Improving Health Systems: There Is No App for That

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Abstract

Healthcare apps generally do not offer a coordinated strategy that aligns incentives among payers and patients, nor do apps solve underlying structural economic problems of sustainability, quality or equity. The economics of payers demand pilot testing; evidence-based research and iterative design; sustained communications to patients with the most need; and slow, careful integration that coordinates the needs of all participants. An integrated social systems app model can take the pressure off a stressed system.

Introduction

Today, there are roughly 100,000 healthcare apps fitting the health and fitness category in the Apple's App Store and Google Play marketplaces. Yet only a few popular apps lay claim to improving access to care or to presenting any other health system benefits. This article sets out to answer why that is and why we need to think about healthcare apps differently in order to improve holistic, patient-centred care as a vital component of a well-integrated health system.

Popular Apps Tend to Focus on Individuals, Not Systems

The five most popular iPhone health apps in the US, as of May 9, 2023, focus on individual fitness, "brain training" and food and cosmetics barcode scanning that assess their potential impacts on individual health (SimilarWeb 2023a). None in the top 50 make any claims to improving health systems. We see a similar phenomenon in Canada (MobileAction 2023); two in the top five are hiking or biking apps. The top 10 health apps for 2023 selected by *Sports Illustrated* base recommendations mostly on user reviews and cost, not scientific evaluation of the apps' effectiveness at the individual or system level (Sayer 2023).

In Canada, the top 10 free "medical" iPhone apps include services to aid in scheduling virtual care for certain diagnostic or other clinical services (Maple, TELUS Health Virtual Care); sharing medical records with patients (MyHealth Records from the Alberta government); accessing care teams (MyChart from Epic Systems, TELUS Health MyCare); clarifying private insurance benefits (Blue Cross Mobile); and managing blood donation appointments (GiveBlood from Canadian Blood Services) or blood testing appointments (Net Check In from LifeLabs) (SimilarWeb 2023b).

Government bodies produce only two of the top 50 Canadian medical iPhone apps. One is "Secourisme–Milieu de travail" (i.e., "First Aid–Workplace") from Quebec's Committee on Standards, Equity, Health and Safety at work. The other is MyHealth Records for Albertans 14 years of age and older who may use the app to obtain some of their records from Alberta Netcare, the province's electronic health record system.

Apps Do Not Have Incentives to Focus on Systems

There is little commercial incentive for most health apps to coordinate with one another. To win over and retain users, an app's primary incentive is to build an intuitive and simple interface that a patient can navigate and understand. Some – such as the many pregnancy, child-rearing and sleep tracker apps – are in competition with one another for the same users. The most popular health apps enjoy financial backing from highly capitalized private or publicly traded companies. A giant digital marketing budget, not independent validation, is what drives user uptake. In other words, while the demand for new medical interventions should be based on impartial evidence of effectiveness (on the same principle as physicians not being permitted to advertise their skills), health app uptake is based on digital advertising best practices: a clean user interface, a catchy name, engaging colour hues and ease of navigation for the target demographic.

Uber Health is one such app. It claims to be on "a mission to help improve health outcomes and the patient, caregiver, and clinician experience by helping enable better access to care and services" (Uber Health 2023). Uber Health is available

everywhere in the US where the company offers its regular ride-sharing services. This means that outside of large swaths of rural America, Uber offers a matchmaking service. It matches the needs of some healthcare organizations (which choose to use Uber Health if it saves them money) with the needs of some drivers (who choose to use it if it makes them money). If there's an algorithmic match between the preferences of a healthcare organization and an Uber driver, a patient might theoretically benefit from this app. An ideal app should be one whose benefits to the health system have been proven; in other words, these benefits should be more than theoretical.

What the COVID Alert App Taught Us

Canada's experience with the defunct COVID Alert app (Government of Canada 2022) is instructive. Through the use of Bluetooth signals, the app was intended to enable the tracking of users potentially exposed to the virus. App users who tested positive on a polymerase chain reaction test could receive a one-time key to enter into the app and, thereby, "alert" other users in their close vicinity at the time of risk.

The app's benefits to the health system should have been demonstrable to anyone. Yet more Canadians tuned into the coronation of King Charles III in one day than downloaded the COVID Alert app over a two-year period (Ransome 2023). British Columbia, Alberta, Nunavut and the Yukon declined to participate in the distribution and marketing of the app (Government of Canada 2022).

As of June 17, 2022, the app had logged just 63,117 positive COVID-19 tests since its launch in July 2020 (Government of Canada 2022). And this was a pandemic. Everyone had a personal stake in sharing their positivity status but, even then, few of us did. Key public health leaders – people we looked up to – endorsed the app. What does the failure in user uptake of this potentially life-saving app portend for the tens of thousands of health apps that do not offer the same theoretical system benefit and are not endorsed by authorities we respect?

Our healthcare woes cannot be fixed by one app or by a million apps ... unless these apps talk to one another.

App Integration Is Central to System Impact

No app should be an island, entire of itself. Apps generally do not offer a coordinated strategy that aligns incentives among payers and patients, nor do apps solve any underlying structural economic problems of sustainability, quality or equity. Healthcare apps – specifically, those that enjoy independent, third-party evaluations of their efficacy – should, in principle, appeal to technologically savvy and health-literate patient populations with known ongoing medical needs, such as diabetes, where apps can help with medication routines or glucose-level tracking. But to suggest that apps such as Uber Health will fix a healthcare system's sustainability or coordination-of-care challenges is like saying Amazon's "Audible" app (Audible, Inc. 2023), which matches book listeners with book narrators, will solve the economic challenges now punishing the publishing industry and authors. The Uber app is useful for patients in urban centres but not for an integrated health system.

Now Is the Time for App Integration

It is not 2012 anymore. Back then, I was once heckled in a public lecture – accurately, in hindsight – for engaging in "hype 2.0"; I regularly evangelized about the grand promise of healthcare apps to help patients participate in their care journey and become activated "e-patients" in a fast-evolving healthcare system whose quality and sustainability could respond with agility to the rapid-fire uptake of apps that would disintermediate the need to consult in person with health experts. What I failed to see is that an app needs to integrate more than disintermediate if it is to truly benefit a patient's holistic wellness while also supporting health prevention goals.

I now see that the challenge is that healthcare apps are like any other app, sometimes vague as to their purpose – and changeable. Apps compete for scarce screen space on mobile phones. Given the goals of public health, it is important to note that apps generally target individual or specific group needs, not system needs. Apps are attractive to tech-literate Gen Z and millennial populations – less so to older populations. Their use is voluntary (targeted populations may choose to not use them), and, appropriately, apps must always be sensitive to privacy concerns. If successful commercially, apps can offer valuable information or provide an improved patient experience, at least for some, but outcomes such as these are rarely evaluated. Other important benefits, though seldom studied, are the provision of vital health information for vulnerable or at-risk populations in developing countries, improved capacity to identify and track diseases and access to training for front-line health workers (Agarwal et al. 2015).

Our healthcare woes cannot be fixed by one app or by a million apps for that matter, unless these apps talk to one another. Outside healthcare, most popular apps that society uses today are designed to allow producers to sell directly to consumers. Duolingo, Bumble, LinkedIn, Uber, Spotify: these apps are wildly popular since they remove the need for professional brokers in order to obtain access to a highly desired good or service in language instruction, romance, jobs, transport and music, respectively. In these areas, there is no need for these different services to talk to one another.

Apps generally aim to put the user in control and deliver an amazing "user experience," though not necessarily an excellent outcome. Uber, for example, aspires to become a travel

"super app" – one that will let users plan end-to-end journeys (Lahiri 2023). Uber's customer promise is not about the quality of the planes or trains or cars that take you where you want to go, it is about the *experience*. When you log into the app to try to complain about the service, you can easily "provide driver feedback," but you cannot provide feedback on the outcome of the purpose of your trip.

So-called healthcare "gig apps" – such as ShiftMed (https://www.shiftmed.com/), CareRev (https://www.carerev.com/) and ShiftKey (https://www.shiftkey.com/) – have shown that they can help nurses pick up extra shifts at US-based private hospitals. Yet these are transactional apps, like Uber, where payers (hospitals or hospital systems) bid on a fluctuating pool of nurses and pay them their market price at that point in time. Like Uber Health, these participants do not work in a coordinated fashion. How much the nurses are compensated is variable and unpredictable – it's an inefficient market that decides. The process actually derails the need of hospitals that require a stable roster of dedicated employees. Nurses who pick up a shift at a new hospital will not be as familiar with that organization's protocols, which opens the door to medical errors. In the end, even though a minority of nurses may benefit from the app's scheduling conveniences, patients could suffer.

Thinking Back in Order to Think Ahead

The health app industry once championed a coordinated strategy for mobile health that focused on the urgency of learning from mobile apps in different areas of healthcare and also from other industries, such that stakeholders could work together to improve sustainability. This is essential given that the strain on the Organisation for Economic Co-operation and Development healthcare systems inexorably rises. The GSM Association (GSMA) representing the worldwide mobile communications industry published a landmark report on mobile health in 2012 describing a vision for healthcare. It saw ways in which mobile technology might play a role in innovating healthcare delivery systems and healthcare system cost management (GSMA and McKinsey & Company 2010).

This GSMA report, written in partnership with the consulting firm McKinsey & Company, noted: "[T]he market must facilitate interactions between all players – device manufacturers, mobile network operators (MNOs), software platform providers, healthcare providers, payors, and regulators" (GSMA and McKinsey & Company 2010: 14). The report underscored the vital role of payer involvement to ensure effective strategic design and implementation. It advised that payers typically have longer time horizons than do many private initiatives and, though they stand to benefit the most in terms of cost savings, it will be challenging for payers to participate meaningfully if the market is fragmented by a flurry of pilots and small, niche offerings. The fragmentation that the report foretold *could* happen is exactly what *has* happened.

The economics of current day apps often demand blitz marketing and fast returns for investors. In contrast, the economics of payers demand pilot testing; evidence-based research and iterative design; sustained communications to patients in most need; and slow, careful integration that coordinates the needs of all participants.

The Future of Apps: Social Systems

Social prescribing apps, for example, already hold out the promise of digitally connecting patients to a range of non-clinical services in the community to improve their holistic health and well-being. These apps can ameliorate social determinants of health, such as socio-economic inequities, housing, nutrition and education needs to improve health outcomes. Apps will accurately diagnose and transmit a patient's social systems information through an integrated network that quickly connects a sender (a patient) to an appropriately skilled responder (a care provider). An integrated social systems app model, with time, takes the pressure off a stressed system. Success will, thereafter, fuel further commercial investment from private- and public-sector payers.

Those apps playing together can stay together. I imagine a day when health apps will want to plug together. This is the next step in a secular trend. It is a tiny step technologically; it does, however, require a large leap in thinking about how we think about health apps. HQ

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