

The Evolution of the Southeast Louisiana Veterans Health Care System Hospital at Home Program

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When Hurricane Katrina hit New Orleans, the local health care infrastructure was immediately and severely compromised with the closure of most hospitals. But a program has provided an alternative model to traditional hospitals by delivering hospital-level care within the home setting.

On August 29, 2005, Hurricane Katrina made landfall on the Gulf Coast of the United States as a Category 3 hurricane. At least 80% of New Orleans flooded.¹ Up to 1,170 people in Louisiana died directly because of Hurricane Katrina with the largest percentage of deaths in persons aged > 75 years (47%).² The local health care infrastructure was immediately and severely compromised with closure of the only Level I trauma center in New Orleans, loss of large numbers of evacuated health care providers, disrupted communication systems, and closure of most hospitals in the New Orleans area including the Southeast Louisiana Veterans Health Care System (SLVHCS) inpatient facility. It would take more than 14 months before the first hospital in the downtown New Orleans area reopened, with many local hospitals

still closed to this day.

Yet, from this destruction arose a widespread spirit of renewal and resiliency—accompanied by a mantra of “we will rebuild, we will make it better”—with prospects of new visions and innovation. One product from this spirit of renewal was the SLVHCS Hospital at Home (H@H) program, an alternative model to traditional hospital care that was initially conceived to address the reduced hospital bed capacity in New Orleans by delivering hospital-level care within the home setting. This article presents the evolution of the SLVHCS H@H program

from its original concept to address the needs from Hurricane Katrina to its current broader services of care.

BACKGROUND

Alternative models to hospital care have developed over the years due to excessive hospital bed demand, growing technology, cost constraints, and recognition of risks associated with hospitalizations, particularly to the elderly. The H@H model is one example of this alternative approach to care. While the definition of the H@H model is controversial and may vary in its focus and delivery of care, the

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general concept of this model centers on providing active medical care, for a limited time in an alternative setting, to patients who would otherwise be in the hospital.³⁻⁵

In 2008 and 2009, the *Cochrane Database of Systematic Reviews* published a meta-analysis of 2 common categories of the H@H model: Early discharge and admission avoidance. The early discharge model discharges patients earlier than traditionally anticipated. With the admission avoidance or substitutive model, patients are admitted into the H@H program directly from the community or Emergency Department. In total, the *Cochrane Database of Systematic Reviews* evaluated 36 studies, including 26 early discharge models and 10 admission avoidance models. These studies had broad geographic reach extending to Australia, New Zealand, United Kingdom, Italy, Norway, Canada, Thailand, and Sweden. Although the trials were noted to be small and varied in structure and outcome measures, the H@H programs provided evidence for an increase in patient satisfaction.^{3,4} The admission avoidance model additionally demonstrated a significantly reduced risk of death at follow-up after 6 months.³

In the U.S., the H@H model has been studied extensively by Dr. Bruce Leff.⁶⁻¹⁰ In 2001, he conducted a prospective quasi-experiment multisite study, evaluating the clinical feasibility and efficacy of the substitutive H@H model, using validated illness-specific selection criteria for admission. All participants were aged > 65 years with common admission diagnoses of community-acquired pneumonia (CAP), chronic obstructive pulmonary disease (COPD), cellulitis, or congestive heart failure (CHF). This study demonstrated clinical processes and quality standards similar to those of inpatient care. Outcomes for H@H pa-



Figure 1. Southeast Louisiana Veterans Health Care System.

tients included shorter lengths of stay (3.2 vs 4.9 days), lower mean costs (\$5,081 vs \$7,480), and higher patient and caregiver satisfaction. Evidence supported a lower incidence of delirium, decreased use of sedatives, and decreased use of chemical restraints. Family members of H@H patients experienced lower rates of potentially stressful situations and lower self-reported stress when stressful situations did occur.⁷ H@H patients also demonstrated greater functional ability to complete Instrumental Activities of Daily Living compared with patients in the traditional hospital.⁹ Health care providers reported positive perceptions of the H@H model.¹⁰

The H@H model is different from other home-based services, including Medicare skilled home care and the U.S. Department of Veterans Affairs (VA) Home Based Primary Care (HBPC) program, because of its

acute-care focus as an alternative to hospital-level care. HBPC is a chronic disease management model that provides comprehensive, interdisciplinary-team based primary care in the home to veterans who typically have complex medical, social, and behavioral issues. Unlike H@H, HBPC could serve veterans for many years until their death. The core HBPC team is composed of physicians who serve as the primary care providers, registered nurses (RN), social workers, dietitians, pharmacists, and rehabilitation therapists. Other disciplines include chaplains, psychologists or psychiatrists, and nurse practitioners or physician assistants.¹¹

Fee-for-service payment structures are not consistent with the H@H concept. The H@H program requires upfront expenses for setup and could lead to a loss of reimbursement stream to the hospital from fewer traditional

hospitalizations. Integrated health care systems, such as Medicare Advantage plans and the VA Health Care system, have economic incentives more in line with the H@H concept.⁵ Accordingly, the H@H model has been implemented in the U.S. with the Presbyterian Healthcare Services in Albuquerque, New Mexico; and at the VA Medical Centers in Portland, Oregon; Honolulu, Hawaii; Boise, Idaho; Bend, Oregon; and more recently in Philadelphia, Pennsylvania. A Medicare demonstration waiver that would develop a payment mechanism for H@H is pending approval that could spur additional H@H development.⁵

SLVHCS H@H BACKGROUND

For SLVHCS, the opportunity was ripe for alternative solutions for inpatient care. During the 2 fiscal years immediately following Hurricane Katrina (October 1, 2005, through September 30, 2007), the number of veterans returning to the hardest hit parishes in southeastern Louisiana increased significantly. In Orleans Parish, where New Orleans is located, the numbers of veterans seeking care from the VA in fiscal years (FY) 2006, 2007, and 2008 were 3,726, 4,821, and 5,351, respectively, reflecting a 44% increase in veterans treated between FY2006 and FY2008. (See Figure 1 for a map of the area served by the SLVHCS.)

While SLVHCS quickly reestablished HBPC and ambulatory services, using tents and mobile units as initial sites of care during this beginning recovery period, inpatient services presented greater challenges due to the closure of the SLVHCS inpatient facility. During the first 2 years post-Katrina, veterans were faced without a single base for inpatient service. Veterans received inpatient care in community hospitals and VA facilities within the region of the VA Vet-

erans Integrated Service Network (VISN) 16, which covers Arkansas, Louisiana, Mississippi, Oklahoma, and parts of Alabama, Florida, Missouri, and Texas. During the first year post-Katrina, more than 2,000 hospitalizations of SLVHCS veterans were recorded among about 33 community hospitals in southeast Louisiana. Veterans in the New Orleans area predominated with more than 650 hospitalizations recorded in this same period.

Anecdotally, veterans expressed dissatisfaction with this inpatient structure, citing increased personal costs from insurance coverage gaps, as well as additional costs associated with time or travel to hospital facilities outside of the region. Additionally, the health care system was fragmented and inefficient due to incomplete retrieval of hospital records from community hospitals, leading to increased challenges for medication reconciliation. Without information on testing and diagnoses, redundant laboratory and diagnostic testing commonly occurred.

A timely *Wall Street Journal* article, published in April 2006, described the H@H program as studied by Dr. Bruce Leff and Dr. Scott Mader of the Portland VA Medical Center in Portland, Oregon, highlighting a potential area of service for veterans in SLVHCS.¹² Because of these influencing trends and the potential match of SLVHCS needs with the focus of the H@H model, SLVHCS then activated the H@H program on October 1, 2007. During the first year, it also served as a demonstration project for the Little Rock VA Medical Center Geriatric Research, Education, and Clinical Center (GRECC).

STRUCTURE

Key operational components of the SLVHCS H@H model include an ini-

tial physician evaluation; once-daily RN evaluations with close physician oversight; continuous telephone access to an RN and physician; home access to laboratory, respiratory, and intravenous (IV) interventions; as well as access to all of the SLVHCS HBPC disciplines, including rehabilitative, social work, pharmacy, mental health, and dietician services, if needed. The geographic boundary for the SLVHCS H@H program is 25 miles or 30 minutes driving time from the HBPC base. The SLVHCS H@H program is organized within the umbrella of HBPC, thereby providing a broader continuum of home-based services under this umbrella, now ranging from acute and subacute care from H@H to HBPC's usual chronic disease management.

Recognizing the inherent ability of home-based evaluations to gain better insight on environmental risks and to identify the true social dynamics among veterans, family, and caregivers, H@H staff also work closely with veterans and caregivers to determine a medical approach that fits the preferences and natural tendencies of the veteran, which can then generate a more effective treatment plan. Examples include using pill trays to organize medications for those without clear caregiver assistance, provision of home equipment that will minimize fall risks or assist in reaching difficult spots through a "hand-reacher," and changes in dietary choices based on locally available resources.

The SLVHCS H@H program is inherently veteran-centric. Eligible veterans voluntarily agree to admission to H@H. Veterans are also given an option to continue receiving home care post-H@H discharge through the traditional HBPC services, which provides an opportunity for a seamless transition from acute to chronic disease management due to the com-

plete overlap of staff in HBPC and H@H. All of the RN staff are cross-trained to serve either HBPC or H@H patients, allowing for greater efficiency of staff coverage on weekends and during times of greater demand.

INITIAL PHASE

The program began on October 1, 2007. During the first year, the program was initially met with some resistance. Providers were uncomfortable with what home care services could actually do for the acute needs

for high-risk veterans. These high-risk veterans typically have a history of multiple ED or hospital admissions. While in H@H, risk factors that may contribute to the pattern of frequent hospitalizations are identified and closely managed, such as severely uncontrolled, asymptomatic hypertension or diabetes. The impact of the dedicated H@H program coordinator and expanded services led to an increase and a more consistent pattern of admissions. In 2009, through support from the VA Office of Geriatrics

teremia. The category of admissions was broken down as follows: Early discharge (38%), LTAC (24%), substitutive (21%), and preventive (15%). Most referrals have come from the Tulane Medical Center (51%), where SLVHCS developed an innovative inpatient service in 2007 using dedicated VA staff and hospitalist teams to provide inpatient care for veterans within the hospital of this academic affiliate. This veteran-focused inpatient service provided the initial referral base to reduce inpatient stays. Other referrals have arisen from HBPC (23%), SLVHCS Urgent Care Center (11%), VA clinics (9%), community hospitals (2%), and other VA hospitals (1%). The average age of veterans admitted to the program was 69 years (range 38-94 years). With multiple chronic conditions, averaging an estimated 7 per veteran, 29% of veterans admitted to the SLVHCS H@H program died within 1 year from discharge, reflecting the level of advanced disease and frailty. Twenty-seven percent of the admissions required an unanticipated acute care service within 30 days postdischarge.

There are indications of cost benefits for this model. Within the VA, the Veterans Equitable Resource Allocation (VERA) system was established in 1997 to provide guidance on the allocation of congressionally appropriated health care funds to the 21 VISNs within the VA system. While earlier VA allocation systems were based on historical costs, the VERA system considers the complexities of providing health care to veterans with service-connected disabilities, low incomes, and special health care needs. For HBPC, revenue from VERA is based on utilization patterns of individual veterans with eligibility determined by provision of a minimum of 10 qualified days of care within the home setting during the fiscal year.¹³ About

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of the veterans. The program initially lacked a dedicated program coordinator, which turned out to be a significant concern in order to sustain marketing and educational efforts of the program to other services. As a demonstration project, the Little Rock VAMC GRECC facilitated monthly telephone meetings and sponsored a half-day, face-to-face meeting in 2008, attended by key stakeholders from SLVHCS, VISN 16, VA Central Office, the Portland VAMC, as well as Dr. Bruce Leff. From this meeting, a program coordinator was assigned to the SLVHCS H@H program and services expanded from an "early discharge" model to 4 areas of focus, based on SLVHCS veteran needs: Early discharge; substitutive; a modified long-term acute care service (LTAC), including long-term IV medications for osteomyelitis or intensive wound care; and a unique preventive service to minimize hospitalizations or emergency department (ED) evaluations

and Extended Care's Patient-Centered Alternative to Institutional Care initiative, SLVHCS received funding to expand the H@H services to 3 other sites, including Slidell, Hammond (rural site), and Baton Rouge (the second largest community-based outpatient clinic in SLVHCS), broadening the geographic service area for H@H (Figure 1).

SNAPSHOT

From its inception on October 1, 2007, through September 30, 2011, the SLVHCS H@H program has served 226 unique veterans involving 284 admissions. The average number of admissions within the past 2 fiscal years was 2.2/wk. The average length of stay was 6 days for early discharge, substitutive, and preventive admissions, and 15 days for LTAC service. The most common admitting diagnoses included CHF, COPD, urinary tract infections, intensive complicated wound care, and bac-

63% and 76% of admissions into H@H in FY2010 and FY2011, respectively, were estimated to qualify for VERA funding. These numbers reflect H@H admissions transitioning into the traditional HBPC services postdischarge from H@H. Assuming an HBPC VERA

admissions reflect potential savings from hospital costs. In FY2010 and FY2011, there was a total of 34 substitutive admissions with a potential savings of \$544,000 from hospitalizations, based on average admissions costs at Tulane Medical Center.

medically complex veterans.

The SLVHCS H@H model is also unique among other H@H programs for its provision of LTAC and preventive approaches allowing for opportunity to improve patterns of acute care services with its potential for reduced costs. There is suggestion of financial benefit, but closer evaluation of the actual cost structure is warranted. The 25-mile geographic restriction limits the number of veterans eligible for H@H. However, SLVHCS is developing an acute real-time telemedicine component that will allow for expanded geographical boundaries. This telemedicine component may also allow the RN to evaluate veterans every 2 to 4 days, instead of daily visits, reducing the impact of extensive travel and related demands. Physicians will evaluate the veterans during the interim days through a telemedicine encounter.

SLVHCS is developing an acute real-time telemedicine component that will allow for expanded geographical boundaries.

reimbursement level of \$22,000 per veteran, the estimated VERA revenue was \$1.5 million and \$1.6 million in FY2010 and FY2011, respectively, with estimated program costs, including salaries, cars, fuel, and laboratory services, of \$1.1 million.

In addition, there is suggestion of a cost benefit from reduced fee-based costs and hospital avoidance savings. The LTAC service has an average length of stay of 15 days, commonly involving long-term management for osteomyelitis with IV antibiotics or intensive complicated wound care management. This service is typically structured with daily care under H@H initially, later transitioning to the traditional HBPC with RN visits reduced to 1 to 3 times a week after appropriate education to caregivers. The HBPC/H@H physicians continue to provide close oversight during this period. Non-VA based home care agencies have provided this service, reimbursed through fee-based costs from the VA. The local average costs for these services are \$103 per visit. During FY2010 and FY2011, there were 24 and 30 admissions falling under the H@H LTAC category, with an estimated savings of \$37,000 and \$46,000, respectively, from fee-basis costs. Additionally, substitutive

BENEFITS AND LIMITATIONS

The SLVHCS H@H model is inherently veteran-centric, offering veterans another choice in the care of their acute or subacute needs, which is significant in the care of veterans who are frail and more vulnerable to complications in traditional hospital stays. The structure of this HBPC H@H model provides a broad continuum of services, from acute to subacute to chronic disease management, presenting a unique paradigm in how home care services can be delivered. With this structure, care is less fragmented because of the broad continuum of services offered. When the SLVHCS replacement medical center is completed within the next 4 years, leading to a fully integrated health care system, this HBPC/H@H model will continue to offer a strong resource, particularly for frail older adults, by minimizing or preventing the risks associated with hospital stays for this vulnerable population. The staffing model is fairly efficient as RNs will assist in the care of H@H or HBPC patients based on the care demands. Unlike Medicare skilled nursing services, in H@H there is close daily physician involvement allowing for quicker responses to clinical changes, which may prove beneficial, particularly for

SUMMARY

Since its launch in 2007, the SLVHCS H@H program has evolved into a model of service, providing veterans more choices in how and where they receive their care. H@H has grown since its inception from a model that was intended to improve diminished hospital bed capacity due to the effects of Hurricane Katrina to a model that is comprehensive, veteran-centric, and broad in scope of service. It provides traditional H@H services through its early discharge and substitutive admissions, but it also provides a unique preventive approach that attempts to minimize the risks for acute care services for veterans considered at high risk for hospitalizations.

The lessons learned from successful development of this model focused on 3 areas: Strong leadership support within SLVHCS and VISN 16 GRECC that has allowed for continued growth, particularly during the initial learning

phases; strong dedication by H@H staff who have demonstrated a clear focus and commitment in addressing veterans' needs and who identified further areas of improvement, including development of protocols to strengthen discharge planning and coordination; and a need to repeatedly educate providers, veterans, and caregivers on the benefits of this nontraditional, alternative service. ●

Author disclosures

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