

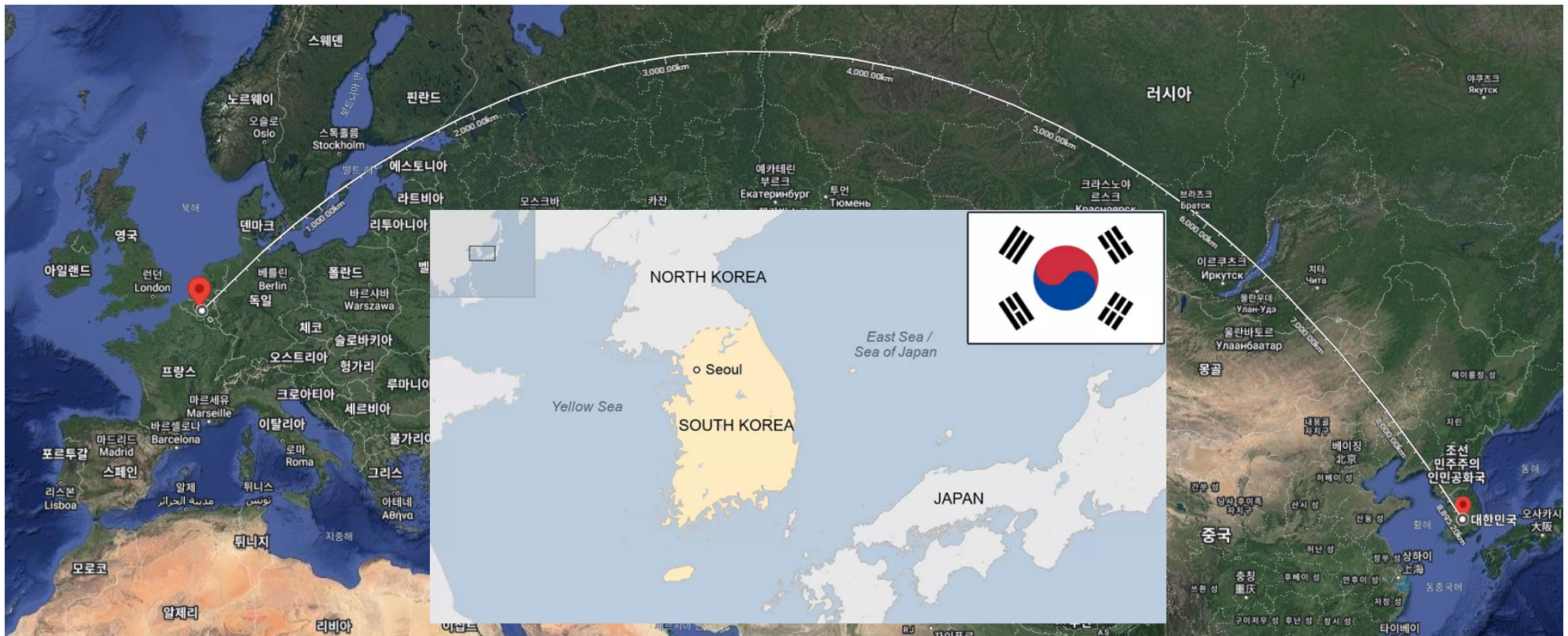


patients safety through the development of surgical instruments tracking system with **RFID** technology

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**Affiliation: SNUBH in SOUTH
KOREA**

Where is **SOUTH KOREA** ?



Seoul National University Hospital

1885



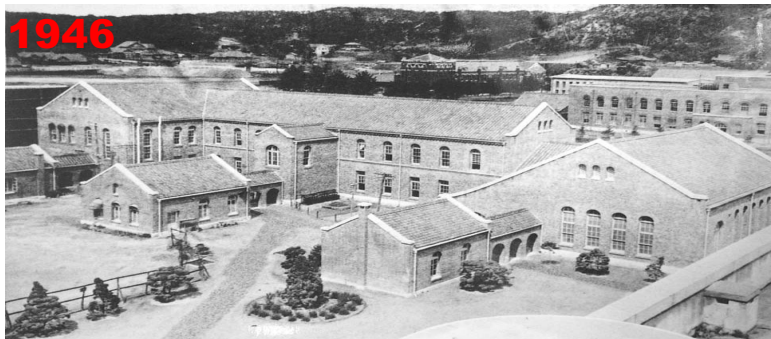
Jejungwon, the first western national hospital

1907



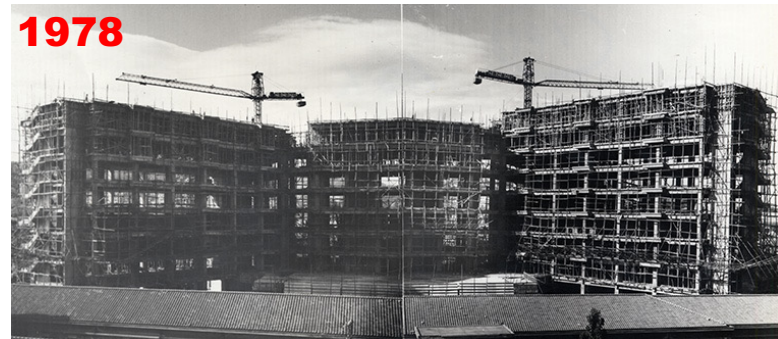
Daehan Hospital

1946



SNU College of Medicine

1978



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

24th WFHSS
CONGRESS
BRUSSELS
18-21 OCTOBER
2023



Seoul National University Bundang



24th
WFHSS
CONGRESS
BRUSSELS
18-21 OCTOBER
2023



OR in Seoul National University Bundang

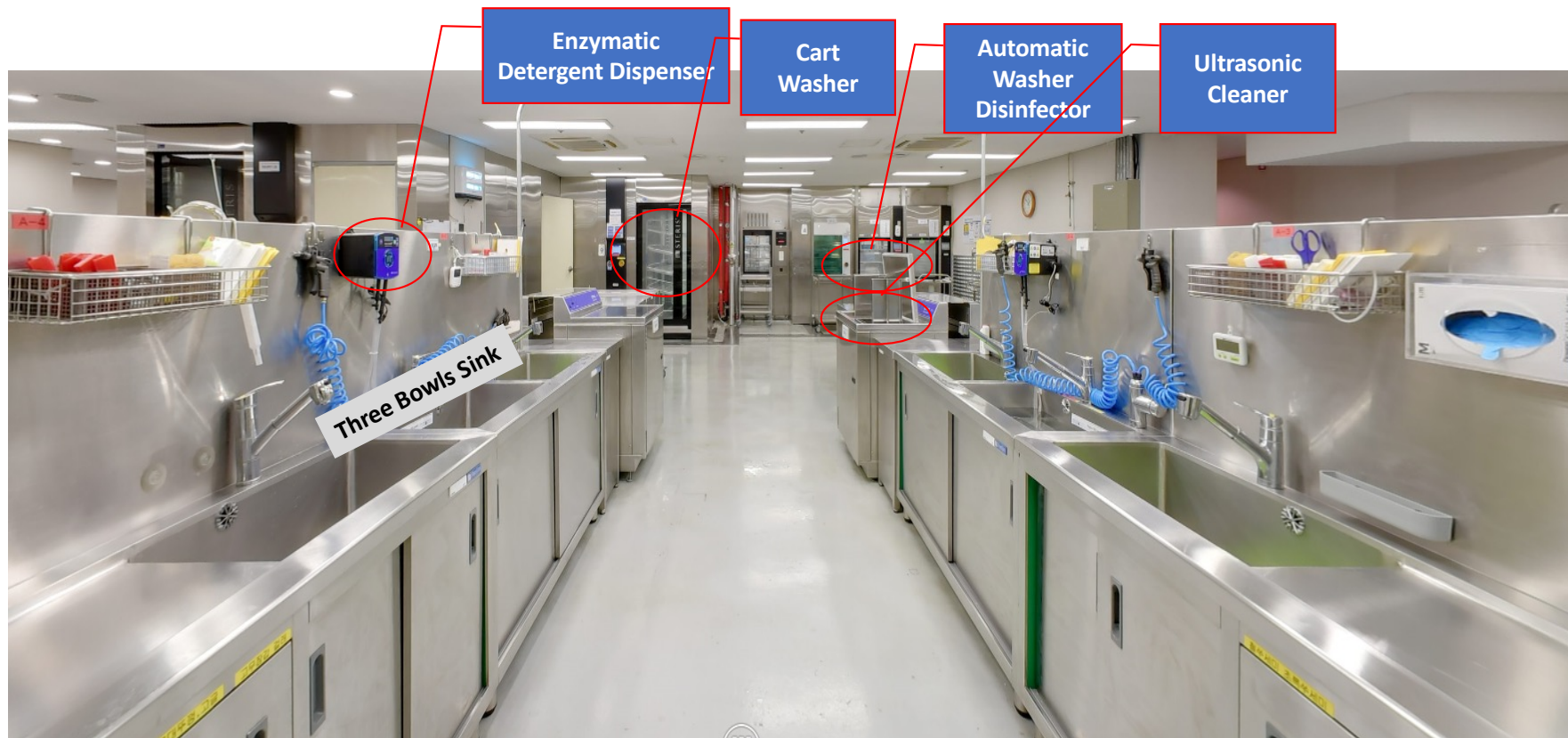


CSSD in Seoul National University Bundang Hospital

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



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

수술기구사용등록및재처리관리

수술기구 사용등록 및 재처리 관리 | 수술실 기구 유효기간 및 재고 관리

수술 환자 목록

수술일자 < 2022-11-02 >
수술실 Room3
진료과
집도의
등록번호

수술 상세 정보

환자명 집도의 진료과 흉부외과 (심장) 수술
진단명 Aortic valve regurgitation 수술명 P00006787 Root
수술시작 2022-11-02 09:43 수술종료 2022-11-02 14:06

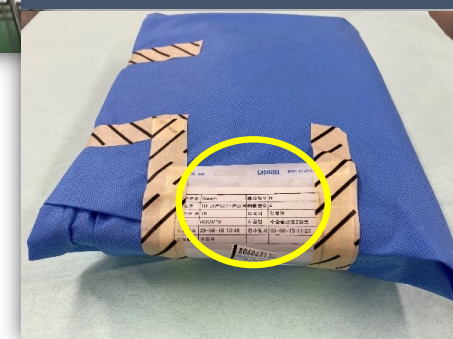
수술 기구 목록

순번	물품명	재고번호	수기구총수량	응급	특이사항
1	CVC OHS SET	3	148	Y	tooth fcp 2ea/ NH
2	CVC OHS 부속	4	34	Y	mitral ret -3ea.
3	CVC WIRE SET	2	23	Y	
4	CVC 기구걸이	5	3	Y	
5	CVC 종지 KIT	3	7	Y	

Container RFID TAG



Disposable RFID TAG



Registration

Receipt

Cleaning

Inspection

Packing &
Sterilization

Release

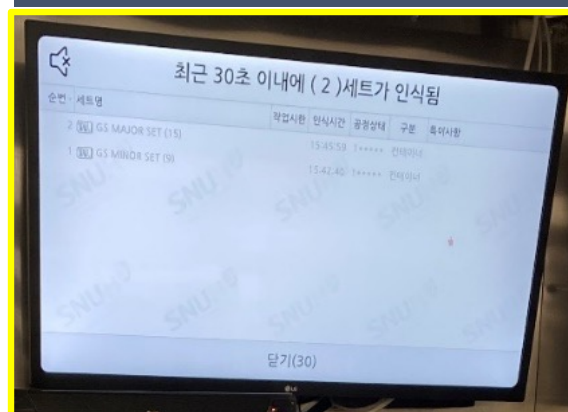
CSSD Entrance (connected to
OR)



RFID Antena



Received set list



Instruments list &
Information

발급부품	Steam	용량	2022-11-02 18:14
세트명	CVC OHS SET	세트번호	3
소기구 수량	148	의뢰자	백도준
구분	ROOM3	사실명	수술실/간호1부동
의뢰일자	2022-11-02 09:25	발주일자	2022-11-02 14:14
포장방법	전데어		
tooth Kop Zeal NH Zeal sci -2			
Retractor			
Retractor, Colby clamp	1	OHS, Scissors, Metzenbaum, Sharp, Medium	1
Retractor, Army clamp	2	OHS, Scissors, Metzenbaum, Gold, Medium	1
Retractor, 2-Prong, Sharp	2	OHS, Scissors, Metzenbaum, Medium	2
Retractor, Vain	2	OHS, Scissors, Metzenbaum, Medium	1
Clamp			
OHS, Clamp, Needle holder, Vain, No.7	3	OHS, Scissors, Mayo, Straight, Medium	1
OHS, Clamp, Needle holder, Vain, No.8	5		
OHS, Clamp, Needle holder, Gold, No.7	5	OHS, Forceps, Debakey, Long	4
OHS, Clamp, Needle holder, Gold, Wire, No.7	1	OHS, Forceps, Debakey, Medium	4
OHS, Clamp, RT angle, Long	2	OHS, Forceps, Cooley, Medium	2
OHS, Clamp, All, Long	2	OHS, Forceps, Cooley, Medium	2
OHS, Clamp, Tuli	6	OHS, Forceps, Cooley, Medium	2
OHS, Clamp, Rother, Curved, Long	2	OHS, Forceps, Russian, Long	2
OHS, Clamp, Chest drain, Curved	1	OHS, Forceps, Tooth	2
OHS, Clamp, Kelly, Curved, Long	10		
OHS, Clamp, Tonsil Adson	2	Scalpel Handle, No.3	2
OHS, Clamp, RT angle, Medium	2	Scalpel Handle, No.3, Long	1
OHS, Clamp, Mixer, Medium	2	Scalpel Handle, No.7	2
Clamp, Hemostat, Straight, Medium	2	OHS, Section, Cooley, Cardiotomy	2
OHS, Clamp, Kelly, Curved, Medium	5	OHS, Section, Cooley, Choke	2
OHS, Clamp, Cric, Curved	10	OHS, Section, Andrievs, Chest, Mini	2
OHS, Clamp, Mosquito, Curved	10	Dilator, Hegar(No.3-4)	1
OHS, Clamp, Hartmann Mosquito, Curved	5	Dilator, Hegar(No.5-6)	1
OHS, Clamp, Towel, Blunt	15	Dilator, Hegar(No.7-8)	1
OHS, Clamp, Kidney	1		
OHS, Clamp, Santinsky	1		
Clamp, Sponge forceps, Straight	4		
Scissors			
OHS, Scissors, Vain, RT angled	1		
OHS, Scissors, Metzenbaum, Park, Long	1		
OHS, Scissors, Metzenbaum, Long	1		



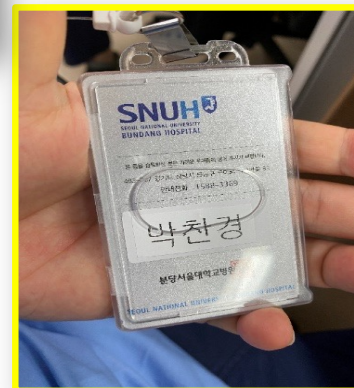
Staff is tagging set and ID card



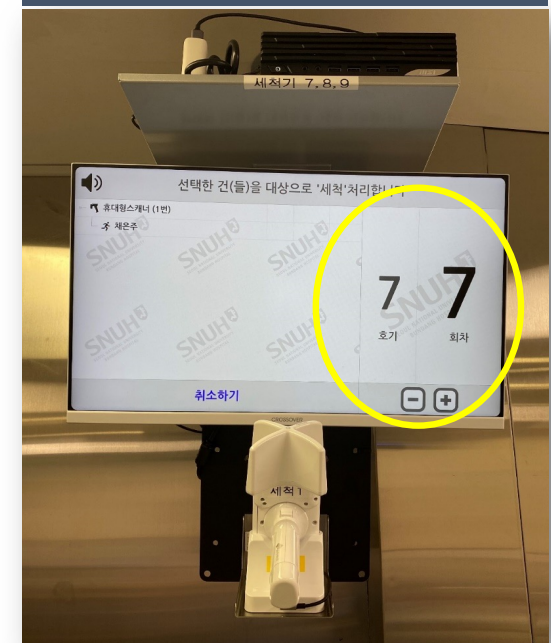
RFID Antenna
(portable)



ID Card



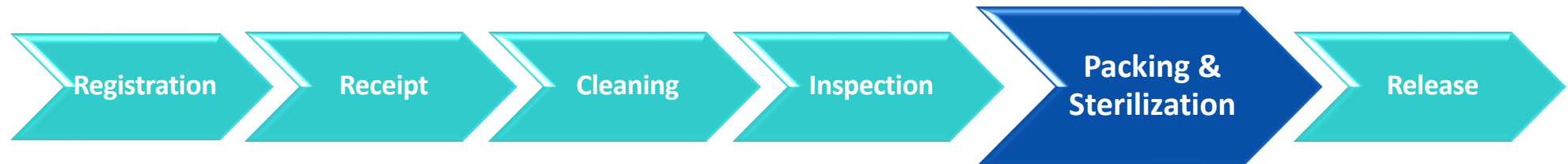
Automatic Washer NO. & Count



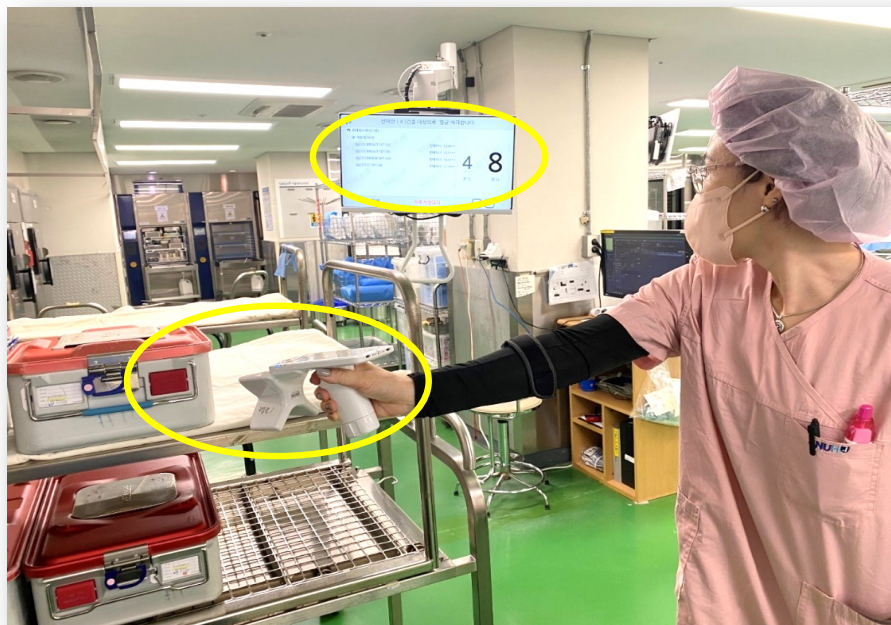


Staff is inspecting the instruments with a list

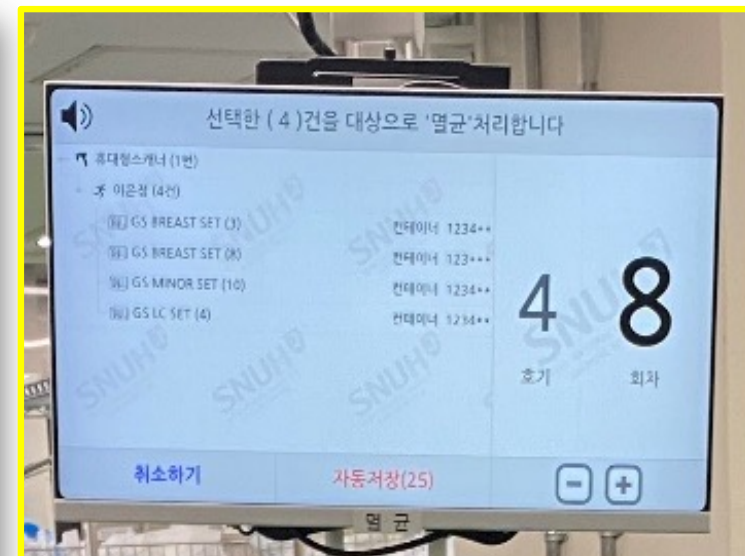


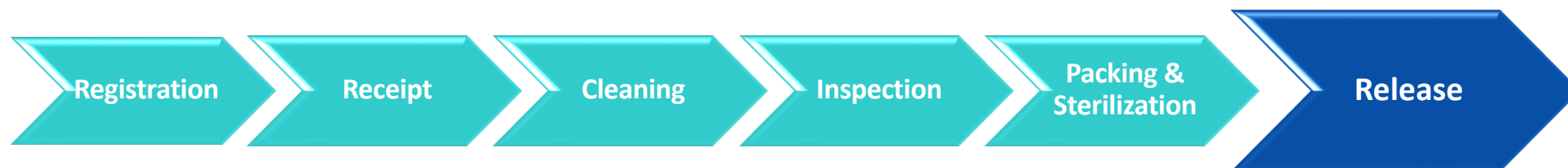


Staff is tagging the set before sterilization



Tagged sets & Sterilizer NO. & count





Released set list

최근 30초 이내에 (9)세트가 인식됨

순번	세트명	작업시한	인식시간	공정상태	구분	특이사항
9	GS BREAST SET (4)		18:21:32	1*3456	컨테이너	
8	GS BX SET (2)		18:21:31	123456	컨테이너	
7	GS MINOR SET (12)		18:21:31	123*56	컨테이너	
6	GS BX SET (5)		18:21:31	123*56	컨테이너	
5	GS BREAST SET (10)		18:21:30	123456	컨테이너	
4	GS AVF SET (2)		18:21:30	123456	컨테이너	
3	GS MINOR SET (9)		18:21:30	123456	컨테이너	
2	GS MAJOR SET (5)		18:21:29	123456	컨테이너	
1	GS MAJOR SET (10)		18:21:28	1*3**6	컨테이너	열균공정이 누락됨

취소하기(10)

Registration

Receipt

Cleaning

Inspection

Packing &
Sterilization

Release

Surgical Instrument Inventory Program in EMR

수술기구재고조회

멸균그룹

조회

세트명	세트순번	재처리상태	보관부서코드	멸균포장구분	멸균유효일자	기구수량
GS MINOR SET	14	불출	ORE	컨테이너	2023-01-26	84
GS MINOR SET	15	불출	ORE	컨테이너	2023-01-26	84
GS MINOR SET	16	불출	ORE	컨테이너	2023-01-24	84
GS MINOR SET	17	불출	ORE	컨테이너	2023-01-25	84
GS MINOR SET	18	불출	ORE	컨테이너	2023-01-24	84
GS MINOR SET	19	멸균	ORE	컨테이너	2023-01-26	84
GS MINOR SET 합계	17 / 19					
GS THYROID SET	1	불출	ORE	컨테이너	2023-01-24	65
GS THYROID SET	2	불출	ORE	컨테이너	2023-01-24	65
GS THYROID SET	3	불출	ORE	컨테이너	2023-01-25	65
GS THYROID SET	4	불출	ORE	컨테이너	2023-01-26	65

Surgical Instrument History Viewer Program in EMR

수술기구재처리및추적관리

의뢰일자 1개월

2022-11-03 ~ 2022-11-03

조회

자동조회

시간설정 10

접수번호	의뢰일시	의뢰부서	의뢰직원	의뢰내용	응급여부	재처리단	멸균원번호	세트명	세트번호	소기구수
2022-11-00147	2022-11-03 17:54	ORN4	안?	suction tip&	N	멸균	OR07420	GS MINOR SET	5	84
2022-11-00148	2022-11-03 15:44	ORN4	김?	모기 악함	N	멸균	OR07434	GS MINOR SET	19	84
2022-11-00146	2022-11-03 16:58	ORN	이?		N	불출	OR07371	HYBRID ANGIO SET	8	10
2022-11-00145	2022-11-03 16:15	ORN	안?		N	멸균	OR07369	HYBRID ANGIO SET	6	10
2022-11-00144	2022-11-03 14:29	ORN4	안?		N	불출	OR07471	GS LC SET	8	17
2022-11-00143	2022-11-03 14:35	ORN4	김?	SUCTION TI	N	불출	OR07426	GS MINOR SET	11	84
2022-11-00142	2022-11-03 15:44	ORN3	이?		N	불출	OR07424	GS MINOR SET	9	84
2022-11-00141	2022-11-03 11:51	ORN4	윤?	11fr. suction	N	불출	OR07455	GS BREAST SET	3	30
2022-11-00140	2022-11-03 12:33	ORN4	김?		N	불출	OR07475	GS HEMO SET	2	46
2022-11-00139	2022-11-03 11:04	ORN4	석?		N	불출	OR07438	GS THYROID SET	4	65
2022-11-00138	2022-11-03 12:40	ORN4	안?	suction tip &	N	불출	OR07473	GS LC SET	10	17
2022-11-00137	2022-11-03 13:16	ORN	안?		N	불출	OR07366	HYBRID ANGIO SET	3	10
2022-11-00134	2022-11-03 09:02	ORN4	안?		N	불출	OR07402	GS MAJOR SET	3	127
2022-11-00132	2022-11-03 10:04	ORN2	권?		N	불출	OR07429	GS MINOR SET	14	84

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 ?**

Please feel free to contact me 😊

THANK YOU !
감사합니다 !



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