GTIN Implementation in Thailand
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Following the Second National Economic and Social Development Plan (1964-1966), the Thai Government aimed to increase the number of doctors and nurses in order to meet the needs of the country. In August 1964, the Cabinet approved the plan of setting up a new medical school.

The Faculty of Medicine Ramathibodi Hospital has two principal buildings to serve 5,000 out-patients per day; first building, Main Building, mainly provides more than 1,000 beds for the tertiary care of complicated and severely ill patients in various specializing departments and units. The second building, the Sirikit Medical Center, serves as a center for modern research projects, namely, bone marrow transplantation project, the project of Advanced Diagnostic Imaging and Imaging-guided Minimal Invasive Therapy Center (AIMC). It also houses modern operating rooms and intensive care units.
• Healthcare Supply Chain
• Academic perspective: Research for Change
• Challenges
• A Journey to the Implementation
Successful Cases in Retail Business BUT ..

Never Happened in Health Sector
## What we have?

<table>
<thead>
<tr>
<th>Originators</th>
<th>Description</th>
<th>Digit Length</th>
<th>Lowest Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Health Security office (NHSO)</td>
<td>Drug type, generic name, strength, dosage form, manufacturer code</td>
<td>24</td>
<td>Generic name</td>
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<tr>
<td>Food and Drug Administration (FDA)</td>
<td>Tax identifier, manufacturer code, class, group and GTIN code</td>
<td>30</td>
<td>Trade name</td>
</tr>
<tr>
<td>The Comptroller General’s Department</td>
<td>Class, category, and running number</td>
<td>22</td>
<td>Class</td>
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<td>GPO</td>
<td>GTIN 13 of GS1 standards</td>
<td>13</td>
<td>Trade Name</td>
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<tr>
<td>The Comptroller General’s Department</td>
<td>Running number</td>
<td>-</td>
<td>Trade name</td>
</tr>
<tr>
<td>Department of Medical Sciences</td>
<td>Source, manufacturer code, active ingredients</td>
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<td>Generic name</td>
</tr>
<tr>
<td>Customs Facilitation</td>
<td>Class, subclass, and statistical information</td>
<td>16</td>
<td>Class</td>
</tr>
</tbody>
</table>

*Source: Muangchoo & Kritchanchai (2011)*
Foundation is NEEDED

Data Pool; DRUG Information with code

Standard Code

Data Pool

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Attributes

General Information is total 15 Attributes as Productndc, producttypename, proprietaryname, nonproprietaryname, content, dosageformname, routename, endmarketingdate, marketingcategoryname, applicationnumber, labelername, substancename, strengthnumber, strengthunit, pharm_classes

Clinical Information is total 14 Attributes as indications(EN/TH), contraindications(EN/TH), dosage(EN/TH), overdose(EN/TH), administration(EN/TH), precautions(EN/TH), special_precautions(EN/TH), adverse_drug_reactions(EN/TH), drug_interactions(EN/TH), storage_condition(EN/TH), pregnancy_category, mechanism_of_action, atc_classification, thai_fda_category

GTIN

Logistics Information is total 14 Attributes as globaltradeitemnumber, Presentation Unit, Pill Unit, Conversion, Orderable Unit, Barcode Marked, barcode_type, width, depth, height, height_width_dept_uom, grossweight, grossweight_uom, storage_condition_th
Pill Level

Logistics Unit → Pack Size → Prescription Unit

Carton → Box → Blister Pack → Can → Tablets

Pack Size Levels:
- 3: Carton
- 2: Box
- 1: Blister Pack
- 0: Low Level

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Drug Flow in Supply Chain

- Material Flow
- Information Flow

Suppliers → Warehouse → Pharmacies → Patients

Drug Information → Doctors → Patient & Medical Information

Financial

Reimbursement (Payer)

Drug Information

Manufacturing → Distribution → Procurement → Inventory (Warehouse) → Inventory (Pharmacy) → Prescription → Dispensing → Reimbursement

Source: In-depth Data Collection
# Drug Flow in Supply Chain

## Supply Chain

### Procurement to Receipt
- **Supplier** to **Warehouse**
  - Supplier to Warehouse
  - Warehouse to Supplier
- **Procurement**
- **Receipt and storage**
- **Inventory Management**
- **Demand Management**
- **Recall Management**

### Internal Distribution: Warehouse to Pharmacy
- **Warehouse** to **Pharmacy**
  - WH to Pharmacy
  - Pharmacy to WH
- **Replenishment**
- **Repackaging**
- **Internal Distribution**
- **Store location Stock Management**

### Prescription to Dispensing
- **Doctor (CPOE)**
  - Dr. to Pharmacy
  - Dr. to Patient (non CPOE)
  - Pharmacy to Dr.
- **Order Entry**
- **Change Order Entry**

### Dispensing to Patient
- **Pharmacy** to **Patient**
  - Patient to Pharmacy
  - Pharmacy to Patient
- **Labeling & Packaging**
- **Dispensing**
- **Return Goods**

### Financial to Reimbursement
- **Financial Dept.**
  - Reimbursement Agents
    - Financial to สปสช.
    - Financial to กรมบัญชีกลาง
    - Financial to สปส.
- **Reimbursement**

## Logistics

**Manufacturing**

**Distribution**

**Procurement**

**Inventory (Warehouse)**

**Inventory (Pharmacy)**

**Prescription**

**Dispensing**

**Reimbursement**

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Source: In-depth Data Collection and analysis
### Critical Success Factors (CSFs) in Supply Chain Management

<table>
<thead>
<tr>
<th>Source</th>
<th>Supply chain management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kim (2005)</td>
<td>The most important critical success factor of SCM is the efficient and effective information sharing in the supply chain</td>
</tr>
<tr>
<td>Tan (2001)</td>
<td>The direct transfer of information between retailers and vendors aids in improving logistics efficiency and supporting increased customer service levels</td>
</tr>
<tr>
<td>White et al (1999); Narasimhan and Carter (1998); Trent and Monczka (1998)</td>
<td>A well integrated supply chain involves coordinating the flows of materials and information between suppliers, manufacturers and customers</td>
</tr>
<tr>
<td>Grieco (1989)</td>
<td>Effective supply chain management rests on the twin pillars of trust and communication</td>
</tr>
</tbody>
</table>

**Information Sharing**

**Supply Chain Efficiency**

**UNIQUE ID ➔ TRACEABILITY**
The Journey just begins....
- Prescription Unit (Pill Level)
- Regulator (Top down), then FUND
- Resistance from suppliers (H/O?)
- +++
- Team work
- GS1 Thailand as facilitator
Thank you
and hope to see you with our
success story next time

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