

Improving Patient Safety: Automated Specimen Collection Solutions for Hospitals, Clinics and Laboratories



Specimen collection errors present two immediate challenges to healthcare providers, and both are equally costly. For patients, mistakes result in missed treatments or medications, which may lead to a longer hospital stay, disability or worse. Hospitals experience increased costs for tracking, correcting or redrawing specimens in addition to any unnecessary treatment. Both patient safety concerns and the growing financial burden to hospitals form a powerful argument for investing in technology to prevent specimen errors.

*Specimen-Related Errors Can Cost Hospitals \$200 - \$400 Million per Year.*¹

Many of today's specimen management applications offer some direction for healthcare professionals during the collection process. However, this software depends more on a person's skill and capabilities rather than creating systematic checkpoints for an error-free environment. Few existing systems enable healthcare providers to prevent errors during the specimen collection process.

Errors can occur anywhere in the process flow, from collecting to transporting to storage of blood, urine or other biological matter for testing. The repercussions of even a poorly timed specimen collection are felt throughout the healthcare system, from patient records to claims to payment. And until recently, the collection and movement of specimens from the patient bedside to the laboratory required a level of mobility that was virtually nonexistent in many hospital environments.

Dennis S. O'Leary, M.D., president of the Joint Commission for the Accreditation of Healthcare Organizations (JCAHO), stated: "The Joint Commission, like others, is deeply concerned that the number of serious medical errors remains unacceptably high, despite the focus of significant national attention on patient safety in recent years." The number one goal for JCAHO's National Public Safety Goals and Requirements for 2004 is to improve the accuracy of patient identification for administering medications or blood products, taking blood samples and surgical or invasive procedures.

Automated Specimen Collection Applications and Wireless Mobility

Specimen collection applications running on handheld wireless mobile computers help eliminate errors at the point of care. This improves patient safety in addition to reducing the financial implications by preventing specimen collection mistakes before they happen. A real-life example details the benefits.

In addition, the LS 7708 offers retailers exceptional flexibility with a secondary scanner port that allows for the connection of a handheld scanner, making it easy to adapt for use with heavy or bulky items. With this feature, cashiers and customers no longer have to lift heavy items — instead, the cashier can leave the item in the customer's cart and scan it with the handheld unit. It gives retailers the best of both worlds — a highly efficient hands-free scanner combined with the versatility of a handheld scanner.

Once testing is ordered, patient identification software sorts requirements for each patient and prioritizes by location, room and time of collection. This information is easily accessible to a healthcare professional using a ruggedized mobile handheld computer. Using a bar coded system, accuracy is ensured. The wristband and badge are scanned to confirm the identity of both the healthcare practitioner and the patient. Further verification of the tests is performed and the appropriate container necessary is provided.

Any errors or discrepancies between the patient identification and the nature of the diagnostic testing are found before any specimen is collected. If there is a problem, an alert immediately appears on the handheld mobile computer. This helps prevent mistakes before they occur. If all information is correct, the specimen is obtained and the time of collection is noted on the patient's medical record. Physicians are also assured that the test results match the patient receiving treatment.

Using an automated specimen collection system, patient records and documentation are also more accurate, current and easily accessible. Handheld mobile computers with wireless local area network (WLAN) connectivity communicate directly with the facility database in real-time or at scheduled intervals during the shift. So, accurate documentation is on hand for best practice assessment and speedier claims billing and payment processes.

Similar procedures are easily applied to other aspects of healthcare as well, such as medication administration at the point of care, with equally effective results.

Measurable Benefits of an Automated Specimen Collection System

Automated specimen collection systems using bar coded systems with rugged mobile computers and wireless communications deliver measurable benefits. Patients receive timely, accurate specimen collection with a reduced risk of error and less inconvenience. Hospitals see reduced mistakes from specimen collection, which in turn saves money with fewer diagnostic tests, less of a chance of incorrect treatment being applied and more positive patient outcomes. And the information collected in this process is critical for quality control measures required for certification and accreditation by the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) and the College of American Pathologists (CAP).

Some hospitals may also realize decreased legal and settlement costs. Overall, staff productivity is improved, and processing insurance claims is speedier, more accurate and less expensive. Automating the specimen collection process enables hospitals and clinics to ensure a higher degree of integrity in the system. It means that the right healthcare practitioner is working with the right patient, using the right container, in the right priority order at the right time of collection.

Benefits Summary:

- › Eliminate specimen collection errors at the point of care
- › Improve patient safety and treatment
- › Reduce costs associated with errors

Although more emphasis is on specimen collection errors in the hospital and clinic setting, this offers only a glimpse into the overall problem. Other environments that provide often complex and sophisticated care are equally at risk and will realize similar benefits. These include ambulatory settings, outpatient surgery centers, medical offices, home caregivers, hospices and nursing homes.

Choosing the Right Mobility System

When developing or establishing specifications for an automated specimen collection system, there are numerous factors a hospital or clinic should consider. For example, the handheld devices must be comfortable and easy for your healthcare staff to use. The devices must also be ruggedized to withstand the unique environmental conditions found in hospitals or clinics. From the handheld mobile computers to the wireless technology to the security implications and accessories, there are many critical decisions to make in the process of selecting an automated specimen collection system.

Many hospitals and clinics take advantage of the knowledge, long history and global experience of companies like Symbol Technologies when considering the development and implementation of rugged mobile computing solutions. For more information on specimen collection solutions from Symbol Technologies, or visit us on the web at

Specimen Collection Solution Components from Symbol

Experienced planning and implementation teams:

A network of experts experienced in the development and rollout of healthcare solutions:

- › Symbol professional services and support staff
- › Software development partners

Process Flow for Specimen Collection

1. Identify the patient
2. Collect specimen in the right quantity at the right time
3. Locate and use appropriate container
4. Print bar coded label for accurate identification of specimen
5. Print bar coded label for accurate identification of specimen
6. Match results to patient



- › Value added resellers



Handheld devices:

- › Keypad or pen-based handheld computers
- › Microsoft® Pocket PC or Palm® operating system
- › IEEE 802.11 or wireless WAN or Bluetooth™ or wireless WAN plus 802.11 and/or Bluetooth or Batch
- › 1D or 2D bar code scanning requirements
- › Magnetic stripe reader
- › Smart card reader

Printers:

- › 3 in./7.62 cm or 4 in./10.16 cm wide
- › Tethered, 802.11 wireless, Bluetooth wireless or sled

Cradles and charging:

- › Nursing stations
- › Spare battery chargers
- › Cradle or wireless synchronization

Client software:

- › Must be thick client where the program that is stored locally on the user's computer rather than the server in order to operate in disconnected mode as required

Server/switch:

- › Must support wired or wireless client devices, typically handhelds as well as desktops and laptops
- › Must communicate either in batch or real -time with some or all of the following:
 - › Patient records system
 - › Hospital billing system
 - › Insurance claim systems

Security:

- › Standard 802.11 or custom
- › Terminal serialization / customization
- › Terminal tamper detection
- › Automatic disabling of mobile device if lost or stolen

Custom accessories:

- › Holster
- › Belt clip
- › Cart or vehicle mounting system

Symbol Technologies, Inc. delivers enterprise mobility solutions that enable anywhere, anytime data and voice communication designed to increase productivity, reduce costs and realize competitive advantage. Symbol systems and services integrate rugged mobile computing, advanced data capture, wireless networking and mobility software for the world's leading retailers, transportation and logistics companies and manufacturers as well as government agencies and providers of healthcare, hospitality and security. More information is available at

Resources

¹ Bologna L., Hardy G., Mutter M. Reducing specimen and medication error with handheld technology. Presented at: 2001 Annual Conference and Exhibition. Healthcare Information and Management Society; February 4 -8, 2001; Chicago, IL.

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