supplies

TABLE 3 Patient characteristics

Characteristic	UTI <i>n</i> = 70	Pneumonia <i>n</i> = 60	Cellulitis <i>n</i> = 45	CHF <i>n</i> = 37	COPD <i>n</i> = 24
Age, mean (SD)	74.9 (17.6)	79.5 (15.1)	74.7 (15.8)	82.0 (13.8)	77.2 (12.3)
Female, # (%)	48 (68.6)	42 (70.0)	29 (64.4)	29 (78.4)	15 (62.5)
Race/Ethnicity, # (%)					
Black or African American	10 (15.4)	7 (13.5)	12 (29.3)	9 (26.5)	4 (19.1)
Hispanic or Latinx	19 (29.2)	14 (26.9)	13 (31.7)	7 (20.6)	8 (38.1)
White	32 (49.2)	27 (51.9)	13 (31.7)	13 (38.2)	7 (33.3)
Other	4 (6.2)	4 (7.7)	3 (7.3)	5 (14.7)	2 (9.5)
Education, # (%)					
College degree or more	18 (37.5)	19 (50.0)	10 (29.4)	4 (16.7)	6 (35.3)
High school diploma/GED	16 (33.3)	9 (23.7)	9 (26.5)	10 (41.7)	2 (11.8)
No high school diploma/GED	14 (29.2)	10 (26.3)	15 (44.1)	10 (41.7)	9 (52.9)
Self-rated health poor, # (%)	17 (34.0)	8 (20.5)	10 (30.3)	8 (34.8)	3 (17.7)
Assistance needed in at least one activity of daily living, # (%)	36 (57.1)	27 (49.1)	15 (34.9)	19 (54.3)	10 (47.6)

TABLE 4 Total Medicare reimbursement for each scenario by diagnosis

	UTI	PNA	COPD	Cellulitis	CHF
Scenario 1: Traditional fee-for-service <i>without</i> home health episode	\$1360.66	\$1120.97	\$915.04	\$1548.08	\$1397.15
Scenario 2: Traditional fee-for-service <i>with</i> home health episode	\$4464.24	\$4606.71	\$4521.97	\$4736.45	\$4825.34
Scenario 3: Medicare Accountable Care Organization <i>without</i> home health episode	\$1416.66	\$1219.37	\$1153.32	\$1662.48	\$1472.38
Scenario 4: Medicare Accountable Care Organization FFS <i>with</i> home health episode	\$4621.68	\$4548.69	\$4469.86	\$4661.84	\$4710.89

Abbreviations: CHF, congestive heart failure; COPD, chronic obstructive pulmonary disease; PNA, pneumonia; UTI, urinary tract infection.

categories were identified from the service inventory, and selected to be representative in each scenario.

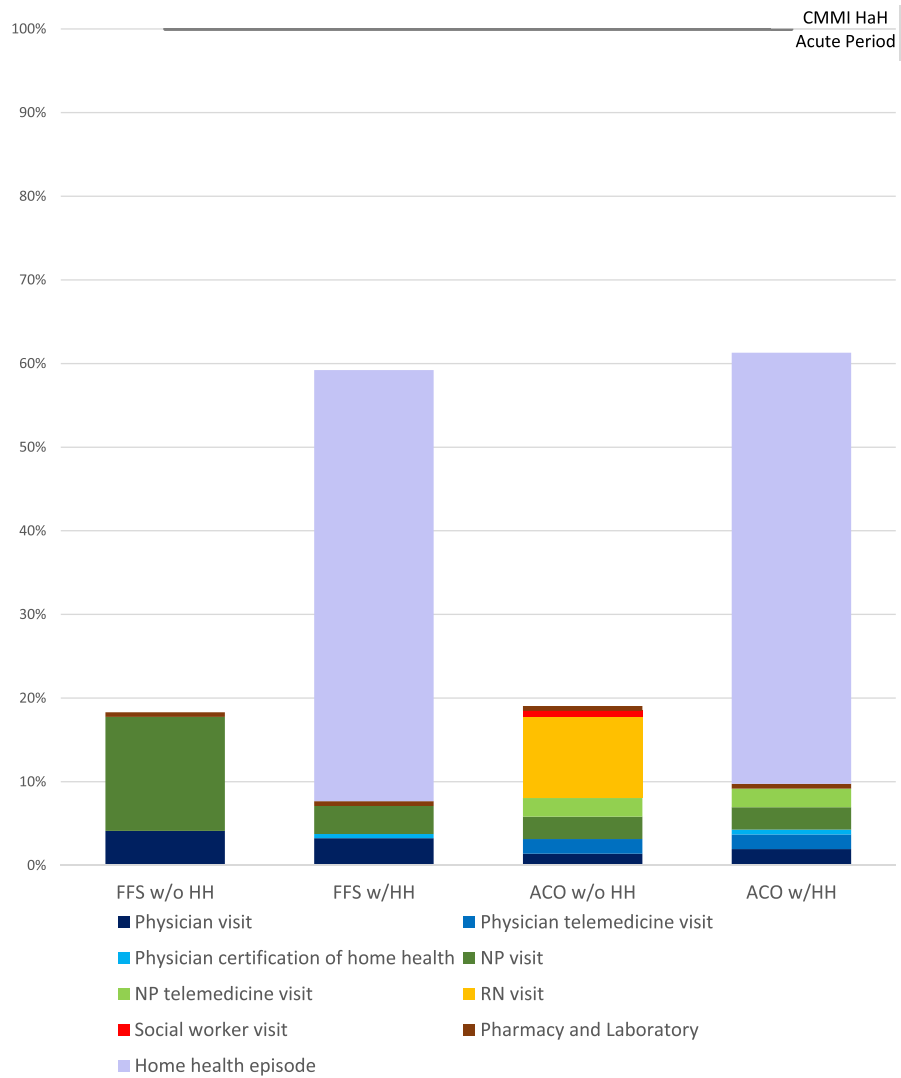
RESULTS

In its proposal to PTAC, ISMMS estimated the cost of providing acute care services for HaH under the CMMI demonstration was approximately \$7585 and that the estimated Part A and B allowed costs to Medicare was \$8010 for the acute episode only.¹⁵ Table 3 shows the service inventory per diagnosis under a HaH acute episode. Some services exhibited large variation by diagnosis, reflecting differences in clinical needs in caring for patients with these diagnoses in the home setting. For example, patients with cellulitis had a mean of 5.0 RN visits compared to 2.3 visits for those with COPD. Patients with CHF had a severalfold greater need for lab

services. In contrast, some services had little variation by diagnosis. For example, variation in average number of physician visits was comparatively small across the diagnoses (e.g., 1.5 visits for pneumonia vs. 1.9 for cellulitis).

Table 4 provides the total Medicare reimbursement for each scenario by diagnosis. Figure 1 illustrates percentage of total cost covered for a UTI diagnosis (the most common) during the CMMI acute care period for the four scenarios modeled for care from the HaH team. *Scenario 1*: Medicare FFS *without* HH Episode, nursing visits were converted to NP visits, and the amount of provider reimbursement for the program ranged from \$964 to \$1604 per episode. *Scenario 2*: Medicare FFS *with* HH Episode has the nursing tasks performed and reimbursed under the prospective payment system directly to the nursing agency. The remainder of the program is reimbursed for the provider visits and a new reimbursement is allowed—certification of HH episode. In this scenario,

FIGURE 1 Percentage each reimbursement scenario covers in relation to CMMI grant HaH, acute period for UTI diagnosis



the total reimbursement is \$4492–\$4793 for the HaH episode, of which \$581–\$882 was for services outside the HH episode payment. *Scenario 3:* In this scenario, there is an ACO *without* HH Episode, which will allow for telehealth waivers, post-discharge home visit waivers and some care coordination reimbursement options if the ACO is in a program involving two-sided risk. The total reimbursement would be between \$1202 and \$1719. In *Scenario 4*, there is an ACO *with* HH Episode, and similar to Scenario 2, removes nursing functions from the NPs, moving them to HH agency RNs. The physician can certify that episode yielding a total reimbursement of \$4519–\$4718 per episode, of which \$608–\$807 was for services outside the HH episode payment. For Scenarios 2 and 4, assuming the Medicare HH reimbursement was as much as 25% less or greater would have respectively, decreased or increased these episode reimbursements estimates by \$978. Tables S2–S6 provide detailed cost data for all scenarios of the five most common diagnoses.

DISCUSSION

Using data from the CMMI demonstration described above, we estimated the amount reimbursable through Medicare FFS under four alternative delivery and billing scenarios. Results show that FFS reimbursement within traditional Medicare covers selected items including physician and NP home visits, bloodwork and medications. However, many needed services are not covered, including screening of potential patients, travel time, nursing care (if patients fail to meet eligibility criteria for certified HH) and supply delivery or transportation to home from the ED. Billing scenarios that did not combine providing HaH with a Medicare HH care episode fell far short of the cost of providing HaH acute services. Scenarios within which a Medicare HH care episode was combined with HaH services came closer to recouping HaH program costs. For ACOs eligible for shared savings, the amount of shared savings an organization could receive (to help offset the cost of HaH) is not easily estimated in this study due to considerations such as risk

scoring, benchmarking, beneficiary attribution, and quality scores. However, for ACOs eligible for shared savings, these funds could potentially cover much of the remaining non-reimbursed cost of HaH acute services.

Thus, the gap between program cost and revenues under traditional FFS Medicare may be acceptable to ACOs if shared savings can be achieved. The delay between expenditures and realized shared savings may pose financial challenges, primarily with cash flow. Additionally, concerns about potential beneficiary inducement may be minimized within an ACO arrangement.

In general, a mix of payer contracts including Medicare ACOs, Medicare Advantage and commercial insurance that bundle the HaH services may be the best payment strategy for most organizations until Medicare defines a payment system covering the costs of such programs. Revenue shortfalls in FFS Medicare may be acceptable to some hospitals with high occupancy rates, and HaH may create an opportunity to fill existing beds with higher margin hospitalizations.

While the clinical strategies in these scenarios are possible and permissible approaches to bill for the HaH clinical services, the strategies may not be the most effective, efficient, or desirable. In the episodes without HH, using NPs to do RN roles is neither efficient, generalizable, or consistent with the goal of practicing at the “top of license.” Some of the study scenarios allow the use of telehealth waivers which may not always be appropriate substitutes for face-to-face encounters and do not reimburse as much as in-person visits even though they may reduce the non-reimbursable costs by decreasing transportation time. These scenarios were constructed as examples of practices following or driven by allowable billing practices related to covered services or place of service, rather than clinical practices dictated by clinical effectiveness, efficiency, or patient/provider preferences.

Additionally, acute hospital-level care in the home has not traditionally been in the purview of HH agencies, but evidence suggests the HH industry recognizes the need to evolve to meet this need.²⁵⁻²⁷ HH agencies exist in nearly every community in the United States, making them an available workforce for scaling home-based acute care efforts with proper education, training and medical oversight. Furthermore, there is no regulation prohibiting multiple nursing visits in 1 day, nor is there a requirement the HH episode be spread evenly over the 30-day interval.

LIMITATIONS

This analysis has limitations; some minor, and some with potentially greater importance. The analysis did not account for the cost of some services (e.g., home X-ray) that were

infrequently used and may not precisely account for other infrequent services (e.g., selected medical supplies). Similarly, we made some simplifying assumptions, such as that all home oxygen is covered; in reality, only chronic conditions (e.g., COPD and not pneumonia) have Medicare coverage for home oxygen. Due to infrequency or low cost, these assumptions are unlikely to have material impact on the conclusions. Similarly, estimates of HH care reimbursement were not specific to the diagnosis (or HH resource group); however, as indicated by the results (Table 3), diagnosis was not a major determinant of utilization. Although some HH episodes are reimbursed at higher rates, those higher reimbursed categories tend to involve wounds or heavy rehabilitation needs, which were not the case for patients included in this analysis. Additionally, while two scenarios accounted for related telehealth opportunities, the analysis does not consider the potential expansion of telehealth billing opportunities that have become available more recently in response to the COVID-19 pandemic. We also limited analyses to five of the most common HaH diagnoses. Future work should consider cost variation across additional diagnoses.

Another limitation is we assumed the majority of HaH acute episodes would meet Medicare's homebound eligibility criteria. While this assumption has not been explicitly tested, we note that the homebound criterion must be met at the start of care. The patient is required to be released as soon as they are no longer homebound. For the acute phase of HaH, patients requiring hospitalization are likely to require supportive devices or personal assistance and/or have a condition where leaving the home would be medically contraindicated and require considerable and taxing effort.

Similarly, we cannot determine whether episode payment to the HH agency will be sufficient to cover the cost of skilled services for a HaH episode. This may be exacerbated by the 2020 implementation of the Patient Driven Grouping Model²⁸ whereby HH agencies will get higher rates for post-hospitalization versus ED or community referrals (e.g., physician clinic practices). As a result, some of these cases requiring only a few days of service should be more adequately reimbursed with a 30-day episode payment. However, patients who need post-HaH home care services may be less adequately reimbursed if services need to be provided well beyond the period of acute HaH service. Additional testing and modeling are needed to determine whether billing a HH care episode for the acute HaH service is feasible and sustainable.

CONCLUSION

This analysis indicates the need for a Medicare payment model for HaH that allows beneficiaries with traditional

FFS to have greater access to HaH. This analysis shows that existing payment mechanisms could be used to pay for many HaH acute services, but significant gaps remain. While existing payment might be used as a stopgap under certain circumstances, it requires compromises in practice that will limit the effectiveness and efficiency of the model (such as using NPs instead of RNs) and would still leave financial uncertainties that would likely require some degree of cross-subsidies from other payers or the health system for the model to be financially sustainable. Our nation's older adults, especially those most vulnerable to the adverse events inherent in hospitalization, deserve to receive high-quality health care in the comfort and safety of home. Clinical care in the home has been shown to be feasible and safe, provides a positive experience for patients, caregivers and providers, and even offers a mortality benefit.⁴ Reimbursement for HaH and other models of home-based acute care is the only obstacle preventing individuals and families from experiencing health care in the environment they find most comfortable.

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As corresponding author, I affirm that I have listed everyone who contributed significantly to the work. There are no other contributors who are not co-authors.

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CONFLICT OF INTEREST

Dr. Siu serves on the board of Mount Sinai Health System's joint venture with Contessa Health in his capacity as an employee of Mount Sinai, and he has no financial interest in the concern. The other authors declare that they have no conflict of interest.

AUTHOR CONTRIBUTIONS

Linda DeCherrie, MD: concept and design, acquisition of subjects and data, analysis and interpretation of data, and preparation of manuscript.

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Albert L. Siu, MD, MSPH: concept and design, acquisition of subjects and/or data, analysis and interpretation of data, and preparation of manuscript.

SPONSOR'S ROLE

West Health Institute is a not-for-profit medical research organization dedicated to researching the cost of health care and improving senior-focused healthcare delivery in homes, hospitals, and community-based organizations. Together with professionals across healthcare delivery, social science, data science, and medical professions, the Institute explores opportunities that will improve acute care for seniors in the emergency department, home, and community; chronic care settings for older adults that may need care at home; and supportive services so seniors can receive the care they need, at a lower cost, wherever they are. Researchers at West Health participated in the concept and design, analysis and interpretation of data, and preparation of manuscript for this study.

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Editor's Note

This study highlights an important barrier to the implementation of the Hospital at Home (HaH) model of care in American health systems—money. The authors describe four scenarios of payment for HaH in the context of 2014–2017 Medicare payment systems. In each example, the payment to the health system was remarkably less than the cost to implement such services. Health systems meet with clinical leaders when considering proposals to improve care. In those meetings, colleagues who understand payment systems and finances engage in how to pay for these models. Follow up discussions sort out the return on investment resulting in decisions on implementation. Health system leadership teams carefully review the benefits and the costs of new models—comparing the innovation to standard care. Health systems leaders further strive to understand how to implement services for older adults in the context of Medicare Advantage and other Value-Based-Payment programs. The HaH model was reviewed by the Centers for Medicare and Medicaid Services (CMS) Payment review committee several years ago with the resulting recommendation for the model to be covered as a Medicare benefit. There was no subsequent action taken. Then the COVID-19 pandemic hit.

In November of 2020, CMS announced a waiver of the payment restrictions on the Acute Hospital Care at Home program in six selected sites. This meant that those programs could provide the model to appropriate patients and bill Medicare for the hospitalization. This waiver resulted in an adequate payment mechanism, recognizing the importance of the HaH model as a strategy to off-load hospitals and payment for telehealth visits. Subsequent changes in CMS payments made as a result of the pandemic have made some of the data

and conclusions in the paper by DeCherrie and her colleagues outdated. Going forward, CMS should integrate HaH into Medicare payment programs to support the care of vulnerable acutely ill older adults who wish to receive care in their homes.

Many in the field of Geriatrics have worked for decades to improve care for acutely ill and injured older adults in American hospitals and emergency departments. One of us (MM) began a program to care for vulnerable older adults in their homes fifteen years ago. Since then, many others have followed. Implementing systems to provide care in the home is even more complex. Drs. Al Siu, Bruce Leff, Linda DeCherrie, David Levine, and others have made us want to do a better job in meeting the patient where they feel most comfortable. CMS should adequately reimburse innovative care delivery models (such as HaH) that keep older Americans in a setting in which they feel most comfortable. As we develop Age-Friendly Health Systems, this is what “Matters Most” to the majority of our patients.

Michael Malone, MD and Joseph G. Ouslander, MD

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

Table S1 CPT codes.

Table S2. Medicare reimbursement scenarios for admitting diagnosis of urinary tract infection ($n = 70$).

Table S3. Medicare reimbursement scenarios for admitting diagnosis of pneumonia ($n = 60$).

Table S4. Medicare reimbursement scenarios for admitting diagnosis of cellulitis ($n = 45$).

Table S5. Medicare reimbursement scenarios for admitting diagnosis of congestive heart failure ($n = 37$).

Table S6. Medicare reimbursement scenarios for admitting diagnosis of chronic obstructive pulmonary disease ($n = 24$).

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