

Design for problems of mentally ill patients in the NPR

Group 4

21700227 노은호

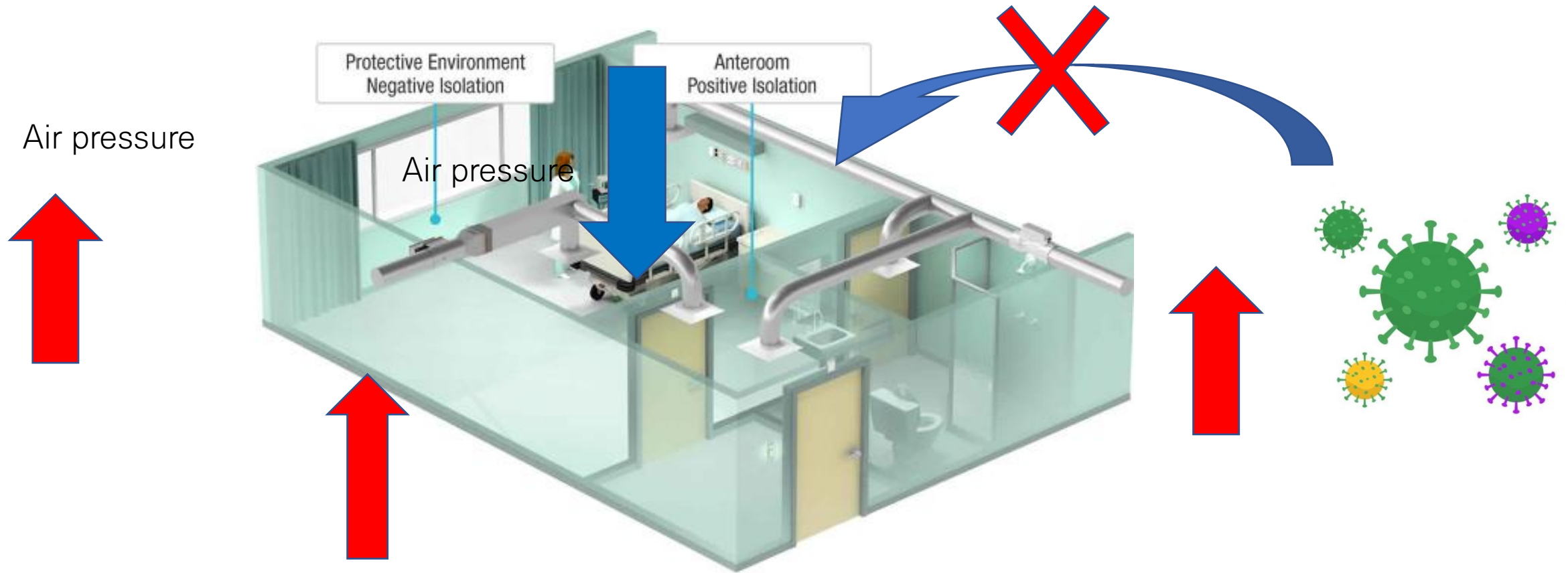
22000072 김민기

22000255 박동건

22000456 유승준

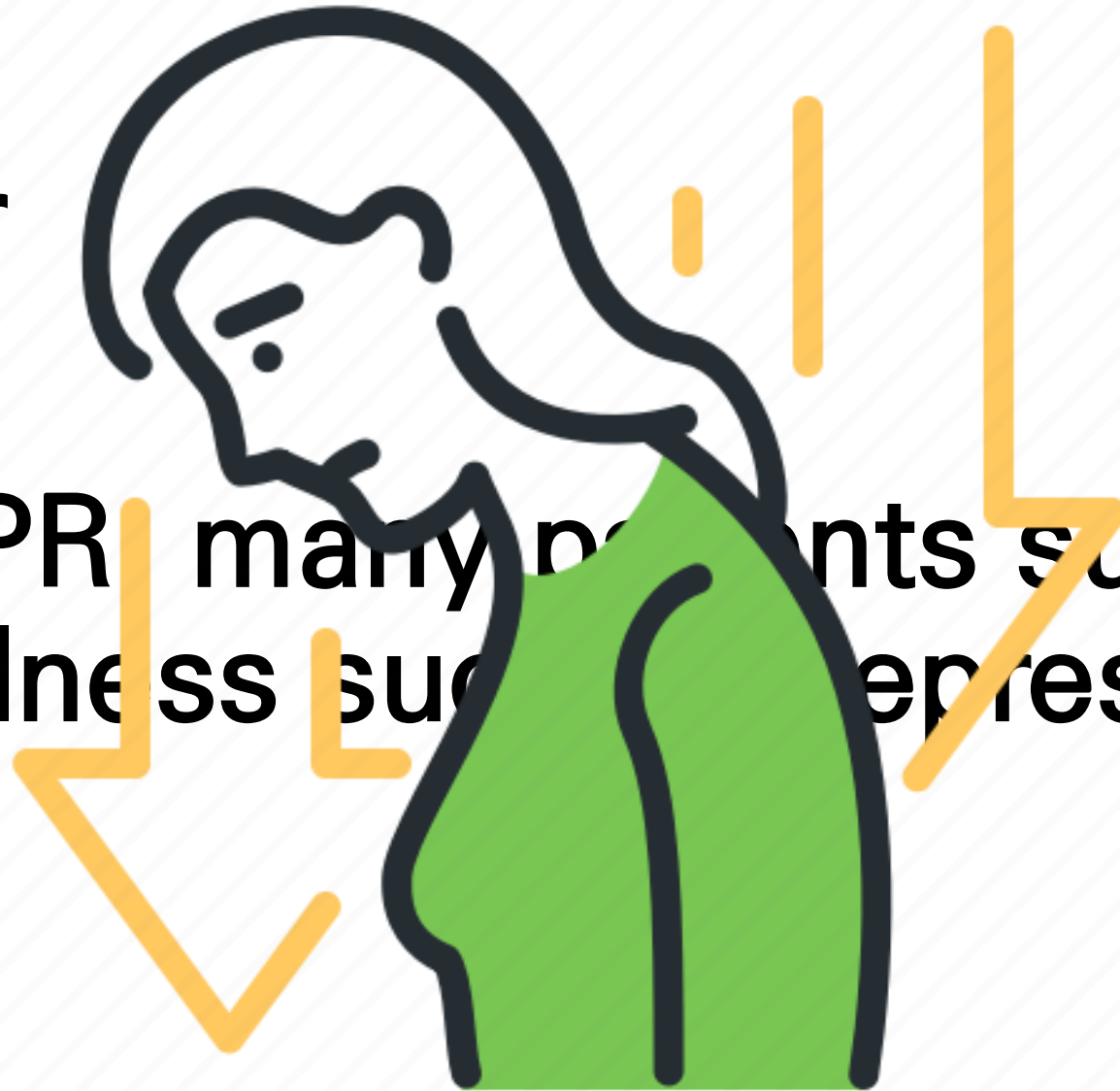
Firstly, what is an NPR?

NPR is...



However

**In the NPR, many parents suffer from
mental illness such as depression!**





And

24 out of 80 NPU Patients



Panic disorder



Depression



Severe Stress

Why?

do patients in the NPR suffer from
these mental disorders?

Causes of mental illness in the NPR patients

1. Blocking social activities and daily life
2. Stiffness due to closed space
3. Patient's lack of communication in the NPR

The problem we focused on

Patient's Lack of Communication in the NPR



Problem statement

Anxiety caused by communication problems with psychotic patients in the negative pressure room

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1. Intro

2. Problems due to lack of communication in the NPR

3. Design process

4. Design Description

5. Advantages and expected effects of the design

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2. Problems due to lack of communication in the NPR

: Actual situation, lack of target for patient communication



Visitors are not allowed to enter the NPR



Medical staff must wear the PPE in the NPR

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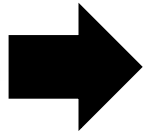
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2. Problems due to lack of communication in the NPR

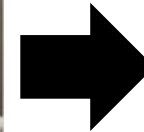
: Depression due to lack of communication with the patient



Lack of communication



Depression



Psychiatric counseling

Reference: KBS News, 김지숙 reporter

2. Problems due to lack of communication in the NPR

: Difficulty in communication between medical staff and patients

**Communication
Difficulty!**



2. Problems due to lack of communication in the NPR

: The labor of the medical staff to enter the patient's isolation room

Wear the PPE for over almost 10 minutes

Enter the patient's room at least 2-3 times a day

Working intensely for up to two hours while wearing the PPE



28일 오후 고양시 명지병원 국가지정 격리병상에서 간호사들이 방호복을 갈아입고 있다. 공성룡 기사

How can the patient and the medical staff talk comfortably together, and communicate with other visitors?



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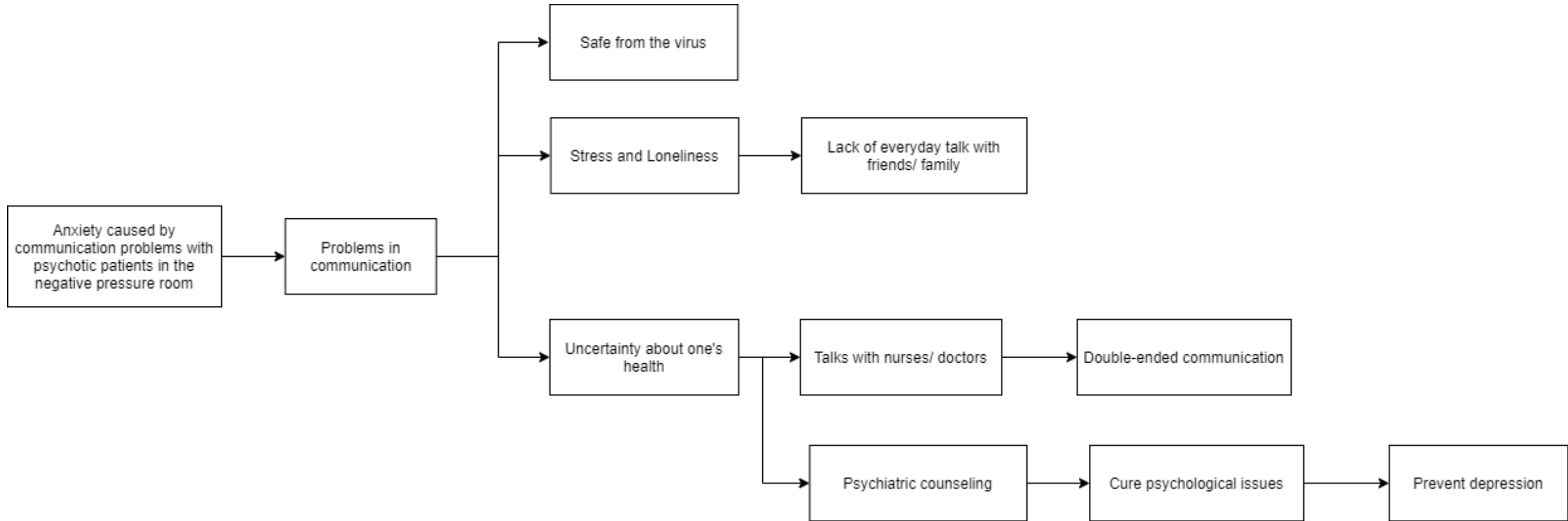
3. Design process

4. Design Description

5. Advantages and expected effects of the design

3. Design process

: Investigating the objectives of stakeholders



3. Design process

: Consider the constraints of the design

Constraints

1. Only one meeting a day to prevent spread of viruses
2. Patients should have psychiatric counseling at least once a week
3. Maintain the differential air pressure between rooms in the order of non-negative pressure isolation area > Corridor front room >> Negative pressure corridor > NPR front room = Visitor room > NPR > Toilet about -2.5Pa or more.
4. The size of the patient's room should be at least 15m^2 excluding NPR front rooms, toilets and walls

3. Design process

: Principal functions

Principal Functions

- The patient and the medical staff should be able to communicate freely
- The patient should be able to have screened meeting

3. Design process

: Morphological chart and Metrics

Means Function	1	2	3	4
Meetings with patients	Online meeting	Meetings between rooms	Standard phone calls	Meetings inside the room with protective clothing on
Prevent spread of virus	Negative pressure rooms	Protective clothing	Reduce meeting to the minimum	Washing hands/ body
Check health condition	Communication with medical staff	Psychiatric counseling	A two-way communication device to use	CCTV

Objective	Not suitable at all	Inappropriate	Average	Suitable	Very Suitable
Does the virus stay inside even after communication takes place?					
Can the patient communicate with the medical staff freely?					
Can communications take place when the patients want?					
Can the patient get psychiatric counseling?					

3. Design process

: Three design alternatives

Three Design Alternatives

1. Changing room design to create a meeting room so that people can talk with the patients face to face with a glass in between.



2. A doll that speaks sympathetic to the patient's situation.
-> A device that records the patient's speech and stores the recorded content on the counselor's PC is placed inside the doll. Then the counselor listens to the recordings stored in the PC and gives sympathy and comfort to the patient through the doll.
3. Implementing the use of Video phones to have a way for the patient and the medical staff to have a two-way conversation freely whenever they want

3. Design process

: Pros and Cons of design alternatives

Pros and Cons

1st Design

Pros: Real-Time conversation between the patients, can communicate face to face reducing the feeling of being lonely, can form bonds for patients are in similar situations.

Cons: Might be difficult to build depending on building structure (Because the rooms have to be right next to each other), may affect the structure that keeps contaminated air inside the room, patients are only limited to talking with other patients.

2nd Design

Pros: Can have a conversation between patient and counselor, no risk of using materials to enter the room

Cons: Counselor is talking through a doll so the patient may feel uncomfortable, the patient may find it difficult to talk to a doll, the doll is contaminated because it is inside the room

3rd Design

Pros: No risk of the medical staff entering the room, the patient can hold conversations to feel less lonely, the patient can send an alert to the medical staff whenever they want to have a conversation.

Cons: it may be expensive for many patients may feel the need to have one, medical staff cannot always hold a conversation with the patient

3. Design process

: Select the final design



Changing NPR design to create a meeting room so that people can talk with the patients face to face with a glass in between

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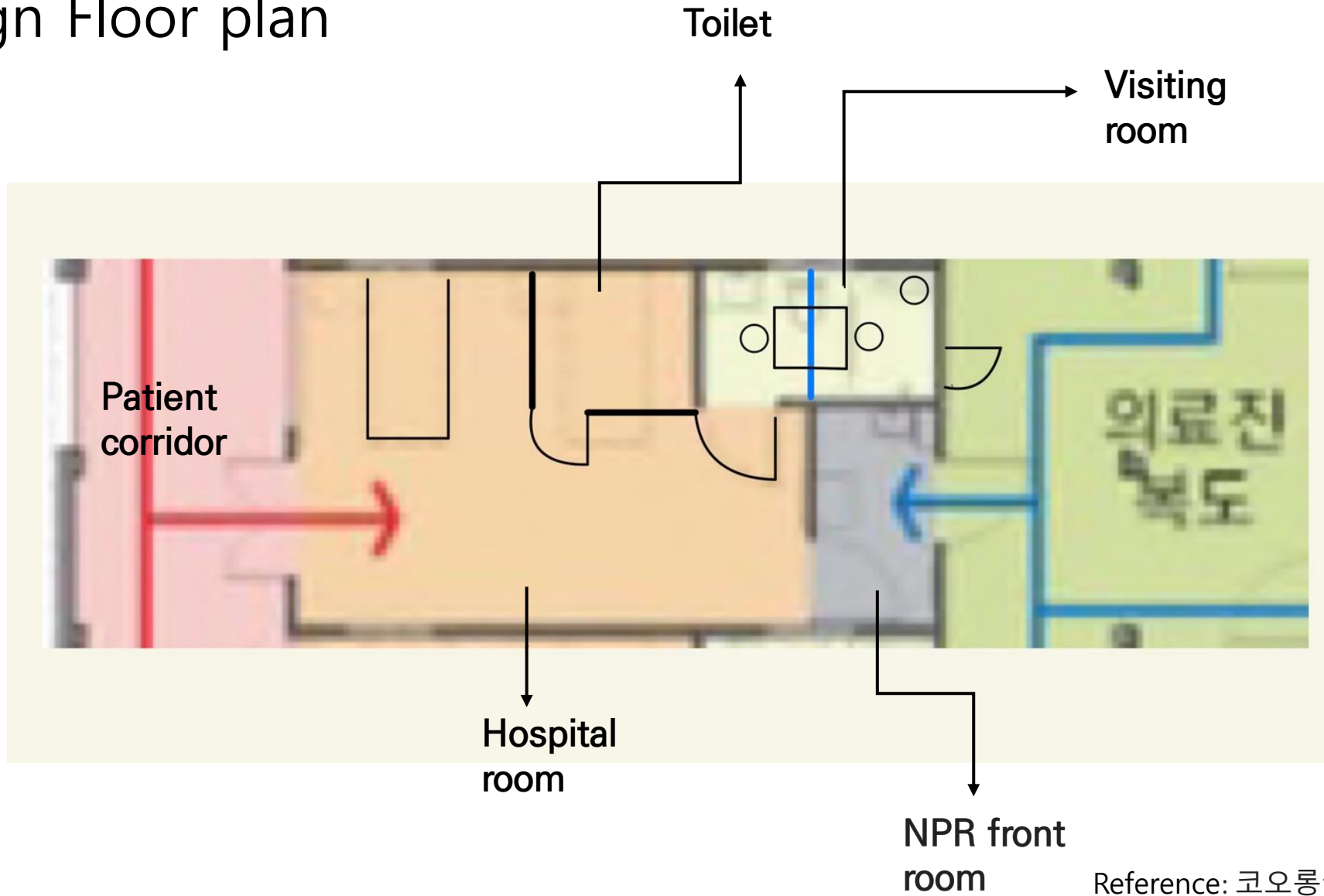
3. Design process

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4. Design Description

: Design Floor plan



Reference: 코오롱글로벌(주), 전효진 reporter

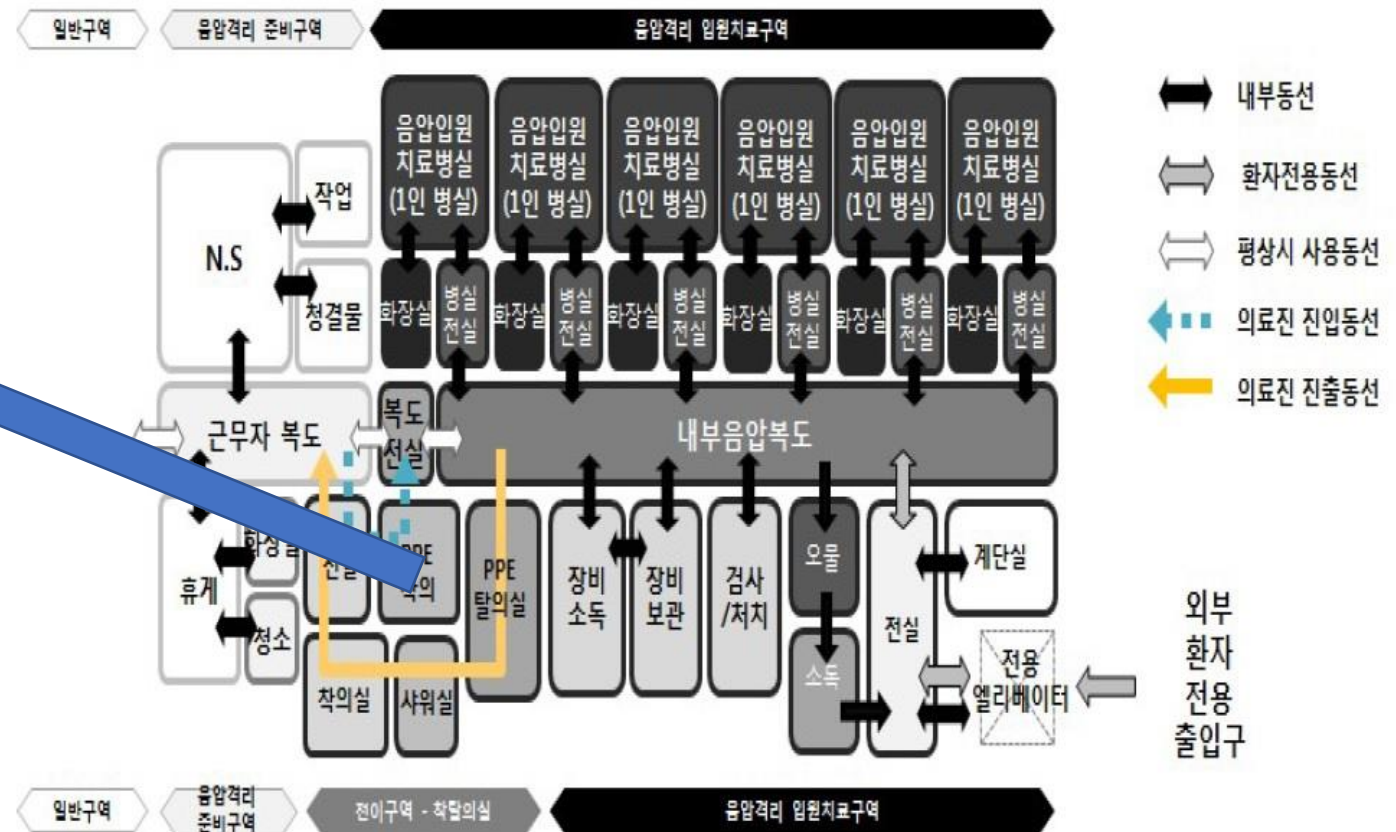
4. Design Description

: Raising design issues



However

Medical staff must wear the PPE in the changing room and move into the corridor.



[그림] 중복지형 음압격리입원치료병상 예시(색이 진할수록 음압이 강함)

4. Design

: Raising design

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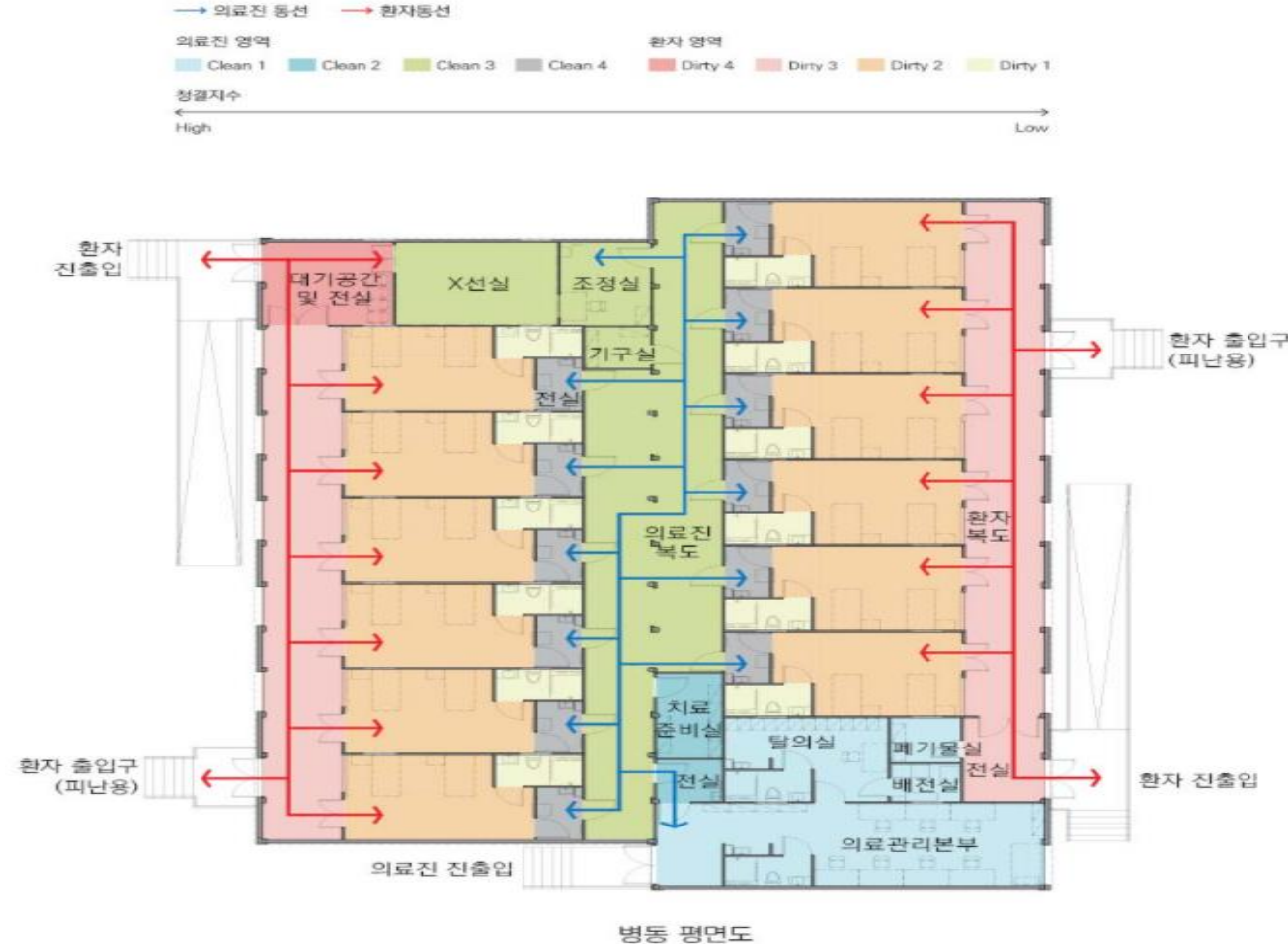


Hi!

meeting

4. Design Description

: Referencing the design of the modular negative pressure life treatment center built with the donation of Kolon Group



4. Design Description

: The reason for referring to this design

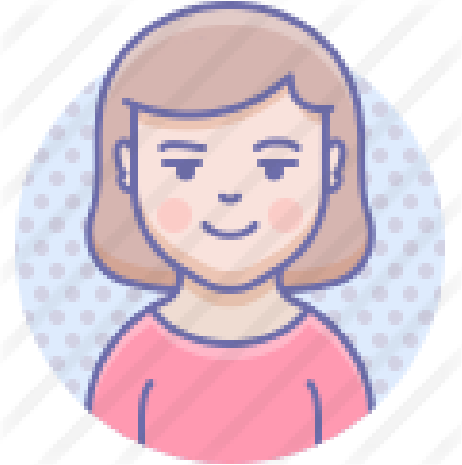


Patient

No direct contact



Medical staff

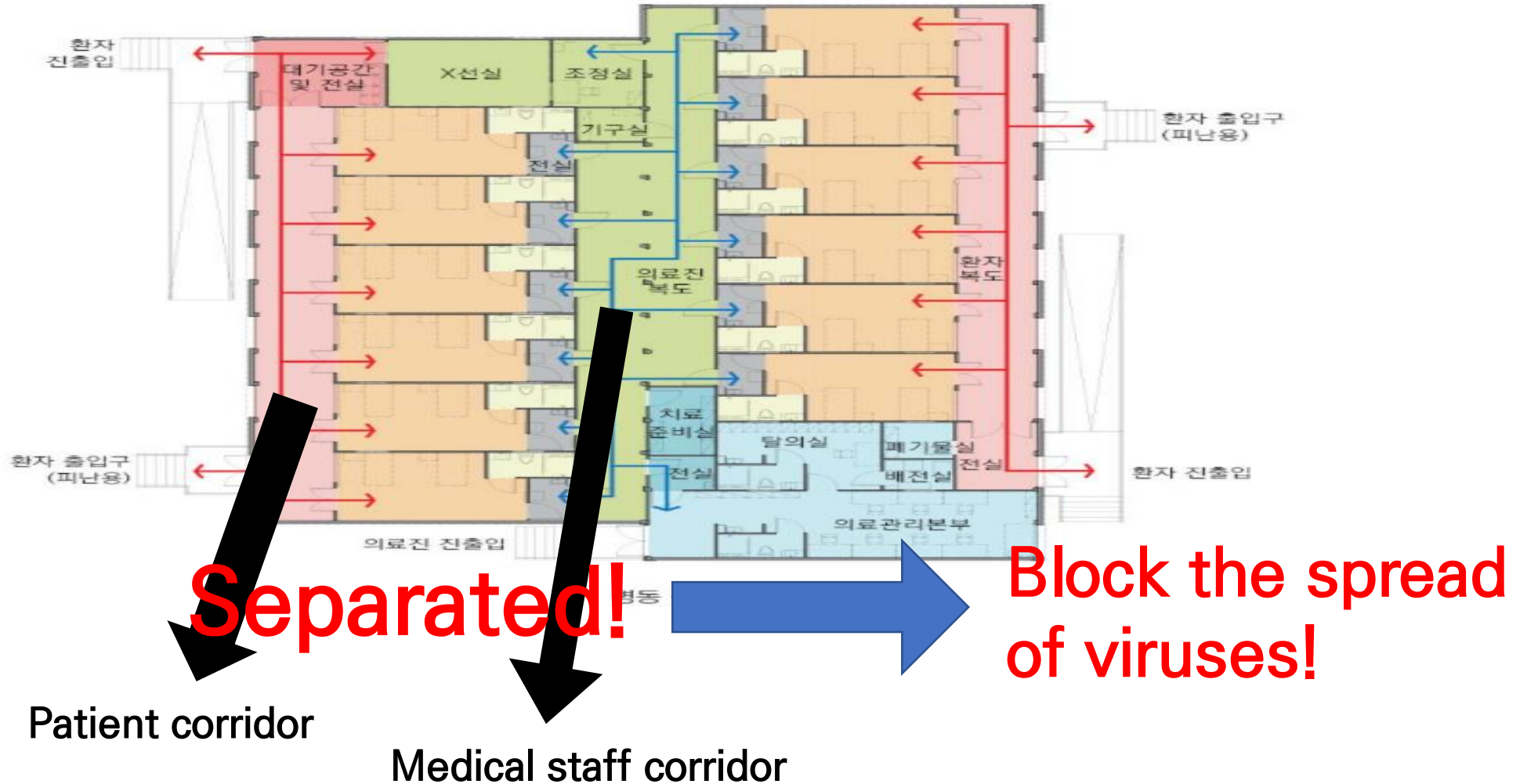


Visitor

To Enter the visiting room with limited PPE

4. Design Description

: The reason for referring to this design



4. Design Description

: The reason for referring to this design

**As a result, Visitors and medical staffs
can enter the visitor room
with limited PPE**

4. Design Description

: The principle of entering the visiting room

In preparation for a virus, medical staff and visitor must wear the protective gear up to level 5 PPE in the changing room.

구분		N95 등급의 마스크와 전신보호복 사용 시 순서
착의 (착용) 순서	1	손위생
	2	(속)장갑
	3	전신보호복 하부
	4	신발커버(또는 장화)
	5	N95 등급의 마스크
	6	보안경(또는 안면보호구)
	7	전신보호복 상체후드 착용 및 여밈
	8	(겉)장갑



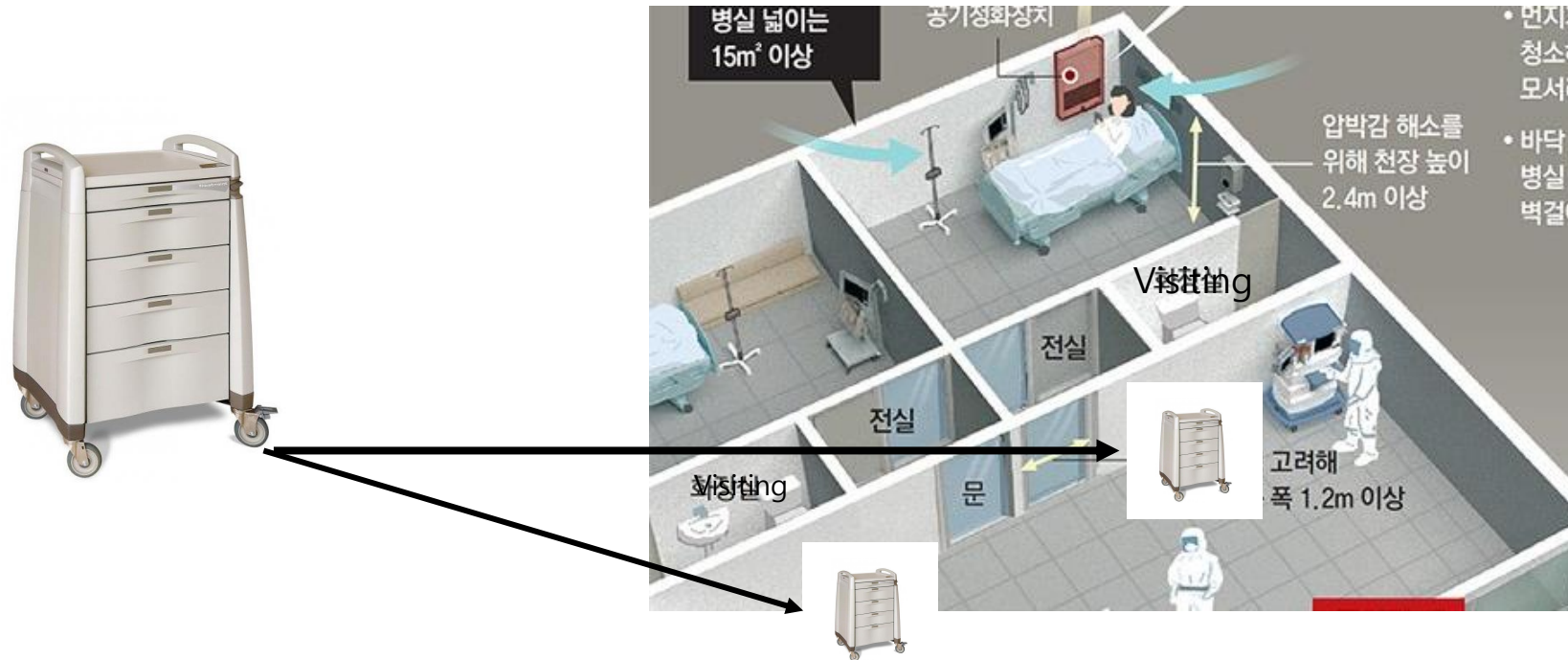
4. Design Description

: The principle of entering the visiting room

**Also, in order to enter the visitor room,
the visitor must accompany
the medical staff in case of any accident.**

: When it happens to enter the patient's room

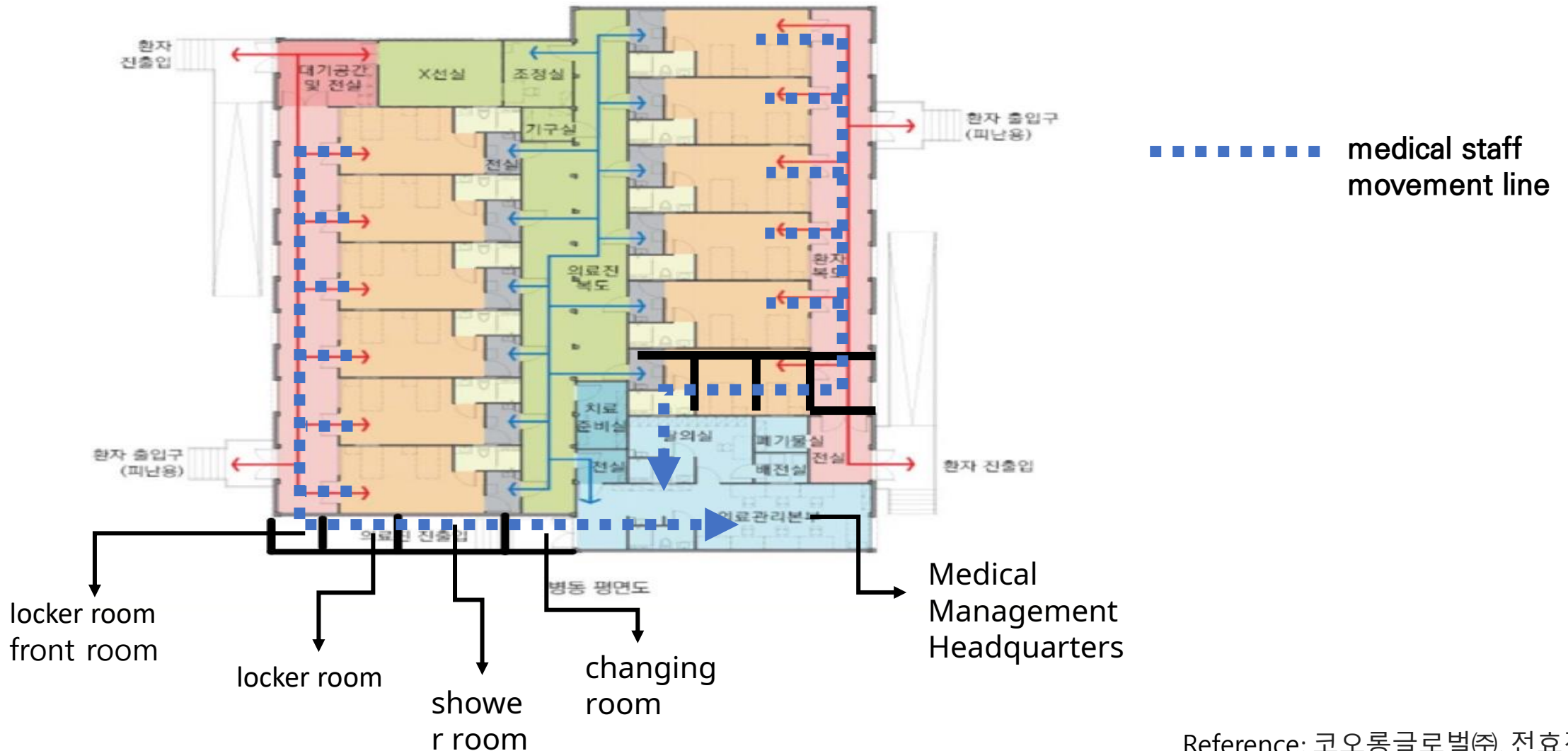
: When it happens to enter the patient's room



Take the rest of the protective equipment out of the medical cart, put it on, and enter the patient's room.

4. Design Description

: Movement line after medical staff enters patient's room



4. Design Description

: Differential pressure in negative pressure isolation room

Non-negative
pressure
isolation area



Corridor front
room



Negative pressure
corridor



NPR front room
=Visiting room



NPR

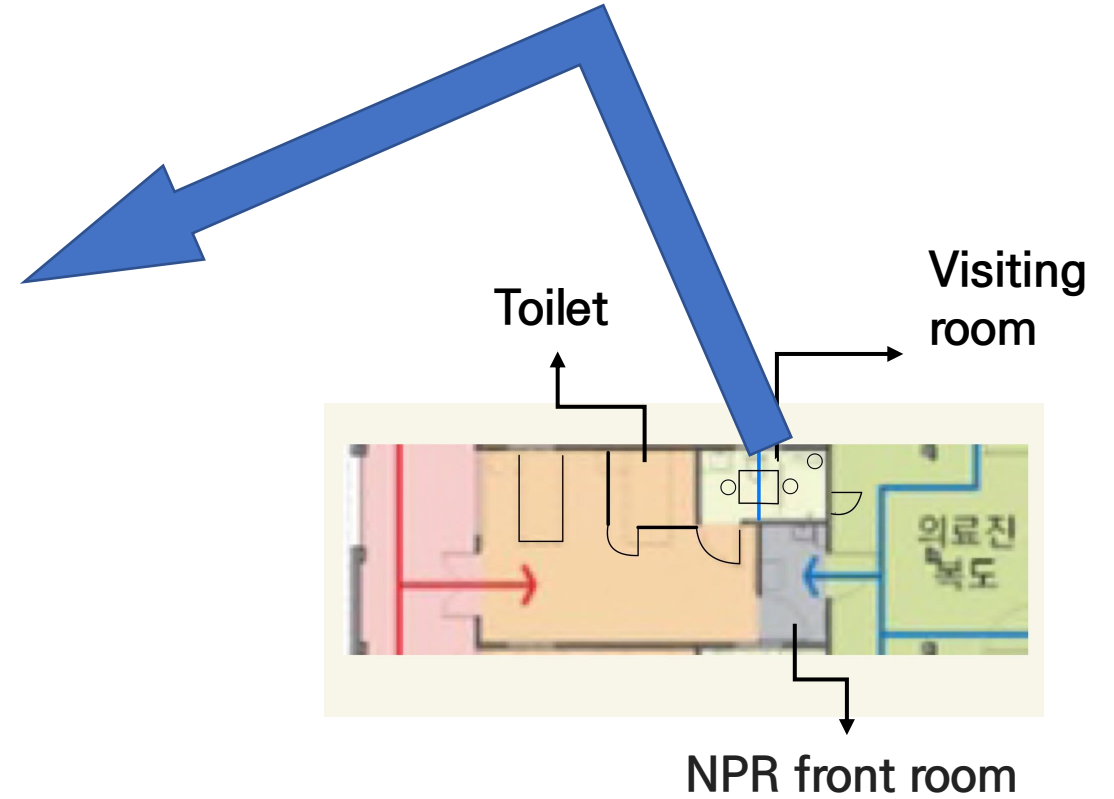
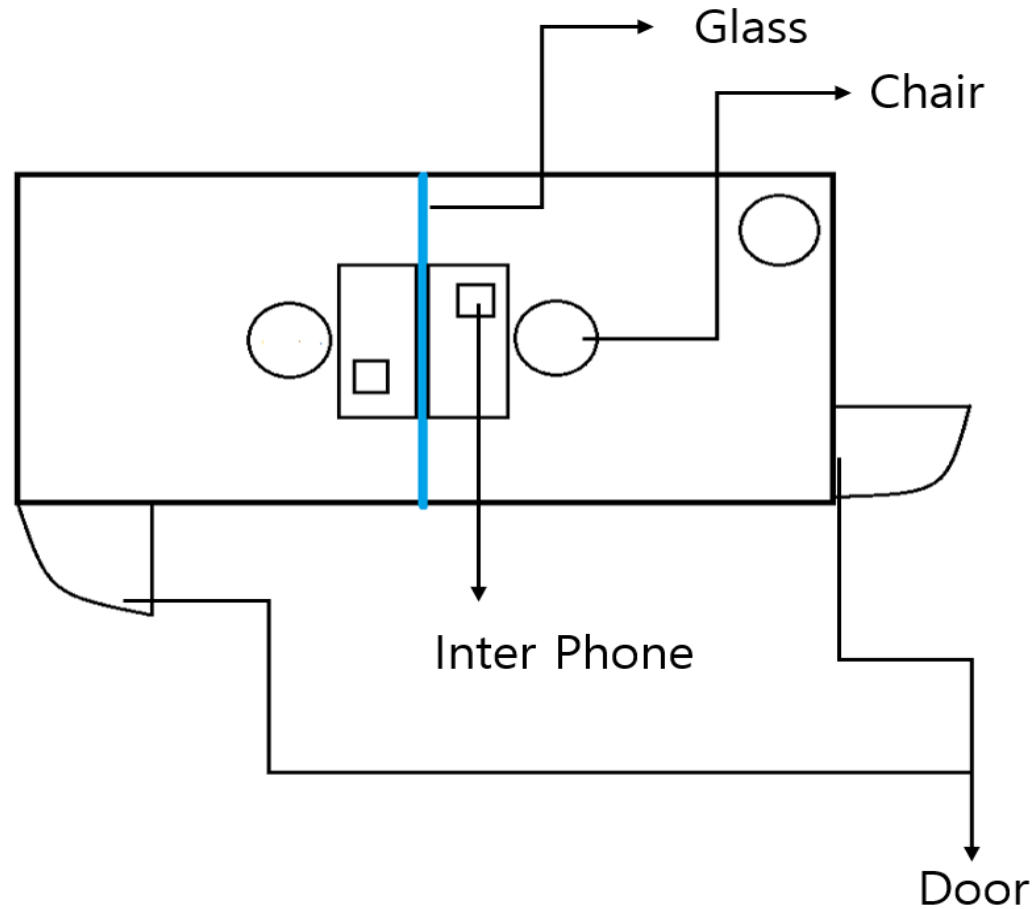


Toilet
in NPR

Maintain room-to-room differential pressure more than -2.5Pa each

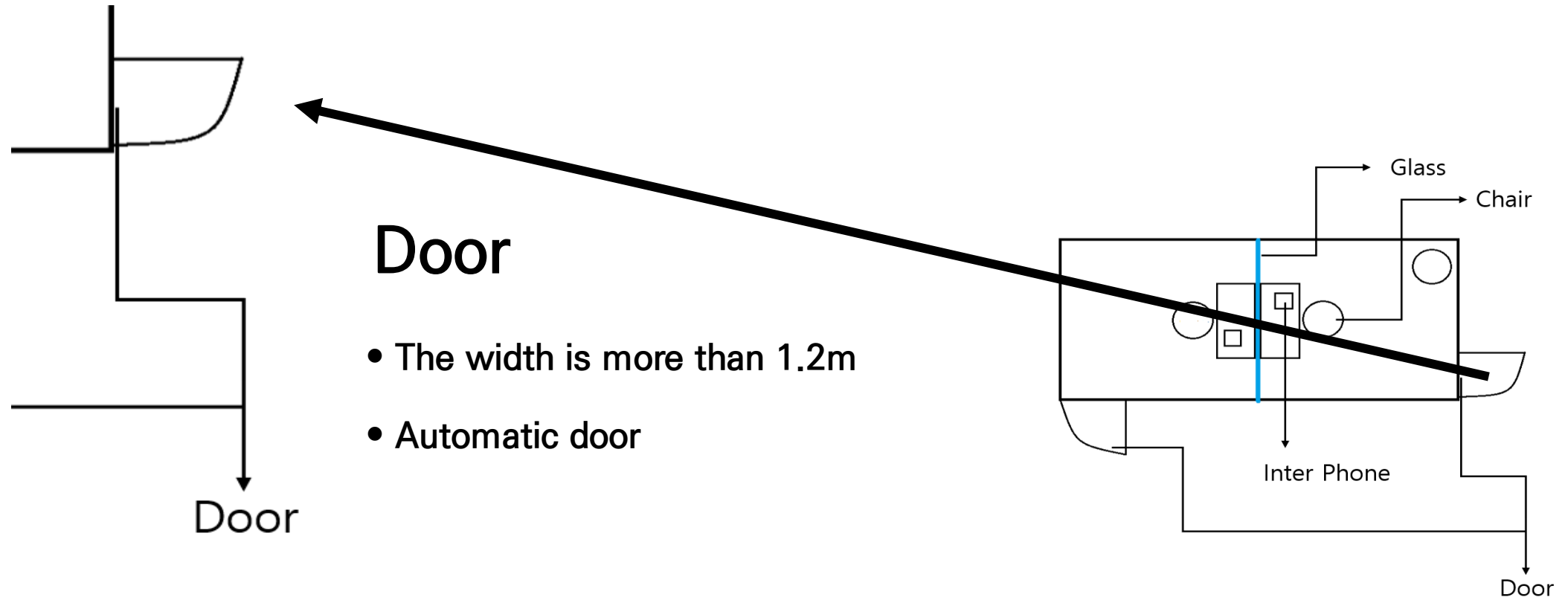
4. Design Description

: The structure of the visiting room



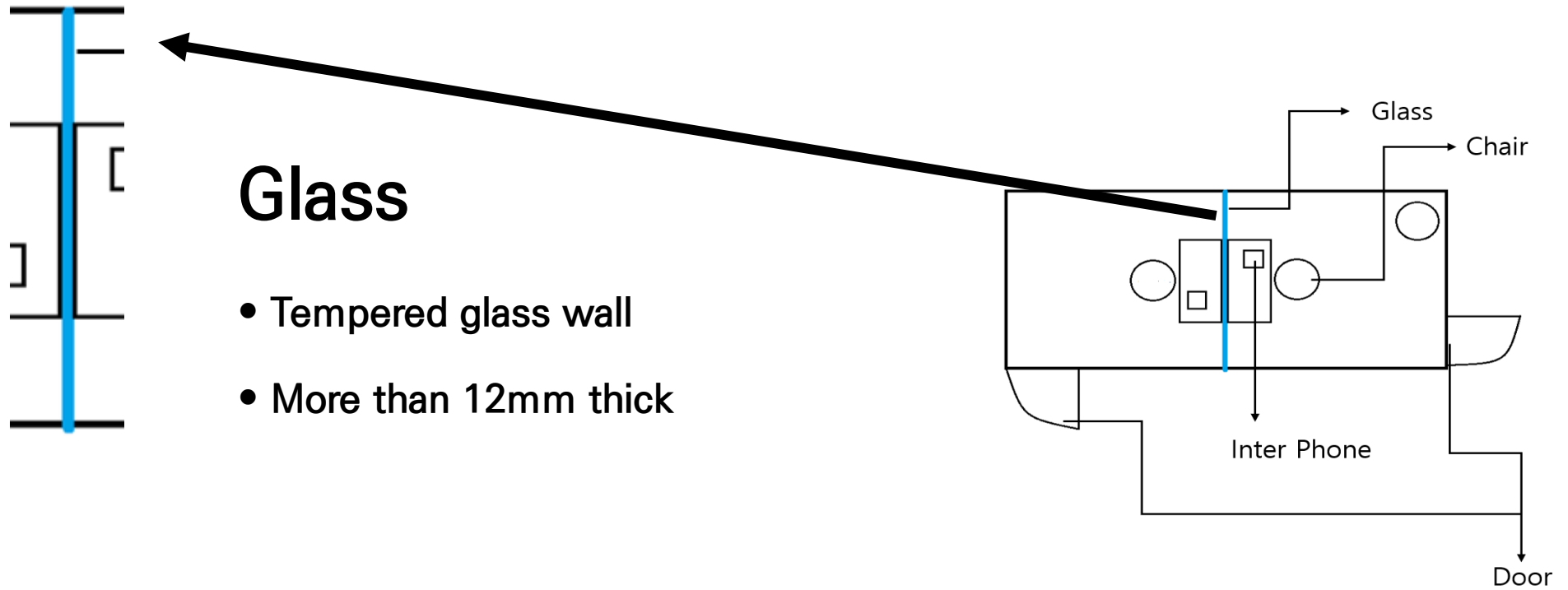
4. Design Description

: The structure of the visiting room



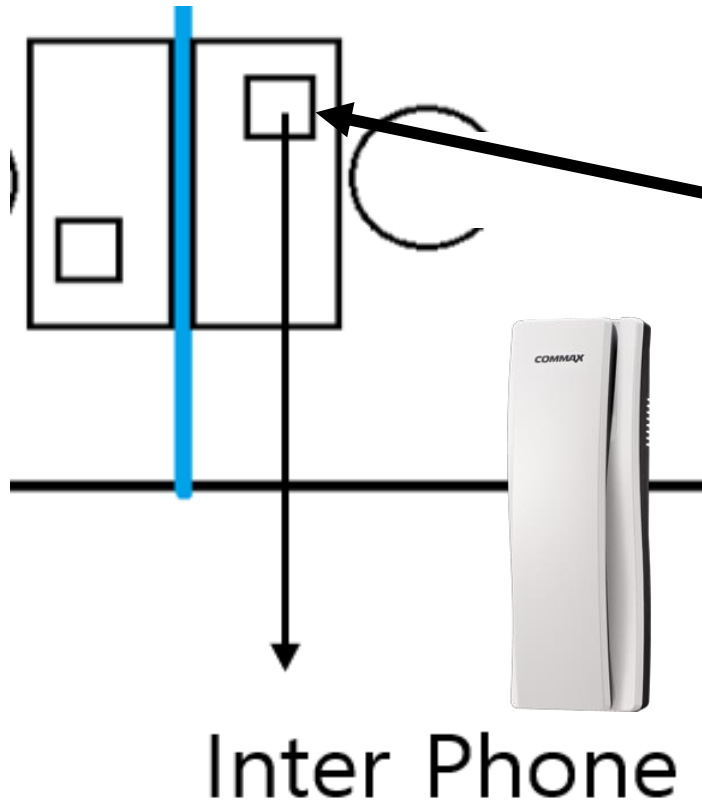
4. Design Description

: The structure of the visiting room



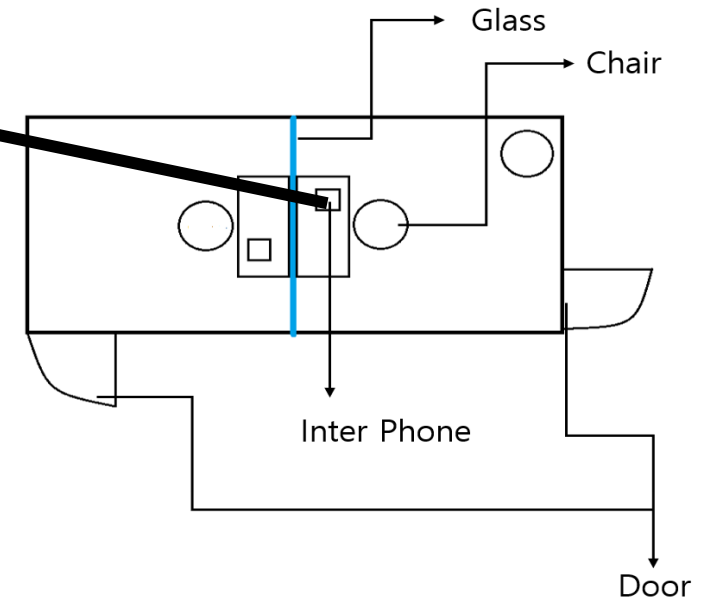
4. Design Description

: The structure of the visiting room



Inter phone

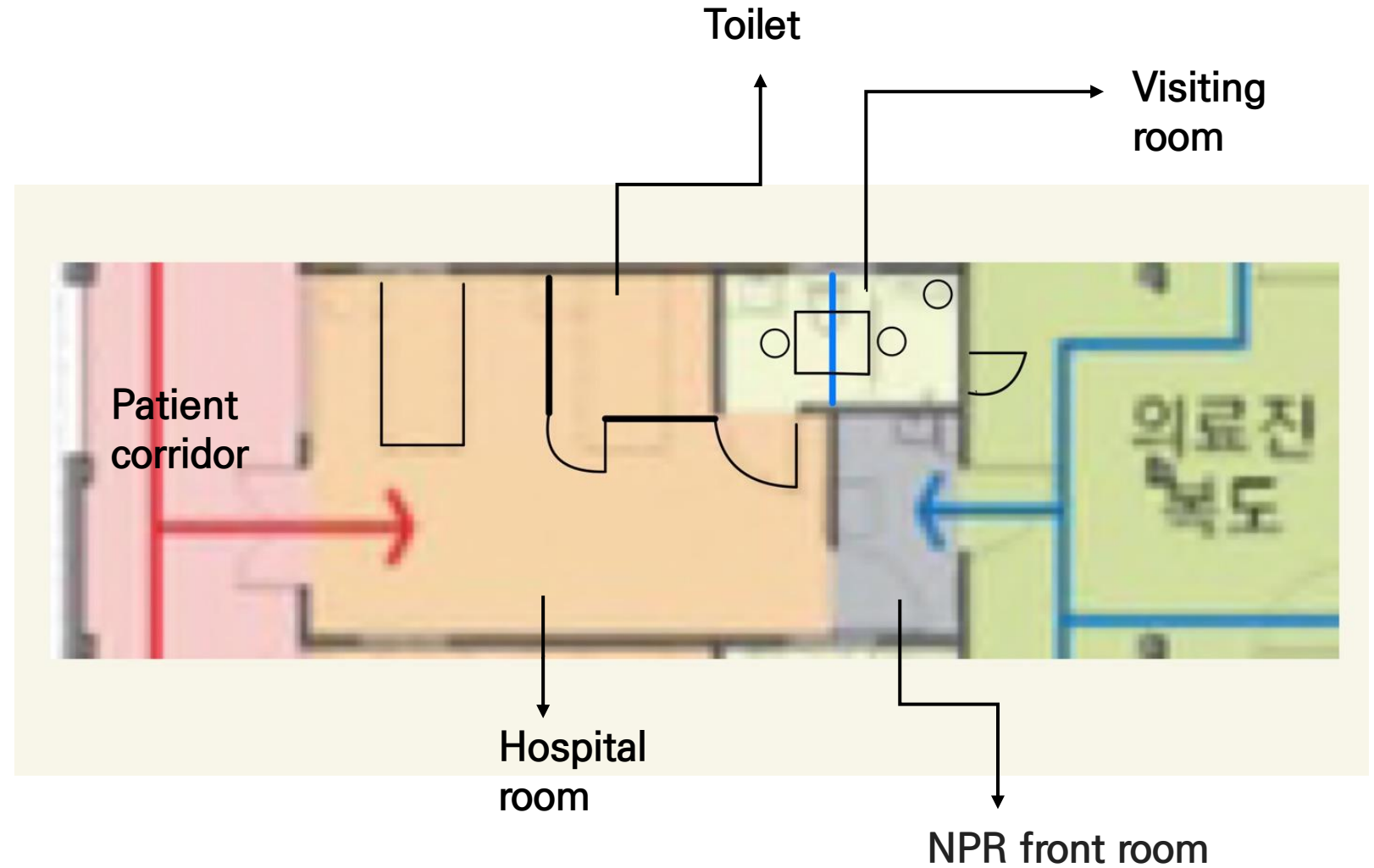
- Patients can communicate smoothly with medical staffs and visitors



4. Design Description

: Structure of the NPR

The size of the hospital room is more than 15m² of net effective area excluding all rooms, toilets, walls, and visitor rooms.



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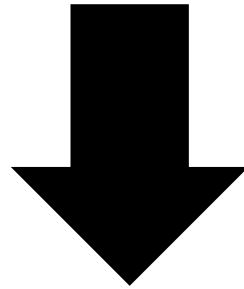
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5. Advantages and expected effects of the design

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: Advantages of the design

Patients can communicate face to face
with the visitor



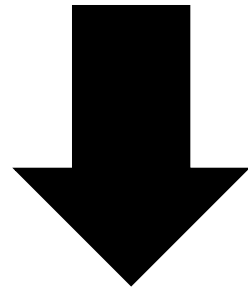
Relieve the patient's loneliness

5. Advantages and expected effects of the design

: Advantages of the design

Actually

Connected environment with the family



Help to treat Covid 19 critical patients
effectively

5. Advantages and expected effects of the design

: Advantages of the design



Family photo



Family letter



**Help improve the condition
of the serious patient**

5. Advantages and expected effects of the design

: Advantages of the design



Talking about your loved ones or the familiar past is also helpful in treating patients.

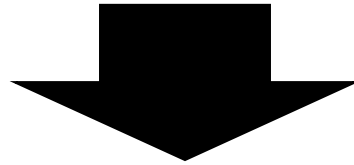
사공정규, Professor of psychiatry
at Dongguk University

5. Advantages and expected effects of the design

: Advantages of the design

As a result

Conversation with patients and their families in the visiting room



Helps patients that have issues with mental and physical health

5. Advantages and expected effects of the design

: Benefits to the medical staff

1. 장갑착용



2. 부직포 가운 착용



3. 비닐가운 착용



4. N95마스크 착용



can go



Negative pressure
corridor

Visiting room

Not all protective clothing

Physical strain

**Protective
clothing time**



5. Advantages and expected effects of the design

: Expected effects of the design

It relieves loneliness and depression of the patient in NPU

It reduces the physical burden on the medical staff

Our design will provide

Patients with a precious family meeting

Medical staff with a slightly more
comfortable environment

Thank You.

Q&A