

# Telehealth: Enhancing collaboration, improving care coordination

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The use of various technologies has revolutionized care delivery across the continuum. In home healthcare, one of the most advanced, interactive technologies to date is telehealth. Although we've experienced varying degrees of resistance and challenges associated with this technology, HomeHealth Visiting Nurses (HHVN) of Southern Maine has learned lessons as an early adopter and continues to leverage the

technology across all service lines.

## Taking healthcare to the home

Each year, HHVN clinicians travel over 1.6 million miles to provide essential home health services to more than 8,500 patients. HHVN's service area is largely rural and encompasses 4,663 square miles across southern Maine. This region

is home to approximately 65,000 older individuals, the largest older adult population in any one region of Maine. According to the U.S. Census, Maine has the oldest population in the country, with a median age of 43 compared with 37 for the United States as a whole. In 2012, 17% of Maine's population was age 65 or older versus 13% for the United States.

It's well documented that heart failure is the leading cause of hospitalization among older people in the United States, exceeding \$17 billion in Medicare expenditures. Annually, more than 1 million patients are hospitalized with a primary diagnosis of heart failure in the United States.<sup>1</sup> Heart failure is the most common discharge diag-

nosis of people older than age 65 and impacts approximately 6.6 million Americans.<sup>2</sup>

Maine also has higher rates of chronic heart disease than the U.S. average. The age-adjusted prevalence of heart disease in Maine for 2010 was 6.4%, compared with 6.0% for the United States. Maine ranks fourth nationwide for deaths caused by chronic illnesses, costing about \$1.5 billion per year.<sup>3</sup> A significant portion of these costs results from frequent hospitalizations for exacerbations of chronic disease.

In light of these statistics, caring for at-risk older patients with advanced chronic disease represented significant challenges. Further, the statistics served as a catalyst to incorporate emerging technology as a method to extend scarce clinical resources across a large and predominantly rural service area, improving not only care in the home, but also the coordination of that care across disciplines. With this strategic direction in place, a 2001 USDA Rural Utilities Service grant allowed HHVN to conduct Southern Maine's first telehealth demonstration project.

## Embracing technology

This project introduced interactive video monitoring units to at-risk patients with congestive heart failure (CHF). That same year, HHVN integrated clinical, management, and financial systems in an agency-wide point-of-service technology project. A second grant allowed project expansion to include patients with chronic obstructive pulmonary disease, diabetes, and wounds. These initial projects demonstrated significant reductions in hospitalization rates, high patient satisfaction rates, and improvements in patient self-management and medication compliance. Despite the positive outcomes, the telehealth program operated in a silo.

Direct care clinicians were resistant to its adoption and virtually disengaged from telehealth



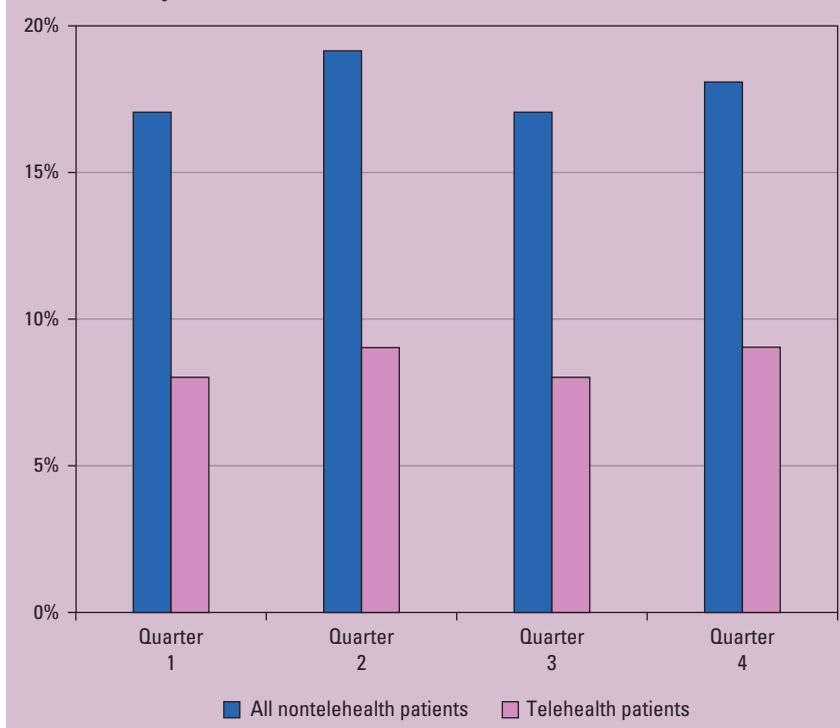
operations. Early educational in-services for referring physicians and nurse leaders on the benefits of telehealth were met with varying degrees of resistance. Patient engagement was essentially limited to the scheduled “video visit” with the telehealth nurse. This resistance to a significant element to better coordinate care was disappointing but not insurmountable.

Recognizing the need to secure buy-in from clinicians, physicians, and patients, HHVN migrated to a web-based telemonitoring program. This system provided opportunities to utilize a greater number of nurses in the monitoring process, more ease with home installation, enhanced patient educational modules, flat screen/color touch monitors, and portals for the exchange of information among healthcare providers. Direct care clinicians were trained to review the features of the system with their patients, enforce the educational modules, and use the integrated vital sign monitoring devices during home visits.

As an additional effort to enhance coordination of care, telehealth monitoring nurses transferred vital sign histories and summary notes to the patient’s electronic medical record. These efforts improved communication and collaboration among healthcare providers. Concurrently, HHVN launched an enhanced marketing campaign to promote the outcomes associated with augmenting telehealth services within an episode of care.

From 2011 to 2013, HHVN cared for over 12,000 patients with chronic disease, 79.1% of whom were diagnosed with heart disease or CHF. Approximately 3,200 of these patients received traditional home healthcare augmented by telehealth monitoring services. As noted in *Figure 1*, telehealth

**Figure 1: Hospitalization rates of nontelehealth and telehealth patients**



patients experienced significantly lower rates of hospitalization when compared with HHVN patients who didn’t receive telehealth. Patients enrolled with telehealth services also demonstrated lower rates of emergent care and an improved ability to manage medications, and were more likely to remain independent at home following discharge from services.

#### The push is on

Collaboration and coordination with other healthcare providers and community-based programs became top priorities. One initiative included the creation of an onsite integrated chronic care management program, led by the vice president of quality and compliance, to train and certify nurses, physical therapists, speech language pathologists, occupational therapists, and social workers at HHVN, as well as

care managers from affiliated physician practices. As a member of MaineHealth—the regional integrated healthcare system that includes eight local hospital systems, a behavioral healthcare network, home healthcare providers, a lab, and over 1,400 physicians—HHVN’s clinical leaders served on the heart failure task group charged with developing strategies to reduce avoidable hospitalizations for end-stage CHF patients. An outcome of this collaboration was the development and implementation of the home diuretic protocol project that demonstrated interventions to avoid hospitalizations can be delivered safely and effectively in the home. Interventions included home-based nursing care augmented with telemonitoring services and I.V. diuretic protocols.

Pilot findings resulted in hospital readmission rates being lowered

from 20.5% to 10%. The application of telehealth technology was central to the success of this program. It allowed caregivers to assess evidence of volume overload and unstable vital signs at the earliest juncture. As a result, timely interventions and medication changes were made to reduce avoidable readmissions. From more than 12 years' experience with telehealth, we've learned that this technology is an essential tool in care delivery. Clearly, quality is improved, patient self-management skills are enhanced, symptoms are identified, and early interventions are adopted to reduce risk.

In an effort to improve patient engagement, HHVN recently migrated to new technology that incorporates a cellular-enabled tablet with 4G Internet and software to support patient education and self-management activities. The system includes wireless monitoring devices, medication compliance and physical activity modules, disease-specific video clips, and the ability for patients to use the tablet to connect via voice or video to telehealth nurses. In addition, patients can permit family members to view their vital sign readings and compliance record.

### Reaping the benefits

An important function of this telehealth system is the ability to remotely transmit patient health status information and vital signs to specialized disease management clinicians at HHVN. Monitoring nurses stay on the alert for the early warning signs of illness and complications inherent with chronic disease and can quickly transmit information through text messaging or phone alerts. Healthcare providers across the continuum also have the capability of

reviewing data through secure portals. We're confident that utilizing the advanced, interactive telehealth features will result in enhanced patient engagement and present new opportunities for clinicians and clinical leaders to collaborate and actively engage in patient-centered care and the care coordination continuum.

For patients, benefits include:

- improved quality of care by providing critically needed clinical resources and support to patients who are confined to the home or lack access to facility-based healthcare services
- reduced healthcare costs by decreasing hospitalizations and emergent care through coordinated early intervention; these interventions include monitoring of vital signs, medication compliance, and consultation with engaged healthcare providers
- improved patient engagement with regular and immediate contact with clinical providers and informal caregivers
- improved quality of life and reduced stress by extending the ability for patients to remain independent in their homes and communities.

There are many quantitative measures of success; however, this patient testimonial speaks to the process and success of patient engagement: Ms. T recently transitioned from an older telehealth system to the new technology to monitor multiple medical conditions, including CHF, asthma, type 2 diabetes, hypertension, and kidney failure. When the HHVN team arrived to admit Ms. T, she had the tablet powered on and ready to go. Without hesitation, she shared her difficult medical journey that started less than a year ago when a sudden 20-lb (9.07 kg) weight gain and severe shortness of breath brought her to the hospital. "I was scared as I really don't like

hospitals and it was so hard to hear that I had congestive heart failure. I just never knew how to take care of myself until I got connected with HomeHealth Visiting Nurses and telehealth services. A lot of the time when I wasn't feeling well, I didn't tell anyone. I just kept it to myself. Now, when something is off, I have someone who knows about me and cares." Ms. T isn't discouraged, "I know how to take care of myself now and I know that there are caring people watching out for me."

### Innovation awaits

As leaders in healthcare, we should fully maximize the capabilities of technology and explore new opportunities for leveraging technology to improve care coordination across providers. Equally important, nurse leaders have new opportunities and tools that will enhance engagement with our patients and, ultimately, lead to improved outcomes. **NM**

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