

Implementation of UDI Barcode and RFID Scanning in a Healthcare Institution

- Connecting the Physical and Digital Worlds using GS1 Standards to
Establish Medical Device Traceability-

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Four Use Cases at the NCGM Hospital*

1. Shipping / Receiving Inspection



2. Preparation of Surgical Supplies



3. Medical Accounting



4. Traceability Databank



+
Clinical
Information

*

One of the six national medical centers in Japan
43 departments, 781 beds,
and 1700 staff members

1. Shipping / Receiving Inspection by using RFID tags

Multiple varieties with large quantities of shipments arrive on a daily basis



because many hospitals have little or no stock in Japan

Daily Delivery to NCGM Hospital

Wholesaler

About 89% reduction in time spent on creating shipping information (from 37minuits to 4.2minuits) per hospital

Warehouse of NCGM Hospital

About 62% reduction in time spent on receiving inspection (from 61.4minuits to 23.2minuits)

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2. Preparation of Surgical Supplies with Tunnel Gate

Devices for Total Knee Arthroplasty

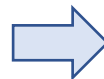


- For each orthopedical surgery, approximately 200 devices are prepared and transported to the operating room, but only about 10 are actually used; the rest are returned.
- Preparation and return operations were systematized using tunnel gates.
- Staffs can carry out the operations smoothly and accurately regardless they are skilled or unskilled.
- Perfect preparation contributes to medical safety.

Tunnel Gate RFID Reader



Warehouse



OR

About 89% reduction in staff time

Warehouse



OR

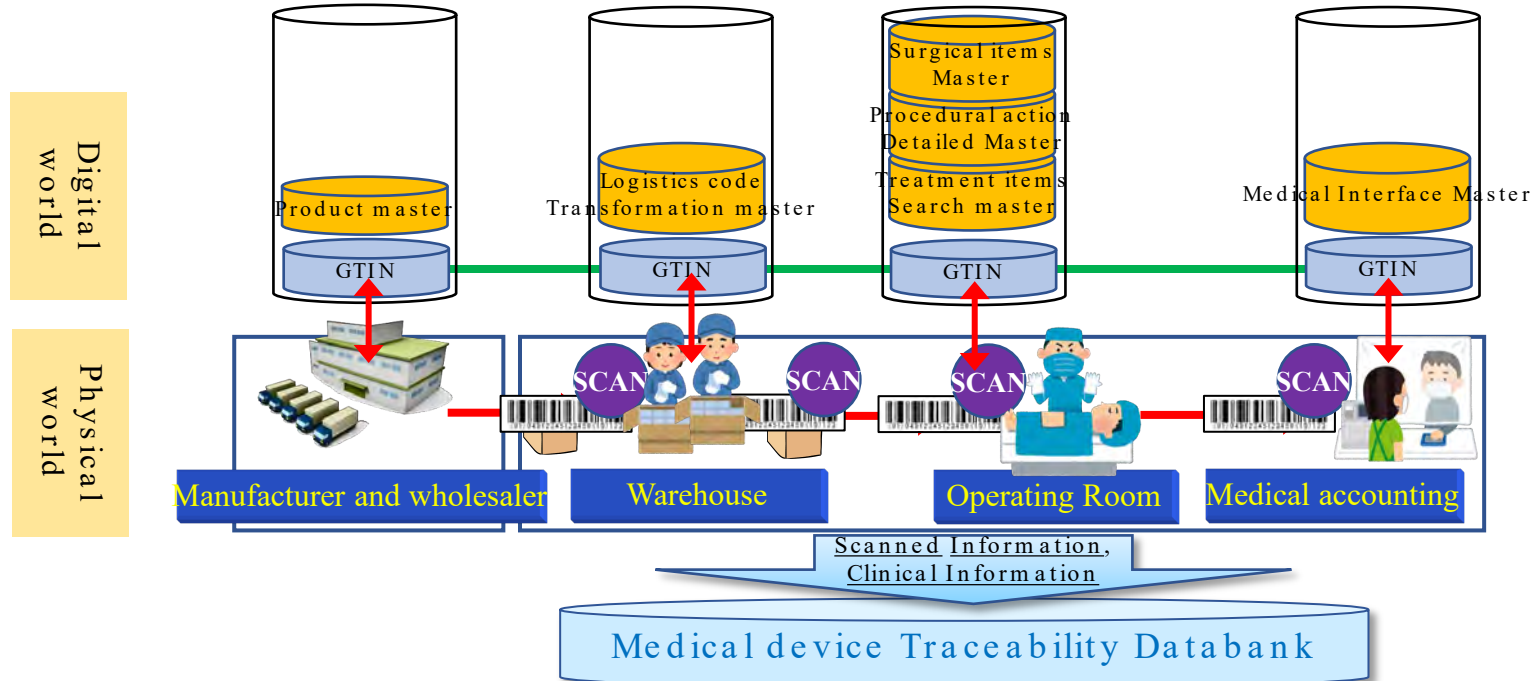
About 26% reduction in staff time

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4. Traceability Databank

- In NCGM, the electronic health record systems have five master files associated with medical supply.
- All products are registered in the master file with the local code.
- Added GTINs to all master file for product identification and traceability

Connecting the physical world and the digital world

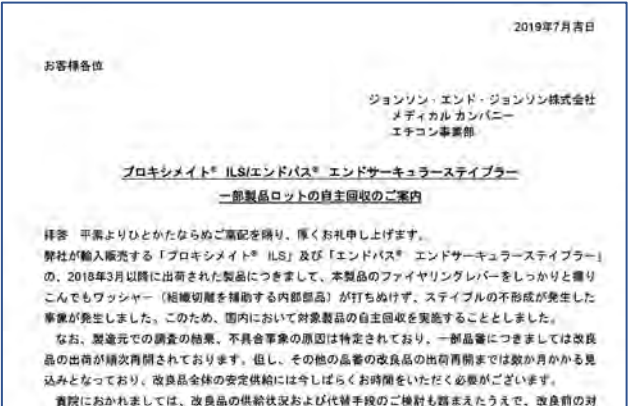


Traceability databank allows tracing from delivery to patient use.

Date	Location (From)	Location (To)	Product Number (GTIN)	Lot. Number
2018/10/01	移動元ロケータ	移動先ロケータ	4987482410328	R40W2R
2018/10/01	D0338143645	インメディックス	4987482410328	R40W7J
2018/11/01	D0338143645	インメディックス	4987482410328	R40W7J
2018/11/01	D0338143645	インメディックス	4987482410328	R40W7J
2018/12/01	D0338143645	インメディックス	4987482410328	R41283
2018/12/01	D0338143645	インメディックス	4987482410328	R41283
2018/12/01	D0338143645	インメディックス	4987482410328	R4140N
2018/12/01	D0338143645	インメディックス	4987482410328	R4140N
2019/01/01	D0338143645	インメディックス	4987482410328	R5AN6C
2019/01/01	D0338143645	インメディックス	4987482410328	R4152G
2019/01/01	D0338143645	インメディックス	4987482410328	R4140N
2019/02/01	手術室	患者ID	4987482410328	R41283
2019/02/01	H0473723501	手術室	4987482410328	R41283
2019/02/01	H0473723501	手術室	4987482410328	R40W2R
2019/02/01	手術室	患者ID	4987482410328	R40W2R
2019/02/01	手術室	患者ID	4987482410328	R41283
2019/02/01	H0473723501	手術室	4987482410328	R41283
2019/02/01	D0338143645	インメディックス	4987482410328	R5A14W
2019/02/01	D0338143645	インメディックス	4987482410328	R5AN6C
2019/02/01	D0338143645	インメディックス	4987482410328	R5A14W
2019/03/01	H0473723501	手術室	4987482410328	R5A14W
2019/03/01	手術室	患者ID	4987482410328	R5A14W
2019/03/01	手術室	患者ID	4987482410328	R4152G
2019/03/01	H0473723501	手術室	4987482410328	R4152G
2019/03/01	H0473723501	手術室	4987482410328	R4140N
2019/03/01	手術室	患者ID	4987482410328	R4140N
2019/03/01	手術室	患者ID	4987482410328	R4140N
2019/03/01	H0473723501	手術室	4987482410328	R5A14W
2019/04/01	D0338143645	インメディックス	4987482410328	R5AN6C
2019/04/01	H0473723501	手術室	4987482410328	R5AN6C
2019/04/01	手術室	患者ID	4987482410328	R5AN6C

For Example

Product recall letter from Manufacture



The table shows the trace data of product No. “4987482410328”. The lot No. of subject to recall is “R40W2R”

- This lot was brought from wholesalers to NCGM warehouse October, 2018
- Then February 2019, it was moved from the warehouse to operating room and used on the patient with ID XXXXXXXXXX.
- The databank can show which patient they were used on and where they remains in the hospital

Discussion and Conclusions

- We implemented UDI barcode and RFID scanning system at NCGM Hospital.
- Our results show inspection using GS1 barcodes or RFIDs is more efficient than visual inspection in any process.
- The automatic recording of GTINs and lot numbers in the databank is expected to contribute to medical safety.
- The databank also has the potential to promote the development of new devices. Because it can help us understand how devices are actually used in the medical field.
- In order to expand this initiative and build cross-institutional databank, the Japan Cabinet Office plans to begin feasibility study at several hospitals in 2023.

