



# JOURNAL OF HEALTH AND LIFE SCIENCES LAW

OFFICIAL JOURNAL OF AMERICAN HEALTH LAW ASSOCIATION

## Regulating Digital Health Care for the Cognitively Impaired

*Kathryn Huber and Tara Sklar*

**2023–2024  
Editorial Board\***

---

**Susan O. Scheutzow**

Editor in Chief  
Kohrman Jackson & Krantz LLP

**Christine Dauchez**

Fenwick & West LLP

**Kyle A. Fromm**

HALO Diagnostics

**Gerry Hinkley**

Retired (formerly at Pillsbury  
Winthrop Shaw Pittman LLP)

**Barbara E. Hirsch**

Johns Hopkins Health System

**Scott A. Memmott**

Morgan Lewis & Bockius LLP

**Larissa C. Morgan**

Faegre Drinker Biddle & Reath LLP

**Gerard Nussbaum**

Zarach Associates LLC

**David A. Rawi**

Johnson & Rawi PC

**Kathryn Spates**

The Joint Commission

**Elizabeth J. Tucker**

Polsinelli PC

**Stephanie Lynn Williams**

Food and Drug Administration

**Kristen Andrews Wilson**

Stephoe & Johnson LLP

*\* Each member of the Editorial  
Board is participating in their own  
personal capacity.*

---

**Publication Staff****David S. Cade**

Executive Vice President/  
Chief Executive Officer

**Rob Anderson**

Senior Director of Publishing

**Lisa Salerno**

Director of Member Publications

**Katherine E. Miller**

Senior Legal Editor, Member  
Publications and Resources

**Annie Hsu Shieh**

Citations Editor

**Mary Boutsikaris**

Creative Director

**Jen Smith**

Graphic Designer

---

**2023–2024 Board of  
Directors: Officers****Patricia A. Markus  
President**

Nelson Mullins Riley &  
Scarborough LLP

**Asha Scielzo  
President-Elect**

American University, Washington  
College of Law

**Mark S. Kopson**

President-Elect Designate  
Plunkett Cooney PC

**Thomas N. Shorter**

Immediate Past President  
Husch Blackwell LLP

---

The mission of the American Health Law Association's (AHLA) *Journal of Health and Life Sciences Law* (ISBN 978-1-4224-4585-3, ISSN 1942-4736) is to publish in-depth, professionally reviewed articles that are interesting and useful to intermediate and advanced health lawyers throughout the United States.

This publication is designed to provide accurate and authoritative information in regard to the subject matter covered. It is provided with the understanding that the publisher and authors are not engaged in rendering legal or other professional services. If legal advice or other expert assistance is required, the services of a competent professional person should be sought.  
—From a declaration of the American Bar Association

Consistent with AHLA's educational mission, it is an objective of the *Journal* to be a forum for the free expression and interchange of ideas. Contributors to the *Journal* are not agents of AHLA. The opinions and positions stated in the *Journal* are those of the authors and not of AHLA, its staff, volunteers, editors, or editorial board. The *Journal* is published by the American Health Law Association, 1099 14th St., NW, Suite 925, Washington, D.C. 20005. Tel. 202-833-1100. [www.americanhealthlaw.org](http://www.americanhealthlaw.org).

© 2024 Copyright by the American Health Law Association. All rights reserved. No part of this publication may be reproduced in any form except by prior written permission from the publisher. Produced in the United States of America.

The reprint of American Health Law Association publications is handled by the American Health Law Association. To request reprint permission of the *Journal*, please email [journal@americanhealthlaw.org](mailto:journal@americanhealthlaw.org).

Subscriptions to the *Journal of Health and Life Sciences Law* are complimentary for members of the American Health Law Association. Paid subscriptions are available at [www.americanhealthlaw.org/journal](http://www.americanhealthlaw.org/journal).

**AHLA's Commitment to Inclusion, Diversity, Equality, and Accessibility**

In principle and in practice, AHLA values and seeks to advance and promote diverse, equitable, inclusive, and accessible participation within the Association for all staff and members. Guided by these values, the Association strongly encourages and embraces meaningful participation of diverse individuals as it leads health law to excellence through education, information, and dialogue. For more information on AHLA's commitment, please visit [www.americanhealthlaw.org/IDEAStatement](http://www.americanhealthlaw.org/IDEAStatement).

## Regulating Digital Health Care for the Cognitively Impaired

Kathryn Huber and Tara Sklar\*

**ABSTRACT:** Americans are living longer, and delivering high-quality, effective, and cost-efficient health care remains critically important, especially as the number of older adults with cognitive impairment increases. Relatedly, a growing number of older adults are preferring to “age in place” and receive care in their homes. This preference aligns with advances being made in digital health technologies (e.g., remote patient monitoring devices, telehealth) and Medicare coverage for in-home virtual health care services. However, efforts to integrate digital health care into the lives of older adults living with cognitive impairments present unique barriers and challenges due to their confused mental state or fluctuating capacity, which can limit their ability to provide meaningful informed consent; their vulnerability to privacy violations regarding their health data; their lack of digital health equity; difficulties operating the technology, navigating online platforms and applications; and effectively communicating with their providers. These challenges usually result in this particular demographic being far less likely to participate in the digital health ecosystem compared to their younger counterparts. This Article will address those challenges and their related regulatory and legal hurdles and will propose reforms for emerging models of digital health care that address the current shortcomings in caring for older adults with cognitive impairment.

Kathryn Huber & Tara Sklar, *Regulating Digital Health Care for the Cognitively Impaired*, 19 J. HEALTH AND LIFE SCI. L. 97 (2024). © American Health Law Association, [www.americanhealthlaw.org/journal](http://www.americanhealthlaw.org/journal). All rights reserved.

*\*The authors wish to thank Katherine Barnett for her exceptional research assistance and the editorial staff for the Journal of Health and Life Sciences Law at the American Health Law Association for their insights and guidance.*

# Digital Health Care for the Cognitively Impaired

## ARTICLE CONTENTS

---

<b>Introduction</b>	<b>99</b>
---------------------	-----------

---

<b>What is Cognitive Impairment?</b>	<b>99</b>
--------------------------------------	-----------

---

<b>The Digital Health Care Industry—Claims and Cautions</b>	<b>100</b>
---	------------

---

<b>Barriers and Challenges to Widespread Adoption</b>	<b>101</b>
Big Data Analytics—Data Quality and Heightened Health Disparities	101
Informed Consent Among the Cognitively Impaired	103
Supporting the Caregiver and Protecting Their Privacy	104
Affordability and Usability	104
The Effect of Hospitalizations on Cognitive Impairment	105

---

<b>Overcoming Reluctance to Using and Adopting Digital Health Technology</b>	<b>106</b>
--	------------

---

<b>Proposed Reforms for Emerging Models of Digital Health Care</b>	<b>107</b>
Individual and Community Level Benefits of Digital Health Care	108
The Benefits of Telehealth Care	109
Expanding Reimbursement to Improve Coordination of Care	110
Reimbursement for Digital Health Technologies and Implications for the Cognitively Impaired	110

---

<b>Conclusion</b>	<b>113</b>
-------------------	------------

## INTRODUCTION

One in every nine Americans is reportedly living with cognitive impairment.<sup>1</sup> The U.S. is not as well prepared as it could be in addressing its growing aging population, which poses a public health and humanitarian challenge to many of the country's older adults and their families. Older adults, also commonly referred to as the elderly or senior citizens, are defined in the context of this article as individuals aged 65 years and over. Americans are living longer, and with this longevity comes increased health morbidity and disability. Today, approximately two out of every three Americans will face some level of cognitive impairment by age seventy.<sup>2</sup> Many who live with cognitive impairment live alone, which disproportionately impacts the most ethnically and racially diverse in the most socioeconomically disadvantaged populations.<sup>3</sup> Combined with workforce shortages, strained health systems post-COVID-19, and poorly prepared primary care providers who are not sufficiently trained and/or equipped on how to use digital health technologies to help those with cognitive impairments, older adult care is facing a crisis.

## WHAT IS COGNITIVE IMPAIRMENT?

Cognitive impairment is a broad term that describes a continuum of disease, ranging from mild cognitive impairment to advanced dementia. Mild cognitive impairment (MCI) includes memory deficits first noticed by the individual or their family or health care provider that do not yet cause functional impairment.<sup>4</sup> Dementia, in contrast, reflects the added impact of loss of function in activities of daily living (ADLs) and independent activities of daily living (IADLs). Such loss affects many domains of life, ranging from daily function, health and wellbeing, and economic and social opportunity. Alzheimer's Dementia and Related Dementias (ADRDs), best described as a collection of individuals experiencing memory loss that in some form impacts function, mental abilities, and activities of daily life caused by physical changes to the human brain.<sup>5</sup> These are chronic, progressive, and debilitating conditions with no known treatments that can successfully reverse this trajectory. ADRDs impact an estimated 55 million people worldwide and cost global economies an estimated 1.3 trillion U.S. dollars.<sup>6</sup>

---

1 *Subjective Cognitive Decline — A Public Health Issue*, CTRS. FOR DISEASE CONTROL & PREVENTION (2018), <https://www.cdc.gov/aging/agingdata/docs/subjective-cognitive-decline-508.pdf>.

2 Jo Mhairi Hale et al., *Cognitive Impairment in the U.S.: Lifetime Risk, Age at Onset, and Years Impaired*, 8 SSM – POPULATION HEALTH 1, 7 (2020), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7153285/pdf/main.pdf>.

3 *Subjective Cognitive Decline — A Public Health Issue*, CTRS. FOR DISEASE CONTROL & PREVENTION (2018), <https://www.cdc.gov/aging/agingdata/docs/subjective-cognitive-decline-508.pdf>.

4 Alzheimer's Ass'n, *2022 Alzheimer's Disease Facts and Figures: Special Report, More than Normal Aging: Recognizing Mild Cognitive Impairment*, 18 ALZHEIMER'S DEMENTIA 80, 81 (2022), <https://www.alz.org/media/Documents/alzheimers-facts-and-figures-special-report-2022.pdf>.

5 *What is Dementia? Types of Dementia*, ALZHEIMER'S ASS'N, <https://www.alz.org/alzheimers-dementia/what-is-dementia/types-of-dementia> (last visited May 3, 2024).

6 *Dementia*, WORLD HEALTH ORG. (Mar. 15, 2023), <https://www.who.int/news-room/fact-sheets/detail/dementia>.

## THE DIGITAL HEALTH CARE INDUSTRY—CLAIMS AND CAUTIONS

Care for older persons with cognitive impairment involves simple and complex interventions aimed at improving functionality, maintaining independence, and promoting safety and well-being—goals that are time and resource intensive. To address the unique challenges of a population that heavily utilizes health care services, many technology developers and manufacturers have rushed into the digital health care industry to push out new and novel products that claim to improve care and psychosocial outcomes for cognitively impaired older adults.<sup>7</sup> They also claim to offer smart and personalized assessments and readings by acquiring, customizing, and leveraging aggregate data.

The proposed benefits are appealing, but there are concerns about whether this is more hype than promise and whether safeguards exist to protect the end user. Furthermore, there is little to ensure that older adults can meaningfully consent to having these devices monitor their health and daily movements or that their health information will be kept secure and private. Complicating the picture is the end user's vulnerability. While all persons possess some level of vulnerability,<sup>8</sup> those vulnerabilities manifest differently among older adults, and they are often only apparent in the context of cognitive impairment. Older adults experience varying levels of cognitive impairments, and many of them further suffer from functional limitations and sensory deficits that make them more susceptible to harm and neglect.

It is against this background—the older adult population with cognitive impairments and the burgeoning digital health technology industry—that this Article will analyze the legal and regulatory safeguards that currently exist to protect this particularly vulnerable demographic. While the harm—potential and realized—to individuals who incorporate new technologies into their lives are not unique to older adults *per se*, they do illustrate how more laws, regulations, and policies are needed to protect a large and still-growing group of older adults who can be more vulnerable to stigmatization, discrimination, abuse, and neglect, especially when cognition and independence wanes.<sup>9</sup> Without the appropriate safeguards, these vulnerabilities can be exacerbated rather than improved by some of these new digital health technologies.

---

7 Yesoda Bhargava & Veeky Baths, *Technology for Dementia Care: Benefits, Opportunities and Concerns*, J. GLOB. HEALTH REPS. 6:e2022056 (Oct. 31, 2022), <https://www.joghr.org/article/39606-technology-for-dementia-care-benefits-opportunities-and-concerns>.

8 See generally Martha Albertson Fineman, *Vulnerability and Inevitable Inequality*, 4 OSLO L. REV. 133 (2017), [https://web.gs.emory.edu/vulnerability/\\_includes/documents/Oslo-Review-Vulnerability-and-Inevitable-Inequality.pdf](https://web.gs.emory.edu/vulnerability/_includes/documents/Oslo-Review-Vulnerability-and-Inevitable-Inequality.pdf).

9 See generally Claudia Bozzaro et al., *Are Older People a Vulnerable Group? Philosophical and Bioethical Perspectives on Ageing and Vulnerability*, 32 BIOETHICS 233 (2018).

## BARRIERS AND CHALLENGES TO WIDESPREAD ADOPTION OF DIGITAL HEALTH TECHNOLOGIES

To meet the health care needs of this particular patient group, there has been an expansion of digital health tools and legislation to improve coverage for telehealth services and digital health delivery, including wearables (e.g., health monitoring and activity trackers like fitbit or smart watches that can record steps, heart rate, sleep, etc.), SmartHomes, remote patient monitoring,<sup>10</sup> and the Acute Hospital Care at Home Program.<sup>11</sup> However, practical and regulatory challenges to widespread adoption loom large. Better quality of life for our aging generations is within arm's reach, but those efforts require supportive and protective measures that address vulnerabilities specific to this population. Our discussion of those challenges begins with the use—and usefulness—of big data in digital health technology.

### Big Data Analytics—Data Quality and Heightened Health Disparities

Digitally enabled care has been touted as a cost-effective care solution for older adults, including those with cognitive impairment. For example, devices that address their specific needs can help with medication adherence and fall prevention while also reducing caregiver oversight, hospital visits, and readmissions.<sup>12</sup> Many of these devices contain a broad range of features, including high-resolution cameras, superior audio capabilities, thermal and motion detectors, and the ability to track a person's steps, sleep, and geolocation at all times.<sup>13</sup> The information collected includes a wide range of behavioral, demographic, geographic, and biologic data on the individuals, their living environments, their caregivers, and essentially, their day-to-day lives. The variety and complexity of data collected from these devices provides a novel approach to addressing whole-person care needs when integrated into care ecosystems that are aimed at reducing hospitalizations and increasing time spent aging in place.<sup>14</sup> Big-data analyses of such systems aim to translate these small-scale care ecosystems into a large-scale, long-term care revolution for a population that is already facing limited care and housing options.

10 Health Res. & Servs. Admin., *Telehealth and Remote Patient Monitoring*, Telehealth.HHS.gov, <https://telehealth.hhs.gov/providers/preparing-patients-for-telehealth/telehealth-and-remote-patient-monitoring> (last updated May 11, 2023).

11 QualityNet, *Acute Hospital Care at Home*, CMS.gov, <https://qualitynet.cms.gov/acute-hospital-care-at-home> (last visited May 3, 2024).

12 Brian Dolan, *Prediction: Health Wearables to Save 1.3 Million Lives by 2020*, MOBIHEALTHNEWS (Dec. 16, 2014 5:44 AM), <https://www.mobihealthnews.com/39062/prediction-health-wearables-to-save-1-3-million-lives-by-2020>; Gerd Flodgren et al., *Interactive Telemedicine: Effects on Professional Practice and Health Care Outcomes*, Cochrane Libr. (Sept. 7, 2015), <https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD002098.pub2/full>.

13 See generally Md. Zia Uddin et al., *Ambient Sensors for Elderly Care and Independent Living: A Survey*, 18 SENSORS (2018), <https://doi.org/10.3390/s18072027>.

14 See generally Vittavat Termglinchan et al., *Identifying Solutions to Meet Unmet Needs of Family Caregivers Using Human-Centered Design*, 22 BMC GERIATRICS (2022), <https://doi.org/10.1186/s12877-022-02790-5>.

However, other studies have shown that these large-scale promises based on big data analytics can be overblown, citing issues with data quality, incomplete data collections for complex multimorbidity, and faulty prediction models, just to name a few.<sup>15</sup> These claims raise concerns about the safety and efficacy of new technologies from a care-focused standpoint and bring to light questions regarding their black box-nature (devices, applications, and technologies that obscure or fail to disclose how they were developed or operate) and the incentive structures (such as focusing on maximizing new users, profit, or data acquisition and manipulation), just to name a few. For the individual user—particularly the older adult who is confused and overwhelmed by new technologies—we must ask, who is best served by their use? Though advertised as promoting independence, some digital health interventions may ultimately be attending to the convenience and oversight needs of health systems and providers rather than the patient (for example, remote monitoring has a real potential to reduce regular in-person check-ins as vital signs can all be collected remotely, but this can lead to increased social isolation and loneliness for seniors).<sup>16</sup>

Another notable concern about relying on big data to address an individual's health needs via digital technology is that big data does little to address or remediate existing systemic injustices or prevent future ones from occurring. Many have voiced concerns that application of big data analysis using artificial intelligence models are likely to exacerbate existing racial and other biases in clinician and authority decision-making.<sup>17</sup> If the data is collected in a way that captures existing disparities, it follows that the outputs from that data will also be biased. For example, many big data and AI algorithms driving the technology behind many of these devices and applications has been trained on data sets where older adult data points are largely underrepresented compared to younger counterparts, resulting in inaccurate outputs and predictions.<sup>18</sup> In older populations where the rate of multiple comorbidities (including cognitive impairment and significant disease burden rates) are high and health disparities exist alongside racial and cultural biases, these issues will likely be heightened. The “one size fits all” prediction models offered by big data analytics will be a poor fit for such a medically and socially heterogenous group due to significantly increased burden of comorbidities, frailty and complex living and support needs.<sup>19</sup> In a model of care that is increasingly focused on

---

15 See generally Mowafa S. Househ et al., *Big Data, Big Problems: A Healthcare Perspective*, 238 *STUD. HEALTH TECH. & INFORMATICS* 36 (2017), <https://doi.org/10.3233/978-1-61499-781-8-3636>.

16 Rachel Zuraw & Tara Sklar, *Digital Health Privacy and Age: Quality and Safety Improvement in Long-Term Care*, 17 *IND. HEALTH L. REV.* 85, 92 (2020), <https://mckinneylaw.iu.edu/ihlr/pdf/vol17p85.pdf>.

17 Abraham Verghese et al., *What This Computer Needs Is a Physician: Humanism and Artificial Intelligence*, 319 *JAMA* 19, 19 (2018).

18 Sandra Florisson et al., *Are Older Adults Insufficiently Included in Clinical Trials? — An Umbrella Review*, 128 *BASIC & CLINICAL PHARMACOLOGY & TOXICOLOGY* 213 (2021), <https://onlinelibrary.wiley.com/doi/abs/10.1111/bcpt.13536>.

19 Lorelle Dismore et al., *Why Are Older Adults Living with the Complexity of Multiple Long-Term Conditions, Frailty and a Recent Deterioration in Health Under-Served by Research? A Narrative Synthesis Review of the Literature*, 8 *J. FRAILTY, SARCOPENIA & FALLS* 230, [https://www.jfsf.eu/articles/v08i04\\_230.pdf](https://www.jfsf.eu/articles/v08i04_230.pdf).



person-centered care, a big-data cookie-cutter approach will be antithetical to the mission and goals that are most closely aligned with improving care for older adults.

Despite these concerns and inconsistencies, many have rapidly incorporated these technologies into older adult care. In the rush, many older adult care facilities and programs have failed to implement essential safeguards and parameters around data collection, use, and security. Regulators are only now starting to recognize the impact, namely, the collection of identifiable and detailed personal health data and the challenges in obtaining informed consent from those with cognitive impairment.

### **Informed Consent Among the Cognitively Impaired**

Obtaining informed consent can be challenging with any population, but the challenges are magnified when working with an older population that has a higher incidence of cognitive and sensory impairments. Current informed consent practices—demonstrated by early experiences with wearable technologies and continuous monitoring devices—frequently include only click-through user agreements and one-off consent practices. Vendors claim that this approach allows for broad standardization and easy, rapid updating processes. Despite this easy-button approach, their use as a true mechanism for protecting individual autonomy in the private and health care sectors remains questionable.<sup>20</sup> Specifically for older adults, this type of consent process fails to comprehensively address digital literacy and functionality concerns common among those with cognitive impairment. Executive cognitive function (that which allows for ready manipulation of new information and subsequent decision-making) is one of the most common impairments experienced by adults living with dementia,<sup>21</sup> resulting in immediate challenges with existing consent protocols.

For example, reading, processing, and applying detailed, often new and technical information contained in the consent tabs that require a simple “accept” or “decline” for use with many of these technologies fails to capture any meaningful assessment of the user’s capacity for understanding and appropriately responding to the use of the tool in their lives. It is not hard to imagine a cognitively impaired older adult struggling to swipe through, scroll, or click through today’s standard consent pages with little knowledge or understanding of what they may be agreeing to. The gap that exists between our general desire for idealized, streamlined applications and the end user’s unique needs makes it easy for 1) the latter to provide consent without fully comprehending what they are consenting to, and 2) the former from providing adequate protection to a vulnerable group.

20 See generally Christine Grady et al., *Informed Consent*, 376 NEW ENG. J. MED. 856 (2017), <https://www.nejm.org/doi/pdf/10.1056/NEJMr1603773>.

21 See generally Lindsay R. Clark et al., *Specific Measures of Executive Function Predict Cognitive Decline in Older Adults*, 18 J. INT’L NEUROPSYCHOLOGICAL SOC’Y 118 (2012).

### Supporting the Caregiver and Protecting Their Privacy

Unique to many older adults, but specifically to those living with cognitive impairment, is the added and expanded role of caregivers and their ability and/or willingness to adopt, support, and correctly utilize digital health technologies. Just as older adults face challenges in fully informed or realized consent, their adult caregivers—many who are older and facing similar visual or functional impairments themselves—may also struggle with consent. Keep in mind that some of these new technologies gather comprehensive in-home data, such as visual or audio reels of not just the intended user, but of everyone else who is in the user's home space. There is little regulatory guidance regarding privacy and security for the data and information that is collected on caregivers, family members, or friends who may become subject to monitoring by merely being in the home of an older adult who has cognitive impairment.

In addition, many of these technologies require the assistance of more capable users to implement them into the care of the intended recipient. Lack of technical support—help that would otherwise enable caregivers and staff navigate these technologies—is a well-documented barrier to adopting digital health technology in caring for older adults with cognitive impairments.<sup>22</sup> Providing them with digital health technology support and protecting their privacy are issues that must be addressed if the promises of these novel technologies are to be fully realized in the not-too-distant future.

### Affordability and Usability

Access to health services for the older adult population—from general primary care to specialty-specific management of advanced dementias—is critical to providing health care throughout the aging adult's lifespan. The older adult is often living on a fixed income or experiencing diminishing financial resources; affordability of home broadband and digital health technologies is, therefore, a key area of concern.<sup>23</sup> Beyond the cost of the device itself, the cost of high-speed internet required for practical functionality, including the hardware to support related applications, must be addressed. Over 20 million older adult Americans are without reliable internet access at home.<sup>24</sup> This represents a unique logistical need for older adults, as well as a public health crisis.

A growing body of research has shown that primary visual neural networks are often disproportionately impacted in correlation with the progression of disease for older adults

---

22 See, e.g., Julie S. Yi et al., *Telemedicine and Dementia Care: A Systematic Review of Barriers and Facilitators*, 22 J. AM. MED. DIRS. ASS'N 1396, 1401 (2021).

23 Safiya Richardson et al., *A Framework for Digital Health Equity*, NPJ DIG. MED. (Aug. 18, 2022), <https://www.nature.com/articles/s41746-022-00663-0>.

24 Older Adults Tech. Servs., *AGINGconnected: Exposing the Hidden Connectivity Crisis for Older Adults 16* (2021), [https://agingconnected.org/wp-content/uploads/2021/05/Aging-Connected\\_Exposing-the-Hidden-Connectivity-Crisis-for-Older-Adults.pdf](https://agingconnected.org/wp-content/uploads/2021/05/Aging-Connected_Exposing-the-Hidden-Connectivity-Crisis-for-Older-Adults.pdf).

with advancing dementia.<sup>25</sup> Even when older adults have access to broadband internet, one's inability to functionally utilize tablets, computers, or smartphones directly impedes their use of most modern digital health technologies, and it represents one of the most commonly cited barriers to adopting telehealth care for older adults living with dementia.<sup>26</sup> Hearing or vision impairments can often be addressed by assistive devices, but they rarely are in telehealth care visits due to lack of resources, access, and awareness that these devices exist, or the provider's lack of knowledge on how to incorporate them into a telehealth visit.<sup>27</sup> While these barriers may not always be specific to older adult users living with cognitive impairments, they pose uniquely more burdensome challenges to those who have difficulty communicating their symptoms, health care needs, and preferences remotely to a health care provider.<sup>28</sup> New technologies must therefore be developed in a way that maximizes user capability and reduces the risk of exacerbating the difficulties that come from diminishing dexterity and hearing/visual perception.

### The Effect of Hospitalizations on Cognitive Impairment

Recent studies have found that older patients' vulnerability to cognitive impairment is increasingly stemming from a recent hospital stay, regardless of underlying impairment, with rates as high as one out of five recent admissions resulting in new cognitive impairment.<sup>29</sup> In other words, 20 percent of patients over the age of 65 become delirious after a hospital stay, a significant number in light of high medical comorbidity rates (and thus by implication, higher hospitalization rates).<sup>30</sup> The combination of sleep deprivation, malnourishment, excessive

- 
- 25 Jie Huang et al., *Alzheimer's Disease Progressively Reduces Visual Functional Network Connectivity*, 5 J. ALZHEIMER'S DISEASE REPS. 549, 560 (2021), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8385433/pdf/adr-5-adr210017.pdf>; Anne McIntyre et al., *Health and Social Care Practitioners' Understanding of the Problems of People with Dementia-Related Visual Processing Impairment*, 27 HEALTH & SOC. CARE CMTY. 982, 989 (2018).
- 26 Julie S. Yi et al., *Telemedicine and Dementia Care: A Systematic Review of Barriers and Facilitators*, 22 J. AM. MED. DIRS. ASS'N 1396, 1399 (2021); Susan Nash, *Older Adults and Technology: Moving Beyond the Stereotypes*, STAN. CTR. ON LONGEVITY, <https://longevity.stanford.edu/older-adults-and-technology-moving-beyond-the-stereotypes/#:~:text=Research%20and%20experience%20show%20that,the%20stereotypes%20of%20technological%20incompetence> (last visited May 3, 2024).
- 27 Julie S. Yi et al., *Telemedicine and Dementia Care: A Systematic Review of Barriers and Facilitators*, 22 J. AM. MED. DIRS. ASS'N 1396, 1399 (2021).
- 28 Susan Nash, *Older Adults and Technology: Moving Beyond the Stereotypes*, STAN. CTR. ON LONGEVITY, <https://longevity.stanford.edu/older-adults-and-technology-moving-beyond-the-stereotypes/#:~:text=Research%20and%20experience%20show%20that,the%20stereotypes%20of%20technological%20incompetence> (last visited May 3, 2024).
- 29 See, e.g., Edward R. Marcantonio, *Delirium in Hospitalized Older Adults*, 377 NEW ENG. J. MED. 1456, 1456 (2013), <https://www.nejm.org/doi/pdf/10.1056/NEJMcp1605501>.
- 30 David M. Levine et al., *Hospital-Level Care at Home for Acutely Ill Adults: A Randomized Controlled Trial*, 172 ANNALS INTERNAL MED. 77, 77 (2020); Harlan M. Krumholz, *Post-Hospital Syndrome — A Condition of Generalized Risk*, 368 NEW ENG. J. MED. 100, 101 (2013), <https://www.nejm.org/doi/pdf/10.1056/NEJMcp1212324>.

inactivity from lying in a hospital bed, and confusion with medication regimens that can arise during a hospital stay have all been cited as contributing factors.<sup>31</sup>

The onset of delirium results in post-hospital syndrome, where older adults are often readmitted within a month for cognitive or physical impairments. Over time, this portion of the population ultimately experiences earlier admissions to a nursing home due to a debilitating pattern of frequent readmissions and progressive functional decline.<sup>32</sup> Technologies aimed at retaining care in the home and maximizing functionality are poised to reverse this tragic trend if appropriate guardrails are implemented in a timely and thoughtful manner.

### OVERCOMING RELUCTANCE TO USING AND ADOPTING DIGITAL HEALTH TECHNOLOGY

The numerous accessibility challenges described understandably result in older adult users being wary of adopting digital health tools or receiving hospital care in the home and yet, the convenience and increased access to providers are highly desirable benefits for this patient population, mirrored by improved cost and operational efficiencies for health systems and the government; however, wholesale adoption of digital health technology has been slower than expected.

According to a recent Mayo Clinic Health System qualitative study, Medicare beneficiaries are reluctant about receiving digital health care from their homes primarily due to lack of clarity or understanding on how to use the digital health tools, and domestic concerns, such as helping with meal preparation and cleaning the house.<sup>33</sup> To address these identified issues, the study's authors cite the need for improved education and information for both patients and hospital staff users, as well as inclusive strategies for navigating domestic, practical barriers and diagnostic challenges. Similarly, Kaiser Permanente has found that among its large patient catchment, most older adults report having a smart phone or computer technology and yet, some of them use digital health care the least. Kaiser researchers cite similar barriers to use, such as caregivers or family members lacking support to utilize the technology and their discomfort level at having to use such technology.<sup>34</sup>

---

31 David M. Levine et al., *Hospital-Level Care at Home for Acutely Ill Adults: A Randomized Controlled Trial*, 172 ANNALS INTERNAL MED. 77, 77 (2020); Harlan M. Krumholz, *Post-Hospital Syndrome — A Condition of Generalized Risk*, 368 NEW ENG. J. MED. 100, 101 (2013).

32 Shubing Cai et al., *Association of Costs and Days at Home with Transfer Hospital in Home*, 4 JAMA NETWORK OPEN 1, 5 (2021).

33 Nels Paulson et al., *Why U.S. Patients Declined Hospital-at-Home during the COVID-19 Public Health Emergency: An Exploratory Mixed Methods Study*, 10 J. PATIENT EXPERIENCE 1, 3 (2023), <https://journals.sagepub.com/doi/epub/10.1177/23743735231189354>.

34 Juliette Cubanski, *Possibilities and Limits of Telehealth for Older Adults During the COVID-19 Emergency*, KFF (Apr. 13, 2020), <https://www.kff.org/policy-watch/possibilities-and-limits-of-telehealth-for-older-adults-during-the-covid-19-emergency/>.

Despite the somewhat intimidating challenges that new technological health devices can present, older adults are still increasingly seeking access to online resources, tools, and services; in fact, they represent the fastest growing group of social media users and smartphone owners.<sup>35</sup> The flipside, however, is that older adults are at the highest risk for succumbing to online misinformation, scams, and abuse; those with cognitive impairment being the among the most vulnerable.<sup>36</sup> To combat this, many organizations—from the American Association of Retired Persons (AARP) to retirement communities to non-profit aging organizations—have begun offering educational and training services to older adult users and their families. Efforts to expand access must consider simultaneously implementing services to reduce risks and harm to this growing body of new and aging users.

### PROPOSED REFORMS FOR EMERGING MODELS OF DIGITAL HEALTH CARE

The combined challenges of maintaining patient privacy, promoting independence, and preserving human dignity puts significant burdens on patients, their caregivers, and the communities charged with providing their care.<sup>37</sup> The cost of this burden is born out financially, physically, and psychologically, as demonstrated by this population's increasingly high cost of care and high rates of depression, anxiety, and poor quality of life for both the patient and their caregiver.<sup>38</sup>

Virtual care delivered through digital health tools and telehealth visits are emerging practices that need supportive and protective policies in order to 1) address the vulnerabilities inherent to an aging population that is increasingly experiencing cognitive impairments and 2) encourage widespread adoption and effective implementation of such technologies among this understandably reluctant patient population group. To pursue more comprehensive and lasting change in the emerging models of digital health care for older adults with cognitive impairment, a more radical approach may be on the horizon. Just as recent events with the COVID-19 pandemic have brought to light the value of defunding inefficient and harmful systems,<sup>39</sup> such as requiring in-person visits for home health care certification, vital sign checks, and medication monitoring, so too should we re-evaluate long-term care strategy

35 Julie S. Yi et al., *Telemedicine and Dementia Care: A Systematic Review of Barriers and Facilitators*, 22 J. AM. MED. DIRS. ASS'N 1396, 1399 (2021).

36 See *id.* at 1396.

37 Jennifer M. Reckrey et al., *Health Care Utilization Among Homebound Elders: Does Caregiver Burden Play a Role?*, 25 J. AGING & HEALTH 1036, 1036 (2013).

38 Örjan Åkerborg et al., *Cost of Dementia and Its Correlation with Dependence*, 28 J. AGING & HEALTH 1448, 1448 (2016); Barry B. Zeltzer & Robert Kohn, *Mental Health Services for Homebound Elders from Home Health Nursing Agencies and Home Care Agencies*, 57 PSYCHIATRIC SERVS. 567, 569 (2006), <https://ps.psychiatryonline.org/doi/epdf/10.1176/ps.2006.57.4.567>; Aleksandra Glos, *Solidarity in Healthcare — The Challenge of Dementia*, 49 DIAMETROS 1, 8 (2013), <https://diametros.uj.edu.pl/diametros/article/view/918/1070>.

39 Reginald D. Williams et al., *The Impact of COVID-19 on Older Adults: Findings from the 2021 International Health Policy Survey of Older Adults*, COMMONWEALTH FUND (2021), <https://www.commonwealthfund.org/publications/surveys/2021/sep/impact-covid-19-older-adults>.

with an eye towards digitally enabled solutions, such as virtual care visits, remote and continuous home monitoring devices.

In using digital health care tools to broaden the scope of caring for and monitoring patients, health care providers and caregivers have a larger role to play in their safe use than previously conceptualized. This includes giving caregivers and frontline staff more training and control over these technologies through programs like the new program offered by the Centers for Medicare and Medicaid Services (CMS), Guiding an Improved Dementia Experience (GUIDE),<sup>40</sup> as well as expanding regulatory oversight to ensure that the design of these apps and devices involve the end user<sup>41</sup> by more specifically addressing issues related to their ability to provide informed consent and their ability to adjust privacy preferences. When data that is collected from digital health devices is collected and used/analyzed properly, the data could underpin breakthrough research built on new real-world data sets that reflect a better represented older adult population.<sup>42</sup> Incorporating a more comprehensive, socially interconnected form of consent can also offer an opportunity to safely implement these technologies into the care of older adults, while allowing for more accurate, ethically informed inclusion of older adult end users.

### **Individual and Community-Level Benefits of Digital Health Care**

Care interventions through digital health care for those with cognitive impairment are revolutionizing how care is delivered to a largely homebound, vulnerable population. At the individual level, earlier diagnosis of cognitive impairment through remote monitoring can now be leveraged through emerging technologies. Recent research has revealed that earlier detection of Alzheimer's and Parkinson's diseases might be possible through voice recognition and analysis software, as well as gait and behavior monitoring, likely months to years sooner than clinical detection in a provider's primary care office.<sup>43</sup> Utilizing digital technologies for early detection of key symptoms can result in a more timely and accurate diagnosis and earlier sharing of resources. Early detection via digital health technology will also help at-risk persons and those in the early stages of cognitive impairment plan for their futures and potentially avoid a crisis situation down the line. Proactively educating individuals and their providers about such resources is one important step forward towards improving the care and experience of those living with cognitive impairment.

---

40 Joyce Frieden, *CMS Announces New Dementia Care Model for Medicare Patients*, MEDPAGE TODAY (July 31, 2023), <https://www.medpagetoday.com/practicemanagement/reimbursement/105701>.

41 *Privacy Is Good Business, A case for privacy by design in app development*, AM. MED. ASS'N 3 (2021), <https://www.ama-assn.org/system/files/privacy-principles-by-design.pdf>.

42 Lisa Bari & Daniel P. O'Neill, *Rethinking Patient Data Privacy in the Era of Digital Health*, HEALTH AFFS. (Dec. 12, 2019), <https://www.healthaffairs.org/content/forefront/rethinking-patient-data-privacy-era-digital-health>.

43 Sara Wilson et al., *Usability and Acceptability of Wearable Technology in the Early Detection of Dementia*, 18 ALZHEIMER'S & DEMENTIA 1, 1 (2022), <https://alz-journals.onlinelibrary.wiley.com/doi/epdf/10.1002/alz.059820>.

At the community level, utilization of digital technologies such as remote-monitoring and telehealth collaboration may allow for improved coordination across interdisciplinary teams in hard-to-reach areas and hard-to-reach populations. One of telehealth's greatest strengths lies in its capacity for expanding access to resources—skilled care teams are one such key resource in the care of older adults. Similarly, expanding access to digital health technologies and reimbursement for their use under CMS offers an opportunity for older adults with cognitive impairments to age safely and comfortably at home, instead of in institutionalized settings.

### The Benefits of Telehealth Care

One of the promises that telehealth is poised to deliver is cost-savings for both the individual and the health system providing their care. For the population of older adults with cognitive impairment, cost savings are increasingly achievable through reducing secondary care delivery, improving productivity for providers, and improving home monitoring to reduce hospitalization.<sup>44</sup> For example, the Veterans Health Administration (VHA) has become one of the largest users of telehealth services and is a prime example of its effective adoption. The VHA's telehealth services are helping to support the management of chronic conditions, promote healthy aging in the home, and prevent hospitalizations. When the VHA adopted and integrated their telehealth care program in the early 2000s, it experienced reduced hospital admissions and total days in hospital, an increase in patient satisfaction, and significant cost savings over five years.<sup>45</sup> By today's estimates, the VHA stands to save an estimated 2.8 billion dollars by enrolling just 30 percent of its members into similar telehealth programs.<sup>46</sup> This data makes an excellent case for the adoption of telehealth programs into other health care systems.

The benefits of telehealth care for the individual patient are becoming increasingly clear to clinicians and providers. In disease states such as stroke and heart failure, telehealth care has lowered the risk for hospitalizations and demonstrated improvements in patient self-care and patient reported outcomes. For example, in the area of cardiac care research, telehealth care has been identified as a helpful tool for surmounting barriers related to transportation, care coordination, limited staffing, and geographic accessibility.<sup>47</sup> These areas for improvement are not unique to cardiovascular disease; they include the cognitively impaired as well. For people living with dementia, telehealth studies have largely focused on providing cognitive assess-

44 Centaine L. Snoswell et al., *Determining if Telehealth Can Reduce Health System Costs: Scoping Review*, 22 J. MED. INTERNET RSCH. (Oct. 22, 2020), <https://ncbi.nlm.nih.gov/pmc/articles/PMC7605980/>.

45 Adam Darkins, *The Growth of Telehealth Services in the Veterans Health Administration Between 1994 and 2014: A Study in the Diffusion of Innovation*, TELEMEDICINE & E-HEALTH (Sept. 3, 2014).

46 Joseph P. Lyons et al., *The Evolution of Elderly Telehealth and Health Informatics*, RECENT ADVANCES DIGIT. SYS. DIAGNOSIS & MGMT. HEALTHCARE (Aug. 8, 2019), <https://www.intechopen.com/chapters/68526>.

47 Ashok Krishnaswami et al., *Gerotechnology for Older Adults with Cardiovascular Diseases: JACC State-of-the-Art Review*, 76 J. AM. COLL. CARDIOLOGY 2650, 2651 (2020).

ment, diagnosis, and post-rehabilitation evaluations to help reduce transportation needs and improve access and chronic disease management over time.<sup>48</sup>

### **Expanding Reimbursement to Improve Coordination of Care**

Uniquely beneficial to the cognitively impaired population is the opportunity to expand reimbursement for coordination of care services. High quality care delivery is best demonstrated by collaborative, interdisciplinary management that encompasses services provided by physicians, ancillary providers (e.g., occupational and physical therapy, social work), and other care management disciplines, just to name a few. Coordination of care across these varied specialties is time and resource intensive, with few models successfully implementing reimbursement schemes that adequately compensate for the complexities involved. Virtual team-based care and care planning has been successfully trialed in populations with cognitive impairments. Some of the resulting positive benefits have been improved patient outcomes in the areas of mental health, falls reduction, medication management, caregiver stress, and caregiver skills.<sup>49</sup> The Alzheimer's Association reported a 91% increase in referrals to their virtual Dementia Care Coordination program during the COVID-19 pandemic, which is a free, virtual team of clinicians that helps adults with cognitive impairment and their caregivers with care planning and health system navigation. These referrals have been sustained, indicating that in the absence of in-person access to dementia support services, caregivers subsequently developed increased awareness of, and trust in, virtual care coordination services among this population.<sup>50</sup> Furthermore, referral to the program resulted in improved satisfaction among caregivers and increased confidence in management of dementia by clinicians through expanded access to multi-disciplinary team support. In a workforce population already facing significant staffing and training limitations in managing this serious, progressive, and debilitating disease, the opportunity for improved access and improved quality of care offers a profound opportunity.

### **Reimbursement for Digital Health Technologies and Implications for the Cognitively Impaired**

Under the 2024 Medicare Physician Fee Schedule, covered telehealth services include live video (synchronous), audio-only, store and forward technology, remote patient monitoring,

---

48 Julie S. Yi et al., *Telemedicine and Dementia Care: A Systematic Review of Barriers and Facilitators*, 22 J. AM. MED. DIRS. ASS'N 1396, 1397 (2021).

49 Harrison Gao et al., *Implementation and Impacts of Virtual Team-Based Care Planning for Older Persons in Formal Care Settings: A Scoping Review*, DIGIT. HEALTH (2023), <https://journals.sagepub.com/doi/epub/10.1177/20552076231151567>.

50 Nicole E. McGurin et al., *Dementia Care Coordination: Evaluating a Program to Support Caregivers through Collaboration with the Alzheimer's Association and Health Care Partners*, 18 ALZHEIMER'S & DEMENTIA 1, 1 (2022), <https://alz-journals.onlinelibrary.wiley.com/doi/epdf/10.1002/alz.059900>.



and mobile health services.<sup>51</sup> Audio-only visits continue to be controversial due to quality of care concerns and potential fraud, but reimbursement for these other modalities could support digital health equity for older adults to allow for alternative, less expensive interfaces with the health system. However, with limited access to digital health platforms (through either technology, wireless support, or hardware availability) and risk of lower access to high quality care and consultations, access issues for these technologies must be addressed to allow for a more level playing field.<sup>52</sup>

Reimbursement for supportive technologies (e.g., wearables, in-home monitors, and treatment devices) is also necessary if the digital health ecosystem is to be effectively adopted and integrated into a provider's clinical practice. For a population that has limited capacity for self-monitoring and for whom in-person evaluations would be difficult, barriers to reimbursement would significantly and immediately impact one's ability to receive care.

### *Medicaid Reimbursement*






The most vulnerable of the elderly population also tend to be Medicaid patients. Many state Medicaid programs are aiming to leverage telehealth through policy expansions, care coordination initiatives, and managed care organization contracts to better serve those with cognitive impairment, but more work is needed to maximize access, affordability, and usability of virtual cognitive care options for this population. Some common initiatives include reducing restrictions on originating sites, covering remote patient monitoring equipment, integrating telepsychiatry, funding caregiver training, and paying facilities to offer virtual visits.

---

51 Press Release, Ctrs. for Medicare & Medicaid Servs., Calendar Year (CY) 2024 Medicare Physician Fee Schedule Final Rule (Nov. 2, 2023), <https://www.cms.gov/newsroom/fact-sheets/calendar-year-cy-2024-medicare-physician-fee-schedule-final-rule>.

52 Ji E. Chang et al., *Rapid Transition to Telehealth and the Digital Divide: Implications for Primary Care Access and Equity in a Post-COVID Era*, 99 MILBANK Q. 340, 344 (2021).

**Table 1. Examples of State Medicaid Policy for Adults with Cognitive Impairments**

	<b>State</b>	<b>Policy</b>	<b>Population</b>
	<b>California</b>	Diabetes Self-Management Support Services reimbursement.	Dual Eligible Medicaid-Medicare patients with cognitive disabilities.
	<b>Michigan</b>	Medicaid required to give clear instructions for accessing telehealth.	Patients with intellectual, cognitive, and memory-related limitations.
	<b>Minnesota</b>	Medicaid waiver programs provide 24/7 access to virtual nursing and physician care and daily remote monitoring.	Older adults with dementia.
	<b>Missouri</b>	Medicaid covers telehealth care for diagnosis, treatment, and care planning.	Dementia and related diagnoses.
	<b>New York</b>	Expanded codes for remote patient monitoring and tele-psychiatry.	Patients with intellectual and cognitive impairments.

Prioritizing the highest needs populations may be one early, feasible option to improving care for older adults living with cognitive impairment and reducing the risk of exacerbating existing health disparities. Ethical distribution of resources that levels the digital health technology playing field for patients is unlikely to fix all these challenges, but it will go a long way and is a necessary first step to improving the quality of life and care for millions of our most vulnerable older adults. By targeting rural and underserved populations and dual-eligible patients (those who have both Medicare and Medicaid insurance) who tend to suffer from a higher burden of cognitive impairment, the Medicaid programs noted earlier offer an opportunity to help the most vulnerable and potentially, the costliest subgroups living with cognitive impairments.

### **CONCLUSION**

Leveraging digital health technologies in the care of older adults with cognitive impairments offers an opportunity to upend the long-term care crisis facing our nation's aging adults. Wearable devices, home monitoring devices, supportive devices, and ready access to health care providers and medical advice from their homes hinge upon ready, reliable high-speed internet in the home. Addressing access to both broadband infrastructure and the technology it enables is a key first step, but not the only one to implementing a more comprehensive approach for this high-need, vulnerable population.

Other strategies that address reimbursement gaps, limit isolation, and provide wrap-around support to older adults and their caregivers are equally important. They can and should be tackled as part of a comprehensive strategy to improve their care.

Additionally, increased efforts to directly address the needs of an older population already facing social isolation, mobility, and transportation challenges is of paramount importance. Many older adults with cognitive impairments face added difficulty if involved caregivers, families, or support networks are lacking to address and advocate for access to these important resources.

The future of care for an aging and cognitively impaired population is primed for significant change through equitable and innovative delivery of high-quality care through telehealth and other digital health technologies. Intervention at the individual patient level, their care team, and health systems offers a unique opportunity to change the status quo. Expanding access, enhancing reimbursement strategies, and delivering services that address—not exacerbate—their impairments will pave the way for improved delivery of care for older adults living with cognitive impairments. If not implemented in a timely and thoughtful manner, our health system is at risk of missing a critical opening in revolutionizing care across the cognitive continuum.

## Author Profiles



**KATHRYN HUBER, MD, MS** is a practicing internist at Kaiser Permanente in Denver, Colorado where her care focuses on older adults with complex medical needs. She also serves as volunteer clinical faculty at the University of Colorado School of Medicine and Professor of Practice at the University of Arizona James E. Rogers College of Law. Her research focuses on ethical considerations in the application of novel technologies to the care of older adults. Her work has appeared in the *American Journal of Bioethics*, *Geriatrics & Gerontology* and the *Journal of American Medical Directors*, and she has presented at the American Society for Bioethics and Humanities, the American Geriatric Society, and the World Congress in Bioethics meetings, among others. Contact her via email at [kathryn.f.huber@cuanschutz.edu](mailto:kathryn.f.huber@cuanschutz.edu).



**TARA SKLAR, JD, MPH** is a Professor and the Faculty Director of the Health Law & Policy Program at the University of Arizona James E. Rogers College of Law. She also holds appointments as Associate Director of Telehealth Law & Policy at the UA College of Medicine-Tucson and Senior Advisor with Innovations in Healthy Aging at the UA Health Sciences. She is a nationally recognized telehealth policy subject matter expert with the National Consortium of Telehealth Resource Centers and the Health Resources & Services Administration Office for the Advancement of Telehealth. Her legal scholarship has appeared in the *New England Journal of Medicine*, *Journal of Empirical Legal Studies*, and *Journal of Clinical and Translational Science*, among others. Her forthcoming book, *Telehealth Law & Policy in a Nutshell*, is under contract with West Academic Publishing. Contact her via email at [trsklar@arizona.edu](mailto:trsklar@arizona.edu).



1099 14th Street, NW, Suite 925 • Washington, DC 20005  
(202) 833-1100 • Fax (202) 833-1105 • [www.americanhealthlaw.org](http://www.americanhealthlaw.org)