The Intersection of mHealth and Health Informatics

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Popular consumer-focused monitoring devices such as Fitbits and smartphones with health data tracking applications are all part of mobile health technology (mHealth). mHealth is a rapidly developing technology applied to improving population health and advancing healthcare practice—tasks that mirror the duties of health informatics and information management (HIIM) professionals. This article will discuss the importance, use, and benefits of mHealth in current practice as well as the implications of mHealth on HIIM practices.

The World Health Organization (WHO) defines mHealth as "an area of electronic health (eHealth)… the provision of health services and information via mobile technologies such as mobile phones and Personal Digital Assistants (PDAs)."[1]

mHealth comprises technology that enables devices like mobile phones or wearables to record and communicate personalized data aimed at improving health outcomes. As the market for mHealth grows, with the total market share forecasted to surpass $21 billion by 2018,[2] mHealth stakeholders continually strive to engage more people through mHealth technology.[3]

mHealth Use and Benefits

Mobile devices enable real-time communication between individuals in motion. Input may be collected continuously or in batches. Output mHealth technologies also include short messaging services, multimedia messaging services, smartphone applications (apps), global positioning systems (GPS), Bluetooth technology, and wearable audio/visual components. mHealth technology design focuses on data, layout, feedback, and interaction.[4] The interface should be simple and intuitive with design elements not interfering with the data.

The evolving role of mHealth provides benefits to stakeholders such as patients, providers, and payers. It should be noted that the primary focus of mHealth is the patient, even though it also benefits providers and payers.

mHealth's Use by Patients

mHealth is a useful tool that allows patients better personal control of their own health management through mobile apps. For example, some patients face strict medication regimens and mHealth technology can help patients set reminders to avoid missed doses. It is also a tool that allows patients to track their own health data by recording and adjusting physical activities, measuring and recording vital signs, and aggregating the information in order to look at daily, weekly, and monthly improvements in their health outcomes.

mHealth improves patient-provider communication through apps or patient portals, which enable providers to communicate securely with patients within that system. Patients can also query providers through this mechanism. Likewise, a patient and a care team can coordinate efforts and communications based on protocols established at the outset of the care plan. It also provides a record of communication between patients and their providers.

mHealth's Use by Providers

mHealth technology provides faster and more cost-effective care in hospitals.[5] Providers can save time by accessing patient information on their mobile phones or tablets and certain applications can assist the provider in designing a care plan for the patient. Medical information can be accessed quickly. By integrating patient and healthcare information together, providers have access to best evidence-based medical practices. This has potential to improve the health outcomes of patients.

mHealth's Use by Payers

Payers can promote wellness programs and health tips through mobile apps that potentially reduce the number of claims in the future. If payers are successful in keeping their consumers healthy, it may help them reduce costs and payment claims. In addition, the payers—with the help of data from the patients—can target specific populations and communities that are at a risk of specific illnesses and alert them to lifestyle changes that can aid in prevention.

The diagnosis of congestive heart failure is a widely prevalent chronic condition that can have frequent acute exacerbations often resulting in (repeated) hospitalization. From the payer sector this highly prevalent and expensive course of treatment became one of the dreaded "never events" for which reimbursement would be denied if a hospital readmission occurred within 30 days of a previous admission for the same diagnosis. Many of these patients undergo a course of home health services post discharge from the hospital. A sentinel condition for this diagnosis is rapid weight gain in a brief time period, indicating fluid retention, which puts patients on the path to hospital admission and payment denials.

Home health caregivers can use mHealth devices like a clinical scale with recording and transmitting connections to measure a patient's weight daily and transmit the data back to the agency. This provides an early warning of weight gain and leads to quicker intervention—everybody benefits. This same set up could be used by the patient at home with similar results.

mHealth Challenges and Implications

mHealth is in its infancy and will continue to grow and evolve as it is driven by biomedical and technological research enterprises in search of "newer and better" products or new revenue streams. In the current technology revolution, it can pretty much be said, "If it can be imagined, it can be done." However, there are several major challenges within mHealth technology, including issues with confidentiality and security, regulation, and technology integration.

Confidentiality and Security

As HIPAA requires, the personalized data of the patients must be safeguarded. Any breach in patient confidentiality due to hacking of non-secured applications can lead to HIPAA violations. Thus, security of patient information is a never-ending challenge. In addition, digital technology is moving at an unprecedented rate, causing regulations and standards to fall behind. As millions of people are using some form of mHealth, a software bug can invite hackers. Another issue is theft of mobile devices, which is prevalent and can lead to a data breach. Finally, viruses or malware can infect apps and the entire network to which they are connected.

Regulations

Navigating healthcare regulations remains a hurdle for content developers and providers. These laws may pertain to reimbursement or prescribing. There are a number of regulations that need to be met in order for mobile devices to become true tools for hospitals and practices to use. For example, an app that is directly involved in dispensing or controlling prescription drugs and controlled substances may have to meet FDA regulations and requirements before being accepted and authorized for use.

Integration

mHealth requires seamless integration of devices and applications. Thus, overdependence on these devices can cause a system to stop when there are software or connectivity issues.

mHealth technology is changing the traditional data collection practices. Traditionally, vital signs are collected in doctors' offices or bedside, and data are recorded in patient medical records. Mobile devices allow patients to collect these vital records and daily physical activities at home or on the go. HIIM professionals need to be familiar with and have skills to manage this kind of non-traditional approach to data collection.

The information recorded and collected from each activity in mHealth is segmented unless it can be integrated with electronic health records (EHRs). EHR integration can enhance the provider workflow, promote better care delivery, and improve data collection. The major role of HIIM professionals in this mHealth era is designing, managing, and enhancing EHR integration with mobile devices.

Change is Constant, Stay Current

As with all things related to the delivery of health services, change is a constant and very fast. Staying current is a continual challenge, as is the awareness of obsolescence and the need to discard what was recently new but is no longer relevant.

Notes

1. World Health Organization. "mHealth: New horizons for health through mobile activities." 2011. www.who.int/goe/publications/goe_mhealth_web.pdf.
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