

# **SARI CRITICAL CARE TRAINING**

## **SEVERE ACUTE RESPIRATORY INFECTION (SARI) TREATMENT FACILITY DESIGN**

### **MODULE 2: DESIGNING SARI SCREENING AREA AND TREATMENT CENTRE**

MARCH 2020

# Learning objectives

**By the end of this lecture, you will be able to:**

- Identify the basic principles and layout of a COVID-19 screening point for healthcare facilities;
- Describe how to set up a SARI treatment centre; and
- Describe how to set up a SARI treatment centre in tents.

# Modules

**This lecture is organized in three different sections:**

- 2A Basic principles and layout of a COVID-19 screening point for healthcare facilities
- 2B Setting up a SARI treatment centre
- 2C SARI treatment centre in tents.

# Module: 2A

## Module 2A

### Basic principles and layout of a COVID-19 screening point for healthcare facilities

# Screening for health facilities

Establish a proper screening system at all different levels of the public health system to enable early detection of potential suspected cases. It should include temporary isolation capacity, referral ambulance, trained staffs, protocols and all needed supplies.

- Existing building and new construction
- Big tent facility [ $>100\text{m}^2$ ]
- Small tent facility [around  $45\text{m}^2$ ]



# Screening for health facilities – Building

4: Patient side triage

5: Staff side triage

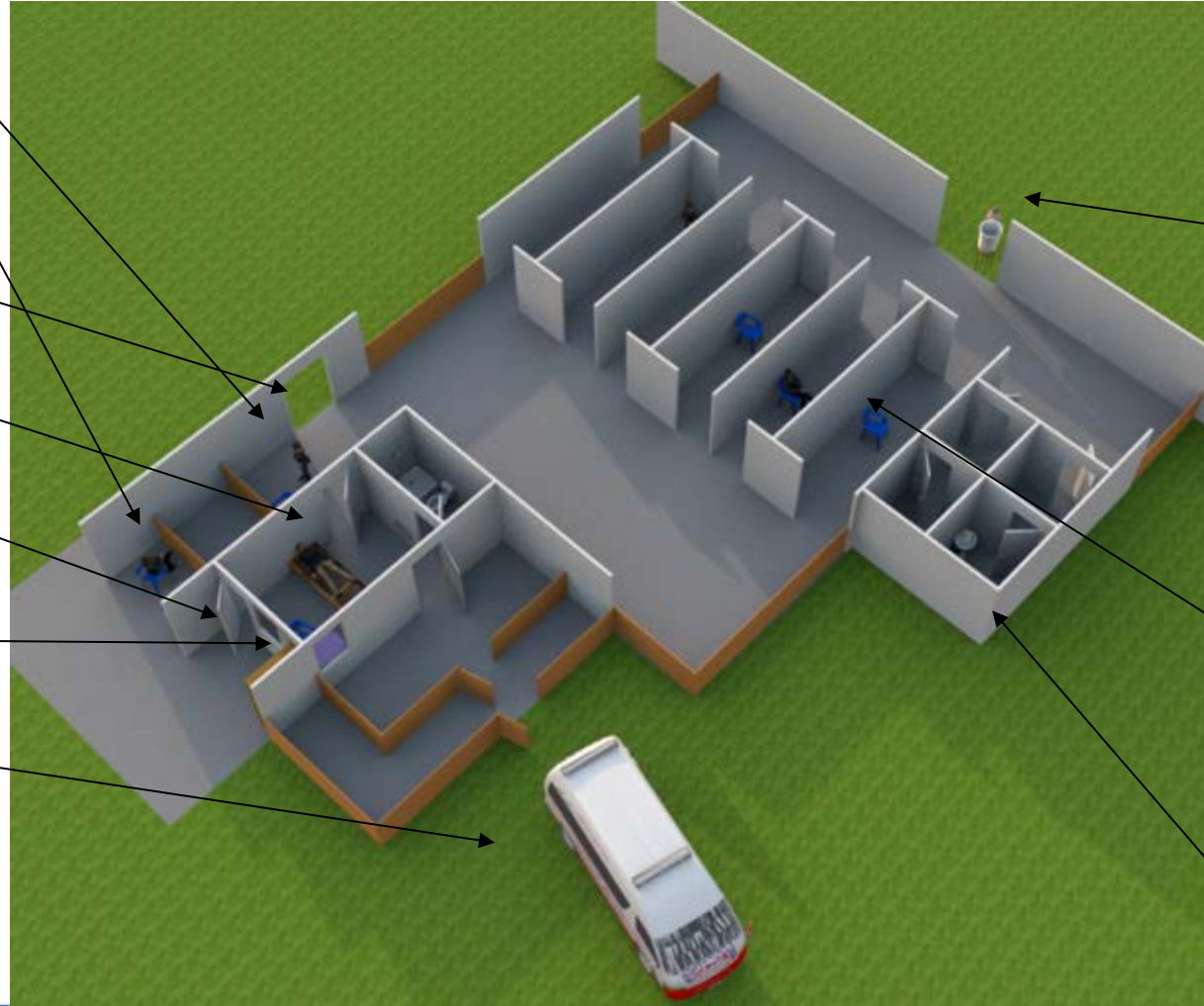
6: To the health facility

7: To isolation room

8: Donning and doffing

9: Self-contained isolation room

10: To SARI treatment centre



## 1: Patient entry

NOTE: All patients should pass through the triage!

At this point all patients:

- receive a mask;
- wash their hands;
- are directed to a dedicated individual booth in the waiting room.

## 2: Waiting room

The waiting room is composed of different individual booths with separated entrances and exits.

This facility is completely open [no doors] to allow a proper natural ventilation and equipped with dedicated toilets.

## 3: Waiting room toilets

Male and female services

# Screening for health facilities – Building

## 2. Waiting room

The waiting room is composed of different individual booths with separated entrances and exits.

This facility is completely open [no doors] to allow a proper natural ventilation and is equipped with dedicated toilets.

## 1. Patient entry

At this point, all patients:

- receive a mask;
- wash their hands; and
- are directed to a dedicated individual booth in the waiting room.

## 3. Triage

Patients are investigated in an individual triage booth. A one (1) meter distance fence [1.2 meter high] separates patients from staff.

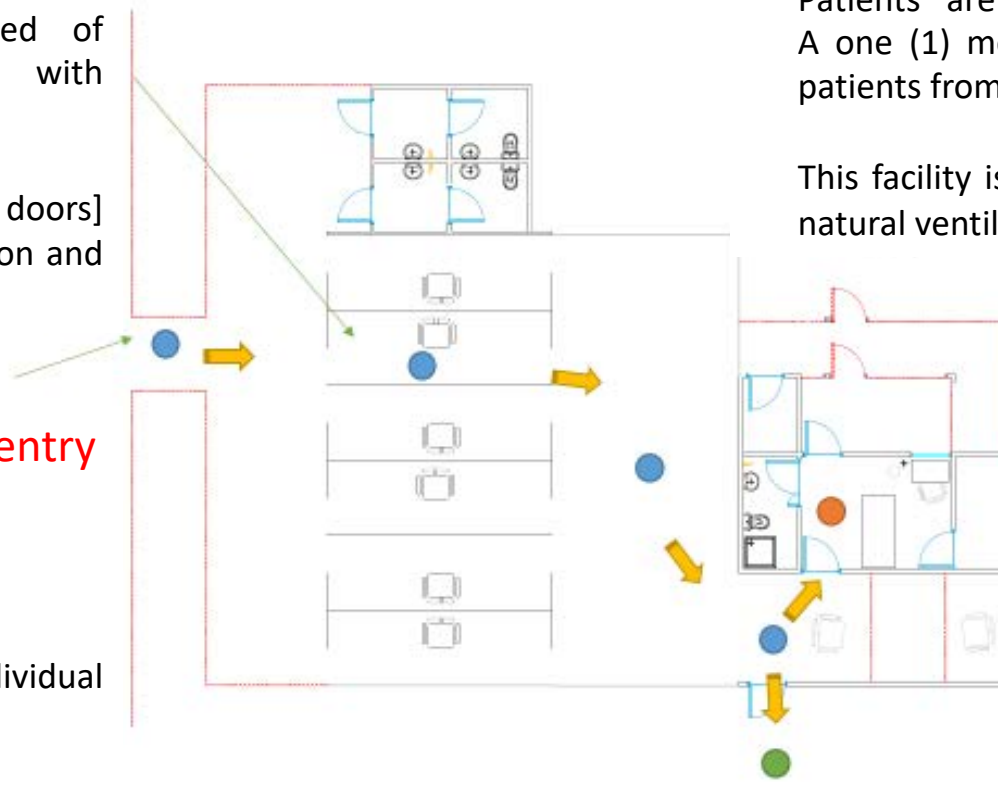
This facility is completely open [no doors] to allow a proper natural ventilation and is equipped with dedicated toilets.

## 4. Suspected case

Patient moves to the isolation room, waiting to be referred to a specific treatment centre.

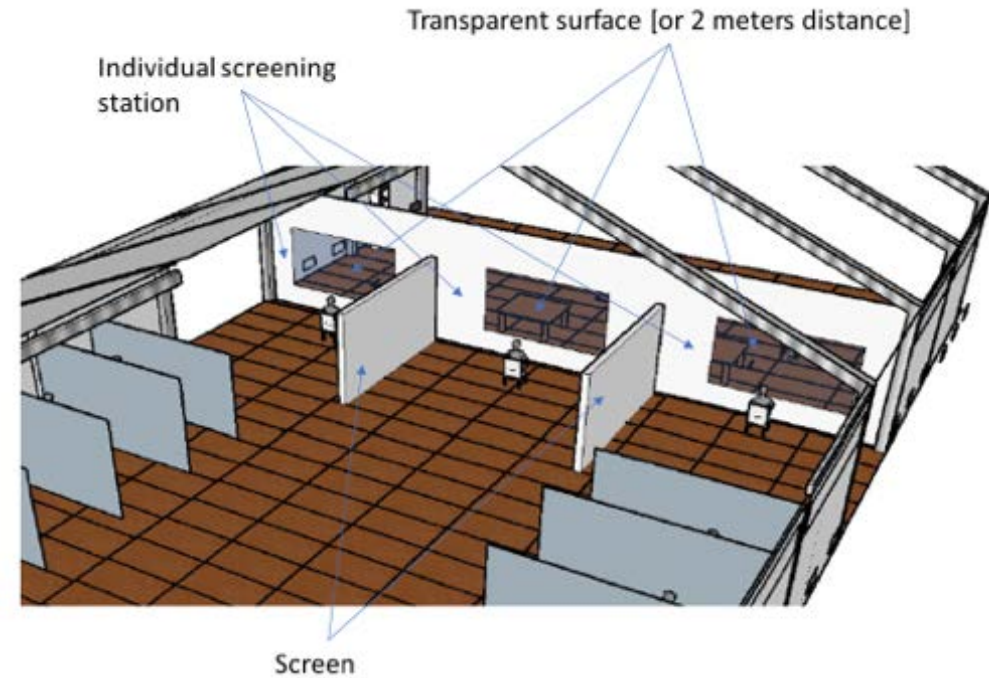
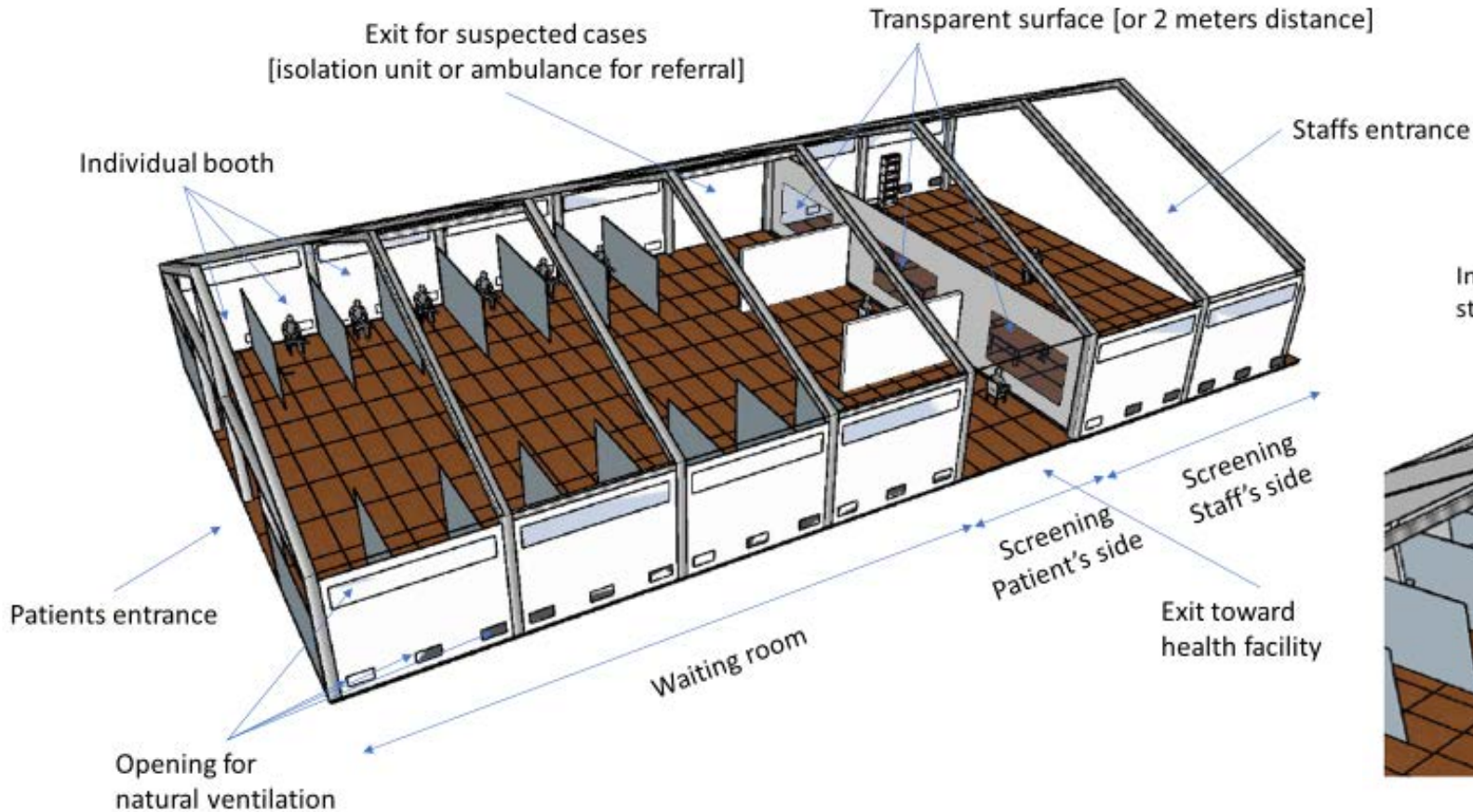
## 5. Non case

Patient moves to the health facility.



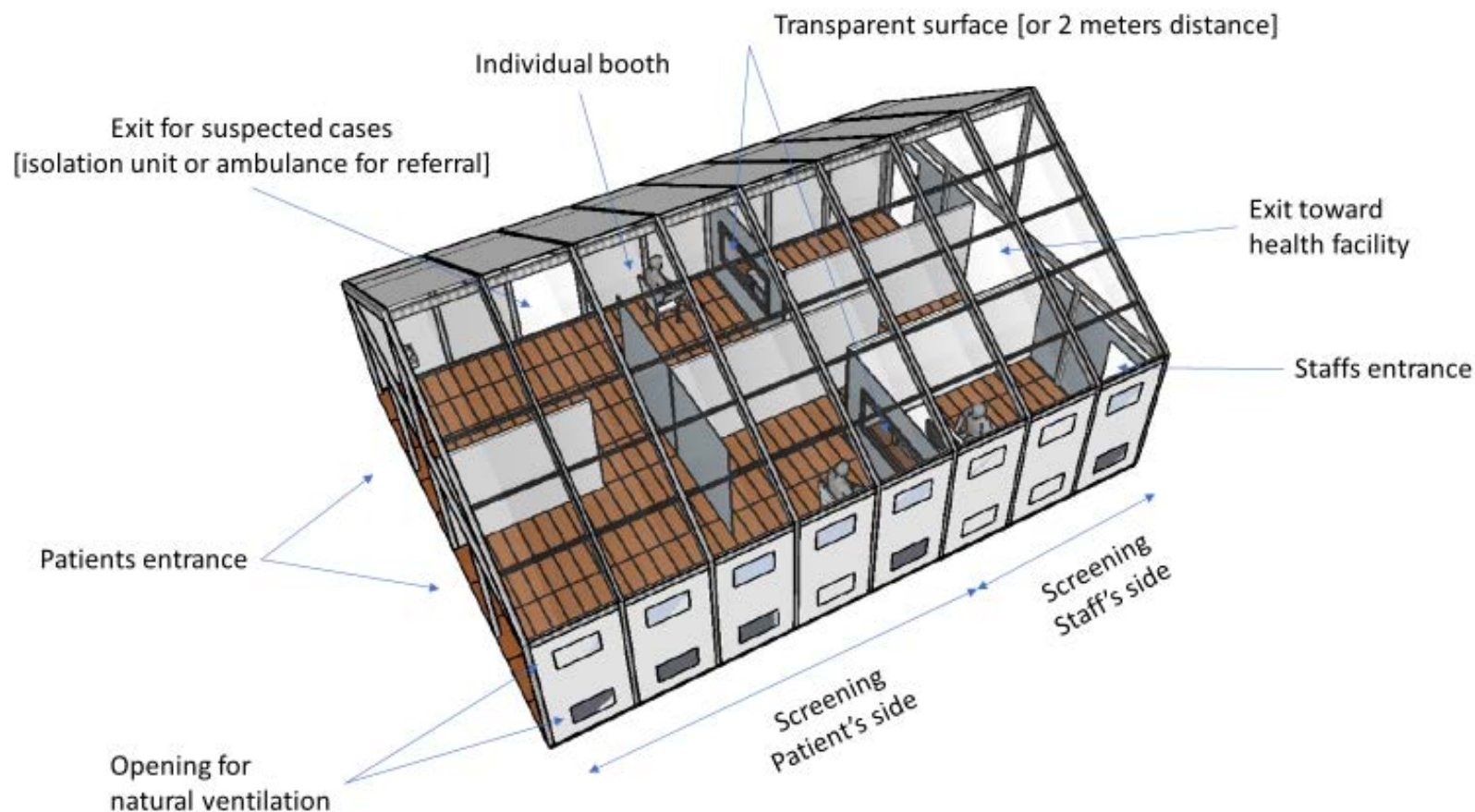


# Screening for health facilities – Big tents

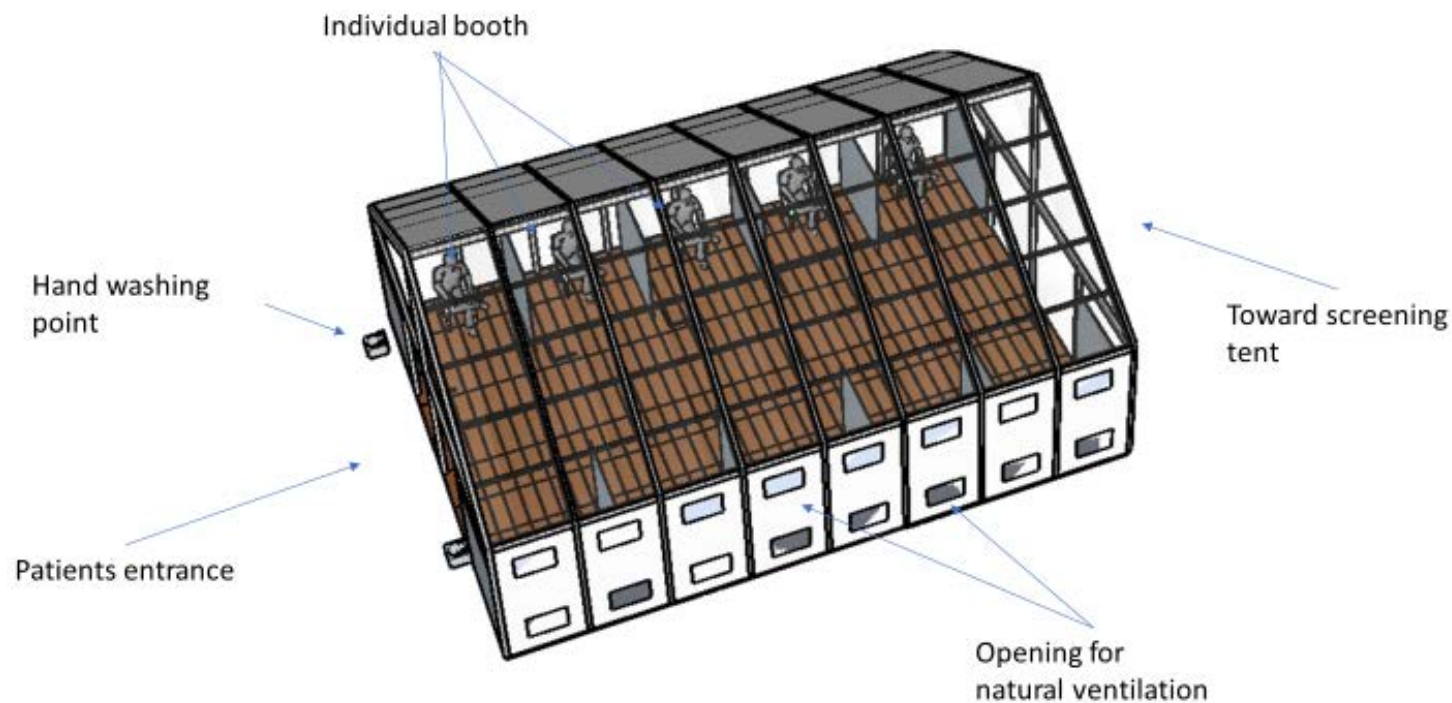




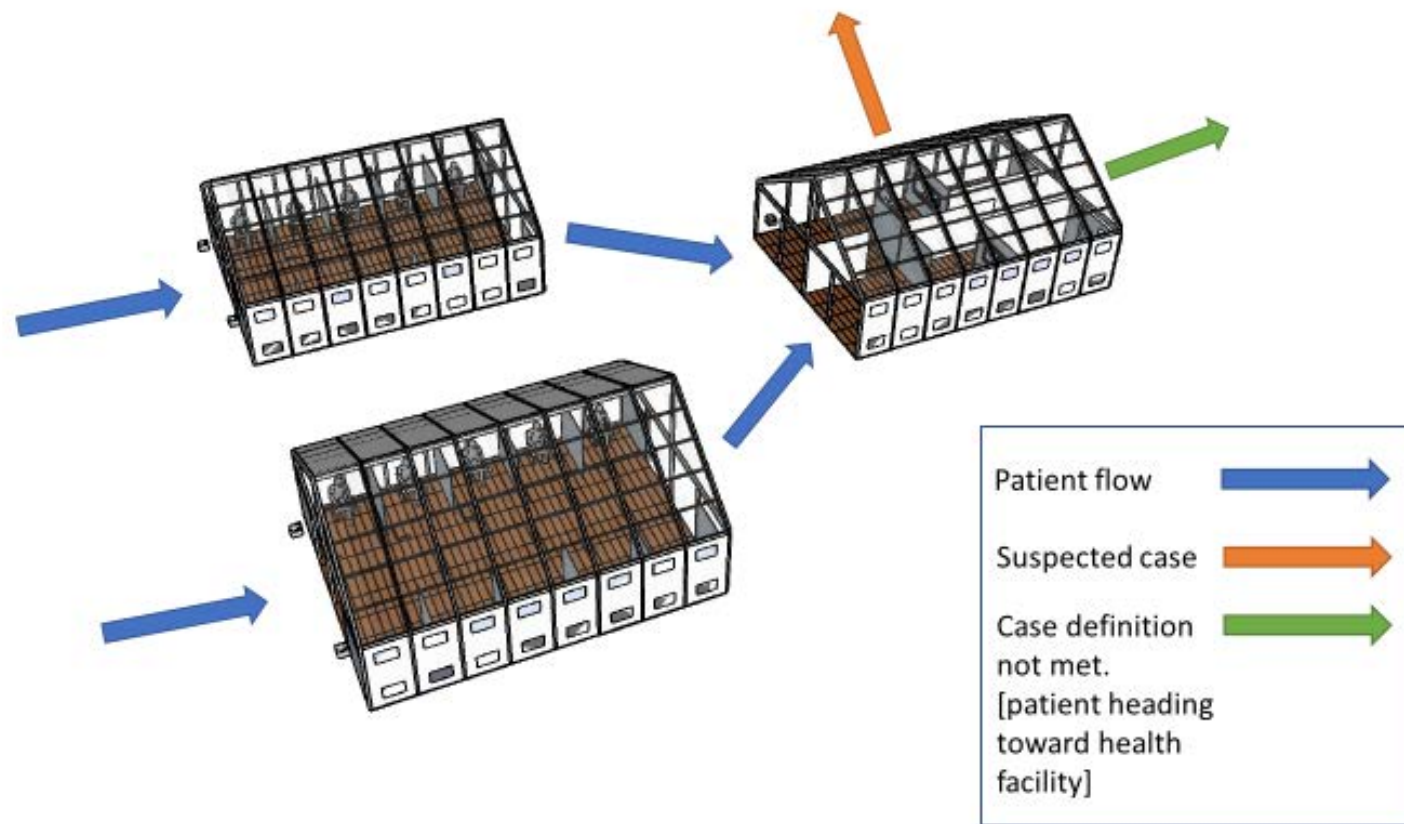
# Screening for health facilities – Small tents



# Screening for health facilities – Small tents



# Screening for health facilities – Small tents



# Module: 2B

## Module 2B

### Setting up a SARI treatment centre

# Where to set up a SARI Treatment Centre (STC)?

- As close as possible to the outbreak epicentre;
  - Next to existing health facilities (to allow an integrated approach and ease the referral of suspect case);

And/or

- New place chosen according to specific strategic reasons (space, community acceptance, accessibility, etc.)

Construction field requirements:

- Enough space (future extensions) and accessible water source;
- Soil conditions: waste water infiltration, rain water evacuation, stability, etc.;
- Take into account prevailing winds for the control of smoke and odours.



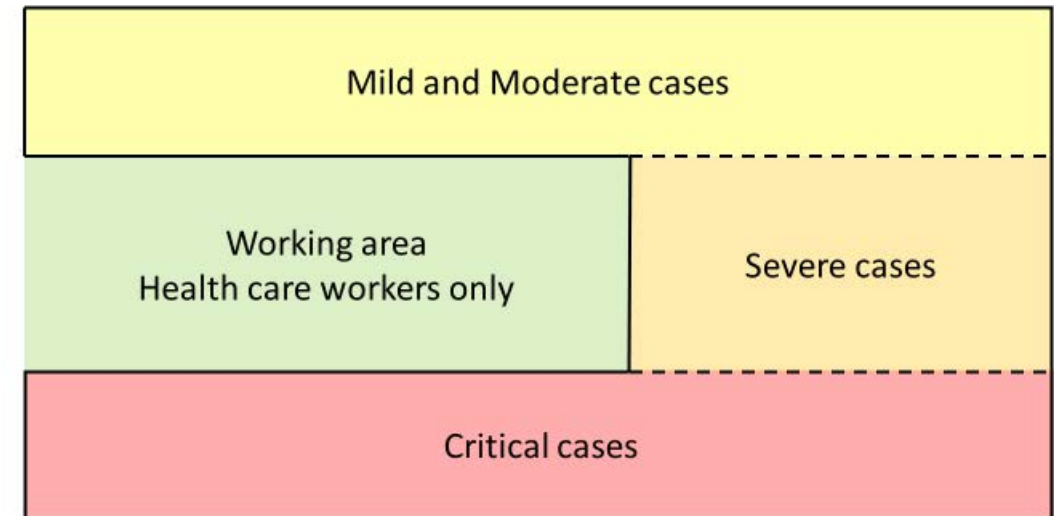
# Basic layout principle

The rationales behind this layout are:

- ✓ Medical care should be provided as soon as possible, even prior to laboratory confirmation, in order to avoid medical conditions worsening.
- ✓ The different levels of risk, represented by patients with specific medical conditions, such as severe cases which might need an aerosol generating procedure [aspiration, intubation, bronchoscopy, etc.].
- ✓ Ensure a clear demarcation and separation from patient and staff areas in order to reduce the risk for HCW and allow a rational use of PPE.

# Basic layout principle

Based on the **clinical definition** of patients with SARI, suspected of COVID-19, the clinical syndromes associated with COVID-19 infection and related medical conditions: mild, moderate and severe illness [including critical patients].

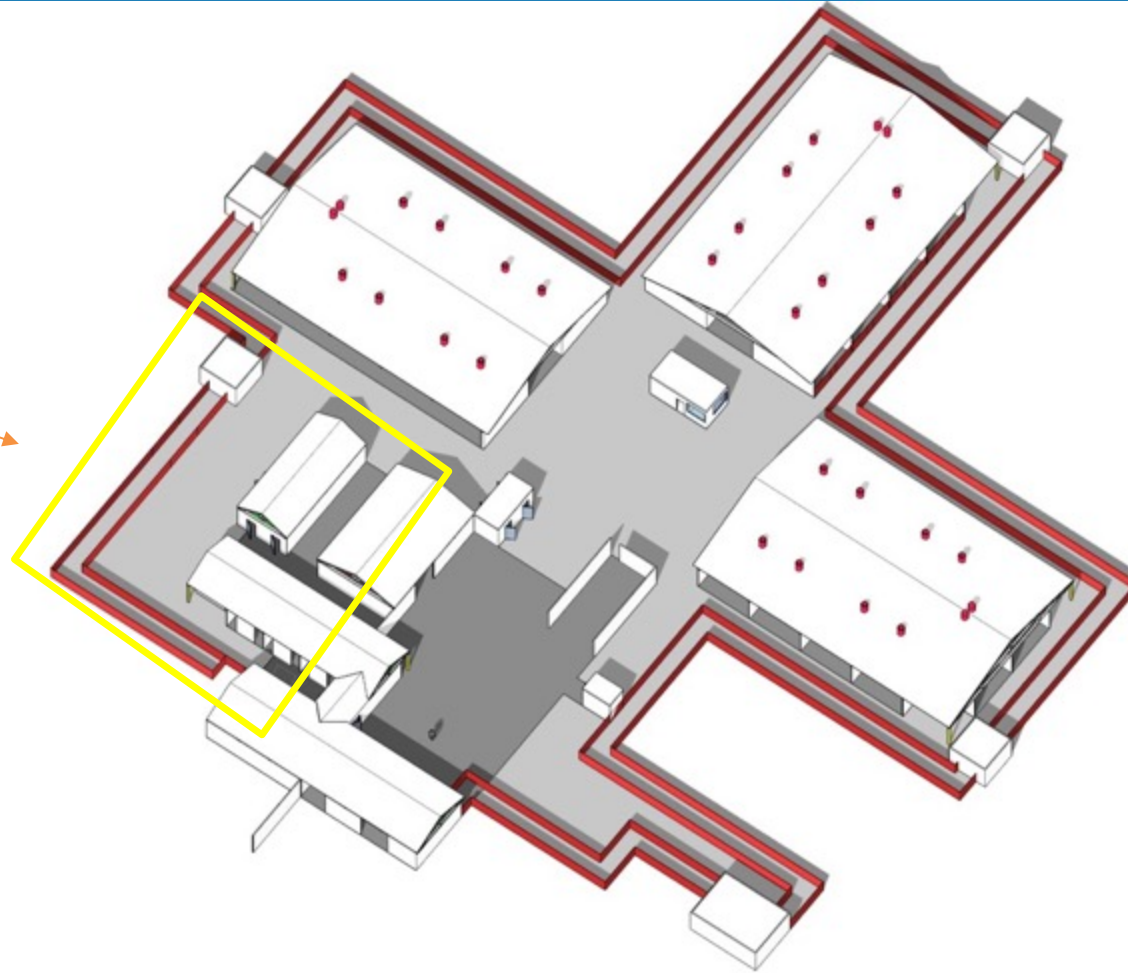


# Basic layout principle

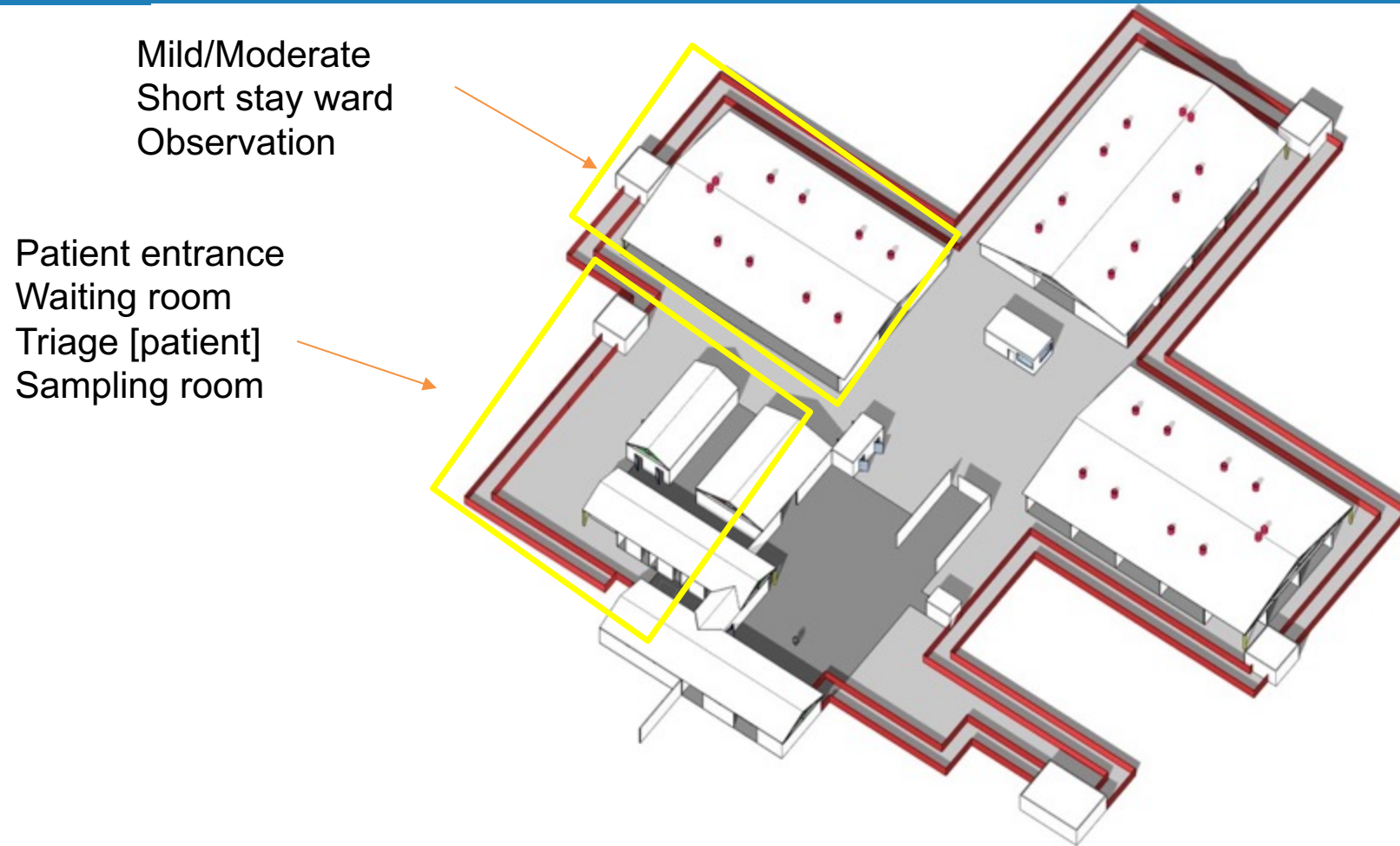


# Key elements

Patient entrance  
Waiting room  
Triage [patient]  
Sampling room

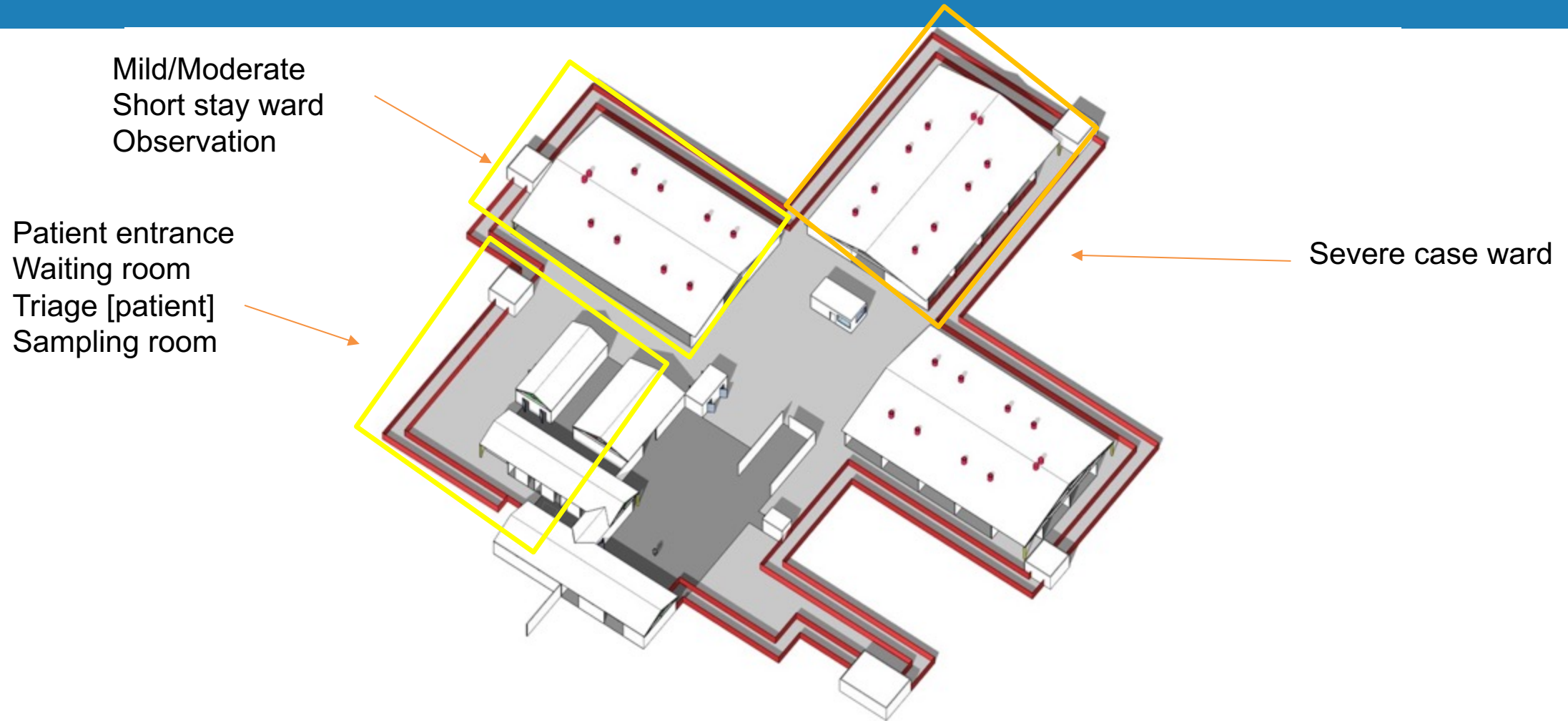


# Key elements

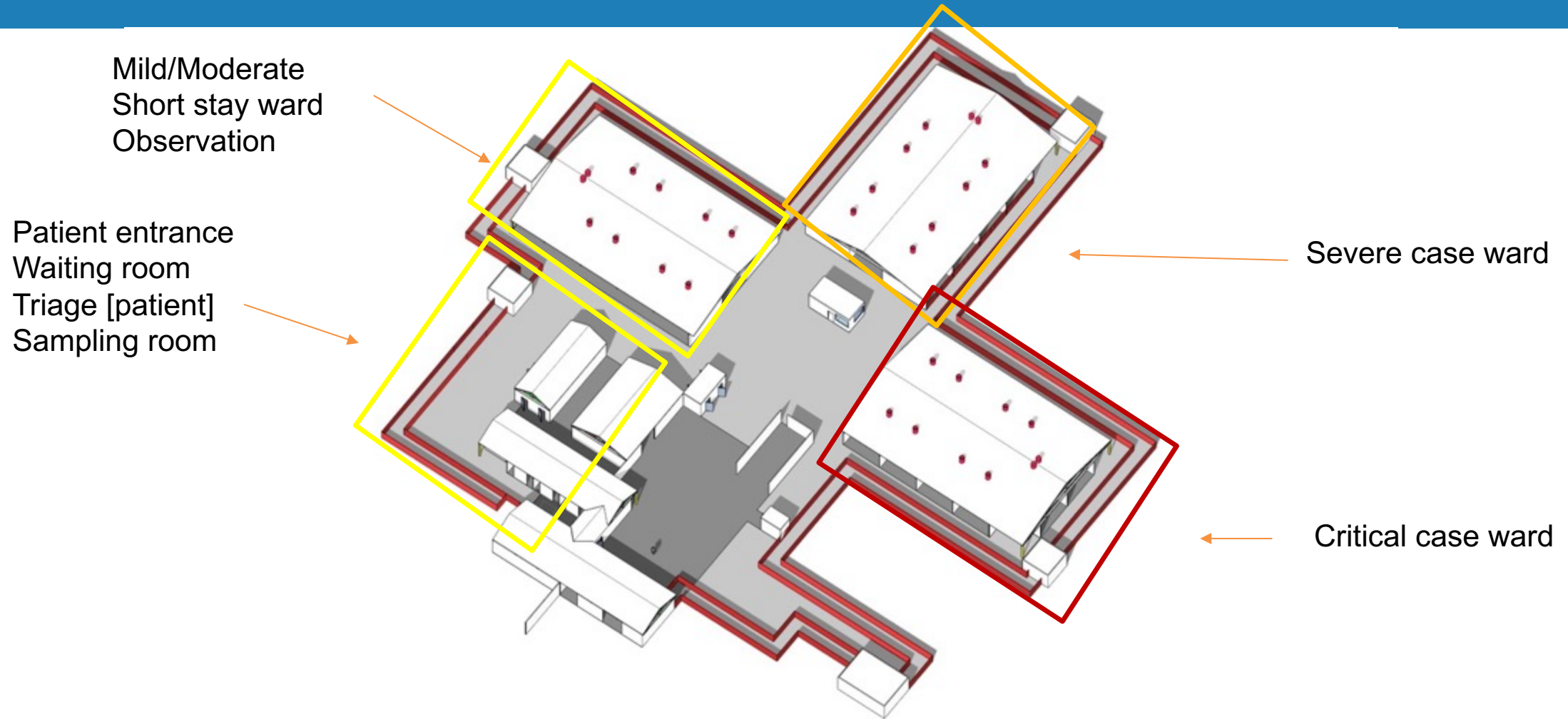




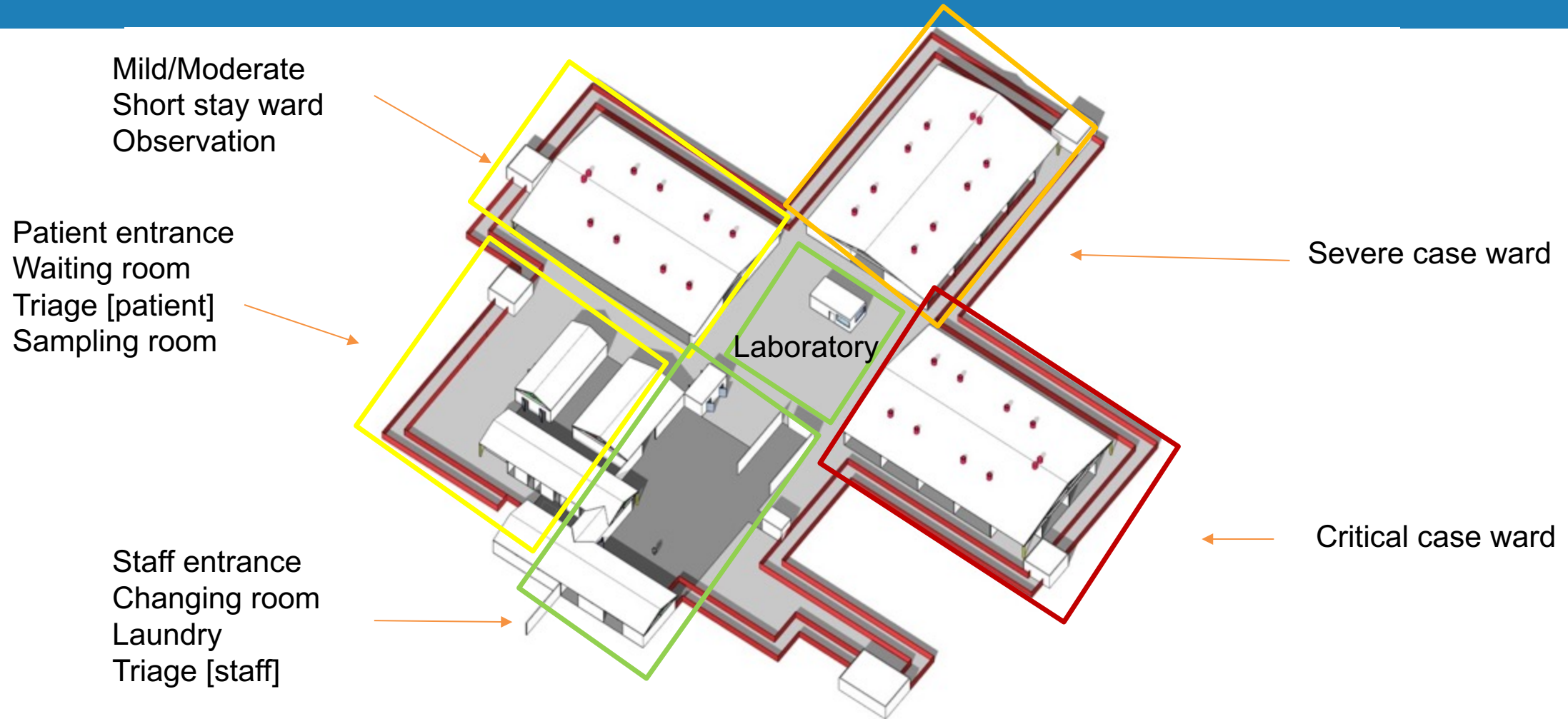
# Key elements



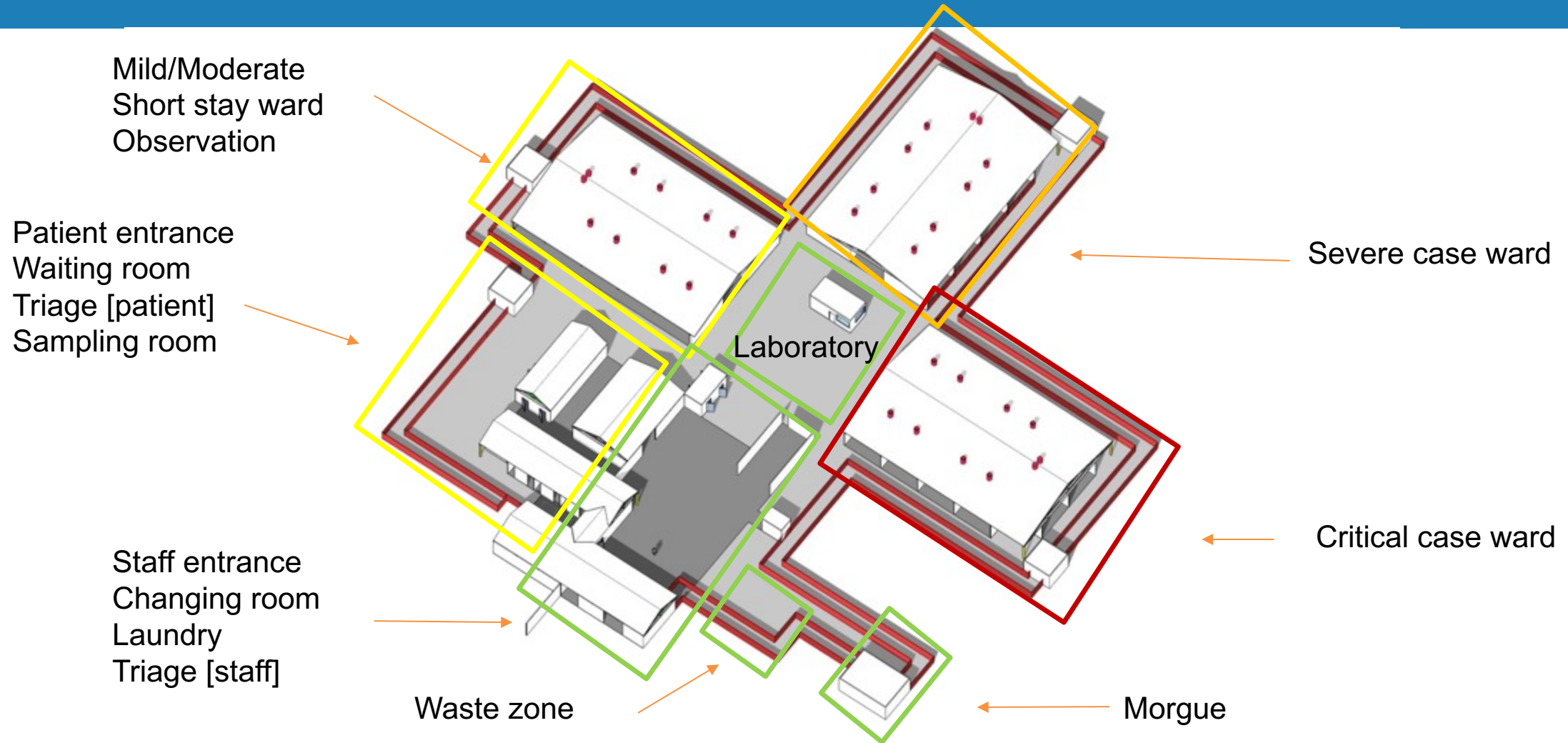
# Key elements



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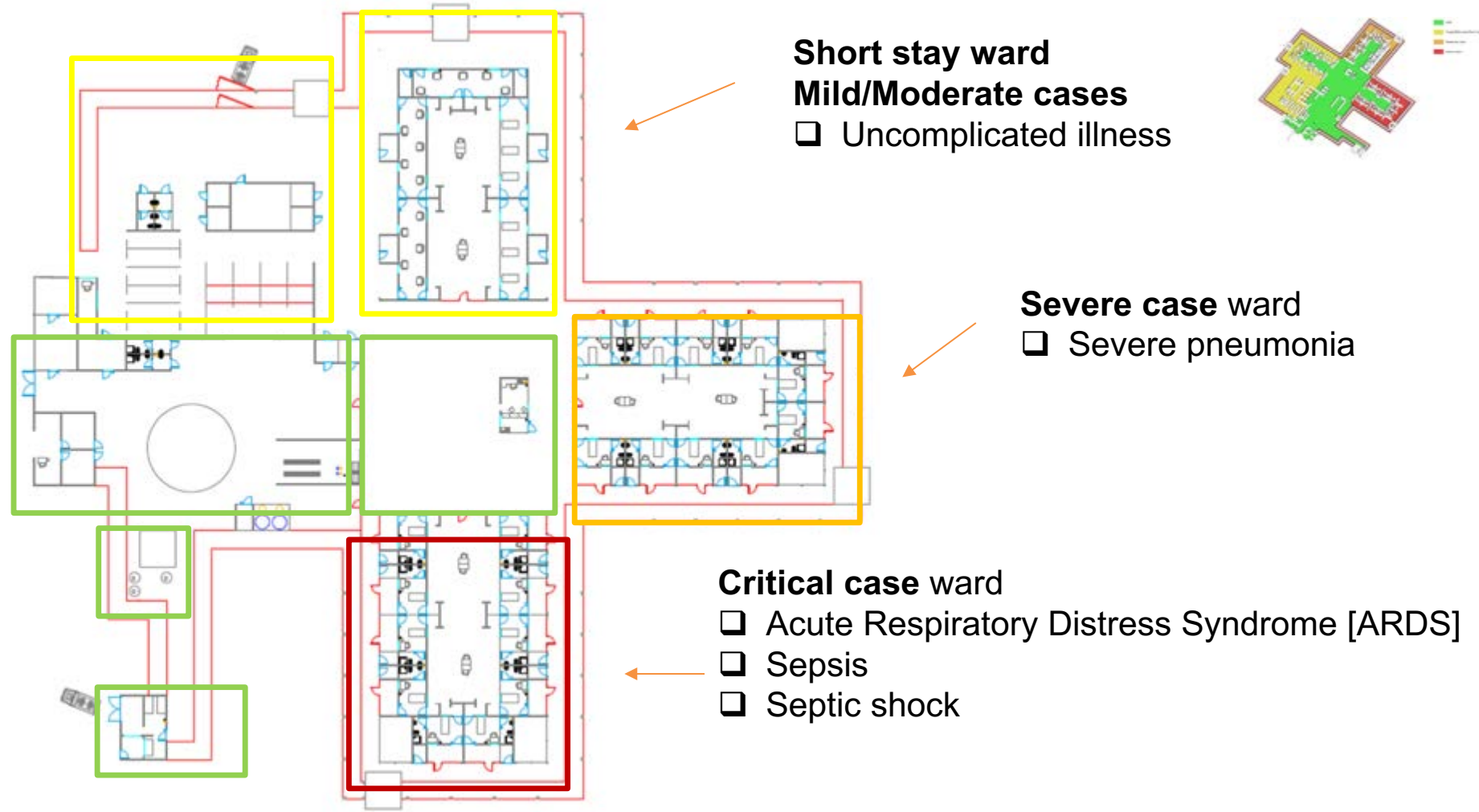


# Key elements



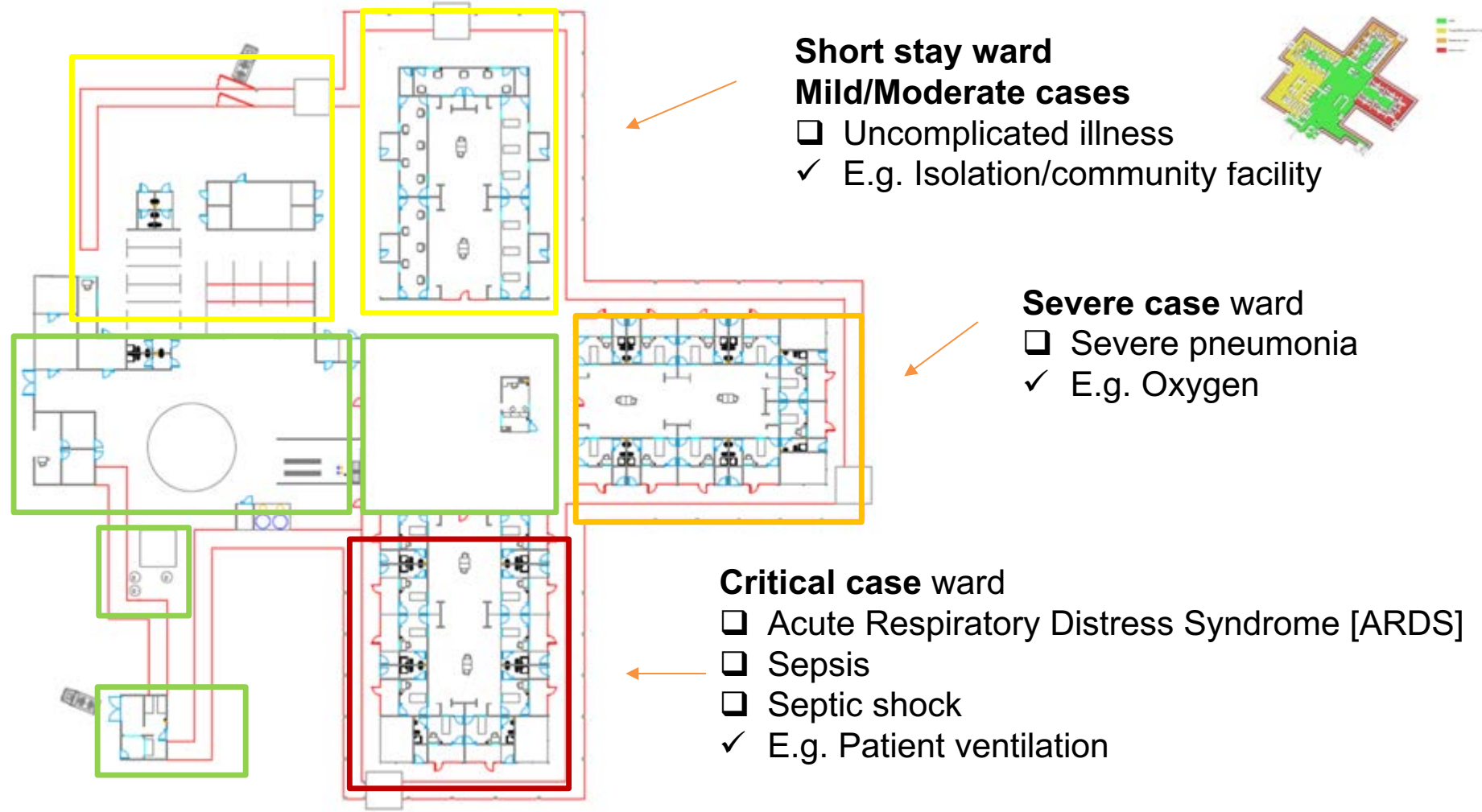


# Key elements – Clinical categorization

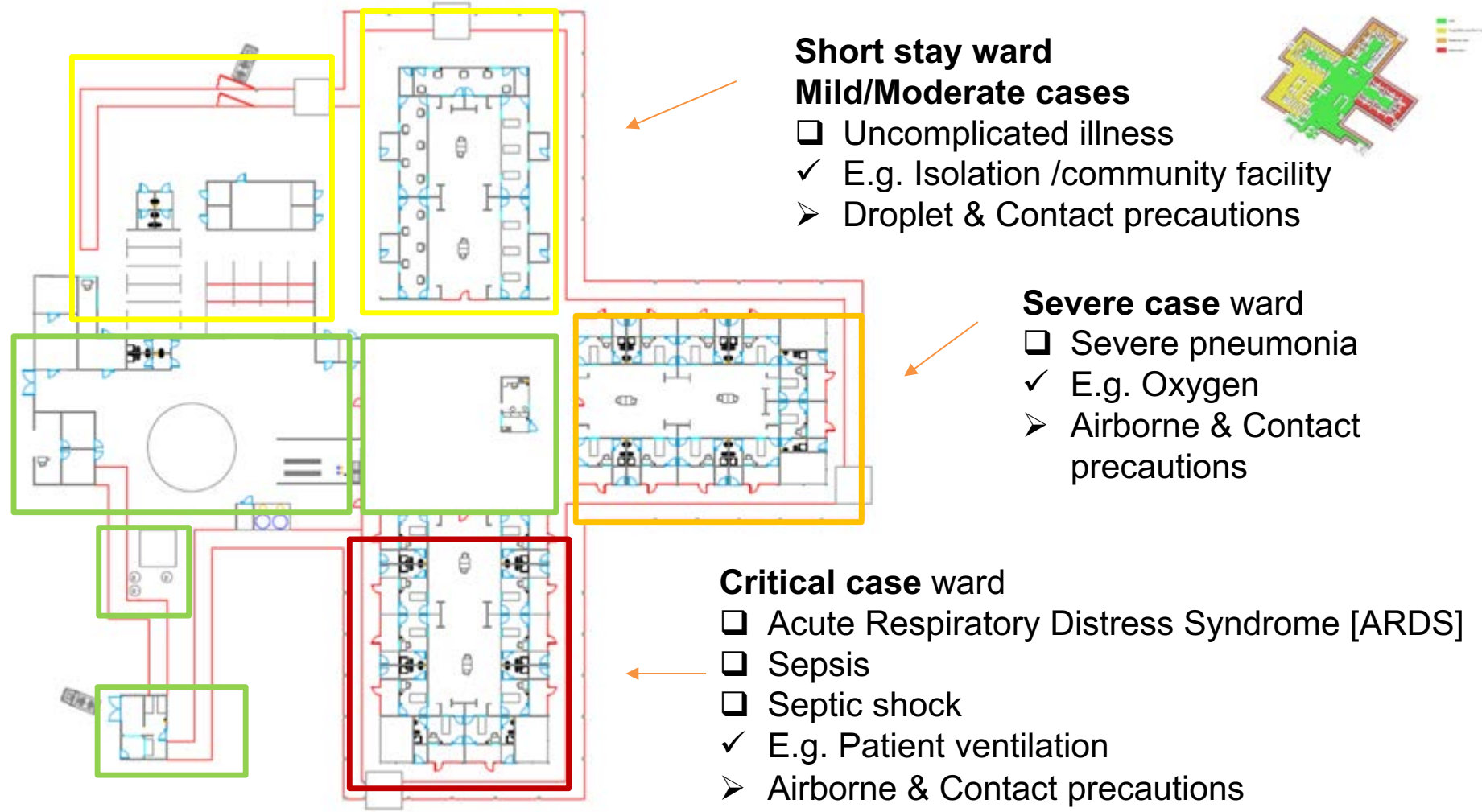




# Key elements – Case management



# Key elements – IPC measures / PPE



# Key elements – IPC measures / engineering

## Short stay ward

### Mild/Moderate cases

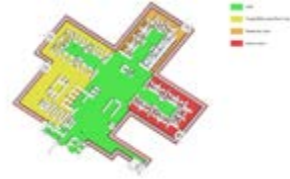
Ward: Spatial separation

Ventilation: Natural ventilation

## Short stay ward

### Mild/Moderate cases

- ☐ Uncomplicated illness
- ✓ E.g. Isolation /community facility
- Droplet & Contact precautions



## Severe cases

Ward or individual self-contained room

Ventilation: Ventilation at least 160 l/s/patient

## Severe case ward

- ☐ Severe pneumonia
- ✓ E.g. Oxygen
- Airborne & Contact precautions

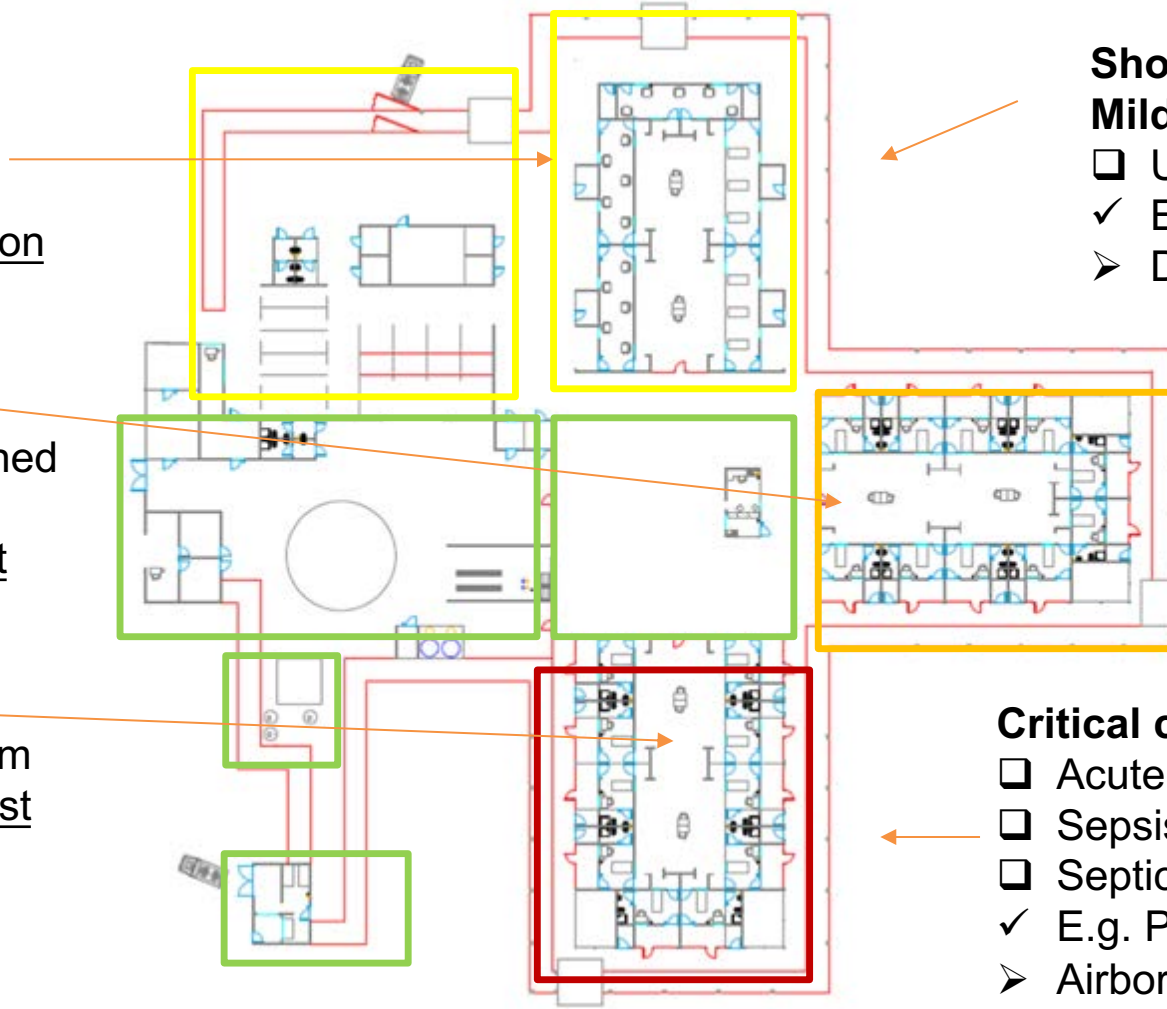
## Critical cases

Individual self-contained room

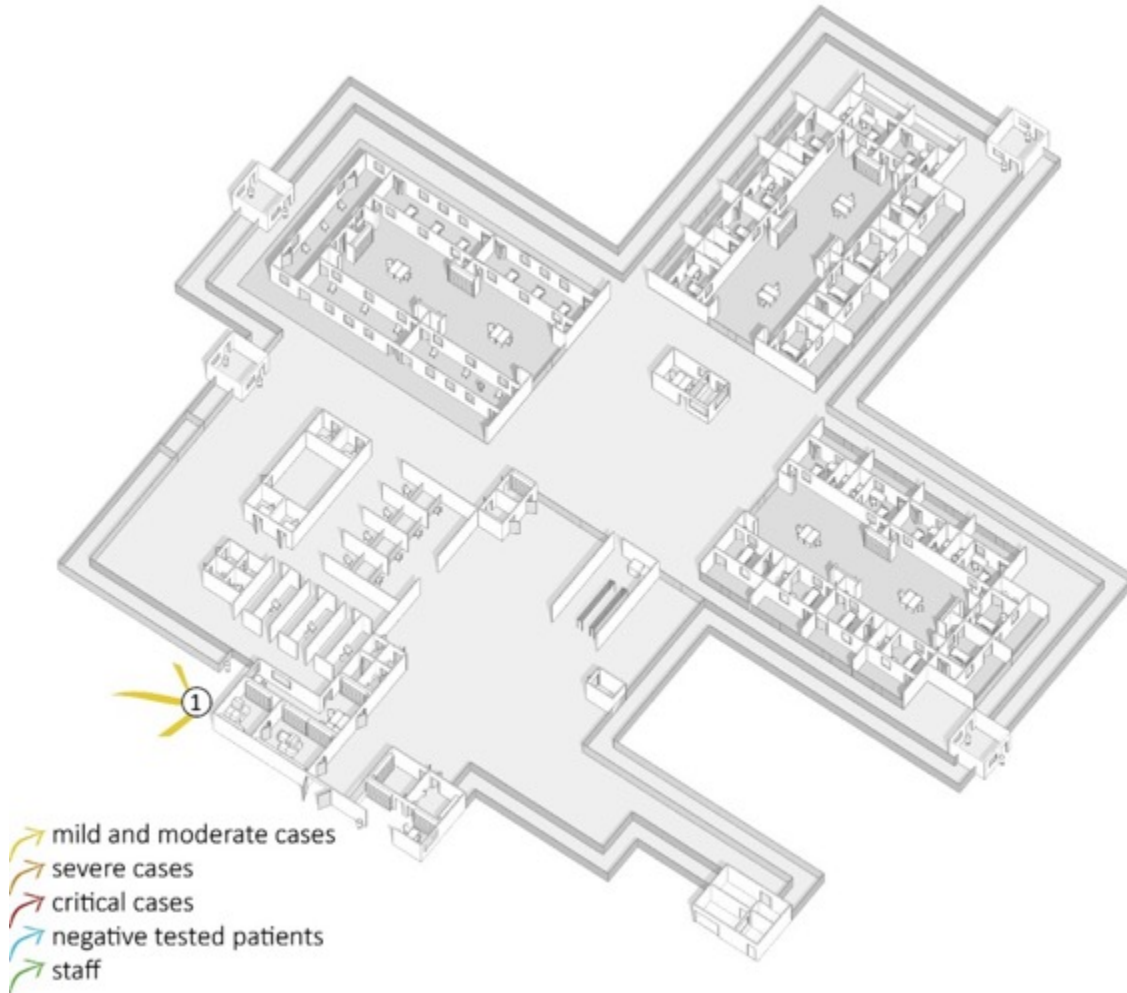
Ventilation: Ventilation at least 160 l/s/patient

## Critical case ward

- ☐ Acute Respiratory Distress Syndrome [ARDS]
- ☐ Sepsis
- ☐ Septic shock
- ✓ E.g. Patient ventilation
- Airborne & Contact precautions



# Patient's flow

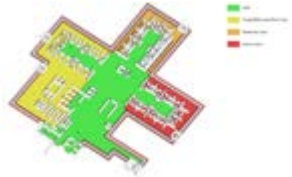


## 1. Patient entry

NOTE: Patients have already been triaged in another medical facility and are referred to the SARI treatment center.

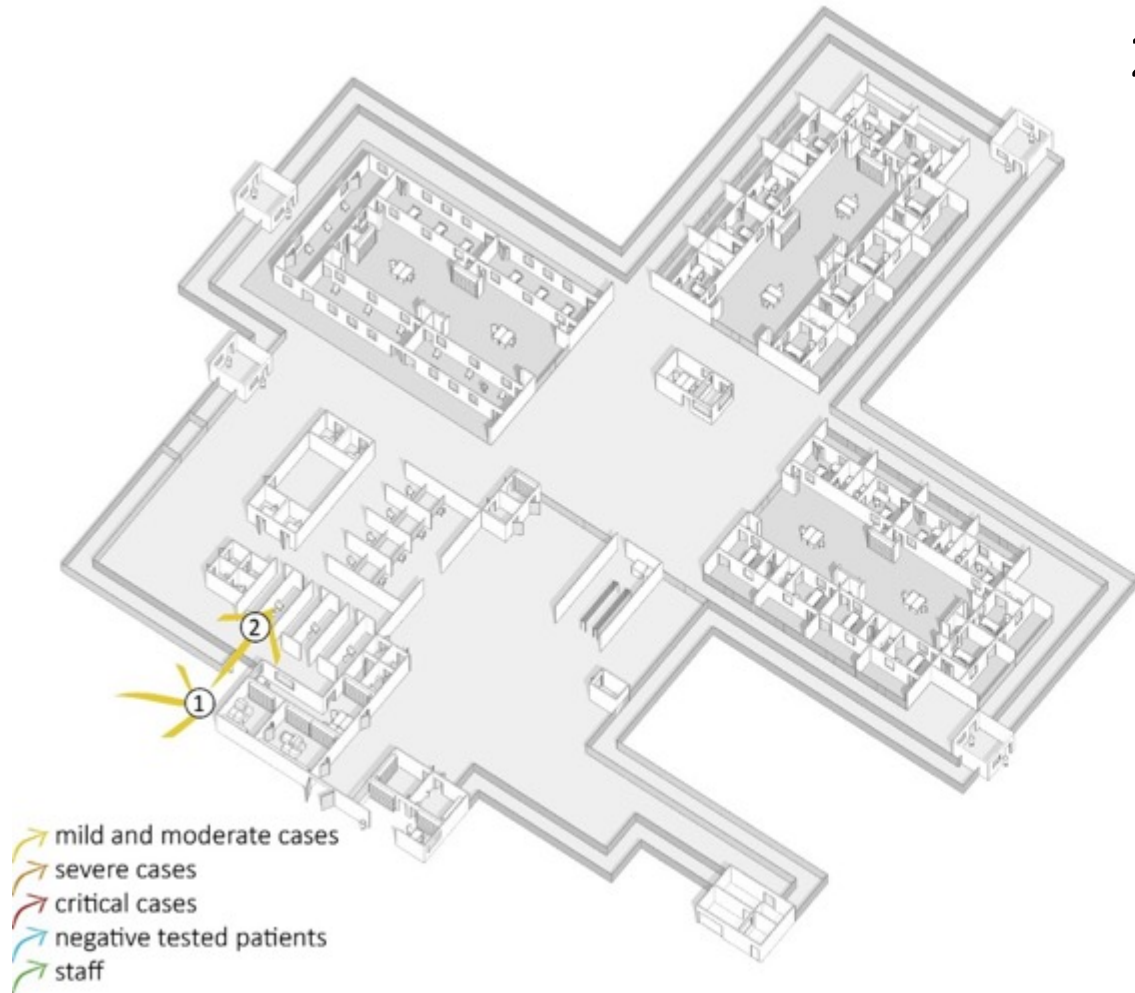
At this point, all patients:

- receive a mask;
- wash their hands; and
- are directed to a dedicated individual booth in the waiting room.





# Patient's flow



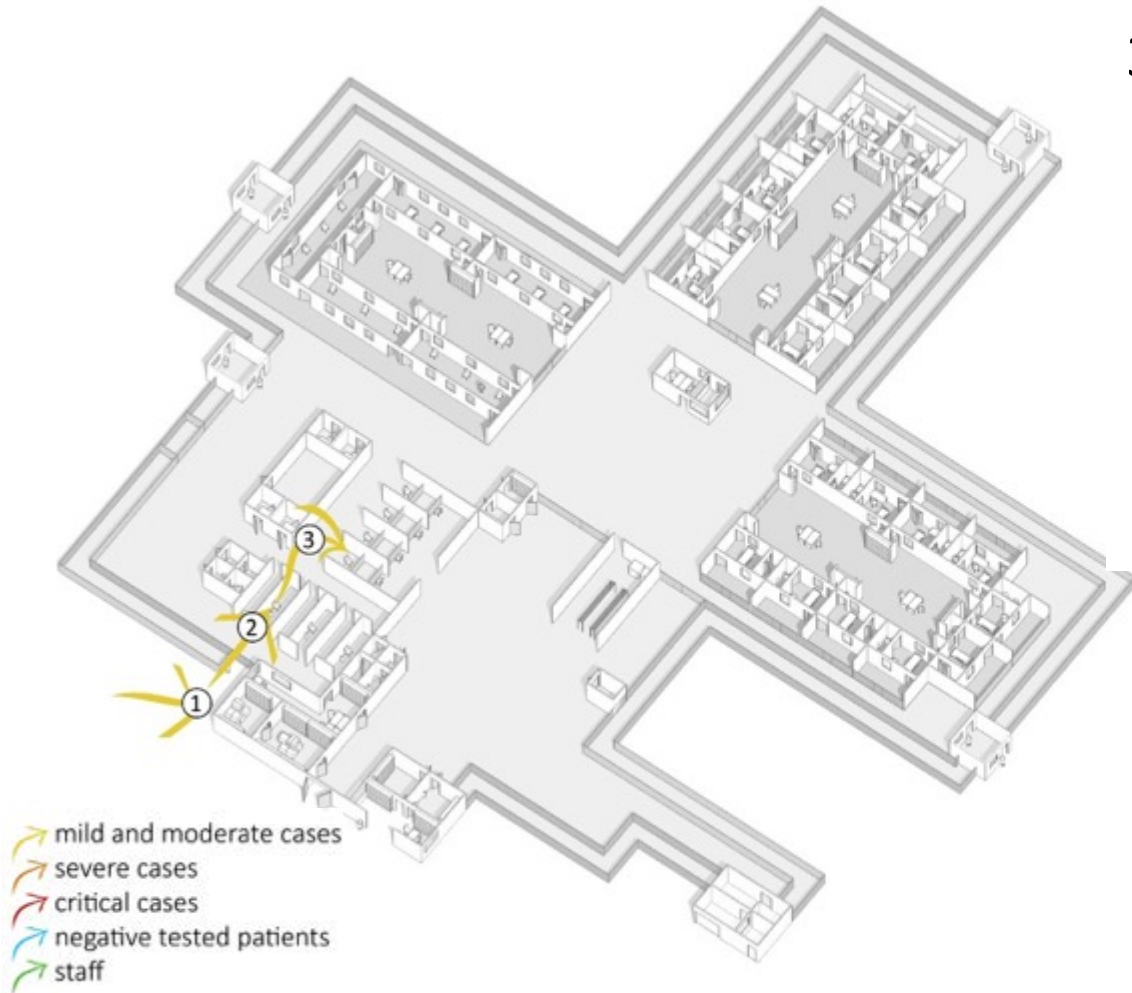
## 2. Waiting room

The waiting room is composed of different individual booths with separated entrances and exits. This facility is completely open [no doors] to allow a proper natural ventilation and is equipped with dedicated toilets.



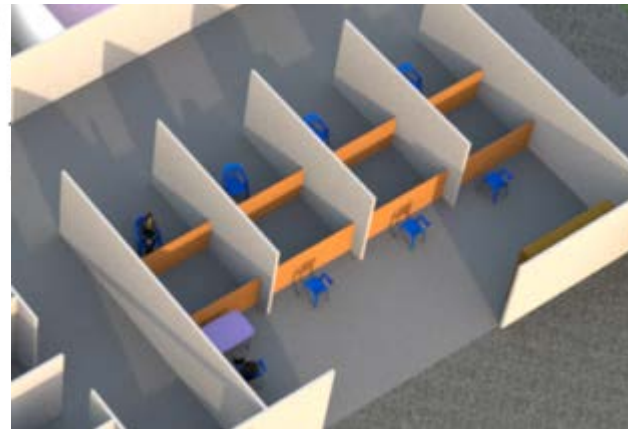


# Patient's flow

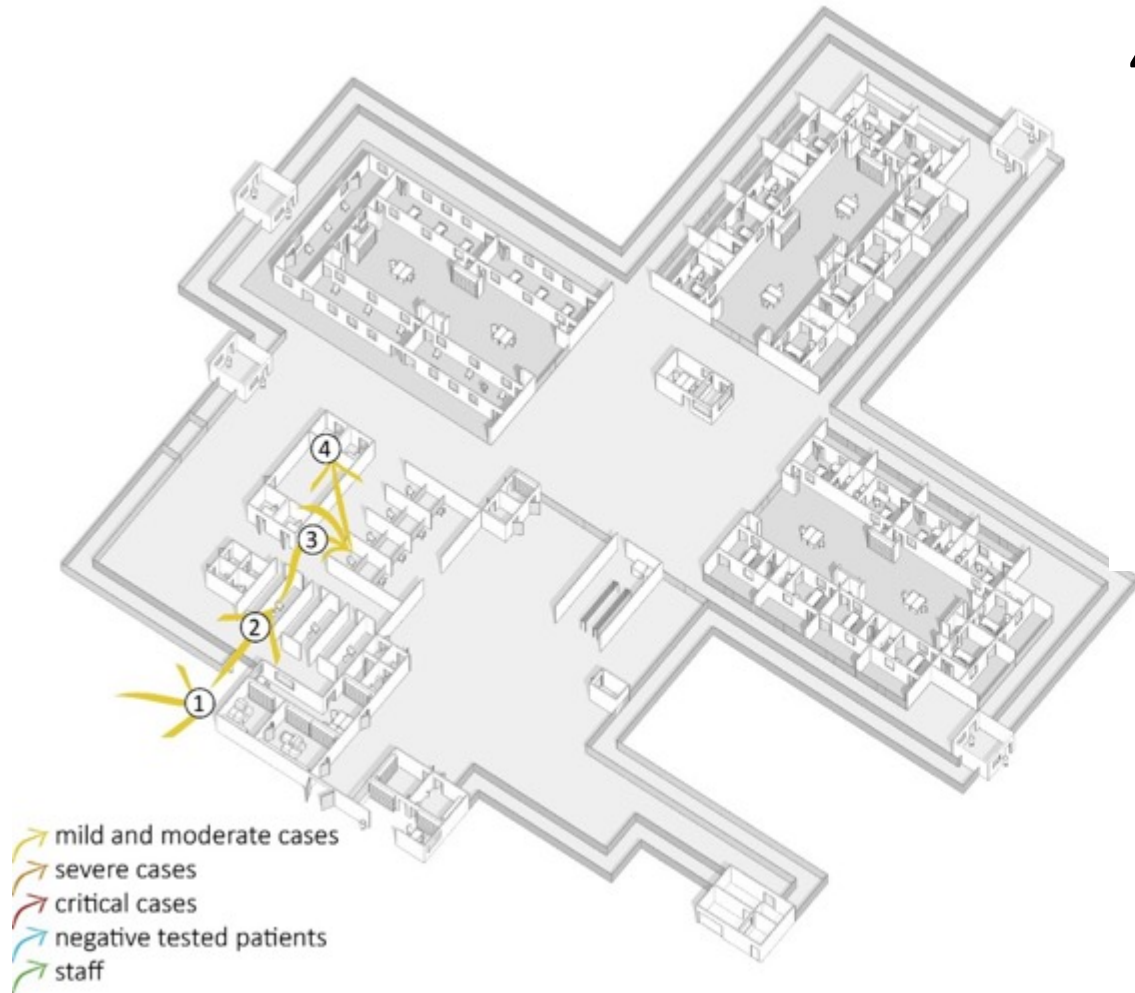


## 3. Triage

Patients are investigated in an individual triage booth. A one (1) meter distance fence [1.2 meter high] separates patients from staff. This facility is completely open [no doors] to allow a proper natural ventilation and is equipped with dedicated toilets.



# Patient's flow

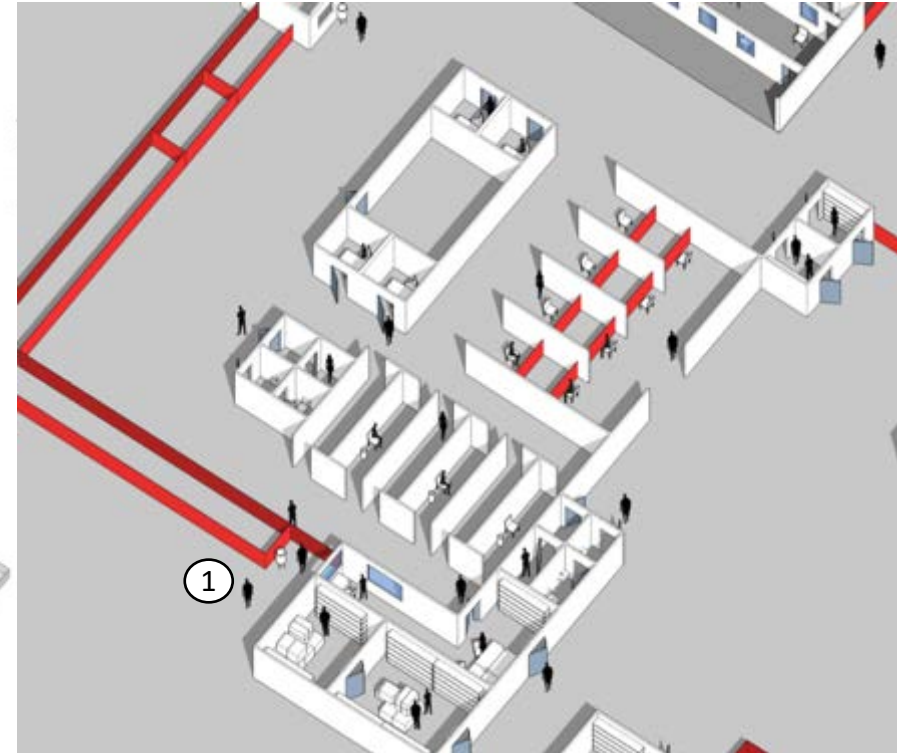
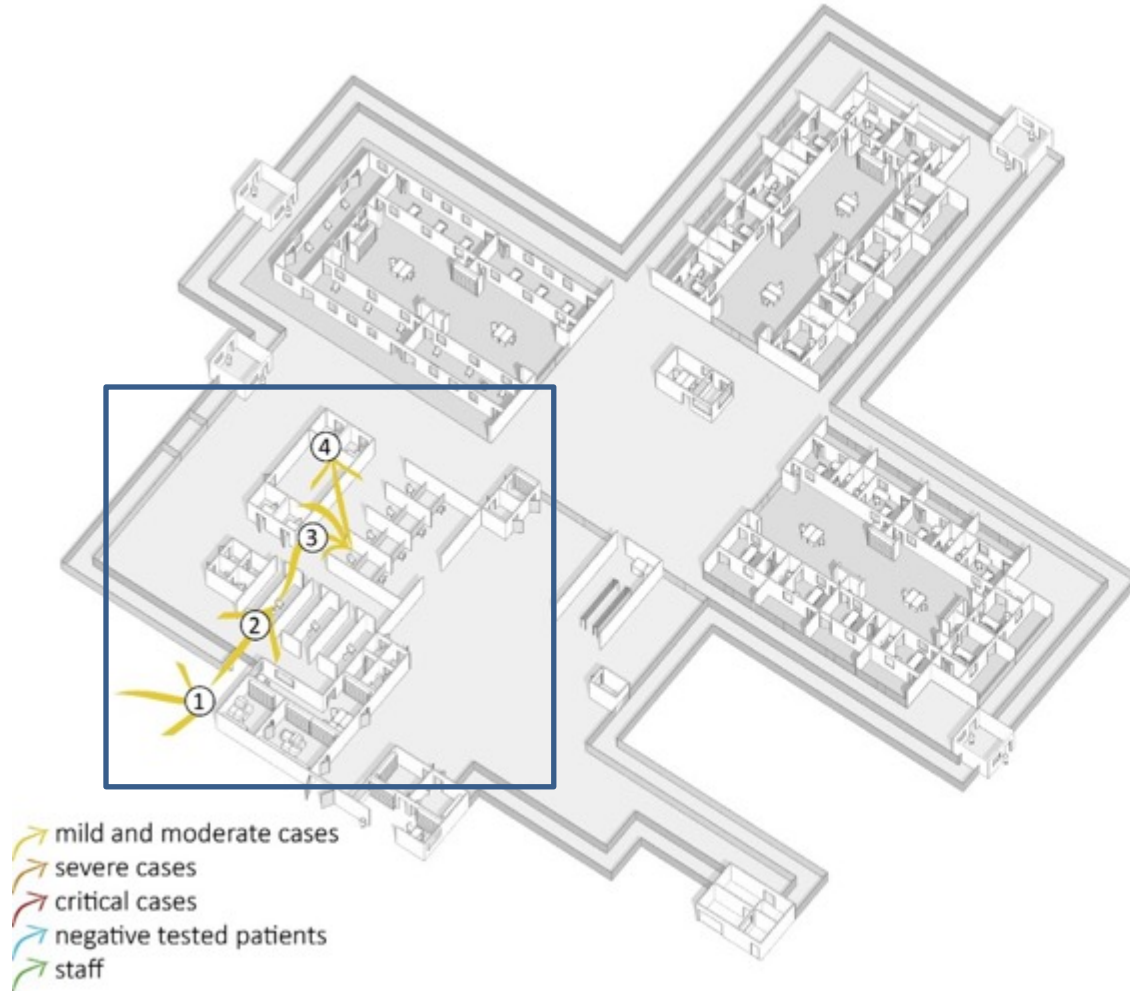


## 4. Sampling

The sampling room has four (4) individual booths with natural or hybrid ventilation.

NOTE: Not all of the patients have been tested, this is according to medical decision.

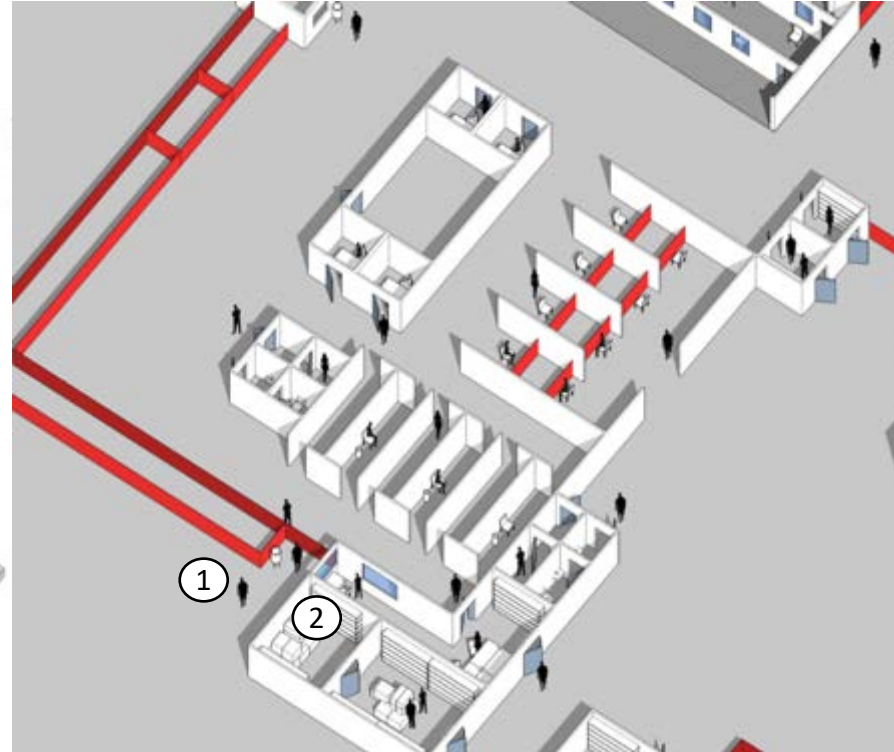
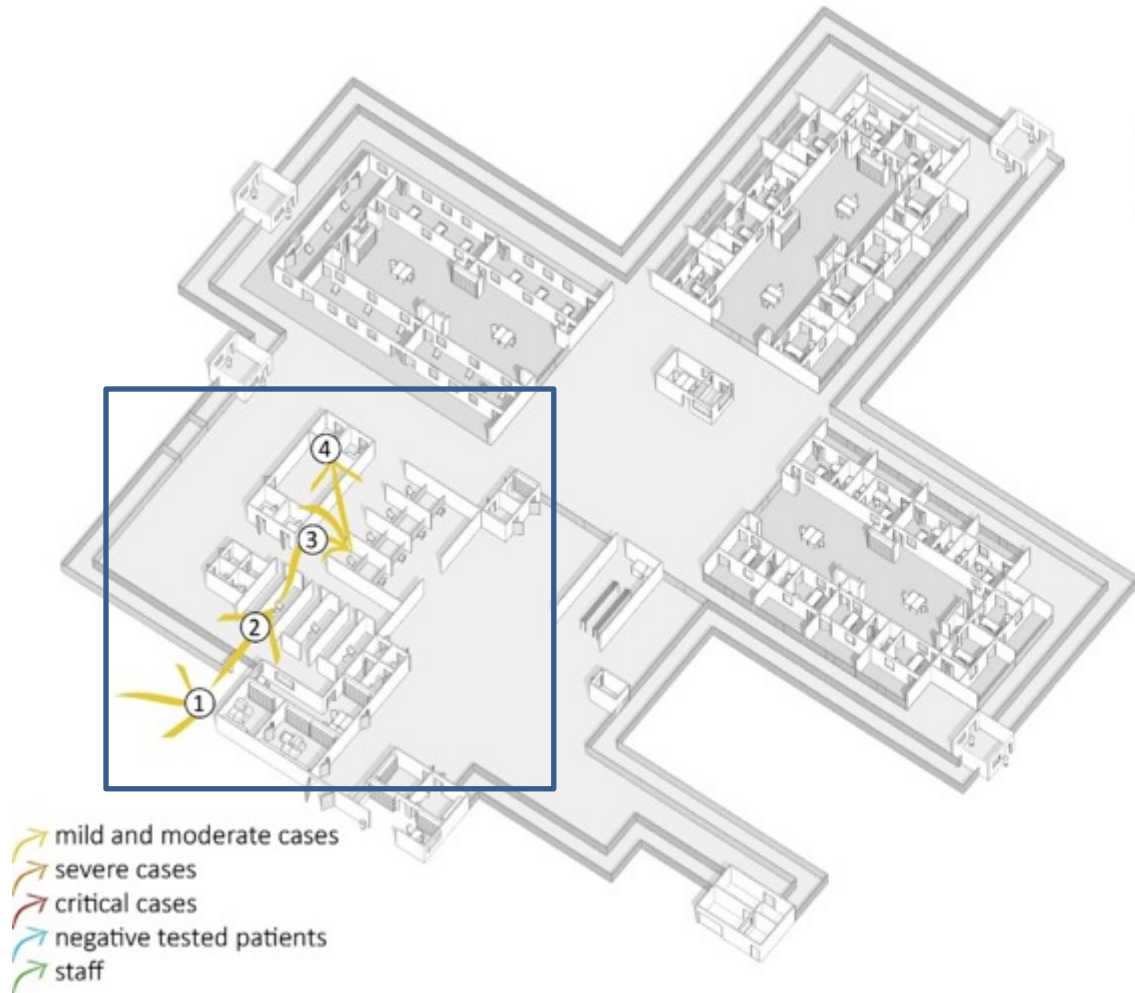
# Patient's flow



1. Patient entry

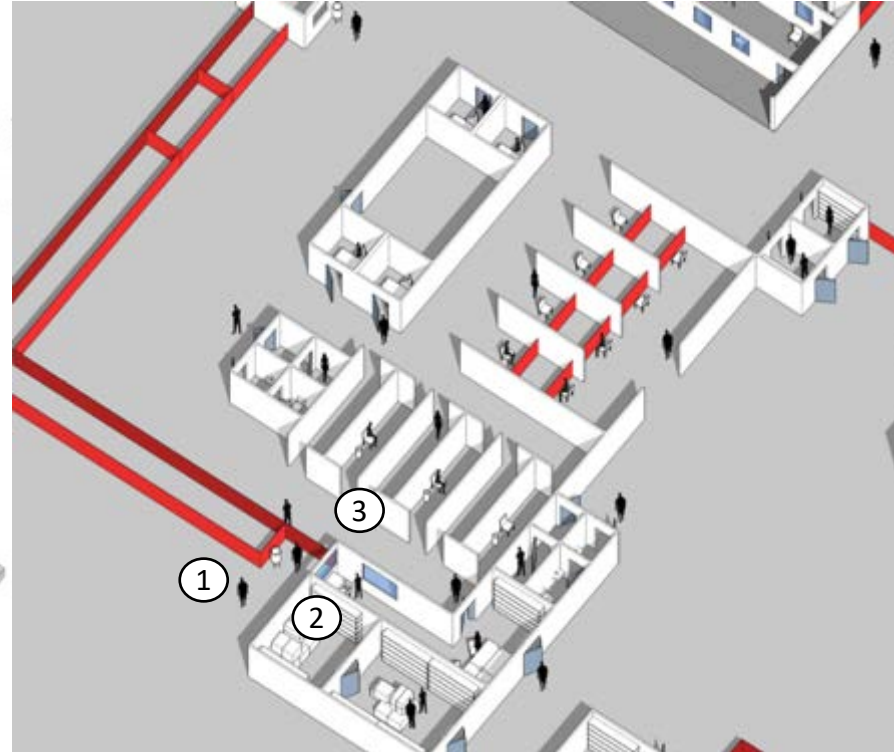


# Patient's flow



1. Patient entry
2. Reception/screening

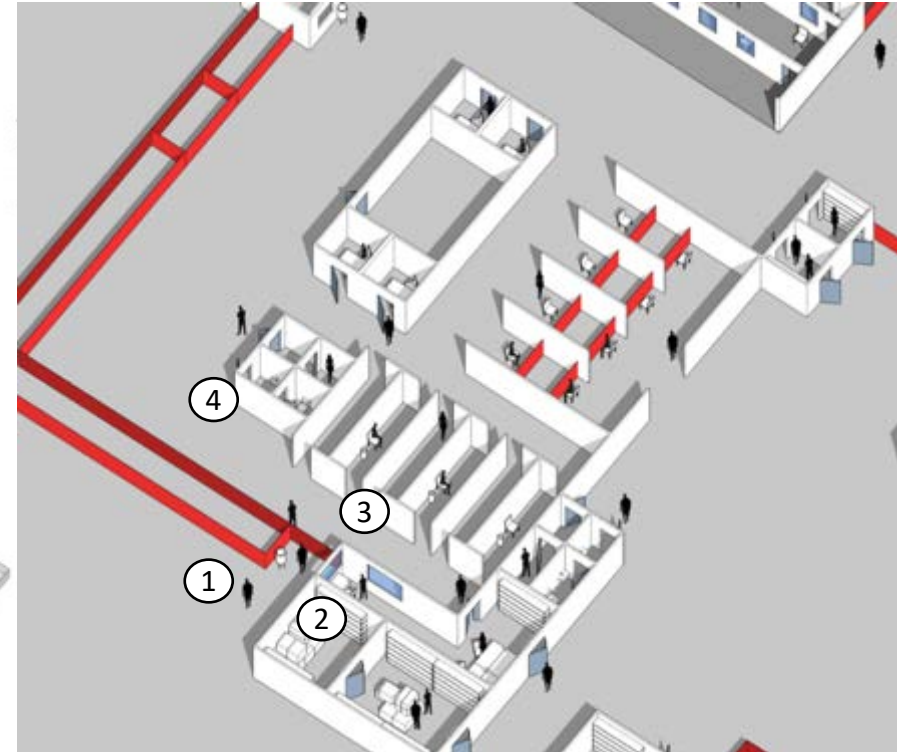
# Patient's flow



1. Patient entry
2. Reception/screening
3. Waiting room

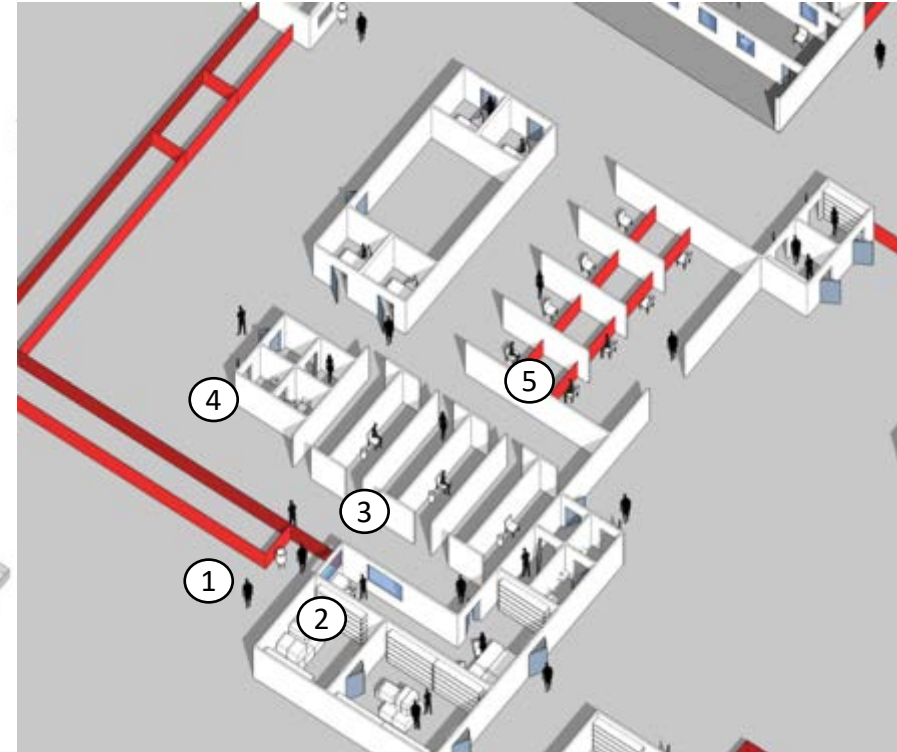


# Patient's flow



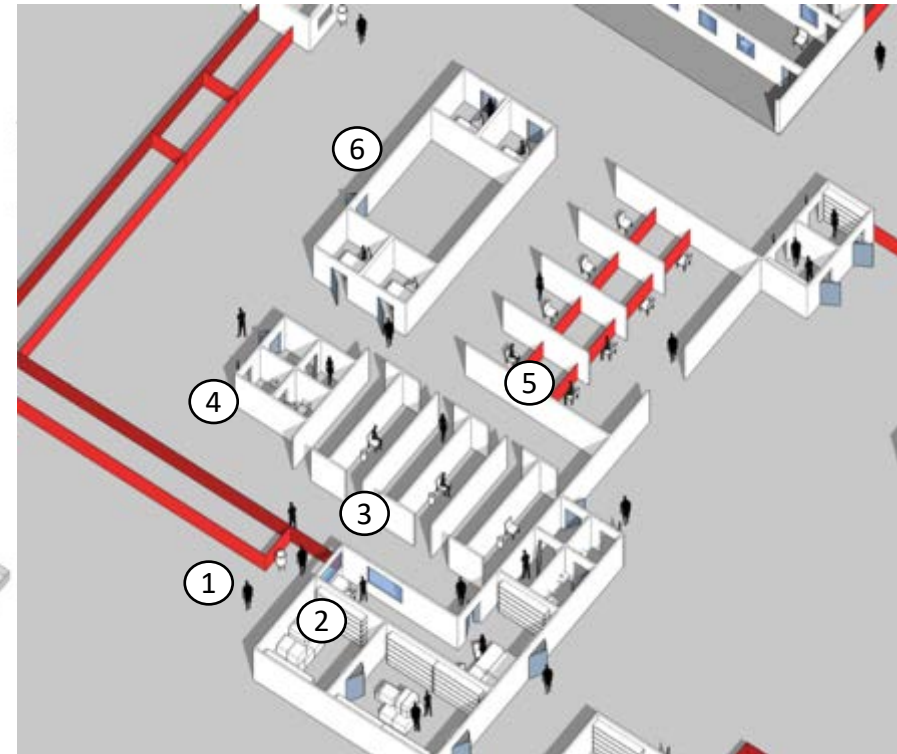
1. Patient entry
2. Reception/screening
3. Waiting room
4. Patient toilets

# Patient's flow



1. Patient entry
2. Reception/screening
3. Waiting room
4. Patient toilets
5. Triage

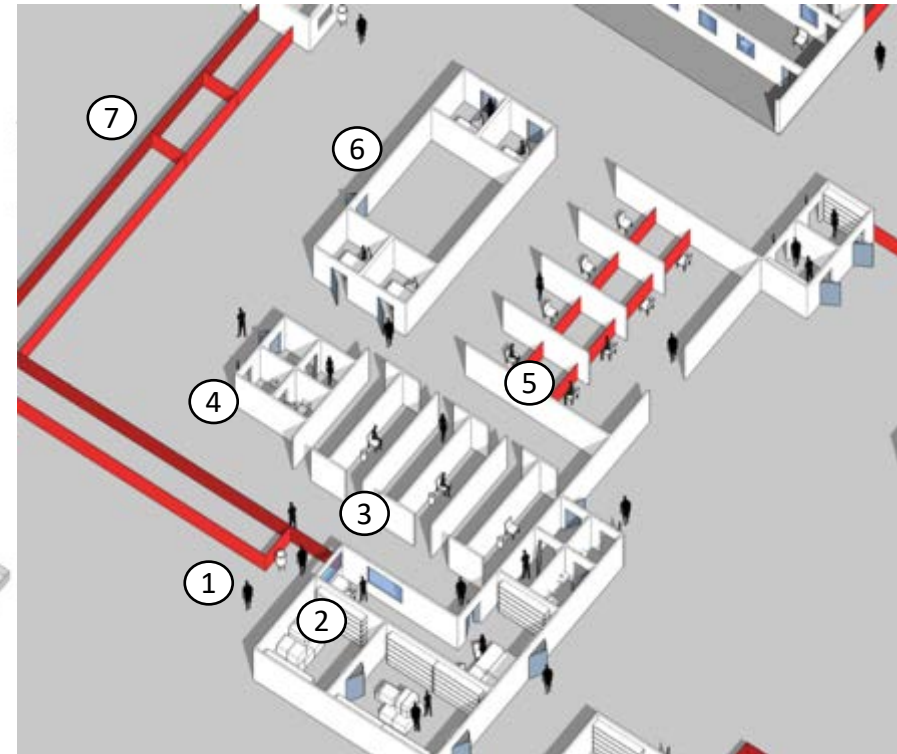
# Patient's flow



1. Patient entry
2. Reception/screening
3. Waiting room
4. Patient toilets
5. Triage
6. Sampling rooms

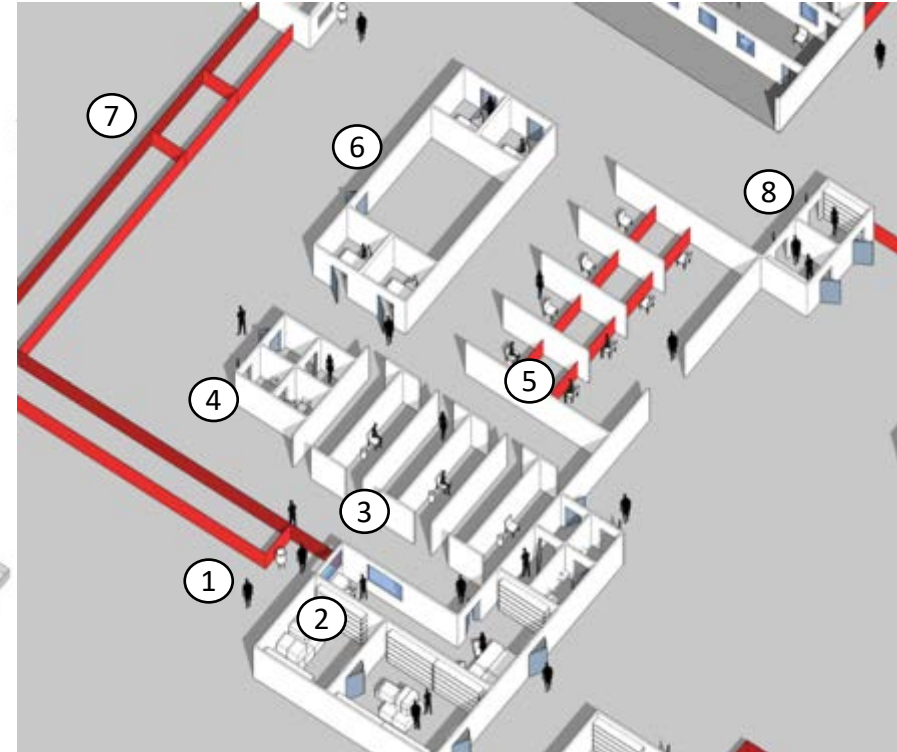


# Patient's flow



1. Patient entry
2. Reception/screening
3. Waiting room
4. Patient toilets
5. Triage
6. Sampling rooms
7. Ambulance entrance

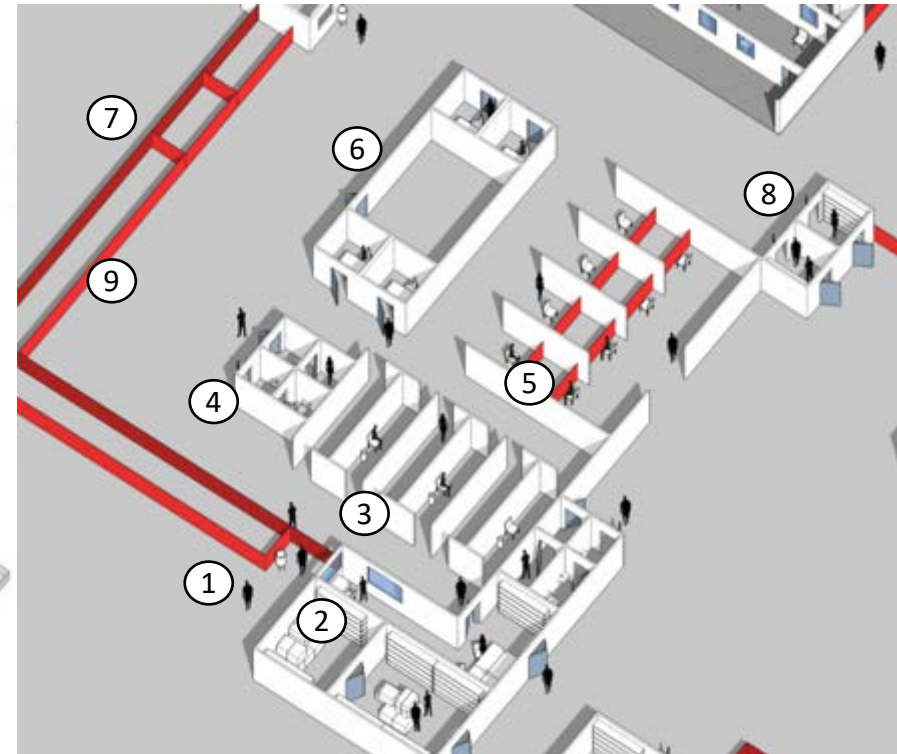
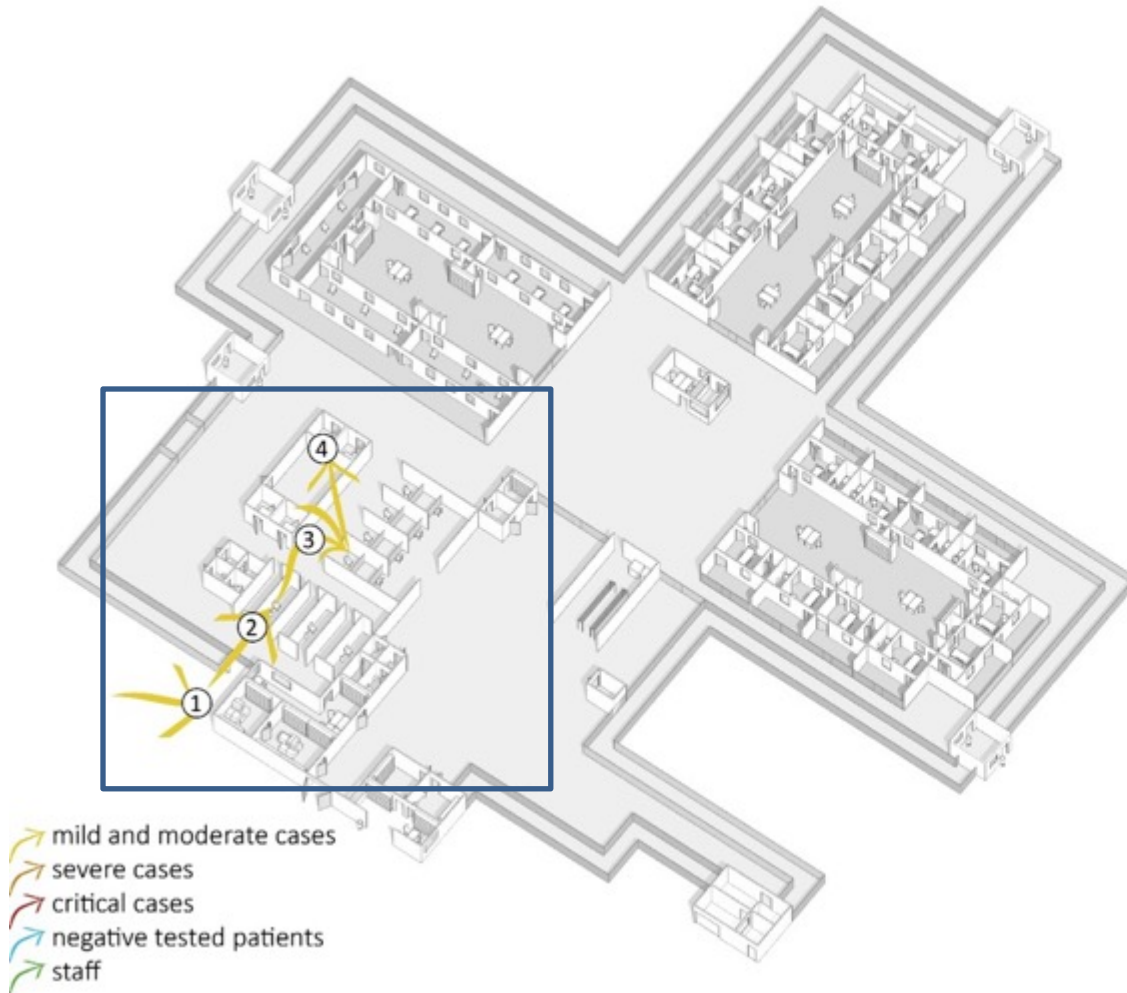
# Patient's flow



1. Patient entry
2. Reception/screening
3. Waiting room
4. Patient toilets
5. Triage
6. Sampling rooms
7. Ambulance entrance
8. Donning/doffing

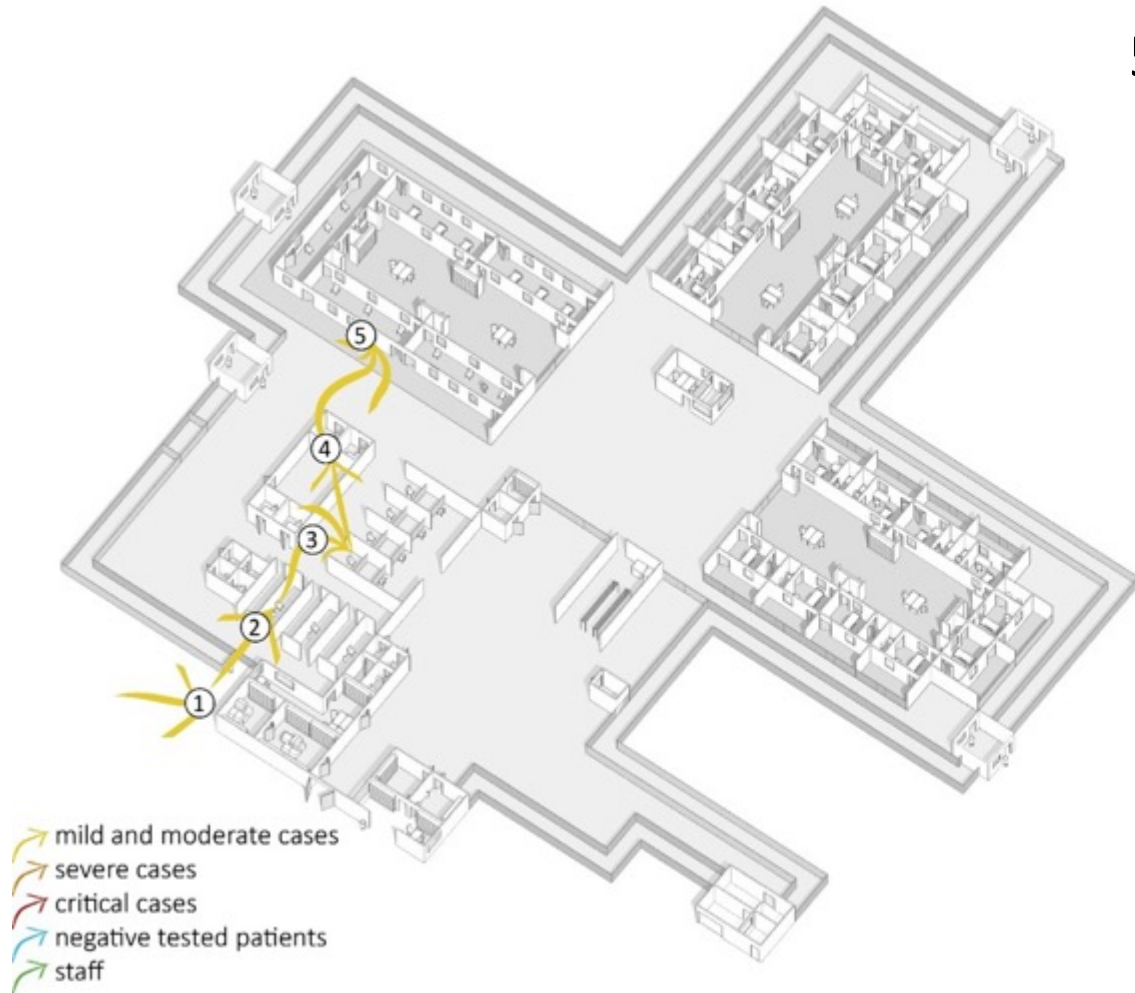


# Patient's flow



1. Patient entry
2. Reception/screening
3. Waiting room
4. Patient toilets
5. Triage
6. Sampling rooms
7. Ambulance entrance
8. Donning/doffing
9. Single fence [1.2 meter high] is to identify the centre area\*

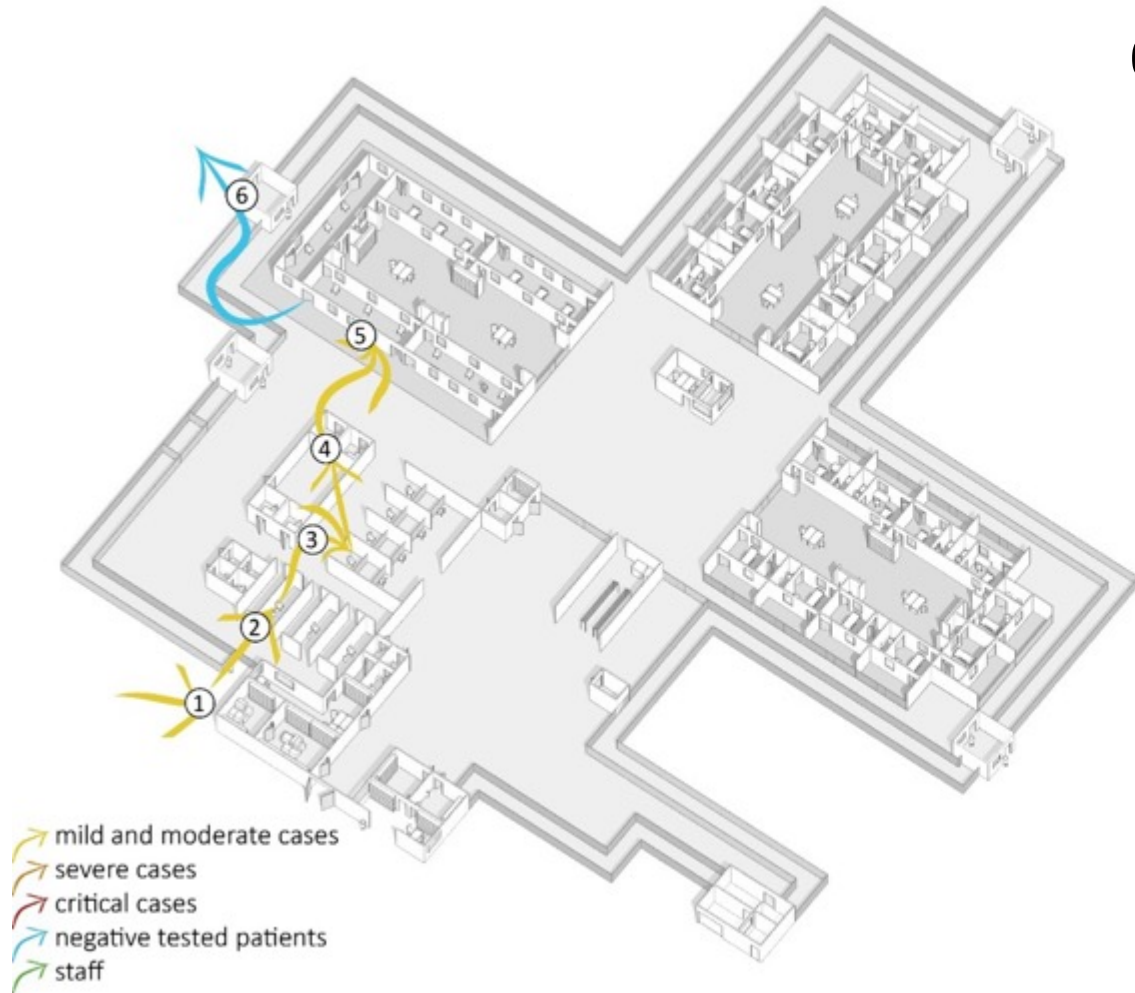
# Patient's flow



## 5. Short stay for mild and moderate cases

Patients are moved to the short stay ward where distances and natural ventilation assure IPC standards. Patients can wait a few hours for the laboratory results and receive health promotion sessions and treatment.

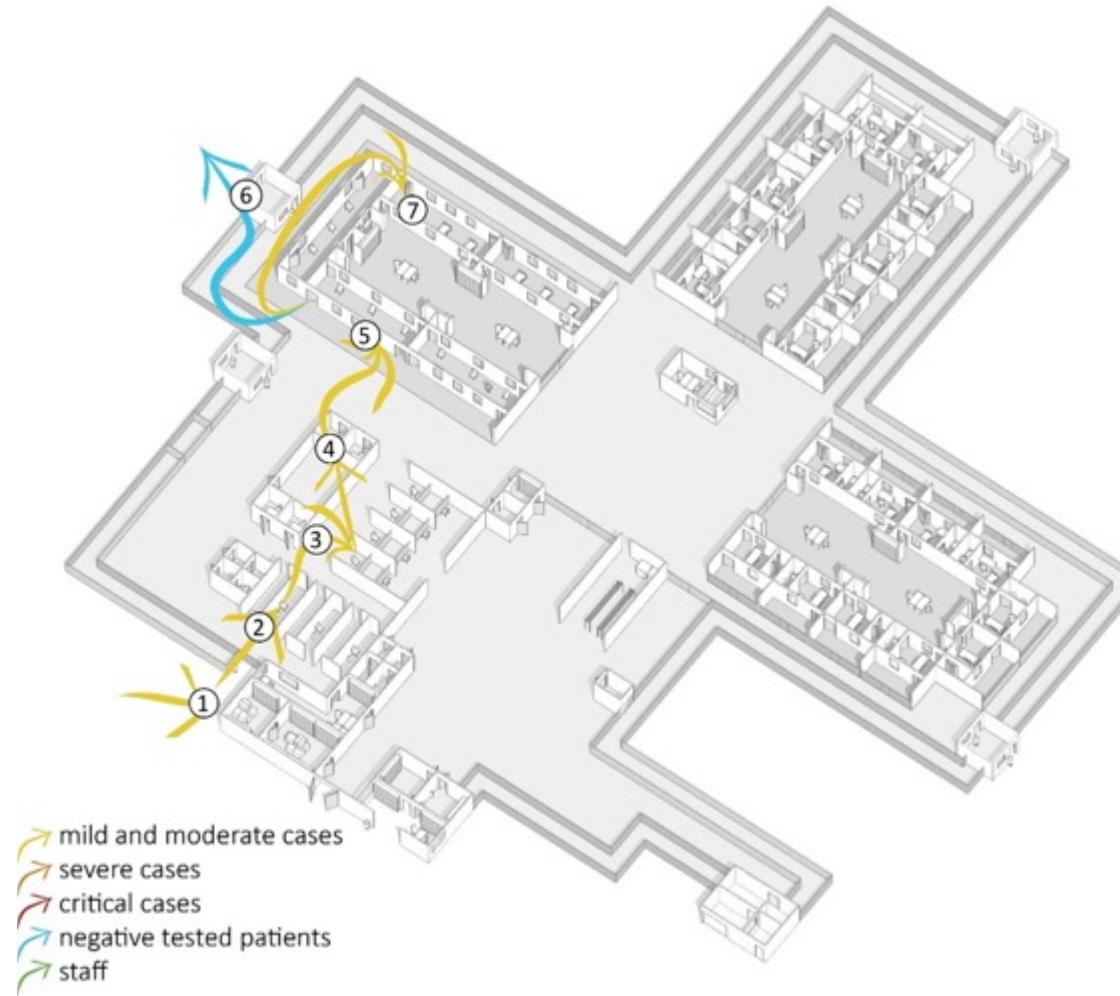
# Patient's flow



## 6. Discharge

If negative, patients can be referred to another health facility. If positive, Mild and Moderate cases can be referred to community facilities for isolation and follow-up.

# Patient's flow

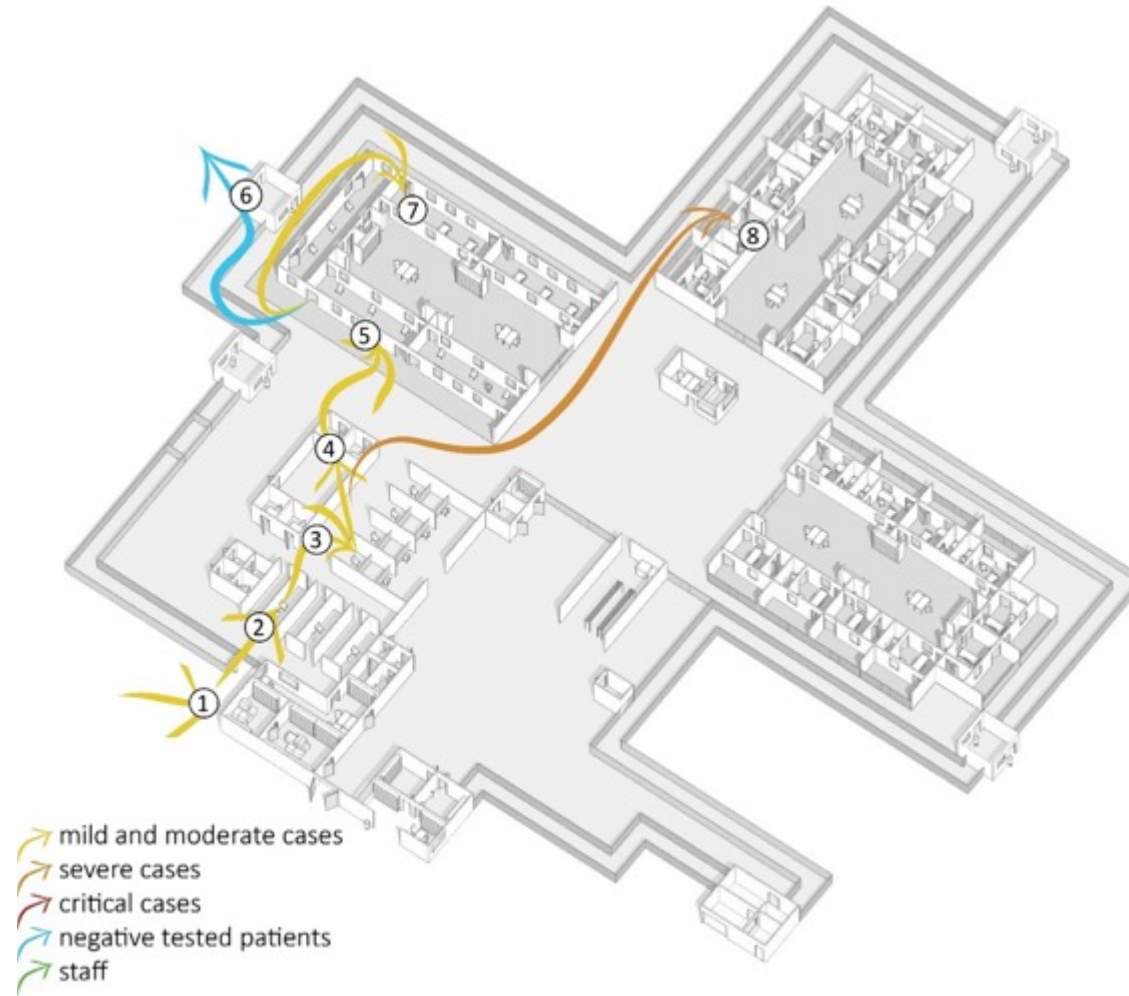


## 7. Short stay ward – Observation and moderate case

The patient is moved to the observation room only in such cases where the medical department wants to keep him/her under observation for a few more hours.



# Patient's flow

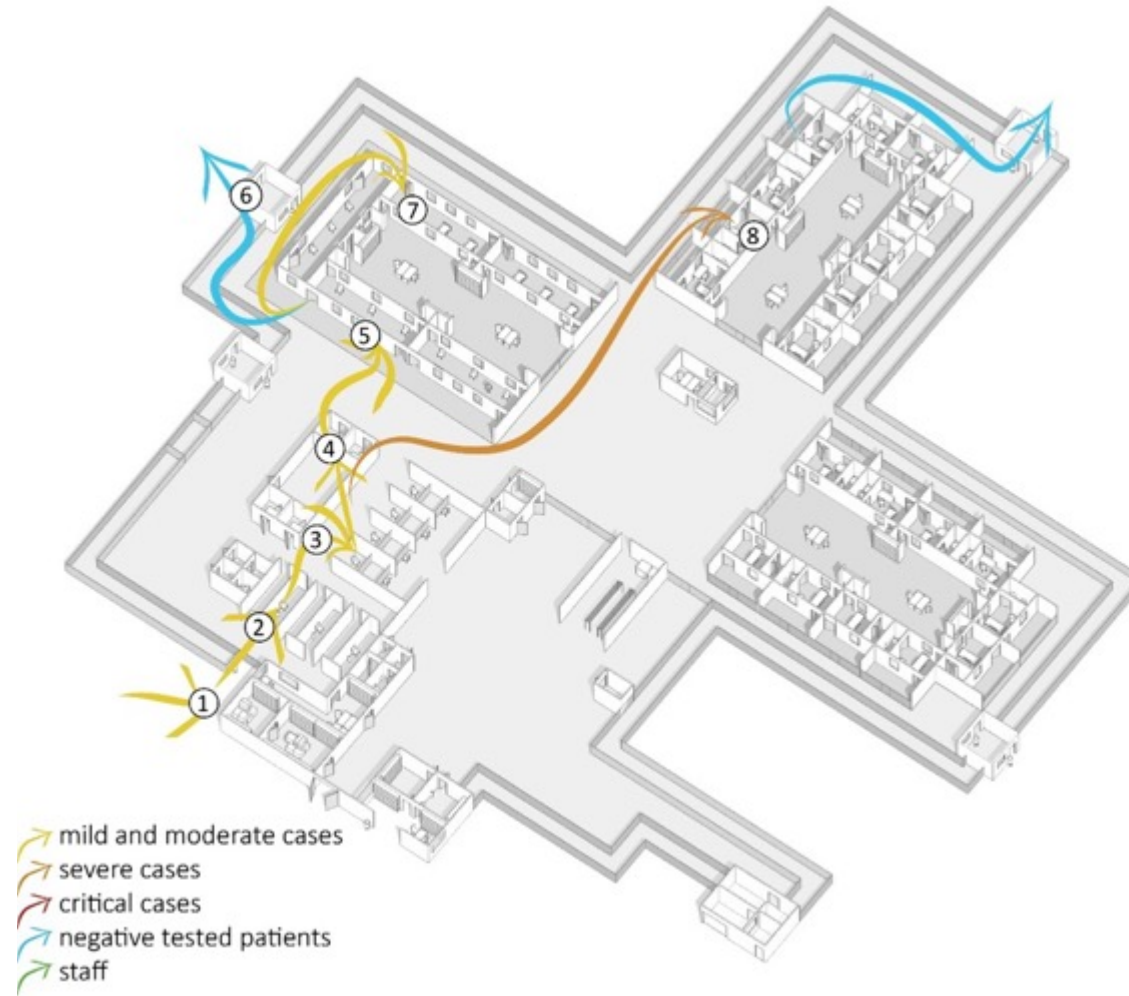


## 8. Severe case

Severe cases are moved directly to the severe case ward. Medical care will then be provided and a sample taken. This ward is composed of individual self-contained rooms with hybrid ventilation.



# Patient's flow

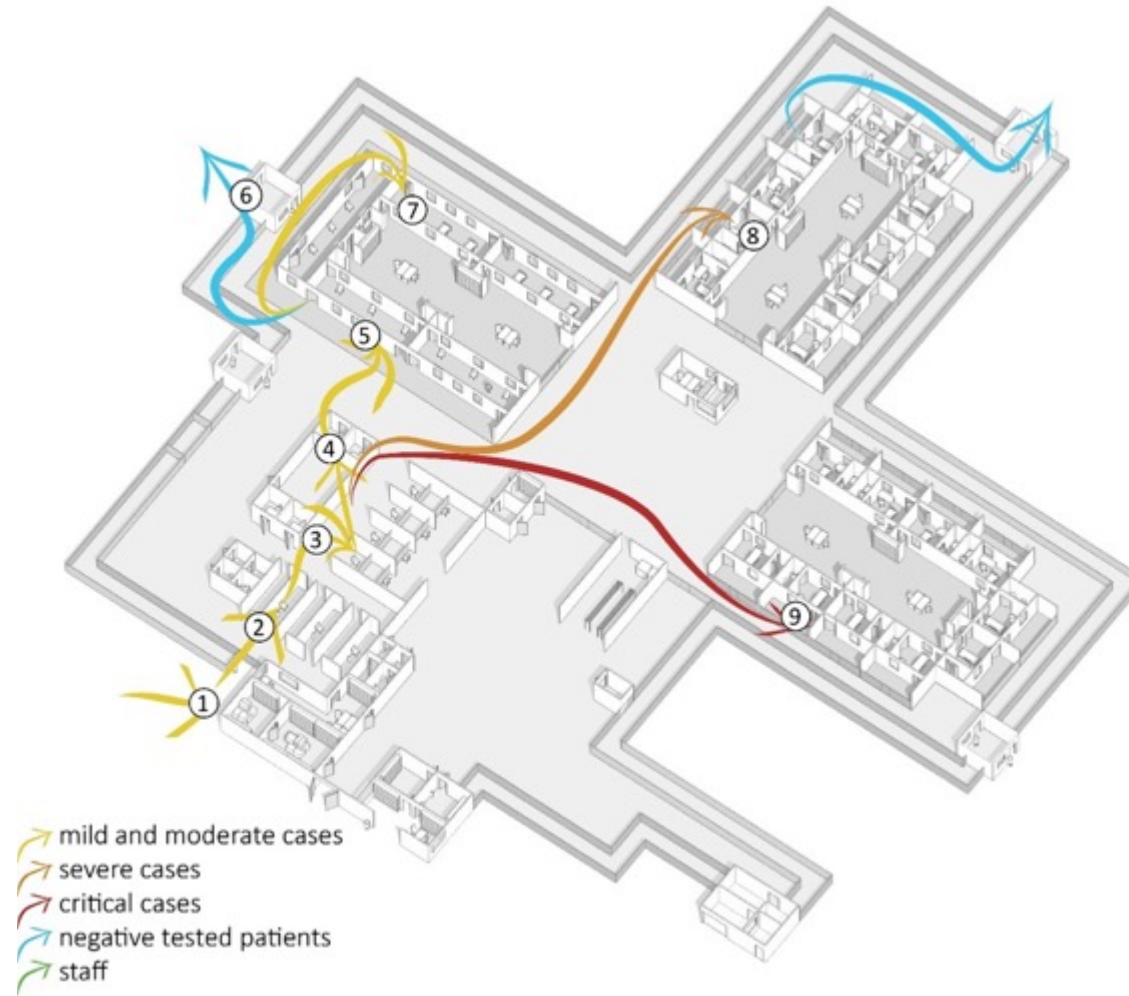


## 8. Severe case

Severe cases are moved directly to the severe case ward. Medical care will then be provided and a sample taken. This ward is composed of individual self-contained rooms with hybrid ventilation.

If tested negative, the patient will be discharged through a dedicated discharge room.

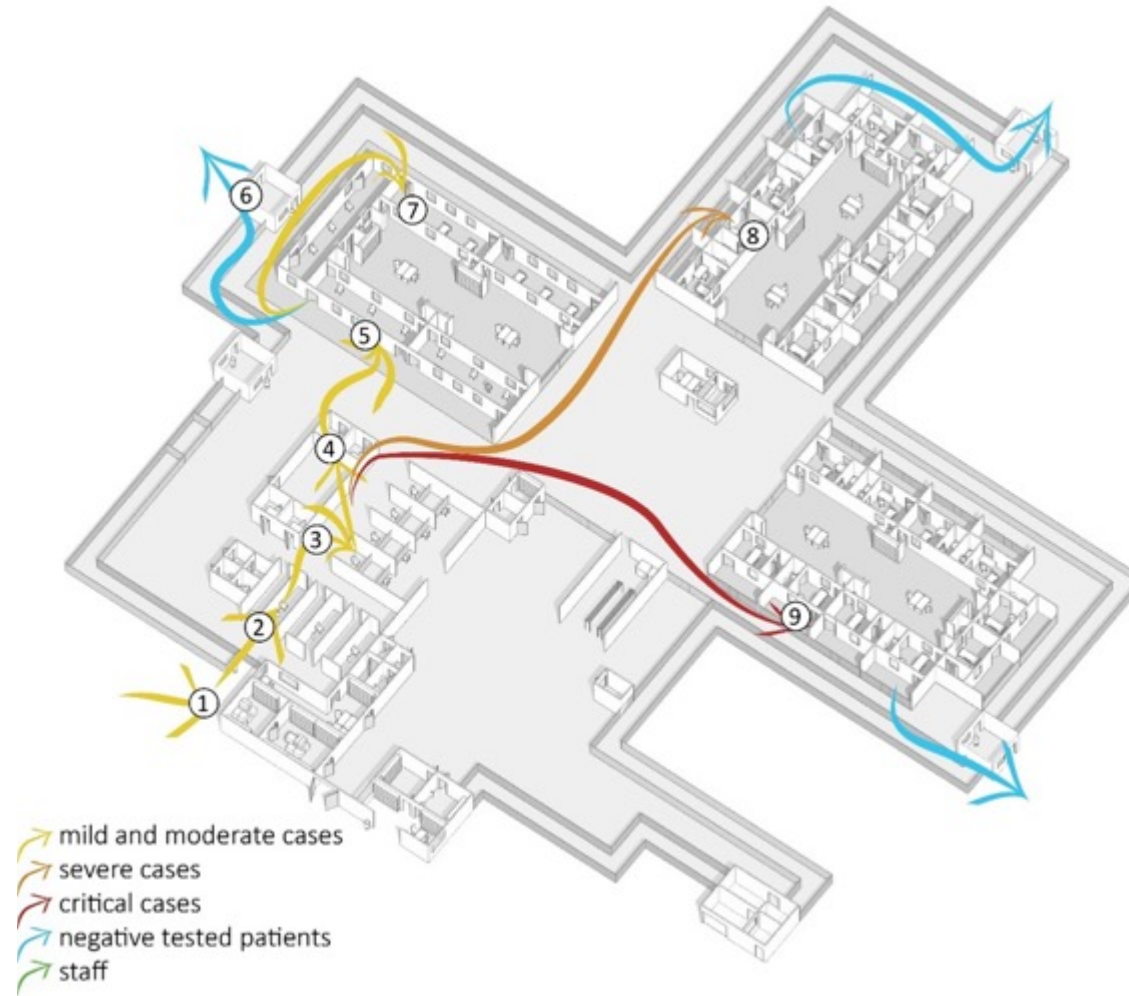
# Patient's flow



## 9. Critical case

Critical cases are moved directly to the critical case ward. Medical care will then be provided and a sample taken. This ward is composed of individual self-contained rooms with hybrid ventilation.

# Patient's flow

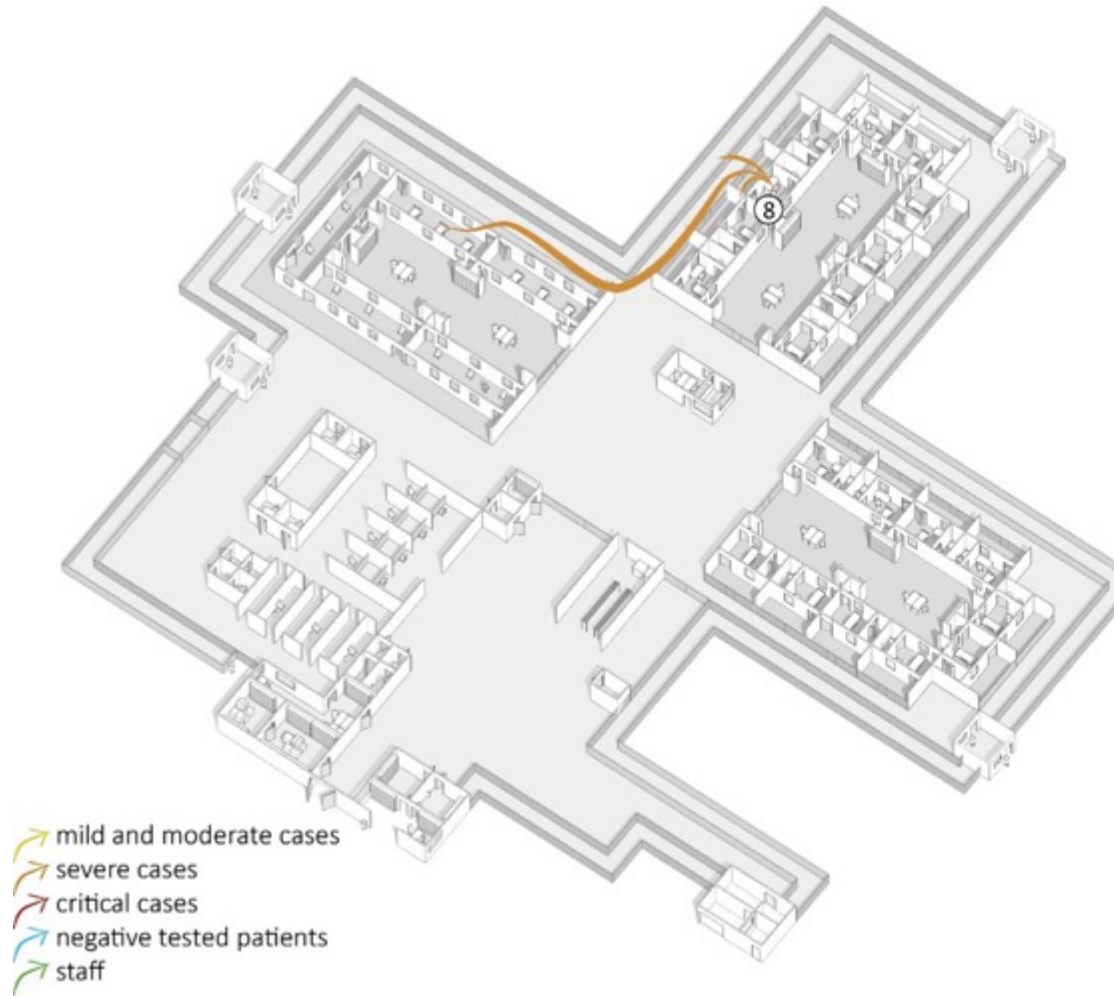


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Critical cases are moved directly to the critical case ward. Medical care will then be provided and a sample taken. This ward is composed of individual self-contained rooms with hybrid ventilation.

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# Patient's flow — Worsening & improving medical condition



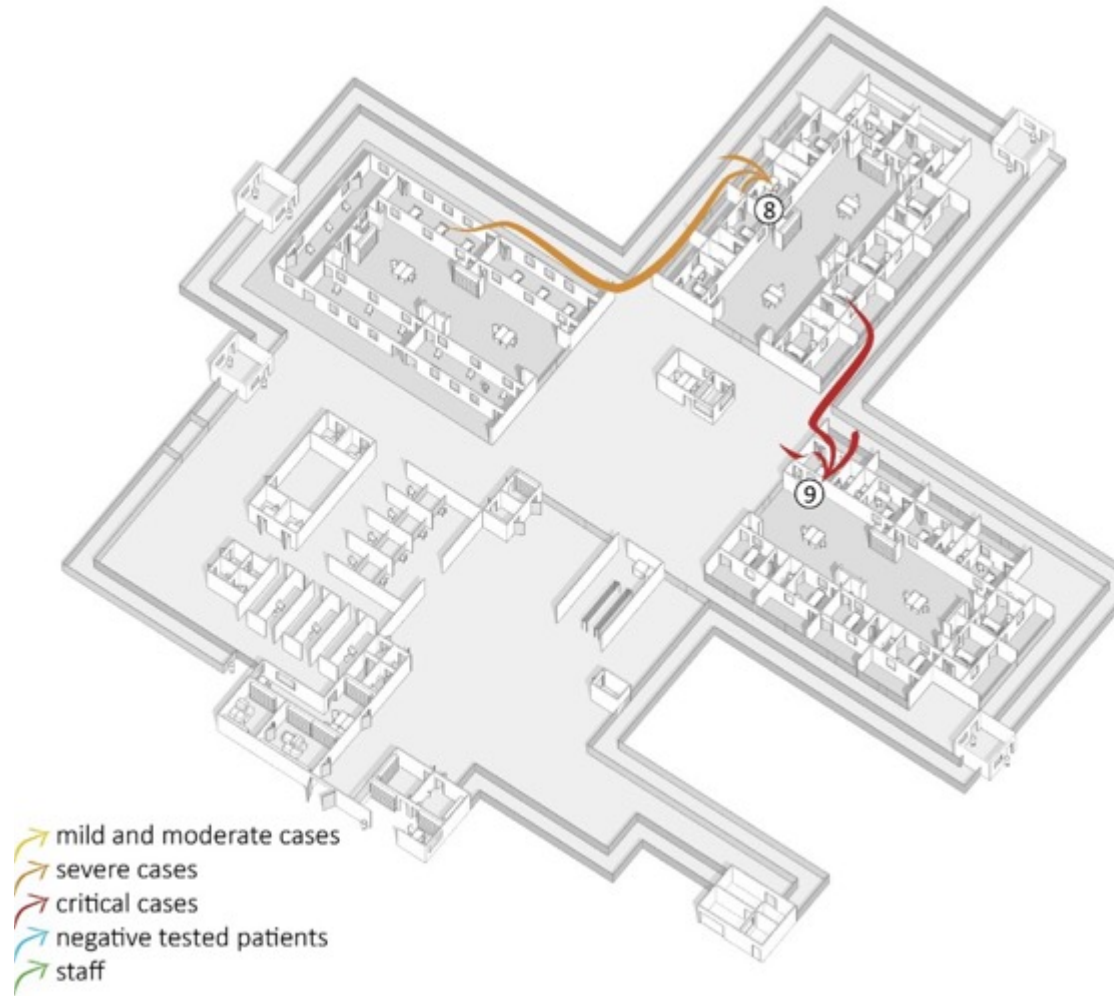
## Patient journey

Patient's flow is not unidirectional as, according to medical conditions, patients can be moved from one ward to another.

For, instance a moderate patient's condition can deteriorate, resulting in the person being move to the severe ward...



# Patient's flow — Worsening & improving medical condition



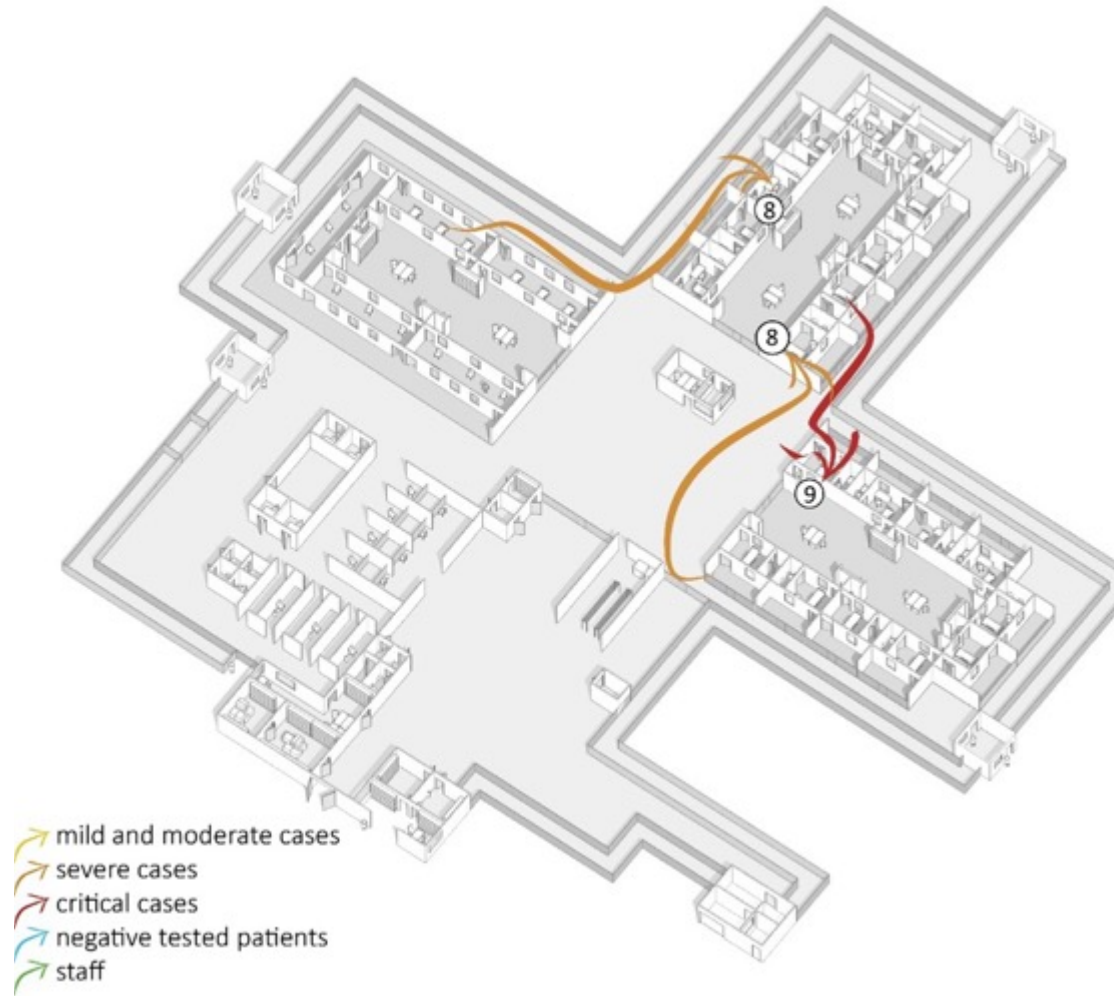
## Patient journey

Patient's flow is not unidirectional as, according to medical conditions, patients can be moved from one ward to another.

For, instance a moderate patient's condition can deteriorate, resulting in the person being move to the severe ward... or to the critical ward.



# Patient's flow — Worsening & improving medical condition

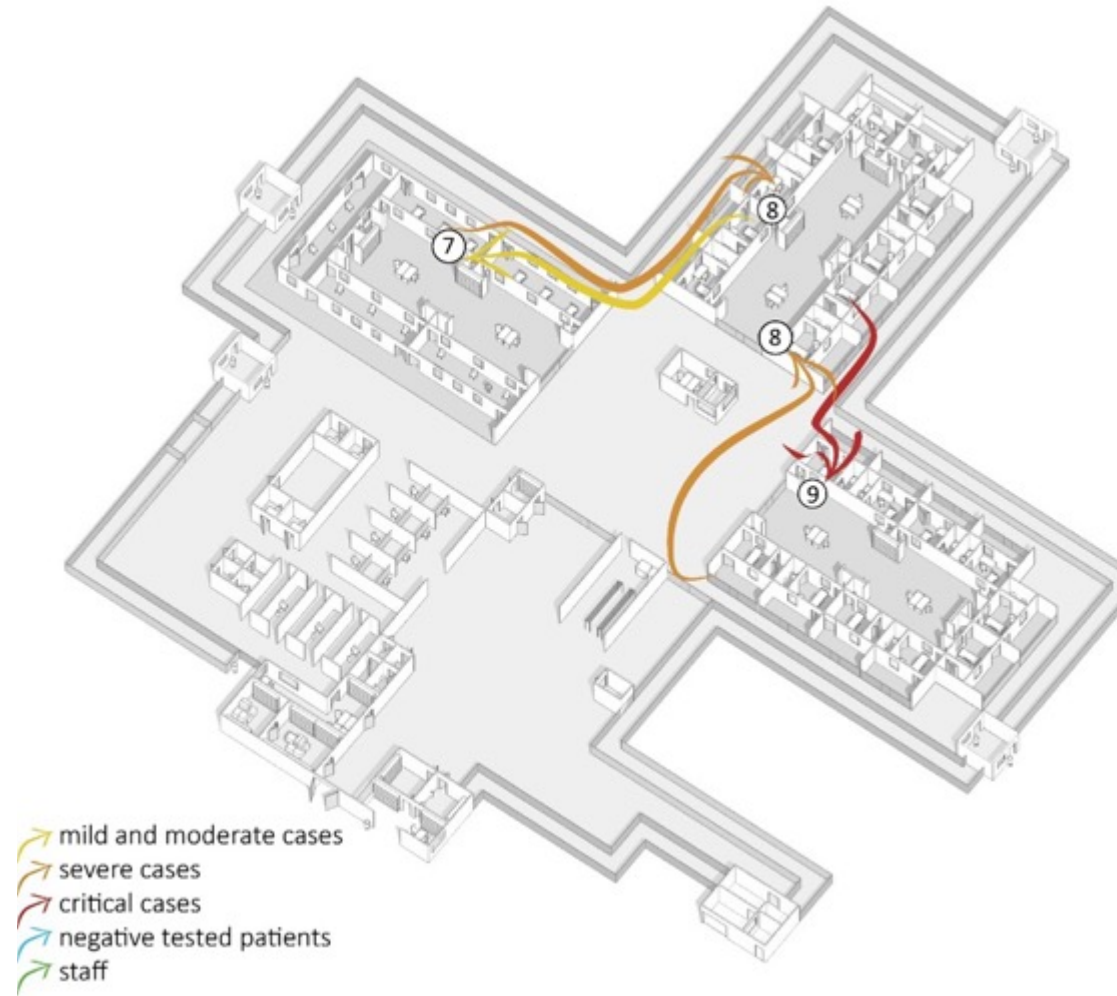


## Patient journey

Similarly, once medical conditions improve, a patient can be moved to another ward.

For instance, a critical patient's condition can improve resulting in the person being move to the severe ward...

# Patient's flow — Worsening & improving medical condition

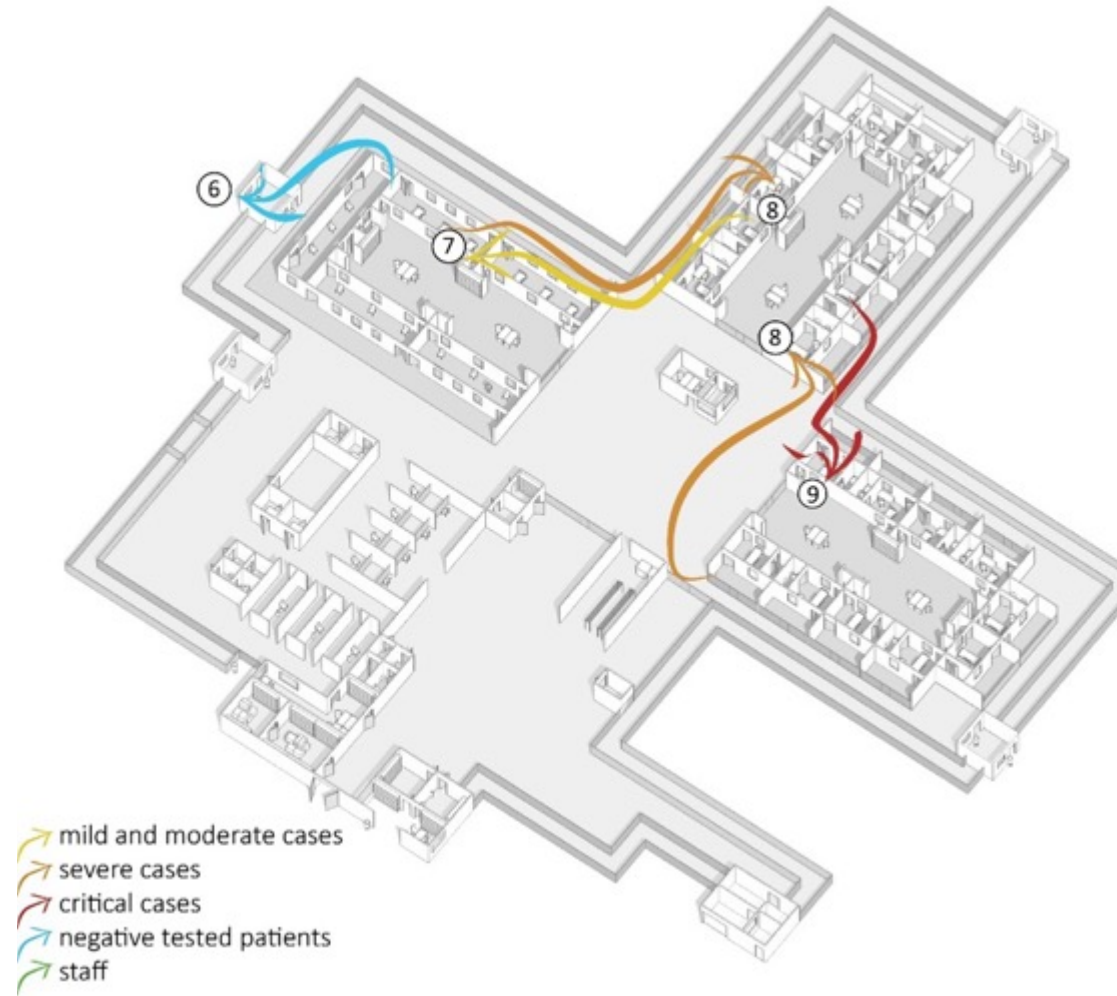


## Patient journey

Similarly, once medical conditions improve, a patient can be moved to another ward.

For instance, a critical patient's condition can improve resulting in the person being move to the severe ward... and to the short stay ward...

# Patient's flow — Worsening & improving medical condition

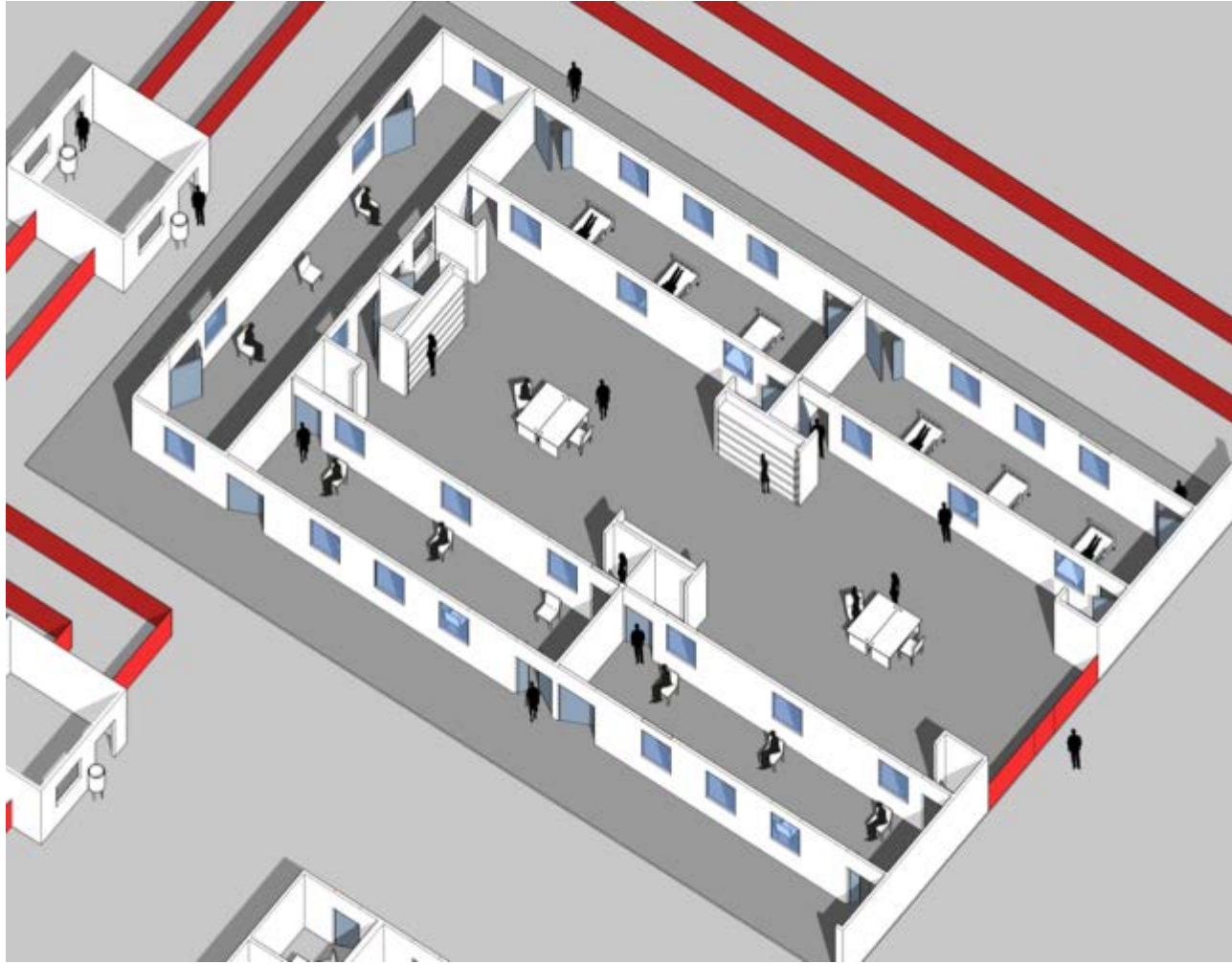


## Patient journey

Similarly, once medical conditions improve, a patient can be moved to another ward.

For instance, a critical patient's condition can improve resulting in the person being move to the severe ward... and to the short stay ward...to be finally discharged according to the discharge criteria.

# Patient's flow / mild & moderate cases

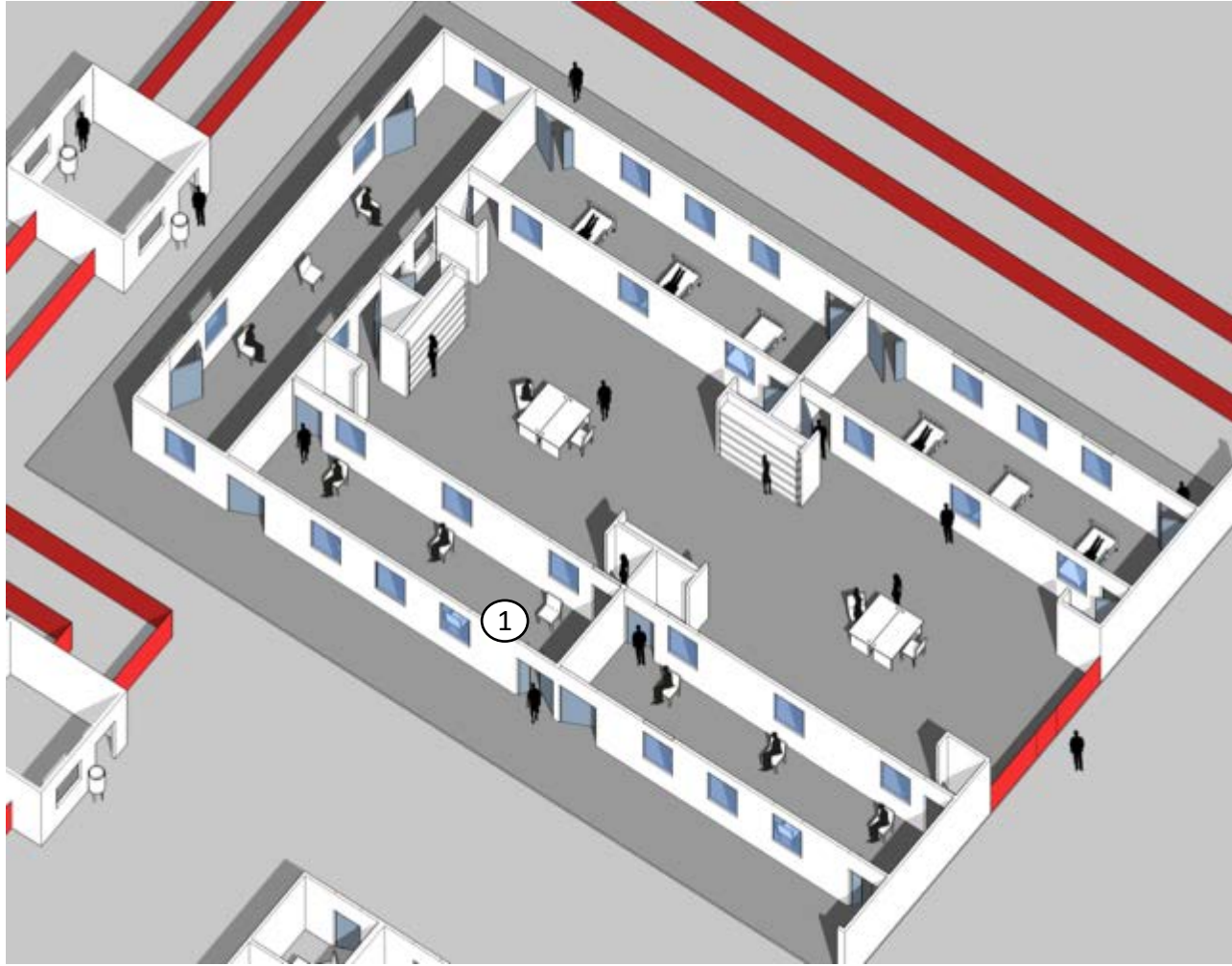


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# Patient's flow / mild & moderate cases



1. Patients [2 m distance\*]

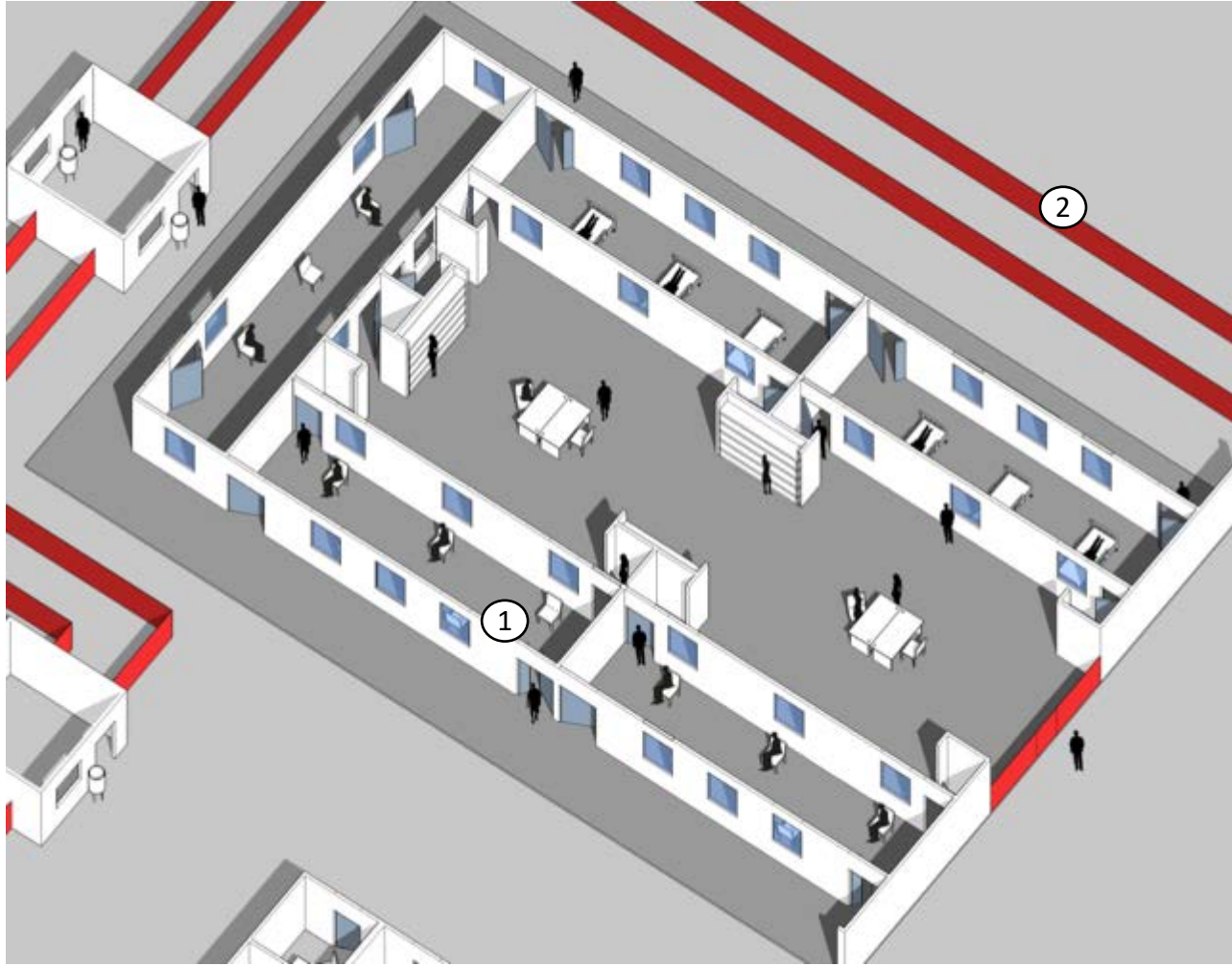


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Organization**

Recommended spatial distance for IPC is 1 meter. However, in order to facilitate access and movement of health-care workers, 2 meters separation is advised.

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# Patient's flow / mild & moderate cases



1. Patients [2 m distance\*]
2. Single fence [1.2 meter high] is to identify the centre area. Double fence with 1 meter distance can be used to help visitors to respect the spatial distance while visiting patients [not mandatory]

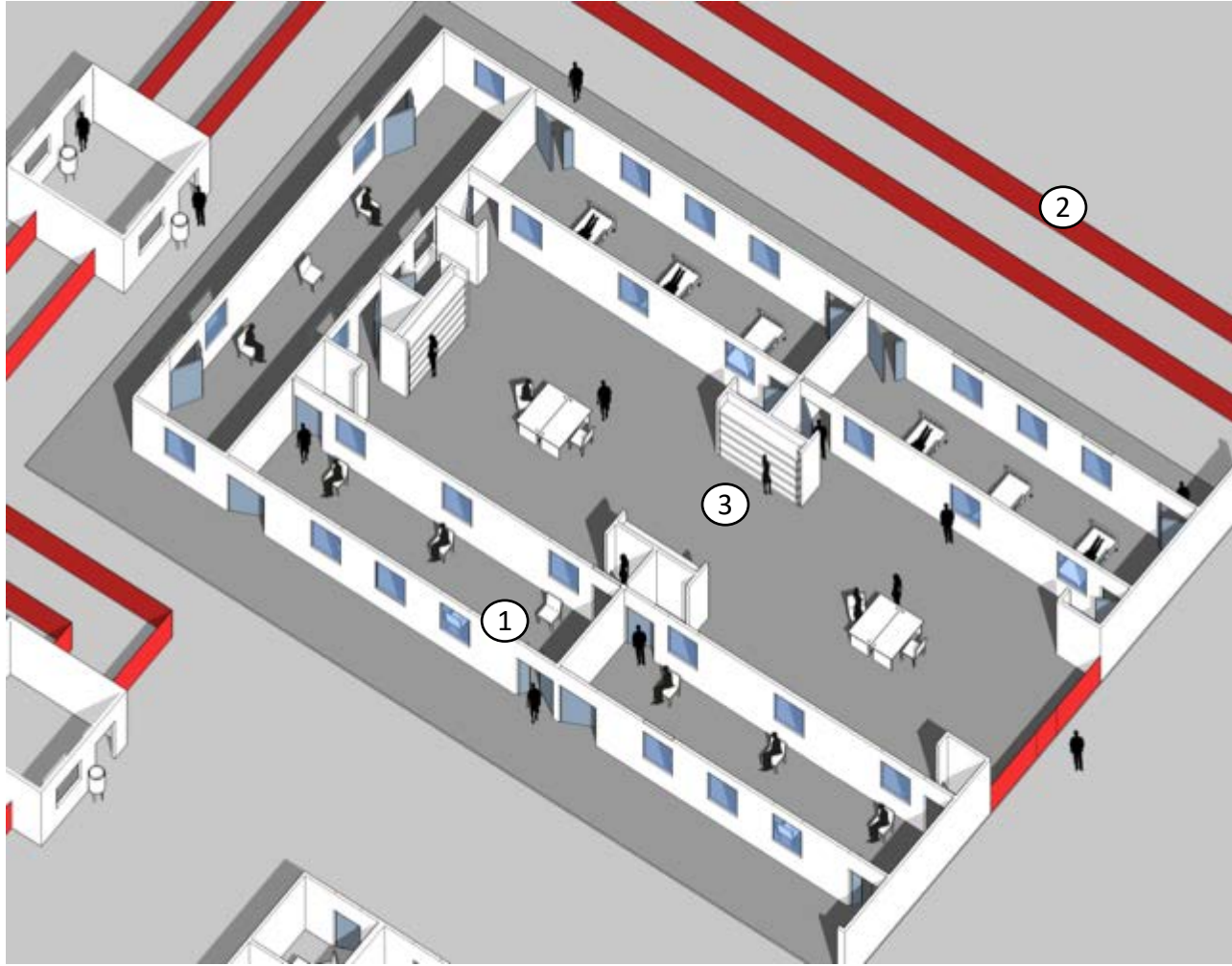


**World Health  
Organization**

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# Patient's flow / mild & moderate cases



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3. Working area [Staff only]



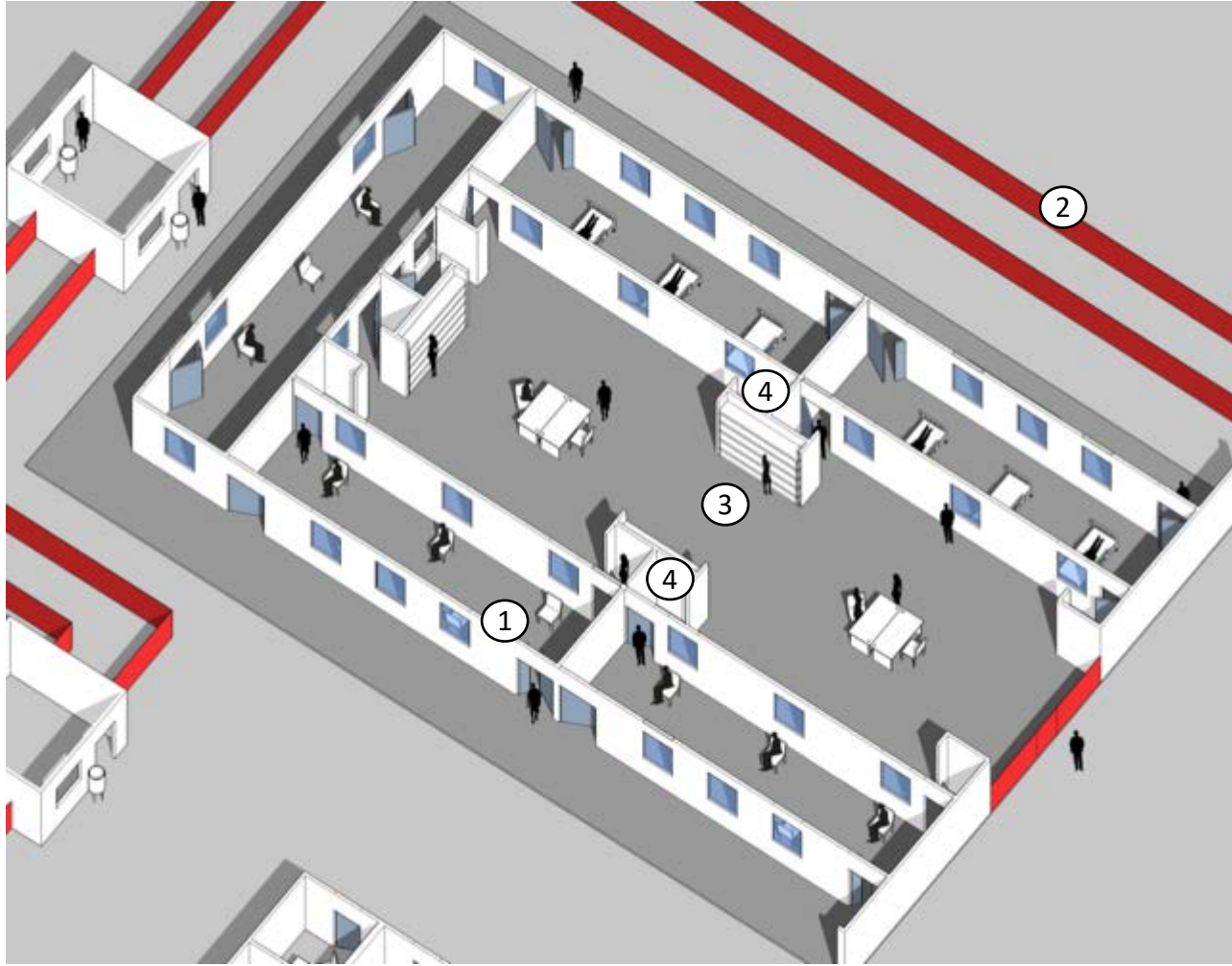
World Health  
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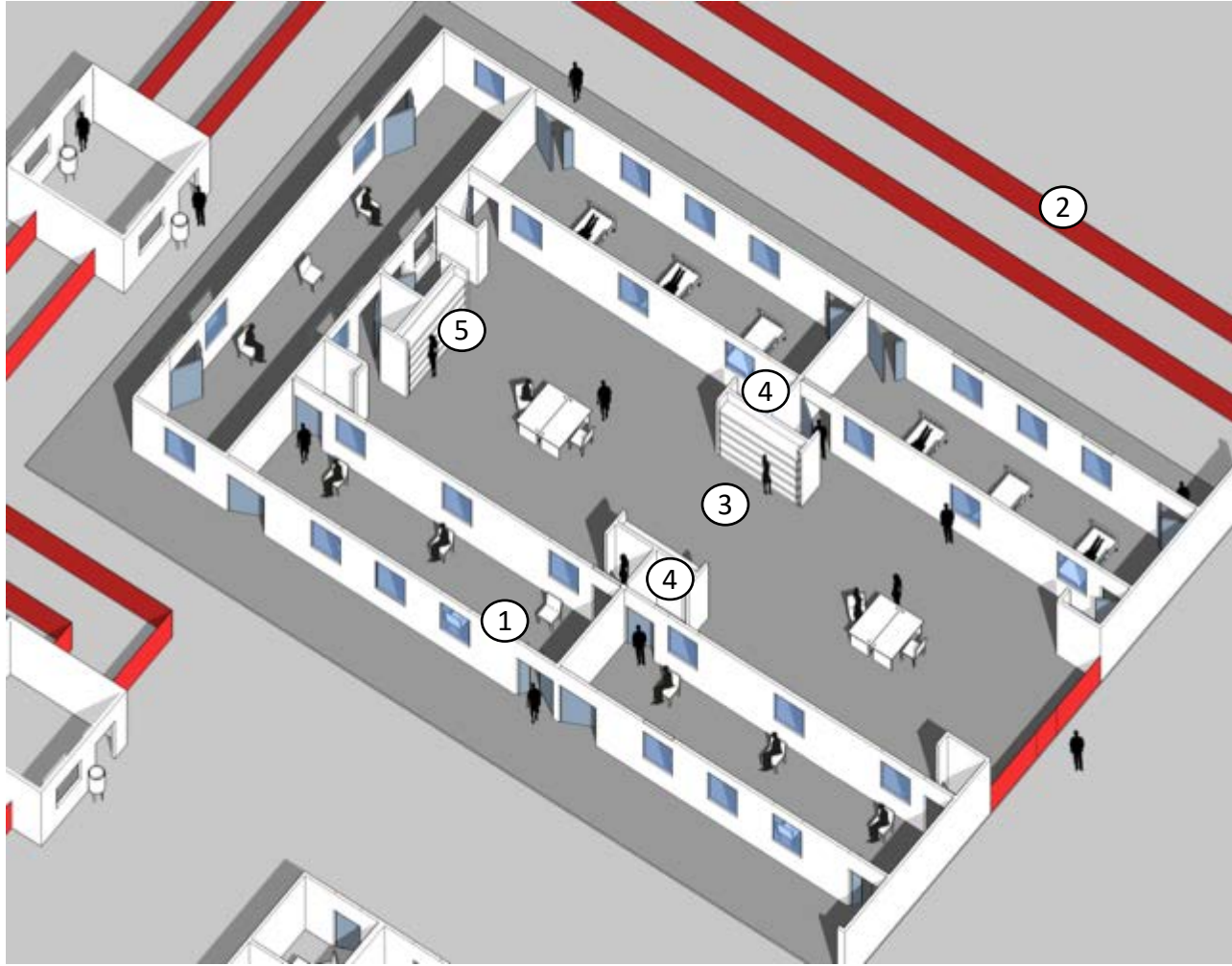
# Patient's flow / mild & moderate cases



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2. Single fence [1.2 meter high] is to identify the centre area. Double fence with 1 meter distance can be used to help visitors to respect the spatial distance while visiting patients [not mandatory]
3. Working area [Staff only]
4. Doffing space

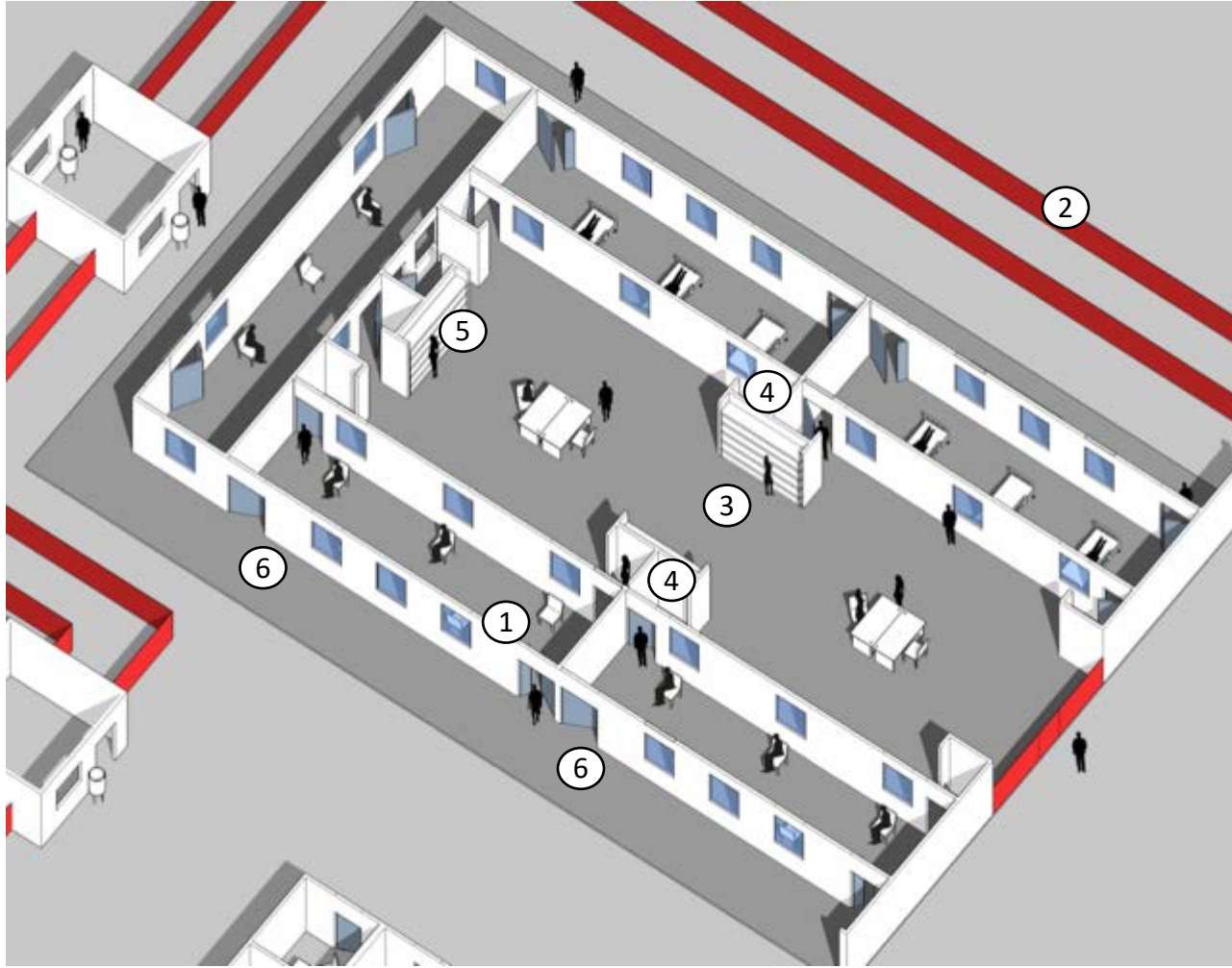


# Patient's flow / mild & moderate cases



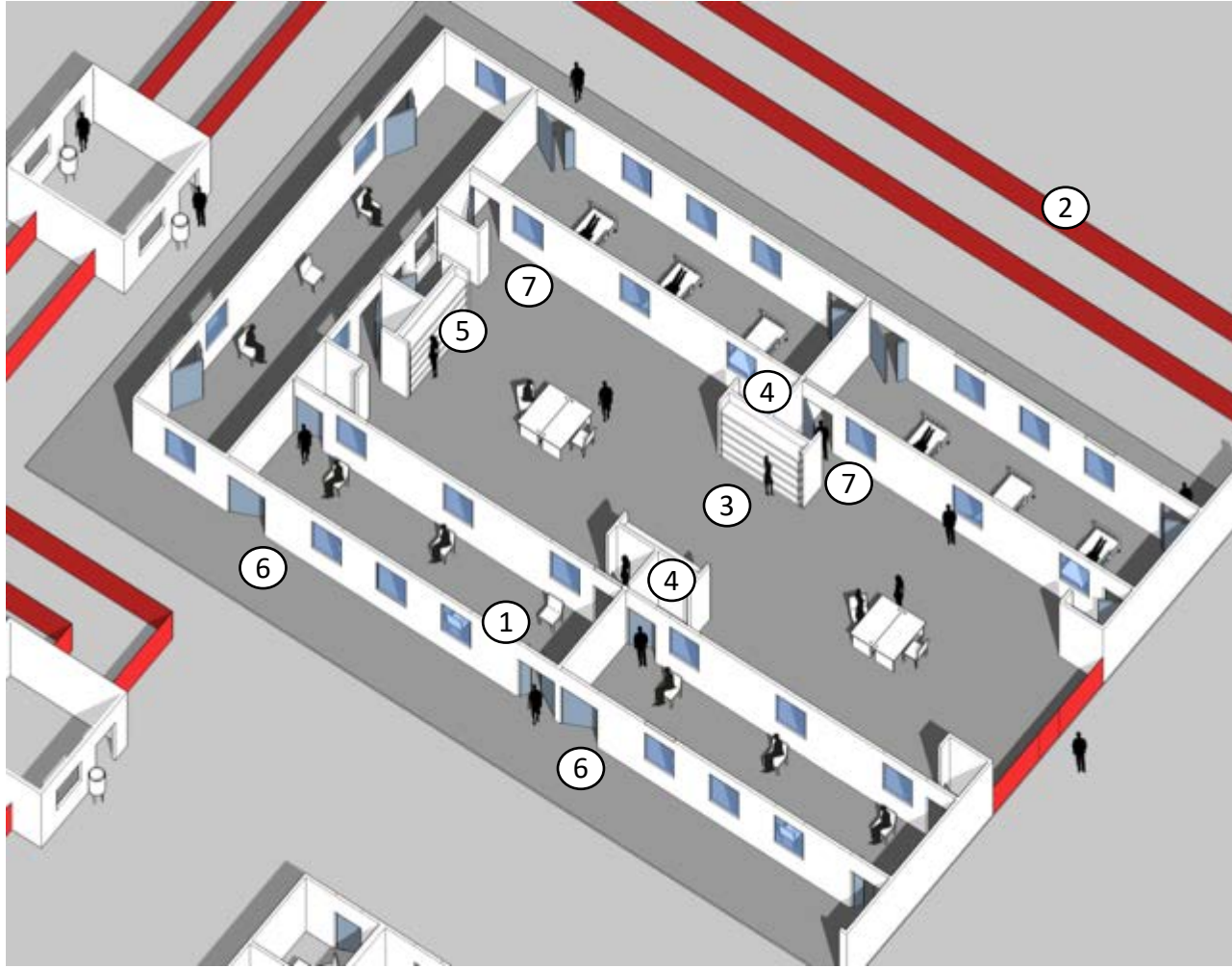
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3. Working area [Staff only]
4. Doffing space
5. Shelf for PPE

# Patient's flow / mild & moderate cases



1. Patients [2 m distance\*]
2. Single fence [1.2 meter high] is to identify the centre area. Double fence with 1 meter distance can be used to help visitors to respect the spatial distance while visiting patients [not mandatory]
3. Working area [Staff only]
4. Doffing space
5. Shelf for PPE
6. Patient entrance

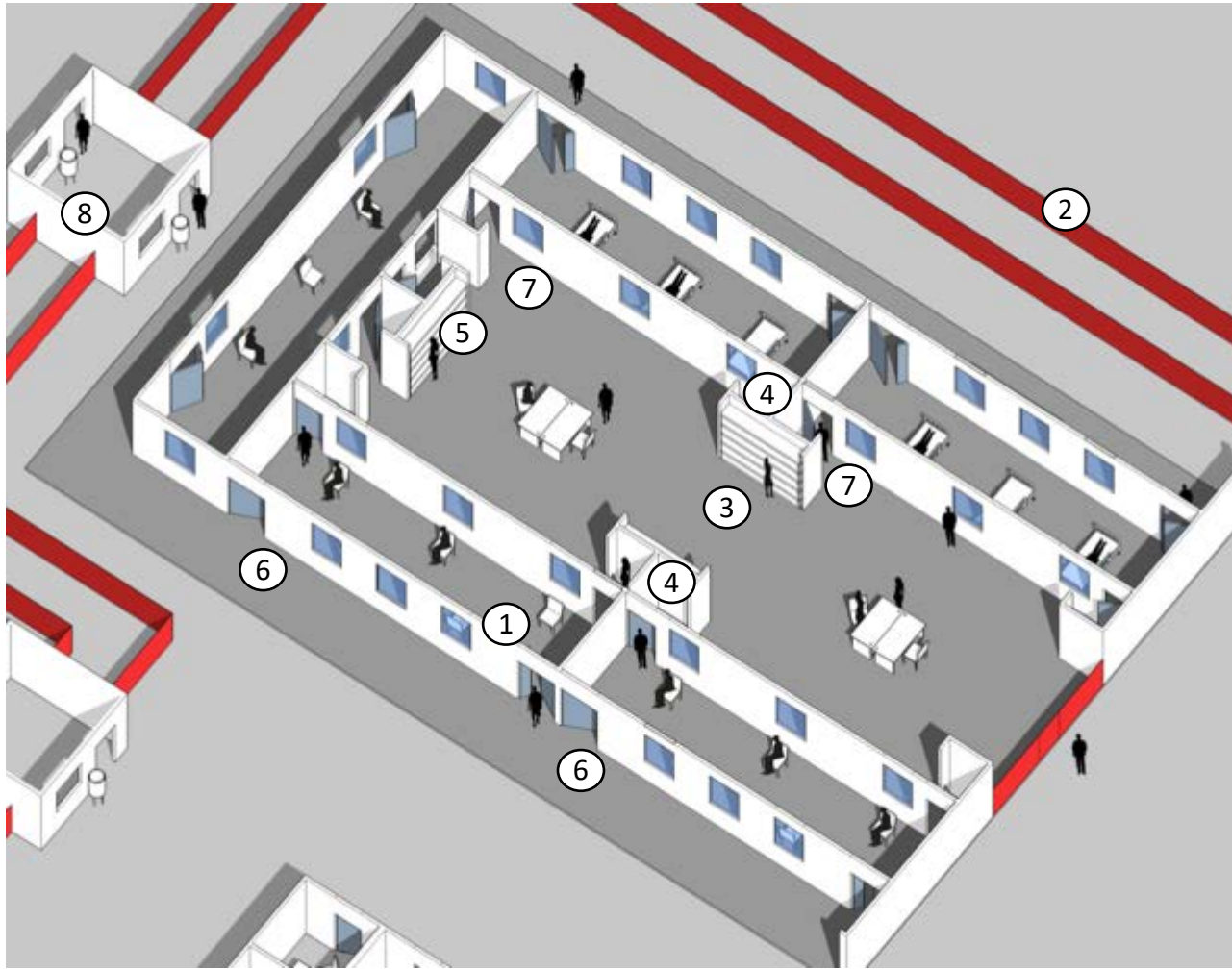
# Patient's flow / mild & moderate cases



1. Patients [2 m distance\*]
2. Single fence [1.2 meter high] is to identify the centre area. Double fence with 1 meter distance can be used to help visitors to respect the spatial distance while visiting patients [not mandatory]
3. Working area [Staff only]
4. Doffing space
5. Shelf for PPE
6. Patient entrance
7. Staff entrance only



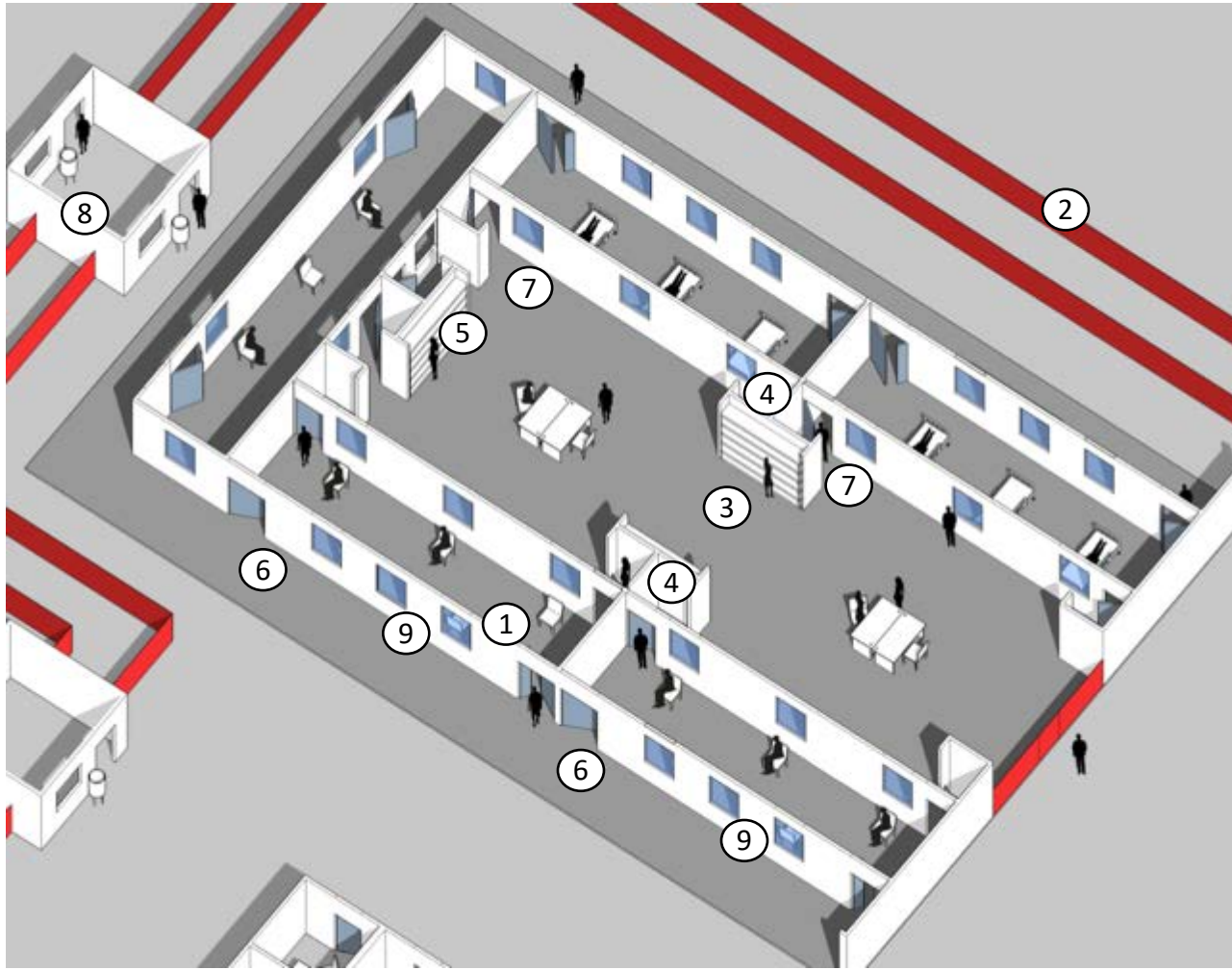
# Patient's flow / mild & moderate cases



1. Patients [2 m distance\*]
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3. Working area [Staff only]
4. Doffing space
5. Shelf for PPE
6. Patient entrance
7. Staff entrance only
8. Discharge room

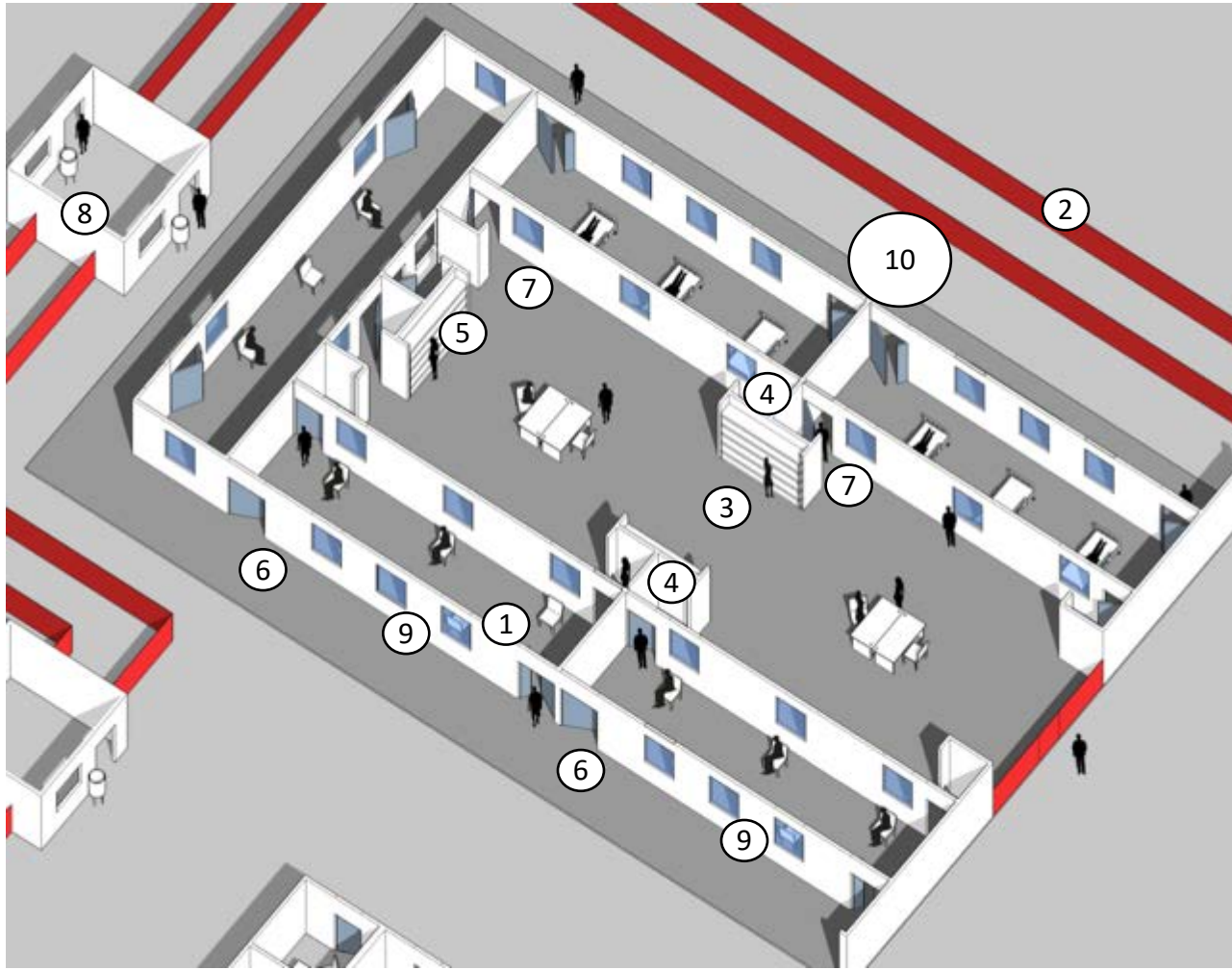


# Patient's flow / mild & moderate cases



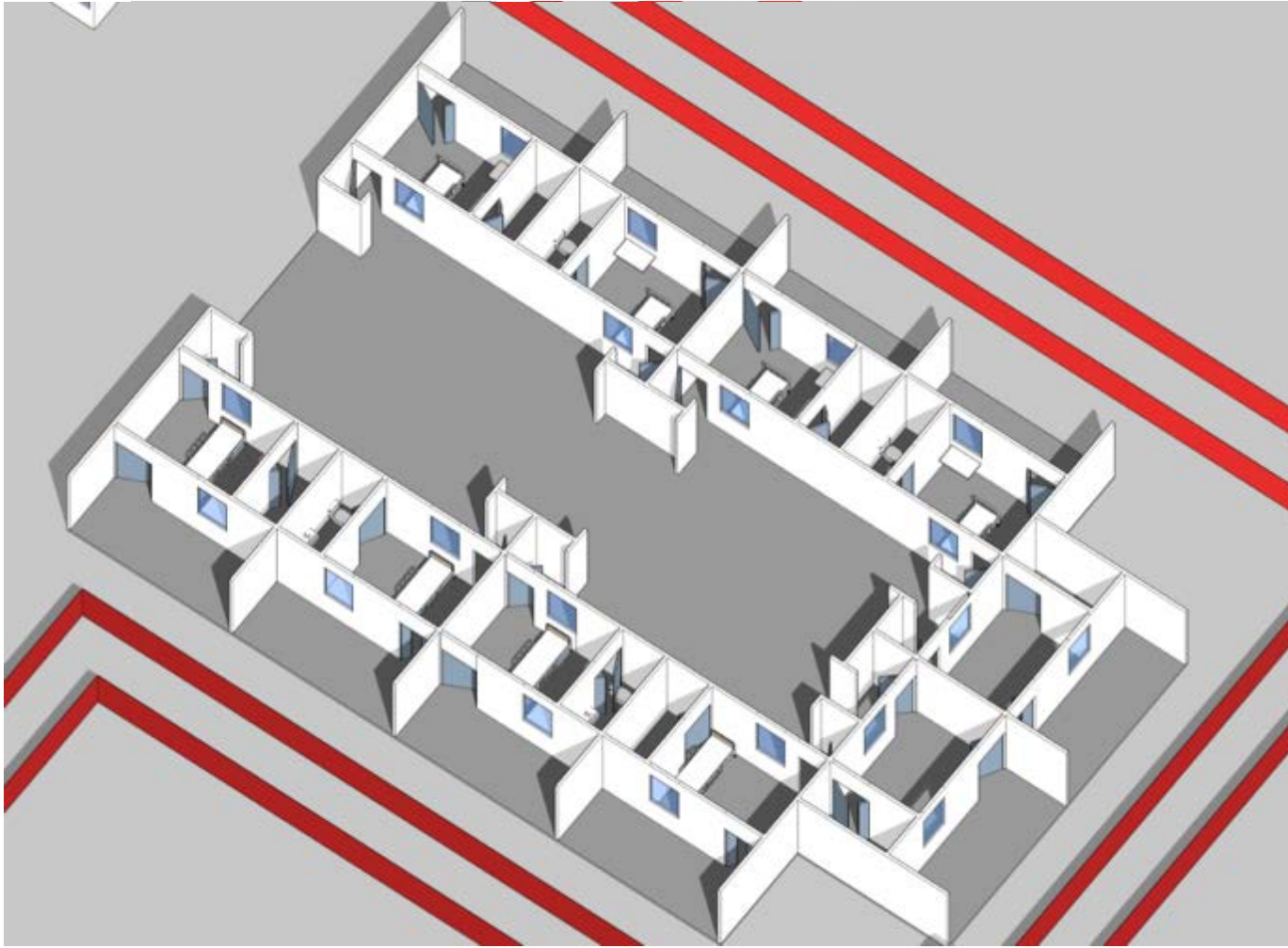
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4. Doffing space
5. Shelf for PPE
6. Patient entrance
7. Staff entrance only
8. Discharge room
9. Windows for natural ventilation

# Patient's flow / mild & moderate cases



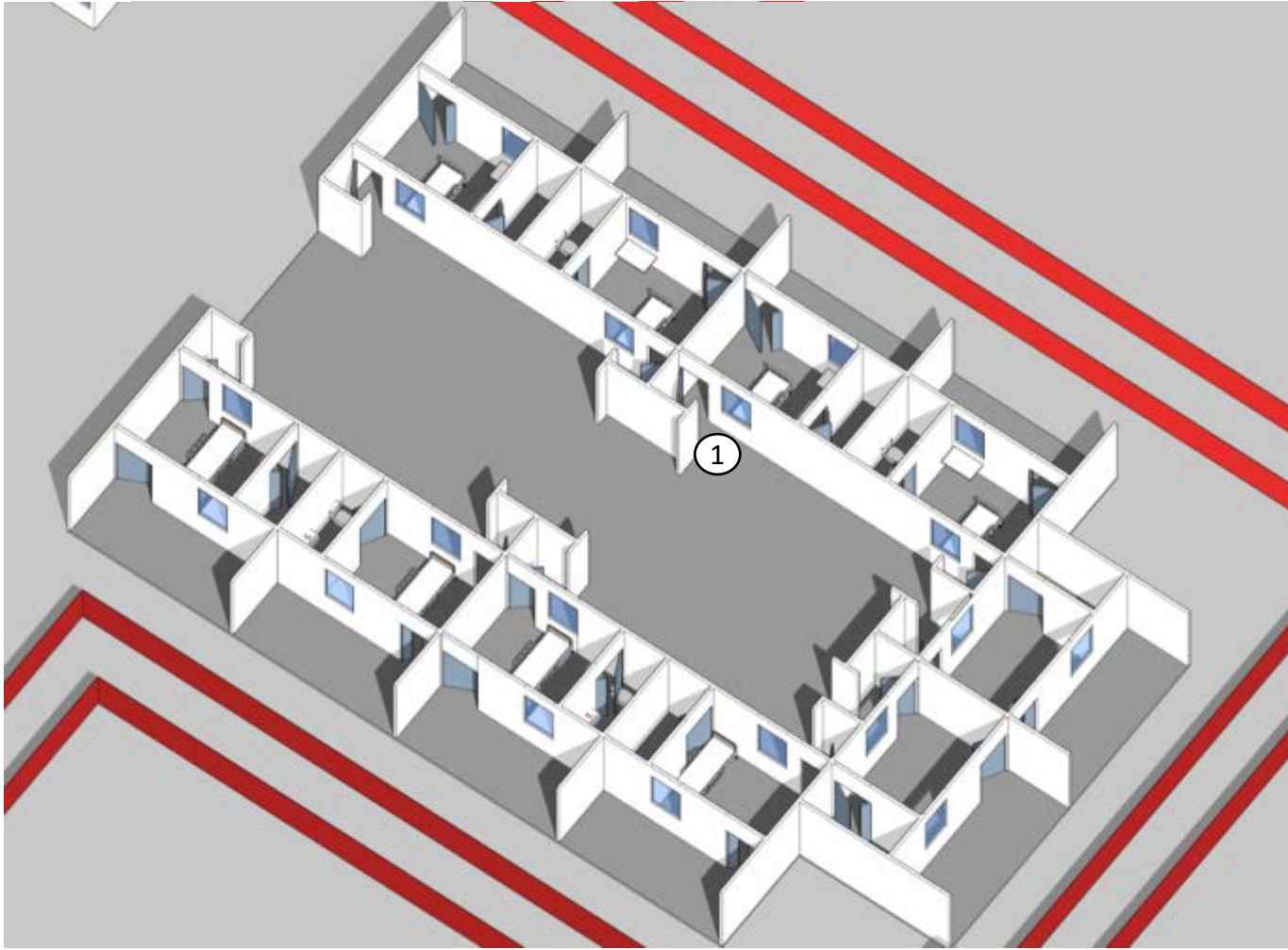
1. Patients [2 m distance\*]
2. Single fence [1.2 meter high] is to identify the centre area. Double fence with 1 meter distance can be used to help visitors to respect the spatial distance while visiting patients [not mandatory]
3. Working area [Staff only]
4. Doffing space
5. Shelf for PPE
6. Patient entrance
7. Staff entrance only
8. Discharge room
9. Windows for natural ventilation
10. Observation.

# Patient's flow / severe & critical cases





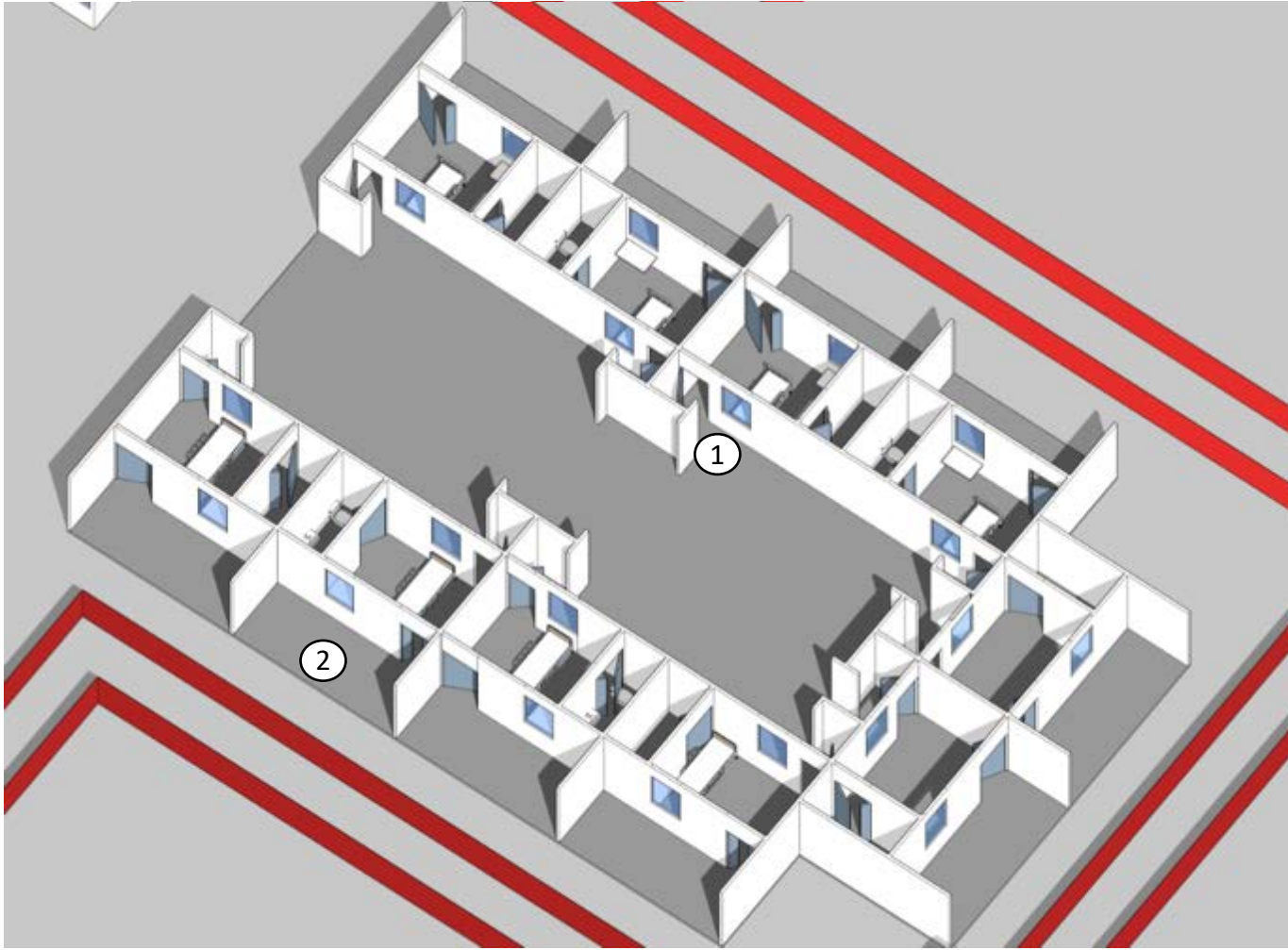
# Patient's flow / severe & critical cases



1. Individual doffing [one per room]

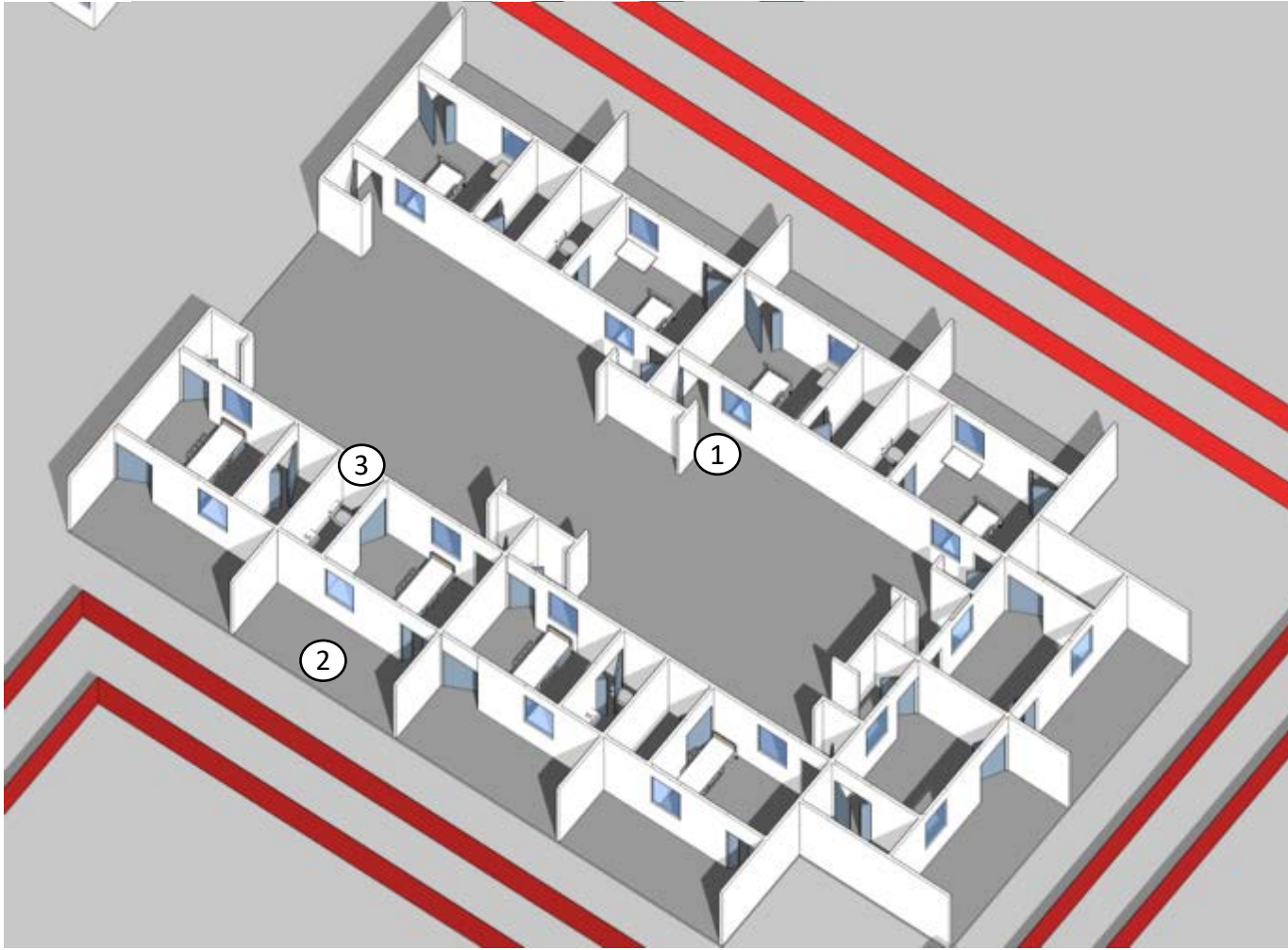


# Patient's flow / severe & critical cases



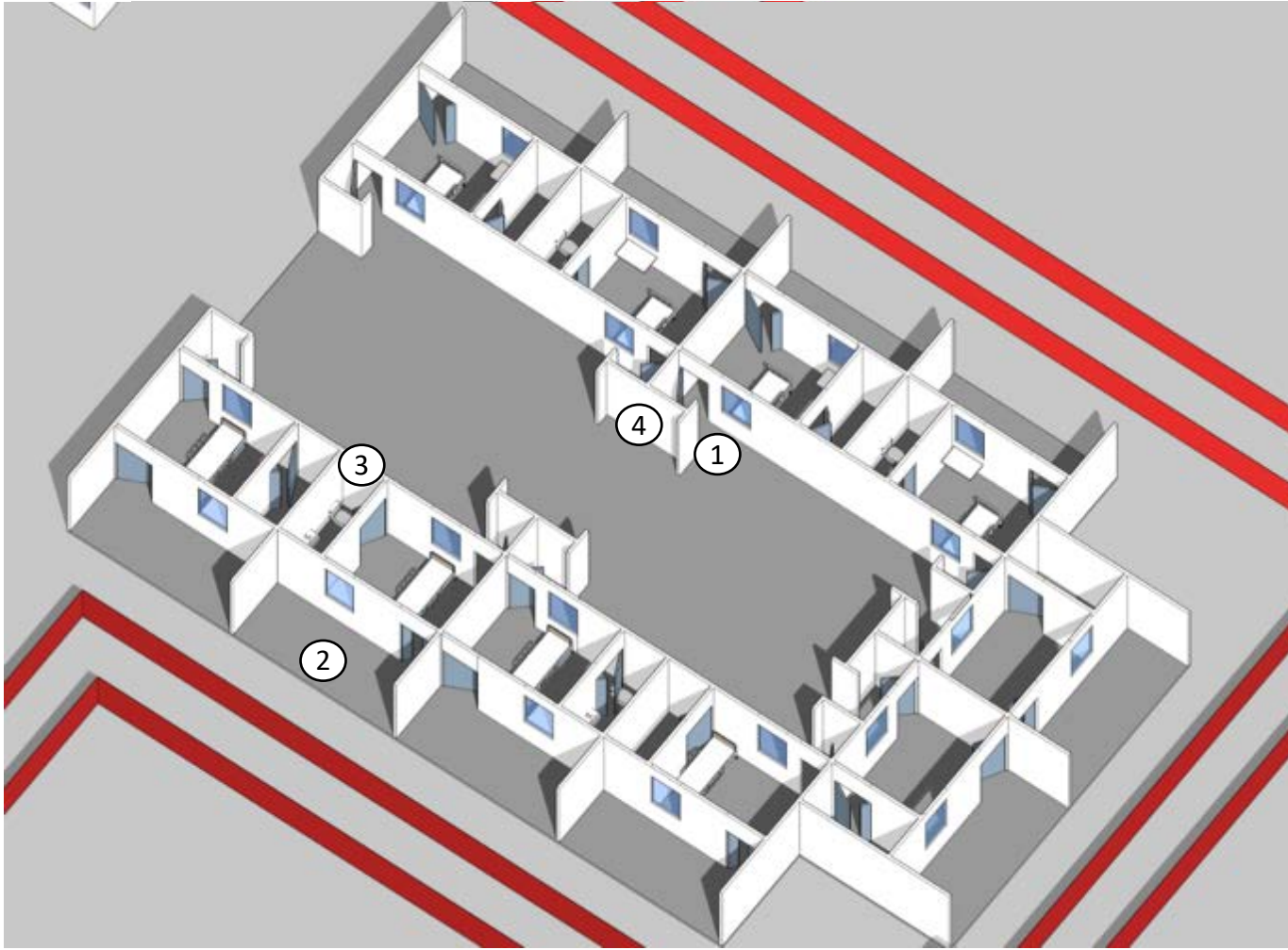
1. Individual doffing [one per room]
2. Self-contained room with individual terrace

# Patient's flow / severe & critical cases



1. Individual doffing [one per room]
2. Self-contained room with individual terrace
3. Individual toilet/shower

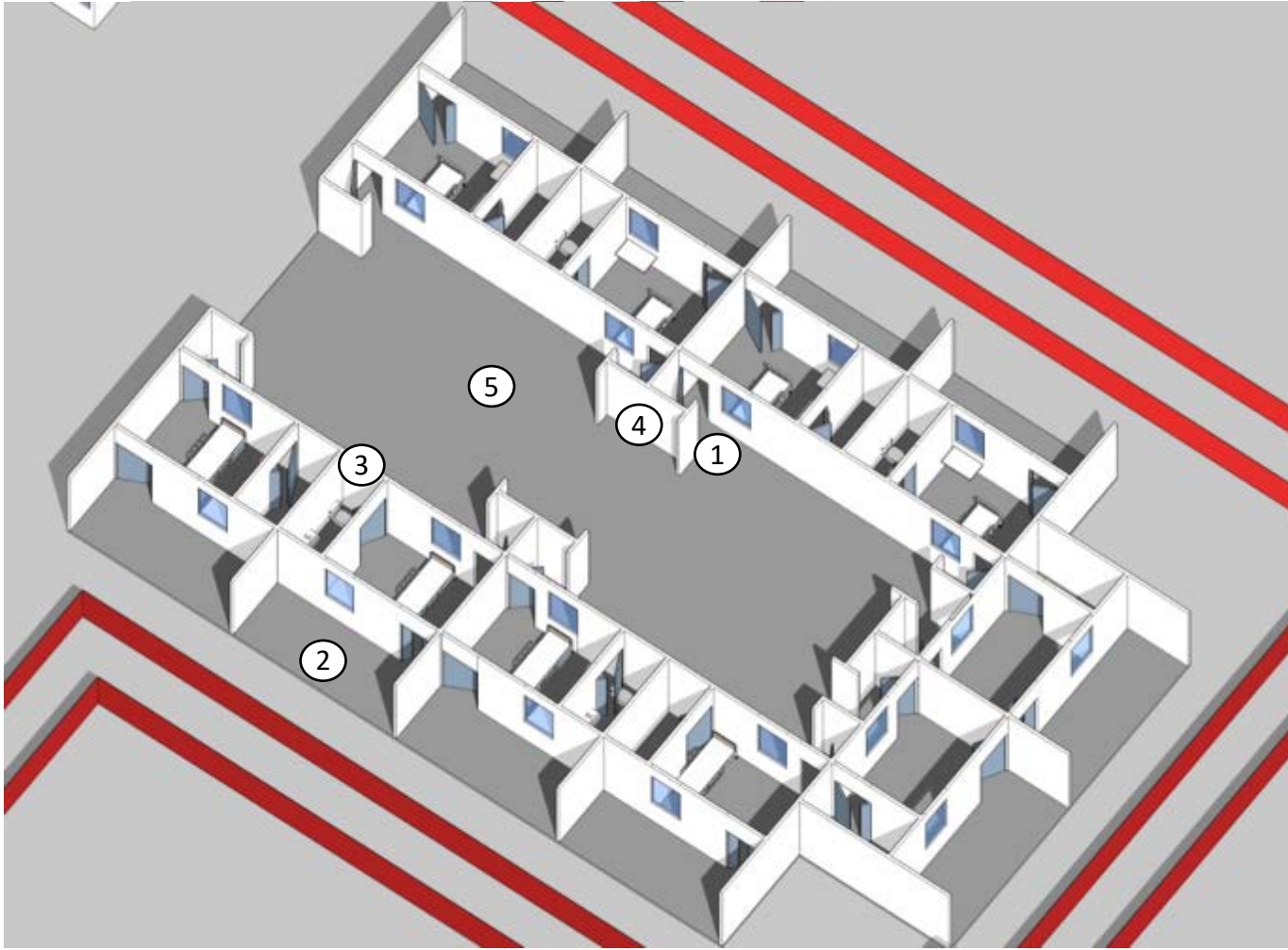
# Patient's flow / severe & critical cases



1. Individual doffing [one per room]
2. Self-contained room with individual terrace
3. Individual toilet/shower
4. Shelf for PPE



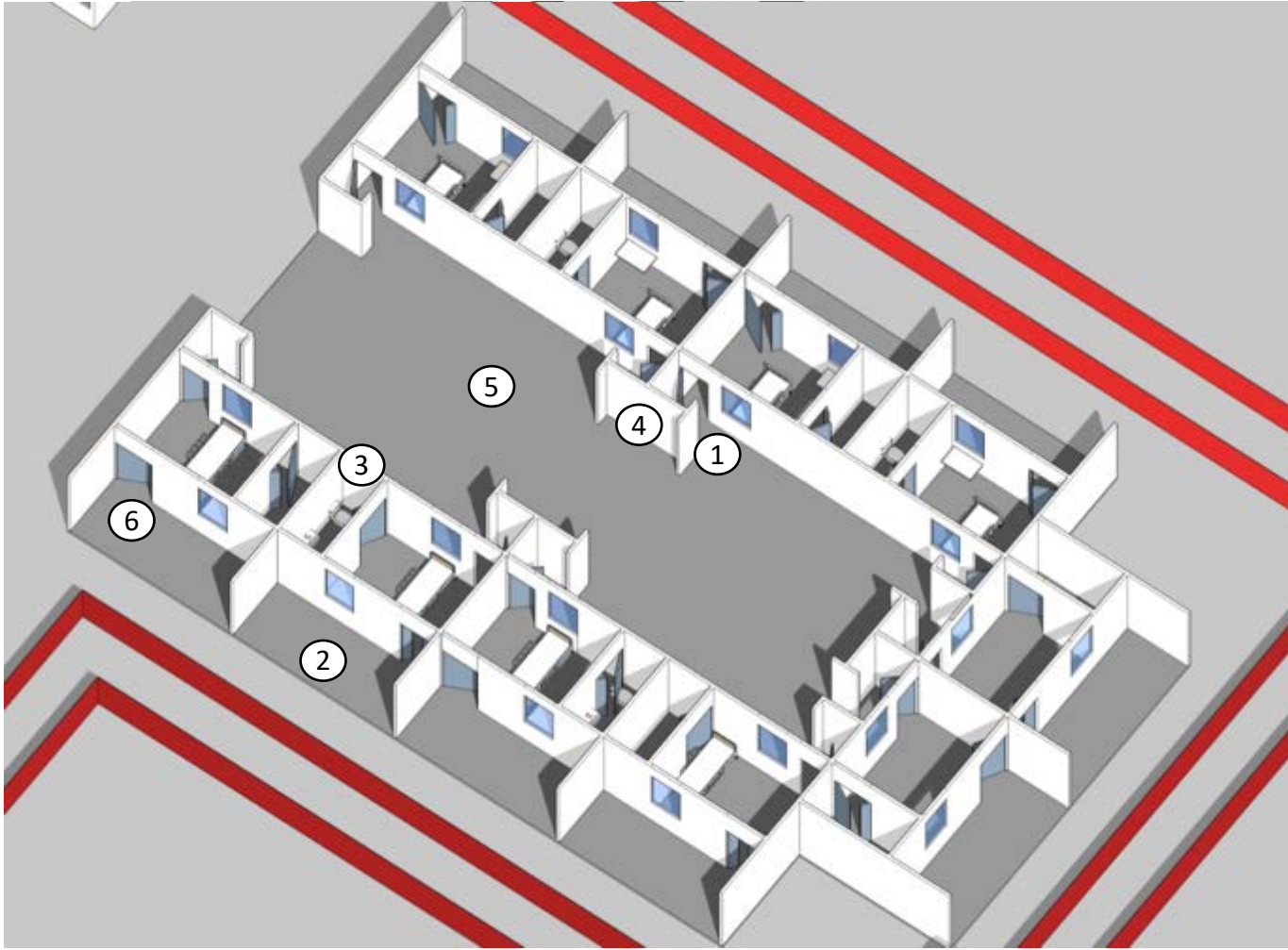
# Patient's flow / severe & critical cases



1. Individual doffing [one per room]
2. Self-contained room with individual terrace
3. Individual toilet/shower
4. Shelf for PPE
5. Working area [Staff only]

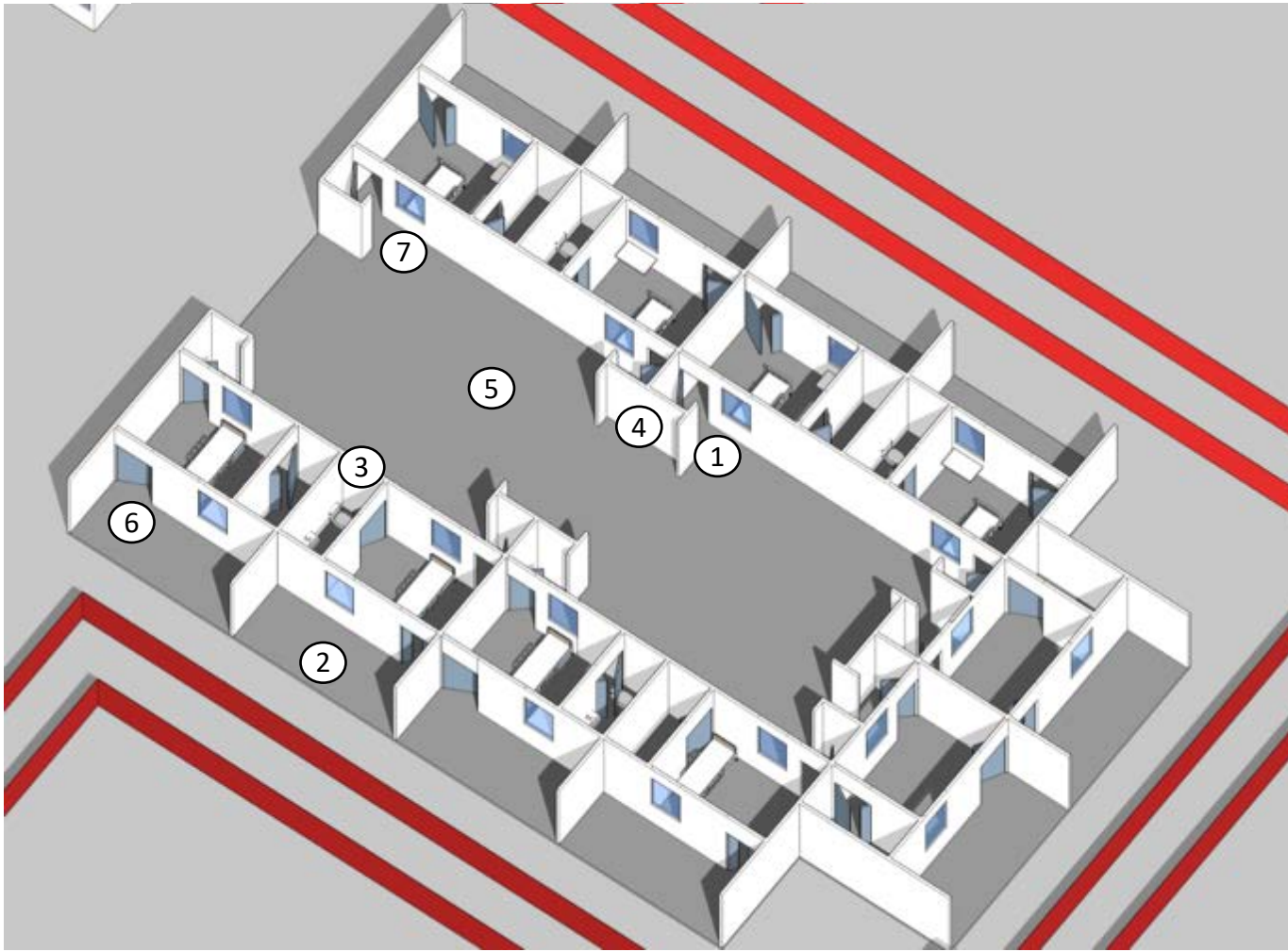


# Patient's flow / severe & critical cases



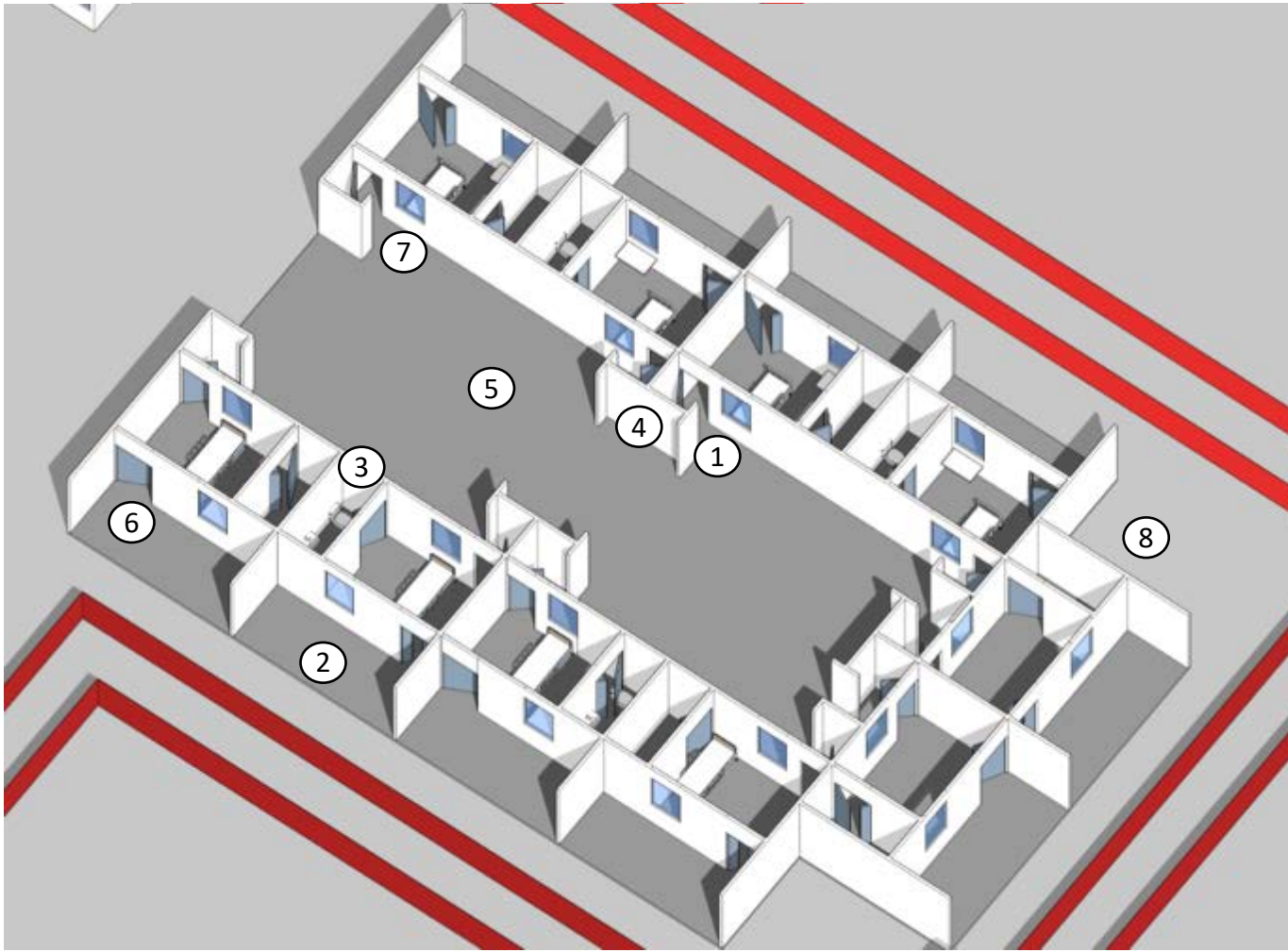
1. Individual doffing [one per room]
2. Self-contained room with individual terrace
3. Individual toilet/shower
4. Shelf for PPE
5. Working area [Staff only]
6. Patient entrance

# Patient's flow / severe & critical cases



1. Individual doffing [one per room]
2. Self-contained room with individual terrace
3. Individual toilet/shower
4. Shelf for PPE
5. Working area [Staff only]
6. Patient entrance
7. Staff entrance only

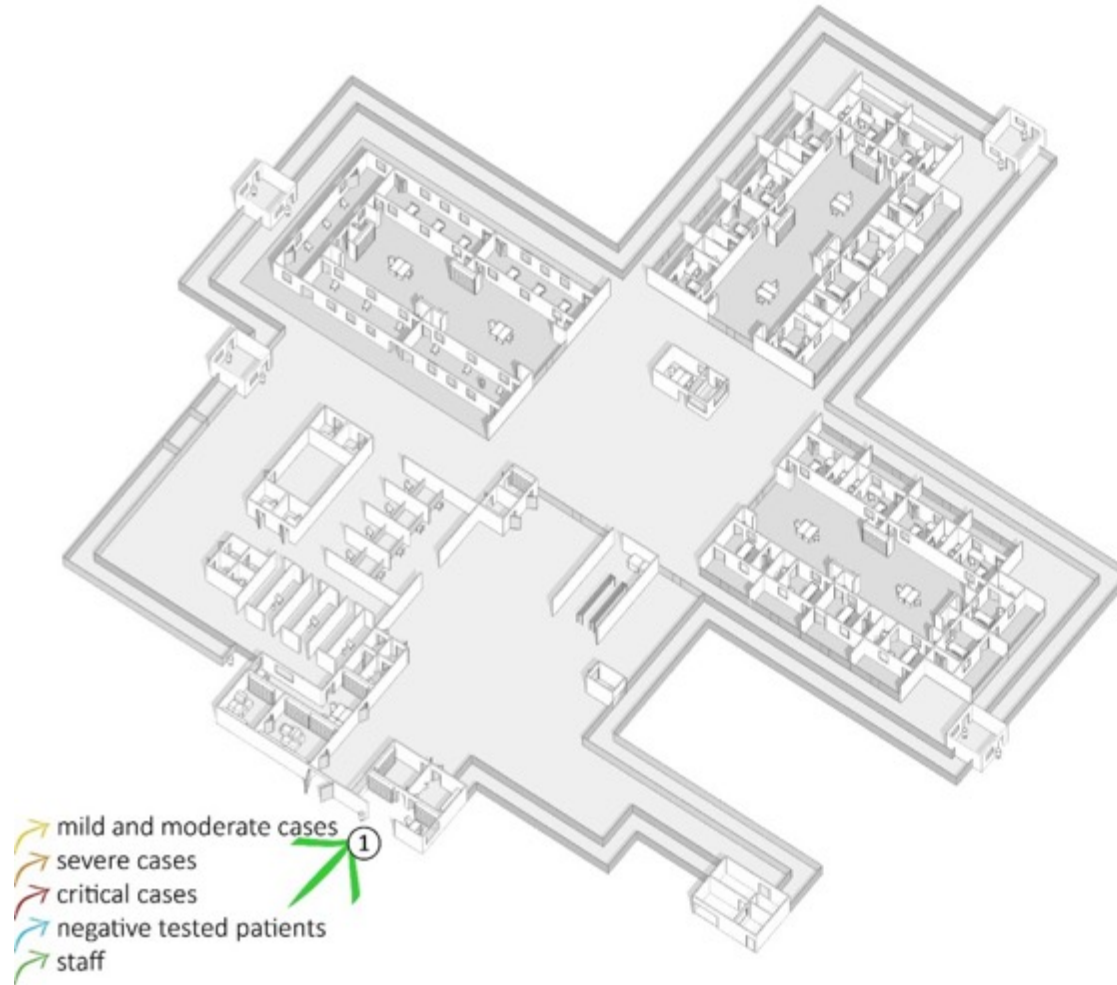
# Patient's flow / severe & critical cases



1. Individual doffing [one per room]
2. Self-contained room with individual terrace
3. Individual toilet/shower
4. Shelf for PPE
5. Working area [Staff only]
6. Patient entrance
7. Staff entrance only
8. Space for cleaning and disinfection of items.



# Staff's flow



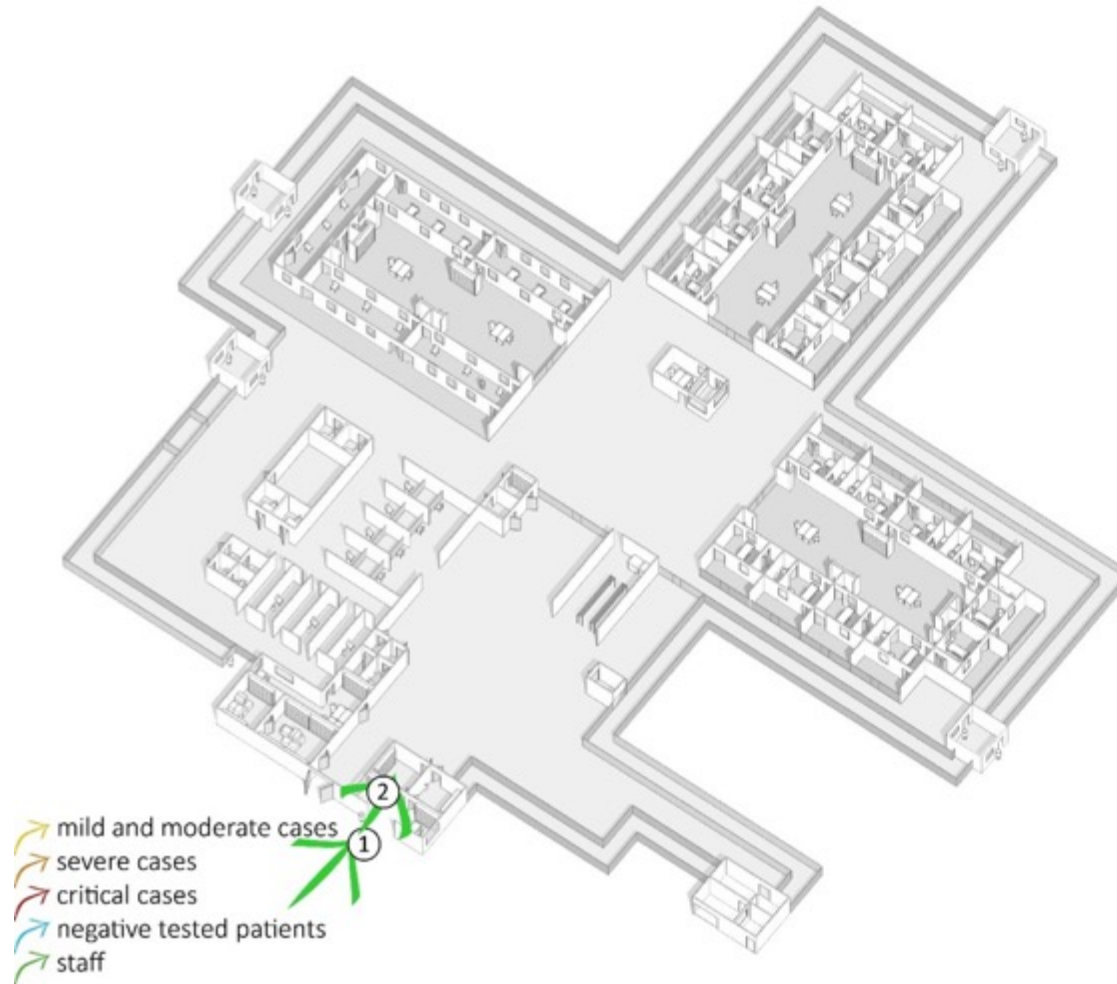
## 1. Staff entry

At this point all staff:

- receive a mask;
- wash their hands;
- check temperature;
- record presence.



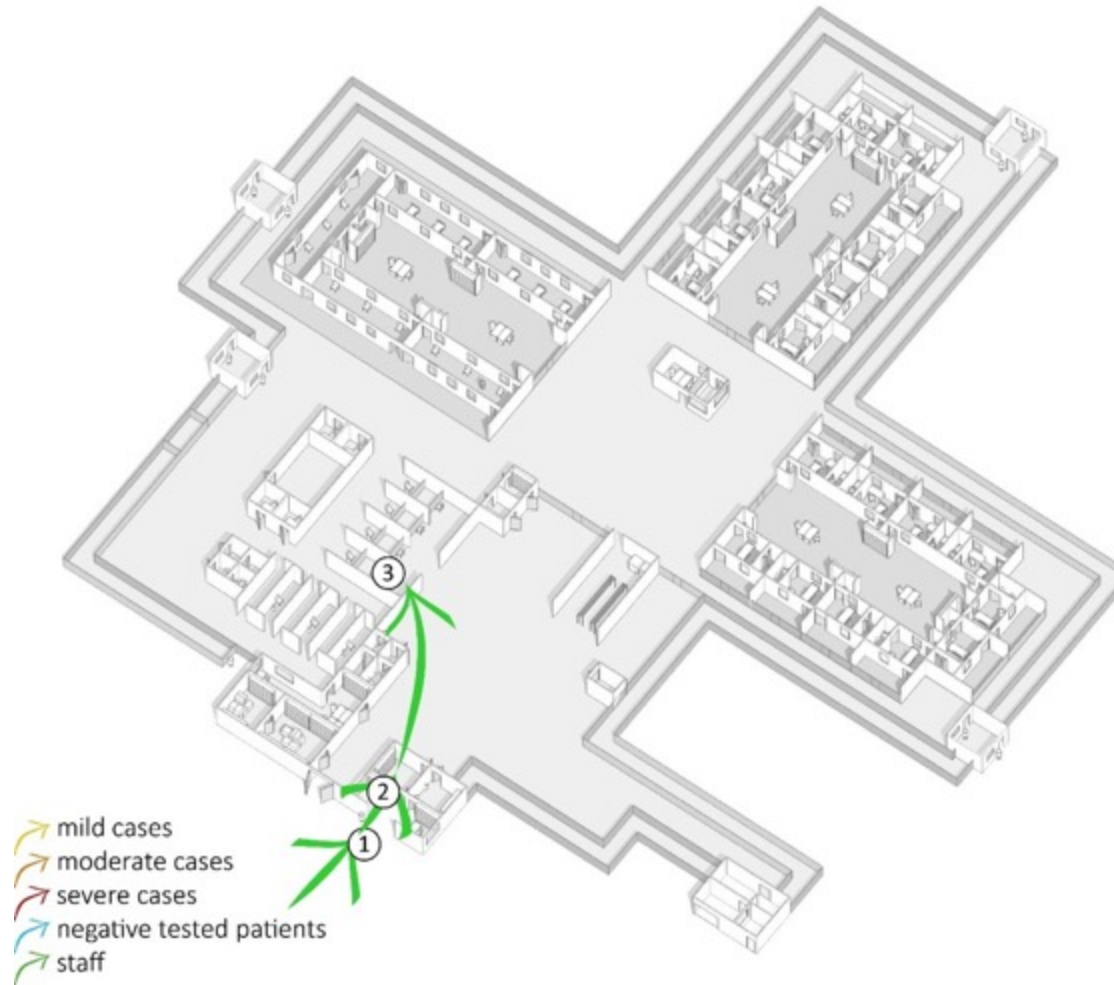
# Staff's flow



## 2. Changing room

Male and female changing rooms to remove personal clothes and wear scrubs and boots [or closed shoes]. Staff toilets are nearby.

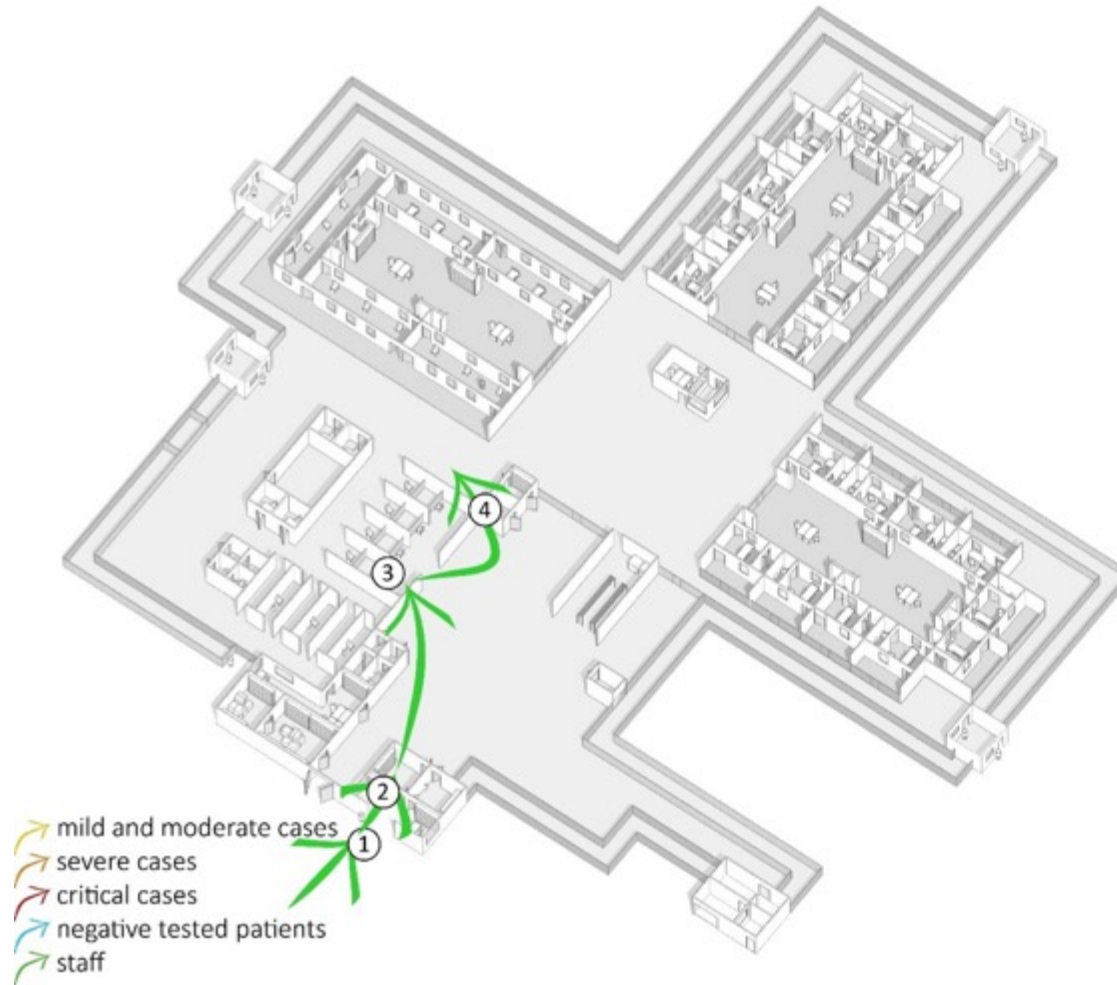
# Staff's flow



## 3. Triage

Patients are investigated in the individual triage booths. A one (1) meter distance fence [1.2 m high] separates patients from staff. The facility is completely open [no doors] to allow a proper natural ventilation.

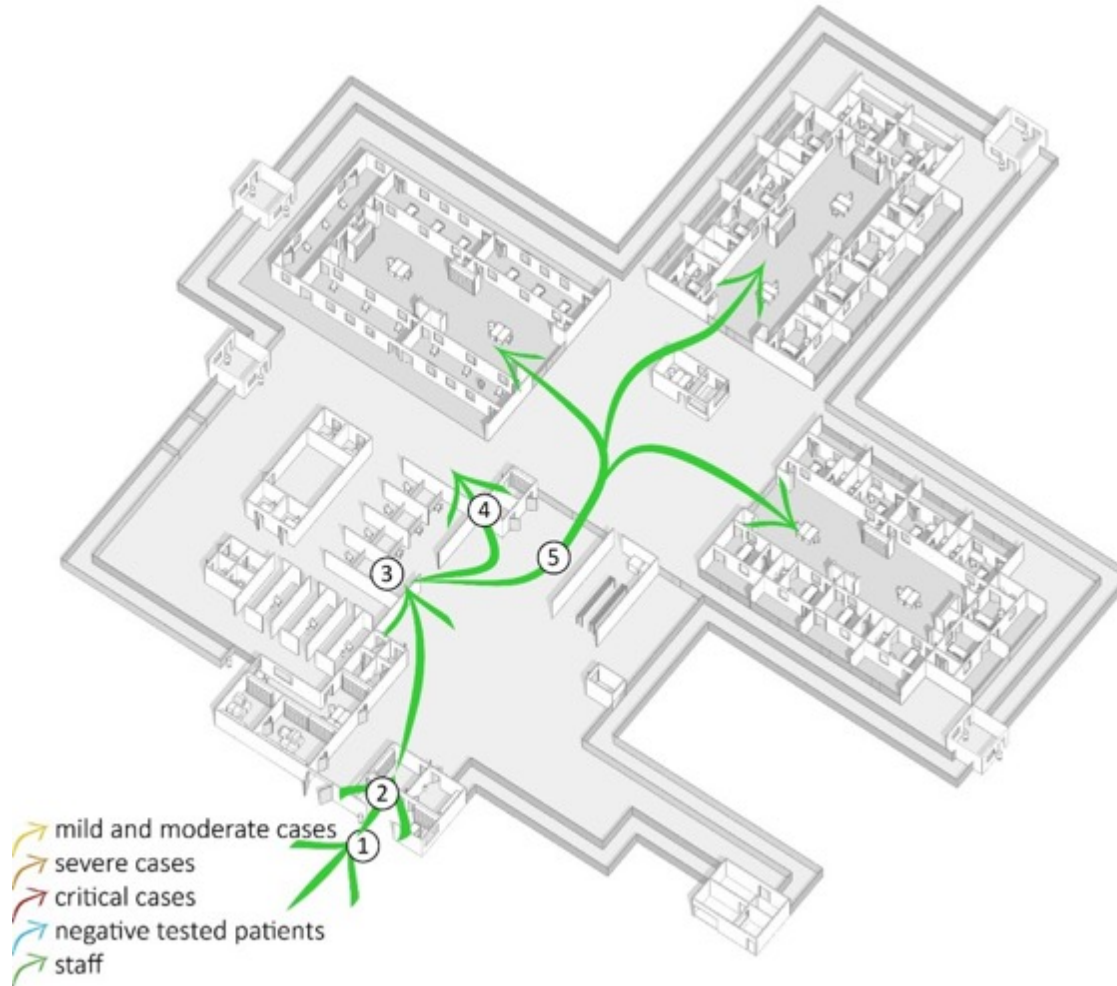
# Staff's flow



## 4. Triage -Donning/Doffing

Staff can wear specific PPE before going to the patient at the triage.

# Staff's flow

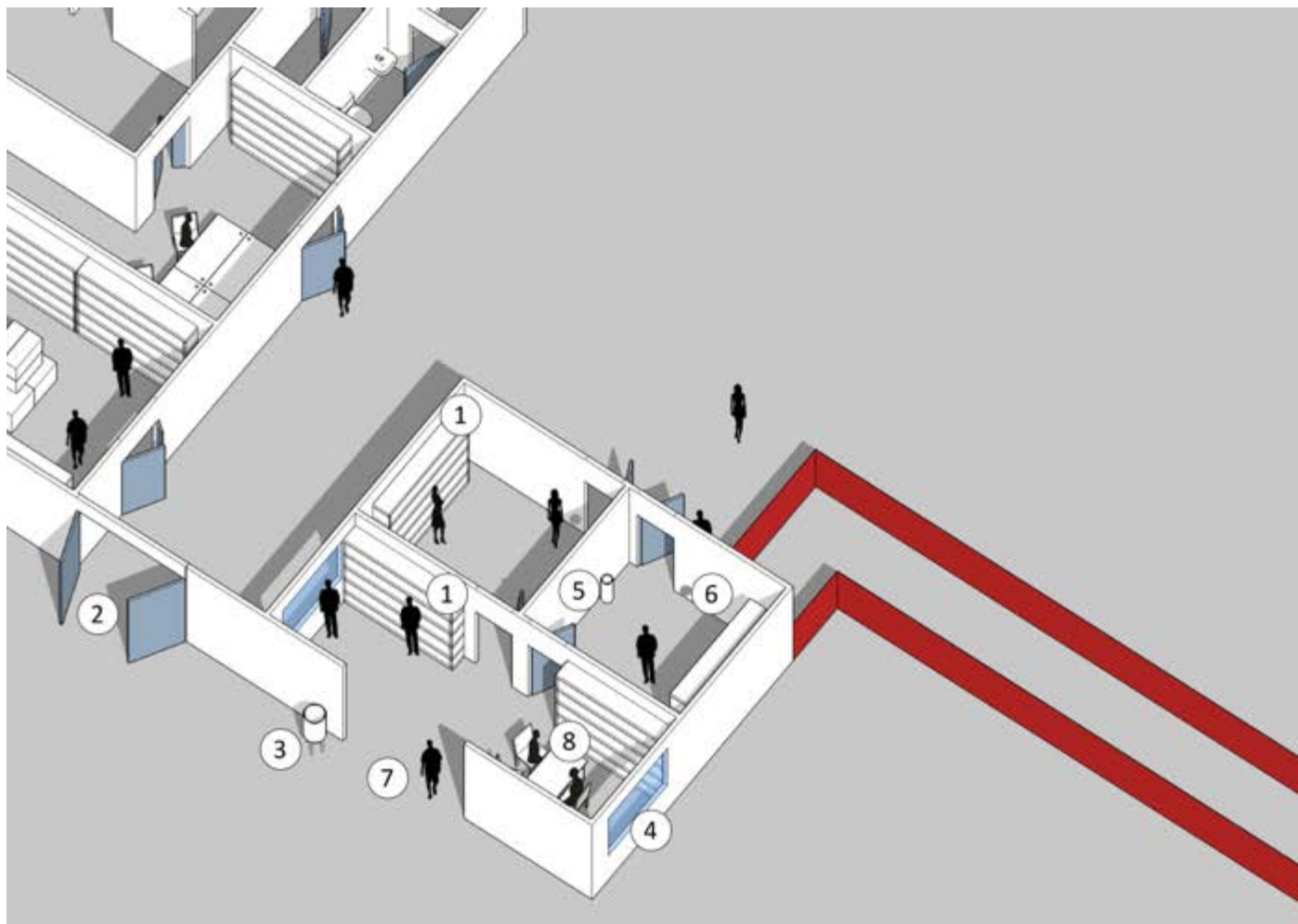


## 5. Wards – Staff area

Each ward is equipped with a working space for staff where patients are not allowed. More information in the next chapter.



# Staff's flow - Entrance



1. Shelf for private items
2. Supply entrance
3. Hand washing point [in and out]
4. Wide windows to assure natural ventilation
5. Bucket for used scrubs collection
6. Air extractors
7. Staff entrance
8. Temperature screening

# Transparent surface



# Transparent surface



- Visual contact with patient without need of PPE
- Biomedical devices placed on the staff side:
  - Monitor,
  - Oxygen,
  - IV, etc.
- Flexible and uniform technical plateau for all rooms as biomedical devices can be moved
- “Humanized” care
- Reduction of entries in the patient’s area:
  - **Reduction of PPE consumption**



# Module: 2C

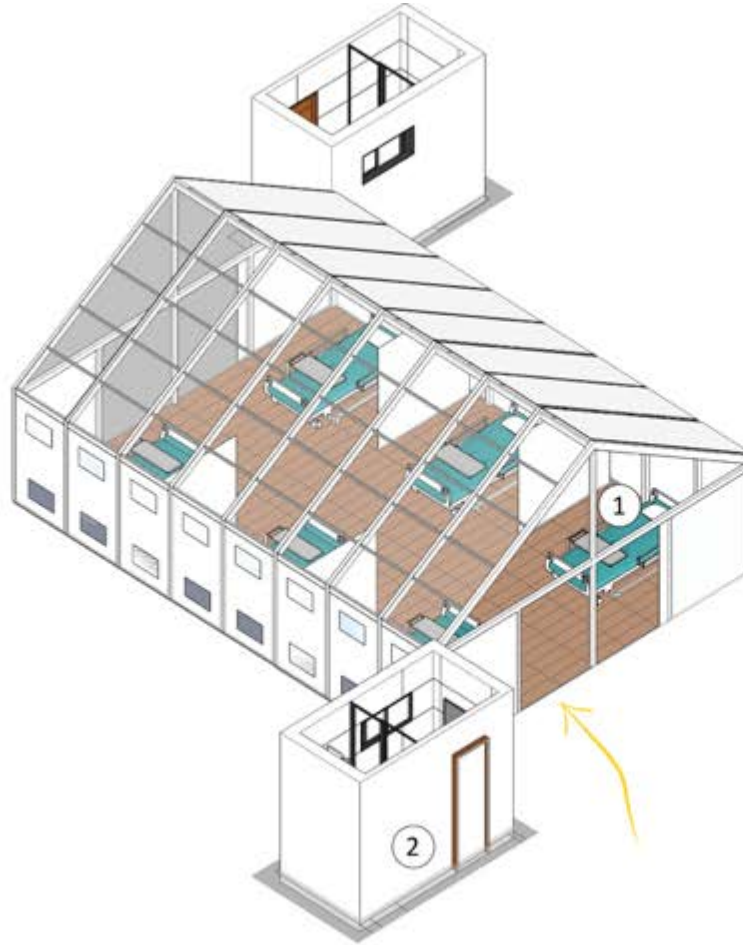
## Module 2C

### SARI treatment centre in tents



# SARI treatment centre in tents – Mild & Moderate cases

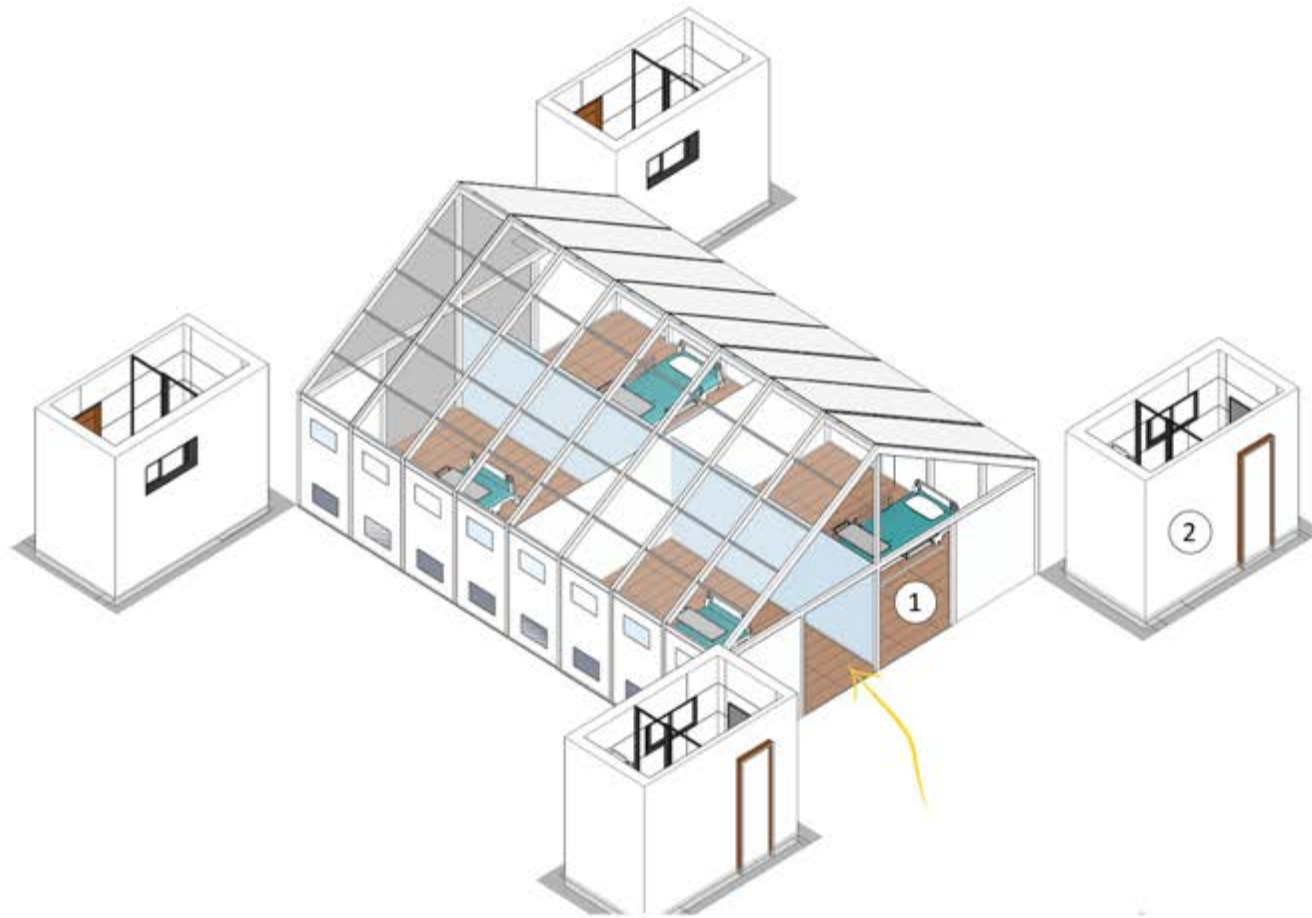
Small tents [ $\sim 45 \text{ m}^2$ ] can be used to set up wards for mild and moderate cases.



1. Individual booth with bed
2. Toilet

➔ patient entrance

# SARI treatment centre in tents – Severe & Critical cases

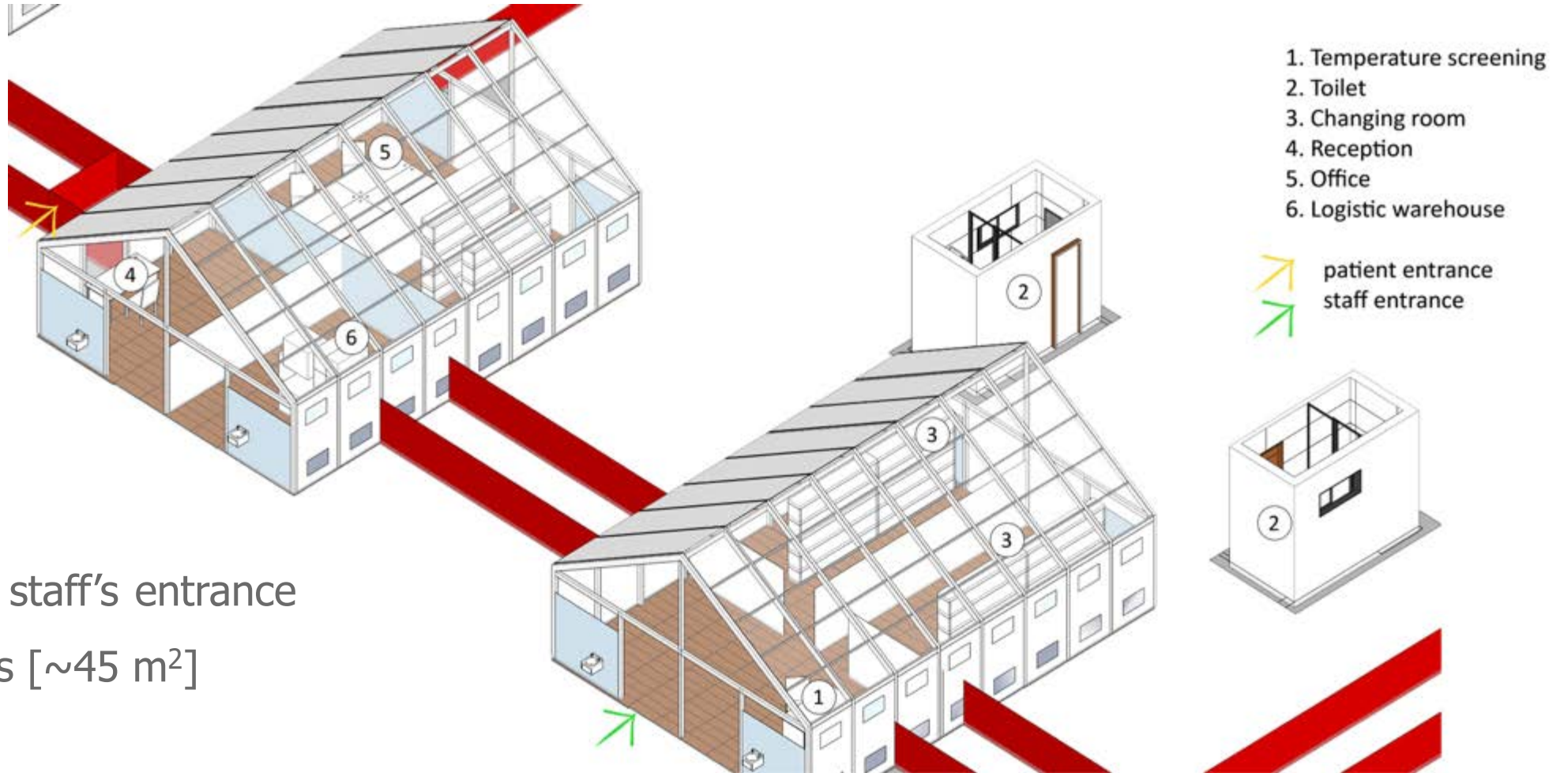


- 1. Private room
- 2. Private toilet

➔ patient entrance

For severe and critical patients self-contained rooms are recommended.

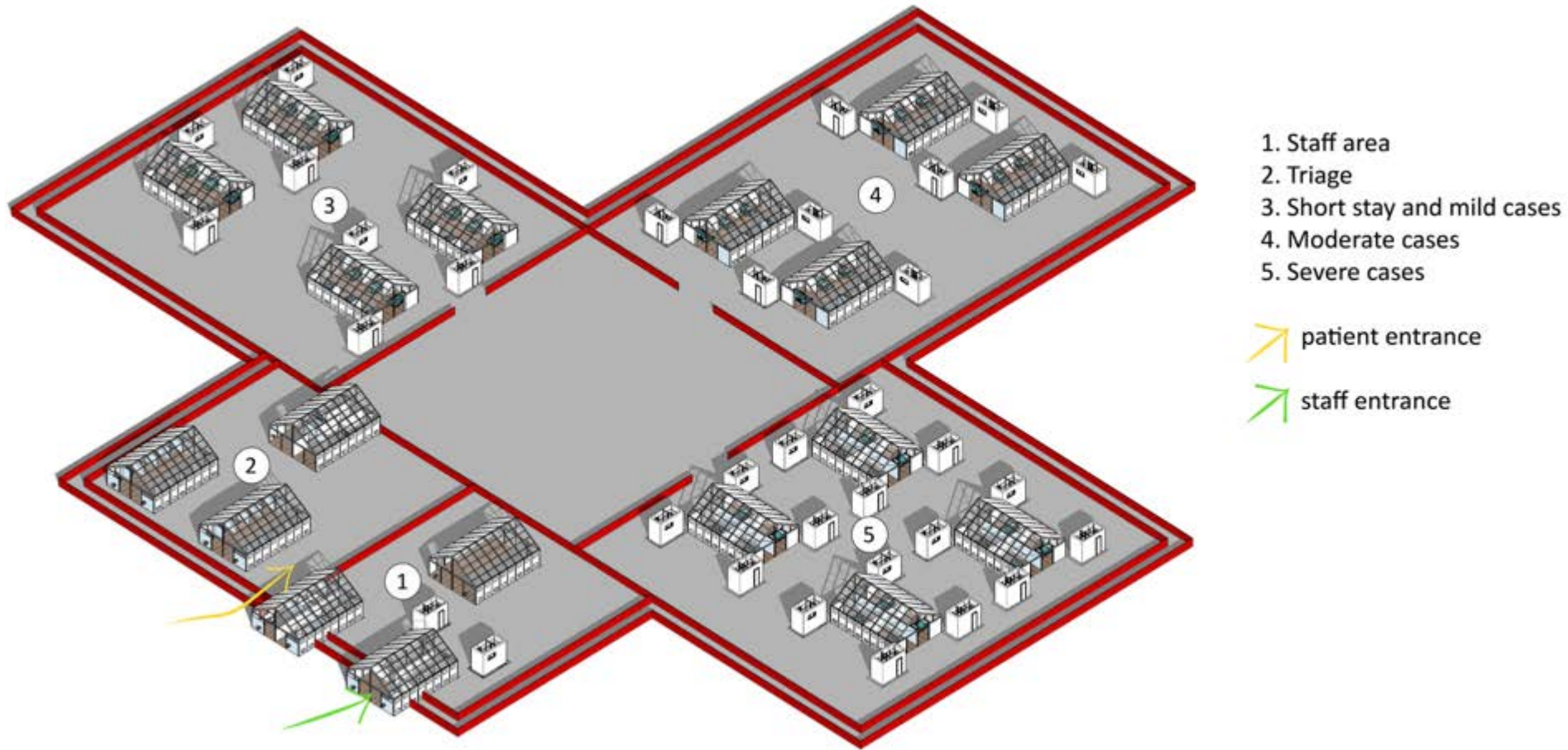
# SARI treatment centre in tents – Layout



An example of staff's entrance  
with small tents [ $\sim 45 \text{ m}^2$ ]



# SARI treatment centre in tents – Layout





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# Thank you

Luca Fontana – WHO - WASH/IPC Highly Infectious Pathogens Expert

Anna Silenzi – WHO - Architect