BEYOND THE HYPE: MOBILE TECHNOLOGIES AND OPPORTUNITIES TO ADDRESS HEALTH DISPARITIES

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In recent years, countless news stories, blog posts, and academic commentaries have highlighted the growing excitement surrounding the potential of mobile health (mHealth) technologies. Whether it is for treatment, diagnosis, illness monitoring or promoting healthy lifestyle behaviors, mHealth refers to the use of mobile and wireless devices such as smartphones or tablet computers for health or medical purposes, and as regularly illustrated in the *Journal of Mobile Technology in Medicine*, these emerging technologies offer innovative approaches to addressing complex medical and population health concerns.[1,2] For example, leaders in medicine, government, and industry have championed mHealth as a strategy for treating acute and chronic illnesses, more efficiently conducting clinical and population-based health research, and addressing healthcare workforce shortages.[3–5] In a recent commentary published in the *Journal of the American Medical Association*, Steinhubl and colleagues discussed the potential for emerging mobile technologies to transform health care.[6] While we entirely agree that mHealth holds tremendous potential, we caution readers that these benefits may be differentially experienced across diverse groups, and may exacerbate as opposed to close health disparities.

The Internet revolution is a case in point. It was championed as a means to overcome socioeconomic, demographic and geographic barriers, yet considerable evidence shows a digital divide and fewer opportunities for disadvantaged individuals. It is possible that mHealth may be different given the rapid worldwide penetration of mobile telecommunication technologies; however, despite the decreasing costs of owning the actual devices, continuing access to data services through subscription represents a considerable expense for low-income individuals[7] and

limits access and use of these services.[8] This creates challenges for many people to maintain a continuous and reliable wireless connection to the Internet, which would severely limit their ability to benefit from mHealth applications requiring continual illness monitoring, real-time data collection, or remote syncing to the virtual cloud. A recent survey conducted in the United States highlighted that expense was the single greatest barrier to owning a mobile device among a predominantly African American sample of low-income individuals with serious mental health concerns.[9]

Access, however, does not guarantee benefit from mHealth technologies. Difficult or unfamiliar user-interface may deter people from lower socioeconomic status to make effective use of mobile technologies for their health. Significant gaps in trust of health information from Internet sources has also been observed across low-income and ethnic groups.[7] It is likely that such digital inequalities and lack of trust of health information may significantly limit the potential for mHealth to enable minority and low-income individuals to benefit through self-diagnosing acute symptoms, or tracking and managing chronic health conditions. This is of particular concern given the disproportionately elevated chronic disease burden impacting these individuals.[10]

Our aim is not to question the promise of mHealth, but rather to emphasize that just as stated by Steinbuhl and colleagues in their concluding remarks, "much remains to be done".[6] Just as clearly defined government regulations[3], internationally recognized research guidelines[11], and robust clinical trial evidence[6] are critically necessary for advancing this nascent field, consideration of how mHealth technologies can be adapted and strategically

delivered to address the needs of the most vulnerable low-income patients is of equal value. The role of mHealth technologies for addressing health disparities has received less attention[12], though important opportunities exist. For instance, trends of increasing mobile phone penetration among low-income groups, evidence that at-risk minorities are more likely to search for health related information on their phones or on the Internet than mainstream populations, and the capacity to engage at-risk patients through greater personalization, facilitating social connections, or community outreach further support the promise of using these emerging technologies for reaching marginalized individuals.[13,14]

It is imperative that efforts to address health disparities through the elimination of health communication inequalities, targeted dissemination of culturally appropriate health information to at-risk minority groups[10], or incentives programs aimed at addressing gaps in affordability and access to mobile health technologies[7], must not be overshadowed by the hype or excitement of only the newest hi-tech devices. We sit at an exciting time where patients, researchers, clinicians, entrepreneurs and policy makers can shape how emerging mobile technologies will transform health care; let's not squander this opportunity.

Disclosures
None for any author.

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