
CHAPTER 6

Bar Code Medication Scanning at the Point of Care

Kevin C. Borchert

CHAPTER OUTLINE

Key Definitions
Introduction
Bar Code Symbology
Medication Distribution
Models
Atypical Product Packaging
Wristbands
Devices and Equipment
Scanners
Printers
Implementation
Reports and Monitoring
Downtime
Future Trends
Summary
References

KEY DEFINITIONS

Bar Code—a series of vertical lines and spaces of varying widths that encode data to be scanned and decoded through a computer.

Bar Code Medication Administration (BCMA)—an inpatient clinical decision support system to assist caregivers with the five rights of medication administration (right patient, right drug, right dose, right route, and right time). BCMA systems provide warnings if any of the five rights are compromised, and many BCMA systems require the nurse to enter an override reason if he/she chooses to proceed. In addition, BCMA systems promote right documentation (some hospitals call this the sixth right of medication administration).

Bar-coding at the Point of Care (BPOC)—a process in which the patient and various patient therapies are documented with a bar code scanner at the bedside.

eMAR—electronic medication administration record.

Imager—an electronic device similar to a scanner that analyzes an image, including linear and two-dimensional bar codes, and digitally converts it into data.

Linear Symbology—a one-dimensional bar code consisting of vertical lines and spaces.

Radio Frequency Identification (RFID)—a computerized chip or tag with an antenna capable of storing data in conjunction with a receiving module for purposes of product identification or tracking.

Scanner—an electronic device that analyzes an object, such as a linear bar code, and digitally converts it into data.

Symbology—the pattern represented in a bar code that encode data and allow it to be converted into information with the use of a scanner or imager. A symbology is similar to a computer language.

Two-dimensional (2D) Symbology—a bar code that may use dots or lines arranged on the vertical and horizontal axes that can contain up to several thousand characters.

Introduction

Medical and medication errors have been a focus of healthcare facilities for years. Many organizations, including the Institute of Medicine (IOM), the Institute for Safe Medication Practices (ISMP), and the Federal Food and Drug Administration (FDA), are advocating various forms of technology for the benefit of patient safety. One of the most promising methods of technology used to prevent medication errors is the bar code scanning of medications at the bedside. A bar code is a symbol, often containing a series of lines and spaces of varying widths that contains data that is read by a scanning device and decoded through a computer which can be used with many applications. Bar code technology was developed over 50 years ago. It has been widely used in the commercial retail industry for more than 30 years. In healthcare, bar code technology is used to assist in the administration of medications to patients. This process is commonly referred to as bar-coding at the point of care (BPOC), bedside scanning, or bar code medication administration (BCMA). The term BPOC is more encompassing than BCMA, since BCMA refers specifically to the scanning of medications. BPOC includes the bar-coding and scanning of other applications. Some of these additional applications include the patient scanning and documentation of vital signs, blood products, and laboratory specimens.

The benefits of BCMA include the reduction of medication errors for patient safety. Studies (Leape, Bates) have demonstrated that over one third of preventable adverse drug events occur at the point of administration.¹ Yet, only 2% of these errors are caught at this point.² Medication administration is the last opportunity for a medication error to be prevented. Thus, BCMA provides a significant opportunity to capture and prevent medication errors.

There are additional benefits to BCMA besides medication error prevention. BCMA

systems have been in place in hospitals since 1993, when the Department of Veterans Affairs introduced a bar code scanning system. BCMA has slowly increased in utilization over the last several years. Liability may be reduced by ensuring complete and accurate documentation, since the patient wristband and medication are scanned at the actual time of administration and not at the end of the nursing shift or later in the day, when the nurse may become distracted and inadvertently forget to document.

There is a potential for greater charge capture through the use of BCMA. Traditionally, medications are either charged on dispense from the pharmacy or an automated distribution machine or charged on charting by the nurse. The former method requires the pharmacy staff to take responsibility for patient charges, regardless of whether the medication was documented. This requires persistence on the part of the pharmacy department to charge and credit medications that have been administered or returned to the pharmacy, respectively. With systems in which charges are contingent on charting on the electronic medication administration record (eMAR), if the medication is not charted, the medication will not be charged. This process is dependent on the nurse charting the medication. If the nurse is distracted and does not chart at the time the medication is administered, the medical record will not be complete and revenue will be lost. With accurate documentation and charging based on the scanning of the medication, the facility would be in greater compliance with billing processes and may have a lower chance of issues if a patient record is audited by internal or external billing departments.

As technology has improved, so has the implementation rate of bar-coding systems. In 2002, only 1.5% of hospitals surveyed had reported the use of bar code technology at the bedside. In 2005, the number increased to 9.4%.^{3,4}