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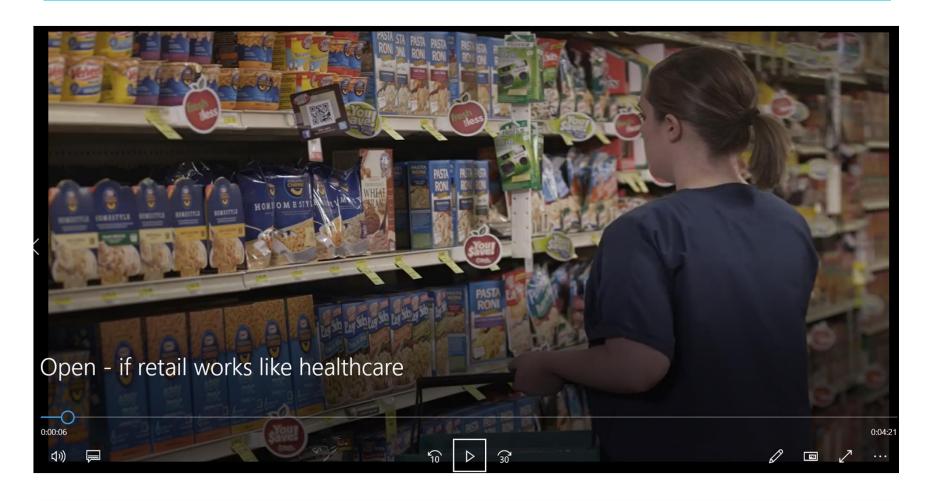
GS1 Standards use in the Healthcare Supply Chain

Andy Siow, Manager, Technical Standards & Services
GS1 Singapore
21 August 2019

If Retail Works Like Healthcare

Open - if retail works like healthcare

0:00:06   0:04:21

Presentation Outline

- Introduction to GS1 in Healthcare
- Overview of GS1 System of Standards
- New GS1 Standards Updates
    - GS1 Clinical Standards
    - GS1 Digital Link Standards
- Global Trend in Pharma & Medical Device Identifications
- Overview of Regulatory Requirement Landscape

Introduction to GS1 in Healthcare

GS1 by the numbers

Neutral and not-for-profit	User-driven and governed	Global and local	Inclusive and collaborative

GS1 is most widely used open standards for SCM

GS1 Healthcare Mission:

GS1 Healthcare is a neutral and open community bringing together all related healthcare stakeholders to lead the successful development and implementation of global GS1 standards enhancing patient safety, operational and supply chain efficiencies

1 million	150 countries	5 billion	114 MOs
over 1 million companies worldwide use GS1 standards	25 industries served across 150 countries	Barcodes scanned more than 5 billion times per day globally	114 Member Organisations around the world

GS1 is a Standards Development Organisation working with others

The council is form to enable common, timely health informatics standards by addressing and resolving issues of gaps, overlaps and counter-productive standardization effort.

International Organisation for Standardisation	European Committee for Standardization	Health Level 7 International	International Health Terminology SDO	Clinical Data Interchange Standards Consortium		Integrating the Healthcare Enterprise	Digital Imaging and Communications in Medicine

Joint Initiative Council

World Health Organization	World Customs Organization	International Hospital Federation	International Council for Commonality in Blood Banking Automation	International Society for Quality in Healthcare	European Association of Hospital Pharmacists	European Federation of Pharmaceutical Industries and Associations	European Association of Medical device and diagnostics industry

GS1 Healthcare: an expanding, committed community of globally engaged stakeholders…

…and there are many more companies working with GS1 at a local level

Value Proposition for Solution/Logistic Service Providers working with GS1

Wide adoption of GS1 Standards in Healthcare in more than 70 countries

To meet healthcare clients' needs by implementing their requirements

Provide solution which facilitates interoperability both intra & inter enterprise connectivity

Become a healthcare industry though leader

https://solution-providers.gs1.org/

and more benefits….

…as well as with leading hospitals and government agencies to implement GS1
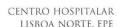
Endorsement paper - Healthcare leaders endorsing GS1 Standards

- GS1 standards enable streamlined supply chain processes and improve visibility – from manufacturers to patients

- Global healthcare leaders have endorsed the GS1 Healthcare standards and the number is growing.

- Endorsement paper could be found on :
  http://www.gs1.org/sites/default/files/docs/healthcare/endorsement_paper-hd.pdf

Why are standardisation important for Healthcare?

Lack of standards in daily life is inefficient and annoying...

Australia: Size 5.5
Europe: Size 37.5
UK: Size 4.5
USA: Size 7
Japan: Size 23
China: Size 38
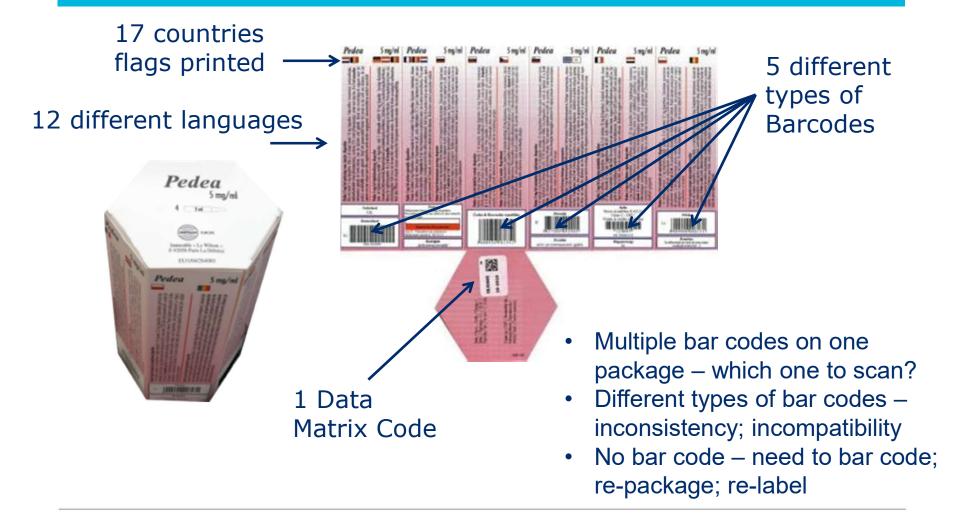
Standardization came too late

..in Healthcare it is dangerous and inefficient!

17 countries flags printed

12 different languages

5 different types of Barcodes

1 Data Matrix Code

- Multiple bar codes on one package – which one to scan?
- Different types of bar codes – inconsistency; incompatibility
- No bar code – need to bar code; re-package; re-label

The Need for Global standards in Healthcare (Upstream)

Diverging country requirements

Manufacturing headache

Country A

(01)12345678912345(17)101230(10)A234VC2

Country B

Country C

(01)30012345678906(17)101230(10)C4324(21)23QA6576P9

Country E

Country D

4 512345 678906 >

0 12345 67890 5

> *"CUSTOMIZED ACTIONS MEAN COSTS!!*
> *Harmonisation of regulatory requirements and data standards will enable efficiency of a global product offering – otherwise complexity and cost will continue to raise"*
> *Senior Executive, MD company*

Why using local formats/national codes are not ideal (Downstream)

Some observations in hospital environment

GOOD	Not so good

GOOD

- Barcode scanning are widely implemented in various parts of hospital processes. Easy to use.

- Pharmacists and nurses prefer to receive "barcode" ready products as it makes their work and processes simpler.

- Hospitals are investing and implementing various systems to automate processes.

Not so good

- Non-standardisation of product code. We noticed at least 4-5 different formats of product codes used. (Such as: GTIN, GPO No., SIN No., Hospital Internal No.)

- Some systems are able to process GS1 barcode, some are not.

Using your own local format introduces cost, increases the risk of error and overall inefficiency.

Potential issues with non-standards product code in Healthcare Provider Environment (Downstream)

Create Inefficiency, increases risk & additional Cost in following areas:

- Manual stock received process
- Error prone to data entry
- Need for re-label work
- System mapping
- Medication Error
- Lack supply chain visibility. JCI audit requirement.
- Breakage in link management impact of capability for effective product traceability & recall
- System may not be able to interoperability/prevent from sharing distribution data with other institutions
- Manufacturers/distributors are not able to leverage on existing standards cater for global market for specific local needs

Impact on Patient Safety & Quality of Care GS1 supports the 5 Rs

GS1: Area of focus in Healthcare

Strength in unity: The promise of Global Standards in healthcare" (McKinsey 2012)

- "Implementing **global standards** across the entire healthcare supply chain **could save 22,000-43,000 lives** and avert 0.7 million to 1.4 million patient disabilities"

- "Rolling out such standards-based systems globally **could prevent tens of millions of dollars' worth of counterfeit drugs** from entering the legitimate supply chain**"**

- [We] "estimate that **healthcare cost could be reduced by $40 billion-$100 billion globally**" from the implementation of global standards

- "Adopting **a single set of global standards** will cost significantly less than two" (between 10-25% less cost to stakeholders)

SOURCE: McKinsey report, "Strength in unity: The promise of global standards in healthcare", October 2012
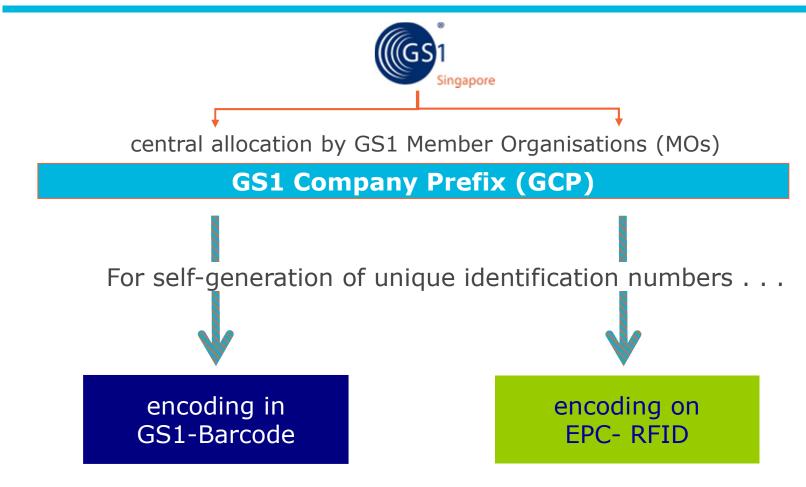
Standards Comparison Grid (McKinsey 2012)

	GS1 Standards	HIBCC Standards	National codes
Availability of high information density data carriers	Yes (GS1 DataMatrix and RFID)	Yes (3 ISO 2D Matrix and RFID)	Generally not (linear barcodes)
Comprehensiveness of the standard in terms of identification definitions	10 identification keys (incl. GTIN, GLN)	Product (UPN), location (HIN)	Product code only
Master data synchronization	GDSN (Global network)	UPN repository	No
Includes traceability standard	Global Traceability Standard for healthcare	No	No
Interoperability with national ID numbers	National numbers compatible with use of GS1 standards	Not applicable - no national codes for medical devices	Not intended to be used outside country
Used in all global geographies	Yes	Yes, except Japan	Only in country
Span across product types	Pharmaceuticals and medical devices	Medical devices (pharmaceuticals in The Netherlands)	Pharmaceuticals only
Global organization infrastructure and support	Global infastructure and support (global office and 111 member orgs)	US; support staff in Australia and Europe	Within relevant country
Additional industry coverage	Core sectors in Retail, Healthcare, Transport and Logistics; 20 others	Healthcare only	Pharmaceuticals only
Regulatory agencies / jurisdictions accepting use of standard	65	Turkey only	China, Germany, Italy, Belgium, Portugal

Understanding GS1 Standards
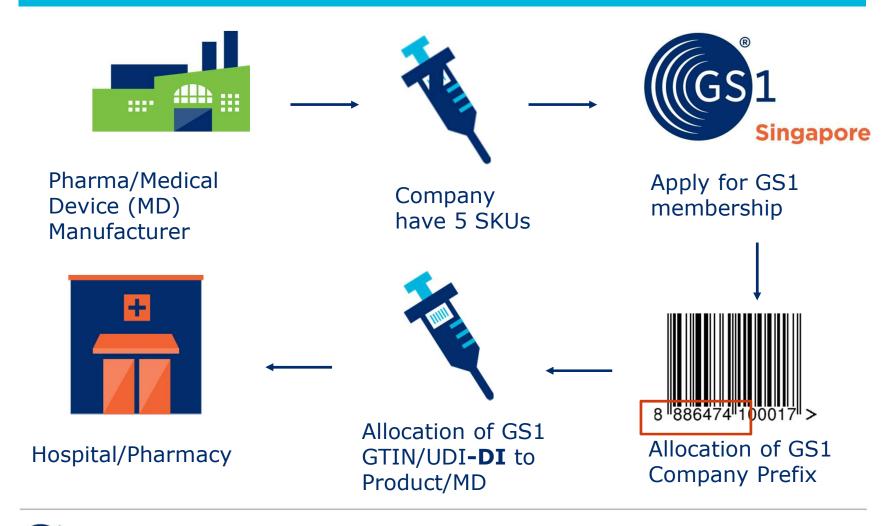
How to get started with GS1?

GS1 Singapore

central allocation by GS1 Member Organisations (MOs)

GS1 Company Prefix (GCP)

For self-generation of unique identification numbers . . .

encoding in
GS1-Barcode

encoding on
EPC- RFID

GS1 GTIN/UDI-**DI** Issuing Process (Example)

Pharma/Medical Device (MD) Manufacturer

Company have 5 SKUs

Apply for GS1 membership

Allocation of GS1 Company Prefix

8 886474 100017 >

Allocation of GS1 GTIN/UDI-**DI** to Product/MD

Hospital/Pharmacy
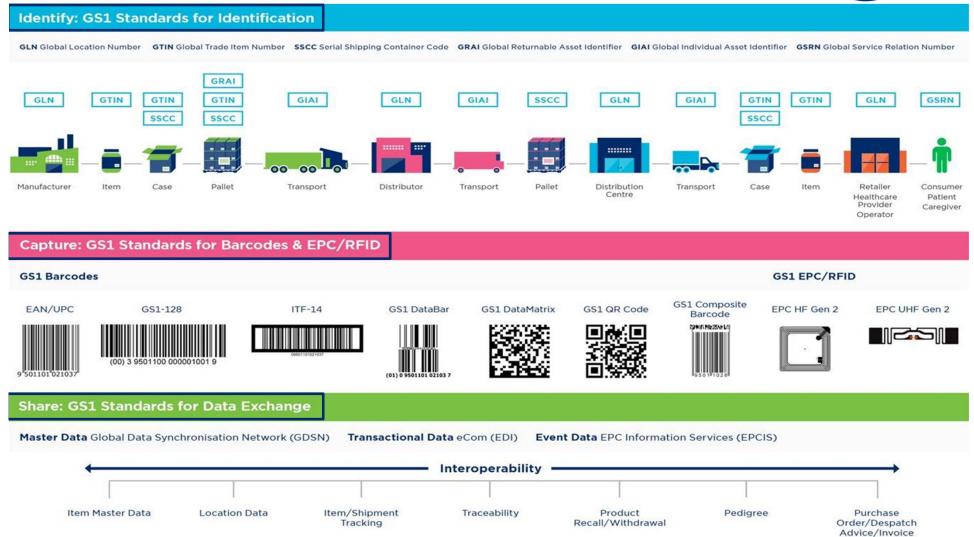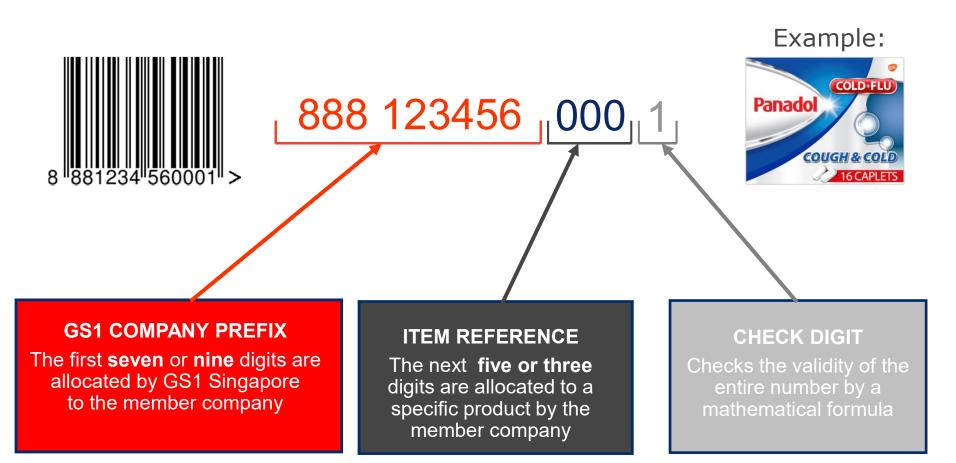
GS1 System Of Standards

Identify: GS1 Standards for Identification

GLN Global Location Number   **GTIN** Global Trade Item Number   **SSCC** Serial Shipping Container Code   **GRAI** Global Returnable Asset Identifier   **GIAI** Global Individual Asset Identifier   **GSRN** Global Service Relation Number

Manufacturer | Item | Case | Pallet | Transport | Distributor | Transport | Pallet | Distribution Centre | Transport | Case | Item | Retailer Healthcare Provider Operator | Consumer Patient Caregiver

Capture: GS1 Standards for Barcodes & EPC/RFID

GS1 Barcodes   **GS1 EPC/RFID**

EAN/UPC | GS1-128 | ITF-14 | GS1 DataBar | GS1 DataMatrix | GS1 QR Code | GS1 Composite Barcode | EPC HF Gen 2 | EPC UHF Gen 2

Share: GS1 Standards for Data Exchange

Master Data Global Data Synchronisation Network (GDSN)   **Transactional Data** eCom (EDI)   **Event Data** EPC Information Services (EPCIS)

Interoperability

Item Master Data | Location Data | Item/Shipment Tracking | Traceability | Product Recall/Withdrawal | Pedigree | Purchase Order/Despatch Advice/Invoice

Identify & Capture
Example: Structure GTIN-13 (Barcode)

Example:

888 123456 | **000** | **1**

Barcode digits: 8 881234 560001 >

GS1 COMPANY PREFIX
The first **seven** or **nine** digits are allocated by GS1 Singapore to the member company

ITEM REFERENCE
The next **five or three** digits are allocated to a specific product by the member company

CHECK DIGIT
Checks the validity of the entire number by a mathematical formula

Product Hierarchy

GTIN 1
46012345600016

GTIN 2
46012345600023

GTIN 3
46012345600030

SSCC 1
(00)04601234560000016

SSCC 2
(00)04601234560000023

Pallet
(Tertiary*)

Case /
Shipper
(Tertiary*)

Secondary
Package

Primary
Package

Single Unit
Package

Allocation of GTIN's…

…fundamentals still apply…

GS1 Healthcare GTIN Allocation Rules

GTIN Allocation Rules for the Healthcare Sector

Brand owners allocate GTIN's based on standardised allocation rules, for example:

- 1 GTIN = 1 product

- 1 product = 1 GTIN

- Different GTIN for each packaging level

- Change GTIN when pack of 20 becomes pack of 25

- Add language, same GTIN

- Change language, new GTIN

- Never re-allocate a GTIN to another product !

http://www.gs1.org/docs/gsmp/healthcare/GS1_Healthcare_GTIN_Allocation_Rules.pdf

GS1 Application Identifiers...

GS1 Gen Spec includes 100+ "Application Identifiers" a.k.a. "Key Attributes"

Application Identifiers generally or commonly found in Healthcare

00	SSCC (Serial Shipping Container Code)
01	GTIN (Global Trade Item Number)
10	Lot / Batch
11	Production
17	Expiry Date
21	Serial Number
710	NHRN – Germany PZN
711	NHRN – France CIP
712	NHRN – Spain CN
713	NHRN – Brazil DRN
7003	Expiry Date + Time
7004	Active Potency
8003	GRAI (Global Returnable Assets Identifier)
8004	GIAI (Global Individual Assets Identifier)
8017	GSRN Service Provider
8018	GSRN Service Recipient
8019	Service Relationship Instance Number

GS1-128

(01)04601234567893(17)160125(10)ABC123(21)123456789

GS1 DATAMATRIX

(01)04601234567893
(17)160125
(10)ABC123
(21)123456789

GS1 Data Exchange Standards
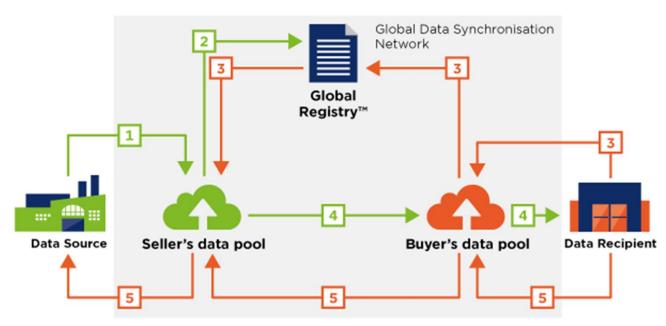
Data Exchange Standards: GDSN(Master Data)

GS1 Global Data Synchronisation Network® (GDSN) is a network of interoperable data pools enabling collaborating users to securely synchronise master data based on GS1 Standards.

Global Data Synchronisation Network

Global Registry™

Data Source → **Seller's data pool** → **Buyer's data pool** → **Data Recipient**

1. Loading of company data
2. Registering of company data
3. Subscription to seller's data pool
4. Publishing of company data
5. Confirmation of receipt of company
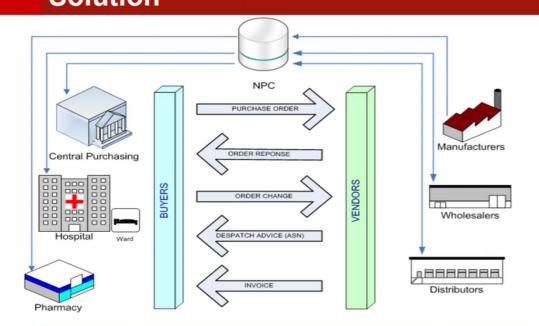
The National E-Health Transition Authority (NEHTA) uses GDSN to support their eProcurement processes.
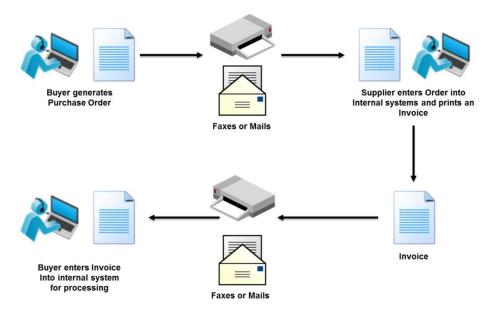
Share: Data Exchange Standards
GS1 EDI (Transaction Data)

Electronic Data Interchange (EDI) is the computer-to-computer exchange of business documents in a standard electronic format between business partners.

Manual Process

Buyer generates Purchase Order

Faxes or Mails

Supplier enters Order into Internal systems and prints an Invoice

Invoice

Buyer enters Invoice Into internal system for processing

Faxes or Mails

Lots of paper and people involved

EDI Process

Purchase Order

Invoice

Buyer's internal system

Supplier's internal system
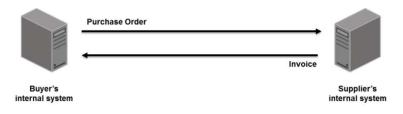
No paper, no people involved
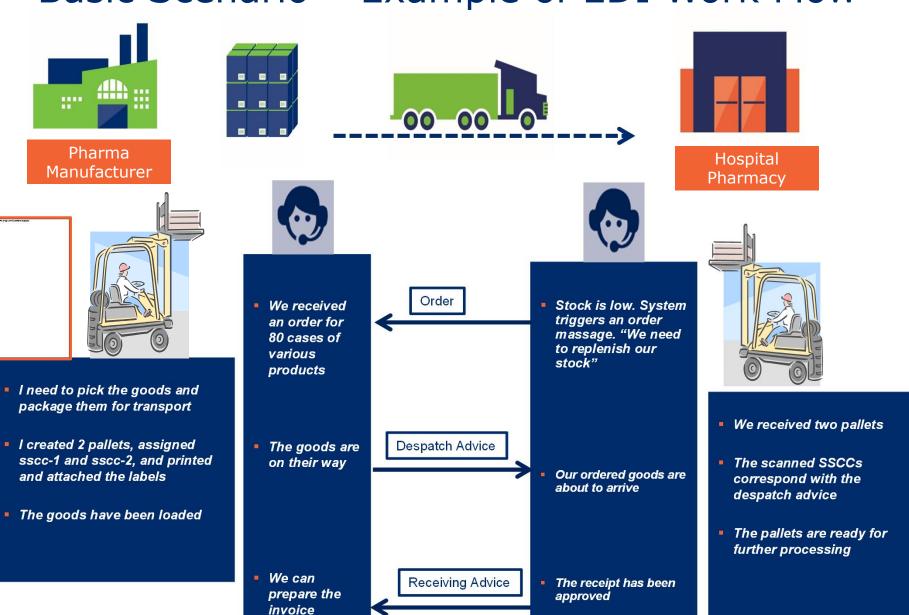
Standard format required

GS1 EDI covers:
- Master Data Alignment
- Order & Delivery
- Financial Settlement
- Transport & Warehouse Management

Sources: edibasics
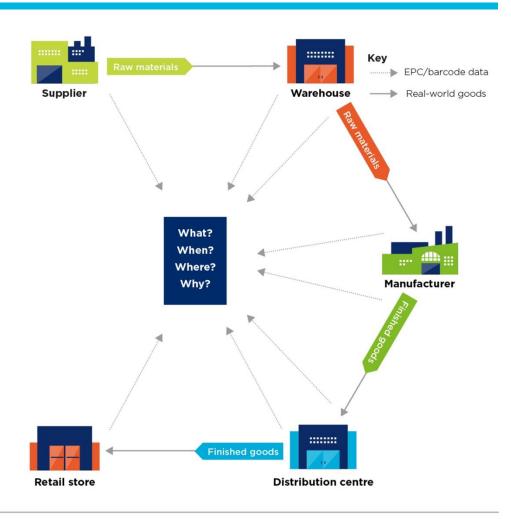
Basic Scenario – Example of EDI Work Flow

Pharma Manufacturer

Hospital Pharmacy

- I need to pick the goods and package them for transport

- I created 2 pallets, assigned sscc-1 and sscc-2, and printed and attached the labels

- The goods have been loaded

- We received an order for 80 cases of various products

Order

- Stock is low. System triggers an order massage. "We need to replenish our stock"

- The goods are on their way

Despatch Advice

- Our ordered goods are about to arrive

- We received two pallets

- The scanned SSCCs correspond with the despatch advice

- The pallets are ready for further processing

- We can prepare the invoice

Receiving Advice

- The receipt has been approved

Data Exchange Standards:
EPCIS (Event Data)

EPCIS is a GS1 standard that enables trading partners to **share information about the physical movement and status of products** as they travel throughout the supply chain – from business to business and ultimately to consumers.
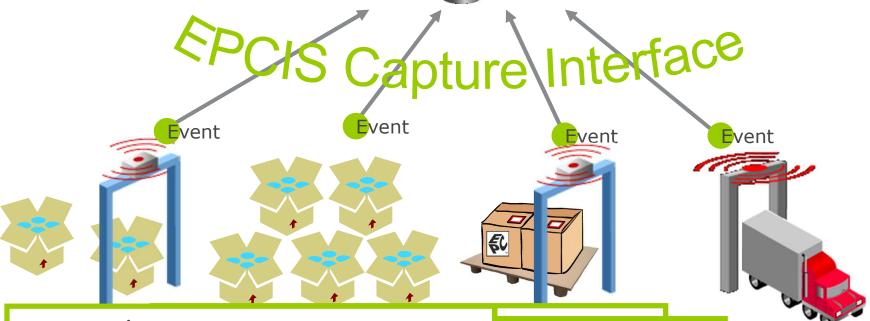
EPCIS Capture of supply chain events

EPCIS Repository

EPCIS Capture Interface

Event   Event   Event   Event

```
AggregationEvent
WHAT:   SSCC 4001356.5900000817
        SGTIN 4026800.010421.101
        SGTIN 4026800.010421.102
WHERE: SGLN 4012345.00040.0
WHEN: 23.10.2009  13:40:00  UTC+1
WHY: commissioning
```

```
yEvent
GTIN 4026800.010421
5
SGLN 4012345.00031.0
2.10.2009  11:20:00  UTC+1
```
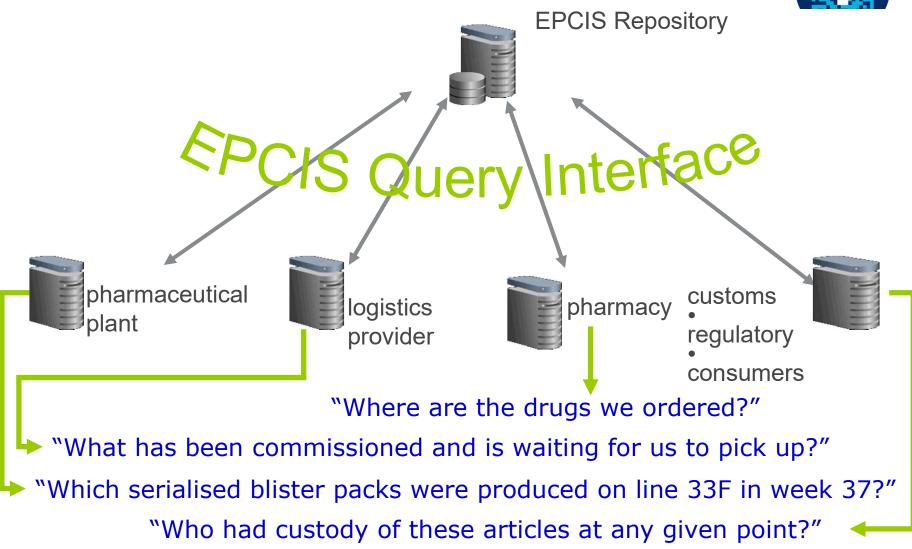
EPCIS query of supply chain events

EPCIS Repository

EPCIS Query Interface

pharmaceutical plant

logistics provider

pharmacy

customs
• regulatory
• consumers

"Where are the drugs we ordered?"

"What has been commissioned and is waiting for us to pick up?"

"Which serialised blister packs were produced on line 33F in week 37?"

"Who had custody of these articles at any given point?"

Source: Craig of GS1

Introducing New GS1 Standards
 - GS1 Clinical Trial Standards
 - GS1 Digital Link Standards
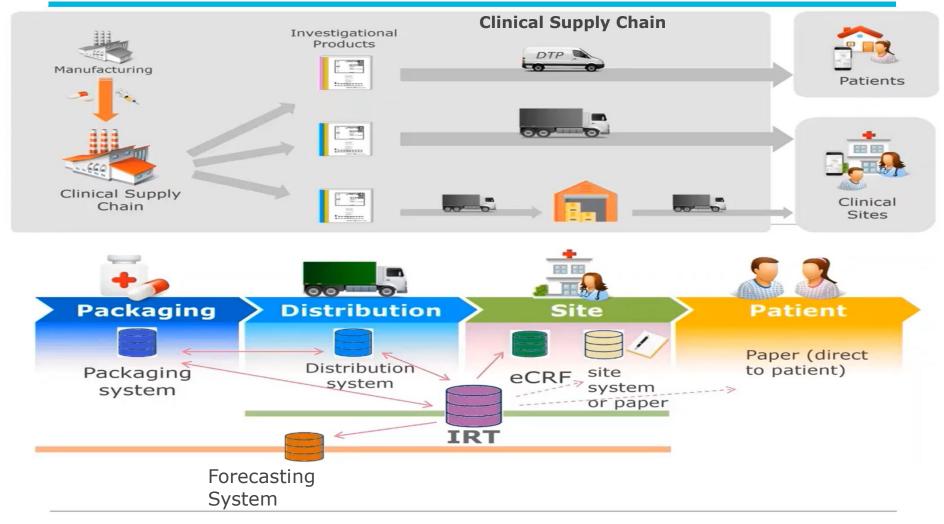
GS1 Clinical Trial Standards

Why globally standardised identifiers and barcodes for investigational products?

IP is tracked in multiple system across the supply chain

Current paper IP management example

From the delivery form…

To the inventory log

Examples of current situation

Numbered boxes and bottles

Multiple barcodes

Over-labelled commercial drugs

What has been developed?

A global standard by the industry

resulting from an industry-led working group:

An industry-led effort

Global standards unique to clinical trial products

An element of trust

GS1 Clinical Trial Standards

(01)09501101530003 - Global Trade Item Number
(10)AB-123 - Batch Number
(21)000124pc123 - Serial Number
(7240)PR0044 - Protocol Number

(01)09501101530003
(10)AB-123
(21)000124pc123
(7240)PR0044

GS1 Clinical Trial Standards

A new standard
for investigational products

GS1 clinical trial video

0:00:04   0:01:52

Standardisation along the Clinical Supply Chain
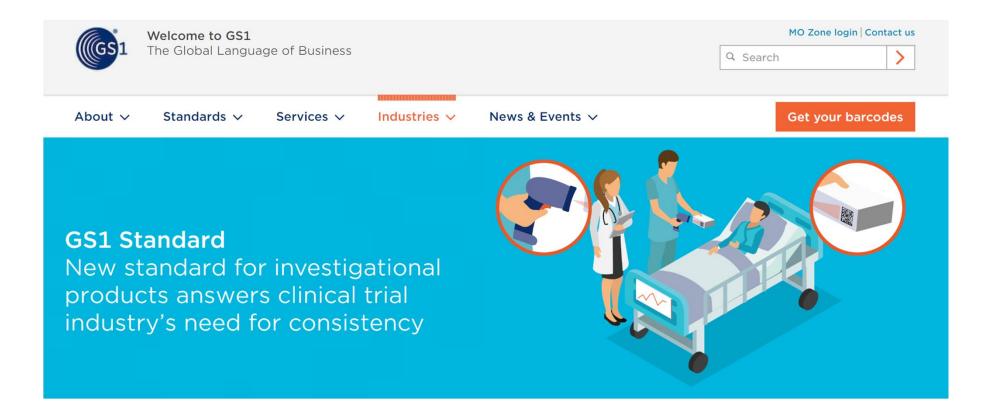
Accuracy   **Efficiency**   **Process Familiarity**   **Safety**

Label & Pack Design

- Standardization of Clinical Labels
- and information

Packaging Operations

- Ease In line Controls,
- Identification of kits / batches

Sub Contractors

Distribution

- Shipments preparation are more reliable
- Supply Chain stakeholders are sharing and exchanging information

Hospital   Sub-Contractors

Ease Study Management activities at site level

PharmaB

Patient

- Connectivity to Patient's ecosystem (smartphones, diaries…)
- Innovative Solutions (eLabeling…)

Pharma C

Providing an element of Trust

Visit GS1 Clinical Trial Info Page

https://www.gs1.org/industries/healthcare/clinical-trials

GS1 Digital Link Standards

For Healthcare (eleaflet)

GS1 Digital Link

A single barcode for identification, authentication and access to information for medical products

How it works?

How

8881234567895

Converts the data elements into a URI

https://example.com/gtin/8881234567895

How

(01)08881234567895(17)200400(10)DZ929

Converts the data elements into a URI
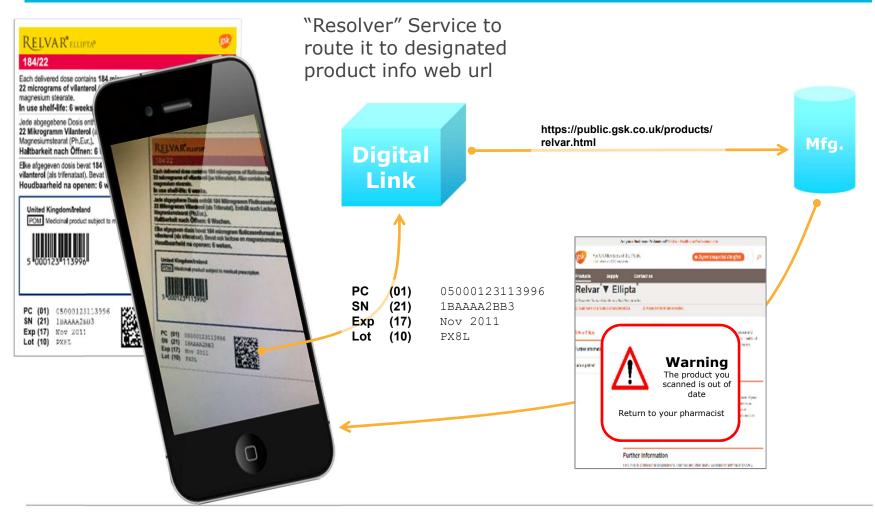
https://example.com/gtin/08881234567895/lot/DZ929?exp=200400

Extra services can be offered using the scanned data

"Resolver" Service to route it to designated product info web url

https://public.gsk.co.uk/products/relvar.html

Digital Link

Mfg.

PC	(01)	05000123113996
SN	(21)	1BAAAA2BB3
Exp	(17)	Nov 2011
Lot	(10)	PX8L

Warning
The product you scanned is out of date

Return to your pharmacist

Potential to route different users to different end points and sources of content

GS1 Digital Link eLeaflet Demo

Scan →

Perjeta 420 mg/14 ml concentrate for solution for infusion (07640149612837)

Perjeta 420 mg/14 ml concentrate for solution for infusion
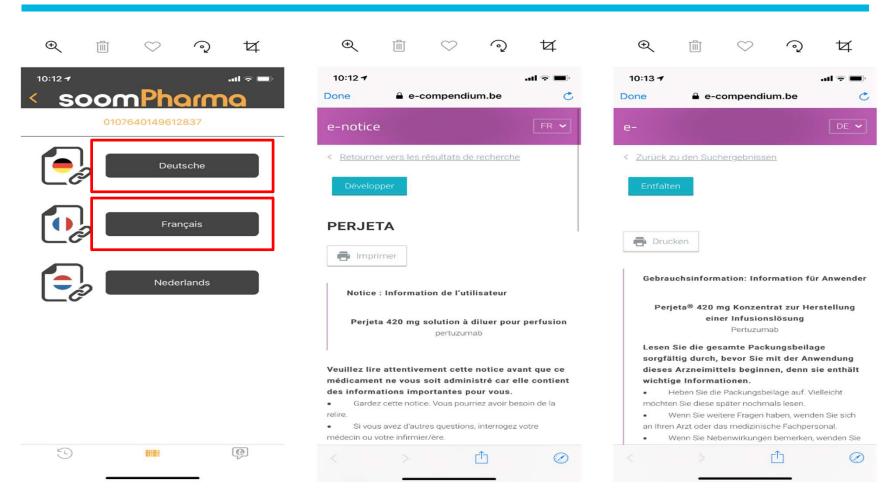
https://id.gs1.org/01/07640149612837
https://id.gs1.org/01/07640149612837/

epil		
de	ePIL (DE)	https://www.e-compendium.be/de/packungsbeilagen/patient/3570/3021
fr	ePIL (FR)	https://www.e-compendium.be/fr/packungsbeilagen/patient/3570/3021
nl	ePL (NL)	https://www.e-compendium.be/nl/packungsbeilagen/patient/3570/3021

GS1 Digital Link eLeaflet Demo

Calling for Pilot (Participation)
GS1 Digital Link + eLeaflet

Looking for interested parties (Pharma or Medical Device) companies whom wish to pilot using GS1 Digital Link Standards for eLeaflet initiatives.
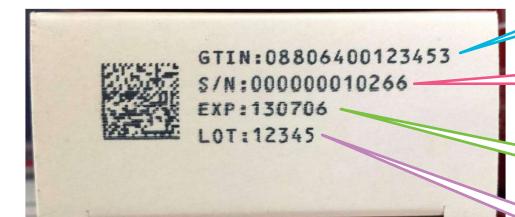
The Global Trends in Pharmaceutical and Medical Device Identification

Global Trend 1: IDENTIFY 4 Identification Attributes

GTIN:08806400123453
S/N:000000010266
EXP:130706
LOT:12345

Product Identifier (GTIN)

Serial Number

Expiry Date

Lot/Batch number

GTINs (Global Trade Item Numbers) provide access to information held in computer files – they are unique — non-significant — international — foundational.
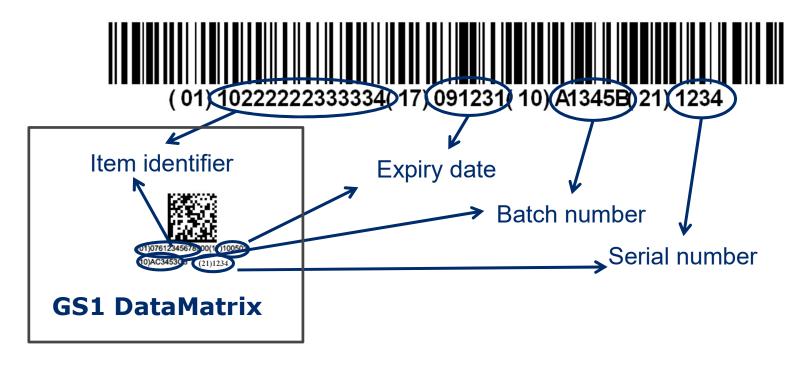
Global Trend 2: Data Carriers
Use of GS1 DataMatrix

GS1-128

(01) 10222222333334 (17) 091231 (10) A1345B (21) 1234

Item identifier

Expiry date

Batch number

Serial number

(01)0761234567800(1)100502

(10)AC34530 (21)1234

GS1 DataMatrix

Global Trend 3: Share
Need for Traceability

TRACEABILITY

- Track
- Trace
- Authentication
- Chain of Custody/ Ownership
- Returns
- Recalls

Regulatory Requirement Overview

Pharmaceutical Regulatory Requirements

2 Major Markets:
- **US DSCSA (Drug Supply Chain Security Act)**
  - over a period of 10 years by providing a migratory path from lot identification to serialisation to item-level traceability. (2013 to 2023)

- **EU FMD (Falsified Medicine Directive)**
  - ensure product integrity and authentication of medicines (ie. safety features and product serialisation) by Feb 2019. Set up end-to-end verification system" for drugs across the world.

Recent developments
- China
- Russia
- South Africa
- Middle East
  - Bahrain, Lebanon, Oman, UAE, Jordan, Sandi Arabia ..etc

PC:	09876543210982
SN:	12345AZRQF1234567890
NN:	(optional)
Batch:	A1C2E3G4I5
Expiry:	180531

US DSCSA implementation phases

Lot-level management
Started on January 1, 2015 for manufacturers, wholesalers, and repackagers, and July 1, 2015 for pharmacy (hospitals and retail): Share the 3T's: Transaction Information (TI), History (TH), and Statements (TS) at the Lot (or Batch) level of identification.

Item serialization
Mid-term (2017–2019): Manufacturer/repackagers serialize packages of drug products using a product identifier (GS1 Global Trade Item Number® (GTIN®) or NDC), serial number, lot number, and expiration date.
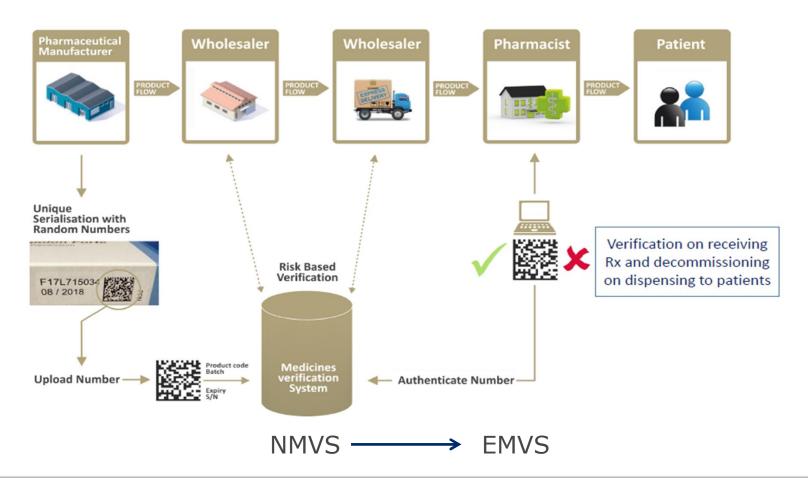
Serialized item-level traceability
By November (2023), make available information that would allow supply chain partners to trace the ownership back to the initial manufacturer or repackager.

EU Traceability Concept:
Point of Dispense Verification

Korea Serialisation System based on GS1 Standards

Korea
Pharmaceutical Serialization System

KPIS - Korea

Ministry of Health and Welfare

HIRA
HEALTH INSURANCE REVIEW & ASSESSMENT SERVICE

KPIS Korea Pharmaceutical Information Service

0:00:02   0:03:23

Medical Devices Regulations

The **U.S. FDA** released, in **September 2013** a rule which establishes that a common, worldwide system for product identification should be applied to all medical devices placed on the U.S. market.

The rule establishes that:
- a unique device identifier number should be assigned by the device manufacturer to each version or model of a device.
- the unique device identifier should be both in human readable format and in AutoID format. By default, this information will be applied on the label of each device uniquely identified.

The **EU Medical Device Regulation (MDR)** and In-vitro Diagnostic Regulation **(IVDR)** have been adopted on **25 April 2017** and define the requirements for the EU UDI system.

According to the Regulations, a UDI number must be applied to the medical device label, its packaging and, in some cases, the device itself.
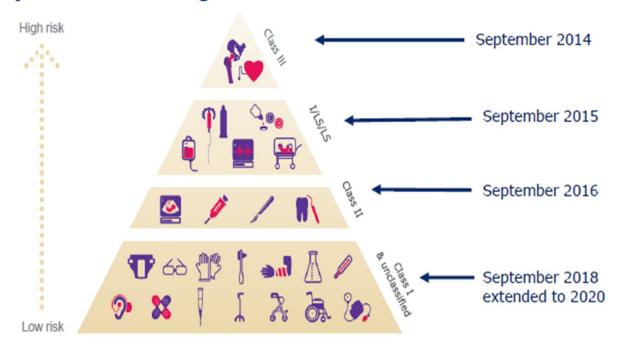
US regulation implementation planning

The regulation was voted on 24 September 2013
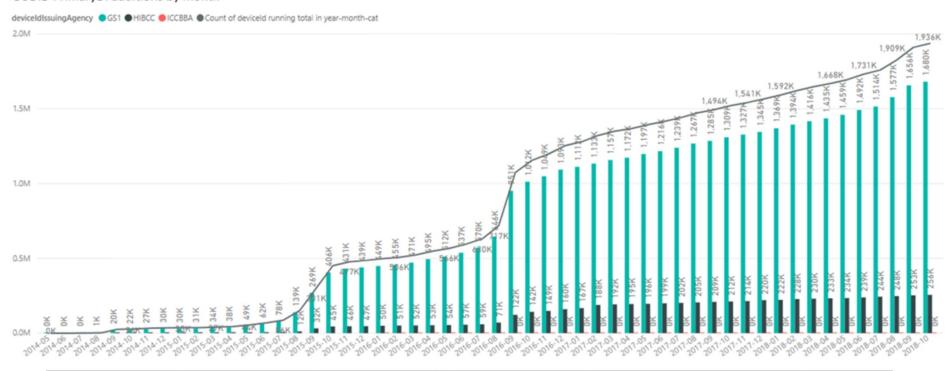
Database (GUDID) + UDI marking deadlines :

High risk

Low risk

Class III → September 2014

I/IS/IS → September 2015

Class II → September 2016

Class I & unclassified → September 2018 extended to 2020

2-year additional period granted for **direct marking**

Total Number of Primary Device Identifiers Listed in the FDA GUDID by Issuing Agency
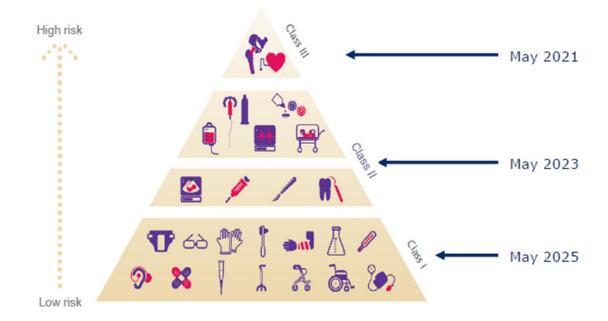

GUDID PrimaryDI additions by month

EU regulation implementation planning

1. **Database (EUDAMED) + UDI-DI** assignement : 26 May 2020
2. **Marking deadlines:**

High risk

Class III → May 2021

Class II → May 2023

Class I → May 2025

Low risk

2-year additional period granted for **direct marking**

In-Vitro diagnostic devices have different deadlines for implementation.
See the related regulation:
https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32017R0746

GS1 has been designated as issuing entity for Unique Device Identification (UDI) by the European Commission

FOR IMMEDIATE RELEASE – Brussels, 7 June 2019. GS1, the leading global supply chain standards organization, has been [designated by the European Commission](#) as issuing entity for Unique Device Identifiers (UDIs). GS1 global standards meet the EU Commission's criteria for the issuance of UDIs, supporting the EU regulators in ensuring a successful implementation of the UDI system as defined by the EU Medical Device Regulation and In-Vitro Diagnostics Medical Devices Regulation ([EU Regulations](#)), and enabling manufacturers to comply with these requirements.

The UDI system intends to provide a globally harmonised framework for identification of medical devices to enhance quality of care, patient safety and business processes.

"The GS1 global system of standards is the most widely implemented in the world and is used by all stakeholders in healthcare supply chains. The GS1 identifiers are fundamental to enable an efficient and effective identification of medical devices from product conception through every step of the supply chain lifecycle. Strengthening patient safety is central to GS1's mission in healthcare and GS1 is committed to support the EU Commission, manufacturers and other stakeholders worldwide in implementing the new EU UDI system." said Miguel Lopera, President and CEO of GS1, which has headquarters in Brussels, Belgium.
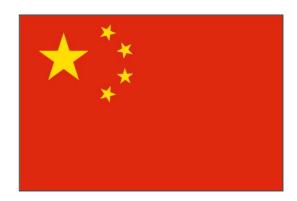
Since 2013, GS1 is accredited as UDI issuing agency in the U.S.A. and other regulators are also planning to allow the use of GS1 standards as the basis of their national UDI system.
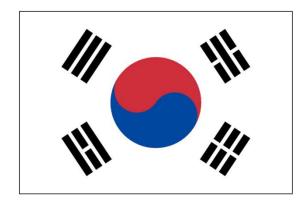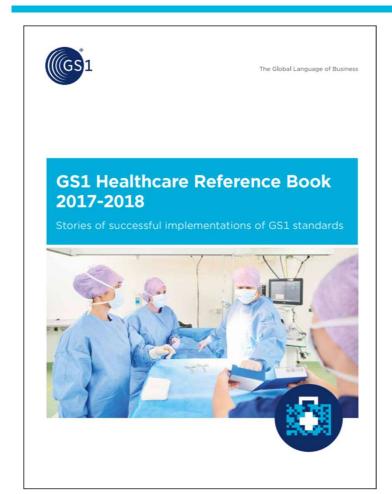
Recent Country UDI Development

GS1 Healthcare Reference Book

Compilation of healthcare success stories
Reference Book 2018/2019 *NEW!*
Reference Book 2017/2018
Reference Book 2016/2017
Reference Book 2015/2016
Reference Book 2014/2015
Reference Book 2013/2014
Reference Book GS1 Argentina "Successful cases of Traceability in the Healthcare Sector in Argentina"
Reference Book 2012/2013
Reference Book 2011/2012
Reference Book 2010/2011
Reference Book 2009/2010

GS1 Healthcare Webinars Series

Bedside scanning requires cultural change

"When implementing bedside scanning it is important to be a clear leader and show the way. However, it is equally important to have strong nurses on the floor as ambassadors to help pave the way. A cultural change must make sense for the individual nurse in order to succeed, and it is a process that needs to be kept in focus."

Trine Spiegelhauer is a Registered Nurse and Nursing Director for the Clinic for Children and Adolescents with Surgical Diseases at Rigshospitalet Nursing School, Copenhagen, Denmark.

During this webinar 'Bedside scanning requires cultural change' Trine will present:

1. Implementing barcode scanning is not something you do overnight;
2. the importance of leadership;
3. and the necessity to have software and hardware up to date.

Thursday
29 August 2019
Brussels, CET: 14:30 - 15:30
New York: EST: 08:30 - 09:30
London, GMT: 12:30 - 13:30
Singapore, SGT: 20:30 - 21:30
São Paulo, BRST: 10:30 - 11:30

https://www.gs1.org/healthcare/hpac_webinars

Upcoming Event:
36th Global GS1 Healthcare Conference
5-7 November 2019, New Delhi, India

With a focus on **patient safety**, the conference themes include:

- **Track and trace** for access to safe medicines
- Hospitals working towards a **better quality of care** and increased efficiency
- **Unique Device Identification (UDI)**

*Participation free for regulatory bodies and hospitals

More details, please visit:
https://healthcare-event.gs1.org/

GS1 Implementation in NHS Trust Hospital

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