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# Weighing the Benefits and Drawbacks of Remote Patient Monitoring

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Remote patient monitoring (RPM) is an emerging branch of monitoring technology that may soon upend how patients receive care, similar to how telehealth altered the path of the healthcare industry forever.

Technological advancements are entering the field of healthcare at a rapid pace, with a strong emphasis on remote technologies. Other examples include digital therapeutics and telehealth platforms.

But remote patient monitoring brings something new to the field of healthcare – the continuous gathering of vitals and other real-time measures of health. With RPM technology, healthcare professionals can even offer remote treatment, medication adherence monitoring, and critical care monitoring.

## RPM Devices

Let's take a dive into some of the currently available RPM devices on the market. Each is designed to collect a specific set of health parameters for a specific purpose. All of these following devices involve some form of sensor that is responsible for this data collection:

- **Glucometers** – glucose meters measure a patient's blood sugar. The patient's finger is pricked, and blood is collected on a test strip. The glucometer then runs a glucose test on the blood to determine if the patient needs to adjust their blood sugar using food or insulin. Providers receive the readings remotely, allowing them to keep a close eye on their diabetic patients and screen potential pre-diabetics.
- **Electrocardiogram (ECG)** – ECGs monitor a patient's heart function through leads that are placed on the patient's chest. While take-home ECGs have existed for a long time, they require the patient to drop the device off after the monitoring period for analysis of stored data. With remote ECGs, the Eko recordings are available for live review for both the patient and provider.
- **Digital Stethoscope** – digital stethoscopes are a newer monitoring option for providers. These devices measure heart and lung sounds and can be plugged into a USB port. After the reading is complete, the data can be sent to the healthcare provider for review.
- **Digital Scales** – digital scales are a useful tool for overweight or obese patients working to lose weight and improve their health. Every time a patient steps on the scale, providers are sent the updated weigh-in information. This helps physicians keep their patients on track with their weight loss goals.
- **Activity Trackers** – these wearable devices (usually in the form of a watch) track a patient's daily steps, calories burned, and other activity information. These devices are often associated with a mobile app so patients can easily track their physical activity over time.

## Benefits of RPM

### 1. Safer for Patients

Hospital-acquired infections (HAIs) are a major concern for healthcare professionals. These infections can be acquired in hospital settings but also in other healthcare environments like outpatient facilities and doctor's offices.

Immuno-compromised patients are especially at risk of catching an infection in this way and may suffer serious complications. Pneumonia, sepsis, surgical site infections (SSIs), C. Diff, and UTIs are some of the most commonly acquired infections from healthcare settings.

Remote patient monitoring can help prevent some of these infections by keeping patients at home instead of requiring them to come into a healthcare setting to collect vitals or other health indicators.

**2. Better Access to Care**

Some patients have complex health situations which require more involved care. But these same patients may lack financial or physical access to the level of care they need to manage their health.

RPM devices offer a way for patients to stay involved in their healthcare without disrupting their daily lives. There's no need to continually drive back and forth to their doctor's office to collect this information when remote monitoring devices can handle this task.

With remote patient monitoring, patients in rural areas or those with limited funds can receive quality care and therapeutic instruction from their doctors without the need for recurring trips to the office. In this fashion, RPM has great potential to reduce disparities in healthcare.

**3. Cost Savings on Both Sides**

RPM technology can address some of the cost issues that plague the (American) healthcare system, potentially saving both healthcare providers and patients billions in costs over the next decade:

- Identifying concerning trends in health early to prevent hospitalization and readmission rates. When patients can avoid hospitalization, they generally have better long-term health outcomes and can avoid the expenses of hospitalization.
- Reducing patient costs associated with traveling to and from doctor's offices and paying for appointments.
- Catching issues early, so fewer therapeutic interventions are needed, thereby reducing the costs passed onto the patients
- Offering remote monitoring can also save providers on their overhead costs. When physicians can see patients less frequently for the collection of health parameters, they can reduce their operating expenditures.

**4. Improved Patient Adherence**

Patient regimen adherence is one of the universal struggles physicians face when trying to keep their patients healthy. Up to 63% of all patients are non-adherent, which negatively impacts healthcare costs and disease outcomes. At each visit, doctors provide important guidelines aimed at improving the patient's health and managing any health conditions. But once the patient leaves the physician's office, there is a large burden of personal responsibility that falls on the patient's shoulders. A patient might adhere to the doctor's advice initially, but when life interferes, it's easy to fall back into bad habits or forget to keep up with your medications, diet, and exercise regimes.

Remote patient monitoring can empower patients to be more involved in their own health. Because patients can monitor key health indicators like weight, heart rate, and activity, they can actually see how their own personal behaviors affect their health trends.

## Drawbacks of RPM

**1. Data Accuracy**

There are still lots of questions about the accuracy of the information being collected by RPM wearables and other devices. Given that RPM technology is relatively new, healthcare organizations are actively investing in researching the accuracy and clinical effectiveness of RPM devices. Data needs to be accurate and reliable for remote patient monitoring to be used effectively to manage health conditions and catch problems early.

If the devices aren't using high-quality sensors, then the accuracy of the health data may be called into question. There's also the potential for user error with RPM devices. If the patient is not trained properly on how to calibrate, wear, and use their monitoring device, the data collected could be completely useless for the provider.

**2. Upfront Costs**

Before a patient can start using an RPM device, they must first pay for it. The upfront cost associated with RPM technology can be a barrier for many patients. Some of the devices are more affordable, while the more advanced and invasive devices can cost significantly more. The patient may need to consider the potential upside of RPM toward their long-term health. If an RPM device can help keep them out of the hospital, it may be well worth the cost.

There are also costs that the healthcare provider will need to absorb when offering RPM services to their patients. Licensing and software costs are usually paid for by physicians and not patients. These can be prohibitively expensive and may not be a feasible option for smaller doctor's offices.

**3. Security Vulnerabilities**

Anytime data is sent over the internet, the security of that data is a concern. Hackers and other malicious actors will work to access sensitive patient information for a variety of malicious activities. Furthermore, patient health data is protected, so providers need to make sure that the software and RPM devices they are using are secured with end-to-end encryption, login authentication, and other data protection measures.

Even when taking these precautions, there's still a major concern about catastrophic data breaches, which can prevent healthcare providers from wanting to offer RPM care options.

**4. Patient Buy In**

RPM technology is only helpful if the patient gets on board with incorporating these devices into their daily life. Some patients may be resistant to monitoring devices because they have privacy concerns or fear the intrusiveness of the devices into their daily lives.

Providers need to emphasize the benefits of RPM, so patients understand how this technology can help them manage their health. Healthcare providers should also cover privacy and security measures in place to protect patient information.

## The Future of RPM

Remote patient monitoring has a bright future within the healthcare industry because it offers a functional new way for healthcare providers to monitor patient vitals and other health indicators remotely. RPM protects patients from the risks of HAIs, reduces costs for patients and physicians, increases access to care, and can improve patient adherence.

While there are a number of key benefits to RPM, its important for providers and patients to note the drawbacks of this new technology. There are potential security risks and data accuracy issues to consider, plus the challenges of patient buy-in and upfront costs.

Published on : Thu, 20 Apr 2023