

## More than just a number: Easy to read wristbands with barcodes and demographics

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**Team** ([list](#))



Chris Royle,  
Laboratory Manager

This case study is about getting a change - using a system of barcoded wristbands with legible demographics - adopted across a multi centre trust. The ID issue was initially picked up by the haematology lab, as well as our safety audits and we found the solution to the problem by tracking the patient journey through the Trust.

The Royal Brompton and Harefield Trust specialises in the treatment of cardio-thoracic disease. It consists of two tertiary referral hospitals located on sites 20 miles apart.

I manage the Clinical Biochemistry, Haematology and Blood Transfusion laboratories and the team of phlebotomists and specimen reception staff. As a team we were concerned about the volume of mislabelled specimens received in the lab and related problems of accurate patient identification.

Approximately 25,000 patients are admitted to the Trust hospitals each year. Based on our audits of sample mislabelling and phlebotomist's data, we estimated that patient misidentification problems would be encountered in at least one per cent (250) of these patient admissions. Up to 30 per cent (7,500) of patients would not be wearing an identification wristband during all or part of their stay with us. Phlebotomy is forbidden until a correct wristband is applied so if it's missing it can lead to delays in blood sampling and testing which have a knock on effect for the patient's diagnosis and treatment.

Our lab audits highlighted patient ID as a major source of error with potentially serious consequences for patient safety. There were also issues for us as a team. In accepting incorrectly or inadequately labelled specimens, we would, in effect, be implicitly taking responsibility for someone else's omissions and errors. So, in 2001, the labs implemented a zero tolerance specimen labelling policy.

Incorrect patient ID and specimen labelling creates many safety issues. These include patients wrongly diagnosed, treatment withheld or the incorrect treatment or procedure administered to the wrong patient. In the worst case scenario, wrong blood transfused to the wrong patient could result in death.

Errors associated with mis-identification include:

- Administration of the wrong drug
- An invasive procedure performed on the wrong patient
- Mis-labelling of a blood or tissue sample
- A diagnosis assigned to the wrong patient
- A patient receiving inappropriate treatment
- The wrong patient taken to theatre
- Cancellation of operations due to the misfiling of results and correspondence



**wristband on wrist**

In consultation with the Director of Operations a project group came together to investigate patient ID systems in the Trust and recommend improvements. The group recommended printed wristbands be produced from one authentic data source, the Hospital Patient Administration System (PAS) and these wristbands incorporate a bar coded representation of the Hospital number, to enable future developments.

The project group included decision makers from across staff groups in the trust, including:

- Medical
- Patient Services
- Nursing
- Information Technology (IT)
- Laboratory Medicine

The group also had a 'team champion' from the Trust's executive board, who had the authority implement the group's recommendations and ensure they were adopted in practice at all levels in the Trust. The team was also given a facilitator to support their initial work. These resources were vital, as all members of the group took this work on in addition to their usual duties.

### **Group objective**

The group agreed its work was to enhance patient safety by making sure all patients were correctly identified at all times. The group's objective was to make sure that once decisions about a particular patient were made, that only that patient received investigations needed for diagnosis, monitoring, and treatment.

### **Targets**

Targets included reviewing adverse event reports relating to patient identification, surveying all relevant systems, policies and procedures in place to identify patients and to identify areas or processes where identification was not made or poorly performed.

### **Making a map**

The group met to brainstorm the ID problem on a number of occasions. They mapped identification processes at each stage in the patient journey. This turned out to be complex and challenging work. When processes were reviewed and error reporting examined, problems with missing, inaccurate or illegible patient wristbands were identified as the essential part of the patient ID process that needed further attention.

### **Auditing wristbands**

The Trust policy for patient identification required that an ID wristband be applied within 30 minutes of a patient being admitted to a ward. When wristbands were audited by the group, they found several problems:

- Failures to issue and apply wristbands on admission
- Incorrect or incomplete handwritten information transcribed from the PAS (patient administration system) database. These errors were perpetuated by further transcription onto handwritten wristbands, request forms, notes, specimen labels etc.
- Wristbands missing because they had been removed, either by the patient, their relatives, or by staff during surgical procedures.
- Illegible information on handwritten wristbands
- Incomplete information on wristbands
- Wristbands not replaced after surgery

When we'd finished examining ID and wristbands across the patient journey, we reached a number of conclusions:

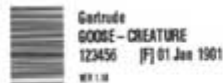
- Most staff were unaware of the Trust's patient identification policy
- Staff who were aware of the policy, often failed to stick to it, especially with wristbands
- Incorrect information was often used on wristbands and this perpetuated errors throughout the system

It was immediately clear that we needed single, robust system for accurate patient identification across the Trust.

The group recommended:

- The use of hand written wristbands should be abolished
- All wristbands should be printed using data from a single authentic source, the PAS
- The PAS to be the only source of patient identification data, and should be used to print any necessary lists, rather than the ad hoc lists commonly used
- Information to be contained on the wristband was to include eye-readable demographic information, (Surname, forename, hospital number, date of birth and gender) and a bar-coded representation of the hospital number to allow for integration with other hospital services, such as blood transfusion, pharmacy and pathology.

### Wristband layout



One dimensional bar coded hospital number



Two dimensional bar coded patient demographic data (Surname, forename, hospital number, gender, date of birth)

The move to printed wristbands was approved. In addition, the Trust approved support for the changes the group recommended. These included developing and delivering a programme of staff education on patient identification and the use of wristbands and demographic data, and the appointment of an implementation manager to oversee the project and deliver the training. Funding was made available for printers, software development and the project manager's salary.

A project manager was appointed and a smaller, working project steering group set up. The project group meets monthly to review progress, support the project manager and assist with any difficulties in implementation.

The project is now well underway. We have supplied printers and linked them with our PAS system. The wristband material and design has been finalised. We chose 'Polyart' for the wristbands, as it is soft, durable, water resistant and retains the printing well.

We are currently at the stage of delivering training in patient identification and the use of the new printers and wristbands across the Trust. We have also drafted revisions to our policies and will be distributing these to all staff.

It's possible some readers may consider our approach too resource intensive for solving a relatively 'simple' problem with an answer that may seem obvious. However, we were systematic and assumed nothing about the problems experienced with patient identification. By going back to basics and mapping the patient journey through the Trust we were able to pick up on weaknesses in the system. This provided us with the evidence we needed to support, and win resources for a relatively simple, but expensive and wide reaching change - printing readable and bar-coded wristbands.

### Lessons learnt

Things we learnt to do included:

- Be systematic in gathering evidence
- Observe the problem, see what happens in practice
- Listen to what staff say
- Get support at the highest level
- Don't expect rapid change, results take time
- Consider systems and their ramifications carefully, don't solve one set of problems by creating another.

### Benefit of hindsight

In retrospect I think I may have approached this problem slightly differently.

We did not include a patient representative in the project team. When we started this work five years ago, patient involvement was hardly on the agenda. Now, I can see the benefit of involving users in the planning process. With the user perspective many of the issues and problems that evaded us or seemed tricky to resolve may have been handled more effectively.

I would also repackage the project, not as a technical project, but as a project demanding cross Trust cooperation as part of a wider process of cultural change to support all aspects of patient safety. Safety issues were undoubtedly the glue that kept the project, and the project team, together when the going got rough. Without the obvious implications for patient safety the project may have failed. Therefore, if I were doing it a second time, I would make this link clearer and package the project as improving patient safety, rather than the specifically technical approach we took with patient ID and wristbands.

Finally, I think the project would have benefited from the involvement of senior level project manager. We needed to obtain support at senior manager level throughout the trust. Our project manager was familiar with all aspects of the patient ID issue and brilliant with the IT systems needed to implement the wristbands, but wasn't as senior as some of the more reluctant heads of departments. Ultimately, this slowed implementation down as there was another layer of negotiating that needed to be done, which could have been done first time around.

## Discussion

Chris Royle will be hosting our patient ID discussion board from 17th October for two weeks, for any questions you may have on wristbands or his experience in implementing the change over to barcoded wristbands in Royal Brompton and Harefield NHS Trust. We welcome your participation and if you haven't already, you'll need to [register](#) to join the discussions. Chris is interested to hear your experience of working on these issues. Click on any of his questions to go straight to the discussion on patient ID and wristbands.

### Have others experienced a high volume of mislabelled specimens in the labs?

- Has anyone carried out an audit?
- What have others tried to reduce the volume of mislabelled specimens?

### We found that up to 30 per cent of our patients were without wristbands when we first audited.

- Is this figure typical?
- What's your experience?

### We took a zero tolerance approach to specimen labelling error. Despite support from nursing and medical staff, we were faced with many difficulties with implementing this.

- How do you feel about this approach?
- What other ways have you found to reduce mislabelling?
- How have you tackled error in this way?
- What problems have you experienced if you've taken this zero tolerance approach? How did you overcome them?

### This project was given the resources of a project manager, as well as funding for the technology, But are others so fortunate?

- What resourcing issues do you have with implementing change?
- Have you struggled with change as an 'amateur' project manager?
- What kind of project management have you had?
- What kind of project management do projects like this need?

### We changed our policies and distributed these to all staff. But we don't know if it's been read, or understood, or accepted...

- Does anyone out there have experience of successfully disseminating changes in policy to staff?
- Are there any clever ideas out there about how to get the message across?

## Related information

- NPSA [Right patient right care](#)
- Dale J. C and Renner S. W (1997) Wristband errors in small hospitals. *Laboratory Medicine* March. 28. 3. 203-207.
- Hodgkinson B, Fitzgerald M, Borbasi S and Walsh K (1999) Towards safer blood transfusion practice *Journal of Quality Clinical Practice* 19. 63-67 [View article abstract](#) (PubMed)
- Renner, S. W, Howanitz, P. J and Brachner, P (1993) Wristband identity error reporting in 712 hospitals. *Arch Pathology Laboratory Medicine* June. 117. 573-557. [View article abstract](#) (PubMed)
- Wright A. A. and Katz I.T. (2005) Bar coding for patient safety *N.Engl.J. Med.* 353:4 329 – 331 [Free full text](#) (*N.Engl.J. Med.* website)
- Olympus osyRis web site <http://www.olympusosyris.co.uk/>

- Wristbands supplied by Scanner Services, contact Paul Wallis [p.wallis@ntlworld.com](mailto:p.wallis@ntlworld.com)
- Zebra printers (Zebra TLP 2844Z T) supplied via Olympus

### **Team**

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