

Poland

The unique and automated identification of pharmaceutical products to improve patient safety and treatment costing at the Regional Hospital, Poznań

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| <p>Challenge</p> <p>Year on year, the hospital has been generating a negative financial result, so one of the initiatives aiming to improve its financial standing was the analysis of the cost of use of medications per ward and per patient – its second largest cost.</p> <p>Approach</p> <p>One of the first decisions was to begin implementing barcodes in the issuing of medication. The application of automatic data collection methods in the hospital's logistics plays a crucial role in the process of streamlining the selected intra-hospital logistics processes, which also contributes to improving the hospital's economic efficiency.</p> | <p>15''</p> <p>The time needed to process a single patient daily was reduced by 15 minutes</p> | <p>Doctors can also use the analysis of the administered medications quantities doses and costs as the basis for effective pharmacotherapy</p> |
| | <p>Scanning of GS1 barcodes eliminates the need to search the IT system's database manually for medications</p> | <p>staff can quickly access the cost of medications administered to a patient</p> |



The Regional Hospital in Poznań, Poland has been active since 1973 and is a multi-discipline hospital providing comprehensive care and complete diagnostics. 27 wards and 16 outpatient clinics operate across all locations of the hospital, with 1500 staff employed. The mission of the Regional Hospital in Poznań is to become the leader of the healthcare market in the Wielkopolska region.

Anna Anders

As part of a plan to reduce costs, the hospital analysed the breakdown of operating costs, along with percentage share:

| Cost structure | Percentage share |
|-----------------------------------|------------------|
| Staff | 62% |
| Medications and medical materials | 19% |
| Non-medical materials | 2% |
| Outside medical services | 1% |
| Outside non-medical services | 6% |
| Depreciation | 5% |
| Miscellaneous | 4% |
| TOTAL | 100% |

Year on year, the hospital has been generating a negative financial result, so one of the initiatives aiming to improve its financial standing was the analysis of the cost of use of medications per ward and per patient – its second largest cost. One of the first decisions was to begin implementing barcodes in the issuing of medication in their transplantology ward. Previously the hospital's logistics were supported with a specific, dedicated IT-solution. The application of automatic data collection methods in the hospital's logistics plays a crucial role in the process of streamlining the selected intra-hospital logistics processes, which also contributes to improving the hospital's economic efficiency.

A standard way of working

In the face of various healthcare-related technical and technological solutions, a need had been identified for standardised communication methods for collecting, aggregating and sharing information in the most effective and efficient manner. Internal solutions that have been popular for many years, are now being replaced by standardised solutions that have been tried and tested in other industries, and that are proven to work across the healthcare supply chain. Both healthcare facilities and patients are no longer viewing the application of these solutions just as the source of competitive edge, but also as a way to reduce operational costs, as well as reduce the costs of patient services. Since automatic data collection technologies and GS1 standards greatly reduce the errors from the use of the wrong medication, hospitals also avoid additional costs related to the prolonged treatment of patients.

Additionally, there are a number of legal regulations that encourage the implementation of barcode scanning, such as:

- The requirement to follow the flow medications, including the production batch.
- The readiness to efficiently withhold or withdraw a medication from the market.
- The requirement to collect pharmacotherapy data in electronic form.
- The verification of authenticity of medications.

Scanning barcodes in hospitals helps satisfy these legal requirements and reduces the number of activities the staff must do manually, such as the recording of data related to medical devices. With that in mind, the hospital's board decided to extend the scope of the pilot project to also include legal requirements. This approach means that the project is not treated as an isolated idea, but as a way to improve the whole hospital's way of working.



Streamlining the process

The project's fundamental aims were:

- Quick access to information on the cost of medications administered to a patient.
- Streamlining the process of administering medications.
- Accurate and automatic identification of medications and patients.
- The elimination of manual data entry that may lead to errors.
- Easier record keeping of the administered medications.
- Improved performance and patient safety.
- Releasing nurse time back to care.

The use of barcodes in the automated record keeping of medications distributed to patients is important on many levels. It gives hospitals quick access to an accurate cost of treatment for a patient and to the batch number of the medication administered. Barcode scanning allows hospital staff to automatically follow the flow of medications, so that medications withdrawn at the Chief Pharmaceutical Inspectorate's request can be quickly located and withheld or withdrawn from the hospital's stock. Also, it allows the hospital to prepare, more efficiently and effectively, for the requirements of Electronic Health Record technology and to confirm the authenticity of medical products in line with the Falsified Medicines Directive.

Barcode scanning can be implemented at many points in the medication journey, starting from the generation of an order at the supplier by the hospital's pharmacy, through recording the acceptance of medications to the hospital's pharmacy, picking the ward's requested medications, recording the acceptance of medications to the ward, picking the medications for the patient and ultimately the automatic recording of the administration of the medications to the patient. It can be difficult to know where to start so the hospital decided to begin with one of its wards, namely the transplant, general surgery and urology ward. The first step of the project was to join forces with the Institute of Logistics and Warehousing and GS1 Poland. Due to the numerous technical and staffing problems, and given the benefits of the application of GS1 standards, we opted not to follow in the footsteps of other hospitals who apply internal code stickers onto packaging, but rather to use GS1 manufacturer codes for the purpose of recording the administration of medications. Since the age of the hospital's ICT infrastructure affects the ability to scan barcodes to the highest degree, it also needed

to be checked from the perspective of its ability to read GS1 barcodes. To ensure the implementation would be efficient, effective and useful from the point of view of the hospital's staff, the IT system needed to work with GS1 standards in order to take the burden of administrative work away from staff. Personnel also needed to be equipped with barcode scanners and wireless internet access, so that scanning can take place wherever needed, at the patient's bedside for example.

Once this was established, the implementation began with the creation of maps to show the sequence of processes related to the flow of medications in the hospital's pharmacy and wards. The pilot process was preceded by general analysis of the process of providing services to the patients and the identification of any bottlenecks related to the distribution of the medicines. This top-down approach gave an overview of the whole process, making it easier to identify potential efficiencies across all the different organisational units in the examined hospital. We also used these maps when we engaged with the IT provider handling our hospital management system.

The new process was designed with the help of the staff who would actually be using it. A weakness of many hospital implementations is when IT companies fail to take into account the specific needs of the hospital they are working with, missing out on key efficiency gains that a hospital may be able to make. The IT system itself should be configured to assist staff in their ultimate goal - treating the patient as best they can. As much as possible, the aim of the new process was to eliminate the manual input of data or the duplication of work.

The project's subsequent stages covered:

- The evaluation of basic data about the medications and its accuracy.
- Arranging, with the hospital's pharmacy, the schedule of distributing the medicines to the ward.
- Inventory taking of the medicines in the ward and the evaluation of the level of availability of standard barcodes on their outer packaging.
- Training for nurses.
- Beginning the implementation in the ward.

Significant support from our IT department was required for the first few days but it has enabled nurses in the transplantology ward to record the distribution of medications among patients using barcode scanners, our IT system and GS1 standards. This process is planned to be implemented in more wards in our primary location in 2019.



Using data to reduce costs and return time to care

Most importantly, the implementation made it possible to quickly access the cost of medications administered to a patient, which will provide measurable benefits when analysing the ward's results, the patient outcomes, and when working with the Agency for Health Technology Assessment and Tariff System. Doctors can also use the analysis of the administered medications, quantities, doses and costs as the basis for effective pharmacotherapy. Nurses' jobs are made easier as the scanning of GS1 barcodes eliminates the need to search the IT system's database manually for medications. GS1 standards also made it possible to eliminate barriers stemming from the use of foreign languages, name conventions and indexes, which usually need to be adjusted and translated. The use of international GS1 data structures, where the meaning and structure of the data for trade and administrative processes is clearly defined, is beneficial from the point of view of the hospital's economic efficiency.

The application of barcodes in the Regional Hospital in Poznań served to streamline the process of administering medications.



It has improved cost effectiveness, increased patient safety and made the job of staff, especially nurses, easier by eliminating the need to input data manually, which can cause errors and prolong the activity.



It has been proven that the time needed to process a single patient, daily, was reduced by **15 minutes**, meaning that medical personnel can focus more on other tasks, which are further streamlined thanks to the introduction of the standards.

About the author



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Anna Anders was the deputy financial director in the Regional Hospital in Poznań. She was responsible for financial reporting and the development of controlling processes, along with the introduction of operating reporting dedicated to specific areas of the hospital's activity.



About the organisation



The Regional Hospital in Poznań is a multi-discipline hospital providing comprehensive care and complete diagnostics. The hospital currently has 1,500 employees, 27 wards and 16 outpatient clinics. The mission of the hospital is to obtain a leading position on the healthcare market in the Wielkopolska region. The Regional Hospital in Poznań accomplishes this target by focusing on the high quality of services provided, meeting expectations and satisfying the individual needs of each patient, including compliance with his rights.

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