Improving Cardiac Care with Remote Patient Monitoring (RPM)

The Impact of Technology on the Management and Outcome of Patients

By 2050, atrial fibrillation (AF) will affect over 5.6 million individuals,[1] driving the need for more efficient cardiac care management. Many are turning to remote patient monitoring (RPM) for its ability to improve quality of life for patients, empower practitioners to make the best medical decisions backed by meaningful data, and enable more cost-effective care. This article will discuss the impact of technology on cardiac care and why forward-thinking healthcare providers are making the switch.

The Current Cardiology Landscape

Cardiology is a branch of medicine that cares for diseases and abnormalities of the heart. It is a combination of different indications in the cardiology disease area, with heart failure, heart attacks, strokes, and cardiovascular disease being most prevalent. In recent years, atrial fibrillation (also called AFib or AF), a quivering or irregular heartbeat that can lead to blood clots, stroke, heart failure and other heart-related complications, has come into the spotlight. There can be confusion as to what patients are experiencing when an episode or event occurs, as there are many different elements and unique identifiers to cardiac conditions. Having the most comprehensive solution and identifying the critical markers to really put the puzzle together is essential to address each of these individually.

The problem is significant, as more people die from heart disease and stroke each year than any other disease,[2] and more than all forms of cancer combined. Cases of AF continue to rise and increase each year as the population ages. It is the most common arrhythmia experienced in the world, with half a million patients in the US undiagnosed with AF.[3] For most people, the first time they know they have AF is when they have a stroke. The chance of having AF increases as you age, but it is not exclusive to older populations. AF exists in any age population, making screening and early detection crucial, and implementing a care plan is critical to avoiding those catastrophic events.

The Challenges with Managing Cardiac Conditions

Cardiology is a growing disease area and managing cardiac conditions presents care challenges for patients, providers and payers. With numerous stakeholders, engagement is needed from multiple aspects of the industry:

Patients: The most critical stakeholder. With current technology and information readily available via the internet, patients are more involved in their healthcare than ever before. Managing lots of difficult equipment requiring wires, patches, gels and comprehensive knowledge on how to use it can be quite burdensome.

Providers: Patients are only evaluated at time-of-care, leaving practitioners with limited or no visibility into patient health status outside of the doctor's office/hospital visit. They want to feel empowered by solutions and technology to enable them to better care for patients.

Payers: Need to improve patient care experience, population health and reduce per capita cost of health care. It is not about generating revenue, but eliminating cost.

750,000 hospitalisations occur annually because of AF.[4] This has significant cost implications with total annual direct AF costs over $8 billion.[5] When people present symptoms, they typically see their doctor or go to a hospital emergency room. AF can be referred to as paroxysmal, persistent, or chronic, and understanding how the disease evolves over time is extremely valuable. Collecting different data points continuously and comparing them against a baseline is helpful for diagnosing AF early in high-risk patients to avoid major cardiac events.

Early identification of AF is not the only challenge, as 25% of patients hospitalised with AF are readmitted within 30 days.[6] AF is a challenging rhythm that is difficult to control in some instances, so being able to monitor patients remotely and keep them out of the hospital is the goal. It is estimated that 30-50% of all hospital readmissions could be avoided with some sort of comprehensive remote patient care programme to identify and treat patients without readmission.

In the fee-for-service landscape, with increased hospitalisations, ER visits and rising healthcare costs, a progressive mindset is critical. Hospitals are penalised significantly when they have readmissions for certain conditions, AF being one of them. Once patients have been treated, keeping them out of the hospital is critical, both in terms of cost and patient experience.

There is a need to implement solutions once patients have been identified so that they are monitored to better improve their care plans. Rather than focusing on revenue, technologies need to be adopted to help better manage patients and drive down costs.

A Better Way: Remote Patient Monitoring in Cardiac Care

According to the Center for Connected Health Policy, remote patient monitoring (RPM) is the use of digital technologies to collect medical and health data from individuals and patients and electronically transmit it securely to a different location, to make assessments and recommendations for care. It covers the collection, transmission and analysis of vital signs data, such as electrocardiograms, weight, blood pressure and blood sugar. RPM is also used for chronic disease management, including AF and other types of congestive heart failure, COPD, diabetes, pulmonary hypertension and asthma.

RPM is a part of telehealth; the delivery of health-related services and information through telecommunications technology (video conferencing, virtual visits, store-and-forward [sending imaging over the internet] and sharing data between different locations). Mobile health is a large part of telehealth today, with easy-to-access technology, mobile phones and tablets with health and wellness apps. Applications can range from targeted text messages that promote healthy behaviour to wide-scale alerts about disease outbreaks. RPM is now at the core of the overall telehealth

industry, being the backbone technology that brings all other parts together.

Looking specifically at cardiovascular disease prevention and early detection, a comprehensive solution is needed with specific biometrics critical to understanding and detecting disease states early. If patients are empowered and markers are established earlier, changes over time can be managed. With the changes in Medicare and Medicaid laws throughout the various states in the country, MACRA laws, value-based care, and the reimbursable event for preventative care, this makes RPM a very viable solution.

How Does RPM Work?

Wireless sensors and devices transmit data to the cloud, where it is shared amongst other systems, including EMRs, EHRs, labs, third-party applications, hospital systems, practice care management and coordination programmes. The data is accessible to patients, physicians, caregivers, analyst dashboards and third-party apps via the health cloud. See Figure 1.

Figure 1: How RPM Works

The data flows back to the cloud, connects with third-party systems, all driven by the data acquired, collected, transmitted and analysed from the patient. New technologies, predictive modelling, artificial intelligence, machine learning, and social media networks create the circle of care and connectedness between the patient, the caregiver and the insurance analyst.

Supporting Better Cardiac Care with RPM

The benefit of RPM is in real-time data collection, enabling clinicians, analysts, and patients to review interactive diagnostic dashboards, access messaging, video consultation and survey functionalities from any location. Early identification is key in improving AF care, and RPM plays a crucial role in:

- Helping to identify patients as early as possible
- Enabling treatments and solutions to be implemented earlier to avoid major cardiac events
- Improving patient outcomes and patient care experience
- Helping to manage rising healthcare costs / reduce per capita cost of healthcare

Screening and better monitoring solutions are the crux of RPM, as early identification of AF and intervention with oral anticoagulation (medication to thin the blood) can reduce risk of stroke by 60–70%.[7]

RPM also has the potential to improve the management and outcome of patients with cardiac diseases, increasing access to care and giving patients the freedom and flexibility to actively participate in their own health.

Remote cardiac monitoring has shown a 66% reduction in hospitalisations for AF or stroke admissions.[8] RPM reduces preventable readmissions, and shortens hospital stays, supporting the shift to value-based reimbursement.

Remote cardiac monitoring helps clinicians to adopt a holistic approach to cardiac care that provides better services while simultaneously reducing costs. Healthcare providers can make proactive care plan adjustments and manage patients by exception. Many studies have concluded that a 30-second rhythm strip can be used to simply and rapidly detect AF in patients with risk factors for AF, used in community screening initiatives or in-office screening, identifying 1.5–3% incidence of AF, previously undiagnosed.

How Does RPM Support Better Cardiac Care?

RPM is fundamentally about ease of use, accessibility, seamless workflow, and the cost-effectiveness of the solution:

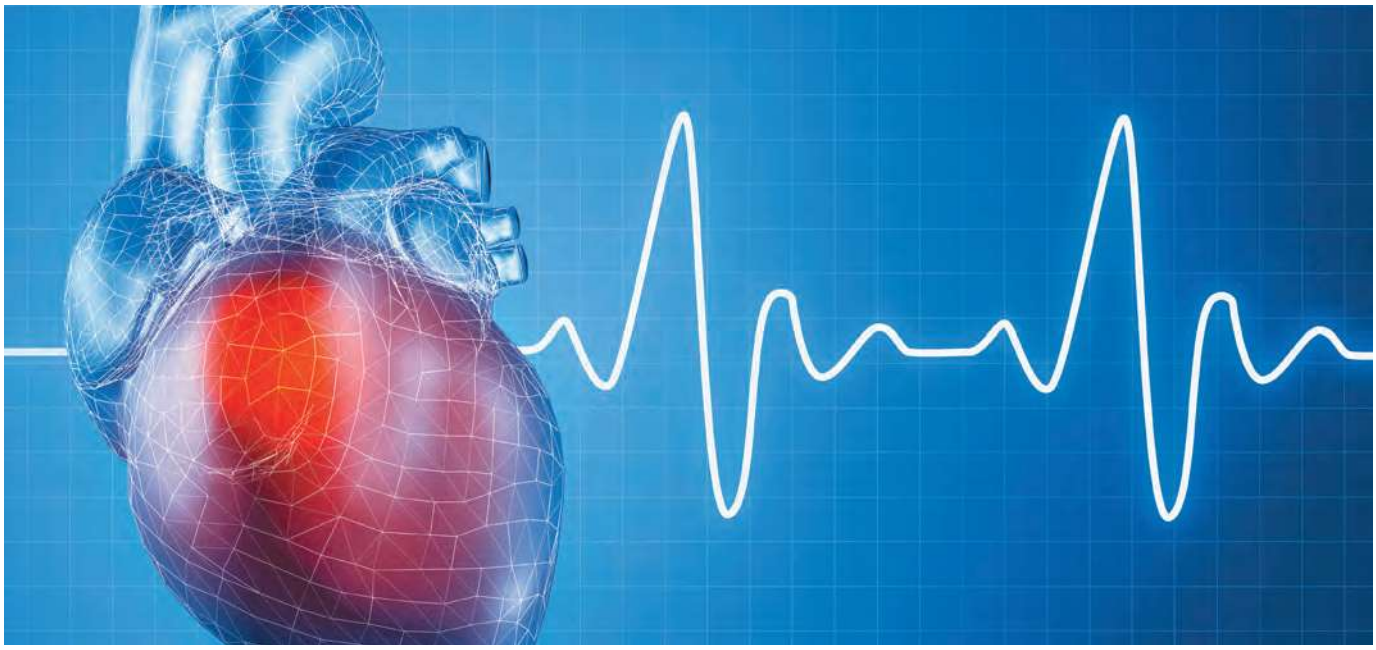
- Engaging patients to improve care: increase patients' understanding of and engagement with their care plan
- Early detection – peace of mind: tracks EKG recordings / interpretations between patient visits
- Easy workflows to focus on what matters: organises longitudinal cardiovascular data, allowing for quick assessment of trends to adjust patient care plan

Physicians and other caregivers are under extreme pressure and by providing more effective ways to manage selective patients that may not need to be seen in the office, they can spend more time with high-risk patients.

The benefits are well defined, but when it comes to implementing a new technology, there are several pointers to consider first. See Table 1.

Topics	Questions	Details
Strategy	Is there a digital health strategy?	A recent poll showed that 75% of all healthcare organisations do not have a digital health strategy.
Stakeholders	Is there buy-in?	It must exceed investment and provide actionable value to each stakeholder. Seek executive sponsorship.
Goals	What are the RMP goals?	Establish overall programme goals: Population health? Readmission prevention? Reimbursement?
Implementation	Is it easy to implement?	How long is it going to take? Is it scalable? What's the workflow?
Integration	Is it easy to integrate?	Can you integrate it with other systems and solutions?
Ease of use	Is it easy to use?	Will people use it? Create a road-map.
Security	Is it secure?	Does it have security features? Will the data be safe?
Accuracy	Is it accurate?	Investments in healthcare technology must be accurate and integrate with a wide array of medical sensors, devices, technology, networks, patient record systems.
ROI / Cost	Does it add value?	Capturing biometric data across multiple indications, focusing on the riskiest populations, has the potential to save time, money and lives.

Table 1: Recommendations for getting started



RPM supports better cardiac care as it helps to engage patients who are taking more control and adopting new technologies. Patients need the tools to work with this powerful technology as it ultimately gives patients peace of mind by having a response without visiting acute settings of care. Depending on where a patient lives, this can be a significant time investment, in addition to eliminating the anxiety that those visits create. Remote patient monitoring really delivers peace of mind to patients.

Conclusion

AF, the most common heart arrhythmia, affects more than 2.7 million American adults. While AF may present symptoms such as palpitations and fatigue, it is often asymptomatic, making diagnosis difficult. The market has an opportunity to improve care with RPM and engage remote patients, provide better care remotely, and potentially save lives and costs. Top-line benefits include:

- Dramatically increase patient compliance and adherence
- Reduce acute exacerbations and in-patient stays
- Save patient care costs
- Empower cardiology patients and the stakeholders that support them to engage in their care

With one in five Americans owning a wearable fitness tracker, and the ease by which consumers can record an EKG with a smartphone, consumers are becoming more engaged in their health and have the opportunity to help address the public health issue related to undiagnosed AF, which when left untreated can result in stroke.

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