patients safety through the development of surgical instruments tracking system with RFID technology

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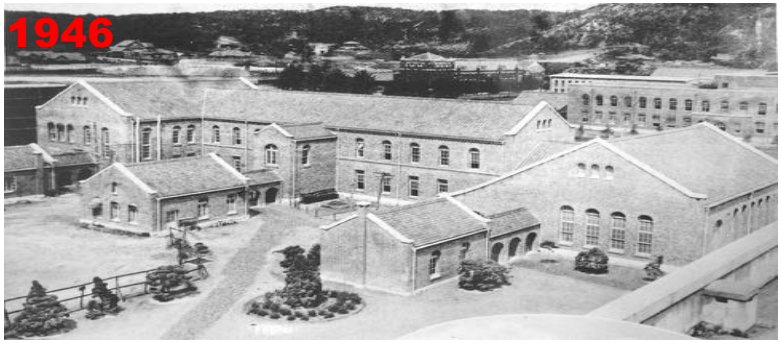
Where is SOUTH KOREA ?

Seoul National University Hospital

Jejungwon, the first western national hospital

Daehan Hospital



SNU College of Medicine

Seoul National University Hospital

Seoul National University Hospital

Seoul National University Hospital

Children Hospital

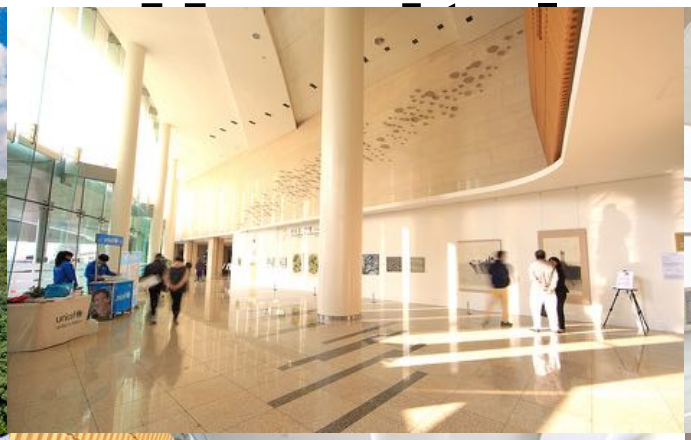
Seoul National University Bundang Hospital

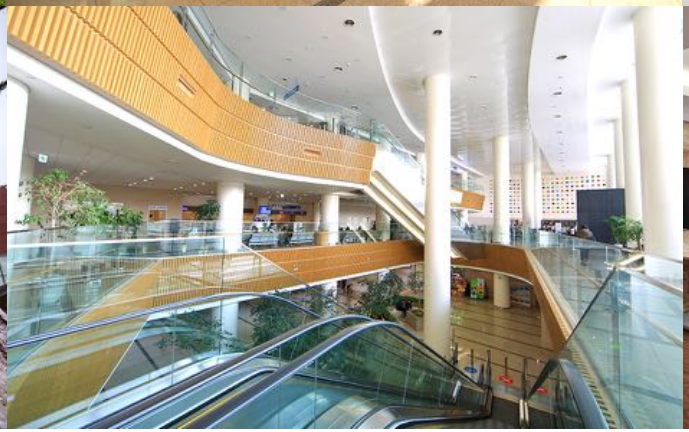
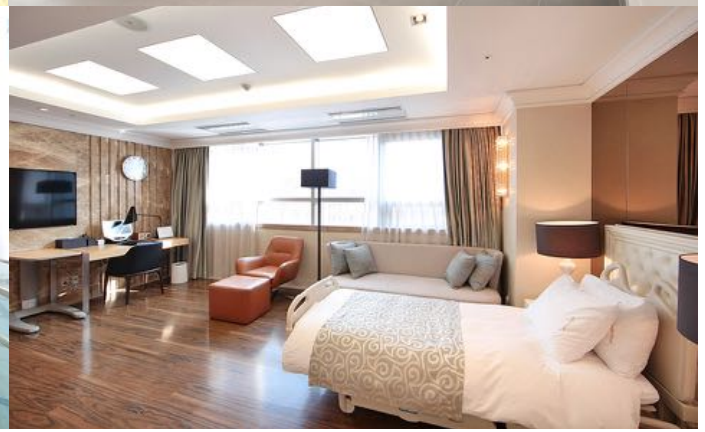
Gangnam Health Outpatient Center

Sheikh Khalifa Specialty Hospital (UAE)

Boramae Hospital

Seoul National University Bundang



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OR in Seoul National University Bundang Hospital

SIX
Da Vinci Robots in SNUBH

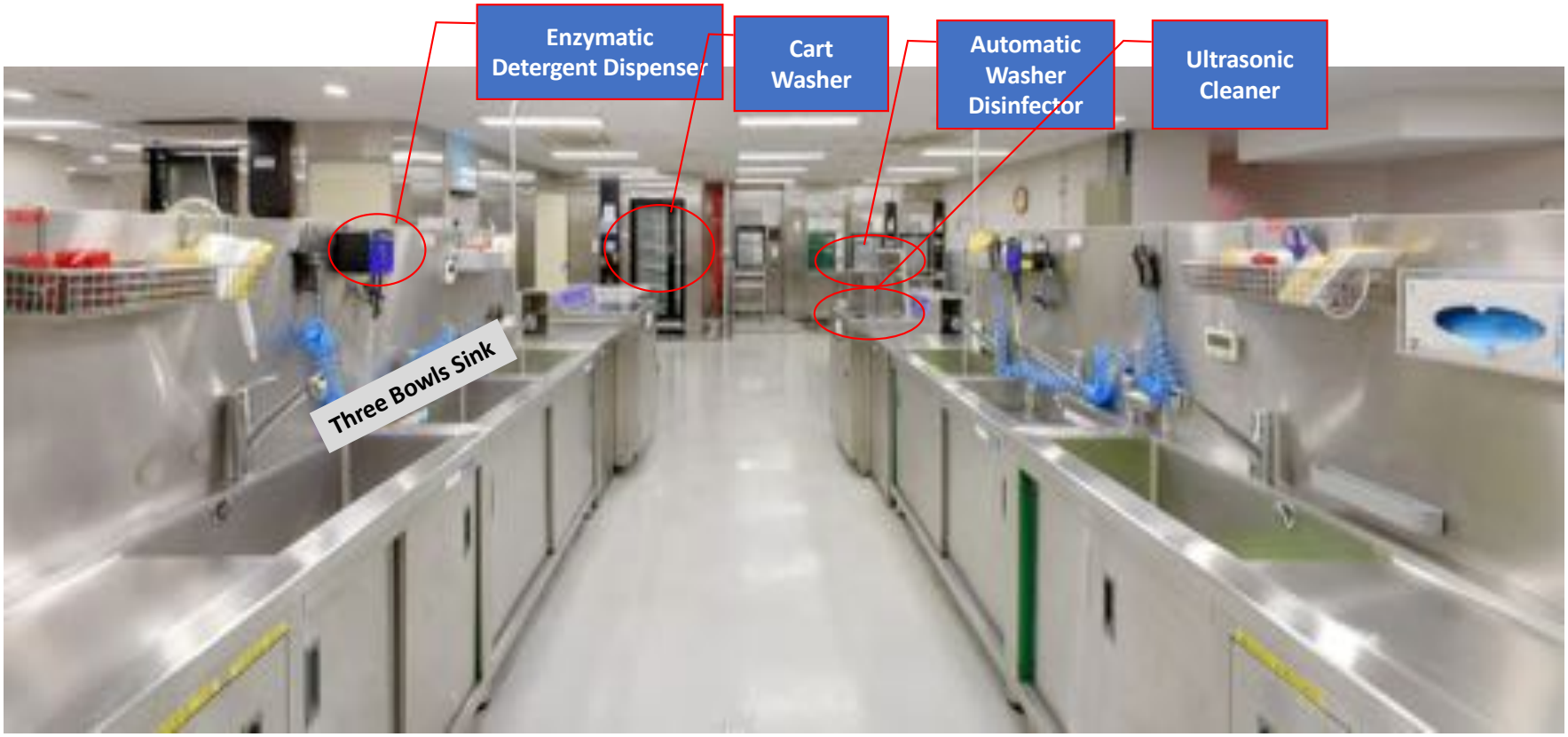
CSSD in Seoul National University Bundang Hospital

Hospital beds	Outpatients / day	Operating rooms	Surgeries / day
1,300	7,500	39	180

RN	Assistant
11	46

Steam Sterilizer	E.O gas Sterilizer	Hydrogen Peroxide Sterilizer	Cart Washer	Automatic Washer Disinfector	Ultrasonic Cleaner	Manual Sink Line
11	9	3	2	9	11	9

Decontamination Area



Packaging and Sterilization Area

What ? Why ?

SNUH
SNUH

Registration
(in OR)
Receipt
Cleaning
Inspection
Packing
Sterilization
Release

SNUH
SNUH

GS MINOR SET (6)

1 Necessity of activity

- Surgical instruments are reused after being cleaned and sterilized.
- However, if a tracking system is not equipped, the usage history is not managed, so it is impossible to identify the cause and take appropriate measures when an infection problem occurs.
- In addition, since it is difficult to grasp the progress of cleaning and sterilization of surgical instruments, if surgical instruments are insufficient compared to the number of surgical cases, preparation for surgery may be delayed, which may cause many problems.
- In conclusion, through the development of a surgical instrument tracking system, it complies with international guidelines, prevents potential transmission of infection and enables appropriate follow-up measures in case of problems, promotes patient safety, and furthermore, improves the convenience of managing surgical instruments, manpower and equipment from the central supply department.

2 Problem analysis and goals

- Problem analysis

(1) The standardized surgical instrument reprocessing process (request, cleaning, packaging, sterilization, release) is not computerized.

(2) The use history of surgical instruments is unknown.

- Key Indicators and Goals

(1) Reduce the average number of errors per month from 10.3 cases per month to 4 cases per month when surgical instruments used in the operating room are requested to be sterilized by the central supply part in the three departments of GS, CVC and HYBRID, which are subject to the task.

(2) Improved job satisfaction of operating room nurses using the tracking system from 51.05 to 80 points.

3 Improvement activities

- Development and use of surgical instrument tracking program.
- Development and installation of RFID equipment linked with surgical instrument tracking program.

4 Effect of improvement activities

- Key indicator evaluation summary

(1) Reduction in sterilization request errors

(current level of 10.3 cases per month → reduced to 2.1 cases, 18.4% exceeded the previous target)

(2) Improvement in nurse satisfaction (current level 51.05 points → 80.25 points improvement, achievement of exceeding 0.25 points compared to the previous goal)

5 Conclusion and future management plan

- In addition, it can be used for management work that can maximize work efficiency through real-time grasp of the current status of surgical instruments, equipment, and personnel.
- Although there is a lack of quantitative evaluation tools to show the effect of the system construction, it is encouraging that the data accumulated through the surgical instrument tracking system can be used for various QI activities in the operating room and central supply department.
- The remaining task is to expand the application of the system to all surgical instruments in the future.
- Based on the data currently being collected, we will continue to develop the program in the future and prepare a foothold to support the efficient work system of the operating room and central supply department.

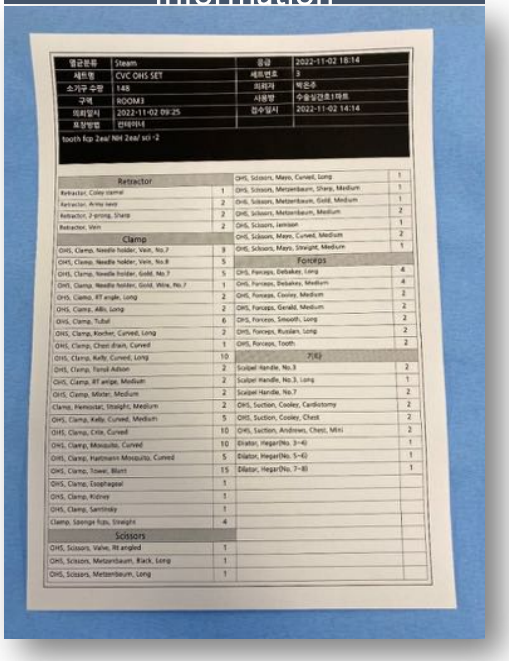
Registration → Receipt → Cleaning → Inspection → Packing & Sterilization → Release

Registration Program in EMR

Container **RFID TAG**

Disposable RFID TAG

Registration → **Receipt** → Cleaning → Inspection → Packing & Sterilization → Release

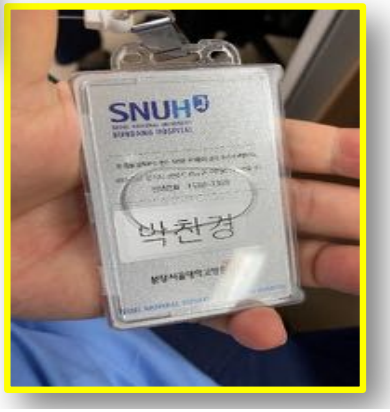
CSSD Enterance (connected to OR)	RFID Antena	Received set list	Instruments list & Information
			

Registration → Receipt → **Cleaning** → Inspection → Packing & Sterilization → Release

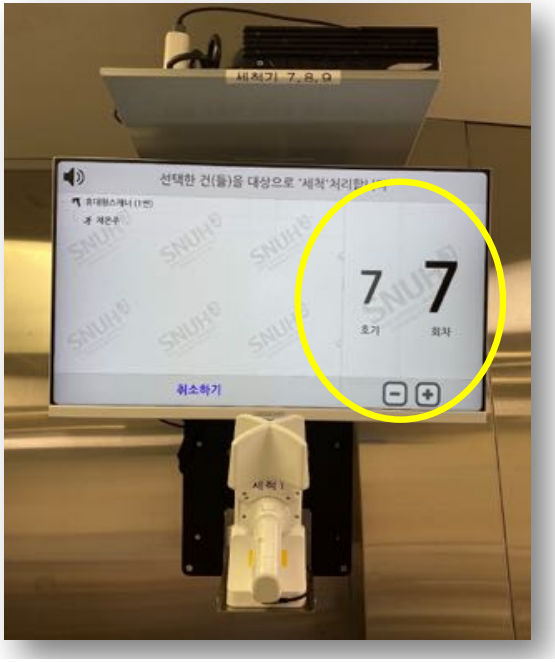
Staff is tagging set and ID card

RFID Antena (portable)

ID Card



Automatic Washer NO. & Count

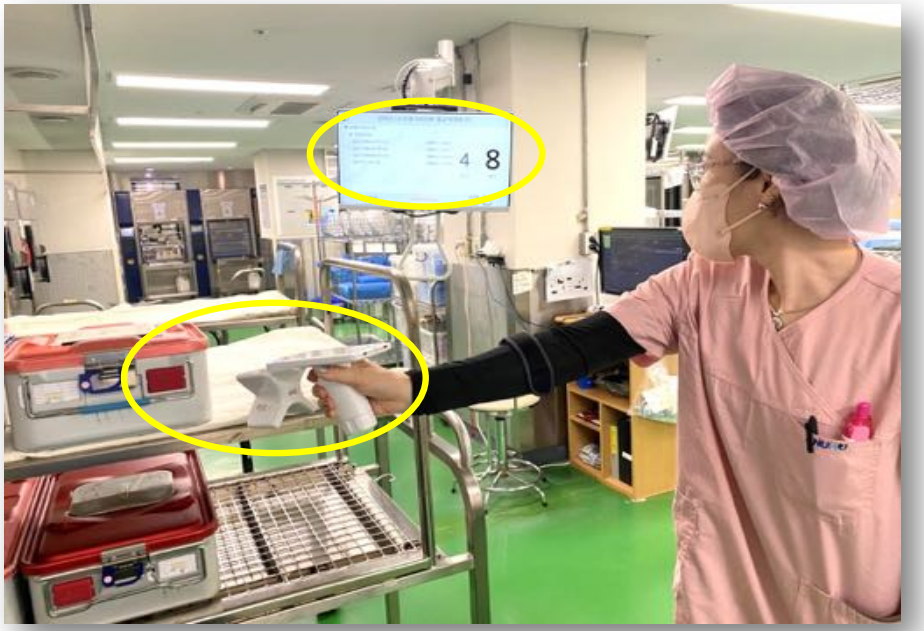


Registration → Receipt → Cleaning → **Inspection** → Packing & Sterilization → Release

Staff is inspecting the instruments with a list

Registration → Receipt → Cleaning → Inspection → **Packing & Sterilization** → Release

Staff is tagging the set before sterilization



Tagged sets & Sterilizer NO. & count

Registration → Receipt → Cleaning → Inspection → Packing & Sterilization → **Release**

CSSD exit **(connected to OR)**

Released set list

Registration → Receipt → Cleaning → Inspection → Packing & Sterilization → Release

Surgical Instrument Inventory Program in EMR

Surgical Instrument History Viewer Program in EMR

Frequently Asked Questions & Answers

1. Why RFID ? How about a bar code ?

2. How much did it cost to build the system ?

3. Can the RFID tag withstand HEAT, PRESSURE and CHEMICALS ?

4. What do you think about the RFID tag on the surgical instrument ?

5. Any other questions ?

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Please feel free to contact me ☺

THANK YOU !

감사합니다 !

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