

2018

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### Recommended Citation

Tupper, S. R. (2018). Home-based Primary Care: Impact on Cost and Patient Satisfaction [Master's alternative plan paper, Minnesota State University, Mankato]. Cornerstone: A Collection of Scholarly and Creative Works for Minnesota State University, Mankato. <https://cornerstone.lib.mnsu.edu/etds/759/>

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Running head: HOME-BASED PRIMARY CARE

Home-based Primary Care: Impact on Cost and Patient Satisfaction

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### Abstract

The aging American population means more people will need healthcare than ever before. Many of these people are or will be Medicare beneficiaries who are predicted to be completely or mostly homebound at some point in time. This literature review was conducted to investigate Home-based Primary Care (HBPC) and whether or not this care delivery model has impacts on cost and patient satisfaction when compared to traditional outpatient encounters. A comprehensive and robust search of the literature was conducted using four different healthcare literature databases. Relevant articles were included if the site of care was ambulatory or office-based and if the study population included hospice, palliative care, chronically ill adults, or primary care patients. Studies that examined transitional care, inpatient, or long-term care were excluded. Studies that reported on home visits by a registered nurse, physical therapist, occupational therapist, respiratory therapist, speech language pathologist, or pharmacist were also excluded, and nurse practitioner or physician home visits were included. Other exclusion parameters included pediatric patients, specialty office visits, and registered nurse only office visits. Key themes that surfaced in the literature were cost savings in addition to patient and caregiver satisfaction with HBPC. This body of evidence suggests HBPC visits by advanced practice nurses or physicians is associated with substantially improved outcomes, lower costs, and higher patient and caregiver satisfaction when compared to standard clinic visits. Given the growing number of older adults with chronic conditions who are or may become homebound, combined with the efficacy of HBPC, it seems prudent that interdisciplinary care teams innovatively deliver quality primary care in the home.

*Keywords:* homebound patients, nurse practitioner, physician, home visits, cost savings, patient satisfaction, office visit, primary care, chronically ill, inpatient, cost.

### Home-based Primary Care: Impact on Cost and Patient Satisfaction

According to the National Committee to Preserve Social Security and Medicare (NCPSSM, 2017), there were approximately 55.3 million Medicare beneficiaries in 2015; at least 5.6% (3 million) of these older adults are estimated to be completely or mostly homebound, meaning they are never or rarely able to leave their homes due to physical or mental impairments, in some cases, both (Ornstein et al., 2015). Many of these seniors have chronic healthcare conditions that result in high costs due to frequent emergency department visits and hospital stays if not managed consistently. The purpose of this literature review was to examine the evidence pertaining to Home-based Primary Care (HBPC) as a care delivery model and its potential impact on cost and patient satisfaction when compared to traditional outpatient encounters.

### **Background**

In March, 2010, the Federal Government enacted the Patient Protection and Affordable Care Act (PPACA) which contained Section 3024 in an effort to “test whether home-based care [could] reduce the need for hospitalization, improve patient and caregiver satisfaction, and lead to better health and lower costs to Medicare” (Centers for Medicare & Medicaid Services [CMS], 2017a, para. 4). After the 2<sup>nd</sup> year of the Independence at Home Demonstration project, Medicare had saved more than \$7.8 million, and 30-day hospital readmission rates decreased along with inpatient and emergency department use by Medicare beneficiaries (CMS, 2017b). The program was extended for two more years and concluded in September of 2017. The fate of the program remains in limbo at this time. The value and benefits of HBPC are recognized by the Veteran’s Administration (VA), and the service is part of the Veterans Health Administration

Standard Medical Benefits Package if veteran's meet program criteria (U.S. Department of Veterans Affairs, 2016). The demonstrated success and coinciding reluctance to continue to proliferate such a program leads to the clinical question, *in homebound patients, how do home visits by an advanced practice nurse or physician compared to standard visits (inpatient or outpatient clinic) affect cost and patient satisfaction?* This literature review examines the impact on cost and patient satisfaction when primary care is delivered in the home setting. This review is significant to advanced nursing practice as we all strive to be responsible stewards of resources with the common goal to deliver high quality care that is satisfying to patients and their caregivers.

### **Methods**

Methods for searching the literature to answer the clinical question were comprehensive and exhaustive, including targeted search strategies and a meticulous data abstraction process. A number of databases were assessed for fit for the topic and the Cumulative Index for Nursing and Allied Health Literature (CINAHL) with full text, Medline, Health Source: Nursing/Academic Edition, and EBSCO Megafire were chosen for electronic searches (see Table 1 of the Appendix for general subjects contained in each database). Once databases were identified, key words for the search were chosen, and various restrictions were placed on the search criteria depending on the database. To ensure consistency and diligence, the same key words were used across all database searches, and included: homebound patients, nurse practitioner, physician, home visits, cost savings, patient satisfaction, office visit, primary care, chronically ill, inpatient, cost, home visits. Varying combinations of keywords were used depending on the number of articles that were being returned and relevance of the articles to the clinical question. Refer to Table 2 in the

Appendix for a complete listing of key words, the combinations used, and the number of articles returned (“hits”) in each database search.

For searches in CINAHL with full text, restrictions for the searches included full text articles, references available, English language, peer reviewed, research article, abstract available, and academic journals for the time period of January 2012 through December 2017. Medline searches were limited to peer reviewed and humans any time after January 1, 2012; HealthSource: Nursing/Academic Edition was restricted to full text and scholarly (peer reviewed) journals for the time period January 2012 through December 2017; and lastly, EBSCO host was constrained to full text, references available, and scholarly (peer reviewed) journals for the time period of January 2012 through December 2017.

The inclusion and exclusion criteria identified broadly before the search was further narrowed as articles most relevant to the clinical question began to surface. When articles were especially relevant, the search was denoted with an asterisk and bolded for further examination at a later time. Broadly, studies were included if the site of care was ambulatory or office-based; therefore, studies that examined transitional care, inpatient, or long-term care were excluded. Studies that reported on home visits by a registered nurse, physical therapist, occupational therapist, respiratory therapist, speech language pathologist, or pharmacist were also excluded and nurse practitioner or physician home visits were included. Other exclusion parameters included pediatric patients, specialty office visits, and registered nurse only office visits (e.g., blood pressure checks, immunizations, etc.). Sample populations included were hospice, palliative care, chronically ill adults, and primary care patients. Other concepts identified as inclusion criteria were patient satisfaction and cost savings. Thirty-one individual hits were identified as warranting further review (denoted with an asterisk in Table 1 of the Appendix), but

only 14 of these articles were unduplicated. Full text of all unique articles were reviewed in their entirety (see Table 3 in the Appendix for detailed rationale for inclusion or exclusion for each article), compared against the broad inclusion and exclusion criteria, and then included or excluded based on relevance to the clinical question. Interestingly, Medline yielded the most reviewable articles (16), CINAHL and HealthSource: Nursing Academic Edition each produced a handful of articles (eight and five, respectively), and EBSCO Megafire returned the least articles (two) that met full review criteria.

Assessing type and strength of evidence is important for clinical decision-making and in identifying the best evidence available to answer a clinical question. Melnyk and Fineout-Overholt (2015) offer one hierarchy of evidence that can be used for rating evidence-based literature. The system utilizes seven levels with Level I indicating the highest level of evidence and Level VII being the lowest level of evidence. For the literature review at hand, there were 10 studies that met full inclusion criteria. Of these 10 studies, there was one Level I study (systematic review or meta-analysis of all relevant randomized controlled trails), one Level IV study (well-designed case-control and cohort studies), seven level VI studies (single descriptive or qualitative studies), and one level VII study (opinion of authorities and/or reports of expert committees). Publication dates for the research articles ranged from 2013 to 2017. Care settings studied in the articles were primary care offices, patient homes, and an academic home-based primary care program. Study subjects included males, females, patients, and caregivers.

### **Literature Review**

The review of the literature revealed two major themes and two sub-themes. The major themes were cost and patient satisfaction. Patient satisfaction was further divided into the two sub-themes of quality of care and level of patient function.

**Cost**

Six of the 10 included articles addressed cost or cost savings when examining HBPC. Several articles addressed utilization of specific services (such as number of hospitalizations, 30-day readmissions, emergency department [ED] encounters, and long-term care admissions) by patients who were recipients of home visits compared to standard care (office or inpatient visits). A 2015 pilot quality improvement project by Echeverry, Lamb, & Miller reported that when advanced practice nurses (APNs) provided home visits to congestive heart failure patients over a three month period, the number of hospitalizations decreased by 64%, 30-day readmissions decreased by 95%, and ED encounters decreased by 85%. An older study that expanded diagnoses beyond heart failure, found hospitalizations decreased by 23-84%, and ED visits were reduced by 15-48% (Stall, Nowaczynski, & Sinha, 2014). The broad ranges in these findings resulted in variation of reporting over the nine studies included in the systematic review. In addition, long-term care admissions decreased by 10-25%, total cost of care decreased by 24%, and 1-year cost savings exceeded \$1 million dollars. When medical doctors (MDs) and APNs provided care as a team, there was no difference in hospital admissions or 30-day readmissions compared to home visits by an MD alone (Melnick et al., 2016). Jones et al. (2017) stated that co-management (by an MD and APN) “has resulted in reductions in annual hospitalization and readmission rates at 18 months follow-up” (p. 213). Two studies reported another area of demonstrated cost savings to be labor costs when APNs teamed with an MD or saw patients independently (Melnick, Green, & Rich, 2016; Reckrey et al., 2015). “Teaming” was defined differently in each study. Melnick et al. (2016) reported that APNs coordinated and performed an initial intake visit, then met with a lead physician to develop a care plan. Of note, all of the teams started out to be led by a physician, but “over time, nurse practitioners with home care



experience assumed a much broader role and have become the norm..because they are more cost-effective than physicians [and have become] increasingly accepted by primary care physicians, who feel assured that their patients are being well cared for...and will return to them following discharge from the program” (p. 30). In the second study, Reckrey et al. (2015) reported that physicians saw the majority of patients in their homes while the APN was office based in order to take urgent calls and to review and address electronic medical record messages. Patients also appreciated cost savings in transportation when they were able to have primary care delivered at home, which could be considered not only a cost saving factor but also a patient satisfier (Shafir, et. al., 2016).

### **Patient and Caregiver Satisfaction**

Quality of care, functional level, quality of life, and symptom management were all variables that surfaced in the literature in relation to patient and caregiver satisfaction with home-based visits. Two of the 10 studies looked at who provided home-based care and found opposing results. The most recent study reported that when MDs and APNs co-managed home visit patients, patients received more prompt resolution of issues via phone (Jones et al., 2017). Whereas an older study found that there was no difference in patient satisfaction when home-based care was delivered with a team approach (MD and APN together) or MD alone (Reckrey, et al., 2015). HBPC is reported to be “a fundamentally necessary service...preferred over standard office-based care...promotes better patient care” (Smith-Carrier et al., 2017, p. 726-727). In a 2016 cross-sectional qualitative study, participants identified specific characteristics of high quality HBPC, which included: 24 hour access seven days per week; provider competency, interpersonal and technical skills, as well as expertise in caring for geriatric patients; care coordination; and evaluation of patient goals (Shafir et al., 2016). Overall, patients

and caregivers seemed satisfied with home-based care. Participants in one study rated satisfaction an average of four out of five with higher numbers being more satisfied (Stall, Nowaczynski, & Sinha, 2014), and another study simply stated, “HBPC must be expanded to meet growing demand” (Smith-Carrier et al., 2017, p. 729).

Functional level, quality of life, or symptom management were addressed in four of the 10 studies included in this literature review. A pilot quality improvement project ( $n=40$ ) examined all three of the variables and found that functional levels increased by 44%, quality of life improved by 54%, and symptoms decreased by 40% (Echeverry, Lamb, & Miller, 2015). Another, large systematic review ( $n=46,154$ ) found that HBPC patients overall (visited by integrated interprofessional teams) had higher quality of life scores when compared to patients receiving standard clinic or inpatient visits (Stall, Nowaczynski, & Sinha, 2014). Caregivers ( $n=55$ ) of homebound dementia patients were studied via mixed method and found to score higher (better) on both physical and mental health assessments; more specifically, “57% of caregivers who did not have access to a home-based provider were at risk for depression,” whereas only 29% of caregivers who had access to a home-based provider were at risk for depression (Fowler & Miyong, 2015). HBPC was again reported to improve patient satisfaction and lead to feelings of better quality of life in a qualitative study of 26 home-based primary care patients (Smith-Carrier et al., 2017).

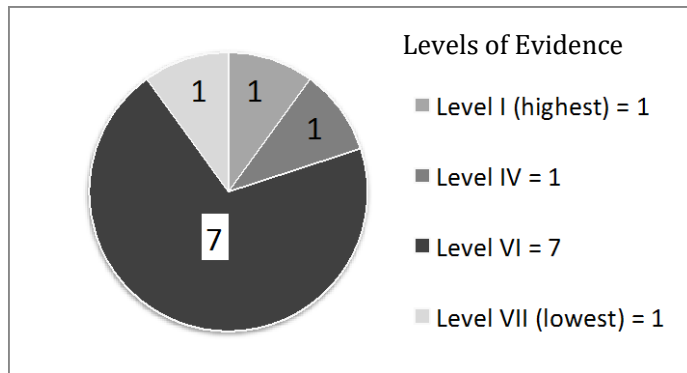
### **Discussion**

Based on this body of research, in homebound patients, home visits by an advanced practice nurse (APN) or physician compared to standard visits (inpatient or outpatient clinic) demonstrate marked cost savings as well as high patient satisfaction. High caregiver satisfaction with HBPC visits are also a significant finding in the literature. The impact of

HBPC on cost was a direct result of decreased hospitalizations, decreased 30-day readmissions, decreased visits to the ED, and reductions in long-term care admissions in HBPC patients. Total cost of care was decreased when compared to traditional clinic visits, and cost per month for HBPC patients also demonstrated a significant decrease. In regard to patient satisfaction, HBPC was preferred over standard office-based care, with improved satisfaction and perceptions of better quality of life among HBPC patients. Overall satisfaction with care by patients and caregivers was high. Some challenges with HBPC were reported in the literature, including the impact on personal privacy, intrusion into personal space, and the need to trust strangers (Smith-Carrier et al., 2017); however, only one study reported such challenges, and in reality, we all face these challenges anytime we invite another person, not well-known to us into our homes. It would seem that the benefits of receiving consistent, convenient care that is free of access barriers likely outweigh these challenges.

### **Limitations**

The literature discovered for this study was timely, in that there were plenty of articles published in the past five years, however, the lack of evidentiary strength suggests that HBPC research and practice remains in its infancy. Figure 1 depicts the levels of evidence and how many articles were found to have highest levels of evidence (Level I) versus lower levels of evidence (Level VII). For the literature review at hand, the majority of the articles (seven) were Level VI (lower levels of evidence), with only one article at the highest level of evidence (Level I).



*Figure 1.* Levels of evidence. The figure represents the number of articles found in the literature review, where Level 1 is the highest level of evidence, and Level VII is the lowest level of evidence.

### **Gaps in Research**

One gap noted in the literature related to cost is the lack of extrapolation of dollar amounts related to utilization of various services. For example, it might be more compelling for readers to know the dollar savings tied to lower ED utilization and fewer hospital readmissions in HBPC patients.

### **Implications**

This study has implications for professional APN clinical practice, future education, public policy, and possible future research agendas. The literature is clear that having access to providers (APN or MD) who are able to provide home visits has a positive influence on physical and mental well-being of caregivers (Fowler & Miyong, 2015). Clinical practice models for HBPC have received some attention. As such, it seems clinical practice could benefit from a team approach, including interdisciplinary and co-management (APN and MD) models of care rather than solitary delivery of services by one discipline (Jones, Ornstein, Skovran, Soriano, & DeCherrie, 2017; Melnick, Green & Rich, 2016; Reckney et al., 2015; Stall et al., 2014). More study is needed on the care models most efficient and effective for delivering HBPC.

Education of future APNs and MDs should also be examined to be sure that curricula include interdisciplinary training to appreciate the skills and scope that respective educational preparation can contribute to HBPC. The literature is clear that having a fully integrated interprofessional care team leads to better patient outcomes, lower costs, and high patient satisfaction (Stall, Nowaczynski, & Sinha, 2014), however, current educational programs do not contain specific HBPC interprofessional team training for APNs or MDs.

Implications for further research study include investigating quality measures specific to HBPC (Shafir, Garrigues, Schenker, Leff, Neil, & Richie, 2016). Perhaps a place to start could be to review quality measures currently used for Patient-Centered Medical Homes, given the focus on interdisciplinary practice and care coordination for chronic condition management, as well as home care (nursing) quality measures. The Health Effectiveness Data Information Set (HEDIS) used by America's health plans to measure performance could also be expanded to include measures specific to HBPC, as health insurers often offer Medicare and Medicaid policies on behalf of the CMS. As noted at the beginning of this paper, Medicare (as well as Medicaid) beneficiaries could be some of the largest populations to benefit from HBPC services.

### **Conclusion**

This paper sought to answer the clinical question, *in homebound patients, how do home visits by an advanced practice nurse or physician compared to standard visits (inpatient or outpatient clinic) affect cost and patient satisfaction?* Through a robust and comprehensive search of the literature, the answer to this question is that HBPC visits by advanced practice nurses or physicians result in substantially better outcomes, lower costs, and higher patient and caregiver satisfaction when compared to standard visits. Given the number of older adults with chronic conditions who either already are or may become

homebound in the very near future, it seems prudent that interdisciplinary care teams work together to innovate and bring care to where the patients are instead of insisting on old models where the patient goes to the provider. We can expect that advanced practice nurses will play an increasing role in HBPC as population health needs become better aligned with financing mechanisms (Yao, Rose, LeBaron, Camacho, & Boling, 2017).

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## Appendix

Table 1

*Database Search Description*

<b>Database (or Search Engine)</b>	<b>Restrictions Added to Search</b>	<b>Dates Included in Database</b>	<b>General Subjects Covered by Database</b>
1. CINAHL Plus with full text	Full Text; References Available; English Language; Peer Reviewed; Research Article; Abstract Available; Academic Journals	January 2012 through December 2017	Nursing, biomedicine, alternative and complementary medicine.
2. Medline	Peer reviewed; Humans	After January 1, 2012	Medical topics, including research, clinical practice, administration, policy issues, and health care services.
3. Health Source: Nursing/Academic Edition	Full text; Scholarly (peer reviewed) Journals	January 2012 through December 2017	Many medical disciplines, particularly nursing and allied health; LEXI-PAL drug guide
4. EBSCO Megafire	Full text; References Available; Scholarly (peer reviewed) Journals	January 2012 through December 2017	Includes the following databases: Academic Search Premier, Business Source Premier, MasterFILE Premier, and Regional Business News.

Table 2

*Data Abstraction Process*

Date of Search	Key Words	Hits in CINAHL	Hits in Medline	Hits in EBSCO Megafile	Hits in Health Source: Nursing/Academic Edition
10.05.17	“homebound patients” AND “nurse practitioner*” OR “physician*”	20	<b>*2</b>	6,065	14,453
10.29.17	“homebound patients” AND “nurse practitioner*” OR “physician*” AND “home visits”	3	<b>*2</b>	11	57
	“homebound patients” AND “cost savings”	0	0	0	0
	“homebound patients” AND “patient satisfaction”	0	<b>*4</b>	<b>*2</b>	<b>*3</b>
	“homebound patients” AND “nurse practitioner*” OR “physician*” AND “home visits” AND “patient satisfaction”	1	<b>*2</b>	0	<b>*1</b>
	“homebound patients” AND “nurse practitioner*” OR “physician*” AND “office visit*”	7	<b>*2</b>	0	<b>*1</b>
11.12.17	“primary care” AND “patient satisfaction”	27	151	8	93
	“primary care” AND “chronically ill” AND “patient satisfaction”	0	0	0	0
	“primary care” AND “nurse practitioner*” AND “patient satisfaction”	8	29	0	7
	“primary care” AND “nurse practitioner*” OR “physician*” AND “patient satisfaction”	126	650	84	362
	“homebound patients” AND “nurse practitioner*” OR “physician*” AND “inpatient” AND “cost”	0	<b>*2</b>	23	0
	“homebound patients” AND “nurse practitioner*” OR “physician*” AND “cost savings”	0	<b>*2</b>	13	0
	“home visits” AND “nurse practitioner*” OR “physician*” AND “cost savings”	4	2	11	0
11.12.17	Review of previously printed articles from MNSU Library all database search	<b>*8</b>			

**\*BOLD** = articles reviewed for match with systematic review inclusion criteria

Table 3

*Characteristics of Literature Included and Excluded*

Reference	Included or Excluded and Document	Rationale
Bryant, R., & Gaspar, P. (2014). Implementation of a self-care of heart failure program among home-based clients. <i>Geriatric Nursing</i> , 35, 188-193.	Excluded	Article examined outcomes of hospital admissions and patient perceptions of self-management, did not examine patient satisfaction or cost outcomes.
DeJonge, E. & Taler, G. (2002). Is there a doctor in the house? <i>CARING Magazine</i> , 21(8), 26-29.	Excluded	“Grey literature”. States that home visits are more effective and less costly but doesn’t provide data to back up the statements. Article is also 15 years old.
Gellis, Z. D., Kenaley, B., McGinty, J., Bardelli, E., Davitt, J., & Ten Have, T. (2012). Outcomes of a telehealth intervention for homebound older adults with heart or chronic respiratory failure: A randomized controlled trial. <i>The Gerontologist</i> , 52(4), 541-552. <a href="http://dx.doi.org.ezproxy.mnsu.edu/10.1093/geront/gnr134">http://dx.doi.org.ezproxy.mnsu.edu/10.1093/geront/gnr134</a>	Excluded	Not looking at telehealth.
Tappenden, P., Campbell, F., Rawdin, A., Wong, R., & Kalita, N. (2017). The clinical effectiveness and cost-effectiveness of home-based, nurse-led health promotion for older people: A systematic review. <i>University of York Centre for Reviews and Dissemination</i> , 1-3.	Excluded	Only addresses health promotion interventions and does not include the interveners of interest (nurse practitioners or physicians).
Echeverry, L. M., Lamb, K. V., & Miller, J. (2015). Impact of APN home visits in reducing healthcare costs and improving function in homebound heart failure. <i>Home Healthcare Now</i> , 33(10), 532-537.	Included	Addresses reduced costs by having APN perform home visits.
Fowler, C., & Miyong, K. T. (2015). Home visits by care providers: Influences on health outcomes for caregivers of homebound older adults with dementia. <i>Geriatric Nursing</i> , 36(2015), 25-29.	Included	Although this article does not represent a study of patient satisfaction, it does report caregiver satisfaction, which one could argue could impact patient satisfaction.
Jones, M. G., Ornstein, K. A., Skovran, D. M., Soriano, T. A., & DeCherrie, L. V. (2017). Characterizing the high-risk homebound patients in need of nurse practitioner co-management. <i>Geriatric Nursing</i> , 38(3), 213-218. <a href="http://dx.doi.org.ezproxy.mnsu.edu/10.1016/j.gerinurse.2016.10.013">http://dx.doi.org.ezproxy.mnsu.edu/10.1016/j.gerinurse.2016.10.013</a>	Included	Provides background and rationale for why NPs should be involved in management of homebound patients.

Reference	Included or Excluded and Document	Rationale
Melnick, G. A., Green, L., & Rich, J. (2016). House calls: California program for homebound patients reduces monthly spending, delivers meaningful care. <i>Health Affairs</i> , 25(1), 28-35.	Included	Addresses savings gleaned through home visits.
Reckrey, J. M., Soriano, T. A., Hernandez, C. R., DeCherrie, L. V., Chavez, S., Zhang, M., & Ornstein, K. (2015). The team approach to home-based primary care: Restructuring care to meet individual, program, and system needs. <i>Journal of the American Geriatrics Society</i> , 63(2), 358-364. <a href="http://dx.doi.org.ezproxy.mnsu.edu/10.1111/jgs.13196">http://dx.doi.org.ezproxy.mnsu.edu/10.1111/jgs.13196</a>	Included	Discusses challenges of providing home-based care and makes recommendations on how best to serve the greatest number of patients.
Shafir, A., Garrigues, S. K., Schenker, Y., Leff, B., Neil, J., & Ritchie, C. (2016). Homebound patient and caregiver perceptions of quality of care in home-based primary care: A qualitative study. <i>Journal of the American Geriatrics Society</i> , 64(8), 1622-1627. <a href="http://dx.doi.org.ezproxy.mnsu.edu/10.1111/jgs.14244">http://dx.doi.org.ezproxy.mnsu.edu/10.1111/jgs.14244</a>	Included	Provides insight into patient and caregiver perceptions of home-based primary care (patient satisfaction).
Smith-Carrier, T., Sinha, S.K., Nowaczynski, M., Akhtar, S., Seddon, G., Pham, T. (2017). "It makes you feel more like a person than a patient": Patients' experiences receiving home-based primary care (HBPC) in Ontario, Canada. <i>Health &amp; Social Care in the Community</i> , 25(2), 723-733.	Included	Discussed reasons why patients are satisfied with home-based care.
Stall, N., Nowaczynski, M., & Sinha, S. K. (2014). Systematic review of outcomes from home-based primary care programs for homebound older adults. <i>Journal of the American Geriatrics Society</i> , 62(12), 2243-2251. <a href="http://dx.doi.org.ezproxy.mnsu.edu/10.1111/jgs.13088">http://dx.doi.org.ezproxy.mnsu.edu/10.1111/jgs.13088</a>	Included	Systematic review includes study of outcomes of cost and patient satisfaction, which are outcomes of interest to current study.
Wolff-Baker, D. I. (2013). Have you considered a house calls practice? <i>Geriatric Nursing</i> , 34, 80-83.	Included	Provides background rationale for nurse practitioner home visits and give state-of-the-art update up through year 2013.
Yao, N., Rose, K., LeBaron, V., Camacho, F., & Boling, P. (2017). Increasing role of nurse practitioners in house call programs. <i>Journal of the American Geriatrics Society</i> , 65(4), 847-852.	Included	Provides background on site of care (long-term care facilities vs. home) provided by NPs.

Table 4

*Literature Review Table of All Studies Included*

<b>Citation</b>	<b>Study Purpose</b>	<b>Sample Size (n) /Setting(s)</b>	<b>Design</b>	<b>Level of Evidence (Melnik &amp; Fineout-Overholt, 2015, p. 11)</b>	<b>Findings</b>	<b>Implications</b>	<b>Theme</b>
Echeverry, L.M., Lamb, K.V., & Miller, J. (2015). Impact of APN home visits in reducing healthcare costs and improving function in homebound heart failure. <i>Home Healthcare Now</i> , 33(10), 532-537.	To develop and test home visits provided by NPs to see if outcomes improve and costs decrease for homebound adults with heart failure.	40 (36 female, 4 male) homebound patients with Class III or IV heart failure who had not sought care in at least 1 year. Large, private, primary care internal medicine office.	Pilot quality improvement project.	Level VI	Number of hospitalizations decreased by 64% with home visits 30-day readmissions decreased by 95% ED visits decreased by 85% Physical functionality improved by 44% Symptom frequency improved by 40% Quality of life improved by 54%	Significant decrease in hospital resources, decreased cost, improved pt. health.	Cost  Patient Satisfaction (function, quality of life [QOL], symptoms)
Fowler, C., & Miyong, K.T. (2015). Home visits by care providers: Influences on health outcomes for caregivers of homebound older adults with dementia. <i>Geriatric Nursing</i> , 36(2015), 25-29.	To evaluate the effect of provider visits (MD, NP) on caregivers of homebound older adults.	55 caregivers to homebound adults with dementia. 34 caregivers who HAD a home provider visit in the past 12 months; 21 who had NOT had a home or office visit in past 12 months.	Mixed method Quantitative-comparative descriptive Qualitative – 5 open-ended questions	Level VI	Physical and mental health scores were higher for caregivers who were able to utilize a provider. 57% of caregivers who did not have access to provider were at risk for depression; 29% of caregivers who had access to provider were at risk for depression.	Need a comprehensive care support system for caregivers of homebound elders with dementia.  Having access to a provider able to provide home visits has a positive influence on physical and mental wellbeing of caregivers.	Patient Satisfaction (function, QOL, symptoms)

<p>Jones, M. G., Ornstein, K. A., Skovran, D. M., Soriano, T. A., &amp; DeCherrie, L. V. (2017). Characterizing the high-risk homebound patients in need of nurse practitioner co-management. <i>Geriatric Nursing, 38</i>(3), 213-218. <a href="http://dx.doi.org.ez.proxy.mnsu.edu/10.1016/j.gerinurse.2016.10.013">http://dx.doi.org.ez.proxy.mnsu.edu/10.1016/j.gerinurse.2016.10.013</a></p>	<p>To which types of homebound patients are best for MD/NP co-management . To discover reasons for referral from MDs to NP for co-management of homebound patients.</p>	<p>1114 patients ; 1027 non-comanagement ; 87 comanagement</p>	<p>Observational, mixed methods: survey, focus group, chart review.</p>	<p>Level VI</p>	<p>Co-management most beneficial for patients with active medical issues needing frequent provider contact; less beneficial for palliative care patients. Co-management reduced healthcare utilization Co-management provided more frequent visits (compared to MD alone) Co-management patients received more prompt addressing of issues via phone</p>	<p>Co-management model can be incorporated into other home-based primary care models as number elderly, homebound patients grow as a way to decrease unnecessary ED and hospital visits and associated costs.</p>	<p>Cost  Patient Satisfaction (quality of care)</p>
<p>Melnick, G.A., Green, L., &amp; Rich, J. (2016). House calls: California program for homebound patients reduces monthly spending, delivers meaningful care. <i>Health Affairs, 25</i>(1), 28-35.</p>	<p>To present data over time (5 years) of a well-established house calls program.</p>	<p>11,184 patients served between 2009-2013 in their homes by a house calls program.</p>	<p>Case Study</p>	<p>Level VI</p>	<p>Cost per patient month decreased from \$187-310 to \$147-185 over 5 years. Per month ED visits, hospital days per 1000 people peaked in the 3 months prior to enrollment in the home visit program. Increasing utilization of NPs to deliver home visit services to complex, fragile patients steadily increased over 5-year period which saved labor costs in the program.</p>	<p>A home visit program delivered by MDs and NPs has the potential to decrease costs of care delivery as well as to decrease number of ED visits, hospital admissions and hospital days.</p>	<p>Cost</p>

<p>Reckrey, J. M., Soriano, T. A., Hernandez, C. R., DeCherrie, L. V., Chavez, S., Zhang, M., &amp; Ornstein, K. (2015). The team approach to home-based primary care: Restructuring care to meet individual, program, and system needs. <i>Journal of the American Geriatrics Society, 63</i>(2), 358-364.  <a href="http://dx.doi.org.ezproxy.mnsu.edu/10.1111/jgs.13196">http://dx.doi.org.ezproxy.mnsu.edu/10.1111/jgs.13196</a></p>	<p>To see if a Team Approach to home-based primary care visits would improve clinical outcomes, remain cost-effective, be acceptable to patients and physicians.</p>	<p>Team approach: 347 patients; usual care: 1,074 patients. Setting was in patient home for both groups.</p>	<p>Case-control cohort study.</p>	<p>Level IV</p>	<p>No difference in hospital admissions or 30-day readmission rates between Team Approach and usual care patients. No statistically significant difference in patient satisfaction between the 2 groups. All Team Approach MDs felt they were adequately meeting their patients' needs with the Team Approach model; only 2/11 of the usual visit MDs felt they were able to adequately meet their patients' needs. No Team Approach MDs felt drained by their work, whereas 4/11 usual care MDs did feel drained. 2/3 Team Approach MDs vs. 3/11 usual care MDs felt their workload was manageable. Personnel cost per patient was 20% less for Team vs. usual care model.</p>	<p>Team approach was effective in meeting goals to serve more patients, improve response time for immediate phone care, improve job satisfaction and reduce burden for MDs.</p> <p>NP did not have her own panel of patients, as pts. would not have immediate access to care that she provides, or redistribution of MD administrative work taken on by the NP.</p>	<p>Cost Patient Satisfaction</p>
<p>Shafir, A., Garrigues, S. K., Schenker, Y., Leff, B., Neil, J., &amp; Ritchie, C. (2016). Homebound patient and caregiver perceptions of quality of care in home-based primary care: A qualitative study. <i>Journal of the American Geriatrics Society, 64</i>(8), 1622-1627.  <a href="http://dx.doi.org.ezproxy.mnsu.edu/10.1111/jgs.14244">http://dx.doi.org.ezproxy.mnsu.edu/10.1111/jgs.14244</a></p>	<p>To assess patient and caregiver perceptions of what constitutes quality care in home-based primary care.</p>	<p>13 homebound patients and 10 care givers (23 total) Academic home-based primary care program.</p>	<p>Cross-sectional qualitative (semi-structured interview).</p>	<p>Level VI</p>	<p>Major themes:  Access – 24/7 access is what patients and families want in HBPC. Emergent visits were only required 5% of the time.  Affordability – HBPC programs should accept Medicare and Medicaid as payment. Pts. appreciated savings in transportation costs with home visits.  Provider competency equals high quality care, includes interpersonal skills (patience and listening) and technical expertise in caring for geriatric patients.  Care coordination – arranging referrals and transport to different care settings and specialists.  Goal attainment – evaluating and addressing pt. goals means high quality care.</p>	<p>Themes from the study help to define what will make a successful practice in terms of satisfied patients and caregivers.</p> <p>Some of the themes identified in this study could inform quality measures specific to HBPC.</p>	<p>Cost Patient Satisfaction (quality of care)</p>



Smith-Carrier, T., Sinha, S.K., Nowaczynski, M., Akhtar, S., Seddon, G., Pham, T. (2017). "It makes you feel more like a person than a patient": Patients' experiences receiving home-based primary care (HBPC) in Ontario, Canada. <i>Health &amp; Social Care in the Community</i> , 25(2), 723-733.	Explore experiences of patients receiving home-based primary care services delivered by interprofessional teams; facilitators and barriers to this care model.	26 home-based primary care patients	Qualitative (content analysis of interviews)	Level VI	HBPC is a fundamentally necessary service. HBPC preferred over standard office-based care. HBPC promotes better patient care. Improved satisfaction and perceptions of better quality of life among HBPC patients Challenges: Personal privacy, intrusion into personal space, trusting strangers, improvements in health status uncertain, difficulties within disorganized home and healthcare systems. HBPC must be expanded to meet growing demand.	HBPC is a way to optimized patient-centered care.  Pts with complex care needs prefer and need HBPC.  HBPC may be the only source of social support for some patients.	Patient Satisfaction (function, quality of life [QOL], symptoms & quality of care)
Stall, N., Nowaczynski, M., & Sinha, S. K. (2014). Systematic review of outcomes from home-based primary care programs for homebound older adults. <i>Journal of the American Geriatrics Society</i> , 62(12), 2243-2251. <a href="http://dx.doi.org.ezproxy.mnsu.edu/10.1111/jgs.13088">http://dx.doi.org.ezproxy.mnsu.edu/10.1111/jgs.13088</a>	Evaluate the effect of comprehensive HBPC programs on several individual, caregiver, and system outcomes.	46,154 homebound community-dwelling older adults	Systematic review	Level I	Reduced ED encounters of 15-48%. 23-84% reductions in hospitalizations. 10-25% reductions in long-term care admissions. Total cost of care decreased by 24% 1-year cost savings >\$1M. Pt. satisfaction 4/5 with HBPC. Higher QoL scores in HBPC patients (compared to regular care).	Common program components contributing to success: fully integrated interprofessional care team, regular interprofessional care meetings, comprehensive geriatric assessments at intake, after-hours urgent telephone service.	Cost  Patient Satisfaction (function, quality of life [QOL], symptoms)

Wolff-Baker, D.I. (2013). Have you considered a house calls practice? <i>Geriatric Nursing</i> , 34, 80-83.	Showcase a model and individual delivering HBPC.	N/A	Descriptive case report	Level VII	Barrier to providing services – being able to sign for Medicare Certified Home Health services.	Healthcare reform opened new venues for reimbursement of HBPC.  Lots of opportunity in HBPC to provide services of care coordination and case management to fragile, complex patients who are homebound.	Implications
Yao, N., Rose, K., LeBaron, V., Camacho, F., & Boling, P. (2017). Increasing role of nurse practitioners in house call programs. <i>Journal of the American Geriatrics Society</i> , 65(4), 847-852.	Examine NPs as a residential workforce.	Medicare Provider Utilization and Payment Data	Observational (using secondary data)	Level VI	3300 NPs made >1.1M home and domiciliary care visits in 2013. NPs are now the most common provider type for HBPC visits. Full-time NPs' geographic service area is 30% larger than family physicians.	VA has HBPC sites at every one of their medical center hospitals.  Expect that NPs will play an increasing role in HBPC as population health needs become better aligned with financing mechanisms.  There should be exposure to HBPC during the education of NPs.	Implications

Melnik, B. M., & Fineout-Overholt, E. (2015). *Evidence-Based Practice in Nursing & Healthcare: A Guide to Best Practice* (3<sup>rd</sup> ed.). Philadelphia, PA: Wolters Kluwer.