

United Kingdom

Harnessing GS1 standards to reduce unwarranted clinical variation

Challenge

Manchester University NHS Foundation Trust's (MFT) is one of the largest healthcare providers in the UK, with 10 separate sites. Obtaining full visibility of supplies across the organisation has traditionally been very difficult, leading to inefficiencies.

Approach

Challenged to become more efficient and reduce procurement costs and product waste, MFT decided to implement an inventory management system (IMS) to improve stock control across the organisation.

The IMS can hold Global Trade Item Numbers (GTINs), enabling tracking and tracing of supplies throughout the organisation.

Via the IMS, the materials management department can track all inventory from purchase through to usage. This has improved stock control for expired products or recalls, so reducing wastage, and also improved patient safety.



Nearly 3,000 individual implants captured in just one year amounting to almost £1M



Product recalls processed in minutes instead of days or weeks



One day a week saved for every senior radiology nurse – time back to patient care



Reduced unwarranted clinical and cost variation between surgical procedures

Introduction

Product traceability is a fundamental part of any safe and effective healthcare system. From supply chain through to the patient pathway, the benefits lie in the ability to accurately trace products from the point of manufacture to the point of care or use. This is an important patient safety requirement, but also helps to drive efficiencies and reduce waste.

Manchester University NHS Foundation Trust (MFT) is the largest acute NHS trust in the UK, delivering care to more than 750,000 local people. As the single biggest provider of specialised services in the north west of England, and with 10 different hospital sites making up the trust, achieving full visibility of inventory can prove challenging.

At eight of these sites, responsibility for supply and demand falls to the materials management department. The team was challenged to be more efficient and reduce procurement costs across the sites under its remit. Traditional routes had been explored, such as sourcing cheaper

products and finding smaller product quantities to reduce wastage, but the trust needed to find alternative ways to maximise efficiency.

The drivers for change

Maintaining consistent supply levels largely relied on regular stocktakes often conducted by theatre staff, or notifications from teams if a product could not be located or had run out of stock. This was particularly challenging for high-priced items where the risk of overordering had significant cost implications.

Without real-time inventory data available, it was difficult to accurately forecast product usage. The lack of stock visibility sometimes resulted in products being wasted because they had expired. In addition, it was hard to trace product use and link an item to the patient at the point of use. This added to the complexity of product recalls.



It was also hard to be confident in the exact costs attributed to a particular procedure for a particular patient (so-called patient level costings) and it was even harder to compare those costs for different consultants across the trust's multiple sites.

So in 2014, when the Department of Health and Social Care published the NHS eProcurement Strategy for England, MFT took the opportunity to optimise its procurement infrastructure and implement a new system to improve stock control across its hospital sites.

Centred on enhancing transparency, driving efficiencies, and reducing waste throughout the supply chain, the government strategy promoted the adoption of GS1 and PEPPOL standards to automate the NHS's purchase to pay activities. GS1 Global Trade Item Numbers (GTINs) were required to uniquely identify products and PEPPOL standards to place orders using electronic data interchange (EDI) directly with suppliers via the PEPPOL network.

A blueprint for trust-wide IMS rollout

MFT needed a new inventory management system (IMS) – one that would be capable of holding GTINs and associated information for products supplied to and used by the trust. After reviewing several options, the trust secured Genesis Automation's full inventory system to operate across all relevant sites.

The Genesis system tracks medical devices and inventory from purchase through to usage and offers patient safety benefits with functionality that alerts users to out of date stock or product recalls. It also has significant reporting capability. This makes it possible to use the system to monitor data and establish trends, understand the costs for every procedure performed within theatres, and to explore the costs of unused or discarded products.

To capture inventory usage and patient-level information costings in real time, the trust needed

to capture product data – via the GTIN – directly at the point of care/use so it could be fed into the IMS. To do so, MFT chose to introduce barcode scanning technologies as part of the rollout. Items needed for a procedure are scanned at the point of use to update the live inventory. Product information such as expiry date, lot/batch number, and serial number is held in the system along with stock levels and minimum stock thresholds.

To be sure this process works, the materials management team aims to ensure all products supplied into the trust have a GTIN, making a conscious effort to avoid any items without a valid GTIN.

As well as scanning products before use, the patient ID is captured (via the wristband using the GS1 Global Service Relation Number, GSRN), the staff and surgeon ID, and the time. This means staff can build a full picture of all procedure details for traceability and for analysis.

Initially, the system was implemented as a three-month trial at Royal Manchester Children's Hospital. This was later extended to 12 months to gather data to test the reports to determine patient-level costings. The initial focus was on a couple of specialties which commonly use high value items because this made it possible to best assess the benefits of the new setup. Eventually the project expanded into 16 theatres, expanding to every speciality over a 12- to 18-month period.

Cultural change

The system implementation was one part of the shift to traceability, but it also required a cultural change for the clinical teams. Staff needed to consistently adopt real-time scanning in theatres. The idea was initially met with some resistance as staff were concerned about the time it would take to scan each item at the point of use. However, the product availability data, the reports, and time saving benefits provided the incentive to adopt this new working practice.

Real time inventory data meant staff in the materials management department could better understand what products were being used on a regular basis. Minimum stock thresholds were set up in the Genesis systems to enable automatically ordering once levels were low. This removed the need for manual stock takes by theatre staff.

Subcommittees with lead surgeons were set up to determine what data would be most valuable to which members of staff – for some it was financial benefits; for others, it was patient safety focused. This was then used to generate reports with the information that staff wanted, not what the team thought might be needed.

The benefits and results

1. Product availability, forecasting, and waste reduction

At a cost of almost £1M in inventory, MFT captured nearly 3,000 individual implants through scanning. As well as being able to see what is being used where, it is possible to highlight any areas where there may be potential cases of over-consumption of products.

Automated stock replenishment has reduced the risk of items not being reordered in sufficient time – lowering the risk of them being out of stock when needed for a procedure. This decreases the number of cancelled surgeries and prevents delays to patient care.

The materials management team also monitors expiry dates on a six-month rolling basis and prompts clinical staff to use certain stock before expiration. This has helped the trust to reduce the volume of product waste.

2. Patient safety and product recalls

All locations of inventory held in the IMS have GS1 Global Location Identifiers (GLNs) assigned to them. With lot/serial numbers and expiry dates also stored, product recalls are now processed in a matter of minutes instead of several days or weeks.

Genesis syncs all the item usage into the electronic patient record (EPR) every minute, so the information is available to clinicians in near real-time. If a product recall is issued, a search can be performed in the IMS to identify the product, stock levels, and the location of the stock, so items can be quickly removed from circulation. If already implanted into a patient, it can be recognised in the EPR so the patient can be identified and notified within minutes. Any potential risk of harm can be prevented for others.

3. Unwarranted clinical variation

Tracking product usage has enabled the materials management team to benchmark procedure costs across each of the relevant trust sites. MFT has now standardised kits for most procedures. This means there is less variation in the items used, so eliminating any cost differences. Standardising equipment has also made it easier to share stock between theatres in the event of shortages.

4. Releasing staff capacity

Staff no longer need to conduct manual stocktakes to ensure consistent supply levels. Instead, Genesis' reporting function allows for reports to be generated at the touch of a button. Interfaces have been set up between

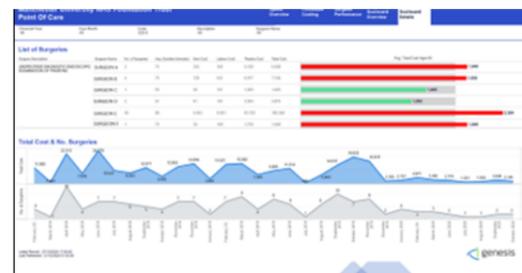


Figure 1

Genesis and various internal and external trust systems – GHX, the trust's cataloguing systems which ensure product process are always up to date, and NHS Supply Chain, to share accurate procedure cost information.

Instead of manually sourcing the relevant information to send via email each week, the procedure reports with product usage and costings can be generated with ease. In MFT's radiology departments, senior nurses would previously spend every Friday producing these reports which can now be done within minutes. This has saved a day's worth of time each week for every senior radiology nurse which can instead be spent on direct patient care.



Figure 2

Embedding traceability throughout the trust

By scanning GTINs in theatres, staff at MFT now have greater insight into product usage, enabling the reduction of waste and releasing clinical time. The trust is also better equipped to monitor supply and demand, to reduce unwarranted clinical variation, and crucially to trace products through to point of use/care, creating an even safer environment for patient care.

The intention is to continue rolling out the IMS and patient-level costing to areas that do not yet have it. Beyond this the project will centre on asset management – tracking medical equipment throughout the trust. The pilot of this will start with high-cost equipment with a view to tracking other key moveable assets such as beds and trolleys. As part of this, staff are seeking to map all remaining locations in the trust using GLNs, so making it possible to accurately track equipment to any location in the organisation.

“We will use it [this data] to drive standardisation in thoracic surgery as well as to measure the financial impact of introducing new procedures when we link in with data such as length of stay and complications for example.”

“I can't tell you how long I have been waiting for this level of quality data!”

Mr Felice Granato
Consultant thoracic surgeon and trust specialty training lead

About the authors



Mark Stevens
Head of Purchase to Pay, Manchester University NHS Foundation Trust

Mark Stevens has worked for Manchester University NHS Foundation Trust for more than 25 years in a number of procurement roles. He currently manages a team that provides a modern and fully integrated purchase-to-pay service including an accounts payable function. With over 100 staff, it is one of the largest and most developed such teams in the country. Mark became a member of the Chartered Institute of Procurement and Supply in 2005 and is currently undertaking a master's degree in leadership. He has spoken at numerous conferences, including the GS1 UK Healthcare Conference, on the importance of developing supply chain management in the NHS.



Jacob Parry
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Jacob Parry has more than five years of experience working for Manchester University NHS Foundation Trust and currently occupies the role of Scan4Safety senior development manager. In this role, he manages a team that is responsible for the maintenance and upkeep of the trust's inventory management system, as well as the roll out of Scan4Safety initiatives to various departments within the trust. He is studying towards a professional diploma in procurement and supply and has a passion for using technology and data to drive better patient care.

About the organisation



Manchester University NHS Foundation Trust (MFT) is one of the largest acute trusts in the UK, employing more than 28,000 staff. It is the main provider of hospital care to approximately 750,000 people in Manchester and Trafford and is the single biggest provider of specialised services in the north west of England. MFT was formed on 1 October 2017 and since then has been responsible for running a family of 10 hospitals across six separate sites, providing a wide range of services from comprehensive local general hospital care through to highly specialised regional and national services. From 1 April 2020 a 10th hospital – North Manchester General Hospital – joined the wider family of MFT hospitals, creating a single hospital service for Manchester. MFT is the lead provider for a significant number of specialised services including breast care, vascular, cardiac, respiratory, urology, cancer, paediatrics, women's services, ophthalmology, and genomic medicine.

www.mft.nhs.uk