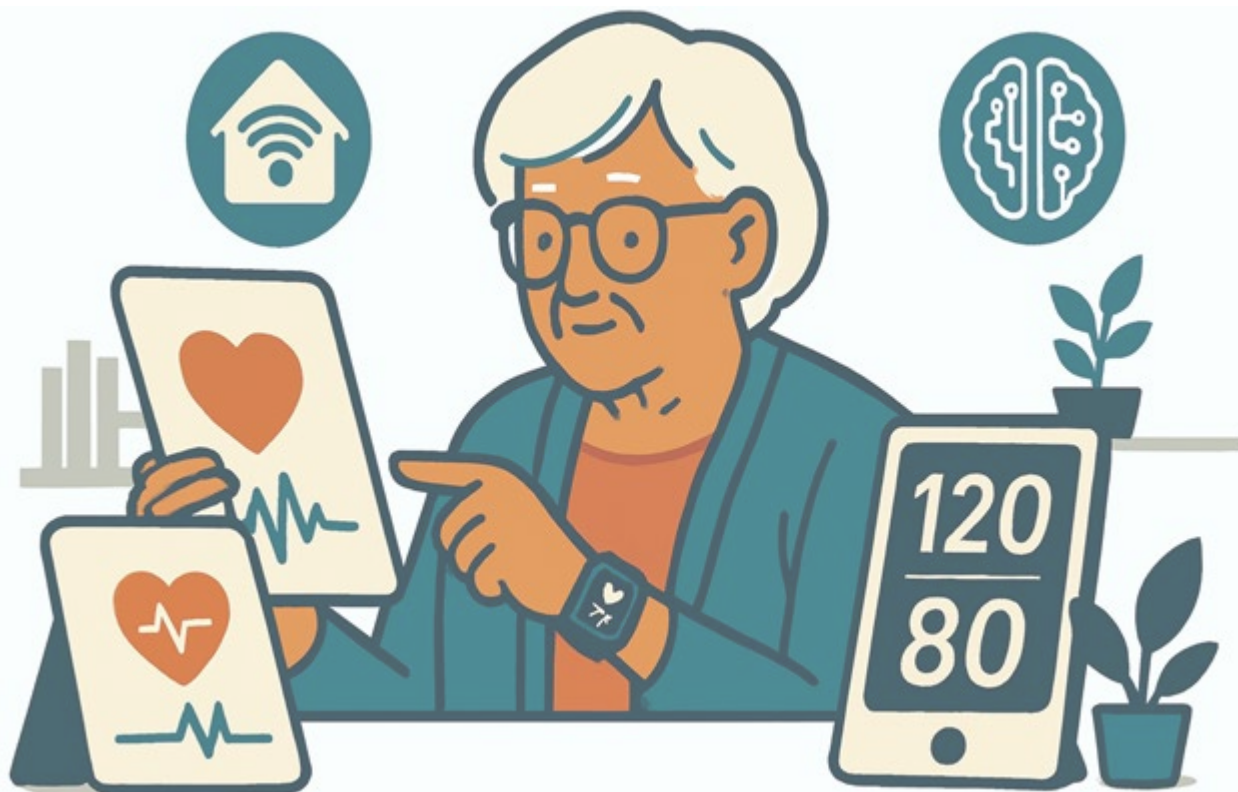




Artificial Intelligent Technologies for Older Adult Care: Ethical Issues and Strategies to Mitigate Risks

VISIONS FOR CHANGE POLICY CHALLENGE 2025-2026

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Executive Summary

Artificial intelligent (AI) technologies have emerged as a potential solution to enhance the quality of care, promote independence, and reduce caregiver and healthcare system burdens. Despite such benefits, there are potential and actual ethical issues. This report aims to provide an overview of the ethical issues around the use or potential use of AI technologies in older adult care, including the strategies to mitigate risks/safeguard users.

Seven ethical issues were identified through a scoping review: standardization, bias, autonomy and consenting, privacy and data security, dehumanized care, black box, and competing interests. Based on the strategies discussed within the papers, this report outlines three policy recommendation: (1) Human-Centric Approach to AI Technology Development and Implementation, (2) Having Data Representativeness and Diversity, Including the Collection and Use of Necessary Data, and (3) Transparent Consent Processes That Include Control Over Data Privacy and Security.

This report contributes to collective efforts to highlight ethical issues surrounding AI in older adult care and underscores the need for targeted safeguards to ensure that current and emerging AI technologies are designed with respect for the rights and dignity of older adults and meaningfully meet their health needs and preferences.

Background

Population aging is the most significant demographic shift of the 21st century both globally ^{1,2} and in Canada ³. An aging population experiences a range of complex and intersecting challenges ⁴⁻⁷, which places strains on the capacities of the healthcare system ^{8,9} and caregivers supporting older adults ¹⁰, especially with the growing desire to age in place ¹¹.

In response to the growing aging population and the need to promote healthy aging and support caregivers, technological innovations have emerged as potential tools ¹¹. Notably, artificial intelligence (AI) technology is an emerging and growing field for older adult care ^{9,12,13}. There are various AI technologies serving different functions for older adult care. Examples include wearable and environmental sensors, or intelligent homes for daily life assistance, including monitoring and detecting changes in an older adult's health and behaviour (e.g., sleep and falls), and AI-enhanced robots to help support an older adult's social well-being ^{14,15}.

Although AI technologies are gaining increased attention and adoption for their potential in older adult care, such innovations also raise several ethical considerations ¹⁶. Previous research applying scoping/systematic review methods has broadly examined ethical issues of AI within the healthcare sector ^{17,18}. However, few reviews focus on older adult care, and those that do often concentrate on a niche group of technologies (e.g., smart home technologies) ^{19,20}. As a result, the broader landscape of ethical issues around applying AI technologies in older adult care remains fragmented.

Therefore, a broad scoping review examining the ethical issues of AI in older adult care is warranted. This approach enables a rapid synthesis of existing literature within a condensed timeline to provide priority areas for policy and decision-makers.

Research Approach

A rapid scoping review was conducted following the Arksey and O'Malley²¹ framework to map the academic and grey literature on actual or potential ethical issues around the use or possible use of AI technologies in older adult care, including the strategies to mitigate risks/safeguard users.

Electronic Search Strategy: Due to time constraints, two academic databases were searched: MEDLINE and Embase. The search used a combination of medical subject headings and keywords related to older adults, artificial intelligence, and ethics, which were combined using the Boolean operator AND. The search strategy was tailored to each database. All searches were conducted in September and October 2025. In addition, the first 10 pages of Google Scholar results were searched to identify additional academic and grey literature.

Identifying Studies: The search results were uploaded into Covidence, a review management tool, which also helped with removing duplicate studies. The review included studies that focused on (1) AI technologies use (or potential use) for older adult care and (2) explored the (potential or actual) ethical issues related to its use (or potential use). Included studies could be any original quantitative or qualitative research or discussion paper published in English. Studies were excluded if they (1) focused on non-AI technologies or made no statement about whether the technology explored was AI-based/enhanced/powered, (2) the AI technology was not meant for older adult care, or (3) were published as study protocols, reviews, or trial registrations. The studies were screened based on the title and abstract and then by full text. Due to the large number of studies identified during the title and abstract phase, and limited resources and time, studies examining use of AI-enhanced robotics for older adult care were also excluded.

Charting and Summarizing Data: An Excel form was used to chart the data of each study and patterns emerging from the data were identified.

Key Findings

Findings were extracted from 23 papers published between 2019 to 2025. The studies' characteristics are summarized in Figure 1. The papers were either qualitative studies (n=13) or discussions or commentaries (n=10). Among the qualitative studies, study participants consisted of only older adults, only family caregivers, or a mix (e.g., older adults, healthcare providers, family caregivers, researchers, academics, ethicists, jurists, computer scientists). Finally, the qualitative studies were conducted in Europe, Asia, or multiple European countries.

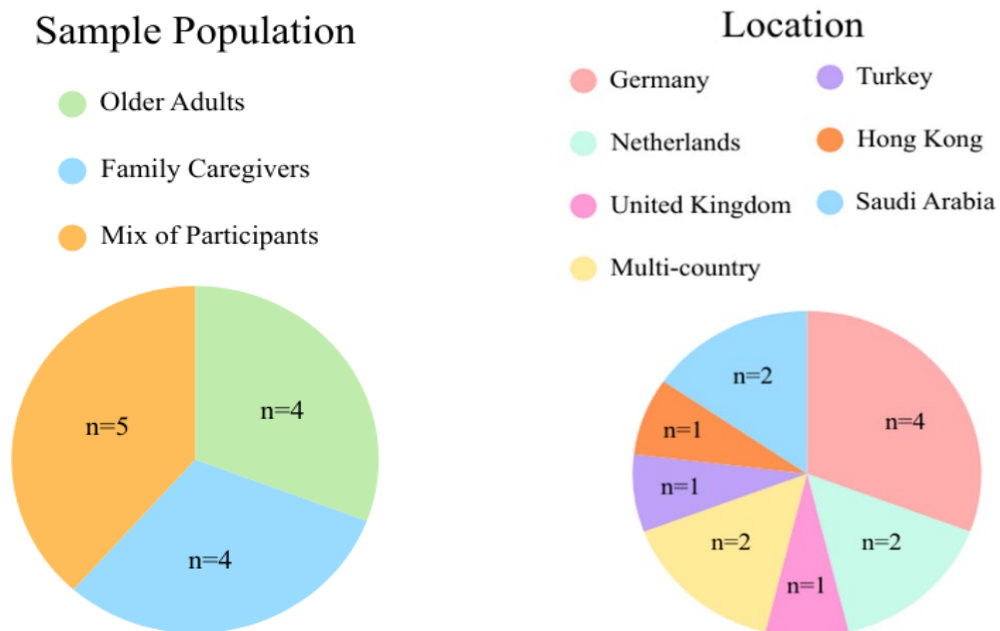
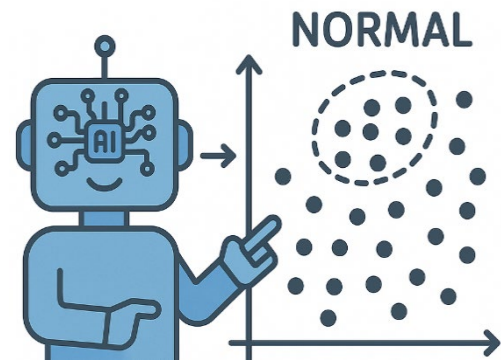


Figure 1: Studies' Characteristics

Standardization

AI technologies process large volumes of complex data, distilling it into simplified outputs or recommendations for users. During this process, the data is imposed into predefined categorized or preprogrammed boundaries. Consequently, AI technologies



reduced the complexity of the data to generate a standard of what is considered a “normal” or “average” health or behaviour^{22,23}. Some papers have highlighted the concerns of AI technologies basing its output on what is “normal” could result in misleading conclusions²⁴ or could be used as a disciplinary tool creating pressure for the caregivers to intervene, if an older adult differs from the “normal”^{25,26}. Additional concerns were raised with restricting the older adult’s freedom or behaviours and conditioning an older adult to behave in a manner that is “desirable”^{23,27}. For example, a study explored older adults with dementia and their caregivers’ opinions on specific intelligent assistive devices, one of which was an intelligent emotion recognition technology that monitors signs of negative emotions, alerts the caregivers, and recommends an intervention²⁷. Participants expressed concerns about the technology controlling and repressing the negative emotions (e.g., aggression) of an older adult with dementia, arguing that they have the right to express such emotions²⁷. As a result, AI technologies would overlook an older adult’s personal needs, preferences, and characteristics; potentially leading to the depersonalization of care^{22,23,25,28}. Overall, standardization in AI shows the ethical dilemma of reducing an older adult patient into generalized data.

Bias

AI technologies learn patterns based on the data provided. Studies and commentaries have raised concerns about the bias posed by poor- or under-representation of certain populations in data ^{22,23,26,29–34}, with regards to certain diseases, race, culture, and age. Consequently, inadequate representation in data can lead to biased or inaccurate outputs that are unsuitable or exclusionary for populations poorly represented in the training/development of the AI technology. A related issue is the use of “age-scripts”, whereby age-related stereotypes about older adults’ needs and preferences are integrated into design and purpose of the AI technologies ^{22,23,34}. Such age-scripts presume certain deficits, such as older adult frailty, often creating a narrow view of older adults as a one-dimensional homogenous group. On the other hand, a study argues that while positive assumptions can be made, such as active aging, “the problem here is the assumption that technology use in itself is sufficient to realize such a concept of a good life. This ignores the often complex individual circumstances that shape a user’s personal situation.” ^{34(p.543)} Ultimately, the ethical concern of bias reflects the risk that societal challenges (e.g., under-representation, discrimination, ageism), if not addressed nor monitored, are being encoded into AI technologies; thereby, perpetuating existing inequalities.



Autonomy and Consent



Older adults' autonomy to make decisions about their care or needs can be undermined through AI, as the technology may detect and force one's behaviour into a pre-defined category, make recommendations without considering older adults' priorities, or impede their sense of freedom through constant surveillance^{25,35–37}. Further impeding older adults' autonomy is the potential risk that reliance or over-reliance on AI in care could reduce caregivers' competency or willingness to make care decisions^{22,25,36} that are based on their own skills/assessment, nuances of an older adult patient, and contextual factors. The reliance on AI can impact providers' professional autonomy/identity²⁸. For example, in a Saudi Arabia-based study nurses expressed how AI technology decision/recommendation could pose a threat to their professional autonomy if there is a conflict between their recommendation and the AI³⁸.

Related to autonomy is consent to use AI technologies, which can face significant challenges as older adults age and experience cognitive decline^{35,37,39}. This challenge can be more salient with AI technologies that collect longitudinal data, as the consent process may require that a older adult provide ongoing permission for data collection, and include provisions for the decision to withdraw consent³⁵. Consent to use AI technologies is further complicated because of AI's ability to learn and evolve; therefore, an older adult's consent might not fully reflect the future capabilities of the technology³⁹. Additionally, AI requires the collection and use of data,

complicating the consent process as users must be informed about how the data is collected, used, transmitted, and stored ³⁷. This underscores how AI technologies in older adult care can impact both care recipient and caregivers' autonomy and the consent process.

Privacy and Data Security



Some papers briefly raised concerns around privacy and data security, especially with AI technologies that constantly monitor and collect or use personal data to perform their tasks ^{22,24,27,37,38,40}. With AI-

enabled monitoring technologies that require constant surveillance to collect data, there is a trade off involving having AI technologies support older adults' independence or promote safety at the expense of one's privacy³⁵. While the idea of data being anonymized gives a sense of security, with future advancements in AI, such data could be re-identified ³². Moreover, concerns related to data security include data access and ownership, specifically around the potential for misuse, unauthorized access, or data breaches ^{25,36,38,40,41}. Such system vulnerabilities can pose a potential risk for data alteration/manipulation, which if undetected can impact care related decision-making ³⁶. One study explained that such concerns about privacy and data security were notably evident among their older adult participants who had limited technology experience or saw it on news outlets ⁴². These concerns highlight the complexity around AI technologies' impact on older adult's rights and preferences.

Dehumanized Care

There are concerns about dehumanizing care through AI. First, AI technologies can impact interactions and relationships between older adults and healthcare providers ^{28,38}, and older adults and their family/caregivers ^{26,27}. For example, a study explored older adults' opinions of an AI clinical decision support system, and shared how AI can improve efficiency (i.e., time saving), but may also contribute to limiting the interactions between an older adult patient and healthcare provider ³⁶. Second, AI technologies are not appropriate tools to provide emotional and empathic support ^{40,43}, which is essential for holistic and personalized care. Finally, beyond the two relational concerns, is the standardization of care, discussed in an earlier section, which can depersonalize care given that the individuality of the older adult patient is overlooked ^{22,23,25,28}. Together, there is a collective concern that there will be a shift away from a human-centred care approach.



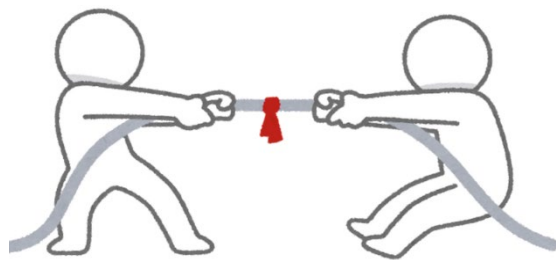
Black Box

A reoccurring concern is the lack of transparency with AI technology, which stems from the AI being a black box where it is not possible to explain specifically how the AI generated an output (e.g., prediction or



recommendation)^{25,29,31–33}. This lack of explainability makes it challenging for caregivers, as well as care recipients, to understand the AI technology's output³¹, creating hesitancy and mistrust towards using the tool^{25,29,32}. The issue posed by the black box nature of AI can complicate accountability and conflicts of interests, which are discussed in the next section.

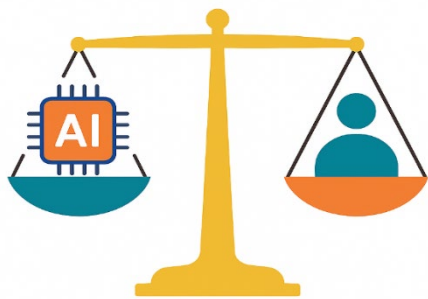
Competing Interests



Application of AI technologies in older adult care involves different stakeholders, such as older adults, family caregivers, healthcare providers, technology companies, insurance companies, healthcare systems/institutions, and government^{25,27,30,32,35,36}. These stakeholders could have differing priorities about whether and how the AI is applied, which may conflict with one another. A central question is which priority is the AI technology servicing, since an AI that could have been intended to empower older adults could shift to promote something not within the user's preferences or objectives²². One example is that instead of using AI technology for personalized care to help manage the emotions of dementia patients, it could be used for cost-saving purposes through monitoring and modifying behaviours²³. Some papers discuss how competing interests can operate at the hospital/systems-level. For instance, the government must balance innovation with regulations to protect users, whereby too much regulation can impact innovation, on the other hand too little regulation can impact users³⁰. Likewise, some authors

expressed concerns around AI technology being applied to make care decisions based on the interest of a third party or financial benefits ³⁶ and concerns that ageist design/development of an AI can systemically exclude older adults from being able to receive certain treatments ³². The dynamic between different stakeholders and users shows the challenge of aligning such perspectives within governance around AI in older adult care.

Equity



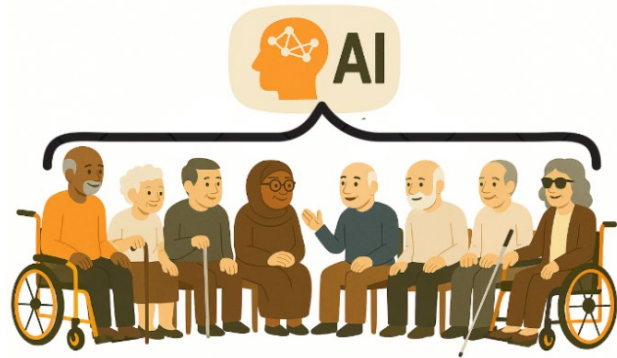
AI technologies could further perpetuate health disparities, especially if we consider the previous discussions around the concern of bias in AI due to the data. Lack of equity can be further perpetrated by the lack of access due to the digital divide, where certain groups of older adults or health intuitions may not be able to afford or have the resources to use AI technologies, creating uneven care quality ^{26,38,39,42}. Equity concerns are not only about the access to the AI technology itself; the technology also needs to be adaptable to different abilities/needs and be user friendly ^{23,30}. If it is not, it could further impede engagement by older adults in their care and with AI technologies. Equity is further complicated within developing nations, where issues of digital access, digital literacy, affordability, and digital exclusion due to geography are ongoing issues ⁴³. These challenges illustrate the potential of AI systems, if not developed and deployed appropriately or fairly, to perpetuate care disparities.

Risk Mitigation Strategies & Policy Recommendations

Suggestions to address the ethical issues were discussed within the 23 papers and policy recommendations were generated based on the findings.

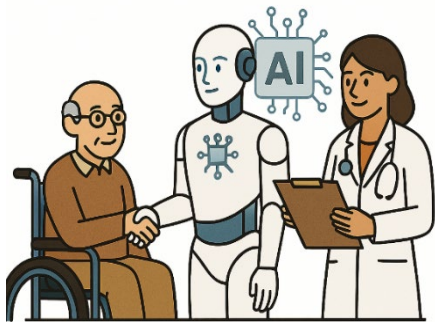
Adoption of a Human-Centric Approach to AI Technology Development and Implementation

Participatory design or co-design approaches involve users and stakeholders in the development and implementation of AI technology to ensure it meets



users' needs and preferences. In this context, integrating relevant stakeholders^{23,26} should include older adults with varying levels of digital literacy⁴⁴ throughout the entire AI development process³⁰. Such an approach can help avoid embedding potential biases (e.g., age-scripts) into the AI technology³⁴ and ensures the technologies are tailored to meet the needs/context of a group/system²³. This strategy also includes addressing potential factors (e.g., time and training) that can impact users' engagement with a co-designed approach³⁰. There is not a one-size-fit-all approach to AI technologies and its implementation; therefore, policy makers should adapt and tailor their approaches based on consultations with stakeholders and patients²² and

incentivise having engagement by older adults as part of AI development⁴⁴. Moreover, some papers shared the importance of using a collaborative interdisciplinary approach during the research and development of AI technologies, including in the evaluation of its implementation^{30,31,35} as it can help to address digital ageism³⁰.



Beyond using human-centred approaches to AI development and design, many papers emphasized the importance of employing a human-in-the-loop model of care when integrating AI technologies in older adult care^{25,28,29,33,36,38,41–43}, whereby humans are involved in providing ongoing oversight and authority over the decision-making. This can contribute to fostering trust in the AI technology^{29,43} and ensuring that the care is relational and personalized^{25,28,41}. Part of the human-in-the-loop model of care should include educating/training care providers about how AI operates and makes recommendations^{31,32} and having the AI output framed as a suggestion to the users, instead of something they must implement²⁵. Overall, AI technologies should not replace human care; rather it should be used as a tool to complement, enhance, or support care.

Policy Recommendation 1

Mandating that AI for older adult care be developed/designed and implemented by involving an interdisciplinary team, including older adult care recipients and caregivers. This should include requirements that AI applications be applied with human oversight and authority.

Having Data Representativeness and Diversity, Including the Collection and Use of Necessary Data

There is a need to have representative or diverse data ³¹, across different demographics (e.g., geographic and socioeconomic status) ⁴³. To obtain reliable and context-specific data, greater research is needed that involves minority populations, including older adults ^{22,34}. In addition, it is important to leverage social determinants of health data, and to question how such data is being used, applied/processed within the AI algorithm, and eventually how it influences AI technology ²³. Some papers also reported approaches to ensuring the evaluation of what the data comprises and how it may impact users during the development stages, such as validating the extent of the dataset's representativeness ³⁰ or evaluating how the AI technology impacts certain groups and using the dataset as a platform to further improve the AI for those groups ³⁴. There are discussions around ensuring data transparency at a systems-level, including disaggregation, to understand how, for example, data about age (or lack thereof) may be influencing decision-making ²⁶. Also, articles discuss integrating data diversity into the AI development process through guidelines, such as those around clinical trials and AI model reporting ²³. Another data related suggestion was to minimize the amount of essential data to be collected and used, only to use data that is absolutely necessary for the AI technology to perform a specific objective ^{25,39,44}.



Policy Recommendation 2

Embed structures into guidelines which mandate that AI systems are designed with representative data, or at least, transparent about their data (and its limitations), including requirements that the AI model uses/collect only necessary data.

Transparent Consent Processes That Include Control Over Data Privacy and Security



The consent process for AI technologies should be informed and ongoing ⁴⁴, within which the AI is explained in an empowering way to the older adult ³², such as using simple language ⁴⁴.

Consent for older adults with dementia should consider the use of decision making surrogates, or obtaining an older adult's preferences about their future decisions around AI ³⁹. It is acknowledged that obtaining consent for the use of AI can add more administrative burden to caregivers, as it may be a time consuming task ³². Part of the consent should include transparency during the development and implementation stages of the AI around its data security approach ⁴². Such discussions should specify how data are protected, including having the user in control over what data is shared to whom ^{26,39}, and should provide the choice to opt out of data

sharing³¹. Following such practices would enable people to make informed decisions based on their personal boundaries around privacy²⁶. Some papers suggested data protection measures, such as having regular/episodic audits around AI privacy⁴⁴ and exchange of information happening internally³⁹ to ensure access only by authorized personal/users³⁸. Moreover, others suggested approaches to protect older adults' autonomy and agency, such as having configurable data privacy settings, for example settings which allow the ability for users to pause monitoring at certain points in time⁴⁴ and involve default privacy settings that protect users, such as limited video surveillance or data collection⁴⁴.

Policy Recommendation 3

Clear regulations requiring that ongoing informed consent be periodically confirmed by the older adult (or a substitute decision-maker). This includes transparency about how data are collected, stored, used, retained, and shared. There should also be regulations that govern the need for having data protection safeguards that prioritize the users' autonomy and control.

Summary

Given the potential ethical risks from the emergence and growth of AI technologies for older adult care, safeguards should proactively leverage human-in-the-loop approaches, transparent data use practices, and continuous consent processes that value the older adults' autonomy. Moving forwards, ethical principles should guide development and implementation to ensure AI for older adult care is applied appropriately and responsibly.

Declaration: All images in this report, except for Figure 1, were generated using Microsoft Copilot.

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