

# ASHP Statement on the Pharmacy Technician's Role in Pharmacy Informatics

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## Position

The American Society of Health-System Pharmacists (ASHP) believes that specially trained pharmacy technicians can assume important supportive roles in pharmacy informatics. These roles include automation and technology systems management, project management, end-user training and education, policy and governance, process improvement, analytics and reporting, and inventory and financial management. Such advanced roles require pharmacy technicians to gain expertise in information technology (IT) systems, including knowledge of interfaces, computer management techniques, troubleshooting, and database

maintenance.<sup>1,2</sup> This knowledge could be acquired through specialized training or experience in a health science or allied scientific field (eg, health informatics). With appropriate safeguards and supervision, pharmacy technician informaticists (PTIs) will manage IT processes in health-system pharmacy services, ensuring a safe and efficient medication-use process.

## Background

The National Library of Medicine has defined health informatics as “the interdisciplinary study of the design, development, adoption and application of IT-based innovations in healthcare services delivery, management and planning.”<sup>3</sup> Health informatics is a discipline at the intersection of information science, healthcare, and computer science that designs and delivers information to improve clinical care, individual and public healthcare, and biomedical research. Health informatics optimizes the usability, acquisition, and processing of health-related information, using resources and tools that span the IT spectrum, from people to processes, from information to knowledge, and from algorithms to data. The broad definition of health informatics and the number of disciplines involved present an opportunity for the growth of subspecialties within the field. One of these subspecialties is pharmacy informatics, which has been defined as “the use and integration of data, information, knowledge, technology, and automation in the medication-use process for the purpose of improving health outcomes.”<sup>4</sup> ASHP believes that pharmacists have the unique knowledge, expertise, and responsibility to assume a significant role in health informatics.<sup>4</sup> Similarly, properly trained and qualified pharmacy technicians play a key supporting role in the field of informatics.<sup>5</sup>

The potential for health informatics to improve health outcomes has prompted the healthcare industry, large healthcare purchasers, and state and federal governments to undertake sweeping health information technology (HIT) initiatives. These initiatives have greatly increased the demand for a highly skilled HIT workforce. The United States Bureau of Labor Statistics estimates that 29,000 new medical records and HIT technician jobs will be created between 2019 and 2029.<sup>6</sup> This tremendous increase will affect organizations' ability to recruit and retain the qualified personnel necessary for healthcare operations. Although not all pharmacy technicians are qualified to fill this pressing need, an emerging cadre of specialized PTIs will help fill these important roles. The purpose of this statement is to provide a preliminary description of the potential roles and responsibilities of the PTI in the evolving HIT landscape as well as the knowledge, skills, and abilities required to assume those roles and responsibilities.

## Roles and responsibilities

In general, the PTI is a healthcare professional, working under the supervision of a registered pharmacist, who uses their knowledge to influence and adapt IT systems to improve the effectiveness and efficiency of the health system and the medication-use process. The roles of PTIs vary, depending on the needs of the healthcare institution and the knowledge, skills, and abilities of the individual. PTIs specializing in the management of health-system pharmacy informatics may, for example, perform workflow assessment and optimization in clinical, administrative, educational, or research domains; adapt software controls to existing workflow; implement

and follow inventory management best practices; lead and/or coordinate measures to manage budgetary expectations; provide subject-matter expertise for new technology assessment and usability; or serve as a resource for pharmacist informaticists when system updates are needed or problems are identified. Areas of responsibility can also vary considerably and may include automation and technology systems management, project management, end-user training and education, policy and governance, process improvement, analytics and reporting, and inventory and financial management.

**Automation and technology systems management.** With training and experience in health informatics, the PTI can serve as a knowledgeable expert for placement, configuration, building, monitoring, maintenance, and troubleshooting of automation and technology systems, and provide users and staff with consultative support. They may assist or lead in assessing the functions, benefits, and constraints of technology and automation systems for drug procurement, pharmacy inventory management, prescribing medications, order processing, distribution and dispensing of medications, administering and documenting administration of medications, medication diversion monitoring, and clinical monitoring. Other responsibilities may include consulting, advising, and educating staff on methods and means to optimize automation and technology systems, as well as integration of information and workflow processes to achieve successful adoption and application of new technologies to support healthcare operations and systems.

PTIs provide and analyze relevant technological or administrative data to identify, quantify, and resolve organizational or operational problems. They integrate software applications for technological services by (1) evaluating the unique needs of the specific services in conjunction with the capabilities of the software and coordinating required modifications; (2) reviewing the effectiveness of the

systems and procedures to assure optimum benefit to patient-care activities; (3) determining the cause of and the solution to problems when functionality is compromised; and (4) coordinating with vendor resources to assist in issue resolution under the guidance of a pharmacist informaticist.

PTIs may develop, modify, and test components specific to fields and data that individualize or customize applications to user roles or needs while maintaining integrity among multiple software packages. They may provide for maintenance and updating of site parameters and site-specific files to ensure proper functioning of complex, interrelated, and interdependent software applications while effectively and efficiently managing multiple competing priorities.

**Project management.** PTIs may lead or collaborate with pharmacist informaticists in implementing and managing technology and information systems based on a shared understanding of system requirements, capabilities, and limitations. They may serve as an interdisciplinary team member to complete HIT system initiatives using analytical and evaluative techniques to assess the effectiveness of results and other related programs. For example, they may contribute to planning for acquisition and implementation of a technology or automation system by assisting the pharmacist informaticist in developing a plan for the evaluation of the system; writing a request for proposal (RFP) for a system; assessing responses to the RFP; or developing a plan for implementation, testing, or maintenance of the system. Further, they may participate in the implementation of a technology or automation system by contributing to system installation (including supplemental buildouts), testing, and training of staff for use of the system, as well as maintaining the system according to an established plan. Development of contingency plans for failure or compromise of technology or automation systems may also involve PTIs.

**End-user training and education.** PTIs identify end-user educational

requirements and training needs and develop educational programs, instructional materials, and appropriate tools to educate users and support staff at all levels of the organization. Additionally, they may contribute to didactic discussions to pharmacy learners on rotation with the pharmacy informatics team, including but not limited to pharmacy technician students, pharmacy students, and pharmacy residents. PTIs monitor end-user satisfaction to drive enhancements and improve performance. In a supportive role with the pharmacist informaticist, PTIs may work to ensure technological changes are aligned with the organizational needs and participate in process improvement, root cause analysis, and system (re)design teams.

**Policy and governance.** PTIs maintain state-of-the-art knowledge of changes in technology, regulatory, and the clinical environment to identify, propose, formulate, and support new or revised major technological policies and directives for automation and systems technology. In collaboration with informaticists, analysts, and IT and pharmacy staff, they may lead or participate in structuring of programmatic and security requirements for data access in IT to ensure that best practices are applied to operational requirements. Finally, they instruct staff members in the proper use of information management tools and security procedures in compliance with policy, regulations, and best practices.

**Process improvement.** PTIs maintain ongoing professional, collegial relationships with onsite peers, pharmacist informaticists, technical support staff, administrative staff, and healthcare professionals within the facility and/or health system. They may need to contact clinical subject-matter experts and offsite technical support personnel as needed. External contacts may include contract developers, for whom PTIs can serve as a primary contact and knowledge resource. Additionally, PTIs maintain open communication with end users and stakeholders to gather feedback on systems and opportunities for improvement, monitor effects of

implemented changes, and solicit feedback on proposed changes to perpetuate the continuous improvement cycle.

#### **Analytics and reporting.**

Standard reports from clinical and automation systems may be extracted, compiled, and analyzed by PTIs to facilitate organizational and individual decision-making. PTIs may customize reports and provide database management to address organizational needs not addressed through standard reporting tools. PTIs may provide extracted data for clinical research, operational review, or validation of informatics implementations. Reporting may then be incorporated into visual dashboards that managers may review for tracking of operational functions such as completion of medication reconciliations or, absent administration documentation, for unreconciled dispenses.

PTIs may analyze or interpret data, including evaluation of the validity of measures used to generate outcomes related to patient management systems. PTIs collaborate with pharmacist informaticists to develop recommendations for improving clinical data management methods, follow-up procedures, and timely compliance with regulatory guidelines.

**Inventory and financial management.** PTIs maintain and manage processes that oversee drug shortage mitigation, departmental quality assurance, formulary and inventory management, and various software interfaces (eg, 340B Drug Pricing Program split billing and management, perpetual inventory systems).

PTIs maintain appropriate charging controls to ensure accurate patient and third-party billing. They may be engaged with pharmaceutical wholesalers and distributors to validate price files in clinical and automation systems, as well as Healthcare Common Procedure Coding System (HCPCS) coding, units, and quantities. Charging and transaction interfaces are also monitored for errors in charge application, quantities, or amounts. This monitoring may include bar coded medication administration (BCMA) monitoring and maintenance.

#### **Knowledge, skills, and abilities**

Due to their combination of technological knowledge, skills, abilities, experience, and training, PTIs are uniquely qualified to serve in pharmacy informatics. They are required to understand IT systems, including interfaces, computer management techniques, problem resolution, and database maintenance. They must be competent in pharmacy operations, medications, and medical terminologies as well as medication-use workflow processes, including drug procurement, pharmacy inventory, medication ordering, order management, dispensing, drug preparation, distribution, regulatory guidance, and billing systems.

Thorough knowledge of the clinical environment is required, including practices, procedures, policies, strengths, and weaknesses, and effective use of data to track and manage patient care. Knowledge of emerging and state-of-the-art technology, regulations, programs, and processes related to health informatics is necessary for PTIs to propose administrative and clinical policies and directives, instruct practitioners on the changes to existing policies and directives and application of new policies and directives, and provide leadership on informatics committees or teams.

Practical, in-depth knowledge of automation and software systems that affect clinical practice, as well as knowledge of technologies that may benefit healthcare delivery processes, is required. When available, PTIs should pursue and complete training, certification, and courses for the specific technology, and the employer should provide support if it is used in the facility. PTIs should be able to troubleshoot functionality issues, develop solutions, and ensure quality management of clinical operations.

PTIs should have comprehensive knowledge of the data life cycle, including data design, collection, and management, in order to input, retrieve, analyze, summarize, and present information effectively. The required

knowledge base is extensive and includes but is not limited to usability, data standards, data validation, understanding content relationships, data security, and interoperability among systems.

PTIs should understand common network standards, network architectures, the functions and purposes of common hardware components and configurations, and the design of safe technology and automation systems. Additionally, the PTI should possess the database skills to successfully create patient and medication information data sets and successfully construct reports.

The PTI should be skilled in communicating both orally and in a variety of written media for a variety of audiences, from information technology and clinical experts to end users. As a specialist with training and experience in health informatics, they guide the evolution of automation technology and processes using creative and well-developed interpersonal skills to achieve effective communication with end users and management.

#### **Conclusion**

The ASHP Practice Advancement Initiative provides several recommendations regarding use of technology to ensure medication safety.<sup>5</sup> Meeting these recommendations requires an expansion of pharmacy resources devoted to the implementation and maintenance of HIT operating at the top of their licenses. A trained and educated PTI has unique skill sets that combine technical knowledge with an understanding of medication vocabulary and pharmacy operational workflow. Through these specialized skills, they are able to support and coordinate pharmacy technologies under the direction of the pharmacy department or an accountable pharmacist. The PTI possesses a working knowledge of the technology and automation systems and processes that support the medication-use system and can contribute to ensuring their safety and efficiency.

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## Disclosures

The authors have declared no potential conflicts of interest.

## Additional information

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## References

- American Society of Health-System Pharmacists. ASHP statement on the roles of pharmacy technicians. *Am J Health-Syst Pharm.* 2016;73:928-930.
- American Society of Health-System Pharmacists. ASHP policy position 1203, qualifications of pharmacy technicians in advanced roles. Accessed November 1, 2021. <https://www.ashp.org/pharmacy-practice/policy-positions-and-guidelines/browse-by-document-type/policy-positions>
- National Library of Medicine. Health Services Research Information Central: Health Informatics. Accessed December 13, 2021. [www.nlm.nih.gov/hsrinfo/informatics.html](http://www.nlm.nih.gov/hsrinfo/informatics.html)
- American Society of Health-System Pharmacists. ASHP statement on the pharmacist's role in clinical informatics. *Am J Health-Syst Pharm.* 2016;73:410-413.
- American Society of Health-System Pharmacists. ASHP Practice Advancement Initiative 2030. *Am J Health-Syst Pharm.* 2020;77:113-122.
- US Bureau of Labor Statistics. Occupational outlook handbook: medical records and health information technicians. Accessed November 1, 2021. [www.bls.gov/ooh/healthcare/medical-records-and-health-information-technicians.htm](http://www.bls.gov/ooh/healthcare/medical-records-and-health-information-technicians.htm)

## Other resources

- American Society of Health-System Pharmacists. Pharmacy technician informatics specialist web resource page. Accessed November 1, 2021. <https://www.ashp.org/pharmacy-practice/resource-centers/informatics/pharmacy-technician-informatics-specialist>
- Nemec II EC, Pawola JA, Shah B. Online resources for informatics education and training. *Am J Health-Syst Pharm.* 2016;73:1131-1134. doi:10.2146/ajhp150659
- Fox BI, Flynn AJ, Fortier CR, et al. Knowledge, skills, and resources for pharmacy informatics education. *Am J Pharm Educ.* 2011;5:93. doi:10.5688/ajpe75593
- American Society of Health-System Pharmacists. Pharmacy informatics certificate. Accessed November 1, 2021. <https://store.ashp.org/Store/ProductListing/ProductDetails.aspx?productId=830829873>