Gertrud Türk-Ihli, IT and medical technology, clinical information systems, Medius Kliniken, Germany

Martin Reitstätter, R&D ORBIS Cardiology, HE/Medical Documentation, Agfa HealthCare, Austria
Closed Loop Medication Workflow

Using GS1 standards
Objective

Uninterrupted Workflow

- The Hospital Information System became the crucial factor of success of the Hospital Enterprise.

- Realtime provision of extensive Information on the full therapeutic process to the entire department, especially important for high security, quality and acceptance.
Objective

Paperless from Admission to Discharge

Mobile Point of Care

- Adapted processes
- Mobile applications
- Mobile devices
- Wireless infrastructure

Workplace in the intensive care unit
Objective

Secure Medication: Processanalyses

• Definition of secure medication
• Find out the status quo
• Isolate and name the causes of defects
• Strategy of interventions
Objective

Liber de cultura hortorum 840 a.d.

Abbot from the isle of Reichenau, Walahfrid Strabo, describes 24 plants such as Sage, Vermouth, Fennel, Opium Poppy, Lovage, Chervil, Fleabane, Betony, Radish and Mint

- Results are „almost-incidences“ and CIRS cases, often caused by small defect, but with major consequences
- In order to address this issue, the medius Clinics - together with Agfa HealthCare - initiated the digital project „Medication Security“.

Medicationscheck 2016

- In Germany, currently approx. 58,000 listed preparations with 2,400 active ingredients and indication information, contraindication, interaction.
Objective

Status quo: Electronic Medication Prescription

No common guideline countrywide to `Unit-Dose‘ supply

- medius Kliniken CPOE (computerized physician order entry) directive:
  - Allergy and medication interaction check
  - Documentation: Who prescribed what and when? Doses?
  - Administration documentation
  - Administration overview
  - Patient identification >> Patient wristband (name, case number)
- Critical incident reporting system (CIRS)
  - Recording of all phases in the medication process
- Clinical risk management
Objective

QA-Manual: ‘Preparation and Administration of Medication’

• Correct patient
• Correct medication
• Correct doses
• Correct time
• Correct administration
• Correct documentation

Introduction of Patient Wristband Containing Name, Case Number and Barcode (GS1-Standard)
Objective

Decision Support by system of rules and warnings

Rules with alerts: 'Medication prescription check'
Objective

Interventions

• Optimisation of medication preparation and administration process
• Introduction of dispenser and single dose barcodes using GS1-Standard
• Documentation software for the medication preparation and administration process
• Usage of existing patient and employee barcodes with GS1-Standard
Objective

Shared project aim

- Closed loop medication process
- Traceable medication preparation process with scanner supply and four eyes principle
- Bedside verification of prepared medication with patient’s wristband
- Future batch backtracking by using the barcode defined in the Falsified Medicines Directive (Directive 2011/62/EU)
Implementation
Implementation

- Analyses of processes, creating different models, decisions
- Agreement on a standardized dispenser barcode (GSRN/SRIN)
- Design of labels and input forms
- Integration of existing identifier for patients and employees (GSRN)
- Validation
- Pilot operation

Ward office with mobile workplace
This workplace is equipped with a barcode scanner and accompanies every ward around
Workflow 1: preparation

- For every patient of the ward, all labels are printed for the dispenser for the next day.
- The labels are stuck onto the dispenser.

Medication dispenser with label
label contains patient’s name, date of birth and barcode with GSRN and SRIN
Workflow 1: preparation

- Dispenser is scanned
- Corresponding prescription opens and displays the medications to be prepared
- Scanning of the medication package
Implementation

Workflow 1: preparation

• The system confirms whether or not the scanned medication package matches the prescription
• Dispenser will be filled
**Implementation**

**Workflow 1: preparation**

- Scanning of an employee barcode finalizes the preparation workflow
- Optionally, a second employee barcode might be scanned for checking reasons
Workflow 2: administration

- Bedside scanning of dispenser
- Form opens, showing the current patient and prescription
- Potential warnings in case the prescription was changed in the meantime
- Asking for patient barcode
Implementation

Workflow 2: administration

- Bedside scanning of patient barcode
- Checking whether the dispenser is the correct one for this patient
Workflow 2: administration

- Scanning of an employee barcode finalizes the administration workflow
- Optionally, a second employee barcode might be scanned for checking reasons
Single Dose Workflow
Medication Workflow Single Dose

Prescription

- Medications that do not fit into the dispenser
- Liquid medication
- Syringes
- Infusion solution
- ...and any medication outside the dispenser workflow

Prescription of single dose medication:
Liquid medication, syringes, injections
Medication Workflow Single Dose

Preparation

- Liquid medication is filled into a cup
- Syringes are prepared
- Injections are filled
Medication Workflow Single Dose

Labels

- Label is stuck onto the infusion solution and the cup
- It contains patient’s name, date of birth, case number as well as the medication and the doses
- Barcode contains GSRN/SRIN
Medication Workflow Single Dose

Labels

• Label is stuck onto the cup and the syringe
• It contains patient’s name, date of birth, case number as well as the medication and the doses
• Barcode contains GSRN/SRIN
Implementation

• Both the clinical division and the material management of the medius Kliniken frequently encounter GS1-Barcodes (GTINs).

• To guarantee an unique patient and employee identification, GS1 also provides the proper standard (GSRN).

• In order to make sure that there is also a unique identifier for a patient-related service (GSRN/SRIN), a decision was made to choose GS1-standards for the entire workflow.
Experience
Experience

- Increase in documentation quality and efficiency by additional pharmaceutic competence.
- High acceptance
- Increase in patient and employee security
Thank You!