



Transforming HealthCare with Remote Clinical Monitoring Technology

White paper abstract

Executive Summary

Globally, healthcare systems are under tremendous pressure; struggling to improve access to timely, quality care in the face of the growing demands of an aging population, an increasing number of people with chronic illnesses, fewer clinicians, and a healthcare system primarily focused on treating acute conditions. These pressures coupled with the lengthy wait times for adequate senior housing or Long Term Care (LTC) beds are providing the stimulus for the adoption of new care models in the community that will allow a patient to stay in their home and still receive quality care.

Remote Patient Monitoring (RPM) will be an enabler of this change, transforming current practices in chronic disease care management (CDM) from ongoing or continual acute care episodes to a more proactive approach that empowers a patient to return to their benchmark threshold of health through appropriate device monitoring, behavior modification and interaction with care providers – all remotely. RPM also ensures that vital clinical information is collected once, securely transmitted, and then shared with all the appropriate healthcare team members involved in the patient's care.

Remote Patient Monitoring is particularly effective for managing a number of chronic diseases which lend themselves to daily monitoring, such as Diabetes, Congestive Heart Failure (CHF), Chronic Obstructive Pulmonary Disease (COPD), and Hypertension.

Introduction: A Growing Crisis

Globally, The World Health Organization (WHO) member countries have indicated the need for action on chronic disease and state: "The global epidemic of chronic disease must, and can, be stopped. This invisible epidemic is an under-appreciated cause of poverty and hinders the economic development of many countries. Chronic disease is responsible for 60% of all deaths worldwide with almost half of chronic disease deaths occurring in people under the age of 70." (Source – WHO)

Chronic disease patients are often treated with medications, driving up drug expenditures and opening the door to additional acute care episodes brought on by non-compliance issues and adverse reactions. Remote monitoring can assist patients in managing their medication compliance as well as detecting early signals of potential adverse reactions or other patient safety issues.

Managing the health of patients with chronic diseases is therefore becoming not only a clinical imperative but a financial one as well. To address both concerns, state/provincial and regional health authorities/managed care organizations are trying to migrate patients from acute care to lower cost alternatives, such as community care and home-based clinical monitoring.

Patient Engagement and an Extended Team Approach

Up until now patients have had limited involvement in their health, using health services and providers to reactively treat acute episodic events rather than proactively working with care providers to promote their own overall wellness and prevent further illness or degradation of their condition. This is no longer a viable option. As the number of people with single or co-morbid chronic diseases increases, it is of paramount importance to reduce the number of unnecessary emergency department visits, preventable hospitalizations, and medical referrals, in order to reduce the clinical and financial demands on already over-burdened healthcare systems.

Moving care to the home encourages patient engagement and enables them to become an integral part of their extended healthcare team. As many chronic illnesses require daily monitoring, using Remote Monitoring technology, patients are empowered to take traditional medical measurements, such as blood pressure, glucose levels, and weight and then relay the information to the right people at the right time – all from the comfort of their own home. In addition to prescribed clinical monitoring, through biometric devices, the system can deliver medication reminders, trigger patient alerts and elicit patient subjective measurements in a question and answer format that provides the healthcare team a more complete holistic clinical snapshot of the patient in real time. The healthcare team can easily analyze the results and adjust a clinical protocol accordingly based on best practice guidelines built into the system.

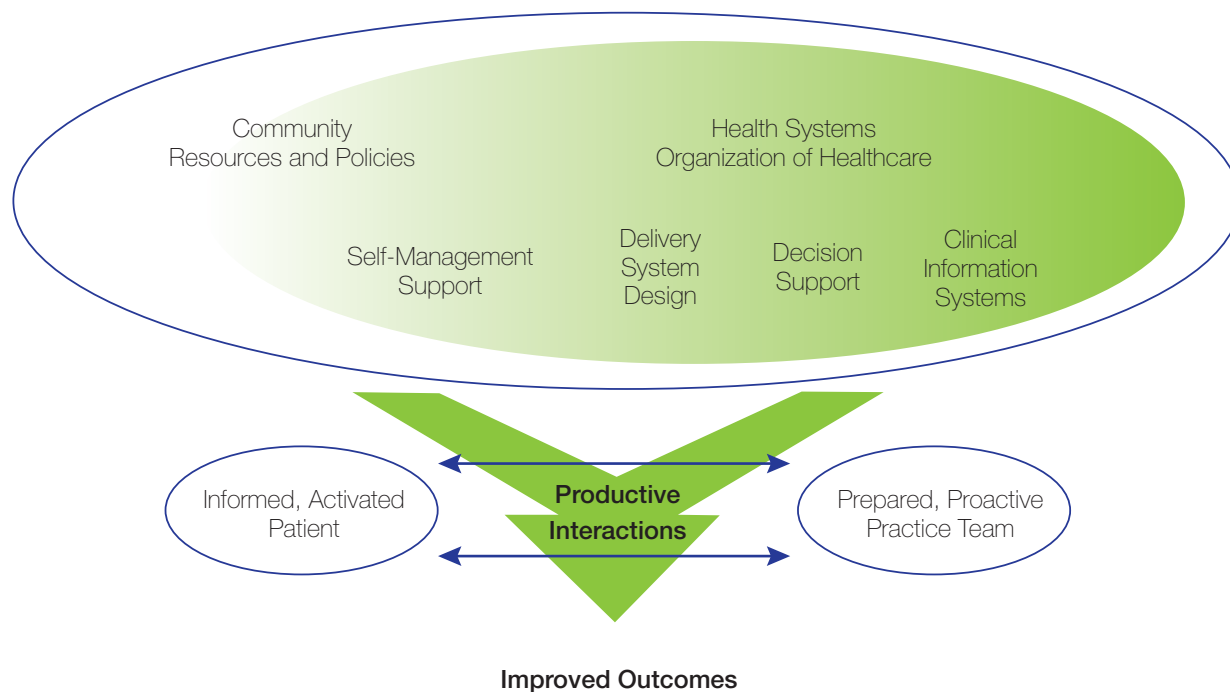
Traditionally this information was only available with a home visit to the patient or a phone call. The care providers can also remotely send the patient appropriate educational material that promotes behavior modification and empowers the patient, ultimately resulting in better patient outcomes.

With patients becoming more involved in their health management, physicians, nurses and other care providers can extend their reach and effectiveness.

Telehealth Solutions: Improved Chronic Care for Better Outcomes

Probably the most widely respected model for chronic disease management was developed in 1998 by Dr. Ed Wagner, of Group Health Cooperative in Seattle, Washington. (See Figure 1.) Within this model, care for patients with chronic diseases happens within a system in which community resources and health systems work together to provide a coordinated approach. Informed patients work in concert with prepared and proactive health teams that are able to anticipate and respond to their patients needs in a timely fashion. In this way priority is given to prevention with the goal being improved patient outcomes.

Figure 1. Chronic Care Model



(Wagner 1998) Reprinted with permission of the American College of Physicians.

Centralized, community and home care models for chronic disease management are new to the healthcare system. As such, planning and deployment must take into account metrics that relate to improving operational efficiencies and care outcomes including:

- ◆ Improved acute care discharge planning
- ◆ Reduced patient travel
- ◆ Improved patient satisfaction
- ◆ Enhanced collaboration between sectors and health care providers
- ◆ Reducing unnecessary referrals
- ◆ Extended geographic reach of the health system
- ◆ Improved care team productivity
- ◆ Extended system capacity/health human resources
- ◆ Better use of available home care resources
- ◆ Reduced/delayed long-term care admissions
- ◆ Improved adherence to drug regimens

Remote Patient Monitoring: eHealth For Life

Improving the way we manage chronic disease is a vital component to the transformation of healthcare. If taken as part of an overall wellness and prevention strategy the benefits to our system will be enormous.

At TELUS Health Solutions our vision for a comprehensive RPM solution that can be used across the spectrum of health and wellness requirements combines a variety of information gathering and communications technologies including:

Client Devices: client condition-specific hardware and services required to support the management and monitoring of their conditions, including standard as well as special condition biometric devices, specific monitors and client coaching components.

Central Systems: applications used by clinicians in the management of multiple clients through the centralized monitoring service and mobile clinical staff providing local support to these clients. This central client management system collects and displays vital sign data and stores clinical and assessment documentation.

Communications Network: hardware, software, network and communications infrastructure necessary to deliver services as well as the operational support to maintain the integrity of the system.

Provider Devices & Care Team Activities: hardware required to support the delivery of care to clients, as well as to support client-to-provider and provider-to-provider information sharing. Also includes clinical staffing and the professional services required for consultative support to users and clients associated with home telehealth services.

Clinical & Patient Monitoring: the clinical team that manages the remote monitoring centre accesses the central application and responds to patient interests raised as part of the normal management of patients, or special alerts or communications. Typically this would be an established contact centre operation.



Conclusion

As the population ages and more people are diagnosed with single and multiple chronic diseases, pressure on healthcare systems will continue to rise. Inadequate treatment plans for complex illnesses results in patient compliance issues and potential health complications that require acute interventions, driving up costs on already over-burdened acute care settings. Using technology as an enabler we are now able to transition to a new model of care for patients with chronic disease where healthcare is provided in the home. Although these complex illnesses can not be cured, they do lend themselves to daily clinical monitoring in a patient's home/self-care environment with an interactive remote patient monitoring system.

For patients the ultimate goal for RPM is to return to their individual optimal level of health. This involves increased compliance to interventions and medications and will result in reducing ER and inpatient stays. The ability to actively engage in their overall health management in the privacy and security of their own home empowers patients to optimize their health in a proactive, personalized and consistent way so that the quality of their life is enhanced and extended.

Healthcare practitioners will have the consistent and timely patient information they need to proactively and more efficiently manage their patients through enhanced best practice ultimately improving patient outcomes.

Healthcare systems will benefit overall with reduced costs for preventable acute care episodes for chronic disease patients, thereby reducing the overall cost per patient. Consistent and reliable data will allow for further evidence based research, trending and forecasting in CDM.