

**APPLICATION BRIEF**

SOLVING THE MIX OF TWO DIMENSIONAL AND ONE DIMENSIONAL LINEAR BARCODES IN HEALTHCARE ENVIRONMENTS



## Solving the Mix of Two Dimensional and One Dimensional Linear Barcodes in Healthcare Environments

### Patient Care Application

A busy nurse visits a bedside and scans the patient’s 2D barcode for PPID. 1D barcode is used only for glucose readers. The critical component is that the 2D barcode is used for identifying the patient for all Meds and Collections. This reduces the ability for a nurse to perform a “Work Around”. With only a 1D barcode- the nurse can scan a chart label and say it was the patient.

The same patient is also due for medication. The caregiver scans the two-dimensional (2D) barcode on the same wristband and then scans the barcode label on the medicine to ensure the right dose, right time and right route as well as a number of other variables.

Is the nurse equipped with a separate barcode scanner for each barcode type, or one that can read both? Zebra® makes the answer simple. Because 1D and 2D barcode technologies are used simultaneously in hospital environments, Zebra 2D barcode scanners should be utilized as it can also scan 1D barcodes. But a 1D barcode scanner cannot scan a 2D barcode.

### GS1 Healthcare Standard

GS1 Healthcare and its global members strongly support the implementation of 2D capable scanners and the adoption of GS1 DataMatrix.

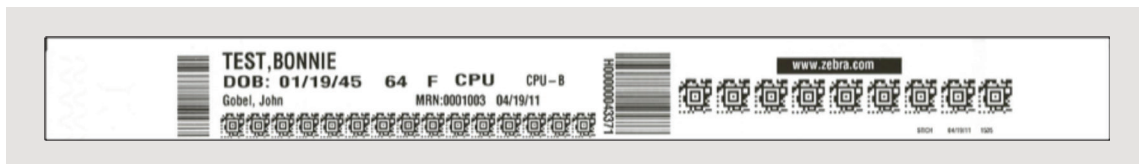
### Hospital Use Cases

#### Patient Identification Wristbands

Patient wristbands are the cornerstone of every hospital identification system, and evidence-based best practices demonstrate that positive patient identification is enhanced by using 1D and 2D barcodes in combination. 2D barcodes can make wristbands easier to scan, especially when printed around the surface of the band, and facilitate positive patient identification. Forward-thinking manufacturers are now also integrating 2D imagers into new devices to improve patient safety and to support the GS1 Healthcare standard. However, linear 1D barcodes are still needed to accommodate legacy equipment. For example, most blood glucose readers still use 1D imagers.

#### Blood Glucose Readers

These mobile devices analyze patient information at the bedside. This enables clinicians to take immediate remedial action instead of sending samples to a central laboratory and awaiting results. The caregiver comes to the patient bedside, scans the patient wristband, ensuring positive patient identification, and then analyzes a blood sample for its results. As of 2016, 90% of hospitals



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owned blood glucose readers that scan linear 1D barcode imagers, making a 1D barcode on a patient wristband a necessity, while the 2D barcode is the primary barcode for PPID; Specimen Collection and Medication Administration.

### Medication Administration: Smart Infusion and Patient-Controlled Analgesia (PCA) Pumps

As with blood glucose readers, older infusion pumps are only equipped with 1D linear barcode imagers. Because the life cycle of some hospital equipment can be over 10 years, the hospital equipment environment oftentimes makes it necessary to read 1D barcodes. Newer equipment will be incorporating the ability to read 1D and 2D barcodes.

### Barcoded Bedside Medication Administration / Verification (BCMA)

The BCMA workflow is straightforward. The caregiver comes to the patient bedside, scans the patient wristband to ensure the correct patient, and then scans the medication being administered to ensure the Five Patient Rights: right Patient, Right Drug, Right Dose, Right method, Right time as well as a number of other variables. However medications are sometimes labeled with 1D barcodes and other times 2D barcodes, so it is important for the barcode scanner to support both.

### Mobile Phlebotomy / Specimen Collection

Mobile phlebotomy improves patient safety by printing patient specific barcode labels at the point of collection. The caregiver can then immediately apply the label to the specimen so it can be sent on to a central lab for analysis.

This workflow prevents wrong patient / wrong specimen errors by minimizing the potential for mix-ups. In 2016 the vast majority of lab analyzers only support 1D barcodes.

### Paperwork Identification for Archiving and Image Retention

Often, throughout the patient treatment process, manual paperwork is created. Later on this needs to be archived to the patient's record. To facilitate this recording keeping, either 1D or 2D labels are generated automatically at the point of registration and are used to identify this paperwork; the barcode on the labels are later read through the document imaging process and then indexed to the correct patient record.

### Hospital Health Care Information Systems (HCIS) Impact on Barcoding

Not all HCIS solutions have adopted native 2D barcode generation. However, Zebra label printers can be used to generate 2D barcodes in any environment. Zebra printers can translate a text string into 1D or 2D barcodes that are inherently compatible, with the correct integration, to any HCIS. But the devil is in the details. A Zebra technology specialist can help.

### A Labeling Standard in Transition

The question isn't whether to support 1D or 2D barcodes, the question is how healthcare providers can support both systems. Today, and for the foreseeable future, both 2D and 1D barcodes will play a role in healthcare. And Zebra has the solutions — printers, barcode imaging equipment, software tools, and media — that are all designed to meet your current and future dual-system labeling requirements.

### 1D Linear Barcodes

are comprised of vertical lines and spaces that encode data in a machine-readable "font". These barcodes are commonly used, but due to the encoding methodology, it takes more space to encode more data.

### 2D Barcodes

store data horizontally and vertically so more data can be encoded in a much smaller space for better error correction.

For more information on 1D and 2D Barcode Printers and Scanners, visit [www.zebra.com](http://www.zebra.com)



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