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DDS Pharmacies optimise clinical care and improve elderly patient safety through GS1 Electronic Data Interchange

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Abstract

By using global standards for electronic business messaging for rapid, efficient and accurate automatic transmission, the use of GS1 Standards has helped pharmacists, general practitioners and nurses in the Netherlands to safely treat patients who live in nursing homes or at home. The newly implemented GS1 eCom Standards improved the ordering process between the dispensing pharmacies and the patients' community pharmacy, paving the way for new patient safety and logistic opportunities.

The Unit Dose Dispensing System

The unit dose system of drug distribution is a pharmacy-coordinated method of dispensing and controlling medication in organised healthcare settings [1]. Unit dose dispensing systems are in place to provide patient-specific, individually packaged medications, which minimise nurse/caregiver product manipulation. These unit doses of medication are dispensed with individually labelled bar code packaging to enable nurse scanning of the medication at the bedside prior to administration.

The DDS pharmacies

In the Netherlands, Dose Dispensing Systems (DDS) are increasingly implemented in healthcare facilities. DDS support pharmacies with the distribution of patient specific medication at home, in nursing homes, institutions and hospitals.

Small packs are filled with one or multiple tablets for oral use and are prepared for each patient. These individual packs are prepared for a week's worth of medication. Each pack contains medication for one intake time and carries the following printed information:

- patient data to identify the right patient,
- date and intake time,
- name of medication and number of tablets, and
- description of tablet appearance.

Due to aging population, unit dose dispensing is becoming increasingly important in the Netherlands, in both (elderly) home care and in institutions. According to the total number of "invoices" to the insurance companies, in 2009, only 26% of all invoices were for a unit dose dispensed medicine. This percentage has grown to 40% in 2013 [2].

The process in a DDS-enabled pharmacy: from goods receipt to production of week packs. Source: Alliance Healthcare Nederland

1 American Society of Hospital Pharmacies http://www.ashp.org/
2 SFK http://www.sfk.nl/

Still, a drug can be very effective, but will be of little use if not taken properly. Medication management becomes more important as people grow older and stay in their homes until an advanced age. Older people at home or in nursing homes often take multiple tablets at multiple times during a day, which can cause confusion about when to take which medication and in what dose.

This is where a DDS can help. Numerous studies concerning unit dose DDS indicate that they are:

- safer for patients, reducing the incidence of medication errors, and
- more efficient and economical for the organisation dispensing them.

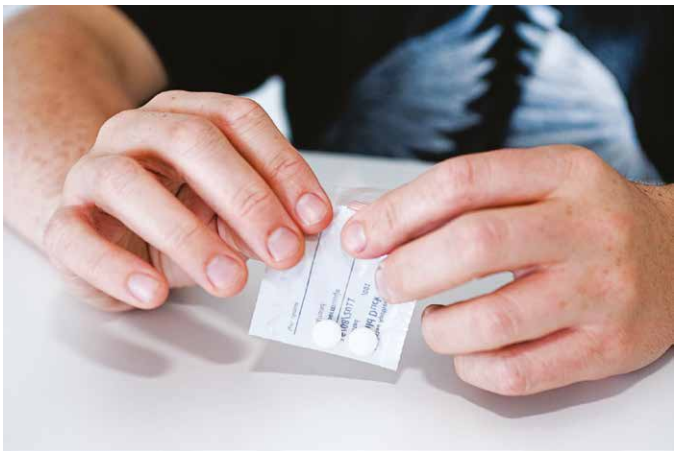
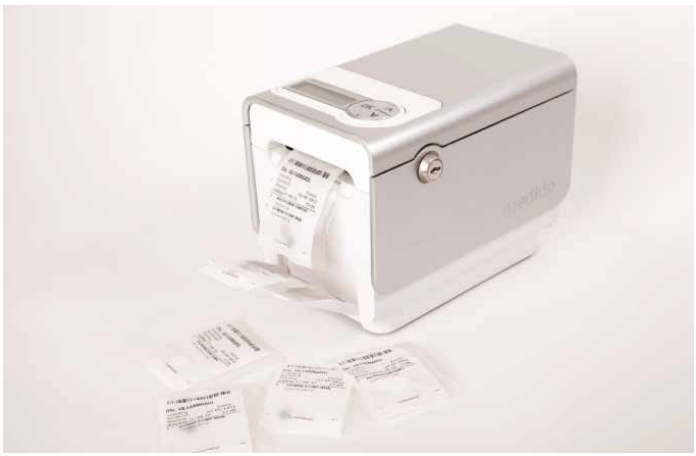


Figure 1: patients labels e. Source: Mediq Systemfarma



Medimo, an electronic dispenser of packs for patients treatment at home. Source: Mediq Systemfarma

Community pharmacies make use of DDS by ordering from specialised pharmacies called DDS pharmacies. In the past, the ordering process had limited functionality and did not rely on GS1 Standards.

Pharmacies and DDS pharmacies expressed the need to enhance their functionality to better support their processes. At the same time, new developments such as the Medimo, an electronic dispenser of packs for patients at home, generated the need to improve the current electronic message used in the ordering process.

GS1 Standards will optimise patient identification and delivery process

GS1 develops and maintains the most widely-used supply chain standards system in the world, including Electronic Data Interchange (EDI) standards – also known as GS1 eCom. EDI allows rapid, efficient and accurate automatic electronic transmission of agreed-upon business data between trading partners.

EDI now allows for a DDS order and DDS order response, based on the GS1 eCom standards for order and order response with the use of Global Trade Item Number (GTIN) identifying each drug and Global Location Number (GLN) identifying the physical location of the drug and/or the legal entities (nursing home, pharmacy).

More functionalities have been introduced in the new ordering process. For example, the opportunity to add extensive patient and medication specific information supports administration of medication. Also, specific delivery information, such as "Delivery through back door" or "Please ring bell for a long time" makes deliveries easier and ensures the patient receives his medications on time.

Some medication need a certain method of administration, such as laying down for a time period after taking it or ensuring the medication is taken with liquid, so another important functionality was added to the ordering process: the ability to include dosage and recommendations for safe use.

An additional improvement linked to the implementation of EDI is that it offers more space for patient name and address information making the information complete on the address label.

Furthermore, new developments in the market around DDS, such as Medimo, an intelligent electronic dispenser of unit dose packs for patients at home have increased the need to implement GS1 Standards to uniquely identify the products and patients and have accelerated the requirements.

The order response is also a new feature in the process, which provides pharmacies with information on the delivery of the ordered medication. The DDS pharmacy communicates to the community pharmacy which medication will be delivered and which cannot be delivered if the medication is out of stock. This results in less manual processes (such as telephone calls) and improves efficiencies.

In addition, the order response contains information per patient on the medication to be delivered, for example the number of tablets that need to be taken at specific times and dates, and, if necessary, a reason for a substitution. Furthermore, non dose dispensed medication information can be sent to the pharmacy. This helps the administration of all remaining medication.

Staged implementation at DDS-pharmacies network

Through a collaborative effort launched in 2012, the DDS Pharmacies Network asked GS1 Netherlands to implement GS1 Standards for the ordering process to be used between community pharmacies and DDS pharmacies. The goal was to establish "a communication standard for the whole care chain" to support efficient, better and safer patient care.

A pilot of this effort will run during the fourth quarter of 2014, with broad implementation in the Netherlands expected to be completed in 2015.

About the Authors

Arnaud Septer has been a pharmacist since 1999. He has previously worked as a community pharmacist in three different Dutch pharmacies. In 2010, Arnaud moved on to work in a DDS pharmacy, Mediq Systemfarma, Sliedrecht. His job responsibilities at Mediq Systemfarma are IT (pharmaceutical), quality assurance and procurement.

Chris Sindhunata graduated from the University of Amsterdam and has been a pharmacist since 1987. During the first 20 years of his career, Chris worked in a community pharmacy in Alkmaar. In 2002, he co-founded and became the managing director of the DDS pharmacy SPITS, also located in Alkmaar. He is also the pharmacist of the 24/7 pharmacy and chairman of the communication health IT network, OZIS.

About the DDS Pharmacies Network

The DDS pharmacies network is a cooperation between the seven largest DDS pharmacies: Pharmacy Voorzorg, Mediq Systemfarma, Pharmacy Spits, Pharmacy 5 Sterren, Brocacef Maatmedicatie, Verpakapotheek and Baggerman Farma Consult B.V. The Network reflects the common interests of the different pharmacies. It also develops and creates quality norms, expedites improvements of current processes, and innovates by enhancing knowledge of the pharmaceutical industry.