‘Eyes in the Home’: ACOs Use Home Visits to Improve Care Management, Identify Needs, and Reduce Hospital Use

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Abstract

Home visits are used for a variety of services and patient populations. We used national survey data from physician practices and accountable care organizations (ACOs) paired with qualitative interviews to learn about home visiting programs. ACO practices were more likely to report using care transitions home visits than non-ACO practices. 80% of ACOs reported using home visits for some of their patients with larger ACOs more commonly using home visits. Interviewed ACOs reported using home visits as part of care management and care transitions programs as well as to evaluate patients’ home environments and identify needs. ACOs most often used non-physician staff to conduct home visits. Home visit implementation for some types of patients can be challenging due to barriers related to reimbursement, staffing, and resources.

Introduction

More than a half-century ago, it was not unusual for physicians to make house calls. Modern medicine, however, transitioned care from the patient’s home to the provider’s office in an effort to improve efficiency.1,2 Still, there are advantages to house calls: for the convenience and safety of the patient, to help providers build more personal relationships with patients, to comprehensively assess patients’ needs, and to identify issues related to the home environment.3 Moreover, many patients benefit from more intensive, home-based care,4,5 and evidence suggests that care provided in patients’ homes can both reduce costs and improve quality.4–7 Medicare has created new reimbursement models for patients who are functionally unable to attend office-based visits to support home visits8

Home visits can improve the quality of care by easing transitions between care settings, enhancing care management, and helping older patients successfully age at home.3,9 Home visits can be used for a variety of services and patient populations such as care management for patients with chronic disease, home-based primary or acute care, post-discharge care
transitions, and support for frail patients. Home visits have the potential to reduce spending by preventing readmissions or by helping those with complex needs manage their conditions in lower-acuity (and lower cost) settings.\textsuperscript{7,10} Home visits are particularly useful for addressing unforeseen challenges post-discharge such as obtaining support from caregivers, understanding a care plan, understanding the full spectrum of medications a patient has in-home, and making necessary adjustments to the home environment.\textsuperscript{4,10}

For patients with complex needs, primary care providers may experience challenges implementing home visits because of limitations in the Centers for Medicare and Medicaid Services’ (CMS) fee-for-service reimbursement model, which has specific requirements for home visit billing under the physician fee schedule, such as the presence of a physician in the home and the physical inability of the patient to attend an office-based visit.\textsuperscript{8} Under alternative payment models – including accountable care organization (ACO) contracts – providers may have greater motivation to improve care delivery for patients with complex clinical needs because they are responsible for patients’ total cost of care.\textsuperscript{11} Given the benefits of home visits for patients as well as their impact on costly utilization, ACO providers may be more likely than other providers to implement home visits,\textsuperscript{12} even when they cannot be reimbursed under a traditional fee-for-service model.\textsuperscript{13} To better understand use of home visits, we use national survey data to examine differences in use of care transitions home visits by ACO and non-ACO practices and compare characteristics of ACOs that do and do not use home visits. Using qualitative data gathered from ACOs, we describe similarities and differences in how ACOs design and implement all types of home visits -- those for care transitions and for other purposes.

\textbf{Methods}

We conducted a mixed methods study to examine how ACOs implement home visits to care for patients with complex needs. We first used the National Survey of Healthcare Organizations and Systems (NSHOS) to determine if ACO practices were more likely to use care transitions home visits than non-ACO practices. We then used the National Survey of ACOs (NSACO) to identify the types of ACOs that used home visits. Finally, we interviewed ACO leaders and managers to understand why and how they use home visits.

\textbf{National Survey of Healthcare Organizations and Systems}

NSHOS, funded by the Agency for Healthcare Research and Quality, led by the Dartmouth-Berkeley-Harvard-High Value Healthcare Collaborative Center of Excellence on Comparative Health System Performance, was fielded in June 2017-August 2018. NSHOS collected nationally representative data from practices with three or more primary care physicians and included information on practice composition, participation in delivery reform, and care delivery capabilities. We sampled 5,039 practices, identified using a commercial database, OneKey, developed by IQVIA, a healthcare solutions company. OneKey uses proprietary approaches, the American Medical Association’s physician Masterfile, and publicly available information to characterize relationships among providers and organizations.\textsuperscript{14} We obtained 2,333 eligible responses for a response rate of 47%. The NSHOS target respondent was a medical director, physician, or practice manager.
We used NSHOS to identify practices using care transitions home visits for patients with complex health needs, stratified by self-reported current or prior ACO participation.

**National Survey of ACOs**

NSACO, conducted by Dartmouth College, is a survey that describes the structure, contracts, and capabilities of ACOs. We used NSACO Wave 4, fielded in 2017–2018. The response rate for was 55% and 48% completed at least half of the core questions. There were significant differences in response rates by payer-type: 69% of Medicare ACOs compared to 36% of non-Medicare ACOs. We defined ACOs as groups of providers who voluntarily and contractually assumed responsibility for total cost and quality of care for a defined patient population.\(^{15}\) The target respondent was a senior leader in the ACO such as the Chief Executive Officer, Chief Medical Officer, or Director. For Medicare ACOs, we linked the NSACO to publicly available shared savings and quality data from CMS (see appendix section “performance and quality data linkage for ACOs”).\(^{16–18}\)

We used NSACO to compare the characteristics and, for Medicare ACOs, the performance of ACOs that used care transitions home visits for at least some patients (all, most, or some) within 72 hours of discharge, with those that did not use home visits.

We compared physician practices that do and do not use care transitions home visits by ACO status, and ACOs that do and do not use care transitions home visits. For analyses using NSHOS data on physician practices, we used weighted logistic regressions by ACO status to test statistical significance for each characteristic. For analyses using NSACO data, we used t-tests to test significance.

**Interviews with ACO Leaders**

To understand care processes, including the use of home visits for patients with complex health needs, we conducted 39 semi-structured interviews at 18 ACOs. We defined patients with complex needs as those with chronic conditions, social needs, or behavioral illness, and the frail elderly. We first interviewed an ACO leader such as the Director, Chief Medical Officer, or other executive-level individual. In 11 ACOs, we conducted an additional 21 interviews with individuals who had on-the-ground experience such as care managers, directors of care management, or practice leaders (see appendix section “semi-structured interview participants”).\(^{18}\)

Interviews were conducted via telephone between February and June 2018. All interviews were recorded and transcribed, and then analyzed using QRS NVivo.\(^{19}\) ACOs were selected from the NSACO to ensure diversity in terms of geography, composition, leadership, and payer. All had a Medicare contract and achieved shared savings in at least one year, and 13 had at least one additional contract with a commercial or Medicaid payer (see appendix Exhibit 3).\(^{18}\) Interviews were semi-structured, lasted approximately one hour, and focused on the ACO structure, leadership, engagement with participating practices, and approaches to caring for patients with complex health needs (see appendix Exhibit 2).\(^{18}\)

We defined home visits as any encounter between a care team member and a patient that occurred in the patient’s home. We used this broader definition to capture all home visit experiences.
activities. Home visits could be conducted by any ACO employee or partner organization. We excluded services that were home-based nursing, such as home health agencies, and services that were a replacement for office-based primary care. Among 18 interviewed ACOs, 12 used home visits.

Our analytic approach was collaborative and iterative. Transcripts were first coded by a research assistant and then coded unblinded by the first author, any coding discrepancies were discussed and resolved. We developed a memo of observed themes based on initial coding. We included examples to support each theme and justified the inclusion/exclusion of each ACO in a given theme. The memo was then iteratively revised based on team discussion.

Limitations
Our study has some key limitations. First, most of our data are from the perspective of the organization’s leadership rather than patients or providers within the organization. While both the NSACO and the NSHOS had high response rates, there could be systematic differences between respondents and non-respondents. Qualitative data are not meant to be generalized, rather it provides contextualization into how some ACOs use home visits. Interviewed ACOS may not have given us information on all activities related to home visits.

Results
A majority of surveyed practices, 69.3%, reported being part of a Medicare, Medicaid, or commercial ACO (data not shown). Practices in ACOs were more likely to report using post-discharge care transitions home visits for their complex patients than practices not in ACOs (25.7% vs. 18.8%, p=.029). (Exhibit 1 shows these percentages but not the significance testing for the comparison.) Among ACO practices, those in an integrated delivery system reported using care transitions home visits more than those not in an integrated delivery system (71.6% vs. 61.6%, p=.024, Exhibit 1).

While only 26% of practices in ACOs said they made home visits during a care transition (Exhibit 1), 79.6% of ACO leaders reported that the ACO used care transitions home visits within 72 hours of discharge for at least some of their patients with complex health needs (Exhibit 2). For Medicare ACOs, 82.0% reported using care transitions home visits compared with 86.7% of Medicaid ACOs and 79.6% of commercial ACOs.

ACOs that conducted home visits had, on average, more primary care and specialist physicians. ACOs that used home visits were more likely to be part of an integrated delivery system and include a hospital (Exhibit 2). Also, ACOs that conducted home visits were more likely to report participation in episode based-payments (50.8% vs. 38.8%) and other risk-bearing contracts (52.5% vs. 30.2%).

Among Medicare ACOs only, we observed no significant differences in quality scores or likelihood of achieving shared savings between ACOs that use care transitions home visits versus those that do not (exhibit 3).
Approaches ACOs Used for Home Visits

ACOs most often conducted home visits as part of a larger care management, care transitions, or condition management program which can include a variety of services and patient populations. A few ACOs used home visits as a foundational element of their care management, and they tried to conduct home visits with every qualified patient as one of their first care management activities, typically after a hospital stay:

“If they engage with care management, then we have a pharmacist, and a nurse, and a social worker, and an MA to go to the home, and they try to do that within seven days of a [hospital] visit and they do their nursing assessment, they reconcile medications, they look for various challenges that the patient might have, any concerns they have in the home.” -ACO executive

Some ACOs used home visits within their care management programs on an as-needed basis when, for example, there was concern about a patient’s safety or falls risk:

“There are times that the care manager through the comprehensive assessment may get the red flags, as we commonly see, where something’s just not quite right, so there are times that the care manager will schedule a home visit” -ACO manager

Some ACOs conducted home visits on an informal basis rather than as part of a structured care management program. For example, some ACOs used home visits to contact patients who had not responded to other methods of communication or when concerned about a patient’s welfare.

Patients receiving home visits: Patients who received home visits were those considered clinically or socially complex. Clinical complexity was based on recent hospital use, multiple chronic conditions, or complex single conditions as part of a disease management program. Socially complex patients were described as those who were non-responsive or non-compliant – for example, the care manager may have called the patient several times without making contact. ACOs used several methods to select patients for home visits, ranging from provider referrals to algorithms to high utilizers.

Motivations for home visits: ACOs reported three motivations for home visits: to see the patient’s home to identify unmet needs, to reconnect patients perceived to be non-responsive with office-based care, and to build relationships with patients. ACOs that did not conduct home visits through a care management program were more likely to use home visits to locate a patient than as part of a care management program.

Activities of home visits: ACOs reported three main activities during home visits: (1) needs assessment; (2) medication reconciliation; and (3) identifying patient barriers to effective/engaged care. Nearly all ACOs said they used home visits to assess the patient’s living situation and get “eyes in the home,” as one [ACO manager] said. Needs assessments included evaluating the cleanliness and safety of the patient’s home, assessing the patient’s support system, and identifying social needs:

“When you go in, that’s where that whole discovery starts… They’ll, with permission, they’ll look in the refrigerator, they’ll look to see that the patient has
food or that the area that they’re living in is safe to get around in. Are we dealing with a home that is infested? So there’s a whole lot of things. You have to be somewhat of a detective and have your eyes and ears open when you’re going in those initial visits and trying to figure out what that patient needs.” - ACO executive

Some ACOs said that medication reconciliation was a major part of home visits. At one ACO, this involved collecting all medications and then reviewing each one with the patient.

Some ACOs used home visits as patient coaching opportunities, such as providing the patient with resources for managing chronic conditions (e.g. teaching heart failure patients to weigh themselves daily) or instructing them about who to call in various situations (e.g. when to call your care manager). Coaching focused on strengthening the relationship between the care team and the patient:

“[We try] to get them to understand how we work and what our expectation is. We want to be there. We want to answer the phone for you. We want to get you what you need.” - ACO executive

Care team members conducting home visits: Home visits were typically conducted by care management or non-physician staff – nurses, social workers, health coaches, pharmacists, or staff from government and community agencies. Individuals varied not only by their titles, but also in their backgrounds and training. No ACOs reported using physicians for home visits.

Discussion

Physician practices participating in an ACO are more likely than non-ACO practices to report use of home visits, and 80% of ACO leaders reported using home visits for some complex patients. ACOs that implemented care transitions home visits were more likely to be larger, and part of an integrated delivery system. This may be due to the high financial and staffing costs associated with starting a home visits program.

Home visits are an evidence-based intervention, found to improve outcomes and reduce spending for patients with chronic conditions, those post-discharge, and to support aging in-place for the elderly. Interviewed ACOs reported using home visits for each of these patient cohorts and others – even though they may have very different clinical needs. Contrary to our expectations, ACOs reported similar motivations for and activities within home visits across patient populations, but it is uncertain if this uniform approach is effective. ACOs used home visits for a broader set of goals than typically discussed in the literature, such as relationship building, finding barriers to care engagement, or identifying reasons for non-compliance. ACOs repeatedly stressed that the value of home visits was to gain information on a patient’s needs and home life.

Our finding on the use of home visits by ACOs to locate and seek to understand non-compliant patients illustrates the impact of policy reform models on care delivery approaches. ACOs are responsible for the quality and cost of services for attributed patients, even those who cannot follow medical advice such as participating in care management or...
going to primary care visits. This accountability may have driven ACOs to more aggressively track down patients and to use home visits as one tool to engage patients and discover care barriers.

While only a quarter of practices participating in ACOs report using home visits, 80% of ACO leaders report using home visits for some patients. This discrepancy may be due to implementation processes; home visits may be implemented by ACO-level centralized care management programs that are largely independent of the practices within the ACO such that practice leaders may have limited knowledge of home visits. Or, ACOs may implement home visits in some practices and not others.

Despite the value perceived in home visits, ACOs experienced challenges such as reimbursement, staffing capacity, and an inability to address identified social needs. Our finding that larger- and system-based ACOs were more likely to implement resource intensive home visits creates concerns for the ability of smaller, independent practices and organizations to use home visits as a tool to engage patients and discover barriers to improved care. These organizations may need further financial or logistical support to implement home visits.

An interesting question is who the “right” population for home visits. Evaluations of home visits have focused on the post-acute care episode, independent living programs, and patients with chronic conditions. Despite the unique clinical needs for each of these populations, interviewed ACOs described remarkably similar activities within different types of home visits. ACOs perceived value in home visits for a large population of patients, but the group in whom the benefits outweigh the costs may be smaller. Most home visits were conducted by non-physician care team members, typically a care coordinator or a nurse. Identifying the right team to complete home visits, the best patients to focus on, the ideal services suited for home visits, and the optimal workflow to incorporate home visits are questions that need ongoing research.

Policymakers and others should be aware that, given the intense resources needed for home visits, organizations may struggle to systematically implement care delivery programs with home-based components. Interviewed ACOs typically used care coordination staff rather than physicians, nurse practitioners, or physician’s assistants to conduct home visits, which limits their options for reimbursement of services provided in patient’s homes.

CMS allows physicians to bill for home visits; however, visits must be used for patients who are not functionally able to have an office visit. Most of the home visits described by ACOs would not qualify for reimbursement from CMS using home visits billing. ACOs could bill CMS for home visits using Chronic Care Management codes, but meeting the requirements is often challenging. Policymakers and administrators should continue to align reimbursement with evidence-based care innovations such as home visits.

The arc of home visits over time is fascinating – visits were moved into physicians’ offices as a way to make doctors more efficient. Now, under new payment models, services are being moved to the lowest intensity setting possible including the home.
uncertain if providers will be able to offer home visits in all cases where patients could potentially benefit.

**Supplementary Material**

Refer to Web version on PubMed Central for supplementary material.

**Notes**

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18. To access the Appendix, click on the Appendix link in the box to the right of the article online.

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Exhibit 1:
Characteristics of practices that do and do not use care transitions home visits for complex patients, by ACO status

| Characteristic                      | Any ACO Contract | No ACO contract |
|-------------------------------------|------------------|-----------------|
|                                     | Home visits after discharge | No home visits after discharge | Home visits after discharge | No home visits after discharge |
| Number of practices, unweighted     | 397              | 82              | 1.112             | 377             |
| Percentage of practices, weighted   | 25.7             | 18.8            | 74.3              | 81.2            |
| Mean number of primary care physicians | 7.5              | 6.3             | 11.3 *            | 5.4 *           |
| Mean number of specialist physicians | 4.0              | 22.6            | 3.2               | 3.2             |
| Federally qualified health center (%) | 22.4             | 25.4            | 21.5              | 16.5            |
| Primary care physicians only (%)    | 50.5             | 60.1            | 56.8              | 59.1            |
| Integrated delivery system (%)     | 71.6 **          | 45.7            | 61.6 **           | 47.9            |

Source: Authors’ analyses of the National Survey of Healthcare Organizations and Systems. NOTES: ACO contracts include self-reported Medicare, Medicaid, or commercial ACO contracts; number of practices is unweighted; analyses were weighted to reflect a national sample of primary care practices with three or more physicians; integrated delivery system was defined as having a corporate owner;

SIGNIFICANCE:

*  p < 0.10
** p < 0.05
*** p < 0.01
**** p < 0.001
### Exhibit 2:

Characteristics of ACOs that use care transitions home visits

| Characteristic                              | Home Visits 72 Hours After Discharge |      |
|---------------------------------------------|--------------------------------------|------|
|                                             | Yes                                  | No   |
| Number of ACOs                              | 293                                  | 75   |
| Percentage of ACOs                          | 79.6                                 | 20.4 |
| Composition                                 |                                      |      |
| Includes hospital (%)                       | 63.8                                 | 46.6*** |
| Integrated delivery system (%)              | 49.1                                 | 33.7** |
| Mean number of primary care physicians      | 299.0                                | 147.9** |
| Mean number of specialist physicians        | 508.6                                | 213.0** |
| ACO Type                                    |                                      |      |
| Medicare (%)                                | 82.0                                 | 18.0** |
| Medicaid (%)                                | 86.7                                 | 13.3*  |
| Commercial (%)                              | 79.6                                 | 20.5  |
| Experience with Payment Models              |                                      |      |
| Bundle or episode based-payments (%)        | 50.8                                 | 38.8*  |
| Medicare Advantage (%)                      | 68.9                                 | 66.2  |
| Capitated commercial contract (%)           | 36.8                                 | 31.8  |
| Other risk-bearing contract (%)             | 52.5                                 | 30.2**** |
| Leadership                                  |                                      |      |
| Physician-led (%)                           | 51.2                                 | 62.7  |

**SOURCE:** Authors’ analysis of the National Survey of Accountable Care Organizations. **NOTES:** Yes = Home visits for some, most, or all patients;

**SIGNIFICANCE:**

* $p < 0.10$

** $p < 0.05$

*** $p < 0.01$

**** $p < 0.001$
### Exhibit 3:

Quality and performance of Medicare ACOs that do and do not use care transitions home visits

| Performance                      | Yes | Number | No | Number |
|----------------------------------|-----|--------|----|--------|
| Achieved Shared Savings          |     |        |    |        |
| Performance Year 1(%)            | 26.8| 42     | 17.1| 6      |
| Performance Year 2(%)            | 34.6| 47     | 19.4| 7      |
| Performance Year 3(%)            | 41.4| 43     | 23.1| 6      |
| Mean Quality Scores              |     |        |    |        |
| Performance Year 1               | n/a | n/a    | n/a |        |
| Performance Year 2               | 91.2| 138    | 92.0| 36     |
| Performance Year 3               | 91.9| 109    | 93.7| 26     |
| Mean Number of Beneficiaries     |     |        |    |        |
| Performance Year 1               | 19,355| 190 | 12,062** | 46 |
| Performance Year 2               | 23,993| 139 | 13,654*** | 37 |
| Performance Year 3               | 25,377| 109 | 17,208 | 26 |

SOURCE: Authors’ analysis of the National Survey of Accountable Care Organizations linked with public use files on performance and utilization of Medicare accountable care organizations provided by the Centers for Medicare and Medicaid Services. NOTES: Yes = Home visits for some, most, or all patients;

**SIGNIFICANCE:**

* $p < 0.10$
** $p < 0.05$
*** $p < 0.01$
**** $p < 0.001$