



Case study

## More than stock management: the benefits of having a robust IMS during a pandemic



Long before becoming a Scan4Safety demonstrator site, University Hospitals Plymouth NHS Trust (Plymouth) was already at an advanced level in the realm of digital-inventory management. When it came to implementing GS1 standards as part of their inventory-management process, it was not an entirely new venture for the team.

Over the last ten years, working alongside their IMS provider Genesis Automation, Plymouth has honed its focus on driving progress in this area. Supported by the establishment of a new warehouse, and the generation of five new internal stores locations, this provided the team with the capacity to achieve greater visibility of stock across the trust.

Although teams were able to scan any product's barcode into the inventory-management system (IMS) before the adoption of GS1 standards, there was no guarantee of each product's barcode details being unique. This left the processes vulnerable to duplication, which could cause significant complications within the system.

Fortunately, when Scan4Safety later came about in 2016, it brought a new dimension to the trust's operations as it enabled them to then scan a product's unique barcode and register the product details directly into the IMS.

Only supplier products that carried GS1 Global Trade Item Numbers (GTINs) allowed them to uniquely identify, track, and trace their goods with a greater level of efficiency and accuracy. To ensure this process worked at its best, the team began contacting their suppliers to request the necessary GS1 product information.

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In radiology, scanning inventory enabled greater visibility of stock. At the start approximately £1m worth of stock was captured. By comparison, the usual estimated cost would hit roughly £600,000. That is around £400,000 attributed to excess stock holding.

## Inventory management pre-COVID

Plymouth initially began its tracking journey in orthopaedics. Despite being one of the most complex areas to start in, the department had been identified as one with profound benefits.

The orthopaedics team began tracking implants, from a patient safety perspective as well as their cost as high-value items. One key example of this was the introduction of sided-procedures alerts, implemented as a preventative measure for Never Events, and to improve traceability in the event of a product recall or patient-safety alert.

In order to do so, they needed to capture more than just the product details, they needed all three GS1 core enablers in place:

- The unique identification of the person (the patient using a GS1 Global Service Relation Number – GSRN)
- The product (in this case, the implant) using the GTIN
- The place (which theatre) using a GS1 Global Location Number – GLN

Scanning at the point of care in surgery meant they could track all relevant procedural information for their records including:

- The implant or product used
- Which patient it was used on
- What theatre the procedure took place in
- Which consultant performed the procedure
- Which clinical staff were present
- What date and time the procedure took place

Now, in the event of a product recall, procurement and clinical staff can identify the patients that have been affected and locate any stock on the shelves within a matter of minutes. They can then remove the items from circulation before further clinical use, and any affected patients can be contacted immediately.

Capturing these details allowed them to improve patient safety and increase transparency across its procedures. They could then produce accurate patient-level costings, which proved useful for forecasting and reducing unwarranted clinical variation.

In the radiology department, scanning allowed practitioners to obtain better insights on stock levels and the associated cost. In the first instance, approximately £1m worth of stock was captured. By, comparison, the usual estimated cost would hit roughly £600,000 which is around £400,000 attributed to excess stock holding. Instead, this £400,000 worth of stock has not had to be re-ordered. The £600,000 worth of existing supplies was sufficient enough to cover the department.

Staff now remove the out-of-date stock and move those due to expire to the front of storage to be used as a priority. Reorder levels are set in the IMS and automated so that stock is ordered only when needed.

Once the effectiveness of the system had been proven, the procurement team moved onto another key item – theatre sets.

Without being able to efficiently track the sets, the team was unable to ascertain how many times a particular one had been used, or whether it had been used at all.

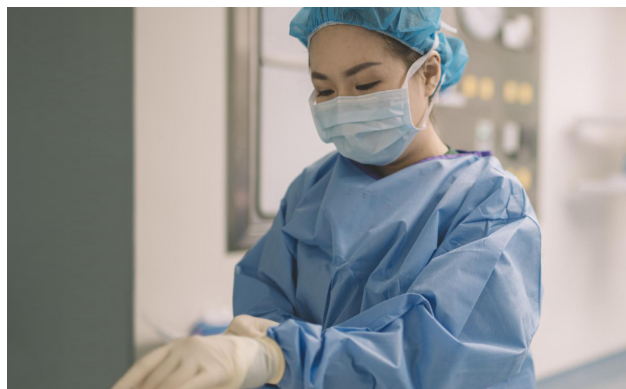
Through barcoding and scanning the sets that were in use, the team could then monitor and manage consumption, as well as identify the trays for sterilisation. This also meant they could do better pre-planning for theatres so, if five sets were available but there were six procedures planned, they were in a position to remedy the shortage.

## Driving effective inventory management throughout the pandemic

Throughout the pandemic, GS1-standards adoption and inventory management have become a lifeline to the trust, helping to improve visibility of assets and vital supplies of personal protective equipment (PPE).

For Plymouth, and likely for many other NHS trusts, managing PPE supplies has been difficult. Supplies are provided based on what is available nationwide, which at times means receiving several different ranges of a product that each need to be recorded.

That could be 20 different types of gloves, or 50 different types of masks, some of which would be new to the trust and would need to receive clinical approval before distribution. Irrespective of the quantities, there still needs to be a record of stock coming in, and what is being distributed in case there are unforeseen problems with any items.



To help overcome this challenge, the procurement team worked with the IMS provider Genesis, to create a PPE tracker to monitor consumption – everything from what is being used every month, to what is being used in a single day. With this real-time tracker in place, they could achieve an accurate account of how many days' worth of available stock they had on shelves.

Real-time insights have given the trust the capacity to forecast critical resources which, amid the pandemic, has been vital. In its intensive care units, Plymouth are now in a position where they can monitor the average stock and consumables used per patient, and forecast stock ordering for the number of critical-care beds they have, making for a more robust supply chain.

## The benefits of using GS1 standards for inventory management

Using a GS1 GTIN on a product is very different to having a generic barcode printed on a product. For example, with a GTIN, it is possible to capture lot numbers and batch details – with a generic barcode it is not – and this is where the fundamental difference lies.

On receipt of goods, Plymouth are now able to capture details in real-time. In the short term, this has been a huge data-capture effort, the long-term value has been immeasurable. Manual stock processing is now a thing of the past, audits can be conducted at a much quicker rate, product recalls are more efficient, and the trust has greater visibility for inventory costings.



Real-time stock management through the use of barcode scanning

The traceability benefits that they have been successfully achieved also enable the trust to meet regulatory requirements for unique device identification (UDI) as part of the EU Medicine and Medical Devices Regulation (EU MDR), and the UK Medicines and Medical Device Bill as part of forthcoming legislation.

Most importantly, Plymouth has built an environment that enables them to drive patient-safety improvements across the theatres where they have adopted Scan4Safety principles.

Efficient supply chain and logistics form the foundations of releasing time to care on the clinical side of the pathway. Staff are freed from routine manual tasks such as physical stock taking – throughout the COVID pandemic, this has made the biggest difference to Plymouth's staff.

## The challenges behind the successes

Although the trust is making strong progress, it continues to face the challenge of receiving products without barcodes, or with barcodes that cannot to be scanned, or are not GS1-compliant.

Alongside this, some products may be barcoded on their outer packaging but not on the inner, individual product boxes. This is a key challenge Plymouth faces when it comes to point-of-care scanning – data capture at the unit level is key. The more suppliers that barcode at the unit level, the more products trusts will be able to trace, and safer the care they will be able to provide for their patients.

## GS1 standards beyond inventory

Outside of the inventory-management use case, Plymouth recently embarked on an RFID-based asset-tracking project. This has been implemented to track the locations of more than 17,000 pieces of kit to be monitored in real time for the clinical-engineering teams.

The project started before the pandemic with solution provider, Paragon ID, and the clinical-engineering team now know where a good proportion of their assets are across the trust, at the touch of a button. For further information on their RFID journey – [visit the Paragon ID website for the full case study](#).

The trust will start soon be starting the next phase of its roll-out in cardiology, and continue to work on traceability and inventory management throughout, and beyond, the pandemic.

## About University Hospitals Plymouth NHS Trust

University Hospitals Plymouth NHS Trust is the largest hospital in the south west peninsula, which serves a local population of 450,000 and a wider peninsula population of almost 2,000,000 people that can access specialist services.

Plymouth has approximately 7,000 staff and volunteers and has a tri-service staff of 200+ military doctors, nurses, and allied health professionals fully integrated within the hospital workplace, working and training alongside their NHS counterparts to treat the local community.

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