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Effective Health Care Program

**Evidence-based Practice Center Systematic Review Protocol**
**Project Title: Home-Based Primary Care Interventions Systematic Review**

## I. Background and Objectives for the Systematic Review

The aging of the population[1,2] along with the increasing number of people with chronic illnesses[3] and multimorbidity[4] are changing health care. The motivation for many health care reform efforts is that chronically ill, frail, and disabled patients may not be best served by the current common model of care[5,6] based on the combination of hospital care, specialist consultations, and office-based primary care.

High quality primary care is comprehensive and serves as the entry into the health care system, provides person-focused (rather than disease-oriented) care over time, addresses all but very uncommon or unusual conditions, and coordinates or integrates care across different types of providers and settings. Primary care is at the center of many health services delivery reform efforts, such as patient-centered medical home models, precisely because primary care provides a usual source of care, encourages relationships with a provider, is more likely to include preventive services, may increase patient satisfaction, and can decrease the use of emergency departments for conditions that are not urgent.[7-9]

Home-based primary care (HBPC) interventions have roots in the house call and community health outreach of the past. Today HBPC is a model that combines home-based care for medical needs with intense management, care coordination, as well as long-term services and supports (LTSS) when needed. HBPC interventions have been proposed as an alternative way of organizing and delivering care that may better address the needs, values, and preferences of chronically ill, frail, and disabled patients who have difficulty accessing traditional office-based care primary care or newer models of care that also require office visits.

The specific reasons a patient needs HBPC and the potential advantages vary. Functional impairments may make transportation to doctors' offices or clinics challenging, or caregivers may not be available to accompany patients during normal office or clinic hours. In some situations going to an office may be contraindicated. For example, patients with cognitive deficits may become confused or agitated in unfamiliar surroundings. Patients with complex needs may require frequent monitoring, intense management, or rapid follow-up that cannot be easily accommodated by an office-based provider or that is difficult when a patient cannot come to an office. Patients at high risk may avoid complications from hospital care (e.g., certain infections, delirium) if hospitalizations can be prevented, averted, or shortened. Potential benefits of HBPC include: 1) increased access to care for people who have difficulty traveling to outpatient medical offices or for whom going to a medical office is contraindicated; 2) better understanding of patients' environments, needs, and constraints that can improve care and ultimately outcomes; 3) decreased hospitalizations and urgent care use when acute incidents are prevented or addressed in the home; 4) potential for prevention or slowing

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In order to clarify the scope and purpose, HBPC interventions for this review are defined as requiring the four characteristics outlined in Table 1. These defining characteristics underscore how HBPC interventions differ significantly from other innovative models such as Hospital at Home, Program of All-inclusive Care for the Elderly (PACE), and Patient-Centered Medical Homes, each of which contain some, but not all of these characteristics.

**Table 1. Defining Characteristics of Home-Based Primary Care Models for this Review**

| Required for this Review | Optional | Excluded |
|---|---|---|
| **1. Visits by a primary care provider**<br>Visits by a physician, nurse practitioner, or physician assistant. | **Additional visits**<br>Nurses, physical therapists, social workers, counselors, etc. | **Other models not included in this report**<br>Telephone call care only, no physician visits, nurse (or other provider) only care. |
| **2. Visits to a patient's home**<br>Home is defined as any non institutional setting where the patient resides. It can include adult homes or senior housing. | **Following patient across care setting**<br>In hospital management and short term post-acute rehabilitation. | **Patients in institutions**<br>Patients who live in nursing homes, prisons, or long-term care hospitals. |
| **3. Longitudinal management**<br>The intention is to provide care for an indefinite period; until admission to an institution, change in status, or death. | Not applicable | **Short-term**<br>One-time home visits or assessments; hospital at home models in which care is provided for an acute need and patient returns to previous primary care. |
| **4. Comprehensive primary care**<br>Includes medical care for and the management of chronic conditions and disabilities, preventive care, and environmental assessments. | **Inclusion of mental health services**<br>Assessment and management of serious mental illnesses including depression. | **Single condition care or single topic risk assessments**<br>Fall risk assessments, programs that target a single condition such as congestive heart failure. |

In addition to clarifying the definition of HBPC, challenges remain in conducting a systematic review about HBPC. The mechanism by which the HBPC interventions are expected to influence outcomes and what outcomes are appropriate is not always explicit in HBPC program designs or the evaluation of these programs. This is a difficult, but not unfamiliar, challenge in research on health service organizations and delivery. In order to address this challenge the review will attempt to document what is and is not reported about the intervention design and as well as the reported outcomes and draw on methods for researching and reviewing studies of complex interventions[24] to inform the presentation and synthesis of the review information.

One objective of this review is to determine what information the current research provides regarding the ability of these programs to optimize patient and caregiver goals while providing care that is more efficient. The review may also be able to identify trends in what services are included in HBPC and the relative contribution of some individual services or combinations. What evidence the review is and is not able to locate, what

questions this evidence can answer, and what questions remain unanswered can serve as the basis for future work in the development and evaluation of HBPC programs.

## II. The Key Questions

A document containing the draft Key Questions (KQs) was developed during Topic Refinement and was available for public comment from August 15, 2014 to September 05, 2014. The comments did not lead to significant changes; however, they identified areas that required more explanation and reorganization in order to clarify our intentions for the systematic review.

In response to comments and our subsequent discussions we have: a) specified that visits may be made by other health care providers, but home visits by a primary care provider, who may be a physician, nurse practitioner or physician's assistant, are necessary for an intervention to be considered HBPC for this review; b) eliminated the confusing overlap of the intermediate outcomes with the health care and patient experience outcomes by incorporating what was previously labeled "intermediate outcomes" into three categories of outcomes for KQ1; c) expanded what is now KQ2b, "organizational characteristics" so that it includes characteristics that public comments suggested may be important; and d) deleting a sub question for KQ2 about HPBC intervention characteristics and incorporating this in to KQ3 in order to eliminate overlap.

**Key Question 1:** Among adults with chronic conditions that are serious or disabling, what are the effects (positive and negative) of home-based primary care interventions on:

a. Health outcomes

b. Patient and caregiver experience

c. Utilization of services

**Key Question 2:** How do the effects of home-based primary care interventions differ across:

a. Patient characteristics (including, but not limited to, reason for HBPC, type and number of diagnoses, level of physical and cognitive function, caregiver availability, and demographics)

b. Organizational characteristics (including, but not limited: ownership organizational structure, payment structure, leadership, and staffing patterns of the practice or health system providing HBPC)

**Key Question 3:** Which characteristics of home-based primary care interventions are associated with effectiveness? (including but not limited to, use of teams, composition of teams, use of technology, frequency of visits, and types of visits/services)

**PICOTS**

**Population(s):**

- Adults (> 18 years old) with chronic conditions, at least one of which is serious or disabling, or who have other major impediments that limit access to care.

  This may include:

  - Patients for whom going outside their home for care places a significant burden on the patient and/or caregiver or is contraindicated.
  - Patients for whom home-based care is deemed medically necessary.
  - Patients targeted for HBPC because of one serious condition (e.g., amyotrophic lateral sclerosis, spinal cord injury, chronic obstructive pulmonary disease, chronic serious mental illness) as long as the care is comprehensive (see intervention definition) and not limited to care only for that condition.
  - Patients who have a high level of health service needs or patients with high levels of utilization or high total costs.
  - Patients with chronic conditions who have social or psychological barriers to access to care (e.g., homelessness, mental illness).

- For KQ2a patient characteristics that will be consider include: reason for HBPC, type and number of diagnoses, level of physical and cognitive function, caregiver availability, and demographics.

**Interventions:**

For this review, home-based primary care interventions must include all four of the following:

- Visits by a primary care provider (e.g., physician, nurse practitioner, or physician assistant).
- Visits to the patient's home.
  - Home can be any location as long as it is not an institutional setting such as a nursing home or prison. Programs that serve people who are homeless can be included as can programs that serve people in alternative housing arrangements such as assisted living or adult care homes as long as they are not receiving nursing home level of services.
- Longitudinal management.
  - Care must be intended for an indefinite period until admission to an institution, change in status that makes HBPC no longer appropriate, or death.
- Comprehensive primary care.
  - Including medical care and management of chronic conditions and disabilities, as well as preventive care and assessment of the home environment through any means (e.g. multidisciplinary teams and/or

referrals), with the goal of minimizing negative outcomes (e.g., acute care, decline in function) and maximizing positive outcomes (quality of life, avoiding institutional care).

Variations in how these four required components are operationalized as well as the additional, optional services included are considered characteristics of the HBPC interventions and are the focus of KQ3. These may include the nature and intensity of the services (e.g., who is part of the team, frequency of home visits, hours of availability) or services that could be provided separately, such as fall assessments, caregiver training, and transitional care after a hospitalization but are integrated into the comprehensive, coordinated care as part of HBPC.

**Comparators:**

- KQ1 comparators are any other model of primary care delivery such as:
  - Standard office-based outpatient management
  - Office-based medical home models
  - All inclusive care models such as PACE
  - Geriatric outpatient clinic
  - Adult day health care
  - Home-based care models that include home visits done exclusively by people other than a primary care provider (e.g., all visits are by social workers, community health workers, nurses, etc.)

For KQ2 and KQ3 comparisons will be made across studies as well as examining any subgroup analyses within studies. Sources of information are not limited to head to head comparisons within individual studies.

- KQ2 requires comparisons across HBPC programs. For this Key Question the comparisons are across:
  - Patient characteristics (including, but not limited to, type and number of diagnoses, level of physical and cognitive function, caregiver availability, and demographics)
  - Organizational characteristics (including, but not limited to, ownership organizational structure, payment structure, leadership, and staffing patterns)
- KQ3 comparisons are across HBPC intervention characteristics (including, but not limited to, use of teams, composition of teams, use of technology, frequency of visits, and types of visits/services).

**Outcomes:**

There are three categories of outcomes considered when assessing the positive and negative effects of HBPC for KQ1 and KQ3. Harms include negative effects of HPBC in any of the outcome categories. Categories of outcomes with examples are listed below.

**For KQ1a, Health Outcomes:**

- Function
  - Physical, psychological, and cognitive
- Mortality
- Morbidities
  - Examples: falls, incontinence, pressure ulcers, depression, delirium, dementia with behavioral problems, pain
- Patient Safety
  - Errors in diagnosis or treatment, including medication errors
  - Harms or unintended consequences of any procedures or treatments provided in the home

**For KQ1b, Patient and Caregiver Experience**

- Quality of life
  - Time patient remains in home and/or location of death/death at home if that is patient preference
  - Patient and caregiver burden and/or anxiety
- Patient and caregiver knowledge and engagement in health care
- Facilitation of patient and caregiver access to other services not included in the HBPC. This could including medical supplies and equipment, medications, or other services not part of the HBPC intervention
- Relationships with care providers
  - Maintenance of relationship with prior primary care provider (if desired)
  - Patient and caregiver trust in HBPC providers

**For KQ1c, Utilization of Services:**

- Hospitalizations: rate and length of stay
- Urgent care use (emergency departments and urgent care centers)
- Nursing home admission
- Use of specialty care (either in home or other location)
- Hospice care
- Other long-term services and supports (adult day health, respite, personal care, homemaker, home health)
- Informal care

**For KQ3**: The outcomes are the same as for KQ1 (Health outcomes, patient and caregiver experience, and utilization of services).

**Timing:**

The intention must be to provide primary care for an extended period as specified above in Interventions.

**Settings:**

Primary care must be provided in patients' homes as specified above in Interventions. Important organizational characteristics that will be considered include:

- Ownership organizational structure
- Payment structure
- Leadership
- Staffing patterns