

# No appointment needed - The advent of mobile health

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Spurred on by the COVID-19 pandemic, consumer adoption of telehealth has soared to 46%, up from 11% in 2019.<sup>1</sup> For private investors and consumers looking for alternatives to in-person care, mobile health has emerged as a promising technology that could have a material impact on addressing the Quadruple Aim of healthcare: reducing cost, improving outcomes, reducing provider burnout, and increasing access.<sup>2</sup>

## What is Mobile Health?

Digital health is a broad descriptor referring to the use of technology to deliver and enhance a healthcare service. This can include any technology platform or solution used in health care, including electronic health records applications. Mobile health falls under the umbrella of telehealth, which broadly covers a variety of digital healthcare services like online screenings, remote patient monitoring, provider-to-provider e-consults, and everything in between.<sup>3</sup> For our purpose, we will adhere to the mobile health definition put forward by the Agency for Healthcare Research and Quality (AHRQ): any website, program, or application delivered through a mobile device to support achievement of health objectives.<sup>4</sup> The table in Figure 1 categorizes segments of the current healthcare system that utilize or intend to utilize mobile health to increase access to care, support care coordination and management, and/or improve quality of care.

## Market investments and Funding

It is safe to say that investors are eager to fuel the digital health revolution. Funding for digital health exploded in the first quarter (Q1) of 2020, growing by 79% from Q1 2019 to reach \$3.6 billion, with a cumulative total of over \$47 billion poured into the space since 2010. Capital sources include seed and early stage venture capital companies, private equity groups, and other corporate

investment arms poised to seize a range of digital health opportunities. Mobile health applications accounted for \$365 million in Q1 2020 or roughly 10% of total funding in the telehealth space.<sup>5</sup>

FIGURE 1: MOBILE HEALTH OVERVIEW

Focus of Solution	Key Feature	Offering
<b>Diagnostics</b>	Autonomous	Platforms that look to diagnose or provide advice to users without the backup or input of a registered health professional.
	Semiautonomous	Platforms that diagnose or provide information against the backdrop or with support of medical professional.
<b>Therapeutics/ Medical Adherence</b>	Patient Adherence	Platforms that look to aid with medical or physical therapy adherence.
	Replacement Therapies	Platforms that are looking to replace therapies or drugs with a mobile app.
<b>Behavioral Health</b>	Personal Well-being	Platforms that are mainly focused on increasing personal well-being. Common examples include behavioral health and mindfulness/meditation.
	Care Management	Platforms that look to increase or ease chronic care management through mobile technology.

This growth is expected to continue as investors sit on an unprecedented amount of “dry powder”<sup>6</sup> (capital that has not been invested) and as digital health companies appear uniquely positioned to ease certain suffering brought on by the pandemic.<sup>7</sup>

By some estimates, the telehealth market has the potential to disrupt up to 20% of Medicare, Medicaid, and commercial office outpatient, and home health care spend.<sup>8</sup> The total market opportunity for mobile health apps includes components for diagnostic, behavioral health, and medical adherence, among others in the health sector. The ability for mobile health to gain both clinical approval and user acceptance will ultimately determine how much of a shift to telehealth from in-person care is possible, and what supplemental value may be added.

Other addressable market opportunities include reducing possibly unnecessary hospital admissions, which the AHRQ estimates at \$33.7 billion for adult patients in 2017.<sup>9</sup> Consider four healthcare service categories that are most likely targeted by mobile health: emergency department visits, behavioral health, physical, occupational, and speech therapy, and preventive services.<sup>10</sup> Alone, these four service categories represent approximately 23% of outpatient billed charges and 22% of professional billed charges<sup>11</sup> in the commercial sector. While these service categories represent the most obvious path forward in the near term, the dynamic nature of mobile health will open more markets, such as dentistry,<sup>12</sup> and services that were not previously considered.

Mobile health may provide true value to providers and consumers in altering the current healthcare delivery system. For example, there is potential to impact high-cost spend related to unnecessary readmission or lack of patient adherence. New delivery methods through mobile health could also provide lower cost alternatives that reduce or even replace the need for current high-cost solutions. One such example is remote behavioral health reducing overhead costs for providers, which could be passed on to patients and insurers through reduced rates.

## Mobile Health Opportunities

Digital health efforts, and more specifically mobile health, support the Quadruple Aim of reforming the current healthcare system (defined above). Mobile health may provide certain advantages and opportunities over traditional healthcare modalities—namely a more consumer-focused platform that offers flexibility to fit individual needs.

Mobile health could be deployed globally, which attracts investment due to both the sheer size of the global economy and because development can be launched in low-cost environments, rapidly refined, and then adopted in more complex developed healthcare systems. It is projected that 3.8 billion people, or roughly half the global population,<sup>13</sup> will be smartphone users by 2021.<sup>14</sup> Some rural and underserved populations could benefit from this broad reach, creating access to medical solutions that may currently be restricted by geographical factors. Mobile health may also improve access, as patients and doctors may no longer be constrained by their locations for certain services, including preventive consultation, behavioral health, and chronic condition management.

Mobile health may assist with providing reliable, global access to quality healthcare, as well as improve individual outcomes through personalization and appropriate preventive measures that are available almost immediately. Through powerful machine learning techniques deployed on user data, mobile health can develop an understanding of each user's unique physiology and

then use the data to potentially make more accurate predictions.<sup>15</sup> Increasing the accuracy of predictions and tailoring to the individual may lead to reduced mistakes in diagnoses, and thereby may reduce costly and inefficient care such as hospital readmissions. Mobile health offers users a second (and in some case sole) platform for routine screening and diagnostics that, if used correctly, can steer individuals to cost-efficient providers and sites of care, avoiding misuse of scarce (and expensive) medical resources.

Some technologies may extend scarce provider resources by acting not only as triage tools, but also to educate and treat patients according to their specific needs. When evidence-based behavioral nudges, prompts, and encouragements are part of the patient's daily activities, the small incremental steps to better health are more likely to be realized than via monthly visits to a physician.<sup>16</sup> These tools are currently useful for care management purposes with appropriate support for clinical input. As these programs become more accepted, providers may be able to increase both the number of patients they see, and the quality of care they provide.

## Current Challenges

Like all burgeoning industries, mobile health and digital health face their own set of challenges. Digital health is battling high fragmentation, with many players generating similar solutions. Multiple solutions on different platforms may create complicated learning curves for providers and consumers, potentially slowing adoption. The U.S. Food and Drug Administration (FDA), is currently updating their procedures for authorizing mobile health applications.<sup>17</sup> The lack of a proven FDA process for adoption may have caused hesitation and slowed adoption. Given the record amounts of funding currently available, many companies are able to receive early-stage funding for similar products and solutions, which in turn makes it difficult for the industry to identify market leaders and gain acceptance from large payers.<sup>18</sup>

Digital health has also struggled thus far to demonstrate value to providers and payers with an end-to-end full service product; that is, a purely mobile platform offering multiple health solutions such as diagnoses, care management, coaching, and therapeutics. Such a platform, which integrates multiple offerings and easy data exchange, may promote provider and payer acceptance by eliminating the need for providers and users to sign on and learn multiple platforms.

Providers will need guidance and experience as these new technologies are adopted, similar to any other new medical device or drug. A single platform may allow for more uniform instructions, and allow those who are experts with the technology to educate providers on their best uses and implementation.

Mobile health faces the same challenges as digital health more broadly, with two additional considerations in promoting daily usage and correct targeting. As mobile health and digital health investment has soared, patient adoption continues to be a challenge.<sup>19</sup> Mobile health has the unique challenge of competing not only with other companies in the same sector, but with all other mobile applications looking to grab the user's attention.

And unlike most mobile apps, mobile health needs to provide a different set of tools across stratifications of risk within a population. For example, a diabetic tool needs to target more than a dozen different risk levels, starting with asymptomatic metabolic syndrome to uncontrolled Type I diabetics suffering from end-stage renal disease (ESRD).

## Concluding Remarks

Mobile health is poised to impact the healthcare market through an increased focus on the consumer and without traditional constraints that hinder incumbent healthcare companies. High investment in the industry has driven record valuations, and we can expect to see more solutions coming to market that aim to lower total healthcare costs by offering more cost effective solutions, or by reducing costly procedures and readmissions.

While fragmentation and provider adoption considerations pose challenges for market growth, consolidation in the industry should drive mobile health companies to scale. Provider and consumer adoption may drive payer acceptance which, in turn, will lead to further utilization. As mobile health companies are able to drive higher daily utilization of their products and gain deeper understandings of their target audiences and demographics through the data collected, solutions will improve, allowing the industry to provide new insights and higher-quality personalized care in the global health market.



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