

Inventory management

OLVG transforms its stock management system and culture of care

After analysing its levels of stock and associated waste, OLVG decided to make significant changes in its stock management system. Using the Lean Six Sigma managerial approach, OLVG centralised stock management practices across its multiple operating theatres. With GS1 standards uniquely identifying medical devices, the logistics team scans device barcodes to easily capture information such as batch/lot numbers and expiry dates for the hospital's stock system. As devices are used, barcodes are scanned to update stock levels. The stock monitoring system provides the team with products for re-ordering as well as products approaching their expiry dates. With the new system, OLVG has achieved full traceability of devices for highly efficient recalls, a 40 percent reduction in stock levels and significant savings in costs and wastage. And best of all, OLVG employees have peace of mind with complete confidence in their new standards-based system.

By Margret Beliën, Ingeborg Wanrooij and Tanja Zenel



Background

The Sint Lucas Andreas Hospital and Onze Lieve Vrouwe Gasthuis merged to create one hospital called OLVG. With two locations in Amsterdam, the hospital has approximately 1,000 beds and 5,700 employees who care for approximately 500,000 patients each year.

During a 2013 audit in the operating theatres of Sint Lucas Andreas Hospital, the hospital discovered that it wasted a significant amount of stock. The stock management system was not efficient nor effective: There was no up-to-date information about stock levels and employees manually checked stock to determine if items had reached their expiry dates. As medical devices were used, they were registered on paper and scanned into patients' electronic medical records. And in the event of recalls, the process of locating impacted implants was labour intensive and time consuming.

Lean Six Sigma is a managerial approach that combines Six Sigma methods and tools and the lean enterprise philosophy, striving to eliminate the waste of physical resources, time, effort and talent, while assuring quality in production and organisational processes.

A labour-intensive stock management process

To better understand the extent of the problem, OLVG counted all stock manually, which revealed a stock value of €1.4 million, the largest component being orthopaedic implants. At the same time, the level of waste was also analysed. In a three-month period, items worth €30,000 had been discarded and the expiry date had passed on at least 80 percent of items examined.

OLVG decided it was time to improve its stock management system. A business case was developed and, with agreement by the Board of Directors, the hospital started a project in 2014 to make all operating theatre medical devices traceable as part of a new stock management process.

Before commencing, the project team briefed operating theatre employees about its findings and the need for a new process. It soon became clear to them that change was needed. In fact, many of them said that, "If we were a supermarket, we would have gone out of business a long time ago!"

Putting patients first with barcoding

The OLVG decided to adopt the Lean Six Sigma approach as its improvement method, with the specific structure being to define, measure, analyse, improve and control (DMAIC) for

organising quality and efficiency improvements that puts patients first.

One of the team's initial steps was to analyse the current stock management process to identify the problem areas. Based on the analysis, the OLVG team improved the process by simplifying it—removing steps that were not really needed.

In addition, new software was implemented to facilitate the scanning of barcodes on products, linking information back to the hospital's electronic medical record and inventory systems.

While the solution initially seemed straightforward (to scan as in supermarkets), the team quickly realised it wasn't. Many products used in OLVG operating theatres come from different suppliers, using different codes. Not all products had a GS1 barcode with the needed information such as the Global Trade Item Number® (GTIN®), batch/lot number and expiry date. Moreover, it was not clear to employees "which barcode" they were supposed to scan since some packages displayed multiple barcodes.

To make the scanning of devices easier for employees, it was decided to use recognisable yellow labels during the temporary labelling conversion process. The GTIN, batch/lot number and expiry data encoded in a barcode for each product was used on the yellow labels. Price information was added to the label to help increase employees' awareness about the cost of stock, thus promoting the need to conserve and not be wasteful.



By scanning the barcodes, OLVG can easily capture information about implants to keep stock levels up-to-date for improved stock management.



After implementing GS1 standards, the result is

100%

traceability of medical devices in the operating theatres.

OLVG is now rolling out GS1 standards in other departments.

OLVG also approached its suppliers about the value of using GS1 standards on their products with accurate information, complete with the GTIN, batch/lot number and expiry date. To date, approximately 60 percent of suppliers have complied. For the remainder of products, OLVG assigns and applies GS1 barcodes so that 100 percent of medical devices are identified with GS1 standards.

Today, by scanning the GTINs encoded in barcodes, OLVG can easily capture information about implants to keep stock levels up-to-date for improved stock management. The OLVG uses a customised and user-friendly stock monitoring system that provides employees with the products that need to be ordered and which products are approaching their expiry dates.

Centralising stock management

Each specialised operating theatre was once responsible for ordering and managing its own stock. Now, a logistics team is designated to manage stock for all operating theatres with a focus on maintaining a highly efficient stock management process. To do this, the logistics team determine stock levels and orders based on the information they are able to generate from the stock monitoring system. This also means that operating theatre employees are able to fully concentrate on their patients.

To enable the effective management of critical items by the logistics team, the hospital examined the entire range of implants and disposables for each area of specialisation, creating an overview with linkages to minimum and maximum levels of stock. In turn, this effort led to the creation of an ordering plan for each department.

To generate support among employees, the project team showed employees how scanning works, while emphasising the responsibility and benefits it entails. If they failed to scan properly, records would then be inaccurate and stocks not replenished.

With increased awareness and understanding, employees were very enthusiastic about how scanning standards could benefit the hospital, its caregivers and patients. The departments were also positive and anxious to be part of the standards-based stock management system. Overall, the new process brought about real cultural change among the employees at OLVG.



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Traceability, savings and peace of mind

The operating theatre stock management project has been a success, in terms of finance and patient safety results. By using GS1 GTINs, batch numbers and expiry dates encoded in GS1 barcodes, the hospital has achieved the following:

- **100% traceability**
- More than **€100,000 ongoing annual savings**
- **90% less waste** due to capturing the expiry dates; there are now minimal losses as a result of missed sterilisation dates.
- **Clear visibility** of stock levels
- **40% reduction in stock**
- **Automatic ordering** process
- **Shorter time intervals to process stock**
- **Improvements** in operating theatre logistics and collaboration with suppliers
- **Increased cost awareness** among employees
- **Uncluttered workspace** based on Lean Six Sigma principles

Thanks to the new system enabled by GS1 standards, the entire stock management process with traceability has become automated. All items subsequently used during treatments and operations are registered in the system, each under the relevant patient number. In the event of a recall, the hospital is able to determine, with the “push of a button,” which implant was used on which patient.

Moreover, less time is spent on recording information, while stocks remain up-to-date since replenishment recommendations are made upon scanning. There are also clear agreements on who is entitled to place orders. And because employees completely rely on the automated stock system, they now experience greater peace of mind. They are able to safeguard data using a simple and quick method, and since stock management is now in the hands of the logistics team, employees in the departments can focus on their work of caring for patients.

Expanding GS1 standards throughout OLVG

The process has been rolled out across every area of specialisation. In addition, instrument trays are also being scanned. In the future, the hospital would like to scan other products, such as blood products and costly disposables.

Thanks to this new way of working, the hospital has achieved its target: to improve patient safety and stock management along with all of their associated benefits. In addition, it has led to a cultural change that has helped to de-stress the employees. Nonetheless, the OLVG still has one main wish: the use of GS1 standards throughout the healthcare sector.

OLVG lessons learned

- Start with **one product** or type of department.
- **Start small** and grow.
- Select and involve **the right stakeholders**.
- Set **clear objectives**.
- **Communicate** the results.

About the Authors



Margret Beliën is an operating theatre organisational manager at OLVG-West in Amsterdam, the Netherlands. In her role, she is involved with both patient care and logistical matters. She seeks to safeguard patient safety, to ensure that the department runs well, and

to create a pleasant working atmosphere for employees.



Ingeborg Wanrooij is an operating theatre business unit team leader at OLVG-West in Amsterdam, the Netherlands. She is also a Lean project manager at the hospital. Ingeborg is a member of the Dutch knowledge group, “Traceability in Healthcare,” which discusses and

deals with the traceability of medical devices and pharmaceuticals, with the aim of improving patient safety and raising efficiency. In addition to her position of team leader, she also assists other departments with the implementation of GS1 standards.



Tanja Zenel is a logistics employee at OLVG-West in Amsterdam, the Netherlands. She is involved with the logistics process, ordering and stocking implants in the operating theatres. Tanja is a member of the Dutch knowledge group, “Traceability in Healthcare,” and

is strongly motivated to further improve the logistics processes in the hospital.

About the OLVG

The OLVG is a 1,000-bed city hospital in Amsterdam. A leading hospital where patients can go for all types of specialties, OLVG offers healthcare services from examinations and simple treatments to complex interventions. Patients are actively involved in their treatments and get assistance when making decisions. By conducting continuous research and training their healthcare professionals, OLVG takes an active role to provide better patient care for healthier lives. The hospital’s 5,700 employees, with “heart and soul,” care for 500,000 patients each year.

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