Case Study: Supply, collection and traceability management system for metallic surgical instruments

Scale of New Central Clinical Facilities

- Number of beds: 1035
  - Advanced medical technology including laparoscopic radical prostatectomy is provided.
- Number of clinical departments: 31
- Number of nurses: 615
- Number of operating theaters: 14
- Number of operations: Approximately 7,300 for FY2007

Kazumi TAKI, Former Assistant Manager, Department of Surgical Center, Nagoya University Hospital
Presented by Hiroyuki KAWAGUCHI, Sakura System Planning
Surgical instrument reprocessing flow

Map of the surgical instrument reprocessing flow on the 4th and 5th floors:
- **Supply**
- **Collection**
- **5th floor**
  - Clean area
  - Semi-clean area
  - Middle area
  - Contaminated area
  - Operating theater
  - Hand-washing area
  - Medical equipment area
- **4th floor**
  - Flow line of supplied items
  - Flow line of returned items
System configuration and flow line of sterilized surgical instruments - part 1-

**Unit 1**
Sterilized instrument utilization management system

Consolidated management of all dispatched sterilized surgical instruments can be conducted in the Central Supply Department.

**Unit 2**
Monitoring system for cleaning and sterilization devices

Operation of cleaning and sterilization devices can be monitored in real time.
Surgical instrument flow in the Department of Surgical Center -part 1-

Standard data processing flow chart to track used surgical instruments

1> Collection after use - Cleaning room

<2> Loading - Cleaning room

<3> Cleaning completed - Assembling room

<4> Label printing - Assembling room

<5> Instrument set assembly - Assembling room

<6> Loading - Assembling room

<7> Sterilization started - Assembling room

<8> Sterilization completed - Post sterilization room

<9> Sterilization completed - Post sterilization room

<10> Dispatch - Post sterilization room

Sterilization carts

Sterilization number & cart number barcodes

Sterilization container

Individual instruments & instrument packages
Examples of barcodes used in this system
Surgical instrument flow in the Department of Surgical Center -part 1-

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<7> Sterilization started - Assembling room

<8> Sterilization completed - Post sterilization room

<9> Sterilization completed - Post sterilization room

<10> Dispatch - Post sterilization room

Labels of returned items

Sterilization container

Cleaning by hand

Jet-type cleaning machine

Checklist of returned items

Barcode printer

Rack number barcode

Jet-type cleaning machine Cleaning by hand

Barcode printer

Rack number barcode

Barcode printer

Sterilization carts

Sterilization number & cart number barcodes

Individual instruments & instrument packages

Sterilization carts

Traverser

AGV

Automated warehouse

Vertical warehouse

Lists of dispatched items
Collection of used surgical instruments
Barcode data entry at the point of collection

Automatic cleaning
Reassembling and label printout

Label application, packing and instrument set assembly

Surgical instruments ready for sterilization
Barcode data entry at the point of sterilization

Items carried into the automatic sterilization system

Items carried out of the automatic sterilization system
Preparation for surgery
Example of a screen display of utilization management function of surgical instruments and surgical containers
Surgical instrument reprocessing cycle (cleaning, sterilization, supply and collection)

Nagoya University Hospital
New Department of Surgical Center and Central Supply Department

Collection system
(Collection AGV)

Collection system
(High-speed lifter)

Cleaning area
Semi-clean area
Contaminated area
Automated transport
Manual transport

Supply system
(Automated multi-level warehouse)

Sterilization container unloading point
Sterilization container loading point

Fully automatic sterilization system
Fully automatic cleaning system

Outside of the automated multi-level warehouse
Loading point for add-ons, individual or packed instruments

Inside of the automated multi-level warehouse
Unloading point for add-ons, individual or packed instruments