Addressing Inequities in Older Adults’ Health: A Role for Emerging Technologies

Mark C. Bicket, MD, PhD; Vijeth Iyengar, PhD; Leith States, MD, MPH

The COVID-19 pandemic has highlighted inequities in health care for many groups of people in the US, including adults aged 65 years or older, uninsured and underinsured individuals, and persons residing in rural communities.1,2 Technology-enabled solutions have been used to bridge the access gap for underserved communities. While telehealth services have dramatically risen to facilitate care during the COVID-19 pandemic, emerging technologies, such as artificial intelligence and 5G broadband, have even greater potential to transform health care. Careful attention must be paid to apply emerging technologies in an intentional and inclusive manner to reduce and reverse health inequities, especially among the older adult population—a rising demographic segment that is also disproportionately affected by COVID-19.

The federal government has taken steps to foster improvements in care, health outcomes, and quality of life for older adults across the socioeconomic spectrum amid the COVID-19 pandemic and beyond. As a recent model example of this undertaking, in March 2020, the Administration for Community Living and the Office of the Assistant Secretary for Health along with other federal partners launched the Mobilizing and Empowering the Nation and Technology to Address Loneliness and Social Isolation (MENTAL) health innovation challenge. This challenge spurred the development of tailor-made solutions to boost awareness and accessibility of technology-enabled tools and social engagement services for older adults, persons with disabilities, racial/ethnic minority communities, and veterans. With its focus on inclusive design, strategic partnerships, underserved populations, and end-user value-driven innovation, the MENTAL health innovation challenge serves as a model for approaching technology through policy. This initiative, along with a recent request for information, provides the context to better understand barriers and potential policy avenues to address inequities in the design, development, and deployment of emerging technologies in underserved, aging populations.

Key Principles for Emerging Technologies to Improve Health Inequities

Managing Bias

Biases may arise in applications of artificial intelligence and machine learning when the training, validation, and testing phases rely on data that do not represent the actual populations in which the tool is applied or used. Algorithmic bias in health care has led to discrimination by race and gender, and it is plausible that similar biases will arise as technology originally developed to serve the needs of other populations is applied to the needs of older adults and underserved communities.3,4

Cultivating Trust

Trust is a critical component to enabling technology solutions.5 While the use of wearables, algorithms, and other logic driven by artificial intelligence has become more commonplace, understanding how these tools work and guide care is not always straightforward. Patients, their caregivers, and clinicians may all perceive these solutions as a “black box” that obscures the inner workings of how outputs were derived. Standards for the design and development of emerging technologies can promote transparency, engender trust, and ensure ethical application of these tools.
Safeguarding Privacy and Data Security

Providing care in nontraditional settings for older adults and other populations has brought concerns about privacy to the forefront, given the rise in telehealth and other digital interventions in the home. The use of connected technologies also introduces cybersecurity concerns, which necessitate steps to mitigate the vulnerability of systems to security breaches that may result from the actions of unknown perpetrators. Concern for privacy and security risks is especially compounded in individuals who lack digital literacy on top of health risks, such as cognitive deficits, which are more common among older adults than the general population.

Policy and Programmatic Considerations for Innovation Rollout

Community Inclusion in Technology Development

Approaching all steps of the design and development process with input from the older adult community aligns with recommended practices of human-centered design methods. Human-centered design presents a useful framework to incorporate the needs and perspectives of older adults in underserved communities by directly engaging with them across the entire continuum of the development process.

Meeting the Data Needs for Emerging Technologies

While technology-enabled solutions often integrate disparate streams of data, more streamlined policies may help to clarify a gray area created when data shifts between entities with differing protection requirements. It is clear that a role exists for federal data resources to be leveraged for the development of artificial intelligence tools. Data sets require relevant metadata, which describes and provides context about the data set, as well as an understanding of data integrity and fidelity to ensure representation of the target community.

Technology Infrastructure and Literacy

Underserved communities will have the best chance of benefiting from emerging technologies when gains take place in their access to, understanding of, and skills for technology. Older adults who reside in rural areas will experience little improvements in broadband or use of 5G networks without specific attention to those underserved areas. Technology literacy goes together with infrastructure, representing a key concept for older adults who may need help using existing technologies, let alone those that are emerging.

Collaborative Approaches for Change

Public-private partnerships offer opportunities to leverage complementary strengths of different sectors to improve health outcomes. Features of such partnerships that hold promise include (a) engaging organizations operating in underserved areas; (b) involving partners with expertise in areas critical to addressing inequities, including data collection and analytics, software design and deployment, and telecommunications infrastructure for health care delivery and services; and (c) adopting inclusive approaches to partner coalitions to ensure diversity of input in the design of innovative solutions.

Conclusions

Emerging technologies, such as artificial intelligence and 5G, have significant potential to change the landscape for underserved populations, including older adults. To realize the full capability of these technologies to address health inequities, policy efforts should prioritize the involvement of end users in technology development, attend to the unique data needs of underserved communities, ensure that these communities have the requisite foundation to use these technologies, and
embrace collaborations with an array of stakeholders to deliver and sustain positive health outcomes. The COVID-19 pandemic has exposed critical health gaps for underserved communities, especially among older adults, but has also revealed a critical opportunity to leverage technology to meaningfully address inequities that were present long before the pandemic.

ARTICLE INFORMATION

Open Access: This is an open access article distributed under the terms of the CC-BY License. © 2021 Bicket MC et al. JAMA Health Forum.

Corresponding Author: Leith States, MD, MPH, Office of Science and Medicine, Office of the Assistant Secretary for Health, US Department of Health and Human Services, 200 Independence Ave, SW, Washington, DC 20201 (leith.states@hhs.gov).

Author Affiliations: Department of Anesthesiology, University of Michigan School of Medicine, Ann Arbor (Bicket); Michigan Opioid Prescribing Engagement Network (OPEN), Institute for Healthcare Policy and Innovation, University of Michigan, Ann Arbor (Bicket); Administration on Aging, Administration for Community Living, US Department of Health and Human Services, Washington, DC (Iyengar); Office of Science and Medicine, Office of the Assistant Secretary for Health, US Department of Health and Human Services, Washington, DC (States).

Conflict of Interest Disclosures: Dr Bicket reported receiving grants from the National Institutes of Health, the Centers for Disease Control and Prevention, the Michigan Department of Health and Human Services, and the Substance Abuse and Mental Health Services Administration and personal fees from Alosa Health and Axial Healthcare outside the submitted work; he also reported serving as a White House Fellow in the White House Office of Science and Technology Policy from 2019 to 2020. No other disclosures were reported.

Disclaimer: The views expressed in this article are those of the authors and not necessarily of the authors' organizations.

Additional Contributions: We acknowledge input from Chanya Liv and Bishen Singh of the US Department of Health and Human Services, numerous partners from Health and Human Services and the interagency, and the groups that responded to the request for information. We are thankful for their collective desire to improve equity and look forward to continuing collaborative efforts.

REFERENCES


