



Short Communication

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Digital Divide as A Barrier to Comprehensive Digital Health Transformation

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Covid-19 pandemic has altered healthcare delivery platform from traditional face-to face format to online care through digital transformation [1]. Unlike the Spanish flu of 1918, which became an international epidemic over the course of a year, Covid-19 has spread to every inhabitable continent within weeks, outpacing our health system's ability to test, track, and contain people with suspected infection [2].

Digital transformation in healthcare arena opened a new frontier of healthcare on-demand. One in three American adults have gone online to assess a medical condition, 72% of Internet users say they looked online for health information within the past year, 47% of Internet users search for information about doctors or other health professionals, 38% of Internet users search for information about hospitals and other medical facilities [3]. Telehealth saw its heyday during the COVID-19 pandemic, when healthcare providers had to close their doors to non-urgent healthcare to accommodate Covid-19 patients. During that period, telehealth proved to be an essential way to maintain chronic disease management for high-risk patients.

Access to digital technologies assumes that every citizen be able to participate in healthcare improvement process. However, the adoption of telehealth was not equally accessible to different populations. Nearly 75% of households either lack or unaware of telehealth options, or both [4]. In addition, much like coronavirus cases, there were stark racial health disparities in pandemic-era telehealth use and adoption. Black patients were four times more likely than white counterparts to visit the emergency department during the pandemic's initial surge. Older black and Hispanic patients used telehealth at significantly lower rates than their

white and Asian counterparts [5], and people in inner cities may not use telehealth as much and often as they should, due mainly to inadequate infrastructure of broadband. Inadequate access to broadband technology for telehealth tends to reduce vulnerable groups from participating in telehealth treatments creating what we call "digital divide". In essence, digital divide separates those who "have" from those who "do not have" digital communication capability, thereby further deepening health disparity among population [6]. In healthcare, the digital divide can lead to disparities in patient portal adoption, telehealth care access, or ability to utilize patient-facing management software, like online appointment schedulers, etc. [7].

Digital divide also could be one of the important factors limiting to collecting and accessing to various personal information useful in managing social determinants of health. Artificial intelligence (AI) and machine learning allow us to collect pertinent information vital to health improvement and integrate into precision medicine [8].

Studies are abundant that medicine and access to healthcare facilities alone does not improve population health [9]. It is social determinants in health such as food security, community support, transportation, availability of health insurance that determine the overall population health. The United States spends the largest per capita on healthcare areas, yet infant mortality rate and life expectancy are the lowest among the OCED countries who allocated far more resources on social determinants of health than we have invested [9]

It is imperative, therefore, that we must reduce the digital divide to make healthcare benefits available to everyone. Investing

in health technology infrastructure is the best way to achieve such goal. Literature appears to suggest that technologies invested in key clinical health such as AI applications, can create \$150 million in annual savings for the U.S. healthcare economy by 2026 [10]. In addition, reducing digital divide is a matter of diversity, equity, and inclusion.

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