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Title

What's Happening at Home

Permalink

<https://escholarship.org/uc/item/5kf0w9v5>

Journal

Medical Care, 58(4)

ISSN

0025-7079

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Publication Date

2020-04-01

DOI

10.1097/mlr.0000000000001267

Peer reviewed



HHS Public Access

Author manuscript

Med Care. Author manuscript; available in PMC 2020 April 01.

Published in final edited form as:

Med Care. 2020 April ; 58(4): 360–367. doi:10.1097/MLR.0000000000001267.

What's happening at home: A claims-based approach to better understand home clinical care received by older adults

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Abstract

Background: Home clinical care (HCC) includes home-based medical care (HBMC –medical visits in the home) and skilled home health care (skilled nursing or therapy visits). Over seven million older adults would benefit from HCC; however, we know surprisingly little about homebound older adults and HCC.

Objective: To describe HCC received by older adults using claims data within the OptumLabs® Data Warehouse.

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Potential conflicts of interest

AARP financially supported this project by supporting the OptumLabs data analysis. Three authors (AA, SD, CP) were employees of OptumLabs and performed all analyses using Optum data. Both Johns Hopkins University and the University of California San Francisco have partnerships with OptumLabs to use their data resources. UCSF and Johns Hopkins received a small stipend from AARP via Optum in support of this work; KH, BL and CR have no other conflicts of interest.

Disclosures and Acknowledgements.

Preliminary findings were presented at the International Association of Gerontology and Geriatrics (IAGG), San Francisco, CA, July 27, 2017, the American Academy of Home Care Medicine (AAHCM), Rosemont IL, October 13, 2017; and the AcademyHealth Annual Research Meeting, June 25, 2018.

Research design: Using administrative claims data for commercial and Medicare Advantage enrollees, we describe morbidity profiles, health service use, and care coordination (operationalized as care plan oversight [CPO]) for people receiving HCC and the subgroup receiving HBMC.

Participants: Three million adults (3,027,247) age 65 with 12 months of continuous enrollment 2013–2014.

Measures: CPT or HCPCS codes delineated HCC, HBMC, and CPO recipients and care site, frequency, and provider type. Other measures included demographic characteristics, clinical characteristics, and health care utilization.

Results: Overall, 5% of the study population (n=161,801) received 2+ months of HCC visits; of these, 46% also received 2+ HBMC visits (n=73,638) while 54% received only skilled home health (n=88,163 HCC but no HBMC). HBMC-recipients had high comorbidity burden (Charlson score 4.3), dementia (35%), and ambulance trips (58%), but few nursing facility admissions (4.9%). Evidence of care coordination (CPO claims) occurred in 30% of the HCC population, 46% of HBMC, and 17% of the skilled home health care only.

Conclusions: Approximately 1 out of 20 older adults in this study received HCC; 30% or less have a claim for care coordination by their primary care provider.

Keywords

home-based medical care; housecalls; palliative care; aging/elderly/geriatrics; homebound; home-limited; claims data; home clinical care

INTRODUCTION

Up to 7.3 million vulnerable older Americans are at least partially homebound as a result of medical, functional, cognitive, or social limitations.^{1,2} Many others are intermittently homebound as a result of an acute event such as a joint replacement or acute medical illness. Being homebound is associated with socioeconomic vulnerabilities such as advanced age, dementia, and lower income as well as greater mortality compared to non-homebound persons.^{2,3} In addition, chronically homebound individuals are a high-need, high-cost population.⁴ An array of “home-based” services have developed to address needs that span the spectrum of care—from long-term services and supports, which provide non-medical assistance with basic activities of daily living, to provision of primary or hospital-level medical care in the home.⁵ The most common types of home clinical care (HCC) are skilled home health and home-based medical care (HBMC) (Figure 1).

HCC as provided by Medicare skilled home health supports homebound beneficiaries through the provision of episodic skilled nursing or physical, occupational or speech therapy services.⁵ Medicare skilled home health requires an order by a doctor and an in-person face-to-face visit with that doctor either three months before the start of HHC or within one month after the skilled home health benefit has begun. Physicians and other providers vary in their involvement in coordinating care of the patient with skilled home health services.⁶

In HBMC, health care providers (e.g. physicians, nurse practitioners, or physician assistants) and interdisciplinary care teams provide longitudinal primary or palliative care to individuals at home. Many individuals receiving HBMC are completely homebound.^{7,8} Receipt of HBMC is associated with reductions in disability, depression, and healthcare utilization;^{9–11} it also can benefit caregiver health.¹² The most recent national survey of HBMC providers reported high rates of interdisciplinary team care despite the fact that a preponderance of HBMC practices do not directly employ non-billing providers (e.g. social workers).¹³ Collaborations between HBMC practices and skilled home health agencies can accomplish team-based care.¹³ Medicare encourages such collaborations by providing the Care Plan Oversight (CPO) billing code which reimburses primary care providers for time spent coordinating patient care issues with skilled home health. By fostering care coordination between skilled home health and primary care providers, CPO claims could operate as a quality process indicator for team-based care. However, existing quality measures do not currently speak to the specific needs of homebound individuals or the home-based medical care setting.¹⁴

As a first step toward addressing this gap, we partnered with OptumLabs®, a collaborative research and innovation center, to assess the feasibility of using the OptumLabs claims data to identify “denominator populations” of people receiving care in the home. This paper describes the demographic and clinical characteristics of a) people receiving any HCC and b) the subset receiving HBMC and c) people with CPO documentation as a potential indicator of quality care in these populations.

METHODS

Research Design:

We used de-identified administrative claims data from the OptumLabs Data Warehouse (OLDW), which includes medical and pharmacy claims, laboratory results, and enrollment records for commercial and Medicare Advantage (MA) enrollees.¹⁵ The database contains longitudinal health information on enrollees and patients, representing a diverse mixture of ages, ethnicities and geographical regions across the United States. Approximately 5% of enrollees in the claims portion of the OLDW live in rural areas, which is greater urban representation compared to most recent U.S. Census figures. At the time of this study Medicare Fee-for-service (FFS) members were not represented in these data. We describe morbidity profiles, health service use, and receipt of care coordination (operationalized as a claims for care plan oversight [CPO]) for people receiving HCC and the subgroup receiving HBMC.

Participants:

The starting population for this study included members age 65 or older, enrolled at any time in 2014, and with continuous medical and pharmacy coverage for at least 12 months prior to the last date of enrollment in 2014 (defined as the index date) (Figure 2). Commercial enrollees age 65 and older are those with employer-based insurance or retiree benefits. For those enrolled for the entire calendar year 2014 (~83%), the index date was set to December 31, 2014.

Measures:

We used CPT or HCPCS codes to identify claims where home was designated as the site of care (derived from AMA site codes), regardless of service or provider (e.g. skilled nursing or home health visits for occupational or physical therapy, HBMC, hospice). Site codes are used, in combination with other information on claims, to determine reimbursement for services and for quality measurement and are considered a reliable indicator of the location of care. Delivery of durable medical equipment (DME) without an associated medical visit was excluded from our definition of a home visit. Multiple claims may be filed for a single encounter, but we counted a maximum of one home visit per patient per day.

Populations:

We defined 3 populations of older adults receiving home clinical care: 1) those receiving any home clinical care (HCC) through either skilled home health or home-based medical care; 2) the subset also receiving HBMC; and 3) those receiving HCC who also had documentation of CPO (Figure 3). The *HCC population* was defined by having 2 or more consecutive months with a home visit claim from any provider type in the 12-month study period; we aimed to identify a population more likely to be chronically homebound (e.g. excluding post-surgical temporarily homebound people) but not necessarily receiving HBMC. The *HBMC population* is a subset of the HCC population (e.g. 2 consecutive months of home visit claims) who also had 2 or more home visit claims from a primary care provider (PCP, e.g. family practitioners, internists, internal medicine physicians, geriatricians, or OB/GYN physician) in the 12-month study period. The CPO population included those for whom providers used CPO codes. Based on eligibility requirements of Medicare skilled home health, the CPO population is at least temporarily homebound (i.e. at home for at least one month). CPO codes are appropriate for Medicare patients receiving skilled home health who have complex or multidisciplinary care needs requiring provider involvement. Practitioners can use these CPO codes¹⁶ (Figure 3) when they have seen the person in an ambulatory office setting or at home within the last 6 months and subsequently documented at least 30 minutes to review reports and develop or revise care plans in the last calendar month.

Patient characteristics included age, sex, and insurance type. Clinical status was characterized using the Charlson comorbidity index¹⁷ and the presence of specific comorbid conditions defined using the Healthcare Cost and Utilization Project (HCUP) Clinical Classifications Software (CCS) for ICD-9-CM.¹⁸ Health care utilization characteristics included number of home visit-days, ED visits, inpatient hospitalization, and use of home-based services indicated by durable medical equipment (DME, specifically home infusion, ventilators and hospital beds). Duration of receipt of home care was calculated as “home visit-months”: the sum of months during the year (maximum 12, not necessarily contiguous) in which the enrollee had at least one home visit.

Analyses:

We used descriptive statistics including means and standard deviations (SD) for continuous variables and percentages for categorical variables as appropriate. We describe demographics, comorbidities, and health care utilization for the three populations of older adults receiving HCC, HBMC, and CPO. Because these are non-mutually exclusive cohorts,

statistical testing was not appropriate. All analyses were performed using SQL and Excel. Since this study involved analysis of pre-existing, de-identified data, it was exempt from Institutional Review Board approval.

RESULTS

The study population was comprised of 3,027,247 members age 65+; 45.7% were enrolled in Medicare Advantage plans and 54.3% in commercial plans (Figure 2). From this overall population, we identified the portion receiving home clinical care (HCC): 5.3% or roughly 1 in 20 people over age 65 (n=161,801) received 2+ consecutive months of home care over a 12-month period (Figure 3). Of these, 46% also received 2+ HBMC visits (n=73,638) and 30% of the HCC population (n=49,203) had a CPO claim. Approximately 54% (n=88,163) of the HCC population received only skilled home health, with no or sporadic PCP home visits, and 17% of the skilled home health-only groups (n=14,894 HCC not HBMC) had CPO claims.

Overall, HCC-recipients were evenly spread across age categories, predominantly female (62%) and used Medicare Advantage (71%) (Table 1). With a mean Charlson Comorbidity Index of 4.1 (s.d. 3.2), common conditions of HCC-recipients included osteoarthritis (50%), diabetes (42%), and lung disease (40%). Clinical utilization characteristics among HCC-recipients included a mean of 5.1 months of home visits, 53% with ambulance trips, 70% with emergency department visits, 5% with admissions to skilled nursing facilities, 18% with hospice, and 30% with CPO claims.

In contrast, 41% of those also receiving HBMC were over the age of 85 and 50% had commercial insurance. Common clinical conditions included osteoarthritis (52%), congestive heart failure (40%), chronic renal failure (30%), stroke (35%), and dementia (35%). Among HBMC-recipients, utilization included a mean of 6.2 months of home visits, 23% with home infusions, 9% with hospital beds, 58% with ambulance trips, 71% with emergency department visits, and 47% with CPO claims (Table 2).

Within the population of people with CPO claims, 55% had some type of HCC care (n=49,293), 38% had HBMC (n=34,309), and 45% had more episodic care, lacking 2 months of continuous home care (n=40,681). The majority of people with CPO claims were age 85 and older (41%) and evenly split between commercial insurance and Medicare Advantage. With a mean Charlson Comorbidity Index of 3.1, common conditions included osteoarthritis (54%), diabetes (41%), lung disease (39%), congestive heart failure (39%), depression (31%), chronic renal failure (30%), and dementia (30%). In the CPO population, 64% received 2+ home visits, 59% had ambulance visits, 74% had emergency department visits, and 67% had inpatient visits.

DISCUSSION

To our knowledge, this is the first study using claims data to identify and compare populations of older adults receiving HCC, HBMC, and CPO. We identified a population receiving care at home for 2 or more consecutive months (HCC), among whom we believe 50% are more chronically homebound, receiving 2 or more home visits by PCPs (HBMC).

Not all older adults receiving HCC also have CPO claims indicating care coordination: only 30% of the overall HCC population has CPO claims, and 47% of the HBMC subpopulation. Among the 54% of the study population thought to be receiving only skilled home health (e.g. HCC with no HBMC), 1 in 6 have CPO claims.

The population of over 73,000 older adults receiving HBMC is the largest sample of individuals receiving HBMC outside of Veterans Affairs described to date and the only one using data that includes both Medicare Advantage and commercial insurance enrollees. The population of HBMC-recipients was comprised of a majority of women and individuals age 85 or older with high levels of multi-morbidity, including high prevalence of heart failure, stroke, depression and dementia. HBMC-recipients received an average of 6 months of home visits in a 12-month period, which for 23% included infusion services and for 9% included a hospital bed. The limited research on homebound older adults in the United States provides further context for understanding the population of HBMC recipients identified in our study. Our HBMC-recipients had similar demographic characteristics and prevalence of chronic conditions (with the exception of a substantially lower prevalence of dementia) to homebound older adults identified by Ornstein et al. using the National Health and Aging Trend Study (NHATS) of community-dwelling Medicare beneficiaries age 65+.² In contrast, Musich et al. analyzed patient-reported health risk assessment data among a population of Medicare Advantage beneficiaries with supplemental insurance, or “Medi-gap” coverage, and these homebound older adults appeared to be healthier than in our or Ornstein’s analysis, which may result from a younger population distribution.¹⁹

Both HCC- and HBMC-recipients identified in this study had high levels of health care utilization; this may reflect severity of illness as well as the challenges of care coordination. Previous studies suggest that most homebound individuals have difficulty leaving the house due to functional impairment; they receive fragmented healthcare and consume disproportionate amounts of healthcare services.⁷ The population of homebound individuals is often unrecognized, despite their intense needs and costs.¹⁴ Being homebound results from a combination of medical, functional, social, and/or psychiatric impairments and may involve the presence of multiple chronic conditions; as a result, it is essential to have the involvement of a physician or other equally capable health care professional who can help coordinate services over time and serve as team quarterback.^{14,20} Patient-centered care services like HBMC may improve quality of life and health for the affected individual and their caregiver, as well as contribute to stewardship of healthcare utilization.^{9,10,12}

Most “home care” is episodic rehabilitative or skilled nursing care, with little or no physician involvement. In a recent study of generalist physicians commonly engaged with skilled home health recipients, 78% reported rarely or never interacting with skilled home health clinicians.⁶ While skilled home health offers important clinical services otherwise difficult to access by mobility-impaired people, no study to date has convincingly demonstrated the benefit of skilled home health. A recent study indicated that post-hospitalization increases in continuity of care with primary care providers was associated with significantly fewer hospitalizations.²⁴ A clinical trial of skilled home health is not feasible given its status as a Medicare Part A/B benefit. Secondary data is difficult to use to make causal claims about the impact of skilled home health because it is difficult to identify

a truly comparable population of people on Medicare *not* receiving skilled home health. A recent study using propensity matching, however, suggested that compared to post-acute skilled nursing facility care, skilled home health was associated with a 5.6-percentage point higher rate of readmission at 30 days.²¹ It remains unclear whether the higher readmission rate is related to intrinsic challenges in the hospital to SHHC care transition,^{22,23} intrinsic insufficiencies of skilled home health as a care model, inadequate access to primary care providers, or insufficient interactions between the provider ordering skilled home health and skilled home health clinicians. The limited research available hints at the potential importance of the continued involvement of providers after ordering skilled home health to provide care continuity and oversight. A recent study within the Veterans Health Administration indicated that increase in continuity with a VA primary care physician was associated with significantly fewer hospitalizations.²⁴

Physicians (and their equivalents) have been shown to be the most effective component of successful community-based models of serious illness care.²⁰ HBMC comprises both longitudinal primary or palliative care; it represents a small but growing portion of health care in the United States.^{25,26} HBMC programs are associated with reductions in emergency department visits, hospital admissions, and long-term care admissions.^{9–11} The positive impact of the Independence at Home Demonstration on patient, caregiver, and system cost-savings^{27,28} indicate HBMC could proliferate within Triple Aim²⁹-oriented health systems using value-based reimbursement, assuming we can develop methods to identify people in need of HBMC.

Care plan oversight (CPO) could serve as important indicator for quality of care for homebound populations. CPO codes can be used when the physician or other provider has seen a Medicare patient with complex needs receiving skilled home health rehabilitation or hospice services within the last 6 months and spent 30 minutes subsequently to review reports and develop or revise care plans. CPO cannot be billed without a home care or hospice agency. As a measure of care coordination, CPO is likely specific (because if it was documented, it happened) but not sensitive (because providers may actually engage in care coordination but not bill for it because billing is complicated).³⁰ In this study, patients receiving HBMC had more claims for CPO than patients receiving HCC alone, among whom CPO documentation was relatively low (30%). CPO claims could be a target for quality improvement in both HBMC and traditional primary care practices.

Additional work is needed to validate and improve upon the definitions used in this study until the field agrees upon gold-standard definitions of receipt of HCC, HBMC, and skilled home health (as well as definitions of homebound populations) in claims data that could be used as denominators for quality measure development. Health care systems could engage in this validation work by using our definitions to identify HCC or HBMC recipients, then contacting patients or their primary treating physician to determine what type(s) of home care they are receiving. In other future work, we anticipate exploring variability in HBMC and HHC patterns, and how HBMC and skilled home health interact. In addition, this work should be replicated in an all-payer claims database to see whether similar or different patterns in patient characteristics and needs emerge by insurer type. Finally, efforts are needed to investigate and contrast care patterns and costs among people receiving different

types of home-based care, for example, comparing people receiving longitudinal HBMC provided by an interdisciplinary team, patients receiving “home care” without physician involvement, and patients with physician-only HBMC.

The National Quality Forum (NQF) established the NQF Measure Incubator™ to encourage collaborations to address gaps in quality measurement and facilitate efficient measure development and testing for important aspects of care for which quality measures are underdeveloped or non-existent. Our claims-based population definition for older adults receiving HBMC could be used by health systems and payers as a denominator for quality measures that examine whether HBMC-recipients are routinely receiving care appropriate to their significant medical, functional, and social needs, such as advance care planning or care transition support. Quality measures could be used to monitor changes over time; examine performance in an overall population of HBMC-recipients; or examine disparities in receipt of services by location, race/ethnicity, income, or provider. Analogous quality measures have been developed for use in hospice care, where 59% of beneficiaries receive care in a private residence; CMS has required hospices to report these measures since 2014 as part of a move towards public reporting of care quality.^{31,32} Quality measures developed and tested for use in HBMC practices will be well-positioned to inform future regulatory and policy changes.

Limitations:

There are limits to the degree to which administrative claims data can accurately capture an individual’s medical history. Claims data are collected for payment purposes and not research. While these data are excellent for understanding “real world” patterns of health care use and outcomes, they are subject to possible coding errors, coding for the purpose of rule-out rather than actual disease, and variation in coding intensity between providers. CPO claims are almost certainly underbilled due to the complexity of the rules and the requirement to have spent 30 or more minutes of time in order to bill. Claims data also lack information that would be helpful in characterizing the homebound population, such as frailty, frequency of leaving the home, and information about disability in activities of daily living. Our definitions of HBMC and as HCC as a proxy for skilled home health or HBMC focus on longitudinal care; as a result, these definitions miss individuals receiving home care every other month, or once a quarter; presumably their care needs are less intense. The overlap between HCC and HBMC also prevents us from making a statistical comparison between those receiving skilled home health alone, HBMC alone or both services concurrently.

This study also does not account for diagnoses or events that occurred before the beginning of the one-year observation period used for this study. For example, a home hospital bed or diagnosis received prior to the start of the one-year baseline period would not be observed. Finally, the dataset used for this study includes individuals insured by commercial and Medicare Advantage managed care plans. Therefore, results of this analysis are primarily applicable to managed care populations. Medicare Advantage populations are growing as a proportion of the Medicare market; as of 2017, one in three people with Medicare is enrolled in a Medicare Advantage plan.³³ Most analyses do not examine this population, so this dataset is particularly valuable for providing insight into a population less well-

characterized. The population used for this analysis includes a wide geographic distribution across the United States and therefore can be generalized to private commercial insurance at a national level.

The population described in this study – those receiving HCC and the subpopulation receiving HBMC – have the benefit of having received some care in the home. Home-based medical care is not accessible to the majority of older adults who would benefit from their services.³⁴ Only 12% of completely homebound older adults receive primary care services at home, likely because many communities lack sufficient number of HBMC providers and many homebound individuals live more than thirty miles from the providers who make the majority of home visits in the United States.^{2,34} Nevertheless, HBMC practices have grown rapidly over the past 20 years in response to the demand for patient-centered care for this vulnerable population.^{25,26} We predict that value-based payment systems will facilitate the continued expansion of these practices. Such reimbursement mechanisms require the achievement of quality measure benchmarks; these benchmarks will need to be tailored for the unique needs of the home-based setting of care.^{14,35} Implementation of tailored quality measures to optimize the receipt of HBMC can be supported through the routine capture of quality of care measures, development of new tailored measures, and creation of practice-based learning collaboratives to assess and improve quality care.

Funding

Analyses were conducted by OptumLabs using funding from AARP.

During the conduct of this study, Dr. Harrison was supported in part by funding from an Aging Research Fellowship from the National Institute of Aging (T32AG000212); Atlantic Fellowship of the Global Brain Health Institute; UCSF Hellman Fellows Award; UCSF Claude D. Pepper Older Americans Independence Center funded by National Institute on Aging (P30 AG044281); Career Development Award from the National Center for Advancing Translational Sciences of the NIH (KL2TR001870); National Palliative Care Research Center Junior Faculty Award; and National Institute of Aging Mentored Research Scientist Development Award (K01AG059831).

Three authors (AA, SD, CP) were employees of OptumLabs at the time this study was conducted and performed all analyses using Optum data. The study was funded by AARP®.

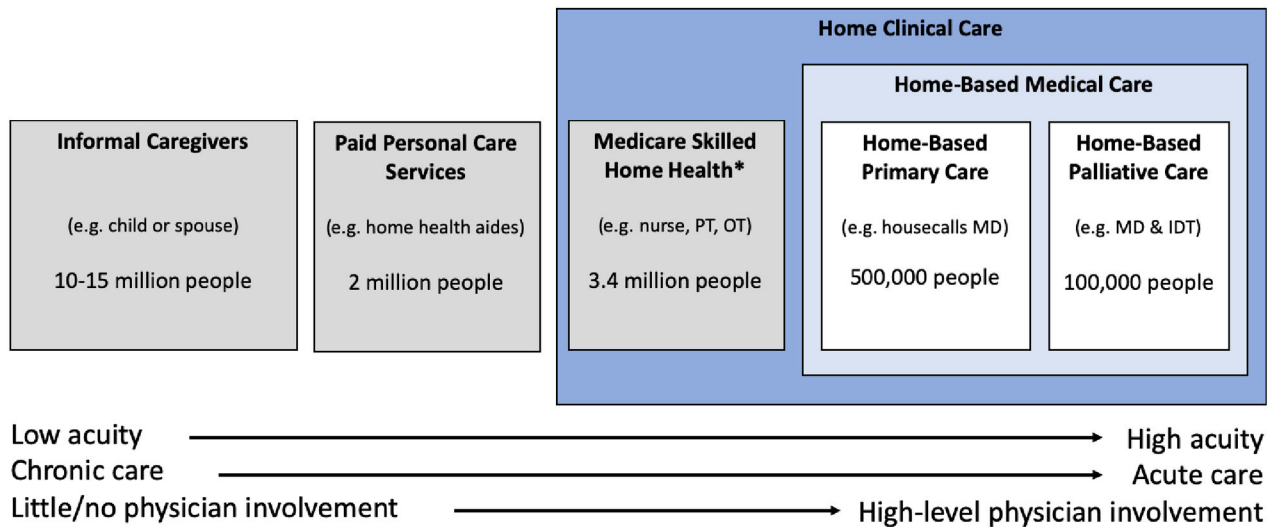
The authors would like to acknowledge Lina Walker (AARP), Helen Burstin (Council for Medical Specialty Societies), Jane Sullivan (OptumLabs), Molly Diethelm (OptumLabs), Sarah Garrigues (UCSF), Sarah Garrett (UCSF) and Kanan Patel (UCSF) for their contributions in support of this research and publication.

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*Some people receiving Medicare Skilled Home Health also have oversight from providers, billed as care plan oversight (CPO) claims

Adapted with permission from Bruce Leff and Elizabeth Madigan, 2014

Figure 1.

Types of care in the home setting

Abbreviations refer to physical therapy (PT), occupational therapy (OT), medical doctor (MD) and interdisciplinary team (IDT).

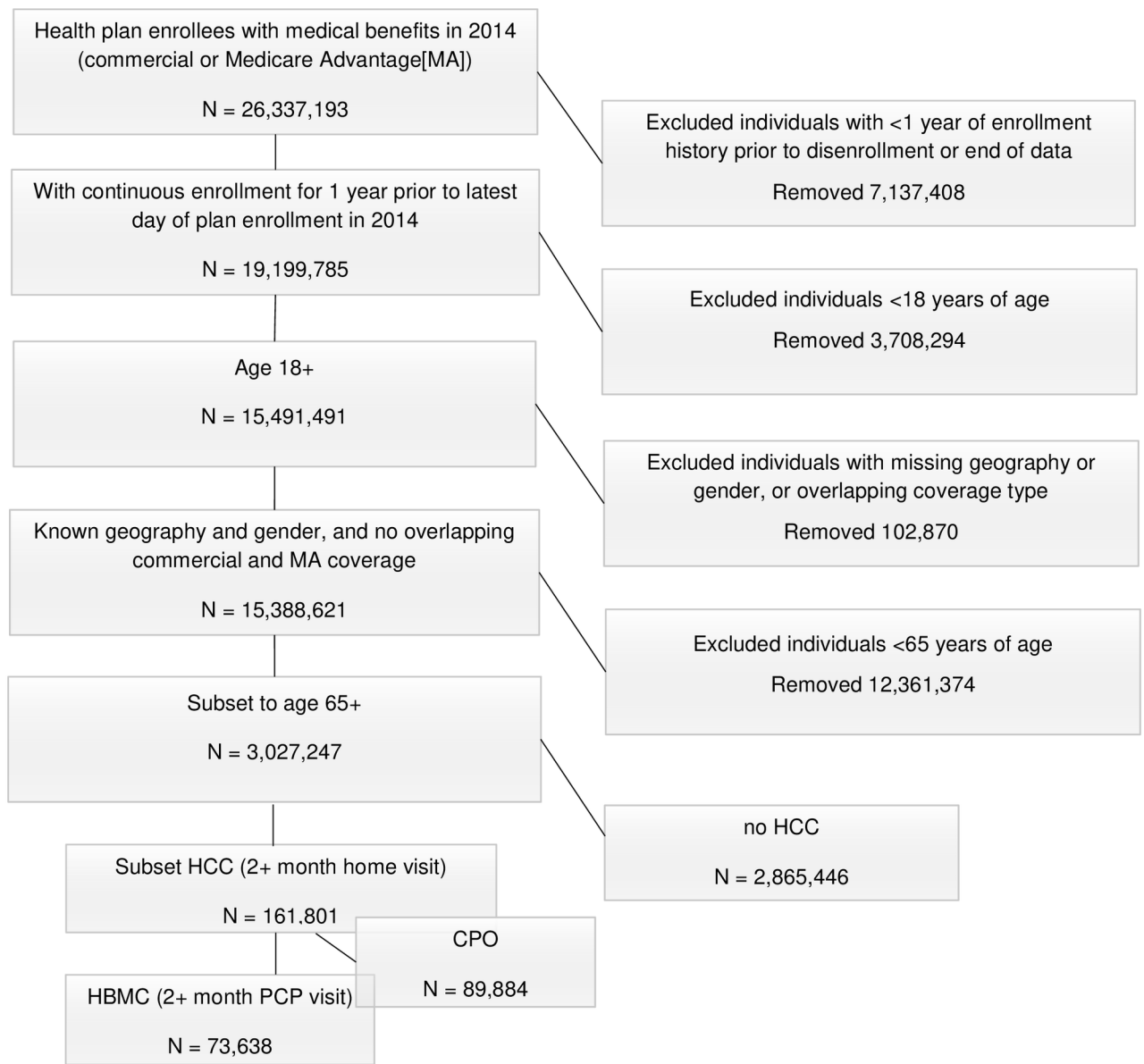


Figure 2. Study Population in the OptumLabs Data Warehouse (Commercial or Medicare Advantage enrollees)

Group	Definition	N
HCC	Individuals with 2 or more consecutive months with a home visit claim during the 12-month observation period.	161,801
HMBC	Individuals with 2 or more consecutive months with a home visit claim during the 12-month observation period AND had claims for at least 2 home visits by a general practice clinician.	73,638
CPO	Individuals with any claim during the 12-month observation period, using any of the following codes: <u>CPT codes</u> 94005, 99339-40, 99374-75, 99377-78, 99379-80, 0405T; <u>HCPCS codes</u> G0179, G0180, G0181, G0182, S0220-21, S0250, S0270-72	89,884

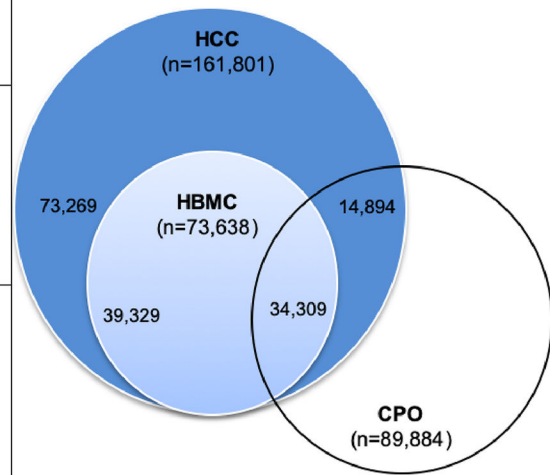


Figure 3. Populations of people receiving home-based clinical care (HCC), people receiving home-based medical care (HBMC), and people with Care Plan Oversight (CPO) claims in the OptumLabs Data Warehouse (Commercial or Medicare Advantage enrollees)

Table 1:

Demographics and comorbidities, comparing people receiving home-based clinical care (HCC), people receiving home-based medical care (HBMC), and people with Care Plan Oversight (CPO) claims

Characteristics (N (%) or mean [SD])	Receiving HCC ¹	Receiving HBMC ²	CPO claims ³
	N=161,801	N=73,638	N=89,884
Age (mean [SD])	79.3 (7.5)	80.2 (7.6)	80.7 (7.1)
Age Category (N [%])			
65–74	48,711 (30.1)	19,482 (26.5)	20,711 (23.0)
75–84	56,698 (35.0)	23,703 (32.2)	32,060 (35.7)
85+	56,392 (34.9)	30,453 (41.4)	37,113 (41.3)
Gender			
Female	100,650 (62.2)	46,245 (62.8)	56,822 (63.2)
Male	61,151 (37.8)	27,393 (37.2)	33,062 (36.8)
Insurance type			
Commercial	47,456 (29.3)	35,146 (47.7)	44,676 (49.7)
Medicare Advantage	114,345 (70.7)	38,492 (52.3)	45,208 (50.3)
Clinical Status			
Charlson Comorbidity Index (mean [SD])	4.12 (3.1)	4.33 (3.2)	4.26 (3.1)
Heart Attack (N [%])	12,228 (7.6)	5,678 (7.7)	7,281 (8.1)
Congestive heart failure	58,190 (36.0)	29,163 (39.6)	35,414 (39.4)
Osteoarthritis	81,163 (50.2)	37,964 (51.6)	48,268 (53.7)
Diabetes	67,456 (41.7)	30,601 (41.6)	37,032 (41.2)
Lung Disease	64,615 (39.9)	30,086 (40.9)	35,235 (39.2)
Chronic Renal Failure	45,614 (28.2)	22,173 (30.1)	26,785 (29.8)
Stroke	53,433 (33.0)	26,156 (35.5)	33,527 (37.3)
Cancer	42,291 (26.1)	19,127 (26.0)	25,078 (27.9)
Depression	48,909 (30.2)	24,914 (33.8)	28,223 (31.4)
Dementia (CCS)	43,553 (26.9)	25,770 (35.0)	26,605 (29.6)
Morbid obesity diagnosis	8,912 (5.5)	4,114 (5.6)	4,560 (5.1)
Musculoskeletal surgery	11,896 (7.4)	3,762 (5.1)	7,466 (8.3)

Notes:

¹Home-based clinical care (HCC) defined by their receipt of 2+ consecutive months with a home visit claim from any provider type in the 12-month study period, whether skilled home health care or home-based medical care

²Home-based medical care (HBMC) defined as those patients who received 2 or more consecutive months of home visits (HCC) plus 2+ months of home visits by a primary care provider (PCP, e.g. family practitioners, internists, internal medicine physicians, geriatricians, and OB/GYN physicians) in the 12-month study period

³Care Plan Oversight (CPO) includes all individuals with CPO claims in the 12-month study period, using any of the following codes: CPT codes 94005, 99339–40, 99374–75, 99377–78, 99379–80, 0405T; HCPCS codes G0179, G0180, G0181, G0182, S0220–21, S0250, S0270–72

⁴The populations of older adults receiving HCC, HBMC and with CPO codes were compared for clinically relevant similarities or differences rather than statistical since populations are not mutually exclusive

Table 2:

Health care use, comparing people receiving home-based clinical care (HCC), people receiving home-based medical care (HBMC), and people with Care Plan Oversight (CPO) claims

Characteristics (N (%) or mean [SD])	Receiving HCC	Receiving HBMC	CPO claims
	N=161,801	N=73,638	N =89,884
Home Utilization			
Home visit months (mean [SD])	5.1 (3.2)	6.2 (3.2)	3.7 (3.2)
Home visits (N [%])			
0 visits	--	--	989 (1.1)
1–2 visits	6,424 (4.0)	2,832 (3.8)	31,091 (34.6)
>2 visits	155,377 (96.0)	70,806 (96.2)	57,804 (64.3)
Home-based services			
Home infusion	28,765 (17.8)	16,752 (22.7)	9,603 (10.7)
Hospital bed	10,895 (6.7)	6,655 (9.0)	6,402 (7.1)
Home ventilator	431 (0.3)	241 (0.3)	223 (0.3)
Other Utilization			
>1 Inpatient visits	98,550 (60.9)	43,743 (59.4)	59,844 (66.6)
>1 Emergency Department visits	112,311 (69.4)	52,239 (70.9)	66,819 (74.3)
>1 Ambulance trips	85,650 (52.9)	42,872 (58.2)	52,846 (58.8)
SNF Admission	8,896 (5.5)	3,610 (4.9)	4,479 (5.0)
Hospice	29,918 (18.5)	11,833 (16.1)	12,452 (13.9)
CPO	49,203 (30.4)	34,309 (46.6)	--

Notes:

¹Home-based clinical care (HCC) defined by their receipt of 2+ consecutive months with a home visit claim from any provider type in the 12-month study period, whether skilled home health care or home-based medical care

²Home-based medical care (HBMC) defined as those patients who received 2 or more consecutive months of home visits (HCC) plus 2+ months of home visits by a primary care provider (PCP, e.g. family practitioners, internists, internal medicine physicians, geriatricians, and OB/GYN physicians) in the 12-month study period

³Care Plan Oversight (CPO) includes all individuals with CPO claims in the 12-month study period, using any of the following codes: CPT codes 94005, 99339–40, 99374–75, 99377–78, 99379–80, 0405T; HCPCS codes G0179, G0180, G0181, G0182, S0220–21, S0250, S0270–72

⁴The populations of older adults receiving HHC, HBMC and those with CPO codes were compared for clinically relevant similarities or differences rather than statistical since populations are not mutually exclusive.