

Healthcare provider implementation

Reliable medication processes for enhanced patient safety

Today's hospitals face ever-growing performance, competitive and cost pressures. As a result, innovation in healthcare processes is playing an increasingly important role when it comes to patient safety and satisfaction. To consolidate and automate their processes for more effective patient treatments and care, the hospitals of medius KLINIKEN use solutions provided by Agfa HealthCare based on globally recognised GS1 standards. The medius KLINIK Nürtingen has improved patient safety practices with help from a new approach of barcode-based medication workflow. The medication administration process is now more transparent than ever before. In addition, medication preparation and dispensing processes can be carried out far more efficiently while minimising the error rate.



By Gertrud Türk-Ihli

Major key for success

Digital transformation: Businesses in all industries are investing more and more in new technologies and solutions to automate and enhance their processes. Regarding digital trends in healthcare, the *Wirtschaftsindex DIGITAL (Digital Economy Index)* study¹ conducted by TNS Infratest on behalf of the German Federal Ministry for Economic Affairs and Energy concluded that the healthcare industry is currently "well below average" in terms of its level of digitisation. Yet according to the survey report, *Digitisation in the healthcare market*,² by the Deutsche Apotheker- und Ärztebank, digital developments will be a key driver of structural change in the market and an increasingly important factor in being able to successfully compete in the future.

¹ <https://www.tns-infratest.com/presse/pdf/presse/2016-10-20-zentrale-ergebnisse-monitoring-report-wirtschaft-digital-2016.pdf>

² <http://360grad.apobank.de/studie-analyse/>

Treatment quality is a key priority

The need for digitised solutions in the healthcare industry is becoming ever more apparent. There is a pressing demand for practical approaches and solutions that can be efficiently and flexibly implemented. medius KLINIKEN recognised this challenge as a group and reacted accordingly. Based in the district of Esslingen, medius KLINIKEN gGmbH is a hospital group with three hospitals, 1,073 beds and a staff of 2,600. Since 2001, the group has worked closely with IT experts from Agfa HealthCare to implement and use ORBIS in its hospitals as both a hospital information system (HIS) and as a medical and clinical documentation and process management system, including ERP. The system covers all departments and allows hospital processes to be efficiently managed.

Establishing a high-quality treatment workflow by digitising processes is of the utmost importance for the hospital group. However, achieving this goal is not just about implementing powerful technologies and systems, the processes should also be perfectly integrated and flow seamlessly from one to the other.

To this end, medius KLINIK Nürtingen wanted to implement a closed-loop medication management system—from computer-controlled prescription and validation by the pharmacist to dispensing and administration at the patient's bedside—with the least amount of resources while maximising efficiency. To optimise all workflows, the hospital decided to use GS1 standards. GS1 standards, specifically identification codes, can be encoded in barcodes that can then be applied to products' packages. When the barcode is scanned, all key information about that specific product is provided to the user and can be efficiently managed. Barcode scanning significantly increases convenience and ergonomics when it comes to monitoring medication processes, making them more transparent and standardising workflow throughout the organisation, as well as subsequently documenting them.

"The GS1 Global Trade Item Number® or GTIN® has been a familiar sight in both the clinical and materials management fields for several years now," says Gertrud Türk-Ihli in the medius KLINIKEN Information and Medical Technology Department. "The Global Service Relation Number (GSRN) seemed to be the most appropriate choice for uniquely identifying patients and employees, because it guarantees a unique and non-overlapping allocation of patient-related services."

Barcode-based medication at the patient's bedside

When combined with the Service Relation Instance Number (SRIN), the GSRN can be used to unambiguously identify the individual dose and medication dispenser (e.g., the patient's tablet box), for a specific daily medication. This workflow that relies on GS1 standards has been in place at medius KLINIK Nürtingen since mid 2016.

Dispensers are prepared for the next day's administration of medications by the responsible hospital staff. The new GS1 standards-based system makes the medication allocation process significantly more efficient, especially since differentiating between medications is becoming increasingly difficult these days. "It was once possible to identify tablets based on their characteristic colours and shapes," explains Türk-Ihli. "Now, it is almost impossible to distinguish between the array of medications that share the exact same colour and form. GS1 standards and the performance of automatic comparisons help reduce possible errors in this area."

At medius KLINIK Nürtingen, labels are applied to the dispensers that carry the GSRN and SRIN encoded in a GS1 DataMatrix barcode. When the dispenser is scanned, a medication overview for the patient and the specified date is displayed. At a glance, this shows what the patient has been prescribed and what dose of which medicine should be administered. The nurse then scans the pharmaceutical registration number (PZN) on the medication package. An automatic check is performed to ensure the medication and prescription correspond with or "match" each other. The dispensers are then loaded. Once complete, the certified nurse scans his or her ID badge to document specifically who dispensed the medication. It is also possible to scan an additional ID badge to record the presence of a supervisor.

"The two-man rule has been a key aspect of our procedures for many years," says Türk-Ihli.

““ At the same time, our new processes and standards have helped strengthen this practice, enabling us to provide our patients with an extra layer of reliability. This is also in keeping with our commitment to implement the greatest possible safeguards for patients and staff.”

Gertrud Türk-Ihli, the medius KLINIKEN Information and Medical Technology Department.

For several years, medius KLINIK Nürtingen has used mobile "thin client trolleys" with a 24" screen, a battery life of over 12 hours, disinfectable keyboards, tablets—basically everything required to meet the needs of a mobile digital hospital routine. The hospital staff can use the trolley to scan the medication dispensers directly at the hospital bedside and perform a final check to see if the prescription has changed.

First, the nurse or caregiver scans the patient's wristband in order to verify the patient's identity and then scans his or her ID badge to document who issued the dispenser. By using a GS1 standards-based barcode, medius KLINIK Nürtingen is able to standardise and optimise its associated processes. "It was possible to integrate the existing system for identifying staff and patients without problem," comments Türk-Ihli.

“The scanner support integrated into the ORBIS system permits an active interpretation of different codes via GS1 support. Moreover, the use of standards is essential for unambiguously allocating materials, medicines, patients and services.”

Close cooperation fuels project success

The administration, staff and patients at the medius KLINIK Nürtingen have been very impressed with the GS1 standards project at their hospital. It takes just one scan to uniquely identify both the patient and the medication.

“We believe this project serves as a role model for other German hospitals,” says Türk-Ihli. “The quality of documentation has improved and the efficiency of our processes has increased. It has reduced the incidence of adverse side effects and drug interactions. To a significant extent, the success of the project is due to the outstanding cooperation between the parties involved. Clinical experience, input from Agfa HealthCare as well as the expertise of GS1 Germany—all merged to create a truly successful outcome.”

Safe processes, batch-specific traceability and real-time authentication of medicines

Thanks to GS1 standards, the medius KLINIK Nürtingen has been able to introduce an unambiguous system of identification in its medication process.

What are the hospital's plans for the future? Türk-Ihli advises that current staff and patient barcodes will be transitioned over to use GS1 standards at all hospitals. In addition, with the future availability of medication barcodes with supplementary batch, serial number and expiration date, this data will be used along with patient-related data, too. This will make it possible to perform more than just batch-specific traceability of medication to the patient. The GS1 DataMatrix will simultaneously contribute to making documentation more accurate.

Starting in 2019, nearly all prescription medicines ought to carry a GS1 DataMatrix barcode that will additionally support the authenticity of the



Dispenser with the GS1 DataMatrix barcode.

medicine to be verified. This is stipulated in the European Union's Falsified Medicines Directive 2011/62/EU. The hospitals of medius KLINIKEN are well prepared for the introduction of the new regulation with their barcode-based medication workflow.

“Individual doses, such as infusion solutions, drops and injections, are all labelled with the GSRN according to the five patient's rights, which are displayed on the label. Anyone who wants to be successful and stay ahead of the competition in today's world has to exploit the technical possibilities that are available. Agfa HealthCare and GS1 Germany are supporting us in doing just that,”

Gertrud Türk-Ihli, the medius KLINIKEN Information and Medical Technology Department

Outstanding cooperation

In recognition of their exemplary project for the well-being of patients, medius KLINIKEN and Agfa HealthCare received the GS1 Healthcare Award 2016 in the category of “business cooperation.” The award recognises successful partnerships and honours achievements that lead to greater patient safety and more efficient processes in the healthcare industry, thanks to close cooperation between medical service providers and the industry.

About the Author



Gertrud Türk-Ihli is with the medius KLINIKEN Information and Medical Technology Department. She is a qualified nurse, studied nursing management and graduated as a healthcare manager. Gertrud worked in the Information and Medical Technology Division, clinical IT systems, Module Customising

Department of the Kreiskliniken Esslingen gGmbH. She is a member of the German Society for Clinical Process Management.

About medius KLINIKEN

medius KLINIKEN is an affiliation of three hospitals located in Kirchheim, Nürtingen and Ruit that has a combined total of 1,073 beds and 2,600 members of staff, making it one of the largest academic teaching hospitals of the University of Tübingen. In keeping with its slogan, “Vertrauen.Können” (“Trust.Ability”), medius KLINIKEN strives to offer humane, local and competent medical services for the people living in the district of Esslingen. Its goal is to establish hospitals as centres of medical excellence and provide a welcoming environment for patients. The various hospitals are home to powerful medical technology, pleasant accommodations, modern infrastructure and people who offer personal and individual diagnostic services, therapies and nursing care.

www.medius-kliniken.de

About Agfa HealthCare

Agfa HealthCare is one of the leading suppliers of diagnostic imaging and computer-assisted healthcare solutions for use in hospitals and healthcare facilities around the globe. As a major player in the market for diagnostic imaging systems, the company offers analogue and digital technology as well as IT solutions that cater to the requirements of specialist doctors. Agfa HealthCare also ranks among the top suppliers of IT systems to the healthcare industry, with solutions for integrating the administrative, finance-related and clinical workflows of individual hospitals and hospital groups.

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The Germany GS1 Healthcare Award Winner 2016.