



## Overview

### **Industry:**

Healthcare

### **Application:**

Ruggedized 2D imagers used to enhance communication and deliver increased patient safety metrics at the point-of-care

### **Product Solution:**

Honeywell 4600 2D imager and Aztec 2D barcodes

### **Solution Provider:**

Honeywell



## Mount Desert Island (MDI) Hospital Ensures Patient Safety with Healthcare Information and 2D Barcode Imaging Solution from Honeywell

### Executive Summary

MDI Hospital was in search of a 2D patient wristband system to increase point-of-care safety and ensure the 5 Rights initiative – right patient, right drug, right time, right dose, and right form. The solution replaces an outdated linear barcode system with the introduction of 2D barcoded wristbands and ruggedized 2D imagers with an increased read rate.

### The Business Challenge

Driven by new industry and hospital specific directives to improve patient safety systems, hospitals are beginning to invest in barcode-based systems to ensure the 5 Rights.

For the critical patient wristband component of patient identification, healthcare systems integrators routinely deploy conventional linear barcodes and linear laser scanners. Due to the limited print space available on wristbands, especially in pediatric applications, linear barcodes are simply not viable. The net result is barcode reading systems that are, at best, difficult to use. In the worst-case deployments, the systems do not work at all.

In 2004, MDI Hospital, a 25-bed critical access hospital on the coast of Maine, decided to invest in a new healthcare information system, including the capability to implement a barcode-based patient safety system. After considering proposals from two healthcare independent software vendors, MDI Hospital, selected CPSI. The new system was implemented in Q1 and Q2 of 2004. The CPSI system includes several healthcare information system (HIS) software modules and a patient safety system for matching patient wristbands with medications to comply with the 5 Rights initiative.

The system is a Unix-based enterprise software environment and uses HP laptop computers on "COWS" (computers on wheels) for the nursing staff to interact with patients. Patient wristbands are generated online through a Printronix multi-form printer in MDI's Registration Department.

However, the CPSI system used high-density linear codes and near contact laser scanners for reading the patient wristbands. In real world practice, the linear codes on the wristbands turned out to be very difficult to read with the near contact laser scanners. This caused both nurses and patients to be very frustrated with the scanning system – eventually leading to the decision to drop this critical portion of the 5 Rights system.

"Over the past several years, MDI Hospital has been motivated by the national trend to becoming 'all electronic' and we invested in a barcode-based point-of-care patient system in 2004," said Jeanne Fortier, VP of Clinical Services, MDI Hospital. "However, with the original laser-based system, our nurses were unable to reliably use the safety features of MDI's information system because scanning the linear barcodes on the patient wristbands was such an arduous process. We were also further challenged in the fact that the laser scanners could not read the newer generation of 2D codes on incoming medications in our Pharmacy."

## Solution

In response to the poor performance of the linear based solution, Honeywell developed an innovative patient wristband solution using Aztec symbology, a 2D matrix code highly suitable to the patient wristband application, and provided 2D image readers to deliver very robust performance on patient wristbands. 2D

image readers have the added benefit of being able to read all barcodes – linear, stacked linear and matrix codes – that are beginning to enter the hospital workflow through medication labels.

In the spring of 2005, MDI Hospital became aware of the patient wristband innovations developed by Honeywell using 2D matrix symbologies and 2D imagers.

Working in conjunction with MDI Hospital's IT department, Honeywell designed a "transparent" solution to retro-fit the CPSI system with Aztec wrist-bands and 2D readers. This new 2D system was intended to overcome the limitations of the original linear barcode and laser scanner approach.

The MDI Hospital and Honeywell project team developed a system that used an off-the shelf barcode label design and generation package to develop "repeated" Aztec 2D matrix codes that could be added to the CPSI wristband stock. The Aztec print label routine was then loaded on the Registration Department's PC along with a Honeywell 4600 2D imager for reading the patient's unique identification number generated from the CPSI system. A Zebra label printer was selected and attached to the Registration Department's PC and adhesive label stock was selected for use with the CPSI wristband stock, containing the patient's unique identification number. The registration operator then places the Aztec labels over the wristband prior to sealing the wristband for use by the patient. Honeywell then replaced the laser scanners with 4600 2D imagers on the hospital's COW laptop computers.

## Benefits

After a successful pilot in the Critical Care Unit (CCU), MDI Hospital has now deployed the new 2D patient safety system to all point of care areas within the hospital including the pharmacy.

The new solution is already delivering impressive patient safety metrics, reducing the number of weekly incidences of medication "no reads" from approximately 100 to less than three. With the old laser-based system and 5 Rights compliance metrics, the percentage of successfully completed wristband and medication barcode transactions was running about 15%. The new 2D imaging-based solution has improved transaction success rate to 70%. By reducing the number of misreads and making compliance easier, nurses are able to deliver safer and more efficient care without having to worry about medication errors.

## The Future

The move to an electronic medical record system has also included the recent implementation of "ChartLink," a component for the Hospital's information system that provides a Windows Web-based portal to easily display all patient information that has been captured in the system.

MDI also plans to implement a Computer Physician Order Entry (CPOE), which will allow physicians to directly enter their orders and doctors notes into the patient's record from any PC instead of using a paper-based system. Picture Archiving Communications System (PACS), which digitizes radiology images allowing physicians to view their patient's radiology tests from any PC, is planned for late 2007.

Currently underway is a project to add an electronic medical record component to health center physician practices software. This software would allow the physician to capture the total patient encounter, review past medical history, and test results via a PC.

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