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NEW PERSPECTIVES: PART I

Mobile Technologies to Facilitate Self-Management of Chronic Conditions: Current Favorite Apps from Medical Students

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I met Mr. R on my ambulatory medicine clerkship. He is in his late 70s and has multiple illnesses, including poorly controlled diabetes and depression. He lives alone and continues to actively participate in community activities. We started discussing the challenges he faced in managing his diabetes with diet and exercise. In the winter, he felt uneasy walking or driving on ice, making it difficult to go to the grocery to buy healthy food. He thus ordered takeout several times a week. While he was talking, I started imagining how I would solve some of these problems. The answer in almost every case was to pull out my smartphone and get to work. This patient had a smartphone with him, so I asked him if he had ever tried to use an application on his phone to order grocery delivery during inclement weather. He looked at me and said, "You can do that?!"

Most Americans are becoming accustomed to using smartphones to pay for purchases, track finances, call cabs, buy goods, read news, and connect with others. Nearly two thirds of Americans own a smartphone, and nearly 20% rely on smartphones for accessing online services. Not surprisingly, this has fueled runaway development of applications that allow users to easily access the Internet to coordinate activities of daily living. Smartphone technology is also successfully moving into the health care sector: "Already 62% of smartphone owners have used their phone in the past year to look up information about a health condition."[1] Today, these applications are largely marketed toward a relatively young, tech-savvy, and affluent crowd. We contend that smartphones have a tremendous potential to help older adults live happier and healthier lives as well.

A common misconception is that technology is beyond the reach of many of our elderly patients. We have observed that older patients are increasingly engaged with technology—they show us pictures of their grandchildren on smartphones, they use pill-tracking apps to keep track of medication use, and some spend many hours on social media applications such as Facebook. In fact, many apps are not only accessible but also easier to use than traditional means of interacting with the environment. For example, it is arguably easier to press three buttons on a phone to request an Uber than to find a phone book, look up the number of a cab company, and correctly identify your address to a dispatcher. Challenges with mobile applications for older adults include risk of privacy violation, potential for excessive spending with a "virtual" shopping cart, and rapidly changing application interfaces, but none are insurmountable with effective support and teaching.

Another misconception about smartphone use is that it is limited to those who have significant financial resources. In fact, recent studies have shown that smartphones are most readily—and consistently—used by those with the least financial resources. In fact, vulnerable populations are more likely to be entirely smartphone dependent as they have no other reliable Internet connection or online access. According to Pew Research Center data, "[s]ome 13% of Americans with an annual household income of less than $30,000...are smartphone-dependent [versus] just 1% of Americans from households earning more than $75,000."[1] Furthermore, "12% of African Americans and 13% of Latinos are smartphone-dependent, compared with 4% of whites."[1]

Finally, the smartphone's ubiquitous presence in the pockets and purses of most Americans means that emergency personnel have a reliable means of obtaining essential information: Comprehensive medical information can be stored on all iPhone and Android smartphones, providing ready access to emergency contacts and important medical details. (No phone passcode is required to access this medical ID.) Even simpler is instructing patients to place a label on their phone with their name and emergency contact information; this is a practical low-tech identification method that can be used regardless of phone type.

During the visit, our patient downloaded the Peapod® app, which he now uses to have groceries delivered to his home during the winter. As our visit ended, I felt gratified knowing that even as a junior member of the team, I had this unique knowledge to share with my colleagues and patients. I was able to help my patient at the point of care with something that would provide him healthy food, peace of mind, and a bit more independence.

Table 1 lists applications that clinicians can share with their patients and their caregivers to assist in streamlining their activities of daily

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living and socialization with the additional aim of facilitating chronic disease self-management. This is a snapshot view of applications that are currently in wide use. There will be geographic variation in availability of each of these services, and certainly this is a list that should be updated frequently as new ones are developed.

Reference

1. Smith A. US Smartphone use in 2015. Pew Research Center, April 1, 2015.

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Table 1. Applications Facilitating Disease Self-Management

Issue	Application Examples	Use Case	Considerations
Transportation	Lyft, Uber, Sidecar, Boston Cab (many local cab companies now using ride-hailing apps)	• Frequent short trips during a time of disability (e.g. to physical therapy) can be easily managed. • Receiving specific pick-up times in inclement weather may be more feasible than with traditional cab services.	• Surge pricing can lead to unexpected expenses. • Name and address are made known to drivers, perhaps raising safety concerns.
Food delivery	Instacart, GrubHub, Peapod, Foodler	• People with mobility impairment or who stay in because of inclement weather can still have access to healthy food (i.e. prepared or grocery delivery).	• It is not possible to examine food prior to purchase. • Social benefits of shopping or dining out are reduced.
Housing	AirBnB, HomeStay	• A patient traveling to the city for an extended course of outpatient treatment (e.g. radiation therapy) may find home stays less expensive than hotel lodging.	• This choice may not meet the expectations of patients who are used to overnight accommodations in motels or hotels. • Accessibility of the unit must be assured prior to the stay.
Communication	Skype, Facebook, WhatsApp	• In times of serious illness or infirmity, people can stay in touch with family and reconnect with friends via social media and free video calls.	• Sharing private data (i.e. location, financial data) online may raise safety concerns. • Video calls can lead to data overcharges on typical phone plans.
Medical	Amazon MyHealthCare Wishes App (American Bar Association)	• A patient who is managing wound care at home can order most needed supplies from Amazon or other online suppliers. • Important health care documents are always with the patient, avoiding the need to search a file cabinet or access a safety deposit box.	• Flexible spending accounts can help with online medical purchases. • Documents can be faxed or e-mailed from a smartphone to a health care provider; all documents are stored on the phone, not on a cloud or server.