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## CHAPTER 4

# Pharmacy Information Systems

Chad Hardy

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### KEY DEFINITIONS

**Application**—software written to work on a computer and designed to perform a specific task, in this context the PIS. It is what the user sees when he opens the PIS.

**Clinical Information System**—a group of computers that run databases and software applications to effectively provide a comprehensive repository of patient-specific healthcare information. As a general term, this might be a laboratory, pharmacy, nursing documentation, or ordering system.

**Database**—a large collection of data organized for rapid search and retrieval by a computer.

**Integrated Systems**—when information systems that perform different functions share the same database, application space, and often hardware. They are usually provided as a single solution.

**Interfaced Systems**—when separate information systems (with separate databases) are built to communicate with one another. This requires the development of an interface to normalize information for interpretation by both systems.

**Pharmacy Information System (PIS)**—a system that provides pharmacy staff the necessary application environment to practice the profession of pharmacy; often includes the ordering, procurement, preparation, dispensing, and monitoring portions of the medication use process.

**Server**—the heart of a network of computers, providing a centralized and organized location for the PIS, database, and application.

**Workstation**—the computer in the pharmacy that a staff member uses to interact with the PIS.

## Introduction

Pharmacists and managers provide timely, safe, and clinically oriented patient care. In the past few decades, industries such as automobiles, oil, gas, or financial institutions discovered the advantages of storing and retrieving information from computers. This increased productivity, accuracy, and profits for some of the nations leading companies. As a result, information systems were explored as a tool to improve many other industries, including pharmacy practice. These innovative systems grew from printing labels to robust and complex pharmaceutical care applications. Those tools allowed the pharmacist to organize patient demographics, input and store orders, search commonly used information, and screen for potential drug interactions. Today's pharmacy information system builds on these fundamentals while providing features to parallel modern practice.

## What is a Pharmacy Information System?

A pharmacy information system (PIS) provides a comprehensive electronic infrastructure to support the provision and management of pharmacy services. Typical systems are designed around pharmacy practice, processes, workflows, and medication use, meeting the needs of the organization. Pharmacy information systems are critical to the efficient and safe operation of any pharmacy business. Not to be confused with a computerized provider order entry (CPOE) system, the PIS is designed for pharmacists and technicians. Consequently, adequate attention should be given to its design, acquisition, implementation, and ongoing maintenance. Many advanced systems require dedicated technical resources for management and configuration.<sup>1</sup> Consequently, the role of the pharmacy informatics specialist is increasingly important to a successful pharmacy team. Focusing on functions, common features can be broken

down by practice area, including medication use functions, clinical use functions, and system/business functions.

## General Practice Tools

The PIS should meet the general needs of daily pharmacy practice while providing the tools to meet regulatory needs. The guidelines and laws set forth by governing bodies in many ways shape standard pharmacy policy, procedure, and operations. In the pharmacy practice environment, the medication use process is a focal point of pharmacy practice. Prescribing, transcription, dispensing, administration, and monitoring include the critical components of medication use. The process includes a qualified medical provider writing orders (prescribing), the pharmacist or order entry technician interpreting those orders and inputting into the PIS (transcription), dispensing of the product to the caregiver, administration of the product to the patient, and continuous monitoring of the patient's drug therapy. The PIS should provide pharmacy staff the tools necessary to perform these functions safely and productively.

## Prescribing and Transcription

Commonly, the PIS addresses the transcription, dispensing, and monitoring of portions of the medication use process. Prescribing features are not typically included in a PIS but can come into play when systems are integrated or interfaced with CPOE. Transcription (or traditional pharmacist order entry) is the process of translating or reducing a provider's order to terms the PIS can understand. These frequently include pertinent fields to support all downstream medication use processes. It is critical to review all of the pieces of information the organization may require throughout the medication use process and to ensure the PIS contains adequate functionality. For instance, the PIS might accept or calculate a rate of administration for an