

# HEALTHCARE

## ZEBRA® PRINTING SOLUTIONS



# The patient journey

**Zebra's proven printer and media solutions are being used to improve safety, comfort and efficiency at every stage of a patient's hospital journey. Bar codes, and more recently RFID (radio frequency identification) are being used to help reduce identification mistakes as well as to speed up hospital processes from admission to discharge, from the pharmacy to the wards.**

**Patient identification**, using Zebra wristband media and printers, provides a critical first step in many patient-safety-improvement initiatives. Incorporating a bar code or an RFID tag as well as text provides a vital extra safeguard against mistaken identity.

**Medical records** that carry a printed label incorporating a bar code are a more reliable way of ensuring that each patient's record can be uniquely identified and tracked.

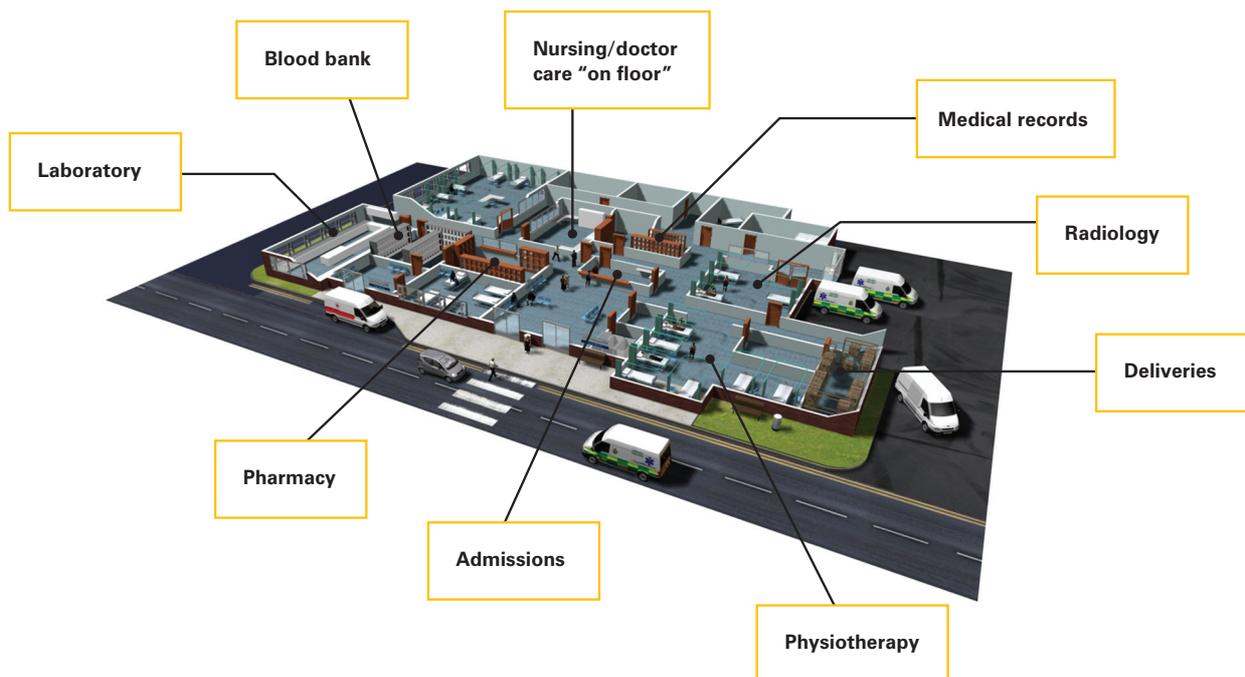
**Laboratory specimens** need to be accurately identified. Zebra printers are a convenient way of producing the labels at the patient's bedside, at the nurses' station or in the laboratory.

**Medication administration** can be both time-consuming and risky. With a mobile printer, the pharmacist can label a patient's personal medication on the hospital floor, which saves time walking back to the pharmacy. The hospital pharmacy can also print unit-of-use bar code labels to provide a full audit trail.

**Blood transfusions** are a high risk-area, where inaccurate identification can lead to potentially fatal errors. Blood bags are routinely bar-coded with their type. Adding a label with the intended patient's details enables additional safety checks to be made automatically before the blood is given.

## Typical healthcare applications:

- Blood-bag allocation labels
- Healthcare estate management, e.g. equipment inventories, preventative maintenance
- Laboratory specimens
- Medical records
- Patient identification
- Pharmacy labels
- Radiology films
- Staff identification
- Sterile-equipment processing
- Supply-chain management of materials
- Tracking labels for physiotherapy aids
- Ultrasound/ECG results



# Reducing mistakes in patient treatment

## Positive patient identification

Over the 12-month period February 2006 to January 2007, the UK National Patient Safety Agency (NPSA) received 24,382 reports of patients being mismatched to their care.

It is estimated that more than 2,900 of these relate to wristbands and their use. (Source: NPSA Safer Practice Notice No. 27, July 07)

Zebra's range of desktop printers and wristband media provide an effective solution for improved patient safety. Available in adult, child and neonatal sizes and solid red allergy bands. Five additional colour options are available on request. Printed wristbands can contain text, bar codes and even digital images so that all necessary details including blood type, allergies and primary physician are immediately visible.

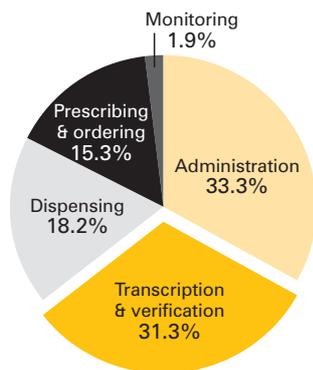
For chronic patients who visit the hospital on a regular basis for treatment, hospitals may choose to issue patients with their own patient ID card that can be used to identify them through the admission and treatment processes.

**Specimen collection:** Print specimen labels at the point of collection on a mobile printer to ensure correct sample labelling.

**Blood transfusions:** Automate identity verification to cut risks. Use wristbands and accurate bar code labels to track blood units and samples.

**Bedside medication delivery:** Ensure the right drug for the right patient. Use bar code labels for medication identification.

## Where do medication errors occur?



Most frequent causes of medication errors, 2002.  
Based on article in Hospitals and Health Networks, April 2004.



**“Following the successful trial of Zebra wristbands at The National Healthcare Centre in Florence, research carried out alongside the trial has shown that using them had prevented 220 cases of mistaken identity.”**

**Dr. Francesco Venneri**  
Head of Operative Emergency Surgery Wards  
and Clinical Risk Manager  
Florence National Healthcare Centre, Italy

**“An RFID wristband pilot at Birmingham Heartlands Hospital’s day-surgery unit enabled the hospital to complete one extra operation per day. This generates an additional unplanned income of between £70,000 and £270,000 per year (depending on the type of procedure).”**

**Heartlands Hospital**  
Heart of England NHS Trust, UK



# Saving time and costs in hospital administration

## Bar codes and printed labels: reduce administration time while increasing safety

When a bar-coded patient-identification system is introduced into the hospital, not only does it reduce errors and the associated costs of correcting them (including potential litigation costs), but it also brings many other advantages. By moving to an automated data-entry and verification system, many administration tasks are speeded up and simplified so that staff can spend more time with the patients and less time dealing with paperwork. Such systems also improve overall visibility by providing real-time information on specimens, tests and results.

## Mobility: decentralise computer and printer access for improved productivity

The availability of versatile mobile and wireless computers, printers and networks has enabled the redesign of many applications. The growth in the implementation of wireless networks and use of mobile hospital workstations has led to safer working practices and radically boosted staff efficiency.

Mobile printers for pharmacy staff or phlebotomists enables bar code labels to be printed on demand at the point of care – saving time. By printing the label at the patient's bedside, the risk of error is greatly reduced, and it's quicker to deliver the medication or identify the sample.

## Printer management: monitor and control printer populations

Leveraging the power of ZebraLink™, ZebraNet™ Bridge Enterprise allows IT staff to deploy, manage and monitor Zebra printers centrally from a single PC screen anywhere on the network. Installation and configuration are fast, out of the box, and management is quick and simple with drag and-drop functionality and wizard assistance. ZebraNet Bridge delivers reduced IT administrative time, costs and more printer uptime.



# Thermal printers for healthcare from Zebra

## Mobile printers

Compact, convenient and lightweight, QL Plus series printers have a full range of connectivity options including 802.11b/g with full VPN support for secure transfer of patient data. Ideal for printing specimen or medication labels at the patient's bedside, these printers are available in 50mm (2"), 76mm (3") and 104mm (4") print widths.

## Desktop printers

Thermal desktop printers provide fast, convenient and reliable printing of patients' wristbands and identification labels for samples, medication or files.

Zebra's complete and integrated wristband solution combines the small-footprint HC100™ direct-thermal printer with easy-to-load cartridges containing Zebra's patent-pending antimicrobial Z-Band® Direct wristbands. Its smart technology senses the wristband type and auto-calibrates the settings for optimised print quality.

Whether located in the pharmacy, laboratory or at the nurses' station on the ward, the range of Zebra desktop printers offer either direct-thermal print technology, where ribbon-free easy-to-use systems are needed, or thermal-transfer print technology, where more durable printing is required e.g. to withstand sterilisation.

## Mid-range printers

### ZM400™

Capable of high-speed, high-volume printing and with a robust metal casing, the ZM400 printer is ideal for hospital supplies labels, stock control, asset-tracking and medical records.

## High-performance printers

### 110XIIIPlus

Combining superior performance with longevity and rugged durability, the 110XIIIPlus printer is ideal for printing blood-bag labels at the blood-donor centre. It has a 32-bit processor for fast throughput and increased memory for graphics, fonts and label formats such as the ISBT 128-specified label. The XIIIPlus printers also offer more connectivity options including XML-enabled printing, ZebraNet wireless and wired print servers, and USB 2.0.

## RFID printers

Zebra's R2844-Z™ can read, write and print RFID labels to identify and track medical records as they move from ward to consultant through to outpatients. The R2844-Z can also be used to print and encode RFID patient wristbands that allow patients to be tracked at every stage of their hospital journey.

## Card printers

Zebra's range of card printers can support a wide variety of patient and staff identification requirements for hospitals. With colour printing, barcode, magnetic stripe and smart card technology the cards can be used for identification and secure access control applications.



**"We are very happy with the way the Zebra printers are performing."**

**Alison Mackay  
eHealth Department  
Raigmore Hospital, NHS Highland, UK**



**HC100 printer  
and wristband cartridge**

**The world's first purpose-built wristband printing solution.**



# Labelling solutions for healthcare

Zebra Technologies offers numerous high-quality custom-made or off-the-shelf labels (ZipShip<sup>SM</sup>), tags and ID cards. These include a wide range of media specially designed for healthcare applications:

- Printable wristbands for patient identification
- CryoCool™ labels for low-temperature-storage applications in laboratories
- Durable direct-thermal labels ideal for case-note and X-ray labelling
- Direct-thermal labels for medication and specimen labelling for both desktop and mobile printers
- Durable synthetic labels that withstand sterilisation
- Secondary blood-bag labels for type and donor traceability

Our custom label service will design a label to meet your functional specifications and needs. This includes a variety of sizes, colours and materials.

You need to be confident that a label will perform well when used in direct-thermal or thermal-transfer applications. Bar codes must scan successfully and the label material, inks or adhesives must not damage the printhead. Genuine Zebra labels and ribbons are tested thoroughly to ensure best performance in Zebra printers and to enhance printhead life.

	<b>Mobile</b>  QL Plus series	<b>Desktop</b>  LP 2824-Z™	 G-Series™	 HC100	<b>Mid-range</b>  S4M™	 Z Series®	<b>High-performance</b>  Xi™ series	<b>Card</b>  P Series™
Patient identification		✓	✓	✓	✓	✓	✓	✓
Staff ID/access control								✓
Laboratory specimens	✓	✓	✓		✓	✓	✓	
Medication administration	✓	✓	✓		✓	✓	✓	
Medical-record labelling	✓		✓		✓	✓	✓	
Blood-transfusion tracking			✓		✓	✓	✓	

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