



Success case at Vall d'Hebron Hospital

**Safety and Traceability
at the Pharmacy Service
in Vall d'Hebron University
Hospital**

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SUCCESS CASE

Safety and traceability at the pharmacy service in Vall d'Hebron University Hospital.

“The contribution of Lug Healthcare Technology has been crucial in achieving our strategic objectives for the last few years. We have virtually eliminated the risk of error in the preparation and administration of chemotherapy, we have full traceability of intravenous blends and treatment of patients at home and we will have, in my opinion, the best clinical trial management program in the world “

Julio Martínez Cutillas

Chief of Pharmacy of the University Hospital Vall d'Hebron.



Executive Summary

THE CLIENT

Vall d'Hebron University Hospital
Barcelona – Spain
Founded in 1955
www.vhebron.net/es

THE CHALLENGE

The hospital pharmacy scenario, especially in oncology, was becoming increasingly complex because of the variety of treatments and the increase of patients. Antineoplastics are particularly difficult products because of their toxicity, narrow therapeutic range and high cost.

The pharmacy of Vall d'Hebron had to face all these challenges while undergoing an internal transformation process.

THE ANSWER

Lug Healthcare Technology has worked closely with the pharmacy for the past 8 years to develop and install several systems that decisively contributed to a smoother operation of the service.

THE METHODOLOGY

Lug has installed and adapted three different and complementary systems for HUVH:

- LUG Traza - Validation, production and quality control of cytostatic preparations.
- LUG Home Delivery - Personalized medication management at the patient's home.
- LUG Trials - Manager of clinical trials in regard to patients, medicines and documentation.

THE BENEFITS

The Hospital Pharmacy Service of Vall d'Hebron is an international reference in:

- Safety - work with a "zero error" process in the management of cytostatics.
- Comprehensive traceability - in all products managed by LUG.
- Big data - generation of reports of pharmacotechnics, pharmacoeconomics and use of products.
- Economic savings - efficiency in the purchase and use of products.

The client

Vall d'Hebron University Hospital is the largest hospital complex in Catalonia and one of the largest in Spain. It has a team of almost 7,000 professionals and a budget of 579 million euros. Geographically it is located to the north of the city of Barcelona, and its area of influence includes a population of 400,000 inhabitants.

With more than 1,100 beds, the Hospital is committed to a management model that places the patient at the center of its mission. Its model includes teaching and research, which promotes participation in Catalan, Spanish and international research projects. Quality is, therefore, a reference for the professionals of the Hospital, and is why it has earned national and international recognition. It also participates in the initiatives of the Department of Health and the public company Instituto Catalán de la Salud, to which it belongs.

The Hospital encompasses practically all medical and surgical specialties and has assistance modalities that are needed for its coverage, as well as clinical services and clinical support units, university teaching centers, public health service companies, research centers, laboratories and other facilities.

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The challenge

In 2001 the current Hospital Vall d'Hebron was born as a result of the merger of three hospitals that until then had independent operations (General, Traumatology and Rehabilitation and Maternal-Infant).

The context of the hospital pharmacy at that time had some characteristics that made the integration a challenging task, such as:

- Cost escalation caused by the chronification of some very prevalent and expensive pathologies such as cancer or HIV.
- Increased specificity and complexity of oncological treatments, which resulted in an increased risk of error in the cytostatic use process.
- Increasingly demanding management systems that required both quantity and quality of information.
- Technological advances that grew exponentially and offered new alternatives for improvement in processes and results.

The mission of the Pharmacy Service at that time was formulated as “providing support to the care process of patient of the hospital, contributing to the effective, efficient and safe use of medicines and knowledge management, committed to teaching and research.”

According to a study (1) carried out in 23 Spanish hospitals between 2008 and 2011, the error rate of medication administration, excluding time errors and patient information, decreased from 12.6%, 14.8% and 12.8% to 8.6% respectively.

Throughout those four year period different improvement initiatives were applied in the participating hospitals, as their participation in the aforementioned study made them aware of the errors and the importance of controlling them.

Even though, according to different studies (2) and despite the fact that electronic prescription is prevalent in the oncology of most Spanish hospitals, the average error rate when no other improvement measures are fluctuates around 10%. That means that mistakes happen in one in every ten courses of chemotherapy. Even if some mistakes are minor and have no serious lasting repercussions, this level of preventable risk is to be minimized.

Traceability is a fundamental to managing different activities' sectors such as food for decades. “Traceability is understood as the set of pre-established and self-sufficient procedures that allow us to know the history, location and trajectory of a product or batch of products along the supply chain at any given time, using specifically created tools.” Paradoxically, technologies that facilitate traceability have not been adopted for medicines administration in hospitals. For example, it would be practically impossible to trace a possible adverse effect of a medication to a specific batch that has been administered.

Vall d'Hebron University Hospital is an international reference in oncology. More than 45,000 doses of chemotherapy per year are administered to patients by its pharmacy in about 18,000 sessions. In addition, many of these patients are part of clinical trials that pose a management and documentation burden for the hospital pharmacy team.

The answer

In 2008, José María Argüello, a partner and founder of LUG, started working with the pharmacy team, then led by Dr. Josep Monterde, in creating a system assisted by software to improve the safety and traceability of chemotherapy preparations.

Thanks to the involvement of all those who made up the service and its high level of knowledge on the management of cytostatics, by the end of 2012 the first version of LUG Traza was fully operational, which included the validation of the oncologist's prescriptions, supply of the laminar flow cabin, production of preparations, quality control, dispensing and administration in day hospital.

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The methodology

A retrospective study was carried out at the HUVH in Barcelona to evaluate the rejection data of preparations in a quantitative quality control.

Records of the preparations elaborated with this system were collected from April 2012 to March 2013 from the database of the production control and traceability system, showing which did not exceed the quantitative control and required the intervention of the pharmacist.

Data were extracted from 27,172 preparations, of which 99.47% (27,028 preparations) passed the quantitative quality control check. Only 144 preparations were retained, accounting for 0.53% of the total. Of these, 107 were accepted by the pharmacist and 37 had to be repeated.

Since then the system has worked according to planned with a very low level of incidents. All the personnel involved emphasize the peace of mind brought by unparalleled quality control "not being able to make mistakes". In addition, it provides a series of characteristics that, for the pharmacy service, currently led by Dr. Julio Martínez, make it unique:

- There is no need to re-label product vials: LUG TRACE is the only system on the market to identify each vial with its contents (including the batch number). This facilitates the work and avoids the possibility of human error.
- Interfaced with all hospital systems: all LUG computer developments are carried out in accordance with the international health standards HL7. This makes interfacing with electronic prescription programs, warehouse management software, clinical history, management software, and billing easy.
- Convenience for the technician in the laminar flow booth: interaction with the software is done through a voice recognition system, which allows hands free control. In addition, the design of the cabin has been adapted to have a screen, precision scale, bar code reader or label printer for preparations, ensuring safety and ergonomics.
- Reduction of the consumption of medicines: thanks to the improvement of efficiency in the processes and the greater control of residues and stabilities, an extra saving was obtained, estimated at around 10%, which is achieved with the control of manual utilization .
- Customization: from the beginning we work on continuously improving the applications in use and on the incorporation of new functionalities towards meeting the needs and demands of a pharmacy service in continuous evolution.

Another substantial improvement for the HUVH pharmacy service is the LUG Home Delivery project, which currently delivers at home drugs to 60 eligible patients. LUG's contribution in this area consists of the development and maintenance of software that allows the hospital to introduce a special order of dispensing, validated by the pharmacist, of medicines based on the electronic prescription, covering a period of time of several months. The program manages the orders with the laboratory or logistics provider, generates partial delivery orders and records all the information of the process with total traceability. The hospital decreases the frequency of outpatient pharmacies, guarantees the delivery of correct medication doses to each patient and, once again, obtains valuable information for the management of both the medical care and the pharmacy service.

Thanks to the improvement of efficiency in the processes and the greater control of residues and stabilities, an extra saving of about 10% was obtained, which could be estimated at around 10%, which is achieved with the control of manual utilization.

Early in the development of the system for the preparation of cytostatics arose the need to manage the process of clinical oncology trials. Thus, in 2009 Tri-Trials, a comprehensive management software for clinical trials in the hospital environment was developed. Today it is considered one of the best softwares of its kind.

It involves a thorough control of all steps that take place in the process, from the documentation control of the trial to the dispensation / administration, through production. It allows the agile and accurate management of the recruitment and treatment of patients, complying with the requirements of the trial and in line with the requests or recommendations of the oncologist.

Improvements achieved with LUG Trials:

- Ensure the correct development of the clinical trial according to the protocol of the same and fulfilling the BPC.
- Control of critical test points at the pharmacy to avoid unnecessary delays and costs such as the destruction of medication or the movement of personnel involved.
- Active and passive integral traceability of the entire process and automatic generation of the necessary follow up reports for each involved party (promoter, manager, pharmacy, etc.)

The benefits

The main benefit is certainly safety for patients, both in the preparation of intravenous chemotherapy and in the medication of patients at home. Hospital Vall d'Hebron has the guarantee that what is prescribed by the doctor and validated by the pharmacist is what the patient actually receives.

Integral traceability also has many advantages. It facilitates the management of a drug-related adverse effect but also helps to manage the stock and all logistical aspects of products more efficiently and easily.

All the information is collected in the system, which is gradually becoming part of a dataset that will benefit both doctors and pharmacists, laboratories and patients themselves.

Finally, greater efficiency in management leads to economic savings. The different LUG systems allow a greater use of the product remains, more control over stabilities or expiration and efficiency in the treatments.

All the information is collected in the system, which gradually becomes "big data".

Conclusions

Vall d'Hebron University Hospital has a pharmacy service that is a benchmark at an international level and adopts the highest quality standards and technological advantage in the world.

With the help of Lug Healthcare Technology, not only has it overcome the challenge of integrating three hospitals, it has also done so by increasing its capabilities and providing its internal and external customers with a high quality service.

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