Issue
Brief

Digital Health Innovations for Medicaid Super-Utilizers: Consumer Feedback to Steer New Technologies

By Rachel Davis, Center for Health Care Strategies   DECEMBER 2013

In recent years, new technologies designed to help individuals manage their health have saturated the market. Products ranging from smartphone applications ("apps") to remote patient monitoring devices have become commonplace, with Apple's App Store offering over 43,000 mobile health-related apps as of June 2013.[1] However, the majority of these tools do not consider the needs of the nation's sickest, most costly individuals,[2] many of whom receive publicly financed care.

Within Medicaid, five percent of beneficiaries account for 55 percent of the program's total expenses.[3] These individuals struggle not only with multiple chronic conditions, including high rates of mental illness and substance use disorders, but also with significant social and environmental challenges such as poverty, homelessness, and social isolation. Their needs are different from those of the population currently targeted by most digital health tools, and yet, in order for these innovations to have an impact on overall quality and cost outcomes, they must reach these high-need, high-cost individuals.

Recent studies show that despite their lower incomes, high-need, high-cost Medicaid beneficiaries are increasingly 'plugged in.' An estimated 34 percent of individuals with an annual household income of less than $30,000 have smartphones—a number that holds steady across race, ethnicity, and level of education.[4] At the same time, 55 percent of individuals with an annual household income of less than $30,000 own only basic cell phones.[5] Current trends suggest that low-income individuals will increasingly become smartphone owners as the technology becomes cheaper and more widespread,[6] but for now, tools aimed at this population must, at the very least, have elements that work on basic cell phones.

To explore how existing and emerging technologies can address the needs of high-need, high-cost Medicaid beneficiaries, the Center for Health Care Strategies (CHCS), with support from Kaiser Permanente Community Benefit, conducted a series of consumer focus groups in the spring of 2013. This brief synthesizes key focus group themes and highlights opportunities for entrepreneurs, developers, health care delivery systems, and policymakers to pursue improved care for complex Medicaid populations through digital health innovations.

Business Case for Digital Tools for Individuals with Complex Needs

Medicaid beneficiaries with extremely complex medical and social needs— interchangeably referred to as high-utilizers, super-utilizers, or frequent flyers— interact with the health care system frequently and at great cost. It is not unusual for high-need, high-cost Medicaid beneficiaries to have tens of thousands of dollars in annual health care-related expenses, largely driven by frequent emergency department visits and costly inpatient admissions. The Camden Coalition of Healthcare Providers, a New Jersey-based nonprofit that has gained national

IN BRIEF

A plethora of digital tools has emerged in recent years to help individuals take charge of their own health; yet few of these tools are designed to meet the unique needs of Medicaid's highest-need, highest-cost beneficiaries. To better understand how digital technology might be able to support this population, the Center for Health Care Strategies (CHCS) conducted a series of consumer focus groups in the spring of 2013.

This brief: (1) outlines the challenges expressed by these consumers; (2) suggests opportunities for developers, entrepreneurs, health care delivery systems, and policymakers to address them; and (3) highlights digital health technologies that Medicaid stakeholders and technology developers may want to explore.

recognition for its innovative approach to managing high-cost individuals in a low-income urban area, found that its top one percent of members using inpatient care accounted for more than $75,000 per beneficiary in Medicaid costs annually. These individuals averaged 4.5 emergency department visits and 5.3 inpatient admissions per year and spent almost 55 days in the hospital annually.[7] With the average Medicaid inpatient admission costing $7,500, there are clear opportunities for payers to see cost savings by implementing successful strategies to help this population manage its health and prevent unnecessary emergency department visits and inpatient admissions.[8]

Exhibit 1: Focus Group Characteristics

Organization	Location	Group Characteristics
Federation Employment and Guidance Services (FEGS)	Long Island, NY	Youngest group, with most members under age 35.
Community Behavioral Health (CBH)	Philadelphia, PA	All had a diagnosis of serious and persistent mental illness and had been previously homeless. At the time of the focus group, all were in permanent supportive housing through CBH.
Westchester Cares Action Program (WCAP)	Tarrytown, NY	Largely suburban group; most had to travel moderate to long distances to receive care and did not have easy access to public transportation.
Institute for Community Living (ICL)	Brooklyn, NY	Roughly half of participants were younger than 35; several reported being homeless in the past.

Two of the greatest challenges facing health professionals working with this population are initially locating and establishing relationships with these individuals, and then, upon doing so, maintaining consistent engagement and contact. A program providing care coordination services to high-utilizing Medicaid beneficiaries based out of Harborview Medical Center in Seattle, Washington found that staff was only able to engage 45 percent of individuals deemed eligible for the program due to factors such as unstable living situations that lead to frequent changes in address and phone numbers; frequent cycling in and out of care facilities; and consumers' mistrust of health care professionals.[9, 10]

The increasing prevalence of mobile phone ownership and internet access presents new opportunities for health care professionals to maintain regular contact with these individuals and to receive real-time information about their clinical conditions and needs. This, in turn, allows care team members to more proactively manage this group and respond quickly when needs arise, increasing their chances of addressing issues before they turn into crises.

Similarly, digital tools also have the potential to empower individuals with complex health needs to proactively manage their own care.[11] Individuals with smartphones—and even basic cell phones to some extent—can use their phones to: (1) collect and relay helpful data in real-time; (2) receive information relevant to their needs in a timely fashion; (3) address many of the challenges they experience navigating the health care system; and (4) engage in new ways around their health. These tools can help providers and care coordinators shift their energies from more basic care management tasks (e.g., giving reminders) to more complex care management activities that require intensive and personal interactions.
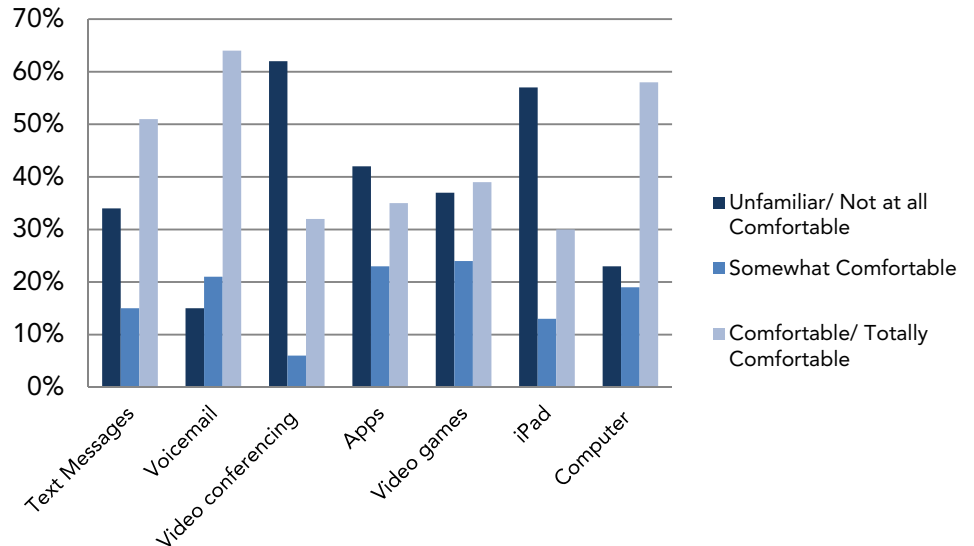
The Focus Groups

To explore opportunities for engaging Medicaid super-utilizers through digital technologies, CHCS organized a series of focus groups with high-cost, high-need consumers in the spring of 2013, designed and co-facilitated in partnership with

New York University (NYU) health research faculty. Focus group participants described the challenges they experience in managing their care on a day-to-day basis, the role that technology currently plays in their lives, and opportunities for technology to help better manage their health.

Focus group members received services from one of four care management organizations in urban and suburban settings in New York and Pennsylvania, and group size ranged from eight to 12 participants. Each group was racially diverse, with minorities representing the majority of participants, and had roughly equal participation between men and women. Notably, the age range varied widely across each site (see Exhibit 1). Participants from all groups had one or more chronic conditions, and several had behavioral health and/or substance use disorder diagnoses. Conversations were loosely structured around a series of questions developed by CHCS and its NYU partner, with participants also answering a brief questionnaire regarding their familiarity and comfort level with technology (for more information, see *Digital Health Focus Groups Supplemental Information* on CHCS' website).

Exhibit 2: **Focus Group Technological Comfort Levels**

Legend:
- Unfamiliar/ Not at all Comfortable
- Somewhat Comfortable
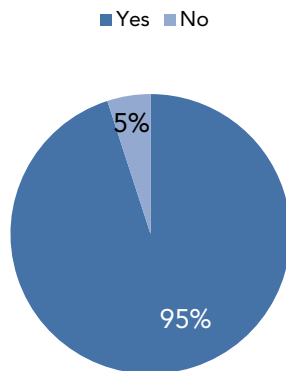- Comfortable/ Totally Comfortable

Key Focus Group Themes

Several focus group themes may provide helpful insights for health care professionals considering integrating digital health tools into their work and for entrepreneurs and developers looking to design new products for this population. See Exhibits 2 and 3 for information about the focus groups' familiarity with and access to digital tools.
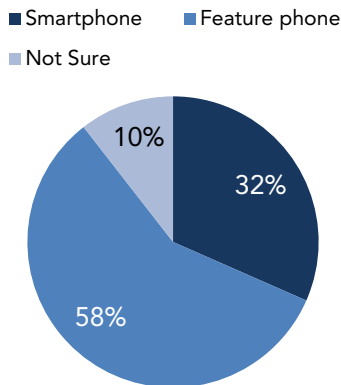
- **There was widespread interest among focus group participants in using digital health tools.** Although participants had varying degrees of familiarity and comfort with technology, the majority recognized that health care is becoming increasingly digitized and were eager to access technologies to help them manage various aspects of their health.

- **Many of the challenges the group members experienced related more to navigating the health care delivery system than to managing their health conditions.** Much of the conversation focused on how challenging it can be to access health care and manage all of the logistical aspects of their health and social needs.

- **A significant portion of the participants had low literacy levels.** This could be due to low educational attainment rates, cognitive impairments, or traumatic brain injuries, among other factors.
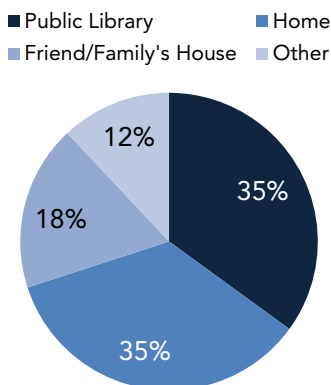
Exhibit 3: **Focus Group Feedback**

Do You Own a Cell Phone?

■ Yes ■ No

5%

95%

What type of phone do you own?

■ Smartphone ■ Feature phone
■ Not Sure

10%

32%

58%

Where Do You Access Computers?

■ Public Library ■ Home
■ Friend/Family's House ■ Other

12%

35%

18%

35%

- There were broad differences in technology exposure and adoption along age lines. Although each group had a slightly different composition in terms of diagnoses, housing status, and gender, the greatest difference among technology exposure and utilization was along age lines, with participants over the age of 40 being much less familiar and comfortable with technology.

- Several of the participants had impaired motor functions as a result of medication side effects or health conditions.

- The groups had mixed feelings about products or tools that shared data about their activities with providers. Some individuals felt that these tools would help to seamlessly loop care coordinators and providers into their care, while others felt that such features would be intrusive.

Challenges and Opportunities

Focus group participants discussed many of the challenges they experience in trying to manage their health care. The challenges fall into five areas:

- **Coverage:** Participants mentioned having difficulties getting real-time information about their Medicaid eligibility and enrollment status. Tools that address this information gap could allow beneficiaries to access care more efficiently.

- **System fragmentation:** Focus group participants often received their care from multiple different health systems, making it difficult for all providers to coordinate their efforts. Tools that simplify the consent process, and interoperable scheduling systems could help to address these issues.

- **Medication management:** Nearly all participants agreed that tracking their prescriptions—when to take them, how much to take, when and where to refill them, etc.—was a huge task. There is a clear need for products that help individuals track their medications, both at home and in pharmacies.

- **Appointment management:** There was significant discussion around the challenges of remembering many different appointments, and also of arranging for reliable transportation, to get to appointments. Participants expressed frustration at often having to wait for long periods of time to see a doctor once they arrive at the clinic. There are numerous opportunities for entrepreneurs, health care delivery systems, and policymakers to address these issues.

- **Records tracking:** Given the high frequency with which group members interact with the health care system, it is not surprising that they also mentioned being overwhelmed by the amount of paperwork they generated, and not always understanding what should be kept, what could be thrown away, and what should be brought to future medical appointments. Tools that allow individuals to electronically access and share their records would help address this issue.

A matrix in the appendix (see page 7) synthesizes these challenges and group members' approaches in detail, and suggests potential digital solutions.

Modifying Tools to Meet the Needs of Super-Utilizers

Participants felt that many of the digital health products that are currently on the market could be useful to them, if they were slightly adapted to meet their needs. Health plans, delivery systems, and care management programs can explore integrating these products into workflows and linking high-need, high-cost consumers to them. Companies that are in the digital health care space might consider adapting existing products to meet the needs of this population, including: adding text messaging features; accommodating for low literacy levels and decreased motor function capabilities; expanding the range of conditions addressed; and leveraging remote tracking features to address the transient nature of this group.

The summary below highlights the types of existing tools that group members were interested in and provides examples of the kinds of products that, with some modification, may be suitable for this population.

- **Tools that monitor, track, and provide data visualizations of health progress over time.** Potential products include web-based patient portals that are integrated with electronic health record systems such as **HealthVault**, and health tracking products such as **Weight Tracker QuickLog.me.**

- **Tools that allow individuals to take clinical measurements at home and transmit those data to clinicians remotely.** Several such tools already exist, including **Propeller Health, iBGStar**, and **Withings Blood Pressure Monitor**.

> **Creating Digital Health Tools for Individuals with Complex Needs: Tips for Entrepreneurs and Developers**
>
> - Interface design should be intuitive, uncluttered, and incorporate icons/images and voice-over features.[12]
>
> - Tools should be made in multiple languages.
>
> - Touch features should be adapted to low-motor skill functions.
>
> - Tools that have direct messaging features should include text messaging capabilities for individuals without smartphones.
>
> - Tools should easily allow users to set and modify their data sharing settings, including the ability to send previously collected data to new contacts.
>
> - Tools should go beyond addressing physical and mental well-being, taking into consideration what is needed to navigate the system and the social circumstances that impact an individual's ability to manage his or her health.

- **Products that are not condition-specific, but focus on overall health and wellness.** Examples might include apps that help consumers count calories (e.g., **LoseIt**), track daily steps, exercise (e.g., **PocketYoga**), and shop for healthy food.

- **Mobile apps or web-based programs that turn managing health conditions into a game with points and rewards ("gamification").** These tools may provide motivation for treatment engagement and adherence. Developers might consider including gamification elements in products targeting conditions and situations impacting complex populations, such as substance use recovery, depression (e.g., **Sparx**), and medication management.

- **Social networking tools that help individuals connect with others who are dealing with similar issues and provide them with a sense of community.** Several group members mentioned that connecting with others who understood what they were going through had been critical to maintaining the motivation to manage their health. Tools like **OneHealth** expand the ways in which socially isolated or home-bound individuals can find and connect with communities.

For a full list of the products highlighted in this brief, along with a description of each, see *Digital Health Focus Groups Supplemental Information* on CHCS' website.

Conclusion

High-need, high-cost Medicaid beneficiaries experience a range of challenges in accessing and navigating the health care system, many of which may be tackled through the use of mobile phone- and web-based digital health technologies. Digital tools tailored to the unique health and social needs of this population can help health care delivery systems engage and manage individuals beyond the clinical setting, leading to improved care quality and cost outcomes. Although the field of digital health care is still emerging, there are clear economic opportunities for entrepreneurs to develop products that serve a market that has been largely unpenetrated by digital health care. New partnerships may emerge between the digital health sector and the safety-net health care delivery system as they begin tapping into these opportunities with the goal of improving health and social outcomes for Medicaid's most complex populations.

Appendix: **Focus Group Discussion Summary**

Issue	Key Challenges	"Home-Grown" Techniques to Manage	Opportunities for Innovation
Coverage	Tracking insurance eligibility if enrolled in a Medicaid spend-down program, or when Medicaid lapses. Participants described rarely knowing if their eligibility status had changed, and typically finding out only when trying to receive care.	N/A	Health plans and state Medicaid programs may consider developing systems that provide real-time email and text notification to beneficiaries and designated individuals (e.g., caretakers and care coordinators) of insurance status, upcoming recertification dates, and other eligibility indicators.
System fragmentation	Lack of care coordination between providers.	Bringing multiple release forms to appointments with new providers, authorizing them to speak with all members of care team, then faxing or providing copies of signed forms to care team members' offices.	Entrepreneurs might consider creating online/mobile contract systems that have consent templates and the ability to digitally store/share signed forms in real-time (e.g., **Shake**).
	Conflicting appointment times if providers are part of different systems.	Looking for systems where services are co-located.	Health care delivery systems may want to pursue comprehensive scheduling platforms that allow appointments to be made while taking into consideration the scheduling availabilities of other members of a individual's care team (e.g., **MyHealthDIRECT**).
Medication management	Remembering to correctly take medications at the right time/dosage every day.	▪ Using pill boxes. ▪ Using "bubble packs," which let individuals see whether or not they have taken their pills. ▪ Placing medications in a location clearly visible first thing in the morning or last thing at night.	▪ Health plans and health care delivery systems may want to consider offering members "smart pill bottle" technology (e.g., **AdhereTech**) and mobile app/text-based technologies that help with medication adherence (e.g., **MangoHealth**). ▪ Entrepreneurs should look into expanding from "smart pill bottles" to "smart pill boxes" that can remind and track multiple prescriptions in one device.
	Difficulty tracking medications if picked up from different pharmacies.	Always using the same pharmacy.	Health plans could explore opportunities to develop or adopt web- or mobile-based prescription technologies that give individuals a real-time summary of active prescriptions, a history of when and where they were last filled, when they expire, when refills will be needed, etc.

Issue	Key Challenges	"Home-Grown" Techniques to Manage	Opportunities for Innovation
Appointment management	Remembering appointments.	▪ Putting appointment reminder notes on mirrors, televisions, refrigerators, etc. ▪ Using calendars (both paper and phone calendars) as appointment reminders. ▪ Reminder calls from doctors' offices.	Health care delivery systems could explore broadening their appointment reminder methods to include text messaging and email services.
	▪ Reservations for Medicaid transportation services must be made with at least three days' advance notice. ▪ Participants described these services as often showing up late, or not at all, and mentioned often forgetting pick-up times.	Using case managers to make transportation reservations.	▪ States can explore opportunities to develop transportation policies and tools that reduce the amount of lead time necessary to make transportation reservations for non-emergent issues (e.g., **Stat**). ▪ Entrepreneurs can consider designing tools that leverage GPS technology to send text messages to individuals about estimated arrival/departure time and other relevant information (e.g., **Uber**).

	Long wait-times at doctor's office.	Showing up early for appointment.	▪ Health care delivery systems can look into technologies that provide advance notice if providers are running late.
			▪ Health care delivery systems and clinics should use wait times to give and/or obtain relevant information from individuals. Possibilities include:
			  ▪ Purchasing tablets and having individuals enter supplemental information that will help inform the appointment (e.g., **iTriage**); and
			  ▪ Loading tablets with educational modules about health conditions such as **Orca Health**, or health-related games such as **PatientPartner**.

Record tracking	▪ Medicaid beneficiaries often have voluminous amounts of paperwork, and are not sure what to bring to appointments. ▪ Homeless and precariously housed individuals have a particularly hard time storing records and keeping them organized.	Some individuals bring paperwork with them to appointments.	Health care delivery systems can explore adopting tools such as **BlueButton** that allow consumers to download their medical records in portable format.

About the Center for Health Care Strategies

The Center for Health Care Strategies (CHCS) is a nonprofit health policy resource center dedicated to improving health care access and quality for low-income Americans. CHCS works with state and federal agencies, health plans, providers, and consumer groups to develop innovative programs that better serve people with complex and high-cost health care needs. For more information, visit www.chcs.org.

Endnotes

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