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MULTIDIMENSIONAL PREVENTATIVE HOME VISIT PROGRAMS: HELPING PATIENTS TO LIVE BETTER LIVES IN PLACE

Abstract

Home visits and medical house calls have a role in health care delivery. Multidimensional Preventative Home Visit Programs are also an important component of a health care system. These consist of in-home comprehensive geriatric assessments of community-dwelling elders by a multidisciplinary team with specific training in geriatric medicine. Such programs reduce mortality in younger geriatric patients, and improve functional status outcomes and reduce nursing home admissions in all geriatric patients. These programs target patients who are still living independently in the community, and require ongoing follow-up and collaboration with other areas in the broad network of geriatric care.

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Key Points

1. Multidimensional Preventative Home Visit Programs (MPHVP), also known as Geriatric Outreach, consist of in-home comprehensive geriatric assessments of and initiation of diagnostics and intervention for community-dwelling older adults by members of a multidisciplinary team with specific training in the care of older adults.
2. Such programs have been shown to reduce mortality in younger geriatric patients; they improve functional status outcomes and reduce nursing home admissions in all geriatric patients.
3. These programs target patients who are still living independently in the community, but are at risk of functional decline.
4. MPHVPs should be a well-functioning team with a variety of backgrounds in health care that are integrated within the continuum of geriatric care.

Background

Multidimensional Preventative Home Visit Programs (MPHVPs) is a term proposed by Huss et al. in 2008¹ to describe the provision of comprehensive home-based assessments of and initiation of diagnostics and intervention for community-dwelling older individuals. Since the 1990s there have been many different terms used to describe home-based assessments in the geriatric population including "home assessment services,"² "community based complex interventions,"³ "geriatric outreach teams," "geriatric program assessment teams," "home visiting programs"⁴ and "preventative home visits"⁵⁻⁷. This variation in terminology reflects variation in the content of interventions and target populations, which has resulted in heterogeneous outcomes of publications examining benefit¹⁻⁵. However, the general structure of MPHVPs involves a multidisciplinary team of providers that are specially trained in the complexity of geriatric care (usually originating from backgrounds in occupational therapy, physiotherapy, social work and nursing) with involvement of a physician specializing in geriatric medicine.

The overarching goal is to improve functional status, reduce morbidity, address caregiver burden, facilitate resource provision to maximize an older adult's ability to "age in place," prevent avoidable emergency department use, prevent avoidable hospitalizations and prevent or delay long-term care placement. Target issues can include primary prevention (i.e., removing loose throw rugs to prevent falls), secondary prevention (i.e., hearing and visual aids to improve communication) and/or tertiary prevention (i.e., medication reviews to prevent iatrogenic harms and/or medication errors) depending on patient-specific concerns⁷. For this article, we do not consider home visits from primary care physicians or home care services. While these are important for the care of older adults, they are outside the scope of this review.

What is the Rationale for MPHVPs?

Frail older patients have complex interacting health factors in addition to other issues such as challenging social situations, cognitive decline and functional impairment. The traditional "systems" approach used in medicine often needs to be broadened to accept these additional domains of concern. Furthermore, patients' views of "successful aging" reach far beyond the biological and include social, functional and psychological constructs reflecting the biopsychosocial perspective of health^{8,9}. This has led to the concept of the "comprehensive geriatric assessment" (CGA), which not only addresses a patient's physical state, but also their social and physical environment and the impact that these have on disease and quality of life^{2,10}. *The CGA includes more than an assessment – it includes diagnosis, treatment, management and care.* CGAs have been found to be more effective than other interventions as is demonstrated by examining the Number Needed to Treat (NNT) in Table 1 at canadiangeriatrics.ca/wp-content/uploads/2017/07/LEADING-BEST-PRACTICES-EMERGING.pdf. However, CGAs demand a great deal of clinician time and require a complex multidimensional approach¹⁰ – two attributes that make the CGA difficult to complete in a typical fee-for-service setting by an isolated generalist provider. Thus it is the combination of the multidisciplinary home-based CGA with a team specialized in person-centred geriatric care planning that distinguishes MPHVP services

from other services that a patient might receive in their home, such as home visits from their primary care provider or home care services. Furthermore, because older adults have often accumulated multiple medications from decades of medical care, the process of a thorough medication review is integral to a successful MPHVP assessment.

What is the evidence for MPHVPs?

There have been multiple publications over several decades and across multiple countries examining the benefits of such interventions. Despite issues with heterogeneity, meta-analyses (jamanetwork.com/journals/jama/article-abstract/194675?redirect=true) ([www.thelancet.com/journals/lancet/article/PIIS0140-6736\(08\)60342-6/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(08)60342-6/fulltext)) (www.ncbi.nlm.nih.gov/pmc/articles/PMC1118404/) have generally shown consistent positive benefits:

1. Geriatric patients followed by MPHVPs have decreased mortality rates in patients aged 65-80 years old^{1,2,4,7}.
2. Multidimensional geriatric assessments that include a clinical exam prevent or significantly delay the rate of functional decline in the elderly^{1,7,11}.
3. Nursing home admission rates can be reduced in patients with extended follow-up by MPHVPs^{3,4,7,11}, and patients may experience decreased hospitalizations and decreased ER visits for social reasons within the first year of contact¹¹.

Cost-saving analyses of MPHVPs are promising due to the functional improvements and decreased rates of long-term care admissions associated with these interventions. In a meta-analysis in 2002 Stuck et al. (jamanetwork.com/journals/jama/article-abstract/194675?redirect=true) calculated that despite an estimated initial cost of \$433 per person⁷, the estimated net savings per patient benefiting from MPHVPs was \$1,403 annually starting in the third year after contact. This cost and savings were based solely on the intervention of preventative home visits with a minimum of five follow-up visits, and the savings was calculated directly from the subsequent decrease in nursing home admissions, using the lifetime cost for a patient in long-term care of \$65,000. This savings was independent of any additional benefits a patient might experience through subsequent contact with other geriatric services, such as a geriatric day hospital.

Heterogeneity amongst the outcomes of meta-analyses looking at the benefits of MPHVPs relates to the lack of standardization in the format of MPHVPs with regards to services, follow-up and target populations.

Common successful features of MPHVPs include a multidisciplinary team^{1,3,4,6,7,11}, clinical examination as part of the CGA¹, control over implementation of the recommendations of the assessment^{2,11} and extended ambulatory follow-up by the MPHVP team itself^{1,3,4,7,11}. For example, Stuck et al. found that a minimum of five follow-up home visits was required to decrease admission rates to long-term care (OR 0.9 (95%CI 0.75-1.05))⁷ with even greater effects if over nine follow-up visits occurred (OR 0.66 (95%CI 0.48-0.92)). Similarly, Huss et al. found significant differences in functional improvement when patients received three or more visits per year (OR 0.81 (95%CI 0.63-1.03)) versus two or less per year (0.98 (95%CI 0.84-1.15))¹, although significant differences between nursing home admission rates and mortality were not reported. Unfortunately, due to resource limitations and delayed referral initiation, many existing MPHVP services are only able to see patients 1-2 times and/or in the setting of acute crisis rather than as a routine preventative function. This should be addressed to emphasize MPHVPs' preventative focus and resources improved to facilitate a minimum of three follow-up visits per year. It has not been directly examined if such follow-ups could be provided through alternative geriatric services, such as an associated geriatric day hospital, although this may be a promising alternative.

Who are the best candidates?

There are two populations that have shown to be the ideal candidates for participation in the MPHVPs. The first group includes patients between 65 and 80 years of age, with early disease processes and lower overall mortality risk, as these populations have improved mortality outcomes with MPHVP intervention^{2,6,7}. The second group includes geriatric patients of any age, with frailty and high levels of dependence who (in addition to the first group) have shown decreased rates of functional decline^{1,3,11}, decreased rates of admission to long-term care facilities^{3,4,11}, decreased rates of hospitalization³ and decreased number of ER visits and hospitalizations for social reasons^{3,11}. Other populations are less well studied: patients requiring acute follow-up after hospital discharge, patients awaiting placement in long-term care, patients admitted to hospital, patients presenting acutely to the emergency department or patients enrolled with palliative care services. It also does not include patients already living in long-term care facilities or other institutions.

What are the design characteristics of MPHVPs?

Setting: The office of the team members of MPHVPs are ideally located close to other geriatric services, with patient encounters occurring within the patients' community-based home.

Structure of Care: Typically, MPHVP assessments are completed in a patient's residence with one or two team members from the MPHVP, the patient and the patient's family or support person present for collateral history when indicated.

Process of Care: Referrals to the MPHVP may be completed by primary care providers, home care services, emergency room physicians, inpatient hospital discharge teams and patients' friends or family members. Patients are assessed in their residence by a multidisciplinary team member (occupational therapy, physiotherapy, social work or nursing) who completes a comprehensive geriatric assessment including clinical exam, cognitive status, mood, functional status, medication review, nutritional status, social network and support systems and home environment. From this assessment areas of concern are noted and a person-centred issue-based care plan developed. This plan is then reviewed with other members of the MPHVP including a geriatrician and a report with formal recommendations is relayed to the patient's primary care provider and other relevant services. Follow-up visits, referral to a geriatric day hospital or geriatric clinic, admission to a geriatric inpatient unit or home care service referrals may also be facilitated by the team. This process is not a replacement for capable and accessible primary care, but rather supplements, supports and strengthens primary care for complex and vulnerable seniors.

Characteristics of successful MPHVPs

A successful MPHVP needs to function as one essential "cog in the wheel" of a geriatric care network, with open lines of communication with home care services, primary care providers and other members of the patient's care team. Programs should also be integrated within a broader network to allow patients to be admitted from the community to a geriatric inpatient unit (see canadiangeriatrics.ca/wp-content/uploads/2016/11/Geriatric-Assessment-Units-GAUs-Optimizing-Evidence-Based.pdf) if need arises or referred to geriatric outpatient services (see canadiangeriatrics.ca/wp-content/uploads/2017/02/The-Geriatric-Day-Hospital.pdf) for further assessment, diagnosis, treatment and rehabilitation. Programs should have a solid administrative foundation to provide support both to the MPHVP team and those in the general community. Ideally MPHVPs should also be designed to allow for regular follow-up with patients and have control over implementation of their recommendations, as a supplement to care provided by their primary care provider. This may be achieved either directly by the MPHVP team itself, or perhaps through referral of patients to associated geriatric day hospitals. Target populations should include both extremes of age and function, including both younger geriatric patients for preventative approaches targeting mortality benefit, as well as older, frail patients to decrease rates of functional decline, avoidable emergency department use, avoidable hospitalizations and avoidable or delayable long-term care admissions.

Summary – the role of MPHVPs in modern geriatrics

Multidimensional Preventative Home Visit Programs are specialized outpatient multidisciplinary teams whose mandate is to assess geriatric patients in their own homes and develop and implement an individual care plan with recommendations encompassing the biopsychosocial factors of health. Their mandate is to improve mortality rates, decrease functional decline and lower admission rates to acute care hospitals and long-term care facilities – evidence has supported that MPHVPs achieve these outcomes through multiple publications. While not yet directly assessed, findings to date are promising that with small early financial investment in these programs, the long-term cost savings to the health care system could be substantial.

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