

**Trend of SCM with auto-identification for medical  
field in Japan**  
~ from factory to bedside ~

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# The concept of the Hospital IT system in Japan is

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not only **a management material** but also **integrated management resource, prevent medication errors, application to EBM** by the data mining of medical records.

As for this system, it has become to grasp medical practice and medical material, which did not understand on current electronic receipt, billing slips processing system accurately.

In **POAS (Point of Act System)**, it is saved the management information, so-called, “man, money, material, and information.”

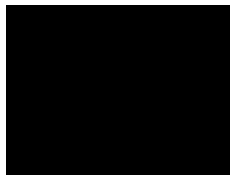
We concluded that this system has remarkable **investment effect, over four million dollars per year**, since it is a hospital management system including logistics management. In addition, the quality of care has been improved dramatically while **error rates have been reduced – nearly to zero** in some case.



# What is POAS?

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- ➔ 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, but RFID technologies are now in processing



## What can POAS do?

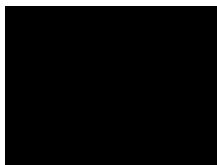
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➔ By collecting data from wireless PDAs, examination room terminals, and laboratory equipment, POAS can:

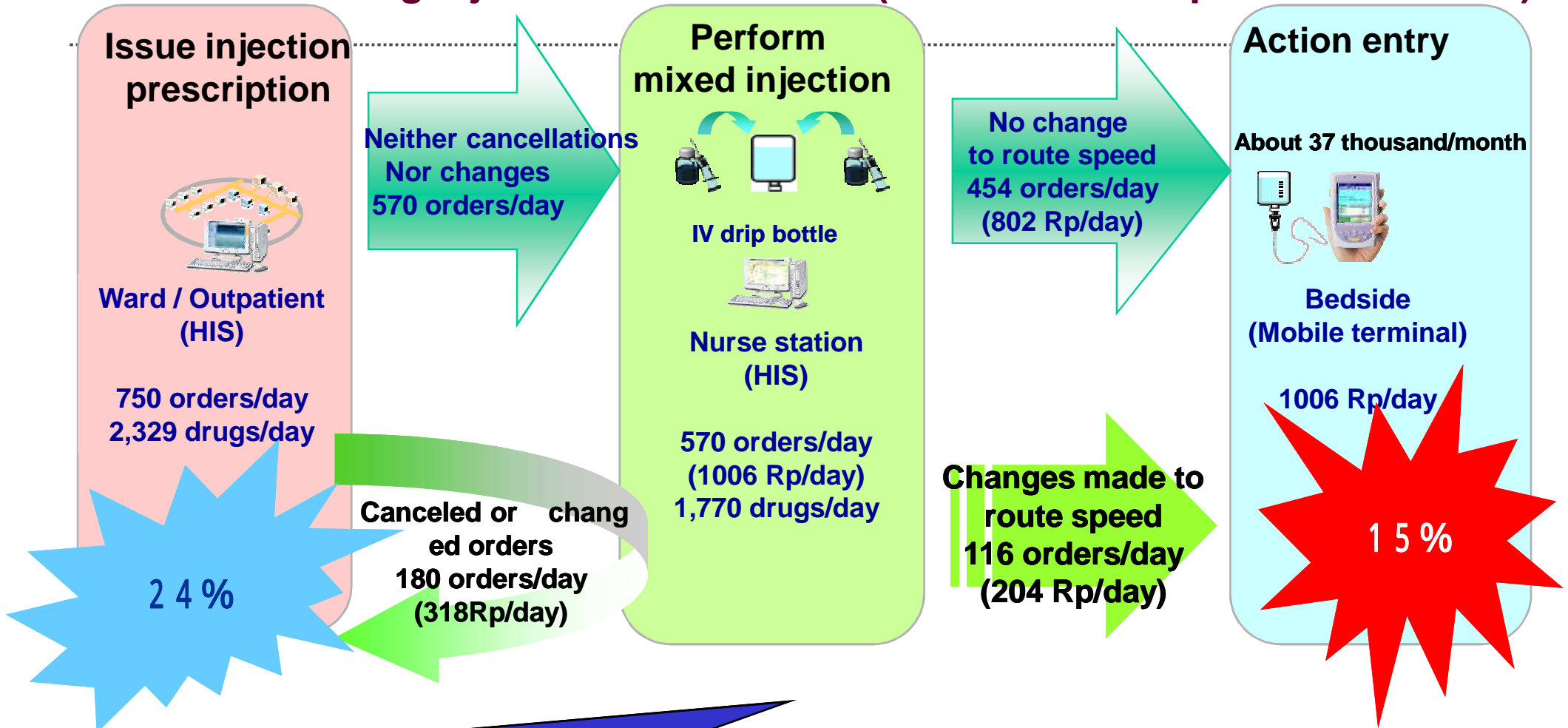
- Record medical actions in detail, everywhere
- Assist practicing medical treatment to patients
- Monitor patient symptoms continuously
- Comprehend logistical data by the “minimum unit”  
→ In real-time.

➔ Useful for automatic single size item identification

➔ UDI



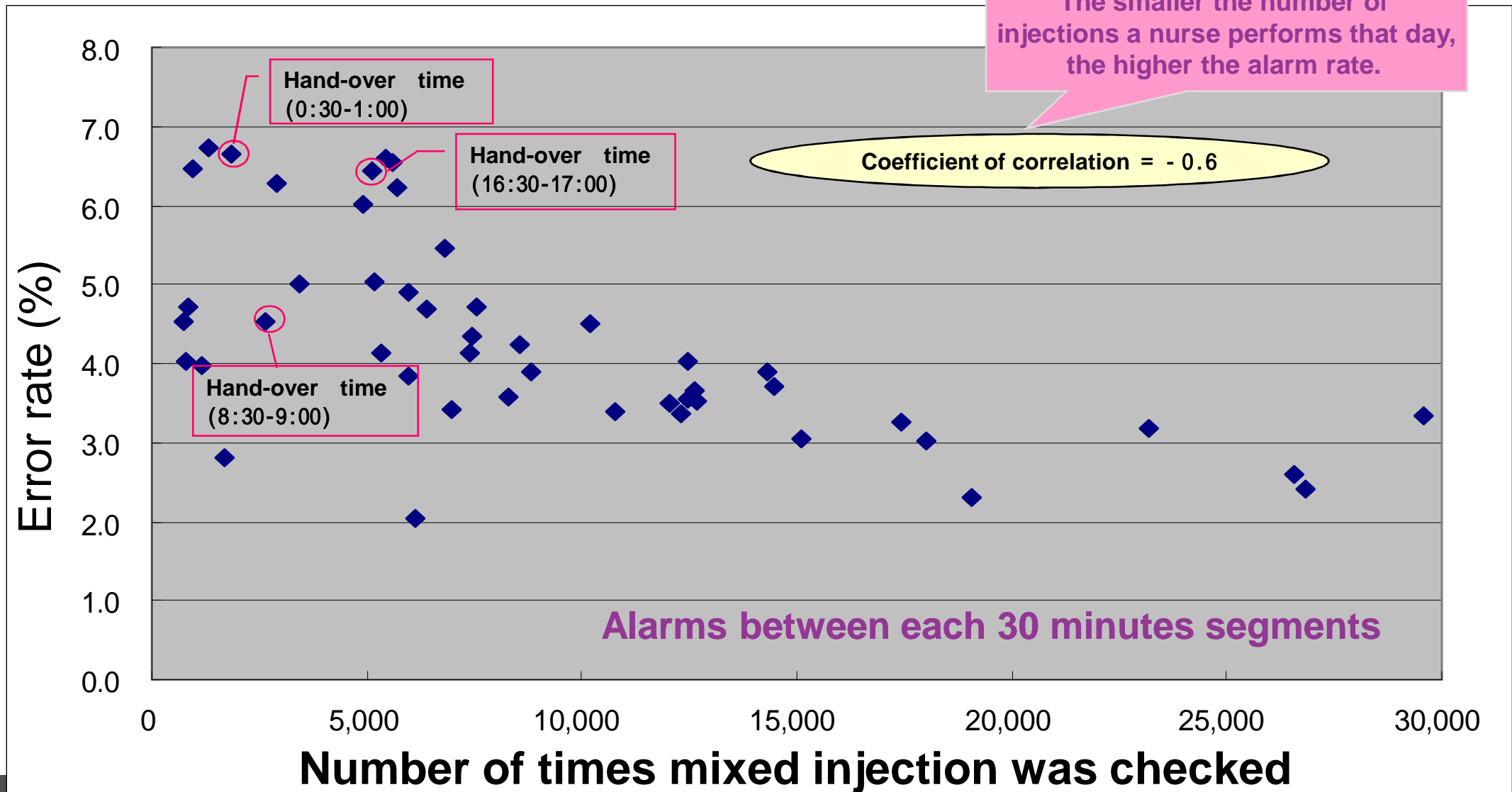
# The effects of making injection action entries (calculated from performance data)



There is a possibility of misadministration of **about 40%** if the change of order is not communicated in real-time.

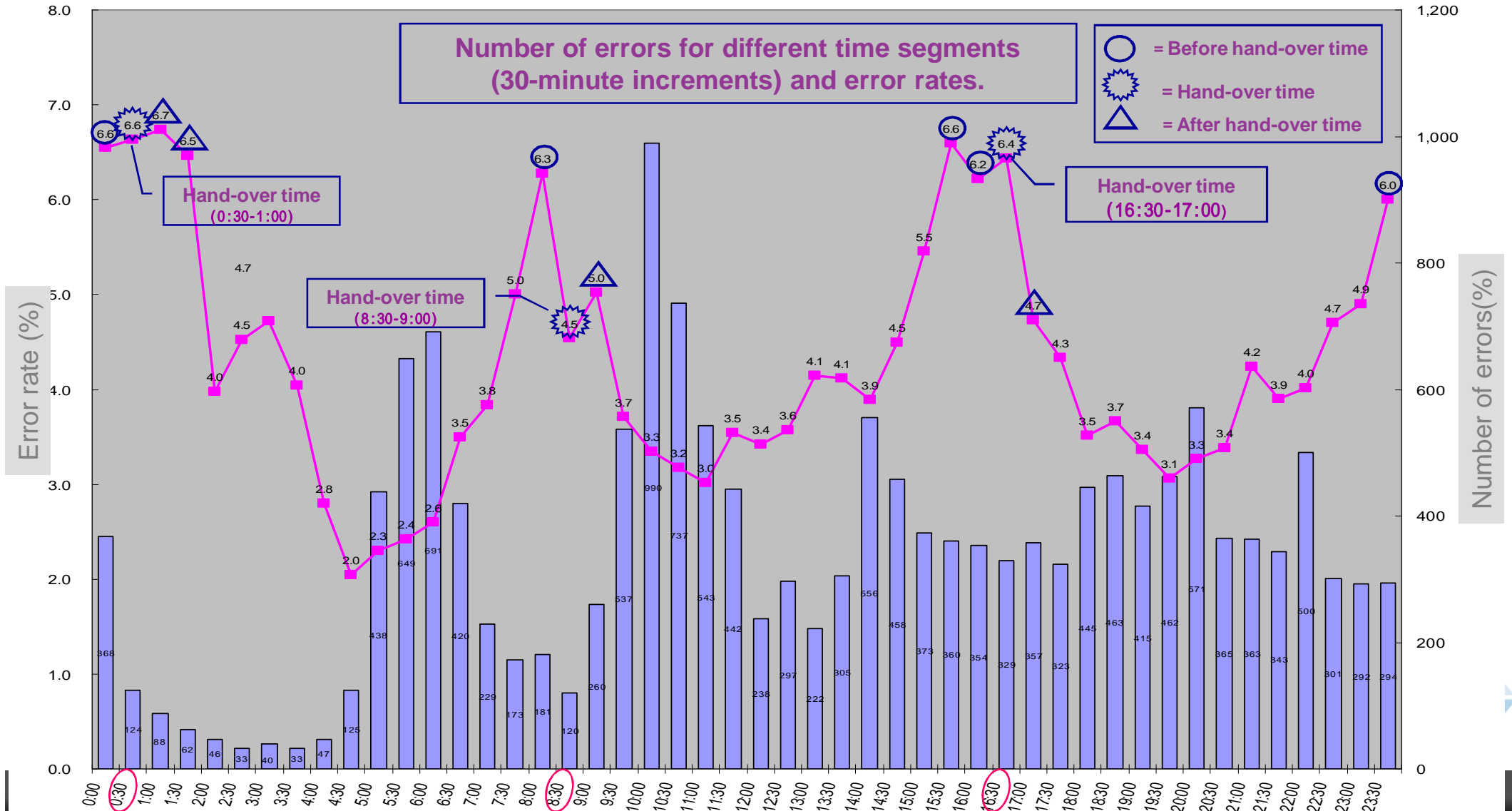
# Comparison of the number of times mixed injections were checked and error rate (%) (between each 30 minutes segments)

The number of check actions and the error rate have a slightly negative correlation.



# Alarm status according to different time segments

Time segments with higher alarm rates become even clearer when seen in 30-minute increments.



# Error rates for time elapsed on nurse duty (before and after hand-over time)

## Work status of nurses who trigger alarms around the hand-over time

Before hand-over time

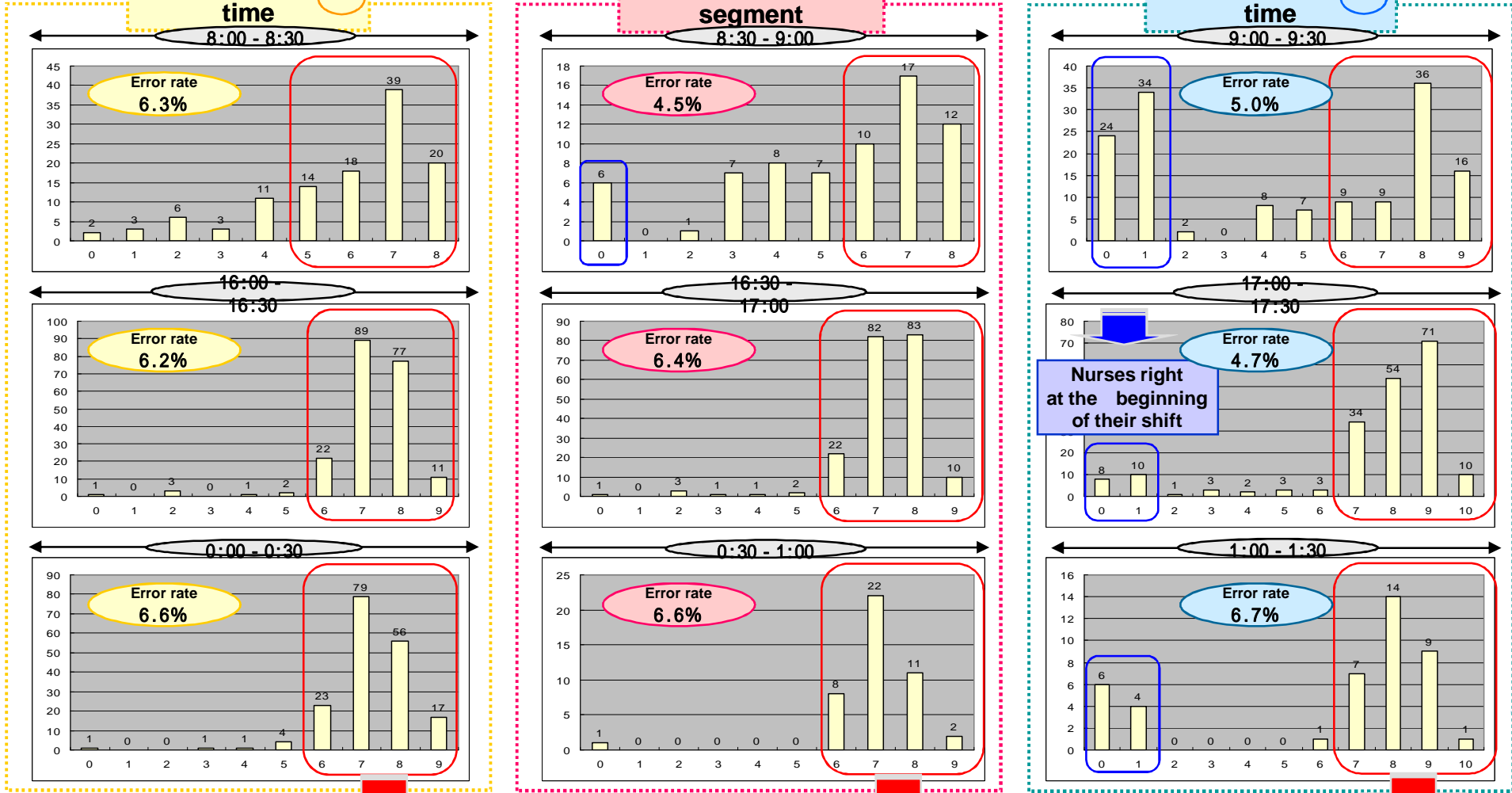
Hand-over time segment

After hand-over time

<Number of errors>

Day shift

Semi-night shift  
Late night shift

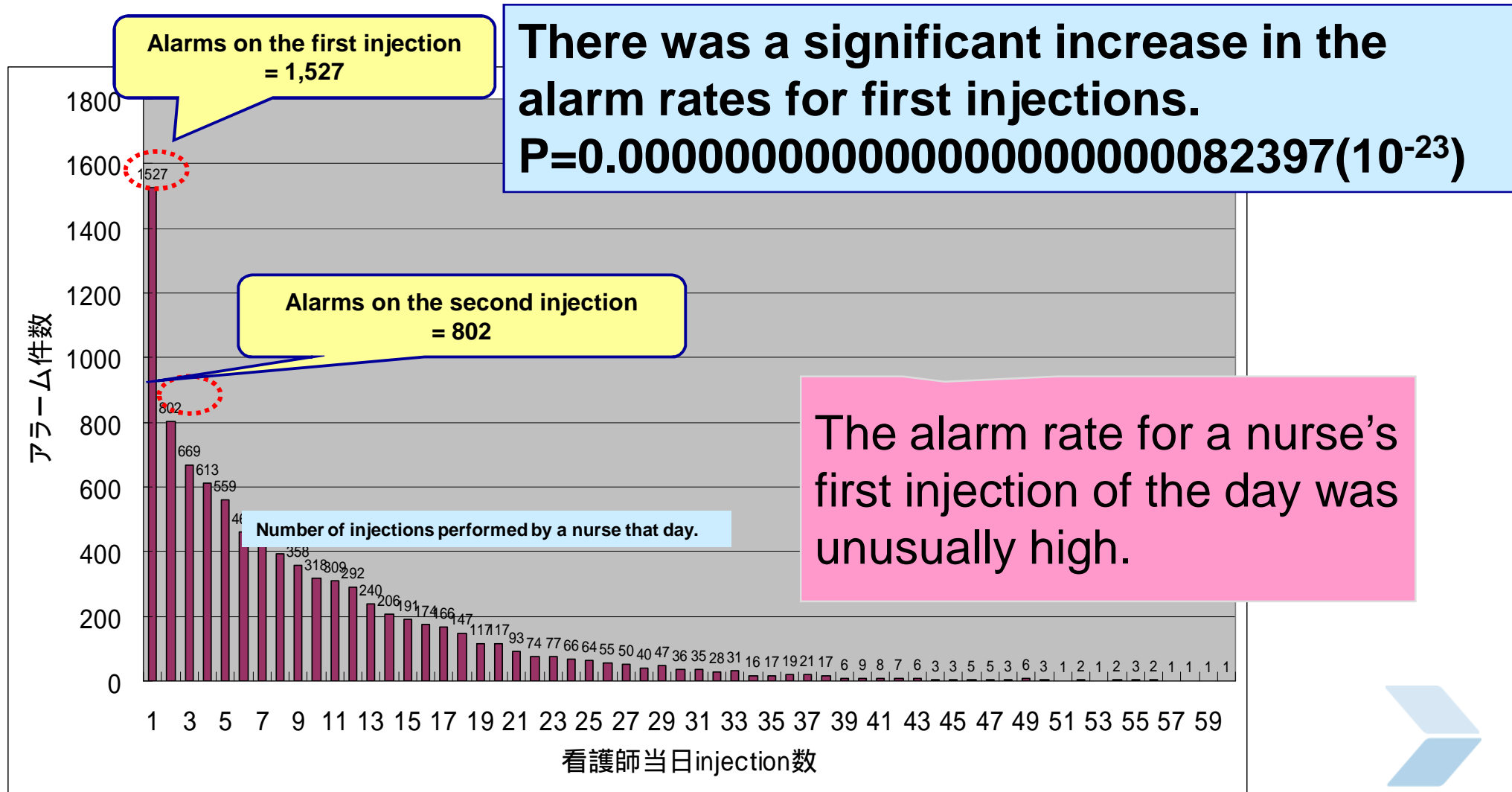


Nurses right before the end of their shift

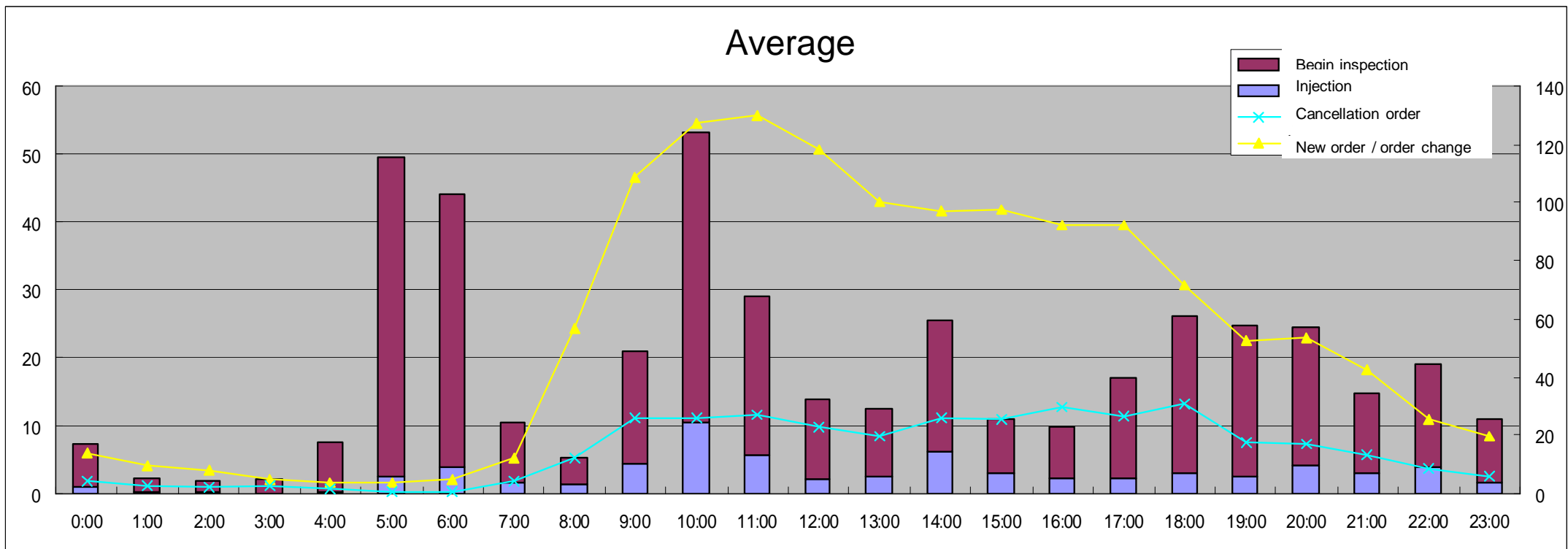


# Study of alarm status of “First injection/IV drip”

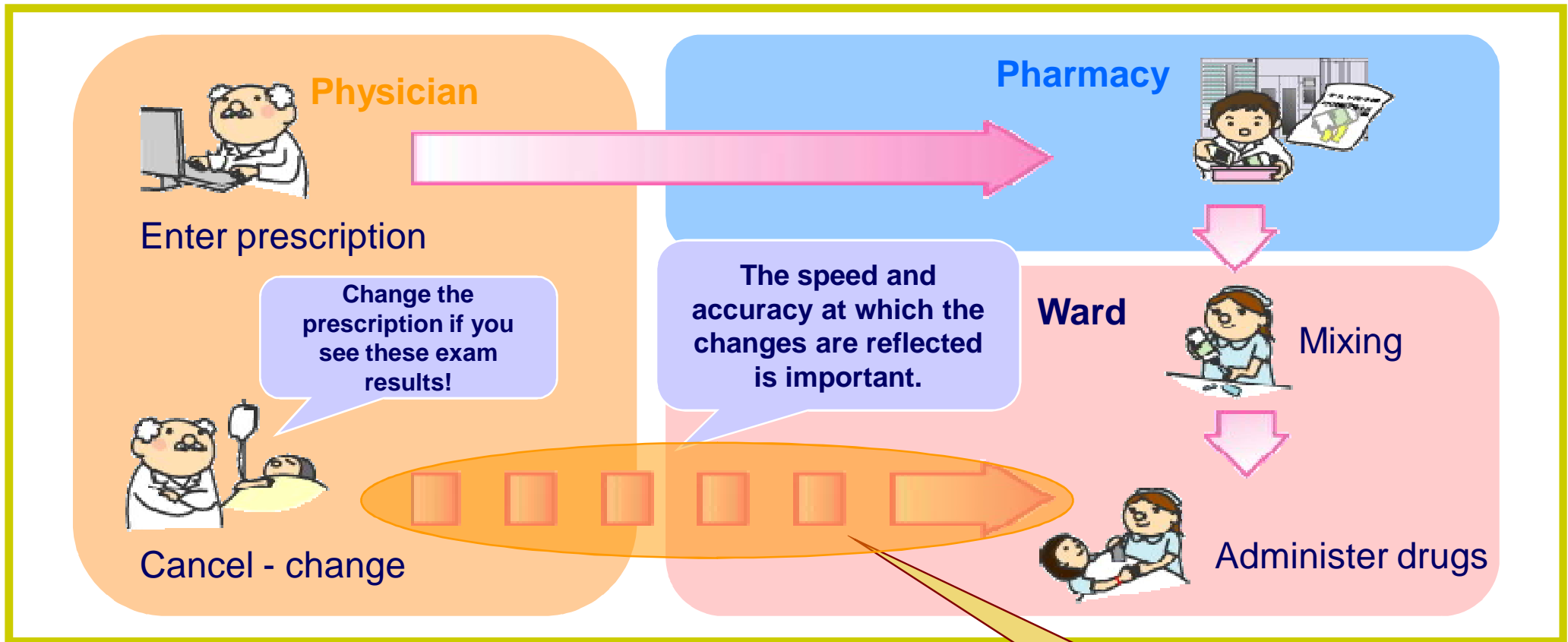
Study regarding the phenomenon where the alarm is more likely to be triggered on the first injection or IV drip on a nurse's shift.



# Time that injection and IV drips were started and order frequency



# 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 the use of POAS.**

Conventional system ID: Drug code  
POAS system ID: Drug code + serial code

Data granularity

Individual (ID) management

Order

Management of the number of items

Act1

Task:5W1H

Act2

Task:5W1H

Act3

Task:5W1H

1

Inje

1

Injection prescription

5% glucose 500 ml

Medin 1A morning

Rp2) Saline500 ml

K2 1A evening

Rp3) Saline100 ml

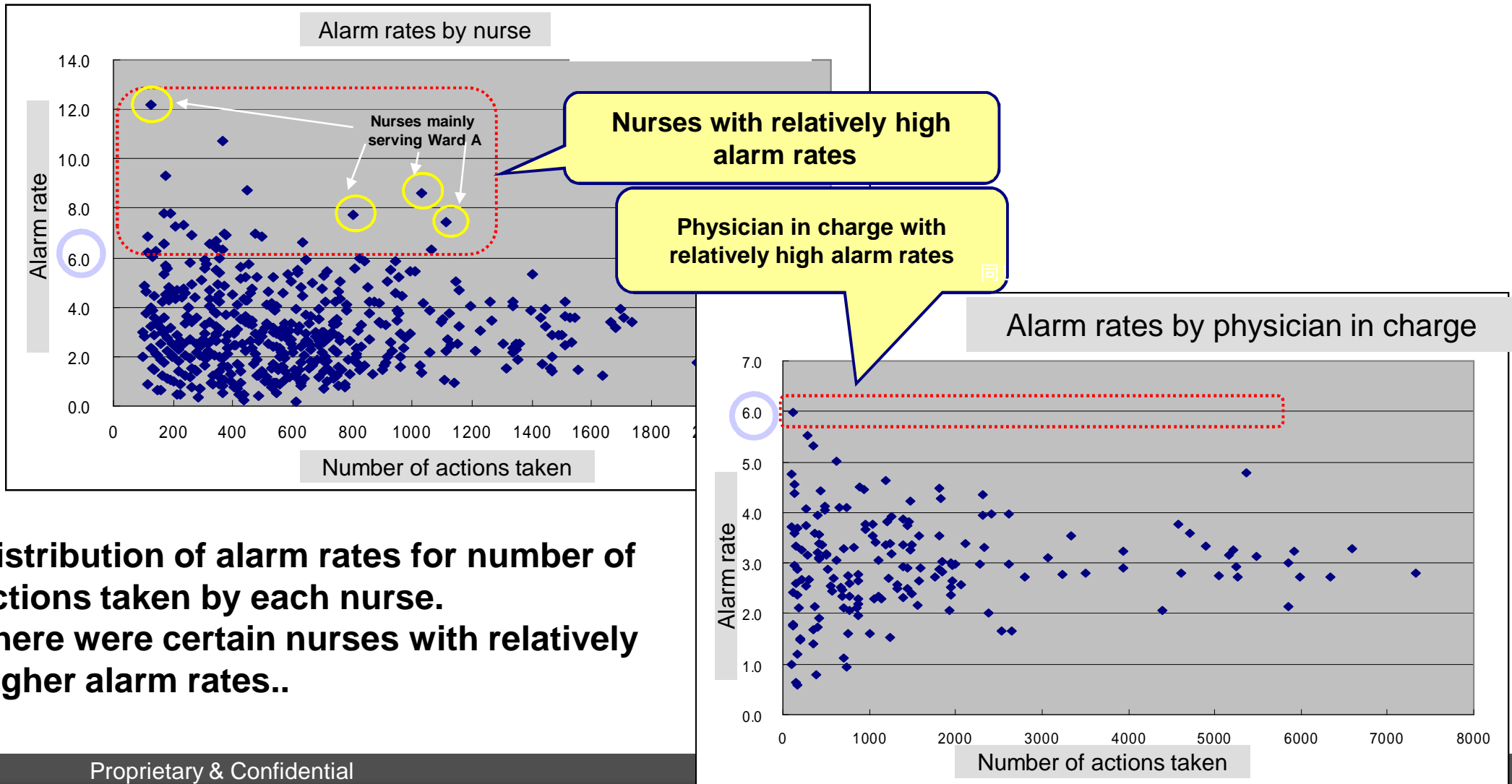
Pansporin 1 g

Morning and evening

Data unit = People's actions (changes) single item based

Data unit = Invoice (payment) unit

# Unusually high alarm rates among certain nurses or physicians



**Distribution of alarm rates for number of actions taken by each nurse. There were certain nurses with relatively higher alarm rates..**

## Cancel data 4/01/2004 – 3/31/2005

Type	Cost (Yen)	Number	Rp numbers	The number of injection and shot
Normality	1,113,386,619	1,019,229	556,283	336,682
Cancel Type2	108,535,086	102,127	55,289	35,959
Cancel rate(%)	9.75	10.02	9.94	10.68

**cost saved : \$1M / year**

this amount if there was no confirmation before mixing the medicine.

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.

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.



## POAS can improve inventory management.

Hospital	Beds	Item number		Area of warehouse (m <sup>2</sup> )	Staff N
		Stock	All		
IMCJ with POAS	925	300	6,800	32	1
A w/o POAS	1,205	1,900	20,000	300	10
B w/o POAS	1,203	500	8,000	200	7
C w/o POAS	1,178	1,000	3,500	65	6
D w/o POAS	1,154	1,320	7,700	155	2
E w/o POAS	1,150	700	7,000	108	4
F w/o POAS	800	600	10,000	300	7

**Inventory was cut to a tenth.  
A cost reduction of 225.5 million yen was achieved for pharmaceuticals and 241.62 million yen for medical supplies.**

# POAS can be improved hospital management.

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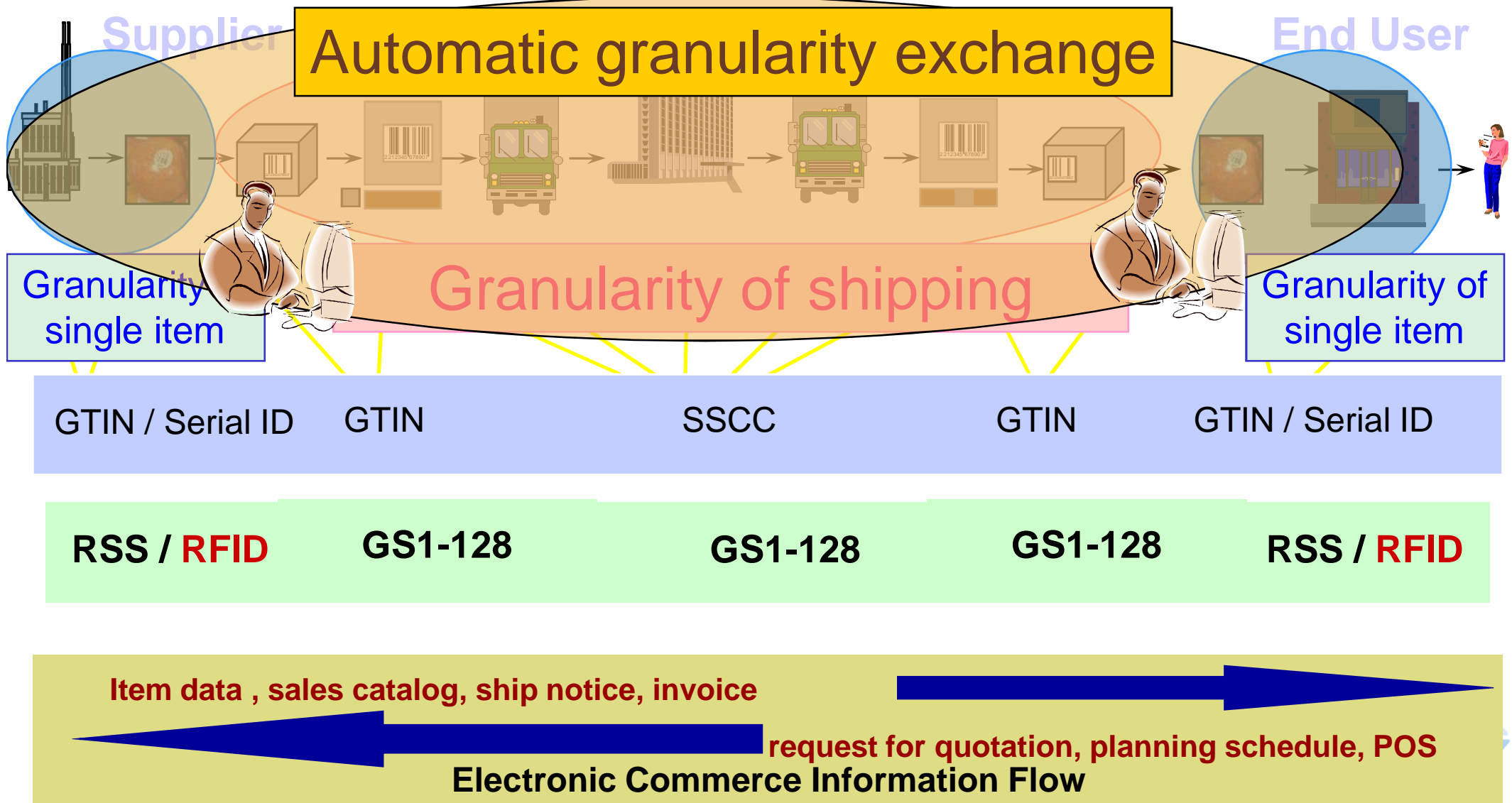
- ➔ Prevent medical accidents.
- ➔ Thorough inventory management
- ➔ Keywords are “**real-time** entry” and “**serialization** for single item management.”
- ➔ The accurate acquisition of information on bedside actions is crucial.
- ➔ Acquire cancellation and change data.
  - Only about 60% can be acquired 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



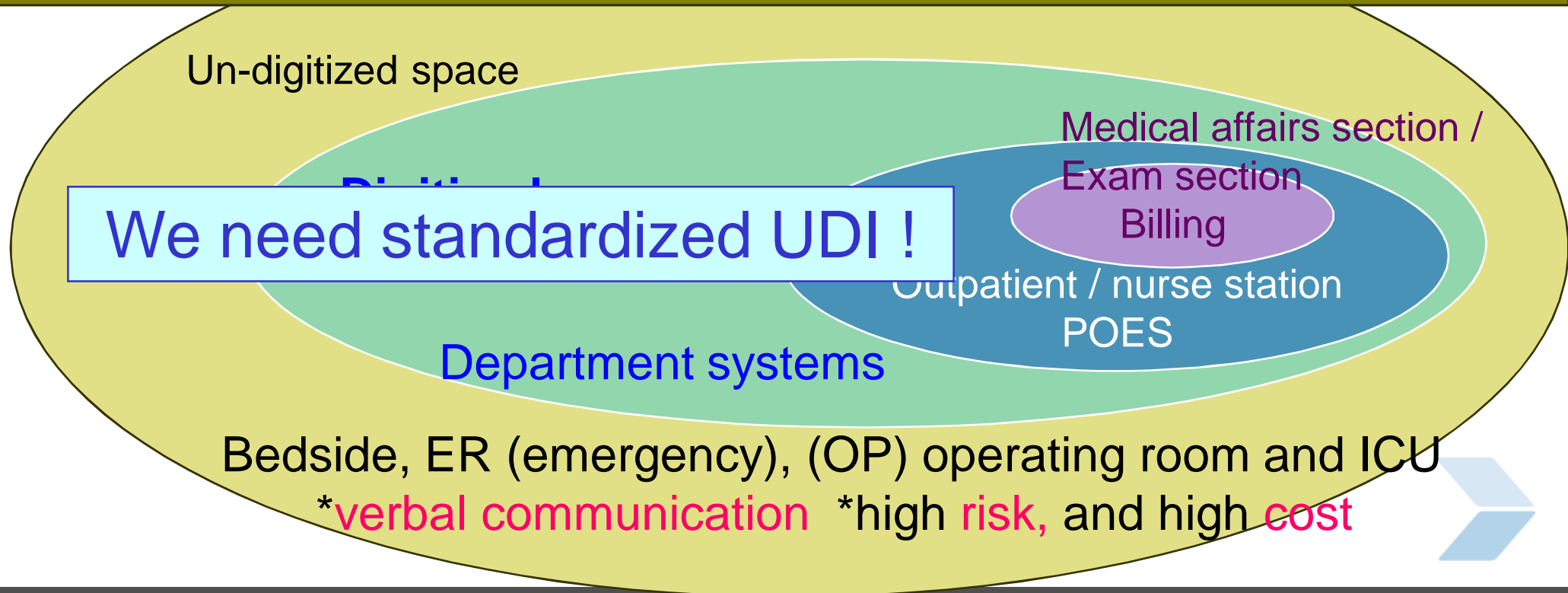
# The evolution of hospital information systems

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

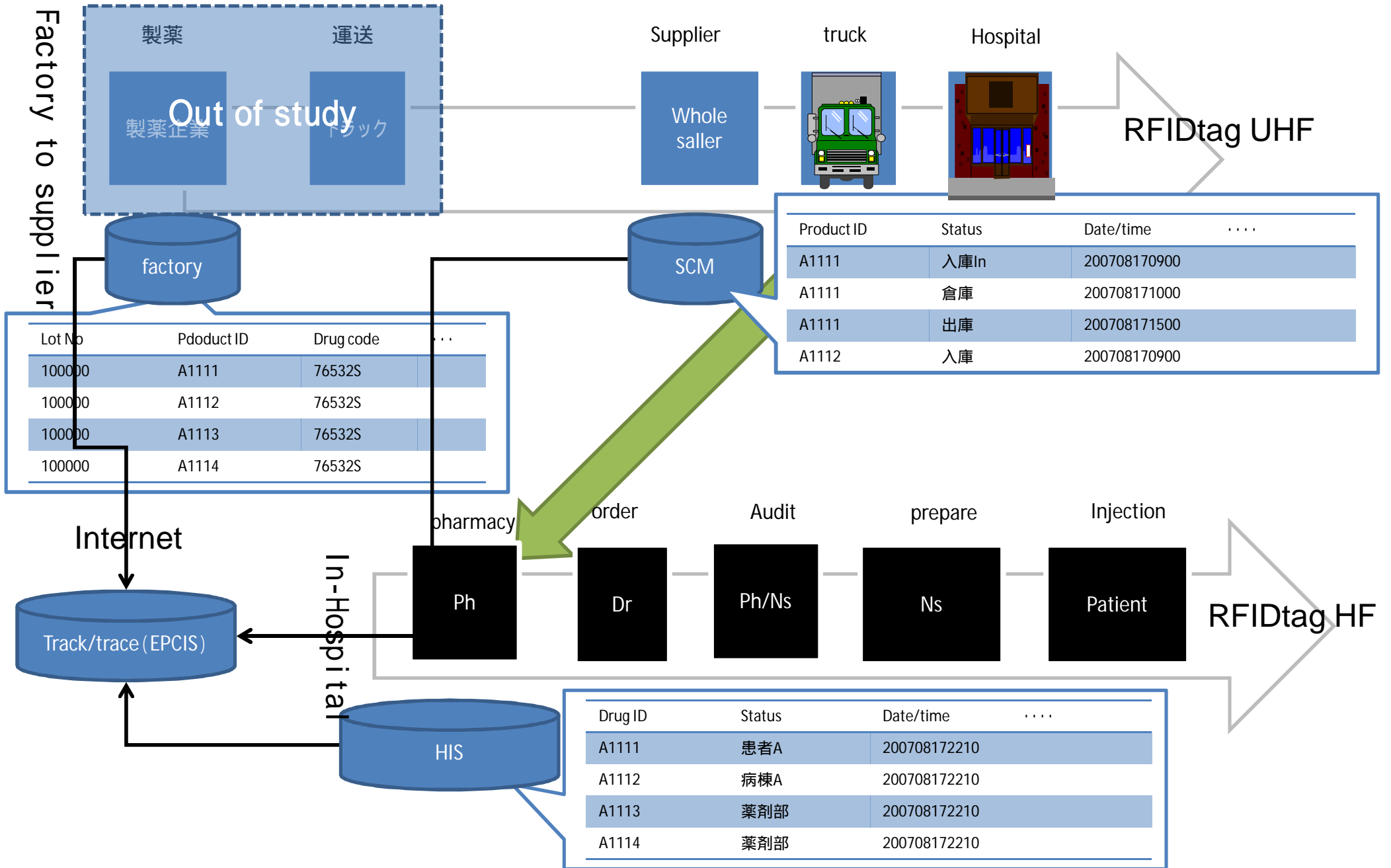
2G: CPOE : ordering

3G: EPR : paperless electronic medical charts

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



# Feasibility study on medical field in Japan



# Thank you for your attention. Any Questions?

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- ➔ Think !
- ➔ What kind of system do you want, if your son or daughter were a patient?

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