

Case Study



Sutter Health Targets Patient Safety with Zebra Bar Code Solutions

Challenge: In the last decade the number of medications has grown by 500 percent, and more than 17,000 trade and generic pharmaceuticals are marketed in the United States. Because tracking medications in healthcare facilities is such a growing challenge, it shouldn't come as a surprise that the administration of these drugs is not without error.

The U.S. Food and Drug Administration (FDA) estimates that every year 770,000 injuries or deaths are caused nationwide by medication errors. In another study, researchers observing 36 healthcare facilities in the Atlanta and Denver metropolitan areas found that almost one in five medications were given erroneously, and that seven percent of these mistakes were potentially harmful.



What accounts for such errors? Investigators at Harvard found that 39 percent of them occur when a physician orders the wrong medication, half of which are intercepted by the nurse at bedside. Another 38 percent occur when a nurse administers a drug mistakenly, but only two percent of these errors are caught in time.

Given these conditions, healthcare organizations are looking to bar code solutions to address the challenge and ensure the "five rights" of patient safety: deliver the right medication, in the right dose, at the right time, to the right patient, through the right method. Bar code solutions are increasingly being used for unit-of-use medications, specimens, blood products, IV mixtures, asset tags, file labels, patient wristbands, and more.

Solution: Sutter Health, a California network of hospitals, community-based cardiac and cancer care centers, rehabilitation clinics, and behavioral health centers has embarked on a \$25 million patient safety effort that will place a bar code scanner at every bedside throughout Sutter's 26-hospital system. When fully implemented, Sutter will be one of the largest health system in the nation using bar code technology as a tool for patient safety.

In 2003, Sutter Health introduced Bridge Medical's eMAP bar code system into 10 of its 26 hospitals. The eMAP system reads bar coded patient wristbands, pharmaceutical products, and staff badges to safeguard the administration of medications. It alerts caregivers to possible allergies and interactions, potential look- or sound-alikes, and high-risk drugs.

Sutter Health also selected Zebra Technologies to deliver bar coding print solutions at the bedside and in the pharmacy throughout its 26-hospital system. At Sutter Solano Medical Center, where Zebra printers are being used to generate labels for packaging and bulk items, the printers have proven to be reliable and have demonstrated low failure rates, according to Mark Riley, Solano Medical Center's Director of Pharmacy.

"Across our network, our nurses administer about 30 million medications at the bedside annually. That's a substantial number of interactions that we're committed to getting right," said Gordon Hunt, M.D., Sutter Health senior vice president and chief medical officer. "As early adopters of this technology, we're helping to refine a potentially lifesaving system; we're finding solutions the rest of the industry can follow. Patients everywhere should be asking their local hospitals if they plan to invest in bar coding."

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When patients register at Sutter hospitals, they are issued a bar coded wristband. At bedside, the patient's wristband, medication, and the nurse's ID badge are scanned using a handheld device. The scanned data is then compared to the patient's medication and orders for administration stored in the hospital's database to verify a match. "If you try to scan something that's the wrong route, the bar code system will give you a warning," said Kelly Gabrielson, director of critical care at Sutter's Eden Medical Center. "You can still bypass that warning and give the medication, but you have to give a reason."

Since less than 35 percent of medications are received from the manufacturer bar coded, Sutter Health bar codes unlabeled unit-of-use level medications, totaling approximately 32 million doses per year at an estimated cost of five cents per dose, or \$1.6 million annually. Sutter expects this cost to decline to one cent per dose when the FDA ruling on unit-of-use bar codes becomes fully implemented.

Results: After just one year, Sutter's bar code system prevented an estimated 28,000 medication errors over the course of 2.6 million drug administrations. Of these, about 2,600 (about 9 percent) could have produced moderate or severe clinical effects

The program has been so effective that Sutter plans to complete deployment of its bar coding initiative at all its facilities one year ahead of schedule. Sutter doctors have been so impressed with the bar coding solution that they are aggressively supporting the advanced deployment of a fully functional EMR.

Sutter Health is the first and only health care system in Northern California to implement advanced patient safety bar code technology. According to the Journal of the American Society of Health System Pharmacists, less than five percent of hospitals provide bar code-enabled patient safety measures nationwide, and Sutter's bar coding initiative has drawn praise from the industry. "We applaud Sutter's investment in technology to improve patient safety," said Peter Lee, president of the Pacific Business Group on Health, a consortium of Fortune 500 employers leading California's Leapfrog effort (a national campaign to improve medical quality). "Research demonstrates that errors can be reduced and lives saved through bold system changes like these. We hope other hospitals follow Sutter's lead and recognize that investing in quality can pay off both for patients and in reducing costs."

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Call Toll Free: 1-888-510-9668



HEADQUARTERS Zebra Technologies International, LLC **T:** +1 847 793 2600 or +1 800 423 0442 **F:** +1 847 913 8766
ADDRESS: 333 Corporate Woods Parkway, Vernon Hills, IL 60061-3109 U.S.A. **WEB:** www.zebra.com

OTHER LOCATIONS **USA:** California, Rhode Island, Wisconsin **EUROPE:** France, Germany, Italy, Netherlands, Poland, Spain, Sweden, United Kingdom **ASIA-PACIFIC:** Australia, China, Japan, Singapore, South Korea
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GSA#: GS-35F-0268N
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#13914L-001 (5/06)