Optimizing hospital pharmacy operations using GS1 standards

GS1 Healthcare Webinar
Mr. Sotiris Tsiafos-Tsiaras, Hospital Pharmacist,
Supply Chain Operations 401 General Army Hospital of Athens, Greece
January 17, 2024
Presenting today

Sotiris Tsiafos-Tsiaras
Colonel Pharmacist
MSc Logistics & Supply Chain Management;
Hospital Pharmacist, Supply Chain Operations

401 General Army Hospital of Athens, Greece
About Us

The largest Military Hospital in Greece, > 600 beds. One of the largest hospitals in the greater Athens area

Pharmacy Dept:
- Pharmaceuticals procurement & warehousing,
- Cytotoxics compounding Lab,
- Toxicology and Analysis (Pharmacokinetics) Lab

>13,000,000 € annual spend in pharmaceuticals & medical materials in 2022
Agenda for today’s session

- **Challenges** for a hospital pharmacy
- **Regulations** that affect the pharmaceuticals and medical devices supply chain
- **Impact** on operational **Efficiency** and **Benefits** of GS1 Standards in **Patient Safety**
- **Practical Implementation** of Barcode Scanning in a hospital pharmacy
- GS1 standards in the 401 General Army Hospital
- **Challenges** and **Solutions**
- Conclusion and **Next Steps**
Agenda for today’s session

• **Challenges for a hospital pharmacy**

• **Regulations** that affect the pharmaceuticals and medical devices supply chain

• **Impact** on operational **Efficiency** and **Benefits** of GS1 Standards in Patient Safety

• **Practical Implementation** of Barcode Scanning in a hospital pharmacy

• GS1 standards in the 401 General Army Hospital

• **Challenges and Solutions**

• **Conclusion and Next Steps**
Challenges for the Hospital Supply Chain(s)

Multiple supply chains, vigorous logistics operations
Challenges for the hospital supply chain(s)

Logistics Definition

- Right **product**,
- Right **place**,
- Right **time**,
- (at the right **cost**)

The 5 Rights of Medication Administration

- Right **drug**,
- Right **dose**,
- Right **patient**,
- Right **time**,
- Right **route**

**Efficient healthcare is based on sound logistics processes!**
Challenges for the hospital supply chain(s)

Supply Chain Efficiency & Patient Safety

NEED FOR GOOD-QUALITY, RELIABLE, TRusted DATA
Challenges for the Hospital Supply Chain(s)

Use of global/national standards

Information Systems data

Automated data capture

Supply chain & clinical

**Standards** → **Standardization** → **Automation** → **Trusted Data**

- **GS1**
- **ISO**
- **IHE**
- **HL7**

The Global Language of Business © GS1 2024
Agenda for today’s session

- Challenges for a hospital pharmacy
- Regulations that affect the pharmaceuticals and medical devices supply chain
- Impact on operational Efficiency and Benefits of GS1 Standards in Patient Safety
- Practical Implementation of Barcode Scanning in a hospital pharmacy
- GS1 standards in the 401 General Army Hospital
- Challenges and Solutions
- Conclusion and Next Steps
Recent developments and regulations

Standardization of product information for medicines, medical devices and in-vitro diagnostic devices

- Directive (EU)2016/161 Falsified Medicines directive (FMD)
- European Medical Device Regulation (EU)2017/745 (MDR)
- European In-vitro Diagnostics Regulation (EU)2017/746 (IVDR)
- Drug Supply Chain Security Act (DSCSA)
Barcode Essentials

✓ Scan once

✓ Explicitly identifies a product

✓ Collects all relevant information (LOT/BATCH, EXP date, SERIAL)
Barcode Essentials

Different GTIN at each packaging level of the same product
No need to scan each item separately.
Agenda for today’s session

- Challenges for a hospital pharmacy
- Regulations that affect the pharmaceuticals and medical devices supply chain
- Impact on operational Efficiency and Benefits in Patient Safety
- Practical Implementation of Barcode Scanning in a hospital pharmacy
- GS1 standards in the 401 General Army Hospital
- Challenges and Solutions
- Conclusion and Next Steps
# Impact on Operational efficiency

## Benefits for Logistics, Manufacture procedures and Clinical processes

### INVENTORY MANAGEMENT AND PROCUREMENT
- Accurate stock visibility
- Less stock-outs
- Less waste and financial loss
- Faster warehouse procedures
- Working-time gains for pharmacy personnel
- Improved procurement strategy
- Supply chain traceability

### MANUFACTURE PROCEDURES - REPACKAGING
- Use of the correct products
- Accurate LOT/BATCH and expiry data
- Fully traceable resulting units-products

### CLINICAL PROCESSES
- No human errors in products identification
- Better documentation
- More use of robotics
- Reduced workload for caregivers
Impact on Operational efficiency

Robotic dispensing system at the pharmacy of the Chania General Hospital in Crete

- Automated dispensing of drug packages scanning the package barcodes
- Utilizes both linear and Datamatrix barcodes
- Fully integrated with the hospital’s information system
Benefits in patient safety

Accuracy in dispensing procedures means safety for our patients

• Elimination of identification errors at the dispensing point

• Automated expiry date check: In the pharmacy and at the wards

• Tracing of LOT/BATCH (or SERIAL No) down to patient level

• Accurate and more complete electronic patient record

• Pharmacy staff and nurses focus more on their duties
Benefits in patient safety

Detailed product data recorded at patient level

<table>
<thead>
<tr>
<th>Α/Α</th>
<th>ΚΩΔ. SAP</th>
<th>ΣΤΟΙΧΕΙΑ ΥΛΙΚΟΥ</th>
<th>TEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>651500021876</td>
<td>ПАКЕТО ОФТАЛАМОЛОГИКО BVI CUSTOMEYES KIT (MAVROGENIS KIT) 401 ARMY HOSPITAL</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>590517</td>
<td>ΧΕΙΡΙΣΜΟ ΠΕΔΙΟ ΜΕ ΑΥΤΟΚΟΛΛΗΤΟ 150 x 240 cm</td>
<td>ΠΑUL HARTMANN HELLAS AE (LOT/SERIAL: 203549283)</td>
</tr>
<tr>
<td>3</td>
<td>651500022401</td>
<td>ΚΑΣΣΕΤΑ ΦΑΚΟΘΡΥΨΙΑΣ B&amp;L STELLARIS 1.8mm PREMIUM VACUUM PHACO PACK</td>
<td>ΑΝΑΣΤΑΣΙΟΣ ΜΑΥΡΟΓΕΝΗΣ Α.Ε. (LOT/SERIAL: X3894)</td>
</tr>
<tr>
<td>4</td>
<td>650500005573</td>
<td>DISCOVISC 1,0 mL</td>
<td>ALCON (LOT/SERIAL: VR581C)</td>
</tr>
<tr>
<td>5</td>
<td>376630</td>
<td>ΜΑΧΑΙΡΙΔΙΟ ΟΦΤΑΛΜΟΛΟΓΙΚΟ 20G Ε ΜVR ΕΥΘΥ</td>
<td>ΑΝΑΣΤΑΣΙΟΣ ΜΑΥΡΟΓΕΝΗΣ Α.Ε. (LOT/SERIAL: 3476714)</td>
</tr>
<tr>
<td>6</td>
<td>651500019655</td>
<td>ΜΑΧΑΙΡΙΔΙΟ ΟΦΤΑΛΜΟΛΟΓΙΚΟ BVI BEAVER</td>
<td>1</td>
</tr>
</tbody>
</table>
Agenda for today’s session

- Challenges for a hospital pharmacy
- Regulations that affect the pharmaceuticals and medical devices supply chain
- Impact on operational Efficiency and Benefits of GS1 Standards in Patient Safety
- Practical Implementation of Barcode Scanning in a hospital pharmacy
- GS1 standards in the 401 General Army Hospital
- Challenges and Solutions
- Conclusion and Next Steps
Practical Implementation of Barcode Scanning in a hospital pharmacy

A short guide to implementing barcode scanning in hospital pharmacy workflows

➢ Understand GS1 Standards

➢ Identify the pharmacy’s specific pain points and inefficiencies

➢ Write down (in detail) all the necessary changes

➢ Estimate the project’s budget (consider a pilot first as a proof of concept)

➢ Ensure the support of the hospital’s higher management
Practical Implementation of Barcode Scanning in a hospital pharmacy

A short guide to implementing barcode scanning in hospital pharmacy workflows

➢ **Engage** other departments or specialists *early* in the project

➢ **Integrate** your software with a **GS1 Data Hub** or a similar platform

➢ **Leverage** GS1 standards for master data *synchronization*

➢ Invest in high-quality **2D** barcode scanners

➢ Pharmacy staff **training**
Agenda for today’s session

- **Challenges for a hospital pharmacy**
- **Regulations** that affect the pharmaceuticals and medical devices supply chain
- **Impact** on operational **Efficiency** and **Benefits** of GS1 Standards in **Patient Safety**
- **Practical Implementation** of Barcode Scanning in a hospital pharmacy
- **GS1 standards in the 401 General Army Hospital**
- **Challenges and Solutions**
- **Conclusion and Next Steps**
## GS1 Standards in the 401 General Army Hospital – The Idea

<table>
<thead>
<tr>
<th>Supply Chain Issues</th>
<th>Business Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>➢ Proprietary hospital-only codes, difficulty in identifying items.</td>
<td>➢ Proof of Concept in the O.R.</td>
</tr>
<tr>
<td>➢ Manual registration of products</td>
<td>➢ Selected pharmaceuticals and medical devices</td>
</tr>
<tr>
<td>➢ No LOT/BATCH or Serial tracking</td>
<td>➢ Use of supplier’s GS1 barcodes</td>
</tr>
<tr>
<td>➢ Limited and inaccurate stock visibility</td>
<td>➢ Scan at the point-of-care</td>
</tr>
<tr>
<td>➢ Valuable hours lost</td>
<td></td>
</tr>
<tr>
<td>➢ Risk of errors!</td>
<td></td>
</tr>
</tbody>
</table>
GS1 Standards in the 401 General Army Hospital - Implementation

Main types of barcodes used:

**GS1-128 and GS1 Datamatrix®**

**SCAN AT THE POINT-OF-CARE**

Capturing crucial product data:

- **GTIN**
- **LOT/BATCH**
- **(SERIAL)**
- **EXP DATE**
GS1 Standards in the 401 General Army Hospital - Implementation

- ERP Database
- EHR Database
- GS1 Master Data DB
- Scanning module
- Software
GS1 Standards in the 401 General Army Hospital - Outcomes

83% less time needed to accurately perform a stock count (record of 60 products on the shelf).

Stock count duration comparison (mins)
## GS1 Standards in the 401 General Army Hospital - Outcomes

### Traceability of pharmacy products at the LOT/BATCH level!

<table>
<thead>
<tr>
<th>GTIN EIDOYS</th>
<th>PRODUCT NAME AND BATCH/LOT</th>
<th>TYPE OF MOVEMENT</th>
<th>PATIENT INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>02802659001015</td>
<td>TACHOSIL SEAL MATRIX 9.5cm x 4.8cm</td>
<td>TEM</td>
<td>ΑΝΑΛΩΣΗ ΣΕ ΑΣΘΕΝΗ</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-1</td>
<td>19/06/2023</td>
</tr>
<tr>
<td>02802659001015</td>
<td>TACHOSIL SEAL MATRIX 9.5cm x 4.8cm</td>
<td>TEM</td>
<td>ΑΝΑΛΩΣΗ ΣΕ ΑΣΘΕΝΗ</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-1</td>
<td>19/06/2023</td>
</tr>
<tr>
<td>02802659001015</td>
<td>TACHOSIL SEAL MATRIX 9.5cm x 4.8cm</td>
<td>TEM</td>
<td>ΑΝΑΛΩΣΗ ΣΕ ΑΣΘΕΝΗ</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-1</td>
<td>19/06/2023</td>
</tr>
<tr>
<td>02802659001015</td>
<td>TACHOSIL SEAL MATRIX 9.5cm x 4.8cm</td>
<td>TEM</td>
<td>ΑΝΑΛΩΣΗ ΣΕ ΑΣΘΕΝΗ</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-1</td>
<td>19/06/2023</td>
</tr>
</tbody>
</table>
GS1 Standards in the 401 General Army Hospital - Outcomes

2014

2021
GS1 Standards in the 401 General Army Hospital - Outcomes

**Trusted data!**
- What was used on which patient
- EXP dates!
- Implants tracking
- Stock accuracy – visibility
- Better forecasting
- Fewer losses

**Patient safety**

**Efficiency**
GS1 Standards in the 401 General Army Hospital - Outcomes

Change of Culture!
GS1 Standards in the 401 General Army Hospital - Lessons Learned

❖ **Start small.** Don’t try to change everything at once.

❖ **Seek advice-guidance** from your local GS1 office. **Engage your IT & procurement** from the very beginning of the project.

❖ Choose the function/department that is easier to start / engage.

❖ **End users** need to see the immediate **benefits in their every-day tasks.** **Listen carefully** to their remarks/requests and **stay close to them.**
Agenda for today’s session

• **Challenges for a hospital pharmacy**

• **Regulations** that affect the pharmaceuticals and medical devices supply chain

• **Impact** on operational **Efficiency** and **Benefits** of GS1 Standards in **Patient Safety**

• **Practical Implementation** of Barcode Scanning in a hospital pharmacy

• GS1 standards in the 401 General Army Hospital

• **Challenges and Solutions**

• Conclusion and **Next Steps**
Challenges and Solutions

Addressing challenges and providing practical solutions

- **Integration** with **Existing** Systems
- Interface **Usability** and **user-friendliness**
- Staff **Training** and **Adoption**
- Workflow **Disruption**
- Infrastructure and Equipment **Costs**
- **Regulatory Compliance**
Challenges and Solutions

Addressing challenges and providing practical solutions

• Scanning medications at the point-of-care
  • Industry lack of support for unit-dose barcode labeling
  • Repackaging at the pharmacy is costly and labor-intensive
  • Nurses need a user-friendly interface (simplicity and usability)

✓ How can these challenges be addressed?
  ✓ Advocacy for Industry Standards
  ✓ Optimizing Repackaging Processes
  ✓ Human-Centered Design for User Interfaces
Agenda for today’s session

- Challenges for a hospital pharmacy
- Regulations that affect the pharmaceuticals and medical devices supply chain
- Impact on operational Efficiency and Benefits of GS1 Standards in Patient Safety
- Practical Implementation of Barcode Scanning in a hospital pharmacy
- Challenges and Solutions
- Conclusion
Conclusion and next steps

GS1 standards play a pivotal role on transforming hospital pharmacies

- Enhanced Patient Safety
- Efficiency in medication management
- Supply chain visibility
- Cost reduction
- Patient-Centric Medication Administration
One last word
Thank you!

Sotiris Tsiafos-Tsiaras
Mil. Pharmacist
s.tsiaras@gmail.com

401 General Military Hospital of Athens, Greece