

Telehealth-Supported Innovation in Home Care

VNA of Greater Philadelphia
has incorporated telehealth to
enhance home care for patients with
heart failure and chronic obstructive
pulmonary disease



By Karen Alston

Physicians often discharge patients who have been hospitalized for heart failure (HF) or chronic obstructive pulmonary disease (COPD) with referrals for home care. While these patients are deemed to no longer require acute inpatient care, their health conditions may still be quite fragile. With their complex chronic conditions, they can still be at high levels of health risk. Home care organizations face the challenge of stabilizing and improving patient health status in order to reduce the risk of disease exacerbations that deteriorate into clinical crises – triggering return trips to the emergency department and repeat hospitalizations. Research results presented in the *New England Journal of Medicine* underscore the magnitude of this challenge. A study of 2003-2004 Medicare claims data concluded that almost 20 percent of all Medicare beneficiaries discharged from a hospital were re-hospitalized within 30 days, and those initially admitted for COPD and HF were found to have even higher readmission rates (Jencks, 2009).

As home care organizations contend with the challenge of caring for these chronically-ill patients under the per episode reimbursement incentives of the Prospective Payment System (PPS), they must balance patients' intense care needs with the costs of care. To achieve this balance, home care organizations can deploy telehealth to stay connected to patients in between home visits, and keep close watch over patients' health conditions to thereby minimize the incidence of disease exacerbation. Telehealth can enable home care organizations to increase the amount and scope of services provided to high-risk patients without the added cost of increasing the number of home visits per episode.

The Visiting Nurse Association (VNA) of Greater Philadelphia has integrated telehealth to meet the challenge of caring for high-risk patients with HF and COPD. Our model organizes telehealth in a different way than many other home care organizations, and supports just-in-time clinical intervention.

Why Telehealth?

Studies continue to demonstrate the value of telehealth. It can help achieve positive clinical and financial outcomes when it is applied to support the care of high-risk, high-complexity patients for whom it is most appropriate (Moore, 2009). Multiple studies of telehealth implementations for heart failure patients have shown positive outcomes achieved by proactive attention to symptom exacerbation. It decreases re-hospitalizations as well as urgent and emergent care utilization (Klienpell and Avitall, 2005). Of particular note are recent findings from the New England Healthcare Institute in a paper (NEHI, 2009) that updates a report initially published in 2004. NEHI researchers evaluated the use of telehealth for remote monitoring of HF patients, and compared it to two other heart failure management options: disease management (without remote monitoring) and standard treatment. The hospital readmission rate for telehealth patients was 50 percent lower than the rate for patients in disease management, and about 60 percent lower than the rate for patients under standard treatment.

NEHI also applied the respective readmission rates to the cost

of heart-failure related hospitalization. The differences in readmission rates resulted in substantial differences in annual per patient costs:

- Remote Patient Monitoring with Telehealth: \$5,632
- Disease Management Only: \$11,387
- Standard Care: \$13,448

In addition, after accounting for the costs associated with each type of intervention, telehealth for remote patient monitoring yielded net savings of approximately \$3,700 per patient annually versus disease management, and about \$5,000 per patient annually versus standard care. These savings translate to an estimated annual return-on-investment (ROI) in the range of 1.30 up to 2.45.

Televisits allow more visits per dollar of reimbursement for home care patients. An analysis conducted several years ago by a research team from the Department of Health Policy and Administration at Pennsylvania State University and the VNA of Greater Philadelphia concluded that telehealth technology can allow a nurse to make video contact with up to 15 to 25 patients a day as compared to about five per day for traditional in-home visits (Dansky, 2001). Such telehealth intervention can reduce direct and indirect costs associated with hospitalization by more than 60 percent. With these savings, organizations implementing telehealth can secure full recovery of equipment and personnel costs required to initiate telehealth services. Thus, the business case for comprehensive telehealth is compelling, and the efficiency gains associated with it are especially important given the economics of home care today.

Integrating Telehealth

VNA of Greater Philadelphia is a non-profit agency which has been making home care and community health care history since 1886. Its mission is to provide comprehensive home health and end-of-life care of the highest quality to all people regardless of their ability to pay. The agency serves 6,000 patients annually in Southeastern Pennsylvania with highly-specialized, cost-effective services available 24 hours a day.

VNA of Greater Philadelphia launched a new telehealth initiative in January 2008. The program focuses on patients with HF or COPD as a primary or secondary diagnosis. These are among the types of patients whose conditions can rapidly deteriorate. They can, therefore, benefit from incorporating telehealth for daily monitoring of their weight, blood pressure, pulse rates, and blood oxygen levels. Additional indications include prior episodes of home care, a repeat hospitalization within six months, or risk of additional readmissions.

The telehealth program is integrated as a component of home care and designed to provide a new level of care. For the program to be effective, it is important for our referral sources to understand and support it. Detailed program information, including patient selection criteria, was developed and shared with VNA nurse liaisons as well as case managers and discharge planners at area hospitals. Home care referrals now come to our agency with "evaluate for telehealth" notations.

VNA of Greater Philadelphia uses the inLife™ Telehealth System from American TeleCare. Deployed in the patient's residence, the system's Patient Stations are compact monitors used to gather and transmit both objective clinical data and subjective patient-reported information. The Patient Stations prompt patients to use the system's integrated medical peripherals to measure their weight, blood pressure, pulse, and blood oxygen levels. The system software provides a combination of multi-media visual and narrated instructions to guide patients through the process of taking their vital signs and other physiological measurements, and helps them answer questions about their health conditions. We can program Patient Stations with reminders and self-care education messages tailored for individual patients, and we can also customize health status questions. The clinical dashboard, which is accessed via a secure Web site, summarizes transmitted patient data to red flag health risks, and provides access to drill down to data details to interpret the findings.

Many home care organizations implement telehealth with a dedicated telehealth nurse. This nurse is responsible for remote monitoring of patients. The role of the telehealth nurse is as an adjunct to primary nurses who care for patients in their homes. The telehealth nurse notifies the patient's primary field nurse of abnormal findings, changes in patient health status, and other concerns or insights. The field nurses do not utilize telehealth themselves.

VNA of Greater Philadelphia has developed and implemented a different model. Telehealth is not just coordinated with in-home

care but integrated with it. We have three telehealth teams that each consists of a nurse practitioner paired with a licensed practical nurse (LPN). The teams are dedicated to caring for targeted high-risk patients with HF or COPD diagnosis. The nurse practitioners are responsible for both in-home care and telehealth services for the selected patients assigned to them. Thus, telehealth is used directly by the nurse practitioners who care for high-risk patients in the field.

Because it eliminates potentially missed connections between separate telehealth nurses and field nurses, this approach can help ensure continuity of care. The nurse practitioners function as home health case managers. With their advanced training in the diagnosis and management of medical conditions, including the chronic illnesses that are the focus of our new program, they are well suited for this role.

The LPNs supports the nurse practitioners. For instance, if a nurse practitioner is at the home of one patient and the LPN has concerns about another, the LPN can reach the nurse practitioner by cell phone. The nurse practitioners have laptop PCs with wireless cards. Wherever they are, the nurse practitioners can access patient data and review and discuss patients with the LPNs.

VNA of Greater Philadelphia utilizes a protocol-based approach to managing the care of high-risk patients in the telehealth program. About one quarter of CHF readmissions occur within the first few days post-hospitalization. Therefore, home visits are frontloaded at the beginning of home care episodes when patients are at highest risk. The nurse practitioners program the Patient Stations and customize each patient's daily session content. Within 48 hours of admission to home care, the LPNs install the Patient Stations in conjunction with a skilled home visit. Daily monitoring plus a scheduled sequence of structured phone calls keep the teams connected with patients in between home visits.

Standing Orders

Remote monitoring alerts a home care organization when patients' conditions change. Effective telehealth must go further to ensure that nurses can promptly respond to problematic changes. That is why VNA of Greater Philadelphia coordinates with physicians who refer patients for home care in order to have standing orders in place for our telehealth patients.

Standing orders include instructions for modifying patients' diuretic regimens when weight gain indicates exacerbation of CHF. The care plan also includes administration of IV diuretics if a patient does not respond to the increase in oral diuretics. To avoid delays in obtaining medication supplies in the event of an exacerbation, physicians sign prescriptions for urgent medication kits. The kits contain prescribed oral and intravenous diuretics and are delivered to patients' homes within the first week of service.

As part of the protocol, our nurses always notify physicians when standing orders are implemented. But they do not have to wait for physicians to return calls and give treatment orders before taking action. In sum, standing orders are an essential element of our telehealth program because they enable the nurses

to provide just-in-time care to avert emergency department visits and help reduce hospital readmissions.

Promising Results

VNA of Greater Philadelphia can provide a higher level of care while decreasing the average number of home visits per episode. Before the implementation of the new telehealth initiative, episodes of care for HF and COPD patients averaged 48 days with 14 home visits per episode. With telehealth, the length-of-stay per episode is the same; the number of home visits is typically 10 or 11.

We have good results regarding patient satisfaction with telehealth. Our 2009 data reveal that 91 percent of patients in the program report overall satisfaction and would recommend telehealth to family and friends, and 100 percent say they would use our telehealth services again in the future.

Most importantly, VNA of Greater Philadelphia has achieved significant improvement in outcomes. Significantly, prior to launching the new telehealth program in January 2008, our HF patients had a 45 percent hospital readmission rate. We reduced this rate to 35 percent within six months. By the end of the program's first year, the readmission rate was down to 25 percent. Seventy percent of our patients have shown improvement in HF symptom severity as measured by the New York Heart Association classification methodology. Finally, 73 percent remain at home after their episode of home care as compared with the national average of 68 percent, as reported by the Centers for

Medicare & Medicaid Services.

The VNA of Greater Philadelphia plans to build on our current success with program expansion. Since HF and COPD are two of our top five home care diagnoses, we have doubled our monitoring capacity to serve more patients in the program. In addition, we are striving to reduce our overall agency hospital readmission rate, and we believe that telehealth-supported innovations in home care will help us attain this goal.

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