



Seeking the innovation in Healthcare Supply Chain

What is required to the healthcare
in the 21st century

Prof. Shigekoto Kaihara, MD

*Chair, GS1 Healthcare Japan
Dean, Graduate School
International University of Health and Welfare*



Contents of my talk

- Multiple aspects of healthcare supply chain
- Supply chain reform and present status in Japan
- Barcode utilization in a hospital for patient safety. Three hospitals with advanced systems
- Future problems to be solved

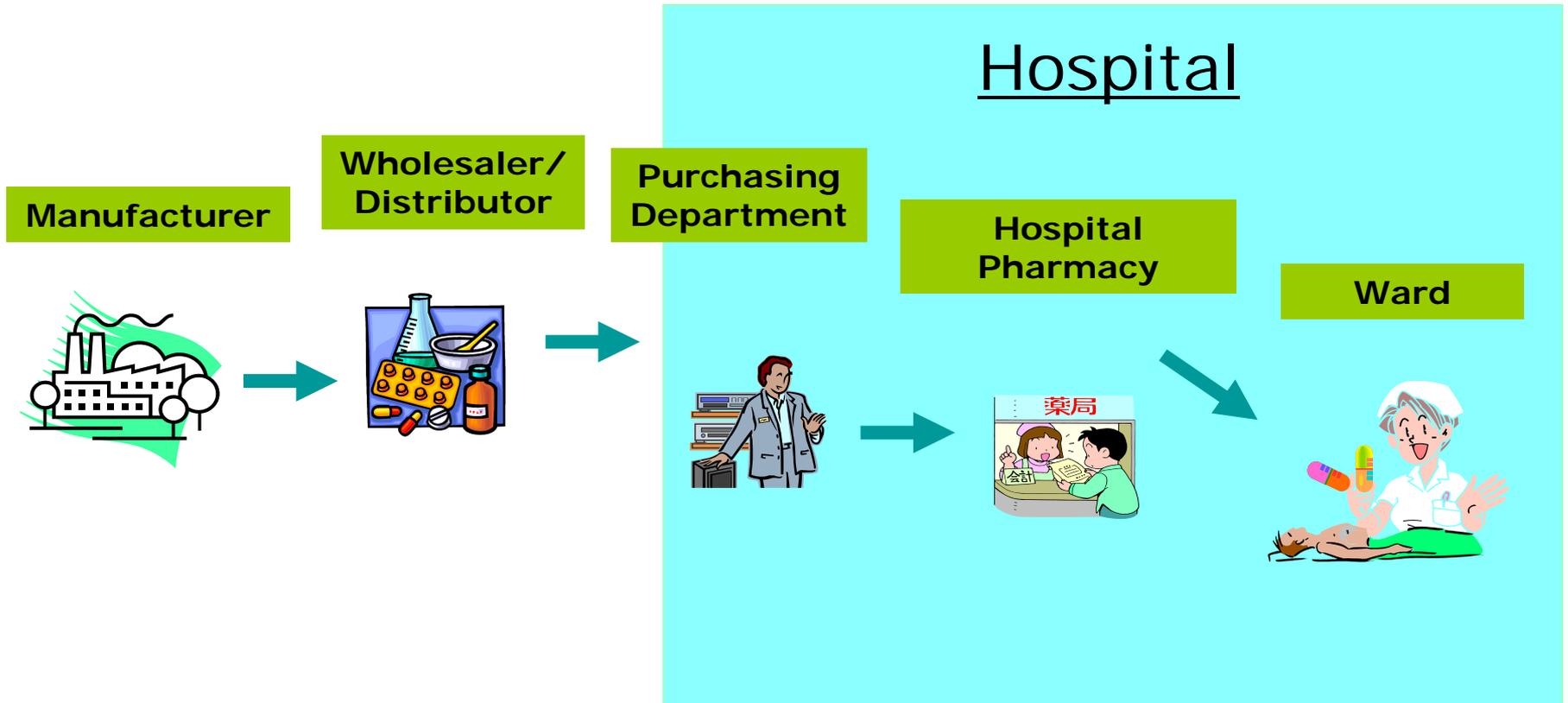


Multiple Aspects of Supply Chain

“Supply Chain” that is a flow from production through consumption consists of four parts

- ✓ manufacturer to wholesaler
- ✓ wholesaler to purchase dpt. of hospital
- ✓ purchase dpt. to pharmacy / supply center
- ✓ pharmacy / supply center to patient

Supply chain in hospital - pharmaceutical products-



Objectives of supply chain reform vary at each part

- Manufacturer : anti-counterfeit, efficient distribution
- Wholesaler (upper) : efficient distribution
- Wholesaler (lower) : efficient distribution (efficient ordering)
- Hospital:
 - Purchase dpt.: efficient ordering
 - Pharma dpt.: inventory control, better management by controlling products flow
 - Ward: patient safety



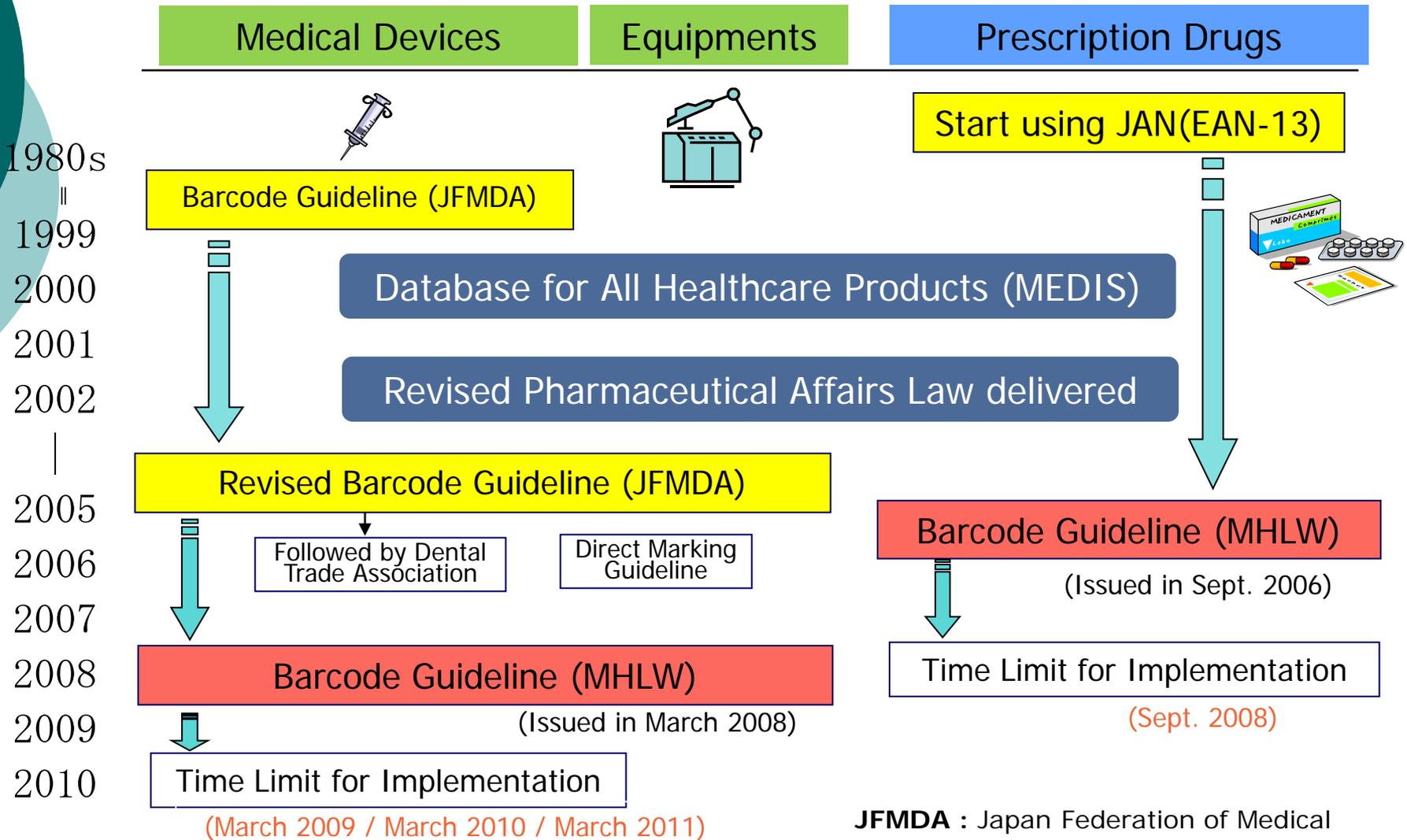
Contents of my talk

- Multiple aspects of healthcare supply chain
- Supply chain reform and present status in Japan
- Barcode utilization in a hospital for patient safety and 3 excellent examples
- Problems to be solved

Common Basic Element for attaining Objectives at each segment --- Unique ID

- Unique ID is a common basic element functioning as product identifier at manufacturer, wholesaler and hospital, though it may be used for different objectives at each segment.
- Unique ID like EAN code is widely used in the adjacent industry such as cosmetics, grocery, etc., and has brought great benefit.

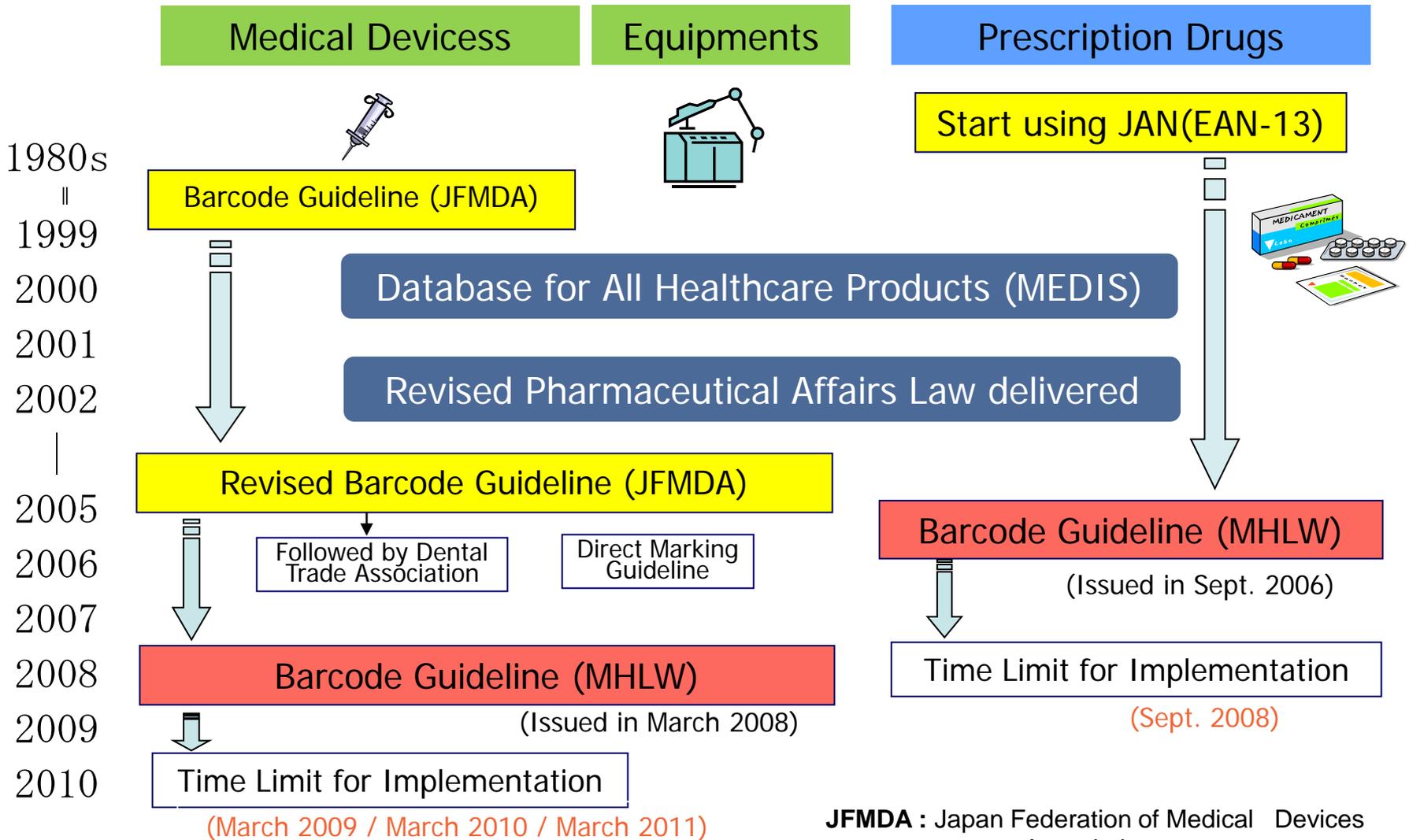
History of Barcode Implementation in Japan



JFMDA : Japan Federation of Medical Devices Associations

MHLW : Ministry of Health, Labour and Welfare 8

History of Barcode Implementation in Japan



JFMDA : Japan Federation of Medical Devices Associations

MHLW : Ministry of Health, Labour and Welfare

Present Status of Japan

- Allocation of Unique ID -- almost done
- Placing Unique ID -- almost done
 - Use of RFID to be tried
- Manufacturer ~ Wholesaler -- improved by using Unique ID
- Wholesaler ~ Hospital -- half improved
- Supply Chain inside Hospital
 - Pharma/Material dpt. -- fairly disseminated
 - Use for patient safety at ward -- very limited

Rate of Barcoding on Drugs at Sales Unit Level

[Annual Survey by MHLW in Sep. 2009]

	GTIN(JAN)	Registration to MEDIS-DC Database	Product Code	Expiry Date	Lot No.
Specific Biological Product ①	100%	92.9%	97.1%	97.2%	97.2%
Biological Product (Excluding ①)	100%	93.9%	99.1%	92.6%	92.6%
Injection	100%	89.2%	98.9%	14.1%	14.1%
Oral Medicine	99.9%	82.6%	89.6%	4.2%	4.2%
External Medicine	99.9%	79.8%	89.5%	2.6%	2.6%

Rate of Barcoding on Medical Devices

[Annual Survey by MHLW in Sep. 2009]

	GTIN	Registration to MEDIS-DC Database	Barcode Individual Package	Barcode Inner Box
Medical Devices	94.1%	57.4%	65.1%	80.8%
In Vitro Diagnostics	97.8%	58.6%	76.1%	84.6%
Consumable Supply	88.7%	37.7%	---	59.5%



Contents of my talk

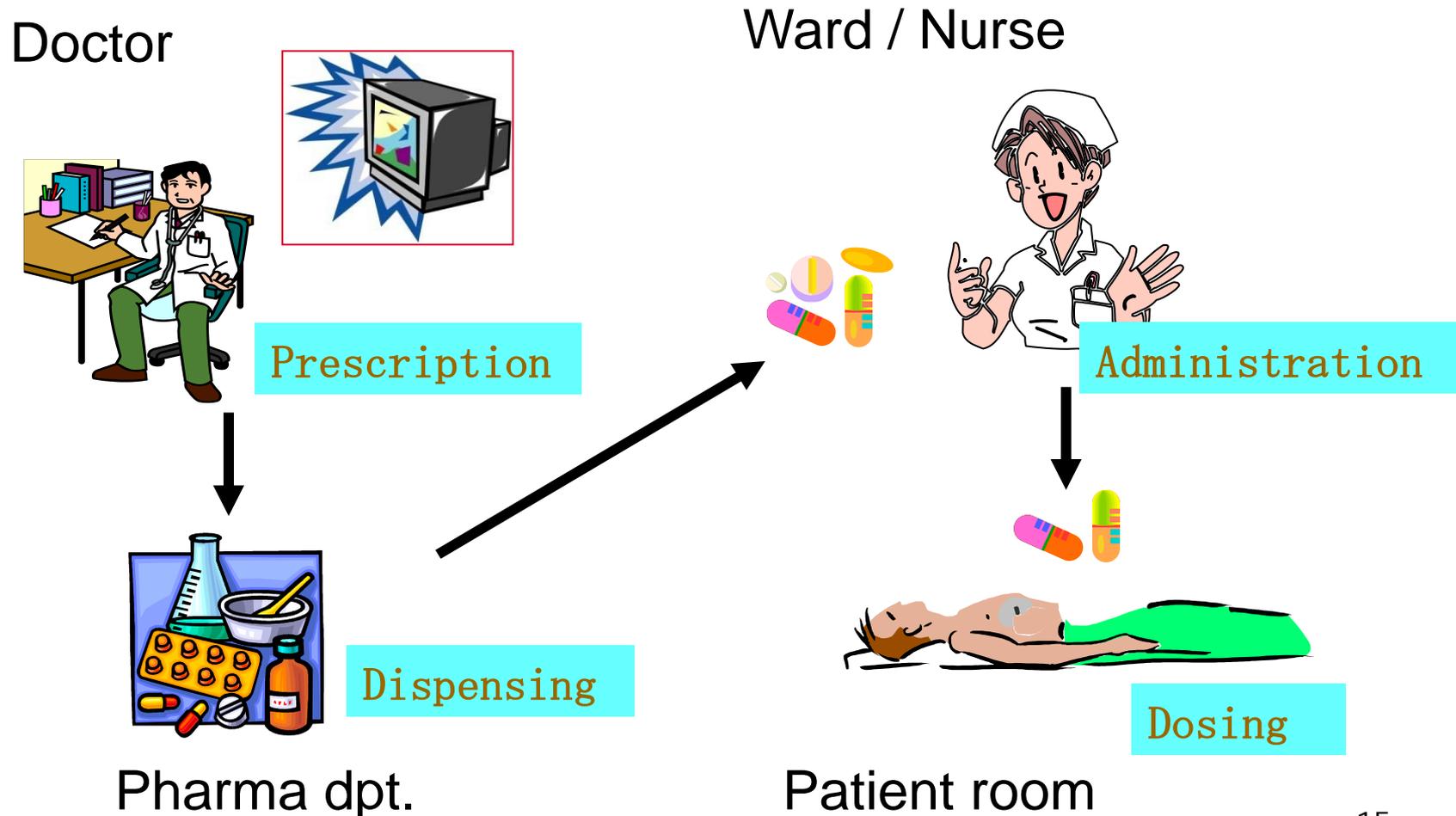
- Multiple aspects of healthcare supply chain
- Supply chain reform and present status in Japan
- Barcode utilization in a hospital for patient safety. Three hospitals with advanced systems
- Problems to be solved

Use of barcode in hospitals

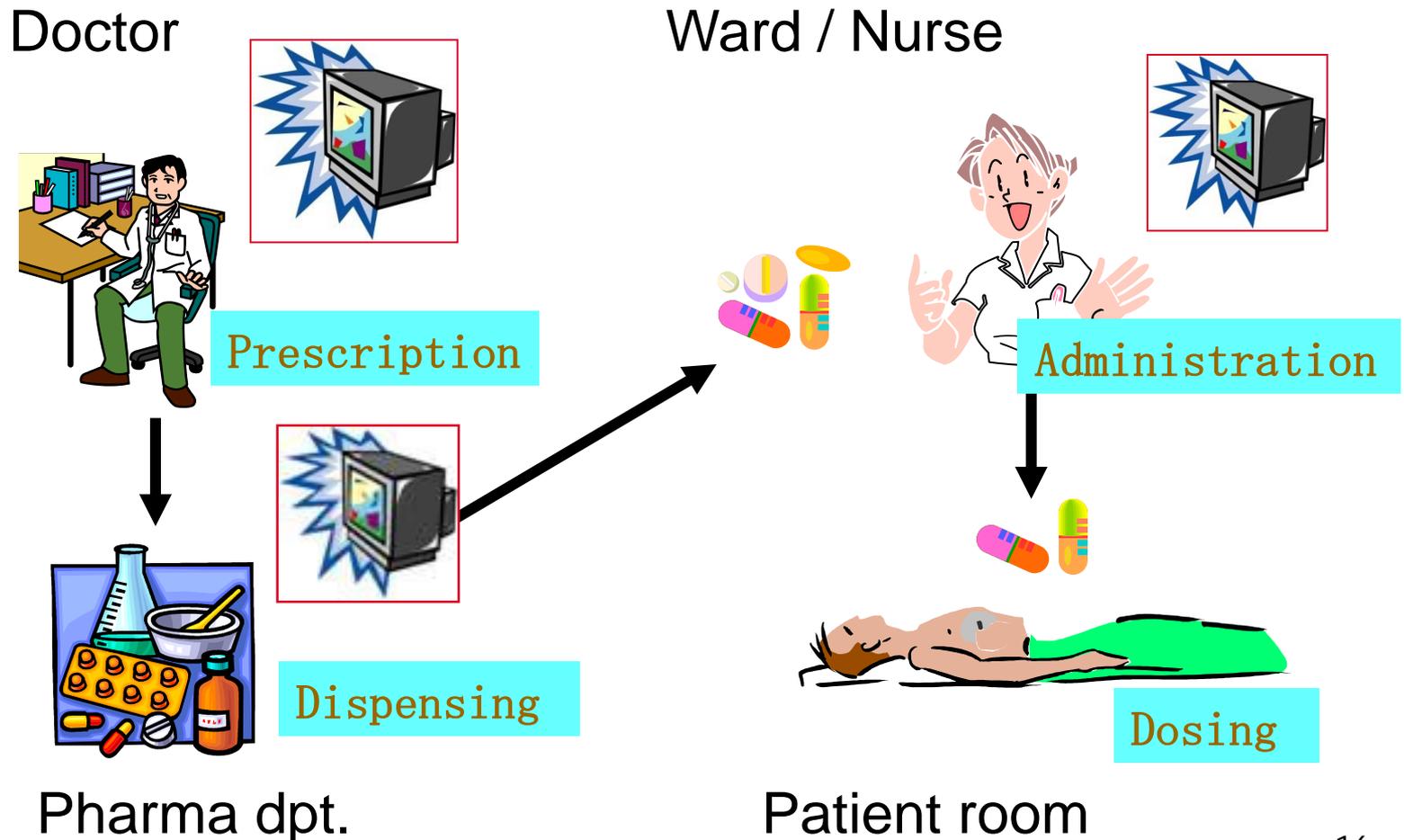
- ✓ Patient safety is the most important application.
- ✓ How does barcode contribute “patient safety” ?

HIS for Patient Safety -- Drugs

Warning system has been introduced for prescription stage, but not introduced for dispensing and administration stage.



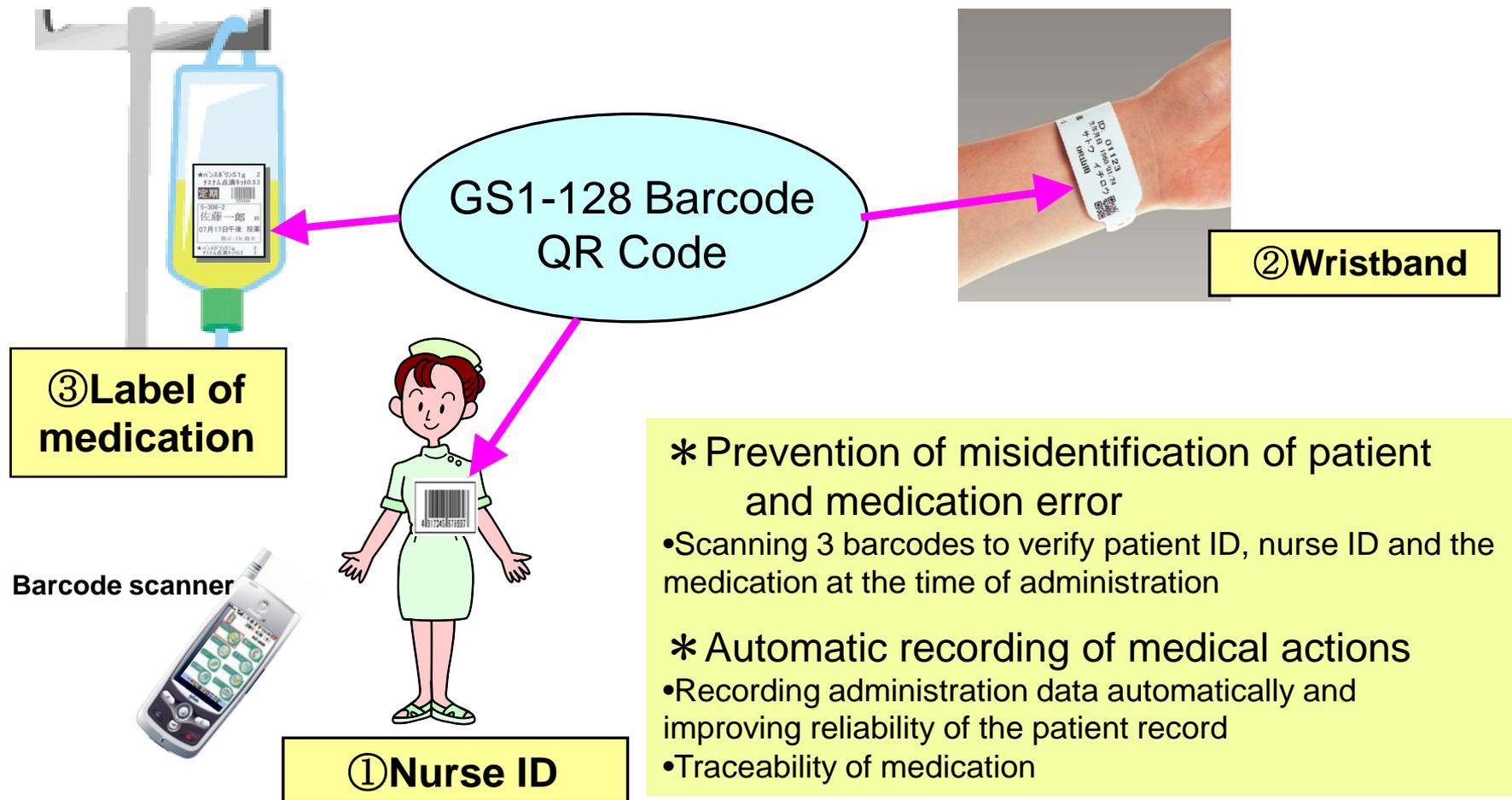
Warning system should be introduced at the point of action, pharmacy and ward



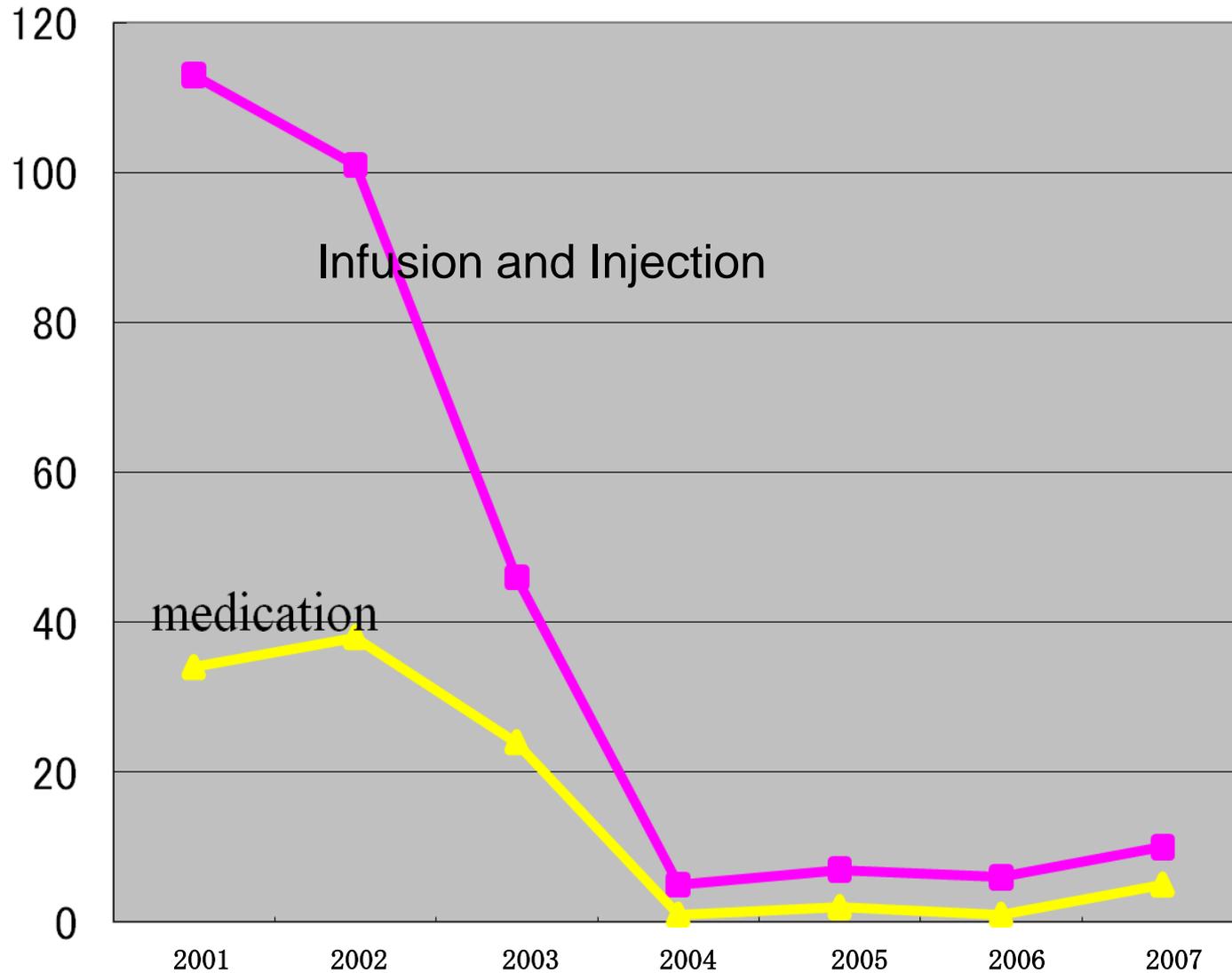
Data entry is required in three points to verify the action

- Barcodes can solve the difficulty of data input
 - Patient : Barcode on the wrist band
 - Pharmacists or Nurses : Barcode on the name tag
 - Drugs & Medical devices : Barcode on the product
- It is demonstrated that the incidences at the stage of practice could be drastically reduced by this method.

Three points verification at point of care



Number of incident / accident report





Discrete Excellent Examples

- Akita University Hospital
- Kyoto Second Red Cross Hospital
- National Center for Child Health and Development
- NTT Medical Center Tokyo

National Center for Child Health and Development



Bed-side Terminal at National Center for Child Health and Development



- 12-inch Touch Panel Display
- All of 500 Beds are equipped
- Barcode Scanner
- TV remote controller
- Extensibility
(4 USB connectors)



National Center for Child Health
and Development

Switch screen

Schedule

History

Care sheet

Nurse ID

99000002

Name

アメニティ(看護)

Search result

Patient ID 0960013521

Sex 男性

Date of birth 1988/03/01

Patient name 成育 太郎

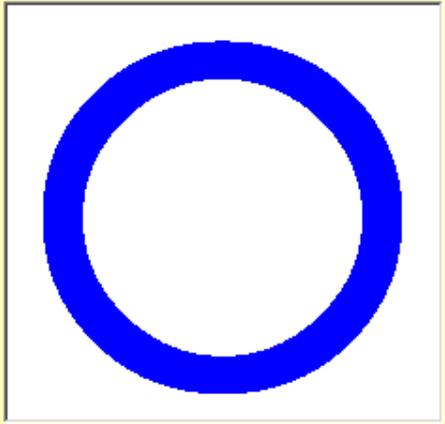
Age 14歳 0ヵ月 17日

Order number 0106071602

Date of taking medicine 2002/03/18

Detail for order 臨時処方 2002/03/11(月) 17:30

	name	Amount	Unit
1	セフゾンCap(50mg)	3	Cap
2	分3 (朝昼夕)食後	7	日分
3	入院 指導する為至急		
4	7FW-NS		
5			
6			
7			
8			
9			
10			
11			



Date of taking medicine

<< < ▼ > >>
2002/03/18 16:00

Start

Confirm

Change speed

Finish

National Center for Child Health and Development

Switch screen

Schedule

History

Care sheet

Nurse ID

99000002

Name

アメニティ(看護)

Search result

Patient ID

0960013521

Sex

男性

Date of birth

1988/03/01

Patient name

成育 太郎

Age

14歳 0カ月 17日

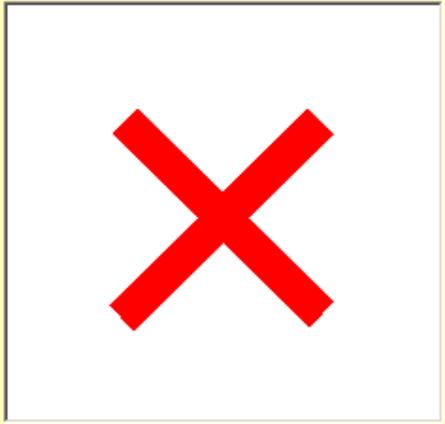
Order number

00015606

Date of taking medicine

Detail for order

	name	Amount	Unit
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			



Date of taking medicine

<< < ▼ > >>

2002/03/18 16:01

Start

Confirm

Change speed

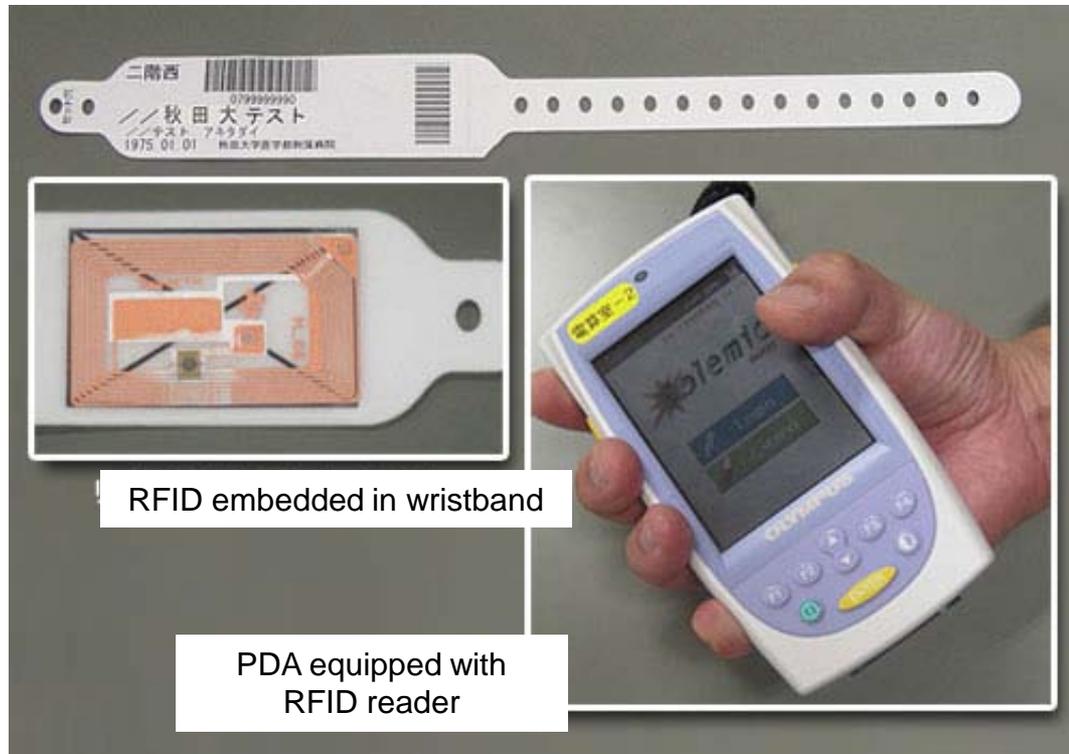
Finish

National Center for Child Health and Development

Akita University Hospital



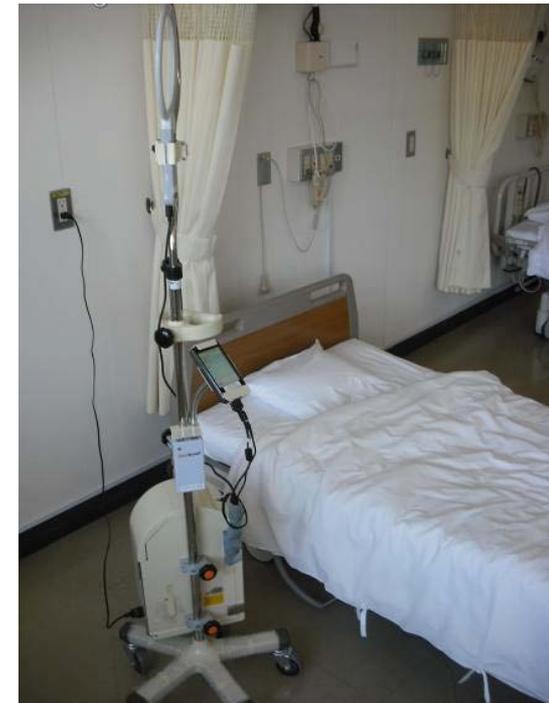
Safety Management System using Patient Wrist Band with RFID at Akita University Hospital



- RFID
 - 13.56MHz
 - Passive RFID tag
- Wrist Band
 - Patient ID (Text and Barcode) on the surface
 - Water proof coating on the reverse side
- P D A
 - Drop impact resistance : 1.0m
 - Alcohol resistant body (Cleaned by rubbing alcohol)

RFID attached on Nurse ID tag, Patient Wrist Band and Infusion Bag

Nurse ID Tag	Patient Wrist Band	Infusion Bag
 <p data-bbox="162 996 450 1043">Active RFID</p>	 <p data-bbox="581 996 869 1043">Active RFID</p>	 <p data-bbox="962 996 1290 1043">Passive RFID</p>



Infusion Pole equipped with RFID Antennas

Antenna for Infusion Bag Tag



RFID on Infusion Bag

Antenna for Infusion Bag Tag



RFID on Infusion Bag is surely read !

PDA for checking Infusion Bag Tag



Antenna for Nurse Tag & Patient Tag



Battery Unit



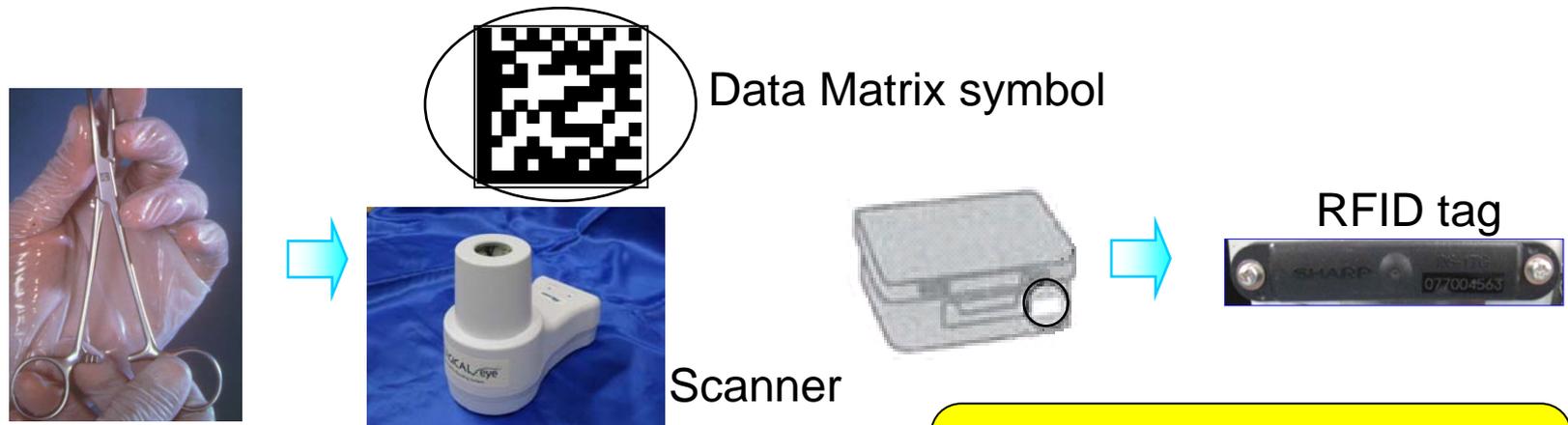
NTT Kanto Medical Center, Tokyo



Application of Data Matrix & RFID in the Sterile Supply Dept.

Return → Cleaning → Assembly → Sterilization → Supply • Storage

Application of bar-coding and RFID



**Surgical instruments :
Data Matrix**

**Containers :
RFID**

NTT Medical Center Tokyo



Reading Data Matrix at the time of assembling instruments

For preventing assembly error

Showing the set to be assembled



< >		
Set Name		
Image		
Surg. Inst.		
Affix		
Composition	115	25
No. of Regist.	115	0
No. of Scanned	4	-
Status	Assembling	

The image on the right shows a detailed view of the software interface. It features a navigation bar with left and right arrows. Below it, the 'Set Name' is 'Surgery Big C'. An 'Image' section displays two photographs of surgical instrument sets. A table below provides statistics: 'Surg. Inst.' (115), 'Affix' (25), 'Composition' (115), 'No. of Regist.' (115), 'No. of Scanned' (4), and 'Status' (Assembling). A red box highlights the 'Composition' row, and a green box highlights the 'Surg. Inst.', 'Affix', and 'Status' rows.

NTT Medical Center Tokyo

For preventing assembly error



In case of discarded or unusable item

セット振分管理: C

10 読込

セ ッ ト 振 分 管 理

< >	1/3 外科 大_A			
名 称				
画 像				
セット構成	銅製小物 115	付属品 25	銅製小物	付属品
登 録 数	115	0		
読 込 数	2	-	-	-
状 態	作業中			
名 称	予 備	不 明	名称をクリックすると、コンテナを選択できます。 画像をクリックすると、拡大画像が表示されます。	
読 込 数	0	1		

シリアル番号 _____ コンテナ名 _____
 メーカー名 _____
 商品名 _____
 通称 _____

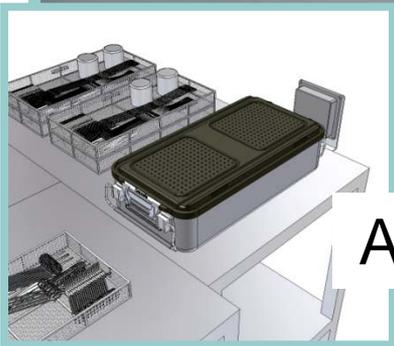
追加単品(セット)登録(E)
一覧(L)
未完了リスト(P)
クリア(N)
終了(X)

RFID Antenna

RFID Tag

Container

Assembly information is read from RFID Tag





Contents of my talk

- Multiple aspects of healthcare supply chain
- Supply chain reform and present status in Japan
- Barcode utilization in a hospital for patient safety. Three hospitals with advanced systems
- Future problems to be solved

Why barcode is not used for patient safety?

- The followings are essential to operate this GS1 system;
 - Recognition of hospital staff that barcode is useful for patient safety
 - Decision on initial investment by top management of hospital
 - Cooperation of nursing department
 - Inclusion of barcode system in a standard hospital information system

How to solve the problem?

- It is necessary to disseminate the knowledge about using barcode to medical personnel.
- Discussion in the academy and coverage by journalism
- Education of top management of hospitals
- Reflection to the reimbursement of medical fees
- To make “Distribution System” a standard module of hospital information systems

GS1 Healthcare Japan launched in 2009

- The first general assembly of the GS1 Healthcare Japan took place on May 28, 2009. <http://www.dsri.jp/gshealth/>
- Around 100 attendees from MoH, METI, healthcare companies, hospitals, associations and solution providers.
- Membership; as of Nov. 1st, 2010
 - Regular Member (Healthcare Companies) – 46
 - Individual Member (Doctors, Professors, etc.) – 15
 - Association Member (Industry Associations) – 16
 - Supporting Member (Solution Providers) – 23



Professor Sigekoto Kaihara
Chairperson of GS1 Healthcare Japan





- **Healthcare Survey Mission to Europe and United States**
Aug. 26 ~ Sep. 6, 2009
Visiting NHS, FDA, 5 hospitals, 1 GPO and GS1US
15 participants
- **Participation in GS1 Healthcare Hong Kong Conference**
Oct. 5 ~ 9, 2009
6 participants
- **Hospital Visit (Kanto Medical Center NTT EC)**
Dec. 4, 2009
63 participants
- **DC Visit (Eisai Distribution Co., Ltd.)**
Jan. 26, 2010
40 participants
- **Healthcare Survey Mission to Korea**
May 17 ~ 20, 2010
Visiting hospitals, universities, pharmaceutical manufacturer, etc.
18 participants
- **Participation in GS1 Healthcare Geneva Conference**
June 22 ~ 24, 2010
8 participants
- **Healthcare Survey Mission to Europe**
Sep. 1 ~ 12, 2010
Visiting hospitals, pharmaceutical manufacturers, distributors, etc.
13 participants

Thank You for Cooperating in the Activities of GS1 Healthcare Japan !

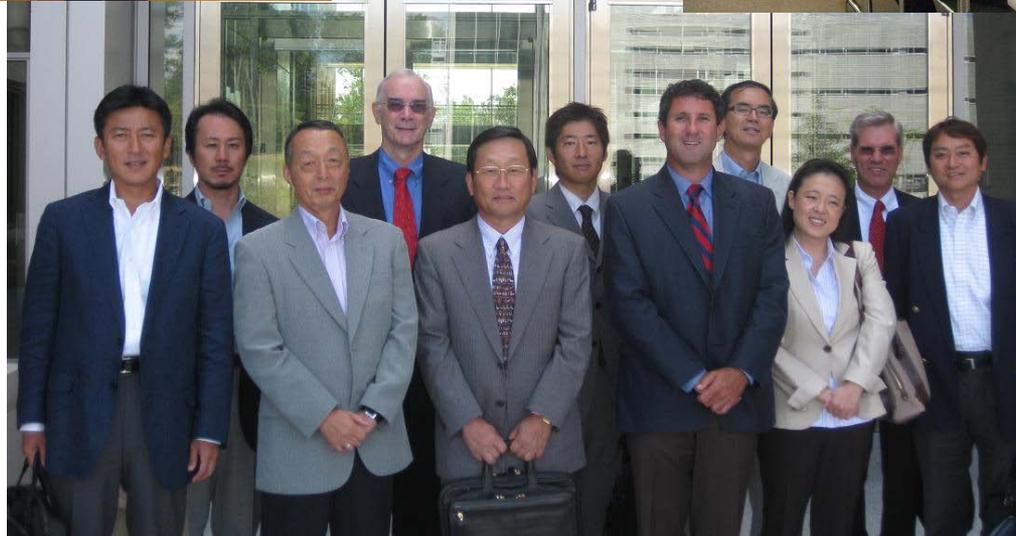
<http://www.dsri.jp/gshealth/>



**GS1Healthcare
Hong Kong
Conference
(Oct. 7, 2009)**



**Briefing Session
(Dec. 1, 2009)**



**Survey Mission
visiting FDA
(Sep. 2, 2009)**

Contact Details

Prof. Shigekoto Kaihara

Chair

GS1 Healthcare Japan

Email : kaihara-ky@umin.net

Tel +81 3 5414 8520

Fax +81 3 5414 8529

