> Healthcare Bar Coding Applications - Beyond Unit-Dose

DATAMAX

Why all the interest in Bar Coding?

Bar coding technology has existed and been widely used in many industries since the mid-1970's. Perhaps the most common reference to bar coding technology is the bar code used on a can of soup or a similar retail item at a grocery store. The checkout clerk, or the consumer, scans the barcode and the register immediately references the price of that can of soup. This is just one example of bar coding, the one that is most commonly used because many people can understand its basic function. But, this example does not reflect all of the potential uses of bar coding technology, especially in a hospital setting.

Where does Bar Coding fit in healthcare?

The healthcare industry has been one of the last large industries to adopt bar coding as part of an automated data collection (ADC) technology system into the day-to-day operations of facilities. Recently, there has been widespread interest in incorporating bar coding technology into healthcare facilities. This interest is driven not only by pending government regulations on patient safety and privacy, but by other factors as well, such as the increasing shortage of pharmacists and nurses, and the constant desire to cut costs in the healthcare industry. Bar coding technology can address these and many other issues - increasing billing accuracy, tracking patient files, accurately identifying lab specimens, improving supply chain costs - with the backing of a technology that has existed in widespread use for many years.

HEALTHCARE BAR CODING APPLICATIONS

Bar coding can be incorporated into many different health care applications when hospitals invest in the technology infrastructure. Incorporating bar coding can improve the quality of care a patient receives by reducing medical errors, while at the same time offering significant cost savings to the healthcare provider facility.

The First Step - Unit Dose Bar Coding

While bar coding and ADC technology has been in widespread use for decades, the technology is still new for users in healthcare applications. Much of the recent interest in bar coding in healthcare is driven by the United States Food and Drug Agency (FDA) pharmaceutical bar coding regulation changes. At the public meeting the FDA held to discuss the bar coding requirements, many pharmaceutical companies, hospitals employees, and technology equipment manufacturers spoke about the uses of bar coding to increase patient safety at the point of care. There has been little doubt that incorporating bar coding technology into pharmaceutical packaging and point of care processes will reduce the annual estimated 770,000 adverse events and 98,000 deaths, including 7,000 deaths that occur as a result of medication delivery errors. These numbers were derived from research the Institute of Medicine, a non-profit public policy research institution created by the National Academy of Sciences.

The Five Rights

The FDA regulation requires pharmaceutical manufacturers to incorporate bar codes into their product packaging at all levels, including those pharmaceuticals packaged in unit-dose containers. These bar codes can then be used in hospitals to improve patient safety by ensuring that the five patient rights are met:

- Right Drug
- Right Patient
- Right Dosage
- Right Method of Administration
- Right Time

With the regulations requiring pharmaceutical companies to incorporate bar coding onto drug labels, the onus has shifted to hospitals to begin investing in the technology infrastructure that will allow them to utilize these bar codes. Hospitals must outfit pharmacies and floor nurses with the scanning technology that will enable the bar codes to reduce medication errors by cross checking all facets of the medication against the doctor's order. Used in this manner, bar coding technology will greatly improve the accuracy of medication delivery, virtually eliminating adverse events resulting from preventable medication errors. Improving patient safety is a priority at healthcare facilities, and bar coding is an excellent method of achieving that goal.

Beyond Patient Safety & Unit Dose

Investment in any technology is a substantial undertaking, one that must be justified by proven or expected benefits to the operation of the facility and the care received by the patients within. The majority of the focus on bar coding in healthcare has been centered on patient safety and the medication delivery process, but what are some other uses for this technology? Hospitals will invest in the technological infrastructure to support bar coding at the point of care; it is important to understand all of the other potential uses for bar coding. Bar coding use in hospital and healthcare facilities will gain momentum in the medication point of care applications, but there are many other areas beyond medication delivery where bar coding technology will increase patient safety and reduce costs for hospitals and healthcare provider facilities.

Patient Wristbands & File Labeling

When a patient is checked into the hospital, either through the admissions procedure or through emergency methods, identifying that patient is paramount in ensuring that the care received is the care required. Historically, patients have worn wristbands indicating their name and other pertinent information. Incorporating bar codes onto patient admissions wristbands is required to achieve the medication delivery accuracy goals. But, it also expands the use of bar coding from solely point of care applications into many other uses that reduce costs for healthcare provider facilities while continuing to improve the quality of care provided.

Incorporating bar codes onto patient admissions wristbands should be accompanied by a bar code on the patient's file as well. When a patient's identification number is identified in a bar code on their wristband, that bar code can be matched to the bar code on the patient's file and scanned every time a procedure occurs, a medication prescription is written, or a lab test is demanded. One of the biggest problems facing the healthcare industry is the need to cut costs while continuing to provide excellent care. Hospitals incur costs on procedures that are often not properly accounted for on an individual patient's account. These costs are not reimbursed by insurance and are eventually written off to be absorbed into the hospital's budget. Incorporating bar coding into patient file labeling ensures that all procedures, medications, tests, etc., that an individual patient incurs or undergoes are properly attributed to that patient's account. This presents a comprehensive view to the patient's insurance company and all procedures can be reimbursed in a timely manner.

Lab Specimen Labeling/Tracking

Bar coding technology can be used in the lab to accurately identify specimens and match them with the proper testing procedure and patient file paperwork. When a specimen arrives at the lab, it must be associated with the correct paperwork to ensure that results are provided accurately. When incorporating bar coding into the process, essentially checks are established at several points in the process. Every time a procedure occurs, the specimen, the lab paperwork, and the patient's files are scanned to check one another. This process eliminates the prospect of performing incorrect tests, or performing the correct tests on incorrect specimens. One of the barriers to incorporating bar coding into lab procedures was its inability to be used on small items. New developments in bar code symbologies, such as the advent of the new Reduced Space Symbology (RSS), have created the ability to produce a small bar code that contains the data needed to track the item through its processes. See Figs. 1 & 2 for a comparison of the size of an RSS bar code versus a traditional Code 128 bar code.

Fig. 1 - RSS Limited Bar Code

Fig. 2 - Code 128 Bar Code

More often than not, lab specimens and results are hand written to be deciphered at a later time by a data entry operator entirely un-associated with the lab procedure. Hand labeling any item incorporates uncertainty into a process because of the many errors that could occur. Handwritten labels can be misinterpreted in any number of ways; the handwriting is illegible, the data is incorrect, or the written label smeared during handling. Entering incorrect or incomplete data for lab testing/results can mean disastrous results for the patients involved.

The next most common scenario in labs is to have either a laser printer or a large dot matrix printer producing labels for specimens. These printers offer clear print for text, but there are some problems associated with their use. Often in a lab setting only a few labels are required at once, one for the specimen itself, one for the paperwork accompanying the specimen, and one for the patient's file. Laser and dot matrix printers are unable to handle a few labels at a time, rather they print entire sheets of labels so that many labels are wasted in order to print a few.

Datamax printers have been used for years to assist pharmacies and labs in creating printed labels to properly identify lab specimens. Facilities that don't currently use bar coding also benefit from using Datamax printers to incorporate printed labels directly from lab software, eliminating handwritten labels and possible errors. Labs that are currently using dot matrix or laser printers will enjoy the convenience of a thermal printer in creating specimen labels. Datamax thermal printers are designed specifically for labeling applications. They eliminate the paper jam and noise problems associated with other types of printers while providing clear, legibly printed labels with or without bar codes.

Asset Tracking

After bar codes proved their utility in the grocery store application, the next industry to adopt bar coding was the warehousing industry. Warehouses receive and store a multitude of items and must be able to locate them in a very timely manner. As time went on and bar coding applications grew, other industries embraced its ability to track and locate items. This application can also be used in hospitals and healthcare provider facilities where items are often needed very quickly. Imagine a scenario where a gurney is needed quickly to transport a patient. Where is the gurney? Without an asset management system, the only way to answer to that question is to go look for the gurney.

A hospital has a significant amount of money tied up in the assets that enable the delivery of premium healthcare services. Assets can include wheelchairs, gurneys, bedpans, IV bag stands, and the list goes on. Maintaining the location of all of these assets within a hospital facility can be a daunting task. Bar coding assets with labels that are tamper resistant allows a healthcare provider facility to incorporate a checkout system that will identify the location of assets.

Why Choose Datamax?

Datamax offers over 25 years worth of experience in bringing together the right printers, labels and supplies for applications in any environment. Datamax printers are capable of printing even the most complex barcodes such as Reduced Space Symbology (RSS) linear and 2-D bar codes, as well as clear text for those applications where bar coding is not being used.

As healthcare providers embrace bar coding, more software providers will incorporate bar coding capabilities into the admissions process. These software additions are generally driven by customer demand. Datamax maintains partnerships with several healthcare software providers to ensure that the bar coding capabilities added will have the capabilities needed in patient tracking, medication verification, and lab specimen identification applications.

Please visit www.datamaxcorp.com for more information on Datamax products and solutions.

Datamax specializes in the design, manufacture, and marketing of products for bar code and RFID labeling including thermal demand printers, label, ticket and tag materials, and thermal transfer ribbons. Headquartered in Orlando, Florida, Datamax has sales representative offices in Singapore, China, and Harlow, England, as well as label converting and preprinting facilities in Robinson, Illinois. Datamax markets its products exclusively through a network of resellers in more than 100 countries worldwide.

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