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Journal

Journal of the American Medical Directors Association, 19(10)

ISSN

1525-8610

Authors

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Publication Date

2018-10-01

DOI

10.1016/j.jamda.2018.05.020

Peer reviewed

Published in final edited form as:

JAm Med Dir Assoc. 2018 October; 19(10): 818–823. doi:10.1016/j.jamda.2018.05.020.

A Quality of Care Framework for Home-Based Medical Care

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Abstract

Objectives: Over 6 million adults in the United States are homebound or semi-homebound and would benefit from home-based medical care (HBMC). There is currently no nationally-recognized quality-of-care framework for home-based medical care. We sought to capture diverse stakeholder perspectives on the essential aspects of quality HBMC and create a quality of care framework for homebound adults.

Design: Qualitative analysis of semi-structured interviews from purposive sampling of key HBMC stakeholders.

Setting and Participants: Leaders from twelve exemplar HBMC practices (clinicians and administrators), advocacy groups (AARP, National Partnership for Women and Families, Kaiser Family Foundation), and representatives from three key professional medical societies associated with HBMC participated in phone interviews.

Measures: Semi-structured interviews were based on domains of quality developed by the National Quality Forum (NQF) for individuals with multiple chronic conditions.

Results: We identified three categories of quality HBMC: provider and practice activities, provider characteristics, and outcomes for patients, caregivers and providers. Within these three categories, we identified 10 domains and 49 standards for quality HBMC. These included 3 new

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- O Acquisition of data: CSR, BL, SKG
- O Analysis and interpretation of the data: CSR, BL, KLH
- O Drafting of the manuscript: CSR, BL, SKG, CP, OCS, KLH
- O Critical revision of the manuscript for important intellectual content: CSR, BL, SKG, CP, OCS, KLH
- O Contributions of others who did not merit authorship but participated in the research: Debbie Statom

Conflicts of Interest

The authors do not have any financial or personal conflicts to disclose.

domains (comprehensive assessment, patient/caregiver education, and provider competency) as well as specification and adaptation of the NQF Framework for Multiple Chronic Conditions domains for HBMC. Notably, several quality domains emanating from the NQF Framework for Multiple Chronic Conditions (transitions, access, and patient/caregiver engagement) were applicable to HBMC.

Conclusion: The identification of new domains of quality confirm the unique nature of HBMC and the care issues faced by HBMC providers and the patients they serve.

Keywords

homecare; quality; primary care; palliative care

Introduction

Approximately 2 million adults in the United States are completely or mostly homebound; another 4.6 million are semi-homebound. As society ages, the homebound population will grow. Homebound older adults often suffer from a constellation of daily challenges, including multiple chronic conditions, functional impairment, frailty, and social stressors. Homebound adults lack easy access to office-based primary care and are among the costliest patients to our health care system.

Studies show that homebound and seriously ill adults benefit from provision of medical care in the home.² Home-based medical care (HBMC) refers to clinical practices that provide physician or nurse practitioner-led, longitudinal interdisciplinary care to homebound, functionally-impaired and seriously-ill adults who have difficulty accessing traditional primary care; it includes both home-based primary care and home-based palliative care.³ HBMC practices commonly provide enriched care coordination, access to community-based social services, and case management services, serving as the glue for all necessary services provided to the homebound patient.² HBMC involves the regular provision of home visits by billing and prescribing clinicians (e.g. physicians, nurse practitioners, and physician assistants) and is a Medicare Part B benefit largely supported through evaluation and management (E&M) coding. In contrast, skilled home health care is a Medicare Part A benefit provided on an episodic basis by home health agencies to homebound Medicare beneficiaries who have a need for skilled services in the home (e.g., nursing, physical therapy). In 2012, the Centers for Medicare & Medicaid Services (CMS) launched the Independence at Home (IAH) Demonstration Project which created a shared-savings payment model for HBMC to provide care to high-need, high-cost, functionally impaired older adults. First-year results demonstrated a Medicare savings of more than \$25 million. Additionally, HBMC reported fewer hospital admissions, fewer inpatient hospital and emergency department services for conditions such as diabetes, high blood pressure, asthma, pneumonia, and urinary tract infection.⁴

A recent systematic review of HBMC programs found reductions in emergency department visits (15%), hospitalizations (30%), hospital bed days of care (37–50%), long-term care admissions (10–20%), long-term care bed days of care (88%), and costs (24%).² Satisfaction and caregiver quality of life were better in HBMC than usual care. In addition, a recent

comparative effectiveness review from the Agency for Healthcare Research and Quality found that "current research evidence is generally positive, providing moderate-strength evidence that HBMC reduces use of inpatient care." Studies also demonstrate the overall savings accomplished through HBMC. Skilled home health nursing care, in contrast, has not shown equivalent impact on total cost. Medicare Advantage and Medicare ACOs are increasingly integrating HBMC into services provided to high-need, mobility-impaired patients. 7–9

In the United States, HBMC practices are diverse in scope, size and practice styles. The American Academy of Home Care Medicine estimates that there are over 1000 practices that provide HBMC visits in the US. ¹⁰ A recent study involving Medicare claims data reported over 7700 medical providers billing for home visits in 2013. ¹¹ The grey literature suggests that this number may be increasing rapidly, ^{7–9} especially in Medicare Advantage markets and in health systems focusing on population health that prioritize optimizing care and reducing unnecessary cost in functionally impaired and seriously ill populations.

In recent years, commercial payers and Medicare have been moving towards systems of care that reward value rather than volume of services. The Medicare Access and CHIP Reauthorization Act (MACRA) legislation of 2015 emphasized value-based care and tied payments to meeting quality of care standards and quality improvement activities. While these policy changes are laudable, a focus on value and quality-based reimbursement puts HBMC providers and practices at a significant disadvantage. HBMC providers and practices must use currently available endorsed quality metrics such as Physician Quality Reporting System (PQRS) or Group Practice Reporting Option (GPRO) quality measures. While CMS and the National Association for Homecare have sought to address quality in skilled home health nursing care, these measures were not developed for medical practices providing care in the home and, in fact, cannot be reported by billing providers through MACRA. Existing measures for ambulatory medical practices (and therefore HBMC providers) were largely developed for people who were less medically fragile or with only a single disease or condition. When applied to the homebound population, many of these metrics have the potential to cause harm by incentivizing inappropriate care (e.g., cancer screening for patients with limited life expectancy for whom screening tests can have untoward complications). In addition, many of these metrics place an additional burden on patients and families and may not balance the social context in which many adults made decisions about their health. 12,13 To date, no set of nationally-recognized quality measures has been created for HBMC, nor has a quality-of-care framework been developed to support measures focused specifically on HBMC.

When the IAH program was initiated, it became clear to HBMC providers, CMS, and other payers that quality measures for HBMC were insufficient. Therefore, we engaged in a systematic assessment of key stakeholder perspectives on quality of care for HBMC to inform the development of a quality framework and set of measures for medical practices more aligned with the homecare setting. We describe the qualitative work conducted to elucidate these perspectives and the resulting quality of care framework that emanated from this work.

Methods

Participants:

We purposively sampled key informants from HBMC practices and advocacy and professional societies. We recruited leaders from twelve HBMC practices (clinicians and administrators) that were diverse in geographic location, practice type (Veterans Health Administration, private, academic, not-for-profit and for profit), and participation in the IAH Demonstration Program. To integrate an array of medical provider, patient and caregiver perspectives, we also purposively recruited 3 advocacy groups (American Association of Retired Persons (AARP), National Partnership for Women and Families, Kaiser Family Foundation), and representatives from 3 relevant professional medical societies associated with HBMC (the American Geriatrics Society, the American Academy of Hospice and Palliative Medicine, and the American Academy of Home Care Medicine). Stakeholders from the 3 patient advocacy groups had personal experiences with HBMC and/or were informal caregivers themselves. 100% of those invited agreed to participate in the study. A separate study sought to capture patient and caregiver perspectives and is reported elsewhere. 14

Data collection:

Two researchers (CR, BL) conducted semi-structured interviews with participants by telephone. The interview framework was based on domains of quality for people with multiple chronic conditions developed by the National Quality Forum overall National Quality Strategies¹⁵ (safety, care coordination, prevention and treatment, person/family centered care, cost and affordability) and specific measure concepts for those with multiple chronic conditions¹⁶ (function, transitions, access, patient/caregiver engagement, health outcomes, avoidance of inappropriate care, cost, and shared decision making). Stakeholders were asked to comment on the domains or measure concepts regarding their applicability to HBMC or need for additional refinement and adaptation. Participants were then asked to identify subcategories (or standards) of quality of care for HBMC within each domain (see Table 1 for interview framework).

With the permission of participants, all but one interview was audio-recorded and transcribed; one participant was not recorded, and notes were taken by hand. Transcripts were emailed to the participants for member-checking, including review, revision, and additional reflections. Ten of the 19 participants edited or revised their transcripts; these revised transcripts were used in the final database for analysis.

Analysis:

We conducted template analysis, a qualitative approach that combines content analysis and grounded theory. ¹⁷ This hybrid approach allowed for deductive and inductive analysis. We deductively approached the data with the NQF Multiple Chronic Conditions Framework and inductively used participant responses to refine the framework, refine domains, and offer new categories of measures.

Two investigators (BL and CR) coded transcripts independently utilizing ATLAS.ti software. After each session's transcript was coded, its corresponding set of field notes was reviewed by the investigators to confirm stability of themes identified; 20% of the sample was double coded. To ensure stability and relevance of themes, we used the constant comparative technique¹⁸ to compare previously coded transcripts with the transcripts being coded at any particular session. To ensure inter-rater agreement, we held coding meetings until both coders reached consensus on coding rules.

Human subjects:

This study was approved by the institutional review boards of the participating institutions. Verbal consent was sought before each data collection activity.

Results

Of the 19 stakeholder participants, 53% were female, 53% were clinicians/physicians, 21% were practice administrators, 16% represented advocacy organizations, and 11% represented professional societies. Participants underscored the importance of developing quality measures and processes tailored to HBMC populations (Table 2).

We identified three overarching categories of quality HBMC: provider and practice activities, provider competency, and outcomes for patients, caregivers and providers. Within these three categories, we identified 10 domains and 49 standards for quality HBMC. These included 3 new domains as well as specification and adaptation of the NQF Framework for Multiple Chronic Conditions domains for HBMC. The 3 new domains that emanated out of the interviews were comprehensive assessment, patient/caregiver education, and provider competency.

Provider and Practice Activities

Domains of quality within the category of Provider and Practice Activities included Assessment, Care Coordination, and Patient/Caregiver Education.

Within the Assessment domain, participants recommended quality standards including conducting comprehensive assessments of the home environment, home and community safety (for patients, caregivers and practice staff), and conducting assessments of caregiver needs and stressors.

Regarding assessment of the home environment, one professional society representative argued providers need to assess "their apartment or house and how it's set up. Are there stairs? Is it easy for them to get in and out of bed?" A patient advocate emphasized quality standards "linking the assessment of a family member to find out what help they need, and addressing those needs, to answer, 'Does that produce better outcomes for the patient or the person?'"

Under the domain of Care Coordination, several standards were emphasized by all stakeholders. Communication across providers and settings was highlighted:

"Coordinating the care is really probably the most important thing that the house call provider can provide, because it touches on all of the different services that any one patient needs. And what they really need is someone who can guide them through that, through all of those transitions or through all of those different services and help them utilize whatever they're getting in an appropriate way...to make sure that the care plan is continuous across space and time."

Under the domain of Patient/Caregiver Education, stakeholders highlighted standards for providing education about prognosis as an aid to arriving at mutually agreed upon and feasible goals.

Provider Competency

Many participants voiced the importance of attending to and measuring provider clinical competency. One provider commented, "I think there is some yet-to-be-defined quality measure whereby if you're going to make house calls on these complex sick patients, then you ought to have a minimum set of diagnostic tools to rule out life threatening emergencies that may be less than obvious." Several stakeholders noted wide variation in provider competency in terms of one's ability to diagnose and manage medical problems in the home or one's skill with complex interpersonal communication required to take care of this population. Stakeholders also called for improved provider competency in quality improvement for HBMC practices.

Patient/Caregiver Outcomes

Domains of quality within the category of Patient/Caregiver Outcomes included Safety, Quality of Life, Goal Attainment, Access, and Cost.

Within the domain of Safety, stakeholders identified several home-specific quality standards (Table 3) such as falls prevention, equipment and gun safety; attention to medications; abuse and neglect; and emergency preparedness. Attention to medications required not only medication reconciliation but ensuring the patient, caregiver and *all* providers were aligned on the medication list and treatment plan:

"The patient moves from the skilled facility back to the assistant living facility and all of a sudden their medications are completely different. You get different doctors involved. I think the coordination of the medications, with a bias toward reduction of number of medications, is really important."

Participants also discussed the importance of optimizing staff safety. Sometimes tradeoffs must be considered between what is best for the patient and what is best for the provider and practice: "We fight about it all the time in our clinical meetings. What counts as safe and when is safety [such] an issue that you fire the patient, even though it may not be the best thing for the patient. But you have to protect the program safety."

In the domain of Quality of Life, highlighted standards were comfort in the home environment; employment of preventive services (including durable medical equipment) to optimize function; and attention to loneliness and social isolation, meaning, and purpose:

"Things like autonomy and choice, having meaningful activity, relationships, privacy, dignity. Those areas, in my view, that's all quality of life."

For the domain of Goal Attainment, participants also emphasized the importance of respecting patient autonomy and choice with respect to living at home or at some alternative setting.

Within the domain of Access, participants emphasized the importance of the standard of providing timely access to both non-urgent visits and calls, appropriate home-based diagnostic assessment, and expert symptom management and palliation in the home.

Finally, for the domain of Cost, participants described a standard around attention to costs for patients, caregivers, and society. Several providers discussed the importance of giving patients and caregivers permission, space, and support to take costs into account in the plan of care. Other stakeholders discussed the value of HBMC to society by providing easier access to lower cost services, but that will need to be assessed: "You would want to make sure that practices were really providing good quality care and not over utilizing ER as an evaluation option."

Stakeholder Concordance and Discordance related to Quality Domains and Standards

There was a fairly high level of concordance between stakeholders of all types on most of the quality domains and standards (Table 3). The greatest discordance between those interviewed centered on the Cost domain. Some stakeholders thought utilization and attention to patient/caregiver financial concerns were important indicators, while others thought utilization should not even be considered a quality domain. These differences in perspectives did not fall along particular stakeholder lines.

Discussion

To our knowledge, this is the first study to define a quality of care framework specifically for HBMC. Given the nature of patients who receive HBMC services, we employed the NQF Framework for Multiple Chronic Conditions ¹⁶ as a starting point. Not surprisingly, our study found several quality domains emanating from the NQF Framework (transitions, access, patient/caregiver engagement) that were applicable to HBMC. The NQF framework, however, required expansion and specification to reflect the special needs of homebound patients. New domains that emanated out of the interviews included comprehensive assessment (e.g., routine physical and cognitive function assessment, symptoms, caregiver experience, and the home environment), safety, patient/caregiver education, and provider competency. The identification of new domains of quality confirm the unique nature of HBMC and the care issues faced by providers and the patients they serve.

Assessment as its own quality domain stemmed from stakeholders' recognition of the complex, multi-faceted needs of homebound patients along with their caregivers and the paramount importance of assessment in the care of complex, multimorbid, functionally-impaired people. While traditional medical issues remained important, attention to and assessment of physical, emotional, social, and spiritual symptoms; physical, executive and

cognitive function; patient goals; and sources of meaning and purpose, for example, could not be ignored and were considered critical to the development of a holistic care plan.

Stakeholders described the safety domain of quality in home setting-specific terms. Attention to safety issues is particularly relevant in the home and included environmental safety, medical equipment safety, gun safety and disaster preparedness. Safety issues encompassed not only the patient and caregiver but staff safety and having procedures in place to both ensure staff safety in the community and monitor staff safety on an ongoing basis.

The qualitative work described in this paper and through additional stakeholder work with homebound patients and caregivers ¹⁴ represents the first systematic attempt to develop a quality of care framework appropriate to HBMC. This framework attempts to reflect the integrated medical care required by a functionally-limited population living at home with variable social support, prognostic uncertainty, and medical complexity. The framework guided a literature review of quality measures applicable to the field of home-based primary care, is leading to the establishment of quality-of-care standards for HBMC, and contributed to the creation of a CMS-approved qualified clinical data registry for HBMC practices. ¹⁹ This quality of care framework serves as the foundation of both the registry and a quality of care-focused learning collaborative using these measures.

The development of a HBMC quality of care framework is a critical step for the field of HBMC, with the ascendance of value-based care. Because of the unique nature of their practice, HBMC providers need a quality of care framework, quality measures, and quality data reporting strategy that is appropriate to the population served and the setting where care is provided. For resource-intensive medical care provided in the home and removed from traditional ambulatory and institutional settings, HBMC providers also need an accountability mechanism to prove that high quality care is being provided in a setting where there is otherwise less real-time oversight.

The study was limited by the perspectives of the stakeholders interviewed. While a broad array of practices, professional societies, and patient advocacy groups were included in the study, several other stakeholders were not included, including patients, caregivers, health system leaders and payers. We did assess patient and caregiver perspectives in a parallel study. Also, our findings from HBMC providers may not reflect all providers; other individuals providing medical care in the home might arguably have a different perspective on what constitutes quality of care.

This study offers an important framework for quality of medical care provided in the home. Next steps will involve testing whether attention to this quality framework and incorporation into practice can lead to better patient and caregiver outcomes. Evaluation of this quality of care framework implemented into daily practice will enable us to assess whether such a framework ultimately improves patient-reported outcomes, reduces caregiver strain, and optimizes healthcare utilization.

Acknowledgements

Sponsor's role: This work was supported by the Commonwealth Fund and the Retirement Research Foundation, national private foundations based in New York City and Chicago that support independent research on healthcare and make grants to improve healthcare practice and policy. The views presented here are those of the authors and not necessarily those of the Commonwealth Fund or the Retirement Research Foundation, their directors, officers, or staff.

Funding sources: This work was supported by The Commonwealth Fund, New York, NY (Grant 20150692) and The Retirement Research Foundation, Chicago, IL (Grant 2013–239)

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Table 1:

Interview Framework

Interview questions

When you think of home-based medical care, what do you think are the main areas that define quality of care?

Quality Frameworks we reviewed listed eight major domains of quality: function, quality of life, goal attainment, patient/caregiver engagement and experience, care coordination, safety, cost, and access. Are there major areas missing for home-based medical care?

What are the elements of quality of care for home-based medical care under the domain of: Function *?

Quality of life *?

Goal attainment?

Patient and caregiver engagement and experience *?

Care coordination?

Safety *?

Cost *?

Access *?

Which of these domains of quality are most important for home-based medical care?

What are quality measures or quality indicators relevant to these domains, especially those current in use?

Which of these quality measures are the best?

 $^{^{*}}$ Indicates domains from the National Quality Forum Framework for Quality in MCC Care 16

 Table 2.

 Essential Domains of Quality Home-Based Medical Care

Categories	Domain	Standards
Provider and practice activities	Assessment (new)	Perform a comprehensive assessment in the home that includes: • Symptoms (physical, emotional, social, spiritual) • Physical, executive and cognitive function • Health literacy • Patient goals and sources of meaning and purpose • Care coordination needs • Treatment burden experienced by patients and caregivers • Patient and caregiver stressors and overall quality of life/well-being • Social support and social risk, cultural issues and spirituality • Safety assessment including home and community safety, including abuse and neglect • Home environmental assessment including physical setup for patient (also lighting, water, electricity, refrigeration, etc.). • Treatment preferences, including advance directives/POLST • Medical and psychiatric history, medical complexity
	Care Coordination	Coordinate handoffs between care settings and providers Communicate patient treatment goals and preferences across settings Identify and use appropriate community resources Ensure that all team members have access to key patient information and to the role each team member plays in the patient's care Ensure that the team is notified of sentinel events updated in a timely manner on patient changes and sentinel events. Coordinate with family and informal caregivers
	Patient and Caregiver Education (new)	Use knowledge of patient's and caregiver's goals and learning needs to inform education plan Promote patient and caregiver understanding of all aspects of the care plan Mutually determine an emergency contingency plan for care Support patient and caregiver self-management
Provider competency	Provider Competency (new)	Know how to make diagnoses and manage medical problems in the home (e.g. high quality medical skills) Engage in effective interpersonal communication and basic knowledge of social issues/supports Integrate quality improvement processes into the practice Demonstrate hospice and palliative care competency Use and order appropriate durable medical equipment (DME)
Patient, caregiver, outcomes	Safety (new)	Perform and document medication reconciliation Medicine management – measure adverse drug events Address general home safety, including falls prevention, equipment safety, gun safety and other potential home-related injuries Address abuse and neglect Ensure a safe place or safe situation (e.g. emergency preparedness and appropriate transport) Promote staff safety and safety of the staff to the patient
	Quality of Life	Optimize comfort and safety of home environment Manage symptoms Reduce treatment burden Employ preventive services to optimize function Attend to relationships / social support / spirituality Assess loneliness/social isolation
	Goal Attainment (shared decision-making and avoiding inappropriate care)	Align patient and caregiver goals with care plan Facilitate communication about and achievement of realistic goals for care Respect patient autonomy and choice
	Access	Provide timely initiation of care Provide 24/7 urgent access to care Ensure and coordinate access to specialty care and home-directed ancillary services Involve medicine, social work, nursing, physical therapy and other relevant disciplines at minimum in provision of patient care Establish appropriate time intervals for visits for stable patients

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Categories Domain Standards Provide access to non-urgent housecalls visits or questions in a timely Conduct marketing and outreach Ensure adequate access to care Employ telemedicine and telemonitoring Conduct timely diagnostic evaluation including appropriate use technology Patient and Caregiver Facilitate trust between the patient, caregiver and the team Experience Manage patient and caregiver stressors; offer support Solicit patient/caregiver perception of provider/practice competence Minimize wait time for non-urgent visits and questions Track disenrollment rates Solicit patient/caregiver experience/satisfaction and patient/caregiver reported outcomes Cost/Affordable Care Match enrollment to patient selection criteria Measure healthcare utilization and cost Attend to patient and caregiver financial concerns related to healthcare

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 Table 3.

 Exemplars of Three Home-based Medical Care Domains

Domains	Exemplar Quotes	
Assessment	"I think that the gap in understanding isif you only approach these patients with a purely biomedical approach, you miss a lot. And of course that's true for everyone, but this patient population is especially sensitive in that area. But, likewise, you can't only approach it strictly from a functional standpoint either, so having the proper alignment of both understanding function and understanding the physiologic and pathologic processes that are going on is very important."	
Care Coordination	"it's like the whole village takes care of this individual, and who coordinates everyone in the village? Because you don't need everyone at the same time; you need them at different times. But do you have the right people at the right time doing the right task?"	
Patient/caregiver education	"What our team works a lot on is how do you get caregivers up to speed, give them the moral support, the training for the care, the legal and financial counseling to get the services they need."	
Competency	"I'm struck by providers making excuses that they won't do medically appropriatelaboratory testing, diagnostic testing, and other kinds of things that will assist in taking care of those multiple comorbidities that come into the home. And those practices making an excuse that being a black bag doctor is enough. It's not enough. We need to start talking about how we integrate care back into the home. Whether it's the absolute 'Hospital at Home' model or whether its, you know, bringing other kinds ofallied health, community support into the home, or simply bringing low-level diagnostic or ancillary testing to the home so we don't inconvenience that patient to go into institutional settings to get their care—or worse—having a provider make an excuse that they aren't providing appropriate medical care to that patient."	
Safety (new)	"Fall prevention, bathroom safety, rail, shower chair, etc. Dementia safetyleaving the stove on, safety leaving the home. Perhaps there are stairs; maybe we need to get a ramp in. The ability to protect themselves if they live alone. And fire safety—are they able to get up and get out of the home in the event of a fire."	
Quality of life (including function)	"Quality of life issues. That's a really big bucket, and I would lump things like pain management, symptom management, spirituality, all these other things go under that. That's a really big thing."	
Goal attainment & person- centered care (including shared decision-making and avoiding inappropriate care)	"I'm thinking that these are the goals that we have set collaboratively with the patient. They may be about reducing hospitalizations; they may be about specific care management things like less frequent exacerbation of COPD or CHF. But they may also be more specific things that the patient wants in the life that has to do with functioning. I'm having a hard time picking out goal attainment from function and quality of life. It seems like those all really fit together. If you're working on the goal collaboratively with the patient, and you've come up with a set of goals that they helped to define, probably they're going to have to do with functioning and quality of life." "It's asking the person and the family when appropriate, 'what are your goals for care?' It could be short term and long term, and then listen to what they say and try to act on that. And the goals may not be medically related."	
Access to Care	"Access is there is a huge pressure in the seniors because of this managed care movement. We see it very acutely here on the West Coast. Patients don't have access to care anymore. Elderly patients have even less access. The sicker you are, the less your access is. And if you have chronic wasting disease, or a difficult-to-handle disease—like you poop in your pants, you're demented and can't understand—your access is very real but in subtle ways is limited even further in the managed care environment. I think that's a huge issue. Fear of costs, fear of life in institutions, fear of MRSA"	
Patient/caregiver experience	"Patient/caregiver experience is extremely important and shouldn't be underrated when we're looking at how we're doing. What do they feel like? Would they recommend the service to others? Do they feel good about the service they're getting? So, yeah, patient/caregiver experience is sometimes the overarching thing. I mean you can ask more specific questions, but it kind of all boils down to that when they're saying so. Overall, is your experience is having a house call physician or nurse practitioner come into your home, has it improved your quality of life?"	
Cost	"House call medicine is highly cost effective because of the fact that you're basically doing a lot you're delivering outpatient services to a patient who, at any point in time, could be at high risk for obtaining those services either through the ER or through an inpatient arena."	