# Prevention Priorities for Telehealth in Health System Reform

By Randy Moore, M.D.

**Telehealth-supported innovations in the management of patient care offer the potential for yielding significant savings in the U.S. health care system—by some estimates, annual savings of 20 percent or more (Deloitte, 2008). That would amount to $400 billion a year.**

Prevention of disease progression and exacerbation among patients with chronic conditions, thereby averting avoidable post-acute complications, is the central source of these potential savings. With chronic conditions (including cardiovascular disease, chronic respiratory, disease and diabetes) now accounting for more than 75 percent of total medical care costs in the U.S., the costs of chronic illnesses are one of the most formidable shoals on which comprehensive health system reform could come aground. Securing the savings made possible by prevention with the application of telehealth in chronic condition management is an imperative for fundamental change in the nation's health care system.

This article discusses the elements of effective telehealth solutions. A patient population segmentation strategy is also suggested in order to focus telehealth-supported prevention efforts on the subsets of patients with the most complex conditions and care needs. By way of introduction, it is useful to first ask a basic question: Is telehealth efficacious for prevention?

## The Evidence for Telehealth

The evidence for telehealth is growing stronger. A literature review is beyond the scope of this article. Robert E. Litan, a researcher affiliated with the Kauffman Foundation and the Brookings Institution, summarized and assessed the findings of more than a dozen studies in his report for the Better Health Care Together coalition of business, labor, and public policy leaders. He concluded that telehealth-supported care processes can prevent downturns in patients' health conditions and thereby reduce emergency room visits, repeat hospitalizations, and skilled nursing facility utilization (Litan, 2008). The ability to collect and transmit patient information in real time does help achieve significant results by connecting patients at home to health care providers for care plan implementation, remote monitoring, consultation, and direct care via telehealth video visits.

In order to realize the potential benefits of telehealth for prevention, two questions require thoughtful attention: First, what does it take to make telehealth effective? Second, how should we set prevention priorities for telehealth?

## Telehealth Solutions

Telehealth solutions begin with two components: enabling telehealth technologies and reengineered care processes that automate work flow, match patients' health care needs to appropriate medical expertise, and overcome temporal, geographic, and other barriers to just-in-time care. Telehealth technologies range from the simple telephone with or without interactive voice response (IVR) to increasing levels of remote patient monitoring to full patient-provider connectivity. Cutting-edge telehealth technology systems have a certain set of attributes. They feature easy-to-use patient stations that proactively prompt patients at home to respond to health status questions by touch screen and to use integrated medical devices to take their vitals. To be easy to use and unobtrusive, they should be compact. Large, high-contrast color screens plus large fonts, images, and icons should be featured to make them easy for patients to read. Narrated instructions with answer verification, multi-media instructions on use of peripheral medical devices and on-screen volume and navigation controls further enhance ease of use for patients and help ensure effective and reliable use of enabling telehealth technologies.

The most advanced telehealth systems automate the elemental sequence of questions and data gathering that nurses and physicians ask and undertake during an office visit with a patient. Health status questions, physiological parameters for monitoring, and multi-media and narrated instructions should be customizable so that they can be personalized for individual patients.

Via HL7 messaging using Secure Socket Layer (SSL) technology over POTS (Plain Old Telephone) or broadband connections, telehealth systems transmit patient responses and data to a server where the physiological measurements should be date-and time-stamped for trending. Clinicians should be able to set thresholds for each patient to red flag significant changes in a patient's condition. When readings exceed any pre-determined threshold, system software in leading telehealth systems color-codes them so they stand out on clinical dashboards accessible on telehealth provider stations. And providers monitoring patients should be able to drill down to the detail underneath any red-flagged findings.

As the burden and complexity of disease increase, so too does the value in the level of connectivity and degree of interaction between patients and telehealth provider teams. Optimal telehealth systems, therefore, include video capability for televisits, thereby enabling not only recognition of potential clinical deterioration but rapid, direct access to patients to enable much of the direct care that would be provided in a live encounter.

Nurses with experience in implementing telehealth to enhance home care agree on this point. Remote monitoring of patients at home is the foundation of telehealth, especially for at-home patients with chronic diseases. It is the basic in which way home care agencies watch over patients and track changes in their conditions. However, according to Mimi Allen, R.N., B.S.N., director of telehealth,

Centura Health at Home, Denver, Colorado, remote monitoring in and of itself does not provide sufficient information and clinical context for interpreting changes. Thus, there is a distinct value to having the video camera as part of a telehealth system that monitors, transmits, and stores vital signs. There is much information in video visits – eye contact, a patient's expression, skin tone, recognition of a grimace with movement. All of these can be important signals that would not be observed without video capability in a telehealth system.

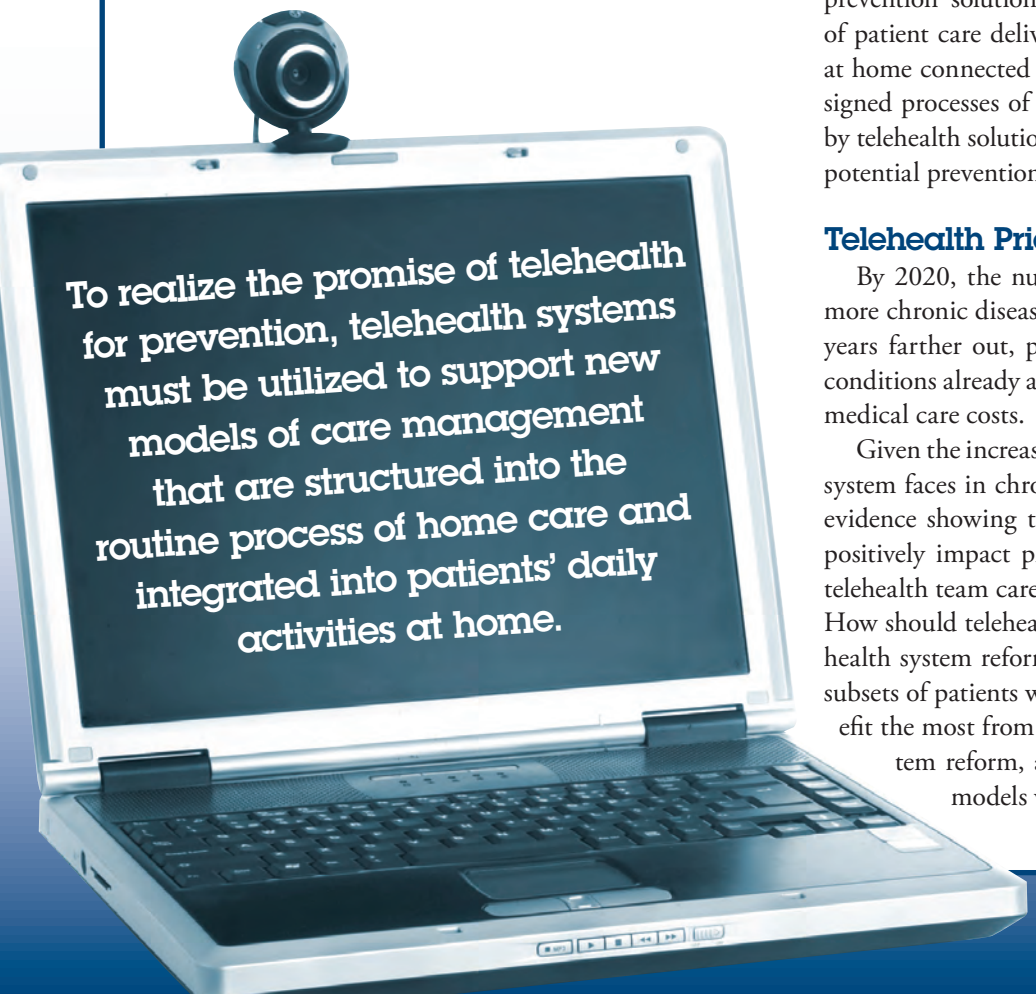
Nina M. Antoniotti, R.N., M.B.A., Ph.D. is director of Marshfield Clinic TeleHealth. Started in 1997, Marshfield Clinic TeleHealth is a service of Marshfield Clinic (Marshfield, Wisconsin) and with more than 3,000 televisits annually, is a national leader in telehealth. Antoniotti has observed that nurses' ability to see and visually assess at-home patients in televisits enables nurses to better apply their critical thinking and clinical decision-making skills and therefore provide better care. Thus, a significant value of video-enabled solutions is supporting the ability to rapidly deliver clinical interventions and follow-up, thereby allowing earlier, simpler, and often much less costly interventions.

## The Telehealth Team

As noted, effective telehealth solutions include systems that have specific features and functions. Yet technology alone is not a solution in and of itself. To realize the promise of telehealth for prevention, telehealth systems must be utilized to support new models of care management that are structured into the routine process of home care and integrated into patients' daily activities at home. Effective telehealth programs use the technology to support care teams that establish and maintain ongoing monitoring and constant care of patients at home. Without a care team to use telehealth technology to implement and carry our improved processes of patient care, no telehealth system, no matter how advanced, will achieve desired results. With a care team deploying telehealth to establish and implement new chronic care protocols, timely detection of potential disease exacerbation and proactive intervention with requisite clinical knowledge leads to positive clinical and financial outcomes.

Presbyterian Healthcare Services, a not-for-profit system of eight hospitals, a health plan and a growing medical group in New Mexico, offers a good example. Presbyterian Home Healthcare Services had adopted a disease management program for heart failure patients and reduced the inpatient readmission rate from 30 percent to 11 percent. They then identified 310 highest complexity patients who continued to have readmissions and enrolled them into a telehealth-supported care team program. Over two years there were only three admissions for this at-home patient group for a readmission rate of less than one percent.

Thus, telehealth technology itself does not provide a prevention solution. It can, however, enable new models of patient care delivery with care teams who keep patients at home connected to necessary clinical expertise. It re-designed processes of patient care with care teams supported by telehealth solutions that make the difference – and make potential prevention gains and savings achievable.




## Telehealth Priorities

By 2020, the number of Americans living with one or more chronic diseases will total about 157 million; ten year years farther out, perhaps 171 million. As noted, chronic conditions already account for more than 75 percent of total medical care costs.

Given the increasingly daunting challenge the health care system faces in chronic care management, and the positive evidence showing that telehealth-supported care processes positively impact prevention, does it make sense to apply telehealth team care to all patients with chronic conditions? How should telehealth be incorporated into comprehensive health system reform? Population segmentation targets the subsets of patients with chronic conditions who would benefit the most from telehealth. In the context of health system reform, application of population segmentation models would maximize the value of telehealth.

It is widely known and well understood that a small proportion of the overall population accounts for a large share of total health care utilization and costs. The five percent of patients with the highest costs utilize 55 percent of all health care dollars; the highest one percent, 25 percent. The "5/55" patient population includes patients with several chronic conditions and the most complex care needs. These patients have multifaceted medical problems that make their conditions exceedingly complicated. Their health status fluctuates and can deteriorate rapidly. Their care is most difficult to manage. Telehealth should be used to initiate and sustain team care with these highest-complexity, highest-cost patients for whom it can help attain the biggest potential gains in clinical and financial outcomes.

**In sum, a "triage" prevention strategy based on patient population segmentation includes:**

- **Population Health** – Prevention for those at-risk of developing chronic conditions. The goal is to prevent disease onset.
- **Disease Management** – Prevention for patients who have developed a chronic condition. The goal is to prevent disease progression.
- **Telehealth-supported Team Care** – Prevention for patients with multiple chronic conditions and the most complex care requirements. The goal is to prevent disease exacerbation.

**How does a population segmentation strategy work? Diabetes offers a useful example.**

Almost 24 million Americans (about eight percent of the population) have diabetes today. From 2006 to 2008, the number increased by more than three million. In theory, telehealth-supported care could benefit all patients with diabetes. However, even if current technology functionality and cost points would support intervention for all patients with diabetes in any covered population, it is doubtful that such programs could scale sufficiently. And they would be exceedingly expensive.

A segmentation strategy would identify and target a segment of a diabetic population to pinpoint a smaller, more manageable subset for which telehealth-supported care can demonstrate the highest potential clinical and financial outcomes. More specifically, targeting those with diabetes in poor control and with impaired renal function would focus efforts that would yield a very high impact. Telehealth-enabled interventions to slow further renal damage have the potential to double the amount of time before such patients need dialysis. This would not only deliver a significant improvement in patients' overall health status and quality of life, but can also result in savings of $5,000 or more for every month that dialysis is delayed.

The health care system does not have unlimited resources to apply to increasing the impact of preventative care in diabetes – or any other chronic condition. In diabetes, there is a much greater potential impact in using telehealth-supported care processes to shift the dialysis curve for the much smaller group of patients in the highest risk segment than to use telehealth for disease management or population health programs. The savings achieved could then be reinvested into the next highest value interventions, including more effective home dialysis and more intensive programs in lipid control through disease management.

In terms of segmentation and the use of telehealth, successful interventions for patients with the highest burdens of disease (those most likely to drive high costs in the near term) will be unlikely to achieve desired outcomes from simple remote patient monitoring alone. However, more robust support, including 24/7 connectivity to interdisciplinary care teams, can achieve significant improvements in clinical and financial outcomes by prevention of disease exacerbation.

If health care system reform is to achieve the goal of extending coverage to all Americans, costs must be controlled. Chronic illnesses are the major driver of health care utilization and costs. Telehealth-enabled care has a positive preventative impact for patients with chronic diseases. The most significant contribution of telehealth to the cause of health system reform will be achieved if telehealth-supported team care is focused on the highest-complexity, highest-risk segments of chronic disease populations for which it can yield the largest, near-term improvements in clinical, health status, and financial outcomes.

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