

Denmark

The right medicine for the right patient: GS1 barcodes improve logistic efficiency and patient safety

Denmark's Capital Region Pharmacy moves approximately 20,000 medicine units securely through a central warehouse on a daily basis, and delivers them to 10 hospitals in the Capital Region of Denmark. In order to perform these logistics efficiently and successfully, there must be an extremely efficient system in place. The Capital Region Pharmacy has implemented requirements of zero-error picking and swift delivery, and has made GS1 barcodes an integral part of the needed processes. The next link in the medicine value chain, dispensing medicine to patients, also requires unwavering certainty, which is why the same barcodes are used in hospital medicine rooms where a verification of "the right medicine for the right patient" takes place by scanning the package barcode. If the industry did not agree on the use of a common standard, such as GS1 for the pharmaceutical industry, the work would be considerably harder, and patient safety would be negatively impacted.

By Viggo Nielsen



Background

Denmark is divided into five regions each with its own political management. The regions' largest sphere of responsibility is public healthcare, including the running of hospitals. The Capital Region of Denmark is the largest of the five with a population of around 1.7 million people. The Capital Region employs some 36,000 people and its annual net operating budget is DKK 36 billion.

Medicine is a significant element of hospital treatment and roughly half of all medicine is used to treat patients in hospitals. The other half is the medicine sold to individuals at privately-run pharmacies. Medicine use in the Capital Region amounted to DKK 3.1 billion in 2014, corresponding to 4.6 million individual medicine packages.

The Capital Region Pharmacy was established to serve as a central hub for supplying medicine to hospitals and institutions in the Capital Region.

Challenge

The logistics process is vital – round the clock

The logistics process must support 24/7 access to the right medicine for the clinics and thus for patients. This makes **efficiency, quality** and **reliability** important factors.

A product can be visually identified by reading text, item numbers or other types of identifying information. However, this method is far from certain as many products are very similar, and the essential and critical information is often allotted a tiny portion of the total space on packages.



Medications in hospital pharmacy

Branding and design are often higher priorities than reliable identification.

Stakeholders in the medicine value chain

By viewing the medicine's journey as an end-to-end process from manufacturer to patient, it becomes clear that many independent stakeholders are involved: manufacturer and packaging developers, pharmaceutical wholesalers, hospital pharmacies, and doctors and nurses, which is the most important as they deliver care directly to the patient.

During this journey, there is a need to identify the product at least once in every link in order to constantly ensure that it is the correct medicine, which is being moved along the value chain.

Using barcodes as a tool in these many links requires the barcode to make sense to the relevant stakeholders. The manufacturer must be able to configure and print the barcode in order for it to generate value throughout the supply chain.

Solution

The logistics process

GS1 standards provide many solutions to address the challenges. The manufacturer prints an

unambiguous barcode on the packaging, either a linear barcode (EAN-13) or a 2D barcode (GS1 DataMatrix) which include a Global Trade Item Number (GTIN). The barcodes are reported together with other product master data when the product is listed. In Denmark, this function is managed by Amgros I/S, which is a joint procurement company for all Danish hospital pharmacies.

The pharmacy's enterprise resource planning (ERP) systems have inbuilt controls which verify the relevant packaging ID by scanning the packaging barcode at critical points.

The first point is during the medicine receiving process, and putting the product in storage, where it is important to place the product at the right location in the storage facility. This process also enables a quality assurance check of the product barcode. A recent survey showed that about 90 % of the 400 most common products can be scanned without problems.

When the products are extracted for delivery to the pharmacy's customers, for instance the hospital medicine rooms, picking accuracy is obviously important for ensuring delivery of the right product. When the goods have been delivered to the right storage location, the deliverer verifies the product by scanning its barcode and quantity.

Benefits

What value does the barcode create for logistics?

Value is generated at two levels:

- The process is significantly **faster** and can be completed by one person, as the prescribed control takes place using the ERP system and data capture. The alternative to this process would be to control it by another employee.
- The process is **safer** as a correctly placed barcode on the packaging combined with the correct master data is 100% reliable.

After delivering the right medicine to the medicine rooms, patients are next in line to receive the medicine.

Medicine room and patient safety

This task involves three stages:

- **Prescription** where (usually) a doctor decides on the medicine and dose to be administered to the patient. The prescription is documented in the medical records.
- **Dispensing** where a nurse takes out the prescribed medicine and ensures that it conforms to the prescription: the right medicine for the right patient in the right quantity.
- **Administration** where medicine is given to and taken by the patient.

In many ways, the dispensing process is similar to the process undertaken at the pharmacy's central warehouse. The packages are the same. The right medicine must be identified and verified by means of a control procedure. In the medicine room, the control also takes place by scanning the packaging barcode, which involves verifying the scanned data against the prescription registered in the medical records. Master data is constantly synchronised and updated between the pharmacy's ERP system and the medical records system.

Conclusion

GS1 standards offer a unique opportunity for practical application of a data standard that make the medicine value chain safer and more efficient. It provides a standard that identifies the entity, a barcode that captures the information – in linear as well as 2D format – and a way to share the data among each stakeholder of the value chain.

The entire pharmaceutical industry supports the use of GS1 standards, which is a considerable breakthrough and is needed for widespread industry adoption and for all stakeholders to receive the benefits related to logistics quality, efficiency and higher patient safety.

Efforts are continuously invested in engaging the manufacturers whose products have not yet been supplied with barcodes, and barcodes will be mandatory on primary as well as secondary packaging in the future.

With the future initiatives such as the EU Falsified Medicines Directive, the barcode will become even more important to ensure the authentication of all drugs sold in Europe as well as open up for data capture of lot numbers and expiration dates.

About the author



Viggo Nielsen is currently Supply Chain Manager at the Hospital Pharmacy of the Capital Region in Denmark.

He leads the operations of centralised supply functions (warehousing and distribution) of 4.5 million packages of medicine. Prior to working for the Capital Region of Denmark, Viggo has been working 25 years in supply chain management in the FMCG sector. Viggo is a member of GS1 Denmark's advisory Board, and is involved in 5 working committees for adapting EDI standards in Denmark. He has also been the first to introduce EDI for ordering and invoicing in Denmark. Viggo holds B.Sc. in business economics.

About the Capital Region

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