

ASHP Statement on the Pharmacist's Role in Digital Health Transformation

Position

The American Society of Health-System Pharmacists (ASHP) affirms that pharmacists are essential participants in the governance, implementation, and oversight of digital health transformation. Digital health transformation is the overarching shift redefining how healthcare is delivered, experienced, and provided through the intentional integration of evolving digital technologies. Examples of digital technologies include automation, clinical decision support tools, clinical insights enabled by artificial intelligence, integrated electronic health records, mobile applications, telehealth platforms, wearable devices, and connected, continuous remote and real-time patient monitoring systems, such as Internet of Things (IoT) sensors. Digital health transformation aims to enhance clinical outcomes, data-informed decision-making, financial sustainability, health equity, patient experience, organizational performance, workflow efficiency, and workforce effectiveness. Digital health transformation requires strategically coordinated efforts to be successful and oftentimes requires several changes to be managed at the same time across culture, governance, role responsibilities, workflows, and workforce capabilities.¹⁻⁵

As members of the interprofessional healthcare team, pharmacists have a professional responsibility to help lead digital health transformation efforts that affect medication use, medication-related outcomes, and the systems in which medications are administered, dispensed, monitored, optimized, and prescribed. Pharmacists should be active participants in broader organizational initiatives that may alter the patient's access to medications or

pharmacy experience, as well as those that impact pharmacy operations and services. Drawing on their expertise in health-system pharmacy operations, medication management, and patient care, pharmacists are well positioned to inform how digital health transformation can support the advancement of care coordination, operations, patient outcomes, and scopes of practice.⁵⁻⁹

In collaboration with the broader healthcare team and with representation from across the pharmacy workforce, pharmacists should evaluate whether digital health technologies improve access to care, medication safety, operational performance, patient experience, and therapeutic outcomes. Pharmacists share accountability with health-system leaders and interprofessional partners in responsible implementation, reliable performance, and ongoing delivery of meaningful clinical, operational, and financial value.

Background

The U.S. Food and Drug Administration (FDA) describes digital health as a broad category that includes health information technology, mobile health, personalized medicine, telehealth, telemedicine, and wearable devices. Digital health technologies include artificial intelligence, automation, clinical decision support (CDS), electronic health records (EHRs), mobile applications, and remote patient monitoring systems. Although the terms digital health and digital transformation are sometimes used interchangeably, they describe different concepts. Digital health refers to technologies and technology-enabled approaches, while digital transformation is a holistic, cultural evolution. Digital health transformation foundationally reframes how health care is delivered, how health care professionals provide patient care, and how patient care is experienced. Digital health transformation requires an intentional, strategic

approach to be efficacious, involving ongoing evaluation, thoughtful governance, meticulous planning, stakeholder engagement, and workforce development for digital technology investments to produce meaningfully measurable improvements in access, efficacy, patient experience, quality, and safety.¹⁻⁴

Past experiences with artificial intelligence, EHRs, and telehealth provide well-documented evidence that technology alone does not transform health care. Transformation occurs when healthcare organizations purposely cultivate cultures capable of adapting to new models of care, redefine professional responsibilities, and reshape processes. As digital technologies will increasingly influence clinical decision-making and patient engagement, as well as medication administration, dispensing, monitoring, and prescribing, pharmacists should actively participate in the evaluation, governance, implementation, and ongoing oversight of those technologies.³⁻⁶

As organizations establish governance structures for digital health transformation, pharmacists should contribute to decisions that affect pharmacy operations and services, as well as the patient's medication-related outcomes and pharmacy experience. In collaboration with interprofessional stakeholders, pharmacists can support the evaluation of digital health solutions for alignment with patient-centered care and medication goals, clinical appropriateness, financial sustainability, interoperability, operational feasibility, and usability. Throughout the technology lifecycle, from product selection through planning, implementation, and continuous optimization, oversight, and sunseting, pharmacists can provide value by helping organizations align investments and anticipate risks, supporting strategic priorities,

while ensuring effective, efficient, equitable, high-quality, and safe patient care is maintained.⁷⁻

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As digital health continues to transform health and patient care, pharmacists should maintain the competencies, knowledge, and leadership capabilities needed to ensure responsible innovation as technology-enabled advancements are leveraged. This statement provides a framework for pharmacists and healthcare organizations to successfully navigate their digital health transformation journeys.⁷⁻⁸

Roles and Responsibilities

Pharmacist expertise in clinical decision-making, health-system pharmacy operations, and medication-use processes supports three broad domain responsibilities:

1. Strategic Governance and Pharmacy Leadership
2. Technology Lifecycle Management
3. Cultural Advancement and Workforce Enablement

Strategic Governance and Pharmacy Leadership

Pharmacists should serve as active participants in organizational governance structures that provide oversight to digital health technologies and transformation initiatives, especially those that impact the medication-use process and medication-related outcomes. They should help establish a technology-enabled care strategy that defines clear governance processes, aligns technological investments, and prioritizes patient care experiences, workforce efficiencies, and organizational goals. Pharmacists should also contribute to the development of key performance indicators (KPIs) for access to medications, clinical outcomes, financial

stewardship, health care equity, medication safety, patient experience, and operational and workforce performance. These measures provide organizations with a way to track, measure, and monitor whether implemented technologies are delivering their intended value.^{2-3,10,14-15}

Pharmacists should participate in leading governance for emerging and evolving technologies, such as artificial intelligence, by establishing standard processes for bias mitigation, monitoring, ongoing optimization and oversight, risk assessment, transparency, and validation. Governance should establish safeguards for compliance with applicable laws, organizational policies, professional standards, and regulations, and preserve the integrity of delivering equitable, quality, and safe patient care. Pharmacists should be aware of relevant industry and market trends in digital health and emerging technologies, anticipate known risks, and inform future capabilities. By applying their expertise and knowledge, pharmacists help align near- and long-term technology roadmaps with organizational strategic plans.^{2,14-17}

Pharmacists also have responsibilities beyond their own organizations. They should contribute to discussions shaping digital health policy and practice standards at legislative and professional forums to inform and influence those decisions to ensure that digital transformation in healthcare strengthens how care is delivered and how patients receive their care while preserving the integrity, quality, and safety of the medication-use process.^{7,9,18-20}

Technology Lifecycle Management

Pharmacists are essential subject matter experts throughout the lifecycle of digital health technologies, from initial evaluation and product selection through implementation and ongoing monitoring and optimization to product retirement. Many digital technologies

intersect with the medication-use process and the patient's pharmacy experience. Pharmacist involvement in technology lifecycle management helps preserve the integrity of medication-use processes and supports a consistent patient experience.^{7-8,21-23} Evaluation of accessibility, data integrity, interoperability, privacy and security, regulatory compliance, usability, and workflow integration helps validate that digital health technologies function reliably within the organization's care delivery model. Collaboration with caregivers, data analysts, informaticists, patients, vendors, and clinical and operational team members and leaders can ensure that technologies meet users' needs.^{14,24-26}

During implementation, pharmacists should collaborate in designing workflows that support care delivery and manage necessary transition-related disruption. Their involvement can reduce unintended consequences such as alert fatigue, medication errors, therapy delays, and workflow inefficiencies. Applying human factors and usability principles supports technology that serves clinicians and patients without introducing avoidable burden.²⁵⁻²⁶ Following implementation, pharmacists should collaborate with relevant stakeholders to validate system performance and establish processes for ongoing monitoring and improvement. Evaluations should include clinical outcomes, equity, medication safety, operational performance, patient experience, and workforce impact. Pharmacists should identify opportunities for refinement and monitor whether technologies continue to meet evolving clinical and organizational needs.^{5,10,27}

Pharmacist responsibility does not end at implementation. Continuous evaluation, optimization, and refinement of digital health technologies confirm that they continue to deliver meaningful clinical, financial, and operational value. When technology introduces

unacceptable risks, fails to improve its intended outcomes, no longer meets intended objectives, or becomes inconsistent with organizational priorities, pharmacists should advocate for modification, replacement, or retirement.^{2-3,12}

Cultural Advancement and Workforce Enablement

Pharmacists are positioned to foster the culture and prepare the pharmacy workforce necessary for enabling successful digital health transformation. Sustainable transformation requires leadership that develops competency, empowers confidence, supports psychological safety, promotes responsible innovation, and establishes trust.^{6,28}

Effective change management is essential for the successful adoption of digital modernization initiatives. Pharmacists should serve as trusted leaders who clearly communicate the purpose and value and transparently share the limitations and risks during digital health initiatives to anticipate and overcome workforce resistance to adopting new technologies and workflows. By proactively identifying barriers, addressing concerns, inviting open feedback, and supporting workforce members throughout the implementation process, pharmacists can address workforce factors that often undermine the overall success of digital health transformation efforts.^{6-10,28}

Pharmacy leaders should ensure that all members of the pharmacy workforce, including pharmacy learners, pharmacy technicians, and pharmacists, develop the knowledge and skills needed to practice effectively in a technology-enabled healthcare environment. Pharmacy technicians and pharmacists share responsibility for identifying and addressing their individual professional development needs based on their education, experience, and responsibilities.

Professional development is an ongoing process that should be leveraged for maintaining pace with the emerging and evolving digital health transformation landscape, including artificial intelligence, automation technology, cybersecurity and privacy, data analytics, data security, digital therapeutics, and pharmacy informatics. The current and future workforce should be equipped with sufficient digital literacy to empower individuals to thrive throughout digital transformation in healthcare. This should be accomplished by integrating digital literacy competencies into pharmacy curricula and learning experiences in colleges and schools of pharmacy, as well as in internship, technician-training, and residency programs, leveraging didactic, experiential, interprofessional, and simulation-based education teaching methods.^{6,28-}

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Pharmacy technicians and pharmacists in academic and training environments should contribute to developing the curricula and experiential opportunities that enable learners to effectively evaluate and navigate digital technologies used in pharmacy operations, practice, and services. Education should also be developed and provided on patient data literacy to ensure that members of the pharmacy workforce can verify that digital health technologies promote equitable care and do not unintentionally worsen disparities. The pharmacy workforce should be prepared to evaluate digital technologies for accessibility, bias, usability, and potential digital and health literacy barriers related to access and connectivity, disability, language, learning style, and socioeconomic status.^{7-8,21,29-32}

Pharmacists should advocate for digital transformation that strengthens, rather than diminishes, the human elements of care. While technology can offer many enhancements to health and patient care, it is not a substitute for professional accountability or the patient-

clinician relationship. Focused efforts to increase change management effectiveness and support workforce development can align digital health transformation with the pharmacy profession's commitment to educating patients and the public.³³⁻³⁸

Conclusion

Digital health transformation represents a significant shift in contemporary healthcare delivery, and pharmacist leadership is essential to its safe, effective, responsible, equitable, and patient-centered implementation. Pharmacists have the expertise and professional responsibility to lead and contribute to the governance, implementation, evaluation, and stewardship of digital health technologies that affect medication use or medication-related outcomes.³⁹⁻⁴⁰

Healthcare organizations, educators, professional organizations, and policymakers should provide pharmacists and the pharmacy workforce with the authority, resources, training, and organizational support needed to contribute meaningfully to digital health transformation. Consistent pharmacist engagement and leadership are necessary for digital health transformation to achieve its full potential to improve medication safety, patient outcomes, workforce effectiveness, health equity, access, and organizational performance.^{3,39-40} Additional information on digital health transformation that may assist educators, healthcare organizations, and pharmacists in advancing the recommendations in this statement is provided in Suggested Readings and Resources: Supplemental Table S1.

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Suggested Readings and Resources

Supplemental Table S1. Suggested Readings and Resources for more information on Digital Health Transformation.

Category	Resource	Sponsoring Organization
Accreditation	ACPE Standards 2025	ACPE
Foundational Reading	<i>Transforming Healthcare: Digital Health and Emerging Technologies</i>	Routledge
Implementation	Digital Implementation Investment Guide	WHO
Interoperability	Interoperability Standards Advisory	ASTP/ONC
Medication Safety	ISMP Targeted Medication Safety Best Practices	ISMP
Professional Certificate	Pharmacy Informatics Professional Certificate	ASHP
Professional Certificate	AI in Pharmacy Professional Certificate	ASHP
Regulatory Guidance	AI/ML-Based Software as a Medical Device Action Plan	FDA
Strategic Planning	Pharmacy Futures Summit on AI in Pharmacy Practice	ASHP

Index Terms

Suggested literature search terms for digital health transformation.

1. Artificial Intelligence
2. Clinical Decision Support
3. Digital Health
4. Digital Therapeutics
5. Digital Transformation
6. Health Equity
7. Health Information Technology
8. Health-System Pharmacy
9. Medication Safety
10. Medication-Use Process
11. Pharmacy Informatics
12. Technology Governance
13. Telehealth
14. Workforce Development