RFID pilot in Japan using SGTIN
~ from factory to bedside ~

Granted by
Ministry of Economy, Trade and Industry (METI)

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GS1 Japan
Ministry of Health, Labor and Welfare (MHLW)

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The concept of the Hospital IT system in Japan is

POAS: Real-time Consumption Data Capturing System

- Collects, manages, and uses consumption data at the point of consumption (e.g. Hospital bedside)
  - In the form of When, Where, Who, to Whom, Why, What, How (6W’s, 1H)
- The first application is hospital
  - International Medical Center of Japan (since 2002)
- Current technology is PDA/bar code, and RFID technologies are in processing.
- We have a feasibility study with RFID tag in 2008.
What can POAS do?

By collecting data from wireless PDAs, examination room terminals, and laboratory equipment, POAS can:

- Record medical actions in detail, everywhere
- Assist practicing medical treatment to patients
- Monitor patient symptoms continuously
- Comprehend logistical data by the “minimum unit”
  → In real-time.

Useful for automatic single size item identification

UDI: Unique Device Identification (US FDA)
Injection operations from the perspective of medical safety

- An inter-divisional safety system is needed.
- A system is needed that reflects changes and cancellations in the information given to medical staff within a timeframe of 2 seconds.

Digitalization of this section was achieved with Single Item management as POAS.
Conventional system ID: GTIN
POAS system ID: GTIN + serial number

Order

Act1
Task: 5W1H

Act2
Task: 5W1H

Act3
Task: 5W1H

Data unit = Invoice (payment) unit

Injection prescription

Rp1) 5% glucose 500 ml
Rp2) Saline 500 ml
Rp3) Saline 100 ml

Vitamedin 1A morning
K2 1A evening
Pansporin 1 g

Data unit = People's actions (changes) single item based
Automatically acquired information: Digitize

- Order
- Purchase
- Inventory
- Injection order
- Pharmacy
- Change order
- Picking
- Rp Printing
- Audit
- Mixing
- Injection / Shot
- Accounting
- Waste
- POAS consumption point

Consumption point of conventional electronic medical charts
Consumption point of conventional systems used by the Pharmaceutical Division

most dangerous, unnecessary costs.
Explanation of type

Order → Print → Audit → Mixing → Injection

- Type 1: Normal
- Type 2: Wasted
- Type 3: Returned

Cancel and change
## Cancel data  4/01/2004 – 3/31/2005

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost (Yen)</th>
<th>Number</th>
<th>Rp numbers</th>
<th>The number of injection and shot</th>
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</thead>
<tbody>
<tr>
<td>Normality</td>
<td>1,113,386,619</td>
<td>1,019,229</td>
<td>556,283</td>
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<td>Cancel Type2</td>
<td>108,535,086</td>
<td>102,127</td>
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<td>Cancel rate(%)</td>
<td>9.75</td>
<td>10.02</td>
<td>9.94</td>
<td>10.68</td>
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</table>

### Cost saved: $1M / year

- 35,959
- 556,283

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**About the unit price**

- **Normal:** I calculate by an actual unit price by the inventory.
- **Cancel:** Because drawing is released and it is drawn by other patients after returned goods unsold, a real unit price is uncertain. Therefore, the agreement unit price of a period concerned and the trial.

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**About the division**

- **Normality:** After the medicine is mixed, discontinuance (for the abandonment) is contained.
- **Discontinuance:** Medicine that was discontinued before medicine is mixed, and returned.

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- this amount if there was no confirmation before mixing the medicine.
IT can be improved hospital management.

- Prevent medical accidents.
- Thorough inventory management
- Keywords are “real-time entry” and “serialization for single item management.”
- The accurate acquisition of information on bedside actions is crucial.
- Acquire cancellation and change data.
  - Only about 60% can be acquired in conventional systems.
  - POAS gives an overall picture.
  - POAS can **save 4 million dollar per year**.
- This improves medical **safety** and **management efficiency**.
GS1: Product Identification through the Supply Chain

PHYSICAL ITEMS & DATA FLOW

Automatic granularity exchange

Granularity of shipping

GTIN / Serial ID   GTIN   SSCC   GTIN   GTIN / Serial ID

RSS / RFID   GS1-128   GS1-128   GS1-128   RSS / RFID

Item data, sales catalog, ship notice, invoice
request for quotation, planning schedule, POS

Electronic Commerce Information Flow

Supplier

End User

Granularity of single item

Granularity of single item

Granularity of shipping
Objectives

1. Track & Trace for Patient Safety

2. To improve SCM in Healthcare Field

3. To reduce CO2
# Timeframe of the Pilot Study

<table>
<thead>
<tr>
<th>Year</th>
<th>2007</th>
<th>2008</th>
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<tbody>
<tr>
<td>Month</td>
<td>October</td>
<td>November</td>
</tr>
<tr>
<td>Days</td>
<td>1-14</td>
<td>15-31</td>
</tr>
<tr>
<td>Event</td>
<td>* Kickoff</td>
<td>* Steering Committee</td>
</tr>
<tr>
<td>System Development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field Practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Researching In EU/US</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reporting</td>
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</tr>
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</table>
Facts of the Pilot Study

1. 1st Project scoped from the Source Marking to Bed-Sides

2. 1st Project adopting GS1 Standards in Japan (SGTIN/GLN)

3. SGTIN (GTIN + Serialized Number) on RFID

Items of Medical Supply

- Drugs
  - injection drugs
- Medical Materials
- Medical Devices
  - Instruments
Business Process of the Pilot Study

Pharmaceutical Manufacture
- Material in Production
- Stock on Hand
- Stock out
- Stock in

Wholesaler
- Stock on Hand
- Stock Out
- Return

Hospital
- Stock in
- Stock on Hand
- Order
- dispense
- Audit
- Ship to ward
- Acceptance at ward
- Consumption
- Mixing
- Injection

Product Lifecycle
- Unit of Package

Outside of hospitals
- Scope of the past pilot studies(2004-2006)
- Unit of Sales
- Unit of Use

Inside of Hospital
- Scope of the current pilot study(2007)
- Unit of Use

Out of Scope
- Proprietary & Confidential

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Scenario Overview

Manufactures
Query

Wholesalers
Query

Stock on hand

Process to be transferred to Common Trace Database

Public Organization
Query

Hospital

Orders

Doctors

Change Orders

Change Orders

Query

Pharmacy

Prescription

Dispense

Audit

Ship-out

In Scope

Process

Out of Scope

Alarm Point

Process

Process

In Scope

Process

UHF Tag Access by Reader

HF Tag Access by Reader

HF Tag Access by PDA

Ward(Nursing)

Mixing

Injection

Disposal

Patients

UHF Tag Access by Reader

HF Tag Access by Reader

HF Tag Access by PDA

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Feasibility study on medical field in Japan

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<tr>
<th>Lot No</th>
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<table>
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<tr>
<th>Product ID</th>
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<th>Date/time</th>
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</thead>
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<tr>
<td>A1111</td>
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<tr>
<td>A1112</td>
<td>入庫</td>
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<tr>
<th>Drug ID</th>
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<th>Date/time</th>
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</thead>
<tbody>
<tr>
<td>A1111</td>
<td>患者A</td>
<td>200708172210</td>
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<td>A1112</td>
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<td>薬剤部</td>
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</tr>
<tr>
<td>A1114</td>
<td>薬剤部</td>
<td>200708172210</td>
</tr>
</tbody>
</table>
The evolution of hospital information systems

1G: Billing and Lab test: medical affairs and specimen exams

2G: CPOE: ordering

3G: EPR: paperless electronic medical charts

4G: Ubiquitous medical information systems for most dangerous / high costs areas

Un-digitized space

We need standardized UDI!

Digitized space

Bedside, ER (emergency), (OR) operating room and ICU

*verbal communication  *high risk, and high cost

Medical affairs section / Exam section
Billing
Outpatient / nurse station
POES

Department systems
Conclusion

Not only cost saving but also Patient safety ---

- Important to manage the verbal communication in Bedside, ER (emergency), (OR) operating room and ICU
- Single item management with unique serialized number

References:

M Akiyama.
Risk Management and Measuring Productivity with POAS - Point of Act System. A Medical Information System as ERP (Enterprise Resource Planning) for Hospital Management.

Akiyama M, Kondo T.
Thank you for your attention. Any Questions?

→ Think!

→ What kind of system do you want, if your son or daughter were a patient?

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