Health technology innovation in long-term care of older people: Advancing a policy-relevant research agenda

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Abstract

As the mean age of the world's population rises, there is increasing demand for long-term post-acute care (LTPAC), where health information technology (HIT) has potential to improve care quality, access, and equity. However, evidence guiding effective HIT implementation in LTPAC remains limited. Authors of this paper report on proceedings from the International Summit on Innovation and Technology in Care of Older People (IS-ITCOP) and present a consensus-driven policy-relevant research agenda to advance HIT use in LTPAC. A two-day international summit convened 47 experts in research, policy, clinical care, and technology. Plenary sessions with keynotes and facilitated discussion groups addressed four domains: emerging care models and technology, workforce of the future, transparency and accountability, and safety and privacy. Data from recordings, structured notes, and word cloud visualization were synthesized to identify consensus-based research priorities. Key priorities include developing equitable and interoperable technology-enabled care models; strengthening workforce readiness through digital competencies, informatics leadership, and training; redesigning accountability systems to reduce reporting burden and improve data validity; and addressing ethical, privacy, cybersecurity, and consent concerns. Cross-cutting themes highlighted infrastructure limitations, policy misalignment, workforce shortages, and disparities in technology access across settings. Advancing HIT in LTPAC requires coordinated policy, infrastructure, workforce, and governance strategies. Findings support the need for investment in interoperability, workforce development, equitable technology design, and person-centered implementation approaches to improve quality, safety, and outcomes for older adults receiving long-term care.

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Innovation and Translational Significance

This study advances innovation in services for older adults by presenting the first international, consensus-based research agenda about health information technology (HIT) in LTPAC. Through structured engagement of researchers, clinicians, policymakers, technology experts, and leaders, we identified priority research questions spanning technology-enabled care models, workforce development, transparency and accountability, and safety and privacy. The resulting agenda provides a practical roadmap for policymakers, health systems, technology developers, and professional organizations to guide investment, regulation, workforce preparation, and implementation strategies.

Keywords

Long-Term Post-Acute Care

Health Information Technology

Delivery of Health Care, Integrated

Informatics

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By 2050, the proportion of the world's population over 60 years will nearly double from 12% to 22%, representing nearly 2 billion older people worldwide (World Health Organization [WHO], 2022b) In response, the United Nations declared 2021–2030 to be the Decade of Healthy Aging, aiming to improve the lives of older people, their families, and the communities in which they live (WHO, 2022a). Thus, Long-Term Post-Acute Care (LTPAC) systems that provide care for older adults are a significant global area of interest. In this project, the World Health Organization's (WHO) definition of LTPAC guided the work: "national systems that ensure integrated long-term care that is appropriate, affordable, accessible, and upholds the rights of older people and carers alike" (WHO, 2017). In this definition, LTPAC providers include home care and hospice, assisted living facilities, and nursing homes (i.e., skilled nursing facilities). LTPAC systems are essential because 70% of older adults will require long-term care (e.g., assistance in their activities of daily living [e.g., moving around, bathing, and feeding]) over the course of their long lives (WHO, 2021). Within LTPAC communities, such activities are supported through healthcare professionals and informal caregivers (i.e., family, friends, neighbors) to ensure that people maintain the highest quality of life, according to their preferences, with the greatest degree of independence, autonomy, participation, personal fulfillment, and dignity (WHO, 2000).

As the world's population gets older, many challenges arise in providing safe, higher-quality care for older adults at the individual, institutional, and community levels. Older adults in LTPAC systems have varying levels of clinical need that are often hampered by increasing functional decline and cognitive impairment. They may, furthermore, be challenged by having limited resources and/or living in poor environments (Ko et al., 2018). One strategy for improving the quality of care in LTPAC systems is the efficient and competent use of health information technology (HIT) (NASEM, 2022a). Unfortunately, there are many gaps in current evidence about how technology can be effectively used to support the care of older people in LTPAC systems.

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There have been substantial changes in HIT use in LTPAC in recent years. Federal U.S. policies launched in 2018 established performance-based accountability measures for hospital readmission rates in LTPAC settings (e.g., skilled nursing facilities), which have resulted in more facilities adopting electronic health records (EHRs) and other electronic tools (e.g., clinical decision support) for frontline staff to use (Shetty et al., 2020). Other HIT advancements since the COVID-19 pandemic include the expansion of Medicare payment for telehealth and increasing collaborations between academic medical centers and LTPAC (Archbald-Pannone et al., 2020; Powell et al., 2022). For example, in LTPAC, following the national telehealth policy expansion in March 2020, telehealth applications for resident evaluation, consultation, and second opinions were used 11.2 times more often than before the expansion Alexander et al. (2021). However, 16% of nursing homes did not have telehealth, with larger urban nursing homes more likely to have telehealth capabilities, illustrating persistent structural disparities in HIT resources in this sector (Alexander et al., 2021). In contrast, researchers have shown that telehealth is more likely to be used in rural settings than in urban settings (Ulyte et al., 2023). Recent national legislative efforts (e.g., Telehealth Modernization Act, CONNECT for Health Act) have been proposed to stabilize and permanently expand telehealth access by eliminating geographic limits, enabling the patient's home to be a primary site, and expanding provider eligibility (Carter, 2025; Thompson, 2025). More research will be needed to evaluate the impacts of policy-driving factors on the uptake of telehealth capabilities.

Other emerging technologies are driving a shift towards home- and community-based models where older adults receive care. In a recent scoping review including 105 research publications, the most frequent technological innovations emerging in home-based care delivery models included wearable devices (31%), mobile apps (28%), remote patient monitoring (26%), and Artificial Intelligence (AI)/Machine Learning (ML) algorithms (19%) (Kennedy et al., 2025). With these rapidly evolving technologies, contemporary models of care delivery require evidence-based approaches that meet consumer expectations to achieve the best possible

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outcomes for patients and the workforce alike (Clarke et al., 2024). Due to recent policy changes and the innovations driving models of care to improve quality in LTPAC settings, now is an opportune time to set a new priority research agenda to promote science by combining input and expertise from a diverse group of researchers, leaders, clinicians, administrators, and policymakers. Using a conference model is an important strategy for generating innovative ideas and developing a broad research consensus on how to optimize technology use in LTPAC and to identify priorities for making evidence-based research.

Thus, on June 6-7, 2024, the International Summit on Innovation and Technology in Care of Older People (IS-ITCOP) in New York, NY, USA, was convened to build a research agenda to make healthcare safer, higher-quality, more accessible, and more equitable. The purpose of IS-ITCOP was to create a research agenda to promote the timely production of research to identify where barriers in the practice and delivery of healthcare supported by technology are most concerning, and to define a research agenda for studying those issues among older adults in LTPAC settings. The objective of this paper is to report on the proceedings of IS-ITCOP and the resultant research agenda.

Conference Planning Committee and Experts

IS-ITCOP brought together leading experts knowledgeable about HIT innovations among LTPAC and community care systems for older adults. Two Co-Chairs with expertise in LTPAC and community health systems, informatics, policy, and quality of care led the organizing committee activities. The organizing planning committee assembled for IS-ITCOP had significant expertise in LTPAC policy, research, informatics, workforce, and quality institutional and community care systems for older people. The Co-Chairs convened bi-weekly to monthly calls with members of the organizing committee using conference call technology (e.g., Zoom) to define plans, timelines, responsibilities, and outcomes. During organizing meetings, the committee leads distributed tasks and materials to solidify all agendas, identify plenary speakers and conference participants, and evaluate and streamline IS-ITCOP materials

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among the team. During the calls, roles and responsibilities, expected outcomes, and IS-ITCOP outreach were determined by members of the committee.

Each member of the planning committee was tasked with identifying potential speakers and conference participants. Speakers and participants were selected based on their experience with the use of technology in the care of older adults in community settings. The experts were identified by their expertise and leadership in relevant professional organizations, peer-reviewed publications, research, and recognition as leaders. International participants were invited who also had experience in the U.S. and who could contribute to research recommendations from a global perspective.

Meeting Overview

Conference Agenda and Proceedings

After much deliberation, the organizing committee agreed upon the IS-ITCOP Agenda illustrated in **Table 1**. Plenary sessions with keynotes were planned to engage all attendees in a large-group setting. Keynotes were organized to stimulate knowledge sharing between all participants through question-and-answer sessions that followed each plenary. Plenary sessions were followed by two roundtable discussion groups. Each discussion group included 4-6 people. The first roundtables in each session included discussions on topics related to: 1) Emerging models of care and technology, 2) Workforce of the future, 3) Transparency and accountability in quality of care, and 4) Safety and privacy considerations in technology use. The second roundtable discussions in each session were about individual, institutional, and community-level facilitators and barriers for each topic discussed in the first roundtable. Each group was moderated by a facilitator who used a semi-structured guide created by the scientific program committee based on Kallio's framework (Kallio et al., 2016). Kallio's framework includes a rigorous five-phase process for developing structured interview guides to improve trustworthiness and objectivity. During discussion groups, a recorder was assigned to each group to document and record discussions. Discussants were informed about recordings and

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that all information recorded would be de-identified and used to create a policy-relevant research agenda. No signed consent was required by the institution's review board. To promote consistency in format, the two moderated sessions were conducted using the same timeframes for each discussion, recorders, and facilitators performed the same functions during each roundtable. Throughout the summit, participants had many opportunities to meet and speak with speakers and one another during the small roundtable discussions. Networking breaks, lunch, and an offsite dinner were also planned for less formal periods of conversation. At the end of each day, summaries of the discussions were provided, and feedback from participants was encouraged by lead organizers as the entire group assembled.

In June 2024, the organizing committee convened 47 national and international participants in New York City for IS-ITCOP and engaged in robust discussions over 2 days. Characteristics of the participants are illustrated in **Table 2**. Most attendees were academic researchers, federal liaisons, and leaders in professional organizations. Many nurses, policy influencers, and engineers contributed their expertise to the discussions. Attendees were from the United States, Australia, Canada, Norway, the Netherlands, Taiwan, India, and the United Kingdom.

Reaching Expert Consensus

Recorders in each discussion group used Slido, an online platform, to document keywords and excerpts from discussion topics and facilitate the process of reaching consensus across the discussion groups. Slido allowed the team to display documented keywords and excerpts as a word cloud generated from all data collected by recorders in each discussion group; see example word cloud for Emerging Models of Care discussions in **Figure 1**. Word clouds were produced immediately following each session. Visualization of the keywords by experts following discussion groups enabled LTPAC leaders to collectively respond to the sentiments, opinions, and ideas generated among discussion groups. Following group discussions, during summary activities, all participants were encouraged to comment on the

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word clouds with the entire group. Through this method, we established credibility and confirmability of the discussion group content (Lincoln & Guba, 1985). The verbatim recordings and word clouds that were transcribed were used in the analysis and writing of the research agenda.

Analysis

Analysis of Summit Discourse

Qualitative data from the discussion groups were analyzed using a hybrid approach that combined artificial intelligence (AI)-assisted thematic analysis with gold standard human qualitative analysis. Verbatim transcripts from all discussion groups were uploaded into a secure, enterprise-based large language model (ChatGPT 4.0) environment. Through iterative prompt engineering (Goyanes et al., 2025), the AI platform was instructed to identify key themes, subthemes, relationships, and representative quotations related to barriers and facilitators of technology adoption discussed by participants. To optimize information extraction and thematic saturation, transcripts were analyzed in smaller batches rather than as a single corpus (Goyanes et al., 2025).

Human-in-the-loop procedures were used throughout the analytic process to ensure rigor, trustworthiness, and validity of AI-generated outputs. Two investigators with expertise in LTPAC and qualitative methods independently reviewed AI-generated themes, compared them with the original transcripts, and verified that findings accurately reflected participant discussions. A third investigator participated in reviews to facilitate decisions when primary coders could not agree. Investigators assessed the completeness of theme extraction, examined supporting quotations, identified omissions or misinterpretations, and refined thematic labels when necessary. Human reviewers also compared AI-generated findings with results obtained through traditional qualitative coding methods, including codebook development, iterative coding, consensus meetings, and audit trail documentation (Bradley et al., 2007; Guba, 1981; Lincoln & Guba, 1985; MacQueen et al., 1998). Final themes were retained only when supported by both

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transcript evidence and investigator consensus. This human-AI collaborative approach leveraged the efficiency of AI for large-scale text synthesis while maintaining methodological rigor through expert review, interpretation, and confirmation of all analytic outputs (Goyanes et al., 2025).

Key Themes

The research agenda

Table 3 provides an overview of the topic areas and research questions emerging from the IS-ITCOP discussions. These discussions highlighted critical gaps and opportunities in the adoption and use of HIT within LTPAC settings, leading to the development of a policy-relevant research agenda. The resulting questions span several interrelated domain areas. First, participants emphasized *emerging models of care and technology*, focusing on how policy and payment structures, infrastructure limitations (e.g., broadband and interoperability), and technology vendors influence adoption, particularly in rural and resource-constrained settings. Participants also highlighted the importance of leadership, governance, and organizational readiness, as well as the need for equity-focused technology design that accounts for the needs of marginalized populations in LTPAC. Cross-sector collaboration was identified as essential for scaling effective, technology-enabled models of care. Second, in the *Workforce of the future* domain, discussions centered on workforce capacity challenges, including staffing shortages, turnover, and role overload, and how these factors constrain effective HIT use. Participants identified the need for standardized digital competencies across roles, improved education and training pathways, and stronger informatics leadership and “technology champions” to support adoption and sustained use. Third, within *Transparency and accountability in quality of care* in LTPAC, participants explored how current regulatory and reporting requirements can both enable and hinder HIT adoption. Key issues included misalignment between reporting demands and clinical workflows, such as the tension between punitive versus quality improvement-oriented uses of data, and opportunities to leverage interoperable technologies to enhance

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accountability while reducing administrative burden. Trust, governance, and consumer-facing transparency tools were also discussed, particularly in relation to digital equity and stakeholder engagement. Finally, the domain of *Safety and privacy considerations in LTPAC* addressed how regulatory ambiguity and risk aversion can limit technology adoption. Participants examined the need to balance safety, privacy, and person-centered care, as well as the role of technology design and usability in influencing safety outcomes. Additional considerations included equitable approaches to privacy and consent, cybersecurity capacity, and the importance of building trust through transparent data governance and communication strategies. Taken together, these domains underscore the complex, multi-level factors influencing HIT adoption in LTPAC and inform the comprehensive, policy-relevant research agenda proposed. Quotes are provided and linked to the professional role and affiliation (Table 1) of the discussant. Additionally, if the discussant was an international attendee, that is noted.

Emerging models of care and technology

Findings related to *emerging models of care and technology* highlight the growing integration of digital tools to enhance care delivery in LTPAC settings, alongside important contextual challenges. Participants emphasized the role of technologies such as wearables, telehealth, and remote monitoring in improving efficiency and enabling more continuous oversight of residents, noting the value of *"wearables and the ability to see into the rooms or into people's homes"* (Policy Influencer, Prof. Society). These tools support a shift toward proactive, data-driven care, described as *"a proactive model of care rather than reactive"* (Informatics, Academic Research) and are increasingly paired with predictive analytics to anticipate risk and tailor interventions, including *"risk prediction* [with] *individual patient risk trajectories"* (Informatics, Academic Research). At the same time, participants raised concerns about maintaining human interaction as automation expands, particularly as systems begin *"automating routine tasks like medication reminders or monitoring"* (Geriatrician MD, LTPAC Org, International).

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Workforce readiness and infrastructure were identified as critical enablers of these emerging care models. Participants highlighted gaps in staff competency and training, emphasizing the need to build capacity for technology use and noting challenges related to *"competency of the workforce to engage with technology"* (RN [registered nurse], Informatics). Technologies such as AI were viewed as potentially supportive, functioning as *"AI as a feedback loop for staff to improve their jobs"* (Geriatrician MD, LTPAC Org), but requiring intentional integration into workflows. Infrastructure limitations also remain a significant barrier, with participants describing *"facilities lacking necessary digital infrastructure for full-scale implementation"* (RN, Academic Research) and ongoing *"Wi-Fi and internet connectivity challenges"* (Policy Influencer, Federal Liaison), particularly in rural and under-resourced settings. These constraints contribute to disparities in adoption and ineffective data exchange across care environments.

Finally, participants underscored the importance of trust, equity, and design in shaping the success of technology-enabled care. Concerns about data privacy and governance were prominent, including the risk of *"breach of trust from the patient due to data handling issues"* (Policy Influencer, Academic Research, International) and uncertainty around *"trust in AI recommendations, especially when considering patient goals"* (Informatics, Academic Research, International). Broader ethical considerations (e.g., autonomy, bias, and equitable access) were also central, with recognition that *"access to technology differs greatly between rural and urban settings"* (Policy Influencer, Federal Liaison). Participants emphasized the need for interoperable systems and human-centered design approaches, noting that *"lack of integration between long-term care and hospital systems complicates data sharing and care coordination"* (Policy Influencer, Academic Research), and that technologies should prioritize user needs, ensuring that *"person-centered design should prioritize the needs, preferences, and comfort of older adults"* (Therapist, LTPAC Org). Collectively, these findings reflect a balance between

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innovation and the structural, ethical, and human factors necessary to sustain effective technology-enabled models of care.

Workforce of the future

Findings within this domain highlight the central role of interdisciplinary collaboration and digital infrastructure in shaping how technology is integrated into LTPAC settings. Participants emphasized that technology could facilitate team-based care, particularly through shared platforms and data systems, noting the importance of *"interdisciplinary collaboration using technology"* and *"teamwork in long-term care"* (Informatics, Academic Research). Tools such as interoperable EHRs and care planning applications were seen as enablers of coordination, with references to *"data sharing across systems using EHR"* (RN, Academic Research, International). At the same time, participants stressed that effective adoption depends on the *"importance of interpersonal relationships in interdisciplinary collaboration"* (APRN [advanced practice registered nurse], Academic Research), even as digital tools are used to enhance human connections, communication, and care coordination.

Workforce capacity and training emerged as persistent challenges affecting technology adoption. Participants described ongoing *"workforce shortages in long-term care"* (Policy Influencer, Community) and a *"generational technology gap"* (Pharmacist, Prof. Society), both of which limit staff's ability to effectively engage with new systems. Training gaps were evident across roles, particularly in informatics competencies, with recognition of the need for continuous skill development and support. Emerging roles, such as informaticians and "super users," were viewed as critical, serving as bridges between clinical practice and technology implementation. However, barriers related to cost and funding remain significant, including *"no funding for EHRs in post-acute care"* (Therapist, LTPAC Org) and *"high costs of technology implementation in smaller facilities"* (Policy Influencer, Prof. Society, International), further constraining adoption in resource-limited settings.

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Participants also identified broader structural and ethical considerations. Challenges related to data standardization and interoperability, such as *"lack of standardization in data"* (Policy Influencer, Federal Liaison, International), complicate effective use and integration across systems. Concerns about ethics, transparency, and trust were prominent, including the need for *"transparency in algorithms and decision-making processes"* (Policy Influencer, Federal Liaison) and attention to *"ethical use of AI in long-term care"* (RN, Academic Research). Issues of patient autonomy and data privacy were also central, with emphasis on *"patient control over technology use and data"* (Informatics, Academic Research). Finally, participants noted resistance to adoption and persistent inequities, including the *"digital divide in technology access and understanding"* (Geriatrician MD, LTPAC Org), underscoring the importance of aligning workforce development, policy support, and technology design to ensure equitable and sustainable implementation.

Transparency and accountability in quality of care

Findings in the domain of *transparency and accountability in quality of care* highlight both the promise and limitations of current reporting systems and technology-enabled oversight mechanisms. Participants frequently referenced public reporting tools such as Centers for Medicare and Medicaid Services (CMS) Care Compare, noting the influence of *"CMS Compare…star ratings"* (Policy Influencer, Federal Liaison) on perceptions of quality and consumer decision-making. However, concerns about data transparency and ownership were prevalent, including uncertainty around *"knowing who is financially responsible for this organization isn't as well known"* (Policy Influencer, Federal Liaison). Central to these discussions were persistent issues with data validity, as participants emphasized that *"data validity is a huge problem because much of it is self-reported and tied to payment measures"* (Informatics, Academic Research), contributing to *"self-reported quality measures* [that] *inflate the real quality of care in some facilities"* (Policy Influencer, Academic Research). These

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limitations raise questions about the reliability of current accountability structures and their ability to accurately reflect the quality of care.

Participants also described the operational burden and unintended consequences associated with existing transparency and reporting requirements. Documentation demands were a major concern, with reports that *"documentation burden is very high, with up to 50% of clinicians' time spent on documentation"* (Informatics, Academic Research), contributing to *"staff burnout…exacerbated by high levels of documentation and reporting tasks"* (Informatics, Academic Research). While technology has the potential to streamline processes, participants noted that *"EHRs replicate outdated paper processes, causing inefficiencies"* (Geriatrician MD, LTPAC Org) and emphasized that *"technology should not add to the workload, but integrate into existing processes smoothly* (Geriatrician MD, LTPAC Org). Challenges in care transitions further illustrate gaps in accountability systems, as *"delays in care transitions* [occur] *due to slow data transfer between care settings"* (Therapist, LTPAC.Org), and the absence of *"family caregiver input in care data"* (Social Worker, Academic Research) limits the completeness of information used in decision-making.

Finally, ethical considerations, equity, and patient-centeredness were central to discussions of transparency and accountability. Concerns about privacy, consent, and data governance were prominent, including questions of *"who gets to see the data, who has access, who it can be shared with"* (Informatics, Academic Researcher, International). Participants emphasized the importance of aligning accountability systems with patient goals, highlighting that current approaches often fall short, as *"current metrics fail to capture a complete view of patient experiences and satisfaction"* (Policy Influencer, Federal Liaison). Broader disparities were also identified, including inequities in access and systemic biases, where *"systemic issues restrict choice for people in underserved areas"* (Geriatrician MD, LTPAC Org and payment structures *"prioritize short-stay residents, leading to unequal focus on long-term care"* (Pharmacist, Prof. Society). Collectively, these findings underscore the need to redesign

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transparency and accountability frameworks to better balance accuracy, efficiency, equity, and person-centered care.

Safety and privacy considerations

Findings in the domain of *safety and privacy* underscore the ongoing tension between leveraging technology to enhance care and protecting patient autonomy and confidentiality. Participants frequently described the need for individualized decision-making, emphasizing *"risk-benefit analysis with each person"* and the challenge of *"navigating the balance between utilizing technology to enhance care while ensuring safety and privacy"* (Therapist, LTPAC Org). While technologies such as wearables, sensors, and AI-enabled monitoring systems offer opportunities to improve safety and oversight, there was recognition that *"privacy quickly falls away as a practical consideration"* (Policy Influencer, Academic Research) in high-need environments. Concerns about surveillance were prominent, including the *"emotional burden of being constantly monitored"* (Economist, Academic Research) and patient discomfort with monitoring in personal spaces, raising important questions about ethics, dignity, and quality of life.

Participants also highlighted the critical role of consent, autonomy, and workforce readiness in the safe and ethical use of technology. Participants did not always agree that every technology used should require informed consent. Discussions emphasized *"ongoing consent"* and the *"importance of resident autonomy"* (Informatics, Academic Research), particularly as technologies evolve and resident needs change over time. There was strong support for more adaptive approaches, such as layered or revisited consent processes, especially for individuals experiencing cognitive decline. At the same time, workforce limitations present challenges to safe implementation, with participants noting both *"no option not to use technology due to staff shortages"* (Informatics, Academic Research, International) and that the *"workforce* [is] *not ready to adopt most of these things"* (Geriatrician MD, LTPAC Org, International). Gaps in digital

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literacy and training—including a *"lack of informatics workforce"*—were seen as contributing to safety risks, underscoring the need for ongoing education and support for these caregivers.

Finally, concerns related to data security, ethical use, and trust in technology were central to discussions. Participants raised alarms about *"potential for hacking and data breaches"* (Informatics, Academic Research) and broader cybersecurity vulnerabilities associated with AI and Internet of Things (IoT) systems. Ethical challenges (e.g., *"bias in AI algorithms affecting safety"* [RN, Community]) and uncertainty around decision-making authority (e.g., *"who makes the final decision on the ethical deployment of technology"* [Geriatrician MD, LTPAC Org]). These challenges highlight the complexity of integrating advanced technologies into care environments. The role of families also emerged as influential, sometimes complicating care decisions, as *"family members often push for the adoption of technology"* (Informatics, Academic Research) that may not align with clinical judgment. Collectively, these findings point to the need for stronger governance frameworks, improved digital literacy, and person-centered approaches to ensure that safety and privacy remain central in technology-enabled care.

Cross-Cutting International Findings

Through the discussions, international participants emphasized that although the ethical principles guiding technology use in long-term care are broadly shared, their operationalization is highly context-dependent. Privacy, autonomy, informed consent, safety, dignity of risk, family participation, workforce preparation, data governance, and equitable access were shaped by differences in national legislation, professional standards, financing and ownership structures, health-system resources, cultural values, workforce composition, consumer choice, and technological maturity. These findings suggest that international consensus may be more readily achieved around core ethical principles than around uniform implementation standards. Accordingly, ethical frameworks for technology enablement should preserve common principles while allowing sufficient flexibility for adaptation to jurisdictional, cultural, organizational, and population-specific circumstances.

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Discussion and Implications

The findings across domains highlight that advancing HIT in LTPAC requires alignment between innovation, workforce capacity, transparency, and safety. In the domain of emerging models of care, participants emphasized the potential of proactive, technology-enabled care supported by predictive analytics, remote monitoring, and interdisciplinary coordination. However, these innovations remain constrained by misaligned payment structures, limited infrastructure, and variability in interoperability across systems (Vest et al., 2019). Prior research similarly demonstrates that while HIT adoption has increased in LTPAC, gaps in interoperability and weak policy incentives continue to limit meaningful use and data exchange (Dougherty et al., 2023). These findings reinforce the need for policy reforms that better align reimbursement and regulatory requirements with care delivery workflows, particularly in resource-limited settings, and that promote infrastructure investment and technology vendor accountability. Additionally, leadership and governance emerged as critical facilitators, consistent with evidence that organizational readiness and structured implementation processes are essential to realize the benefits of HIT (Ko et al., 2018). Equity-focused design also remains central, with implications for procurement standards and certification criteria that ensure technologies address the needs of diverse and underserved populations.

Workforce and technology adoption findings further underscore that human capital is a primary determinant of successful HIT integration (Makeham et al., 2026). Persistent workforce shortages, high turnover, and gaps in digital competencies limit effective technology use, even when systems are in place. These findings align with prior studies demonstrating that insufficient training, lack of informatics expertise, and inadequate workforce preparation are major barriers to HIT adoption in LTPAC settings (Ko et al., 2018). This research agenda highlights the importance of workforce stabilization strategies, including role redesign, team-based models, and protected time for technology use, alongside the development of standardized digital competencies and credentialing frameworks. Expanding education and

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training pathways through public–private partnerships and academic–practice collaborations is also critical to addressing disparities in workforce readiness (Reifsnyder et al., 2023). Furthermore, the role of informatics leadership and "technology champions" reflects broader evidence that internal expertise and change management capacity are essential to sustaining technology adoption and improving care outcomes.

In the domains of transparency, accountability, safety, and privacy, the findings point to a need to rebalance regulatory and oversight structures to better support learning, trust, and equitable care. Existing reporting requirements often create an administrative burden and may incentivize compliance over meaningful use, a challenge widely documented in the literature on HIT implementation in long-term care (NASEM, 2022b). Some discussants favored adopting promising technologies, while others worried about deploying poorly evaluated technologies on vulnerable older adults. The research agenda calls for streamlining reporting processes, aligning them with technology-enabled workflows and shifting oversight from punitive models to quality improvement–oriented approaches. Interoperable technologies offer opportunities to enhance transparency and accountability, but only when coupled with strong data governance and ethical frameworks (McMullen et al., 2022). Concerns related to privacy, consent, and cybersecurity further highlight the need for clearer regulatory guidance and shared infrastructure to support staff in smaller facilities. These findings are consistent with broader evidence that effective HIT use depends not only on technical capacity but also on trust, governance, and equitable access to digital tools (Steurer et al., 2024). Collectively, these implications underscore the importance of coordinated policy action and research to ensure that HIT adoption in LTPAC is sustainable, person-centered, and responsive to the complex needs of providers, residents, and families.

Conclusion

The IS-ITCOP summit highlights that advancing HIT in LTPAC requires more than innovation alone—it depends on aligning infrastructure, workforce capacity, transparency, and

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ethical governance. As demand for care grows, coordinated strategies are needed to strengthen interoperability, invest in workforce development, and modernize payment and regulatory frameworks. The research agenda emphasizes the importance of equity, transparency, and trust to ensure technology benefits all populations and does not deepen existing disparities. At the same time, technology must remain grounded in person-centered care, preserving autonomy, dignity, and human connection. Ultimately, this agenda provides a clear call to action for stakeholders to advance scalable, equitable, and evidence-based HIT solutions that improve care quality and outcomes for older adults.

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Conflict of interest

None to report.

Data availability

This study has not been preregistered. Data is not available at this time as the researcher has not completed planned or expected analyses for future publications.

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via manual checks of IS-ITCOP transcripts and coding conducted by at least two research team members using NVIVO software.

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Table 1 International Summit on Innovation and Technology in Care of Older People (IS-ITCOP) Agendas

Time	Activity
Day 1	
07:30-08:30	Set Up, Registration, and Breakfast
08:30-09:00	Overview, agenda, and introductions
09:00-09:30	Keynote: Emerging models of care using technology
09:30-10:30	Roundtable discussions: Emerging models of care using technology
10:30-10:45	Morning Networking
10:45-12:00	Roundtable discussions: Individual, institutional and community level facilitators and barriers for emerging models of care using technology
12:00-1:00	Lunch
1:00-1:30	Keynote: Workforce readiness to adopt IT
1:30-2:30	Roundtable discussions: Workforce readiness to adopt IT
2:30-2:45	Afternoon Networking
2:45-4:00	Roundtable discussions: Individual, institutional and community level facilitators and barriers to workforce readiness to adopt technology
4:00-5:15	Roundtable discussions: Individual, institutional, and community level barriers in technology adoption and workforce readiness that influence disparities in outcomes
5:15-5:45	Summary of Day 1
5:45-6:00	Closing remarks
Day 2	
08:00-08:30	Breakfast
08:30-08:45	Overview, agenda Day 2
08:45-09:15	Keynote: Transparency and accountability of quality
09:15-10:15	Roundtable discussions: Transparency and accountability for quality
10:15-10:30	Morning Networking
10:30-11:45	Roundtable discussions: Individual, institutional and community level facilitators and barriers for transparency and accountability for quality
11:45-12:45	Lunch
12:45-1:15	Keynote: Safety and security Issues for technology use
1:15-2:30	Roundtable discussions: Safety and security issues for technology use
2:30-2:45	Afternoon Networking
2:45-4:00	Roundtable discussions: Individual, institutional and community level facilitators and barriers for safety and security of technology
4:00-5:15	Roundtable discussions: Individual, institutional, and community level barriers in transparency and accountability for quality and safety and security of technology that influences disparities in outcomes
5:15-5:45	Summary of Day 2
5:45-6:00	Closing remarks

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Table 2 IS-ITCOP Participant Affiliations and Professional Roles

Professional Roles	Participant Affiliations					Total
	Professional Society	LTPAC Org	Academic/ Research	Community	Federal Liaison	
RN / APRN			12	1		**13**
Geriatrician MD		2				**2**
Pharmacist	1					**1**
Therapist		1				**1**
Policy Influencer	1	1	2	1	7	**12**
Engineer / Informatics			5		2	**7**
Economist			2			**2**
Social Worker			1			**1**
Research Assistant	3		5			**8**
Total	**5**	**4**	**27**	**2**	**9**	**47**

Note. IS-ITCOP = International Summit on Innovation and Technology in Care of Older People (IS-ITCOP) Participant; LTPAC = long-term post-acute care; RN = registered nurse; APRN = advanced practice registered nurse.

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Table 3 Topics and proposed research questions to advance a policy-relevant research agenda in LPTAC

Topic	Research questions	Statement of policy relevance
Emerging Models of Care		
Policy and Payment Alignment	How do current federal and state payment, quality reporting, and regulatory policies enable or constrain LTPAC organizations' ability to adopt and sustain HIT, particularly in resource-limited and rural settings?	Identifies misalignment between incentives and real-world LTPAC workflows that governments could address through reimbursement reform or regulatory flexibility.
Infrastructure and Vendor Ecosystems	How do variations in broadband access, interoperability standards, and vendor responsiveness influence disparities in technology adoption across different LTPAC settings (e.g., nursing homes, home health, assisted living)?	Guides government and industry strategies to improve infrastructure investment and vendor accountability for LTPAC-specific needs.
Leadership, Governance, and Organizational Readiness	What governance structures and leadership practices are associated with successful technology adoption in LTPAC, and how can public agencies and professional associations support these capabilities on a scale?	Identifies modifiable organizational facilitators that can be reinforced through technical assistance, leadership development, or accreditation standards.
Equity-Focused Technology Design and Implementation	In what ways do current health technologies fail to account for the needs of marginalized LTPAC populations (e.g., residents with cognitive impairment, limited English proficiency, or low digital access), and what policy levers could promote more inclusive design and implementation?	Centers equity and resident outcomes, informing procurement guidelines, certification criteria, or funding priorities.
Cross-Sector Collaboration and Learning Health Systems	How can cross-sector partnerships among governments, professional organizations, payers, and LTPAC providers reduce implementation burden and spread effective technology-enabled models of care?	Supports the development of shared learning health system collaboratives, public–private partnerships, and national dissemination strategies.
Workforce of the Future		
Workforce Capacity and Professional Support	How do staffing shortages, high turnover, and role overload in LTPAC settings limit the effective adoption of health technologies, and what workforce policies (e.g., role redesign, protected time, team-based models) most effectively mitigate these barriers?	Informs workforce stabilization policies and guidance from CMS, state agencies, and accrediting bodies.
Digital Competencies and Professional Standards	What core digital and informatics competencies are needed across the LTPAC workforce (clinical, administrative, and support roles), and how can professional organizations standardize and credential these competencies to promote equitable technology use?	Supports development of nationally recognized competency frameworks and continuing education requirements.
Education, Training, and Career Pathways	How do gaps in pre-licensure education, onboarding, and ongoing training contribute to disparities in technology adoption across LTPAC settings, and what scalable public-private training models are most effective?	Guides investments in workforce development programs, apprenticeships, and academic–practice partnerships.
Leadership, Culture, and Informatics Support	How does the presence (or absence) of informatics leadership and internal "technology champions" influence workforce acceptance of technology in LTPAC, and how can governments and associations foster these roles in under-resourced settings?	Supports funding and policy mechanisms for shared informatics expertise and leadership development.

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Topic	Research questions	Statement of policy relevance
Transparency and Accountability		
Regulatory Burden and Data Alignment	How do current transparency and accountability requirements (e.g., quality reporting, audits, public reporting) create barriers or incentives for LTPAC technology adoption, and what policy changes could better align reporting demands with technology-enabled workflows?	Informs CMS and state-level efforts to streamline reporting and reduce duplicative documentation burdens.
Use of Data for Quality Improvement vs. Punitive Oversight	How does the perceived use of performance data for punitive enforcement versus quality improvement influence LTPAC providers' willingness to adopt and meaningfully use health technologies?	Guides oversight agencies in designing accountability systems that promote learning rather than risk avoidance.
Technology as a Tool for Accountability	How can interoperable health technologies (e.g., EHRs, data dashboards, real-time reporting tools) be leveraged to improve transparency and accountability while reducing administrative burden in LTPAC?	Identifies opportunities for governments and vendors to co-design technology-enabled accountability infrastructures.
Trust, Governance, and Data Stewardship	What governance structures and data stewardship models increase trust among LTPAC providers, residents, families, and regulators, thereby facilitating technology adoption and data sharing?	Informs standards for data governance, consent, and ethical use promoted by professional organizations.
Consumer-Facing Transparency and Digital Equity	How does variation in access to and understanding of technology-enabled transparency tools (e.g., public quality dashboards, care portals) affect equity for residents and families in LTPAC, and what policies can improve inclusive access?	Aligns transparency initiatives with digital equity and consumer empowerment goals.
Safety and Privacy Concerns		
Regulatory Interpretation and Risk Aversion	How do varying interpretations of safety, privacy, and security regulations (e.g., HIPAA, state privacy laws) contribute to risk-averse behaviors that limit technology adoption in LTPAC, particularly in under-resourced settings?	Informs clearer regulatory guidance and technical assistance from federal and state agencies.
Balancing Safety, Privacy, and Person-Centered Care	How can policies and professional guidelines better support LTPAC providers in balancing resident safety, privacy, and autonomy when implementing monitoring, communication, and data-sharing technologies?	Guides ethical frameworks and standards that enable innovation while protecting residents' rights.
Technology Design, Usability, and Safety Outcomes	What safety risks and benefits are associated with the design and implementation of digital health technologies in LTPAC, and how can government and professional organizations promote safety-by-design standards tailored to LTPAC populations?	Supports development of certification criteria and procurement standards emphasizing usability and safety.
Privacy, Consent, and Health Equity	How do differences in cognitive status, language, health literacy, and access to digital tools affect residents' and families' ability to understand and consent to technology use, and what policy interventions promote equitable privacy protections?	Aligns privacy policy with equity and inclusion goals in LTPAC.
Cybersecurity Capacity and Shared Infrastructure	What models of shared cybersecurity infrastructure, guidance, or support are most effective in reducing privacy and security risks for small and rural LTPAC providers adopting health technologies?	Informs public–private partnerships and regional support models to address resource gaps.
Trust, Transparency, and Technology Acceptance	How do perceptions of data misuse, surveillance, or liability influence trust in technology among LTPAC staff, residents, and families, and what governance or communication strategies improve acceptance and sustained use?	Supports development of trust-building practices and transparent data governance frameworks.

Note. LTPAC = long-term post-acute care; HIT = health information technology; CMS = U.S. Centers for Medicare and Medicaid Services; EHR = electronic health record; HIPAA = Health Insurance Portability and Accountability Act.

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Figure 1. Word cloud for emerging models of care discussions

Alt Text: This slide presents a word cloud of emerging care model discussions, emphasizing cost, standardization, ambient sensors, internet access, privacy, independence, staffing, and technology usability concerns.

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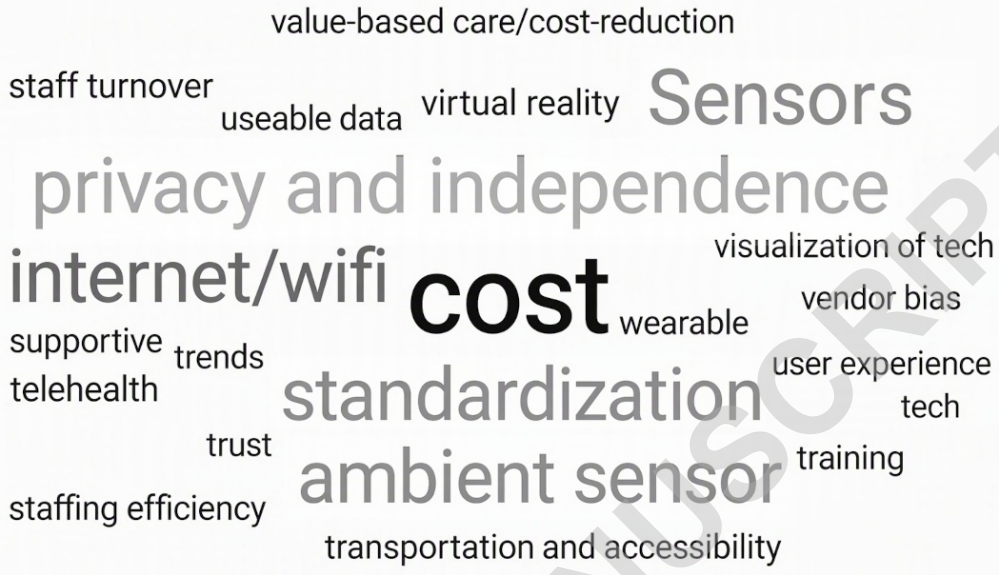

Figure 1

88x51mm (300 x 300 DPI)

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