

HEALTH CLUSTER COORDINATORS' CALL ON COVID – 19: Infection Prevention and Control (IPC) in Limited Resource Settings



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WHO Health Emergencies
IPC – COVID-19 Response
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Agenda

- Introduction to IPC
- COVID-19: modes of transmission
- IPC guidance available
- Process Planning
- PPE Supply chain management



Why is IPC important?



Protecting yourself



Protecting your patients



Protecting your family & community



World Health
Organization

WHO2015 Safe & Quality Health Services Package

HEALTH
EMERGENCIES
programme

Standard precautions: implement at ALL times



1. Hand hygiene
2. Respiratory hygiene
3. PPE use - according to the *risk assessment*
4. Safe injection practices, sharps management & injury prevention
5. Environmental cleaning
6. Safe handling, cleaning & disinfection of patient care equipment
7. Safe handling and cleaning of soiled linen
8. Waste management

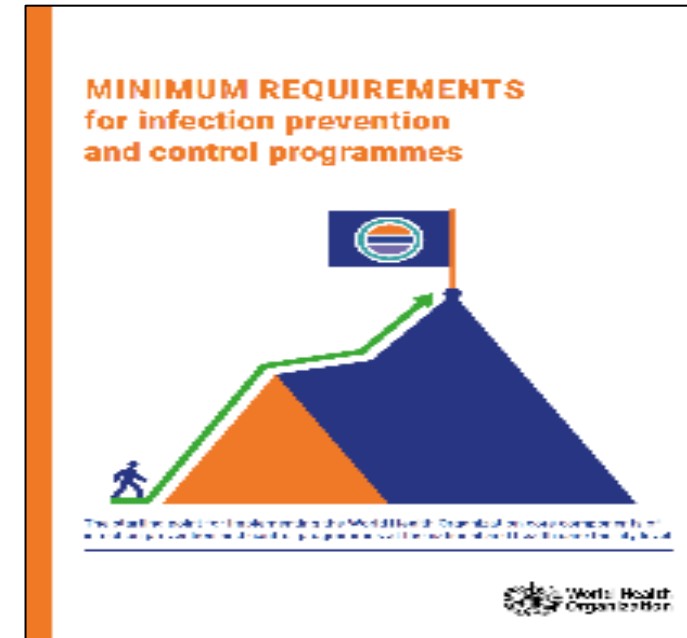


Health care workers must perform a risk assessment before every patient interaction and have a high suspicion of all cases for COVID-19

Infection prevention and control minimum requirements

IPC focal point

- Any health facility or centre should ensure that there is an IPC focal point at the facility
- The IPC focal point should lead and coordinate IPC activities
- In a low-resource setting, the IPC focal point may be alone, ensure they are linked to IPC focal points at country level for support



IPC goals during outbreak



1. To reduce transmission of health care associated infections
2. To enhance the safety of staff, patients and visitors
3. To enhance the ability of the organization/health facility to respond to an outbreak
4. To lower or reduce the risk of the hospital (health care facility) itself amplifying the outbreak

COVID-19 modes of transmission: Infection prevention and control

Droplets

- Respiratory droplets are generated when an infected person coughs or sneezes.
- Any person who is in close contact with someone who has respiratory symptoms (sneezing, coughing) is at risk of being exposed to potentially infective respiratory droplets

Contact

- Droplets may also land on surfaces where the virus could remain viable; thus, the immediate environment of an infected individual can serve as a source of transmission (contact transmission).

Airborne

- Through aerosol-generating procedures
 - tracheal intubation, non-invasive ventilation, tracheotomy, cardiopulmonary resuscitation, manual ventilation before intubation, and bronchoscopy

COVID-19: Effective preventive measures

- Physical distancing
- Frequent hand hygiene
- Respiratory etiquette
- If respiratory symptoms wear mask, self isolate and seek help if respiratory distress



Scenario-based response actions – IPC



No Cases	Sporadic Cases	Clusters of Cases	Community Transmission
Train staff in IPC and clinical management specifically for COVID-19	Train staff in IPC and clinical management specifically for COVID-19	Train staff in IPC and clinical management specifically for COVID-19	Retrain staff in IPC and clinical management specifically for COVID-19
Prepare for surge in health care facility needs, including respiratory support and PPE	Prepare for surge in health care facility needs, including respiratory support and PPE	Advocate for separate facility and/or home care for mild cases. If health care systems are overwhelmed, identify referral systems for high risk groups	Implement health facilities surge plans

Infection prevention and control during health care when COVID-19 is suspected

Interim guidance
19 March 2020



[https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-\(ncov\)-infection-is-suspected-20200125](https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-(ncov)-infection-is-suspected-20200125)

Rational use of personal protective equipment for coronavirus disease (COVID-19) and considerations during severe shortages

Interim guidance
6 April 2020



https://apps.who.int/iris/bitstream/handle/10665/331695/WHO-2019-nCov-IPC_PPE_use-2020.3-eng.pdf

Advice on the use of masks in the context of COVID-19

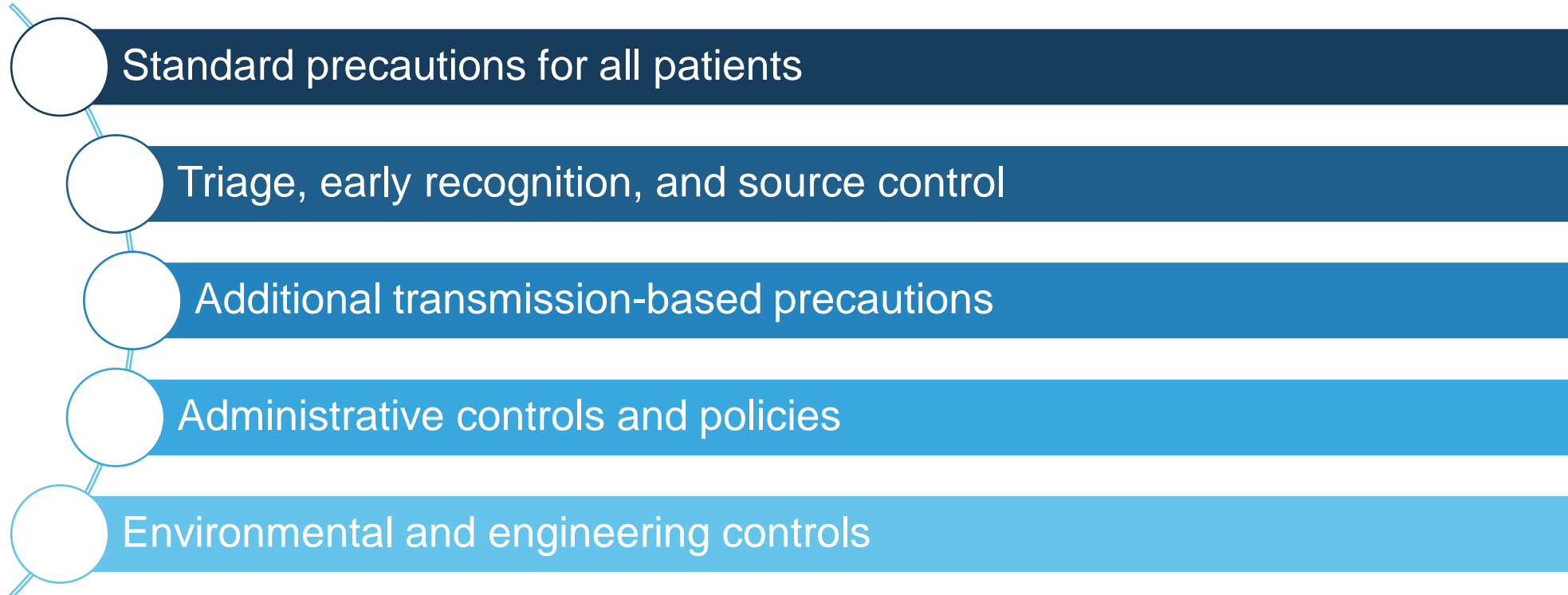
Interim guidance
6 April 2020



[https://www.who.int/publications-detail/advice-on-the-use-of-masks-the-community-during-home-care-and-in-health-care-settings-in-the-context-of-the-novel-coronavirus-\(COVID-19\)-outbreak](https://www.who.int/publications-detail/advice-on-the-use-of-masks-the-community-during-home-care-and-in-health-care-settings-in-the-context-of-the-novel-coronavirus-(COVID-19)-outbreak)

Infection prevention and control for health care facilities in the context of COVID-19

Principles of IPC strategies



- [Infection prevention and control during health care when COVID-19 infection is suspected - Interim Guidance](#)
- [Rational use of personal protective equipment for coronavirus disease 2019 \(COVID-19\) Interim guidance](#)
- [COVID-19 Disease commodity package](#)

IPC measures for patients with suspected or confirmed COVID-19: Droplet and Contact precautions

- Place patients in single rooms or cohort (group) patients
- Ensure adequate ventilation
- When providing care in close contact with a suspect/confirmed COVID-19 patient use risk appropriate PPE
- Team of HCWs should be designated to care exclusively for suspected
- Routinely clean and disinfect surfaces which the patient is in contact
- Equipment should be either single-use and disposable or dedicated equipment
- Limit patient movement within the institution and ensure that patients wear medical masks when outside their rooms

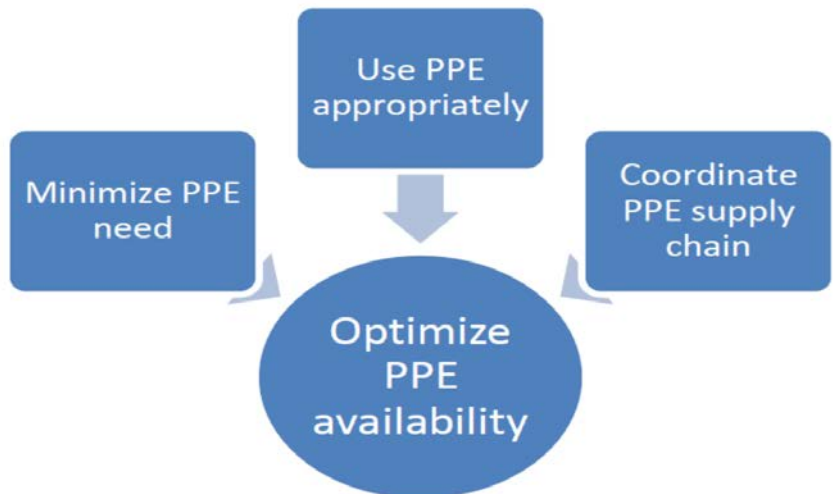
Technical Guidance: type of PPE use & critical shortages

Rational use of personal protective equipment for coronavirus disease (COVID-19) and considerations during severe shortages

Interim guidance
6 April 2020



Strategies to optimize the availability of PPE



[who.int/iris/bitstream/handle/10665/331695/W](https://www.who.int/iris/bitstream/handle/10665/331695/W)

<https://www.who.int/publications/iitem/9789241502033-eng.pdf>

Table 1. Recommended PPE during the outbreak of COVID-19 outbreak, according to the setting, personnel, and type of activity*

Setting	Target personnel or patients	Activity	Type of PPE or procedure
Health care facilities			
Inpatient facilities			
Screening ¹	Health care workers	Preliminary screening not involving direct contact ²	<ul style="list-style-type: none"> Maintain physical distance of at least 1 metre. Ideally, build glass/plastic screens to create a barrier between health care workers and patients No PPE required. When physical distance is not feasible and yet no patient contact, use mask and eye protection.
Clinical triage for prioritization of care according to severity (e.g. Manchester classification) should			

Rational use of personal protective equipment for coronavirus disease (COVID-19) and considerations during severe shortages: interim guidance

Table 2. Options for temporary measures due to the shortage of Personal Protective Equipment (PPE): extended use, reprocessing, or use of alternative PPE

Type of PPE	Measure	Description	Limitations/risks/removal criteria	Feasibility considerations
Medical mask use by health workers	1) Extended use	The use without removing for up to 6h, when caring for a cohort of COVID-19 patients	Risks: <ul style="list-style-type: none"> Extended use of medical mask may increase risk of contamination of the mask with COVID-19 virus and other pathogens Wearing the mask for a prolonged period may increase the chance of the health care worker touching the mask or having inadvertent under-mask touches; if the mask is touched/adjusted, hand hygiene must be performed immediately Damage to or reactions of face skin tissue may occur with prolonged use of medical masks Filtration media of the medical mask may become clogged, thereby increasing breathing resistance and the risk of breathing unfiltered ambient air from the sides of the medical mask Extended periods of time in active patient wards required for health care workers Removal criteria and precautions:	Feasible in all countries Minimum requirements include definition of standard procedure, training and follow up to ensure good practices

SARI Treatment Centre: type of PPE use

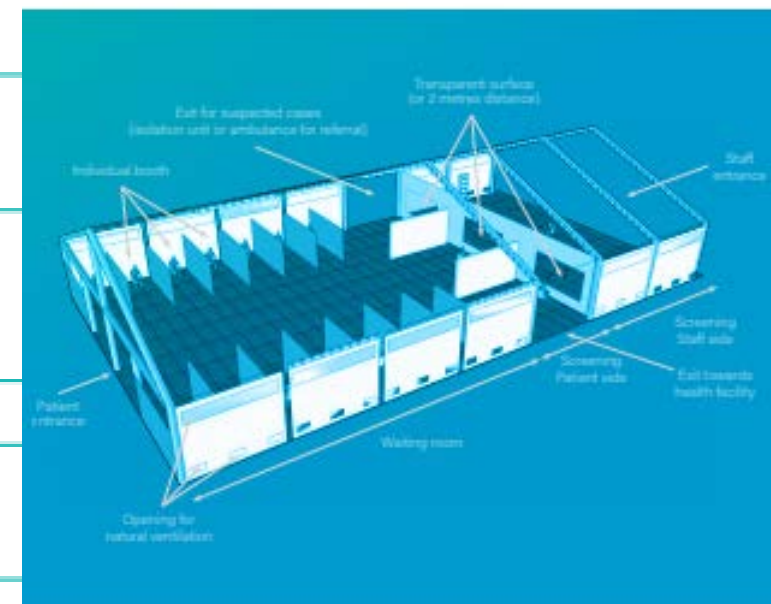
COVID-19, according to the setting, personnel and type of activity

March 2020

Severe Acute Respiratory Infections Treatment Centre

Practical manual to set up and manage a SARI treatment centre and a SARI screening facility in health care facilities

Setting	Target staff or patient	Activity	Type of PPE or procedure
Health-care facilities			
Inpatient facilities			
Patient's room	Health-care workers	Providing direct care to patients with SARI	Medical mask, gown, gloves, eye protection (goggles or face shield)
		Aerosol-generating procedures performed on patients with SARI	Respirator N95 or FFP2 standard or equivalent, gown, gloves, eye protection, apron
	Cleaners	Entering patient's room	Medical mask, gown, heavy-duty gloves, eye protection (if risk of splash from organic material or chemicals), boots or closed work shoes
	Visitors	Entering patient's room	Medical mask, gown, gloves
Other areas of patient transit (e.g. wards, corridors)	All staff, including health-care workers	Any activity that does not involve contact with patients	No PPE required
Triage	Health-care workers	Any	Maintain distance of at least 2 m
	Patients with respiratory symptoms	Any	Provide medical mask if tolerated by patient
Laboratory	Laboratory technicians	Manipulation of respiratory samples	Medical mask, gown, gloves, eye protection (if risk of splash)
Administrative areas	All staff, including health-care workers	Administrative tasks that do not involve contact with patients	No PPE required



https://apps.who.int/iris/bitstream/handle/10665/331603/WHO-2019-nCoV-SARI_treatment_center-2020.1-eng.pdf?sequence=1&isAllowed=y

Community use of PPE

Home visit (for example, for antenatal or postnatal care, or care for a person with tuberculosis, HIV or another chronic condition)	Outreach activities and campaigns	Community case management of acute illness in children	Any activity involving direct physical contact with a person with suspected or confirmed COVID-19	Any activity not involving physical contact (with suspected or confirmed COVID-19, but not providing direct care)
<p>• If feasible, conduct home visits outside in a well-ventilated space and keep a distance of at least 1m</p> <p>• Perform hand hygiene frequently and while providing care, according to WHO's recommendations on the 5 moments for hand hygiene.</p> <p>• Wear gloves only if exposure is expected to blood, body fluids, secretions, excretions, mucous membranes or broken skin.</p> <p>• Consider wearing a medical mask when in direct contact or when a distance of at least 1 m cannot be maintained.</p>	<p>When no direct contact is involved (for example, during the distribution of insecticide-treated nets)</p> <ul style="list-style-type: none"> • Maintain distance of at least 1 m. • No screening required. • No PPE required. • Perform hand hygiene frequently. <p>When direct contact is involved (for example, delivering vaccinations)</p> <ul style="list-style-type: none"> • Perform hand hygiene between each patient. • Consider wearing a medical mask during close contact 	<p>Perform hand hygiene according to WHO's recommendations on the 5 moments for hand hygiene.</p> <ul style="list-style-type: none"> • PPE needs depend on the outcome of screening. • If the patient is not suspected to have COVID-19: wear a medical mask and gloves for a malaria rapid diagnostic test, as per standard protocol. • If the patient is suspected to have COVID-19: wear full PPE (medical mask, eye protection, gloves, gown). 	<p>Perform hand hygiene according to WHO's recommendations on the 5 moments for hand hygiene.</p> <ul style="list-style-type: none"> • Wear a medical mask. • Wear a gown. • Wear gloves. • Wear eye protection. 	<ul style="list-style-type: none"> • Perform hand hygiene according to the WHO recommendations on the 5 moments for hand hygiene. • Wear a medical mask. • Maintain distance of at least 1m • When possible, conduct interviews outdoors, with the patient also wearing a medical mask, if tolerated.

[From: UNICEF – Community Based Care](#)

<https://apps.who.int/iris/bitstream/handle/10665/331106> Key points:

Use of masks by healthy people in the community setting in the context of COVID-19



WHO provides advice to decision makers to apply a **risk-based approach** and define:

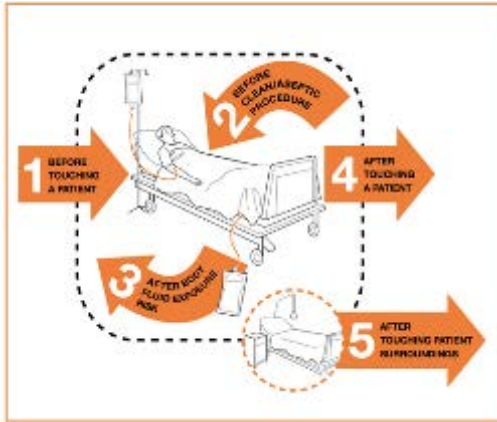
- 1. Purpose of mask use:** the rationale and reason for mask use should be clear— whether it is to be used for source control (used by infected persons) or prevention of COVID-19 (used by healthy persons)
- 2. Risk of exposure** to the COVID-19 virus in the local context
- 3. Vulnerability** of the person/population to develop severe disease or be at higher risk of death (e.g., people with comorbidities and older people)
- 4. Setting** in which the population lives in terms of population density (e.g. camps, closed settings) or ability to carry out physical distancing (e.g. on a crowded bus)
- 5. Feasibility:** availability and costs of the mask, and tolerability by individuals
- 6. Type of mask:** medical mask versus nonmedical mask



Transmission scenario	Who	Setting	Activity	What type of mask
High	Health worker	Health care facility (including LTCF)	In patient care area – irrespective if patients are COVID-19 suspect/confirmed	Medical mask
High	Non-frontline health workers (working in health care facilities but not with patients e.g administrative staff)	Health care facility	without contact with COVID-19 patients or patient areas	Medical mask not required. Only if contact with patients
Low	Health worker	Health care facility (including LTCF)	Providing patient care	Risk based PPE approach
High or low	Health worker	Health care facility	Performing an aerosol generating procedure on a suspected or confirmed COVID-19 patient	Respirator mask (N95 or FFP2 or FFP3)
High or low	Health worker or caregiver	Home care	when in contact with suspect or confirmed COVID-19 patient	Medical mask
High	Community Health worker	Community	Community outreach programs (ie. Immunization)	Consider using medical mask
Low	Community Health worker	Community	Community outreach programs (ie. Immunization) –	No mask required
High or low	Any person experiencing respiratory symptoms	HCF/community	when in the presence of others	Medical mask
High	Public	Vulnerable population	Aged over 60, comorbidities	Consider non-medical mask
High	Public (non health worker)	community	In crowded areas where physical distance can't be maintained - slums, buses, airplanes	Consider non-medical mask– if required by country regulations

Online training options

<https://openwho.org/channels/covid-19>



Standard precautions: Hand hygiene

Self-paced English

Most health care-associated infections are preventable through good hand hygiene – cleaning hands at the right times and in the right way. The WHO Guidelines on hand hygiene in health care support hand hygiene promotion and improvement in health care facilities worldwide and are complemented by the WHO multimodal hand hygiene improvement strategy, the guide to implementation, and implementation toolkit, which contain many ready-to-use practical tools. This module has been prepared to help summarize the WHO guidelines on hand hygiene, associated tools and ideas for effective implementation.

[Show course details](#) [Enroll me for this course](#)



How to put on and remove personal protective equipment (PPE)

Self-paced English

This is a guide for healthcare workers involved in patient care activities in a healthcare setting. It aims to show the type of personal protective equipment or PPE needed to correctly protect oneself. Based on the current available evidence, the WHO recommended PPE for the care of COVID patients are CONTACT and DROPLET precautions, with the exception of aerosol producing procedures, which require CONTACT and AIRBORNE (hence, a respirator mask such as N95, FFP2, FFP3). Keeping in mind, PPE is part of a larger infection prevention and control bundle of measures and should be implemented as part of a multimodal strategy of management of COVID-19 patients. Only clinical staff who are trained and competent in the use of PPE should be allowed to enter the patient's room.

[Show course details](#) [Enroll me for this course](#)



Infection Prevention and Control (IPC) for Novel Coronavirus (COVID-19)

Self-paced English

This course provides information on what facilities should be doing to be prepared to respond to a case of an emerging respiratory virus such as the novel coronavirus, how to identify a case once it occurs, and how to properly implement IPC measures to ensure there is no further transmission to HCW or to other patients and others in the healthcare facility.

This training is intended for healthcare workers and public health professionals, as it is focused on infection prevention and control.

[Show course details](#) [Enroll me for this course](#)

Donning and doffing PPE

1 Perform hand hygiene

Alcohol based handrub

Rub hands for 20–30 seconds.

or

Water and soap

Wash hands for 40–60 seconds.



2 Put on the gown



3 Put on the mask

Medical mask.



4 Put on eye protection

Put on goggles or face shield.



5 Put on gloves

Ensure glove is placed over the cuff of the gown.



Full PPE



1 Remove gloves



2 Remove the gown

Ensure gown is taken off in a manner in which it does not spread anything off of the gown



3 Perform hand hygiene

Alcohol based handrub

Rub hands for 20–30 seconds.

or

Water and soap

Wash hands for 40–60 seconds.



4 Remove eye protection

Remove goggles or face shield.



5 Remove the mask



6 Perform hand hygiene

Alcohol based handrub

Rub hands for 20–30 seconds.

or

Water and soap

Wash hands for 40–60 seconds.



Upcoming IPC mission

IPC INFORMATION FOR WHO MISSIONS

Guide for health care workers who are going on deployments which will have IPC components

XX May 2020



IPC mission package contents

- IPC introduction
- IPC overview of core documents available
- IPC overview of guidance documents – for COVID
- IPC training – both general and COVID-19 specific
- IPC workshops available
- List of resources available
- Option to go over briefing package with IPC team member to be briefed before the mission

COVID-19 Outbreak Readiness and Response Operations in Humanitarian Settings – IPC



- IPC measures need to be developed for households, as well as common spaces tailored to the characteristics of each collective site. Residents need to be engaged to ensure adherence to these measures.
- Isolate and treat all mild and moderate cases with no risk factors in designated facilities. If a health facility is present on-site, IPC measures for health facilities need to be followed - This needs to ensure a functional triage system, training of staff, materials and supplies, including PPE.
- WASH services in health facilities are critical and require enhanced minimum standards in handwashing, enhanced water supply, sanitation as well as adapted management of medical waste.
- The implementation of all IPC measures will require optimal coordination, planning and supervision with the Health, WASH Shelter and CCCM Clusters and their partners.

<https://interagencystandingcommittee.org/system/files/2020-05/IASC%20Interim%20Guidance%20on%20Public%20Health%20and%20Social%20Measures%20for%20COVID-19%20Preparedness%20and%20Response%20Operations%20in%20Low%20Capacity%20and%20Humanitarian%20Settings.pdf>
<https://interagencystandingcommittee.org/system/files/2020-04/IASC%20Interim%20Guidance%20on%20COVID-19%20for%20Outbreak%20Readiness%20and%20Response%20Operations%20-%20Camps%20and%20Camp-like%20Settings.pdf>

IASC Inter-Agency
Standing Committee

Interim Guidance

**SCALING-UP COVID-19
OUTBREAK
READINESS AND
RESPONSE
OPERATIONS IN
HUMANITARIAN
SITUATIONS**

IASC Inter-Agency
Standing Committee

Interim Guidance

**PUBLIC HEALTH AND
SOCIAL MEASURES
FOR COVID-19
PREPAREDNESS AND
RESPONSE IN LOW
CAPACITY AND
HUMANITARIAN
SETTINGS**

Version 1

Screening and Triage

Novel Coronavirus COVID-19

FOR: HEALTHCARE FACILITY MANAGEMENT

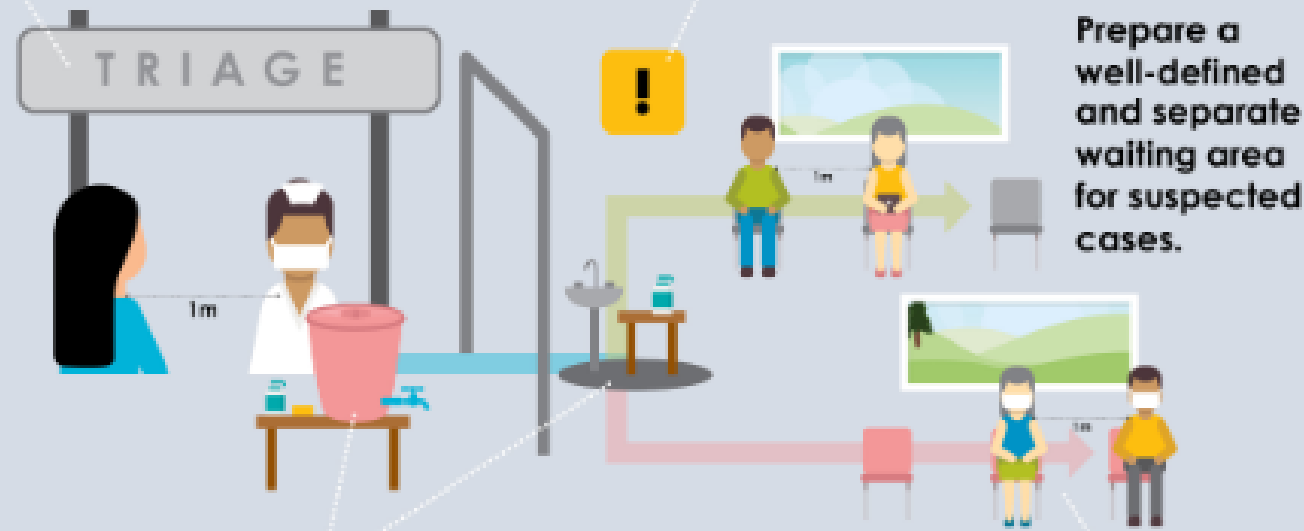
*Preparing for COVID-19 at your
healthcare facility*

When suspected cases of COVID-19 enter healthcare settings, decisions regarding case definition (screening) and acuity (triage) need to be considered:

- Recognition of possible COVID-19 and immediate isolation of patients with suspected disease
- Post signs to remind symptomatic patients to inform HCWs if they meet case definition
- Separation of at least 1 meter maintained between all patients – physical barriers between patients with suspected disease (including use of masks) from other patients is recommended
- High touch surfaces in screening areas frequently cleaned with water and detergent followed by a disinfectant (recommended 3x+ daily)

Have a triage station at the healthcare facility entrance, prior to any waiting area, to screen patients for COVID-19. This limits potential infection throughout the health care center.

Post information, like posters and flyers, that remind patients and visitors to practice good respiratory and hand hygiene.



Prepare a well-defined and separate waiting area for suspected cases.

Have alcohol-based hand rub or soap and water handwashing stations readily available for the use of healthcare workers, patients and visitors.

Be alert for anyone that may have symptoms such as cough, fever, shortness of breath, and difficulty breathing.

COVID-19 Outbreak Readiness and Response Operations in Humanitarian Settings – IPC in Treatment Centres – Engineering Controls



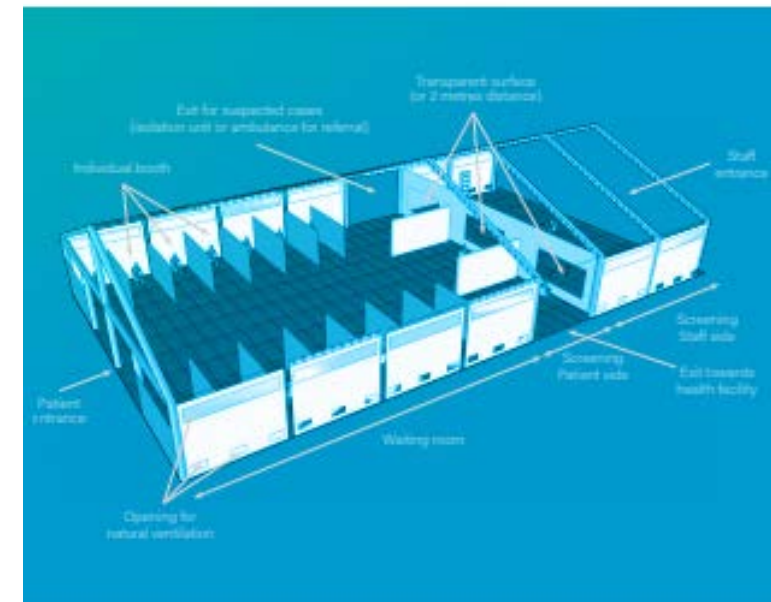
- Use physical barriers to reduce exposure, such as glass or plastic windows.
- Restrict health-care workers from entering the rooms of patients with SARI if they are not involved in direct care.
- Patients should be placed in adequately ventilated single rooms if possible.



March 2020

Severe Acute Respiratory Infections Treatment Centre

Practical manual to set up and manage a SARI treatment centre and a SARI screening facility in health care facilities



COVID-19 Outbreak Readiness and Response Operations in Humanitarian Settings – IPC in home and Designated Facilities



Home and community settings require increased attention to IPC standards in the context of COVID-19

Persons diagnosed with COVID-19 are encouraged to isolate in designated facilities if available, or at home if this is not feasible

Community outreach campaigns and home based activities may carry increased risks for infection transmission



Community-based health care, including outreach and campaigns, in the context of the COVID-19 pandemic

Interim guidance
May 2020



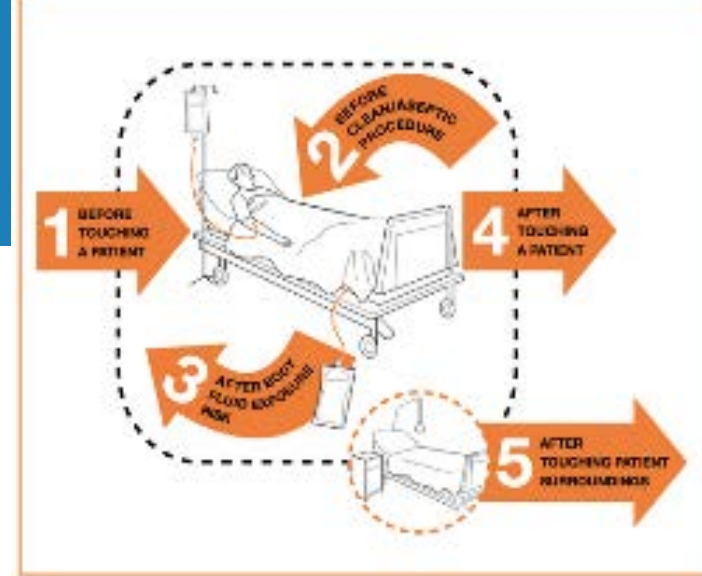
CORE WASH AND IPC: COVID-19

1. Hand Hygiene and respiratory etiquette in all settings
2. Safe Water
3. Environmental cleanliness
4. PPE and WASH equipment availability
5. Infectious and hazardous waste management



Handwashing

When WASH service is limited it is vital to prioritize the key times for hand hygiene



Community		Health Facility	
WHERE	WHEN	WHERE	WHEN
In front of all public buildings and transport hubs – such as markets, shops, places of worship, schools and train or bus stations. In addition, functioning handwashing facilities with water and soap should be available within 5m of all toilets, both public and private	After coughing and sneezing and/or disposing of a tissue, on entering the home having come from public places, before preparing food, before and after eating and feeding/breastfeeding, after using the toilet or changing a child’s diaper and after touching animals.	Hand sanitizers or handwashing facilities positioned in every critical HCF room (entrance, screening and observation, care, near toilets, exit).	WHO 5 moments for hand hygiene, bathroom use

Handwashing Additional Considerations

- Supply and procurement of handwashing essentials
 - Water quality and quantity requirements for handwashing
- Handwashing infrastructure and design options
 - Wastewater management

23 March 2020

unicef 
for every child

COVID-19 Emergency Preparedness and Response

WASH and Infection Prevention and Control in Health Care Facilities

Guidance Note



Water, sanitation, hygiene, and waste management for the
COVID-19 virus

Interim guidance

23 April 2020

Water requirements for COVID-19

- **Water access:** It is critical that health care facilities treating or who may treat COVID-19 patients have water.
- **Water quantity:** Water, at a minimum for hand hygiene, cleaning and drinking.
- **Water quality:** Drinking water should be from an improved source; ideally water should be treated and have chlorine residual.
- **Prepare:** Contingency plans for limited water services and supplies.



Minimum water quantities in health care facilities (WHO Standards)



Source: WHO (2008). Essential environmental health standards in healthcare

https://www.who.int/water_sanitation_health/publications/ehs_hc/en/

Out patients	5 litres/consultation
In patients	40–60 litres/patient/day
Operating theatre / maternity	100 litres/ intervention
Dry or supplementary feeding centre	0.5–5 litres/ consultation
Wet supplementary feeding centre	15 litres/ consultation
Inpatient therapeutic feeding centre	30 litres/ patient/day
Cholera treatment centre	60 litres/ patient/ day
Severe acute respiratory diseases isolation centre	100 litres/ patient/ day
Viral haemorrhagic fever isolation centre	300–400 litres/ patient/ day

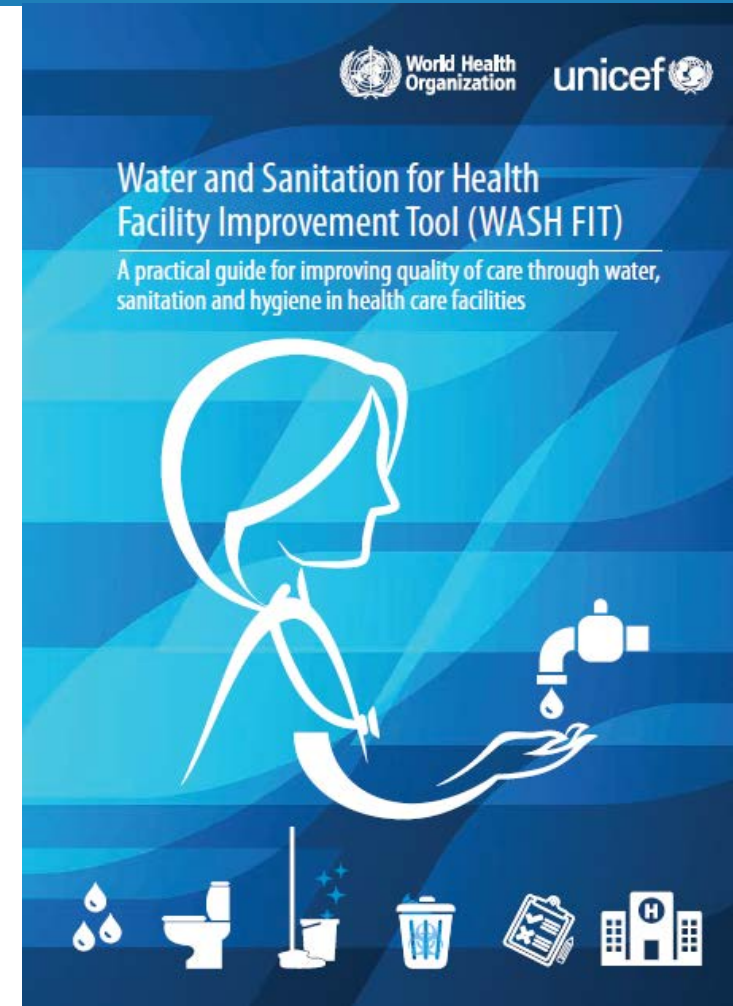
COVID-19 FAQ: How much water is needed for handwashing in resource-limited settings?

The amount of water needed for handwashing is not well studied. If a tap was kept open for 20-40 seconds, about 2.5-5 litres per handwashing event would be needed (assuming a flow of 7.5 litres per minute). In resource-limited settings use of 0.5-2 litres per wash has been shown to reduce faecal contamination of hands.

Best Practices for Environmental Cleaning Programs

Support infrastructure and supplies

- Designated spaces
 - Environmental cleaning services, Decontamination, Waste management
- Water and wastewater services
 - Adequate water supply and wastewater management
- Approved cleaning products, supplies and equipment
- Procurement and supply management systems
 - Avoid stock-out of cleaning supplies and equipment
 - Procure furniture and equipment that is non-porous and can be easily cleaned when possible



What are the recommended cleaning schedules in the context of COVID-19?

Patient area	Frequency	Person / staff responsible	Products/Supplies	Additional guidance
Triage area	At least daily, twice daily preferable	Environmental cleaning (EC) staff	Cleaning solution (neutral detergent and water); Disinfectant (alcohol, chlorine-based, other as approved*) Freshly made solutions, cloths, and mops for each cleaning session PPE: gowns and/or impermeable aprons, rubber gloves, medical mask, and eye protection (preferably face shield) DISINFECTANTS EFFECTIVE AGAINST COVID-19 (contact time 1 minute): Ethanol ≥70% Hydrogen peroxide 0.5% Hypochlorite from 0.1% (1,000 ppm) or 0.5% (5,000 ppm)	Focus on high-touch surfaces, then floors (last)
Inpatient rooms / cohort – occupied	At least daily, twice daily preferable	EC staff OR clinical staff if possible		Focuses on high-touch surfaces, starting with shared/common surfaces, then move to each patient bed; use new cloth for each bed if possible
Inpatient rooms – unoccupied (terminal clean)	Upon discharge/transfer	EC staff		Low-touch surfaces, high-touch surfaces, floors (in that order); waste and linens removed, bed thoroughly cleaned and disinfected
Outpatient / Ambulatory Care rooms	After each patient visit and at least once daily terminal clean	Clinical staff (after each patient); Terminal clean (EC staff)		High touch surfaces to be disinfected after each patient visit; terminal clean as above (end of day)
Hallways / Corridors	At least daily, twice daily preferable	EC staff		High-touch surfaces (e.g., railings)
Patient toilets	Private (at least daily); Shared (at least three times daily)	EC staff		High-touch surfaces, including door handles, light switches, counters, faucets, then sink bowls, then toilets and finally floor (in that order)

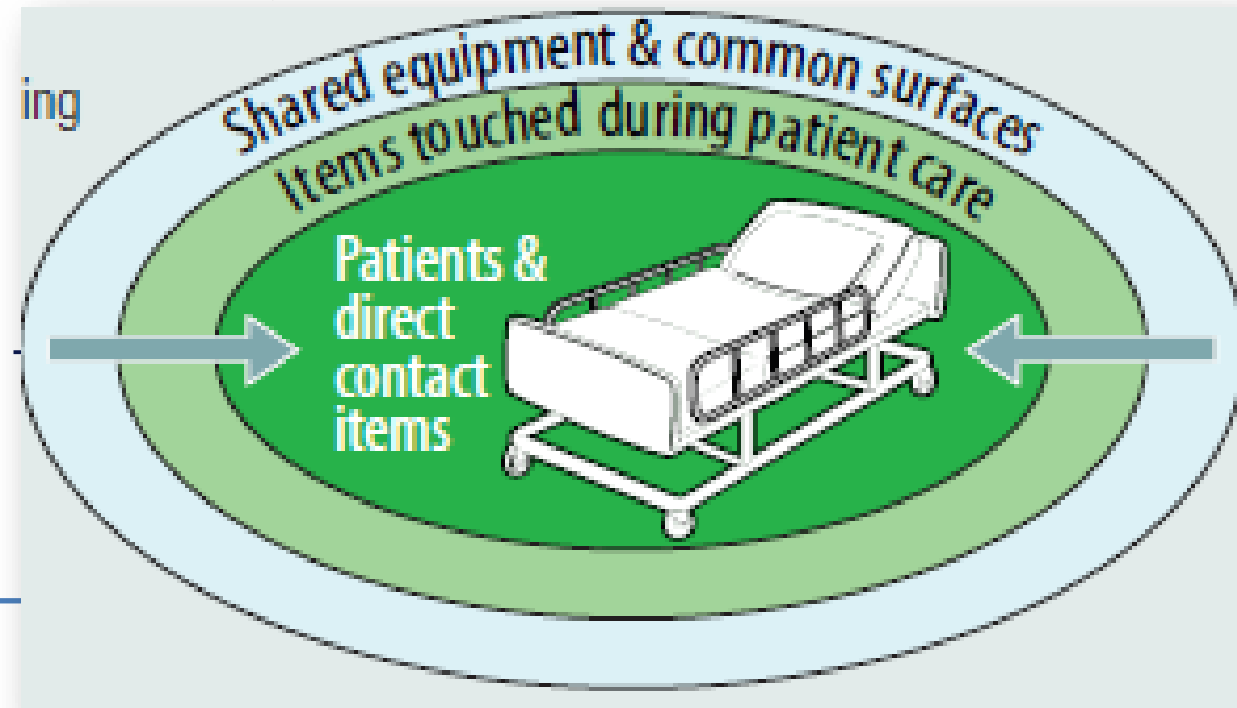
Best Practices for Environmental Cleaning Programs

All Cleaning Procedures Should Use Scheduled and Systematic Approaches:

- Proceed **from cleaner to dirtier**:
- Proceed **from high to low** (top to bottom):
- Proceed in a **methodical, systematic manner**:
- **COVID-19 Surface Survival** (laboratory studies):
 - 2-7 days (wood 2 days; plastic and stainless steel 7 days)
 - ~ 4 days (plastic and stainless steel)

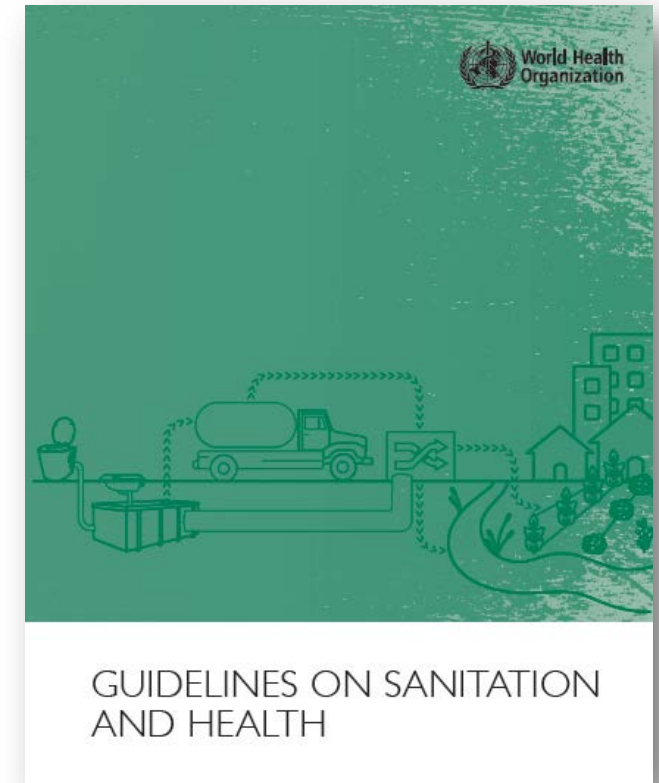
Priority!

Immediately attend to any **body fluid spills** prior to starting routine cleaning



Safely managed sanitation in the context of COVID-19

- Safe management at every point of the sanitation chain; system should be able to meet an **increase in demand**
- Important to check **safety plumbing** (e.g. sealed bathroom drains, backflow valves on bathroom sprayers and faucets)
- Staff and patients should have **separate toilets**; where possible COVID-19 patients should have their own toilets
- **Regular cleaning** and **disinfection** of bathrooms and anyone with risk of exposure to excreta should wear PPE
- Practical, simple wastewater treatment technology implementation (e.g. septic tank + leach field; waste stabilization pond, burying and covering sludge)



SPHERE: Sanitation Monitoring Indicators

- Toilets/latrines should be **onsite**, **usable** (offers privacy, clean) and **accessible**.
- At least one toilet should meet the needs of people with limited mobility and **menstrual hygiene management needs**.
- Toilets should have a functioning **hand hygiene** station within 5m.
- Toilets should be **cleaned every day** and have a **signed record** of cleaning clearly visible.
- Ensure a process is in place for **rapidly addressing** dirty or broken toilets, including through **user feedback**
- Technical staff trained, and able to conduct **regular operation and maintenance** of plumbing, toilet and storage/treatment facilities.



Supply Management and WHO ESFT

- The WHO COVID-19 Essential Supplies Forecasting Tool (COVID-19-ESFT) is meant to help countries forecast essential supplies for their COVID-19 response including personal protective equipment (e.g., masks and gloves), and consumable medical supplies.

IASC Inter-Agency
Standing Committee

Key Messages

**FAST-TRACK HEALTH
AND AID WORKERS
AND SUPPLIES AT
BORDERS AND IN
COUNTRIES**

UNICEF and OCHA
in consultation with the IASC members

May 2020



WHO COVID-19 Essential Supplies Forecasting Tool (COVID-ESFT) v2.0

Equipment List & Usage

[Back to Inputs](#)

This tab contains the master list of commodities that the tool forecasts for. In cases where the commodity comes with or should include other equipment, those items are listed as well. The list also includes packages of drugs and consumables used to treat 40 severe/critical patients. Use the provided links to see what items are included in both of those packages. **Items are listed vertically; and settings of care are listed horizontally. All cells in blue are editable.**

Links to equipment sections

[Hygiene](#)
[PPE](#)
[Diagnostics](#)
[Biomedical Equipment](#)

Commodities and Equipment

These prices are estimates only. Prices are rapidly evolving based on market fluctuations. Users can change the price/unit in blue cells ↓

Category	Grouping	Item	Unit	Reusable	Supplied With?	Price
IPC	Hygiene	Chlorine, HTH 70%	Kg	No	N/A	\$ 3.50
IPC	Hygiene	Alcohol-based hand rub	Lt	No	N/A	\$ 8.30
IPC	Hygiene	Liquid soap	Lt	No	N/A	\$ 0.90
IPC	Hygiene	Bio-hazardous bag	Each	No	N/A	\$ 0.15



<https://interagencystandingcommittee.org/system/files/2020-05/IASC%20Key%20Messages%20to%20Fast-track%20health%20and%20aid%20workers%20and%20supplies%20at%20borders%20and%20in%20countries.pdf>

HEALTH
EMERGENCIES
programme

Resources for COVID-19



WHO Coronavirus Homepage

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019>

All coronavirus (COVID-19) technical guidance documents

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance>

IPC documents

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/infection-prevention-and-control>

<https://www.who.int/infection-prevention/publications/en/>

Questions and Answers

<https://www.who.int/news-room/q-a-detail/q-a-coronaviruses>

If you cannot find an answer you can email our general IPC email with your question: **WHEIPC@who.int**

Thank you !



Thank you!

APPENDICIES

WASH WEBINAR 1 – WATER

WASH WEBINAR 2 – WASTE MANAGEMENT

WASH WEBINAR 3 – HAND HYGIENE

WASH WEBINAR 4 – ENVIRONMENTAL CLEANING

WASH WEBINAR 5 – SANITATION

SARI TREATMENT CENTRE – OPENWHO

WASH in health care facilities for preventing COVID-19



Technical guidance and adaptation of the water, sanitation and hygiene for health facility improvement (WASH FIT) process



@WASH_for_health

Hand hygiene, WASH & COVID-19. The foundations of clean, safe care



Claire Kilpatrick & Julie Storr
WHO WASH in health care facilities team

Part of the 2020 WASH in health care facilities webinar training series
First broadcast April 16 2020
The webinar slides will be available on www.washinhcf.org

Today's session – informed by...

SAVE LIVES
Clean Your Hands

World Health Organization | Patient Safety
A Global Alliance for Safer Health Care

Hand Hygiene Technical Reference Manual

To be used by health-care workers, trainers and observers of hand hygiene practices

WHO Guidelines on Hand Hygiene in Health Care

First Global Patient Safety Challenge
Clean Care is Safer Care

World Health Organization | Patient Safety
A Global Alliance for Safer Health Care



World Health Organization

Infection prevention and control during health care when COVID-19 is suspected

Interim guidance
19 March 2020

World Health Organization

Background

This is the first edition of guidance on infection prevention and control (IPC) strategies for use when COVID-19 is suspected. It has been adapted from WHO's infection prevention and control during health care for probable or confirmed cases of Middle East respiratory syndrome coronavirus (MERS-CoV) infection, based on current knowledge of the disease and experience with severe acute respiratory syndrome (SARS) and MERS.

WHO will update these recommendations as new information becomes available.

This guidance is intended for health care workers (HCWs), health care managers, and IPC teams at the facility level but it is also relevant for national and international levels. Full guidelines are available from WHO.

WHO will update these recommendations as new information becomes available.

Principles of IPC strategies associated with health care for suspected COVID-19

To achieve the highest level of effectiveness in the response to the COVID-19 outbreak using the strategies and practices recommended in this document, an IPC programme with a dedicated and trained team at least an IPC team must be in place and supported by the national and facility level management. In countries where IPC is limited or non-existent, it is critical to start by ensuring that at least minimum requirements for IPC are in place as well as possible, both at the national and facility level, and to gradually progress to the full achievement of all requirements of the IPC core components according to local priorities.

IPC strategies to prevent or limit transmission in health care settings include the following:

1. **Ensuring triage, early recognition, and source control** (including patients with suspected COVID-19).
2. **Applying standard precautions** for all patients, implementing respiratory additional precautions (droplet and contact and, whenever applicable, airborne precautions) for suspected cases of COVID-19.
3. **Implementing administrative controls**.
4. **Using environmental and engineering controls**.

1. Ensuring triage, early recognition, and source control.

Clinical triage includes a system for assessing all patients at admission, allowing for early recognition of possible COVID-19 and immediate isolation of patients with suspected disease in an area separate from other patients (source control). To facilitate the early identification of cases of suspected COVID-19, health care facilities should:

- encourage HCWs to have a high level of clinical suspicion;
- establish a well-equipped triage station at the entrance to the facility, supported by trained staff;
- limit the use of screening questionnaires according to the updated case definitions. Please refer to the [Clinical Surveillance for Acute Infectious Illnesses](#) (WHO/CDC/JC/2019.02) for case definitions, and
- post signs in public areas reminding symptomatic patients to alert HCWs.

Hand hygiene and respiratory hygiene are essential preventive measures.

2. Applying standard precautions for all patients

Standard precautions include hand and respiratory hygiene, the use of appropriate personal protective equipment (PPE) according to risk assessment, infection safety practices, safe waste management, proper linen, environmental cleaning, and disinfection of health-care equipment.

Facilities that the following respiratory hygiene measures are used:

- ensure that all patients cover their nose and mouth with a tissue or elbow when coughing or sneezing;
- offer a medical mask to patients with suspected COVID-19 when they are in waiting public areas or in cohorting rooms;
- perform hand hygiene after contact with respiratory secretions.

HCWs should apply WHO's [Six 5 Moments for Hand Hygiene](#) approach before touching a patient, before any care or activity performed in patient care, after exposure to body fluid, after touching a patient, and after touching a patient's surroundings.

- hand hygiene includes either cleaning hands with an alcohol-based hand rub or with soap and water;
- alcohol-based hand rubs are preferred if hands are not visibly soiled.

World Health Organization | **unicef**

Water, sanitation, hygiene (WASH) and waste management for the prevention of COVID-19

Updated Technical Note-2nd edition
9 April 2020

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All of the normative guidance and resources that are available on WASH in HCFs and IPC to support safe practice always (what we will refer to as “peacetime”)

COVID-19 specific guidance that has & continues to be issued & updated.



What the WASH technical note tells us about safe care: Overview

1.

Hand hygiene: Frequent and effective hand hygiene - one of the most important prevention measures. Right time & right technique.

2.

Environmental hygiene: Effective inactivation on surfaces can be achieved within 1 minute using common disinfectants

3.

Water and sanitation: Existing WHO guidance on the safe management of drinking-water and sanitation services applies to the COVID-19 outbreak.

4.

WASH investments: Should be fundamental to all country preparedness and response plans.

5.

Co-benefits: Many will be realized through good WASH, including preventing millions of deaths each year caused by other infectious diseases.



Water, sanitation, hygiene (WASH) and waste management for the prevention of COVID-19

Updated Technical Note-2nd edition
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What the IPC guidance tells us about safe care!

Overview

Infection prevention and control during health care when COVID-19 is suspected

Interim guidance
19 March 2020



Background

This is the first edition of guidance on infection prevention and control (IPC) strategies for use when COVID-19 is suspected. It has been adapted from WHO's *Infection prevention and control during health care for probable or confirmed cases of Middle East respiratory syndrome coronavirus (MERS-CoV) infection*,¹ based on current knowledge of the situation and experience with severe acute respiratory syndrome (SARS) and MERS.²

WHO will update these recommendations as new information becomes available.

This guidance is intended for health care workers (HCWs), health care managers, and IPC teams at the facility level but it is also relevant for national and district/provincial levels. Full guidelines are available from WHO.³

Principles of IPC strategies associated with health care for suspected COVID-19.

To achieve the highest level of effectiveness in the response to the COVID-19 outbreak using the strategies and practices recommended in this document, an IPC programme with a dedicated and trained team or at least an IPC focal point should be in place and supported by the national and facility senior management.⁴ In countries where IPC is limited or nonexistent, it is critical to start by ensuring that at least minimum requirements for IPC are in place as soon as possible, both at the national and facility level, and to gradually progress to the full achievement of all requirements of the IPC core components according to local priorities.⁴

IPC strategies to prevent or limit transmission in health care settings include the following:

1. ensuring triage, early recognition, and source control (isolating patients with suspected COVID-19);
2. applying standard precautions for all patients;
3. implementing empiric additional precautions (droplet and contact and, whenever applicable, airborne precautions) for suspected cases of COVID-19;
4. implementing administrative controls;
5. using environmental and engineering controls.

1. Ensuring triage, early recognition, and source control.

Clinical triage includes a system for assessing all patients at admission, allowing for early recognition of possible COVID-19 and immediate isolation of patients with suspected disease in an area separate from other patients (source control). To facilitate the early identification of cases of suspected COVID-19, health care facilities should:

- encourage HCWs to have a high level of clinical suspicion;
- establish a well-equipped triage station at the entrance to the facility, supported by trained staff;
- institute the use of screening questionnaires according to the updated case definition. Please refer to the [Global Surveillance for human infection with coronavirus \(COVID-19\)](#) for case definitions, and
- post signs in public areas reminding symptomatic patients to alert HCWs.

Hand hygiene and respiratory hygiene are essential preventive measures.

2. Applying standard precautions for all patients

Standard precautions include hand and respiratory hygiene, the use of appropriate personal protective equipment (PPE) according to a risk assessment, injection safety practices, safe waste management, proper linens, environmental cleaning, and sterilization of patient-care equipment.

Ensure that the following respiratory hygiene measures are used:

- ensure that all patients cover their nose and mouth with a tissue or elbow when coughing or sneezing;
- offer a medical mask to patients with suspected COVID-19 while they are in waiting/public areas or in cohorting rooms;
- perform hand hygiene after contact with respiratory secretions.

HCWs should apply WHO's *My 5 Moments for Hand Hygiene* approach before touching a patient, before any clean or aseptic procedure is performed, after exposure to body fluid, after touching a patient, and after touching a patient's surroundings.⁵

- hand hygiene includes either cleansing hands with an alcohol-based hand rub or with soap and water;
- alcohol-based hand rubs are preferred if hands are not visibly soiled;

“ Apply standard precautions for all patients”. Standard precautions include:

- hand hygiene
- respiratory hygiene
- the use of appropriate personal protective equipment (PPE) according to a risk assessment
- injection safety practices
- safe waste management
- proper linens
- environmental cleaning
- sterilization of patient-care equipment

Hand hygiene in the COVID-19 pandemic versus “peacetime”



During “peacetime”

HCWs should apply **WHO’s My 5 Moments for Hand Hygiene** approach: before touching a patient, before any clean or aseptic procedure is performed, after exposure to body fluid, after touching a patient, and after touching a patient’s surroundings.

- hand hygiene includes either cleansing hands with an alcohol-based hand rub or with soap and water;
- alcohol-based hand rubs are preferred if hands are not visibly soiled;
- wash hands with soap and water when they are visibly soiled.

In the context of COVID-19

HCWs should apply **WHO’s My 5 Moments for Hand Hygiene** approach: before touching a patient, before any clean or aseptic procedure is performed, after exposure to body fluid, after touching a patient, and after touching a patient’s surroundings.

- hand hygiene includes either cleansing hands with an alcohol-based hand rub or with soap and water;
- alcohol-based hand rubs are preferred if hands are not visibly soiled;
- wash hands with soap and water when they are visibly soiled.

Building a strong hand hygiene narrative

- During care delivery, the hands of health workers are contaminated by **potentially harmful microbes** (also referred to as germs) from different sources
- Some of these may be capable of causing **outbreaks** & some may be **resistant to antibiotics**
- Hand hygiene stops the spread of these microbes – it protects patients and staff
- Achieving hand hygiene at the right times is still a challenge **everywhere**



WASH improvements are critical for hand hygiene

What do we know about the problem? Data to drive improvement



Health care-associated infections	Surgical site infections	Impact of infection prevention and control
10% 1 in 10 patients get an infection while receiving care.	50% More than 50% of surgical site infections can be antibiotic-resistant.	30% Effective infection prevention and control reduces health care-associated infections by at least 30%.

‘Whatever the reasons, even in resource-rich settings, hand hygiene compliance can be as low as 0%, with levels most frequently below 40%’ (WHO)

Two global surveys using the WHO Hand Hygiene Self-Assessment Framework (in 2011 and 2015):

“system change” did not improve significantly

“institutional safety climate (a safe culture)” was the element of the improvement strategy that scored the lowest



Do you have data on your hand hygiene situation?

WHO's five golden rules for hand hygiene

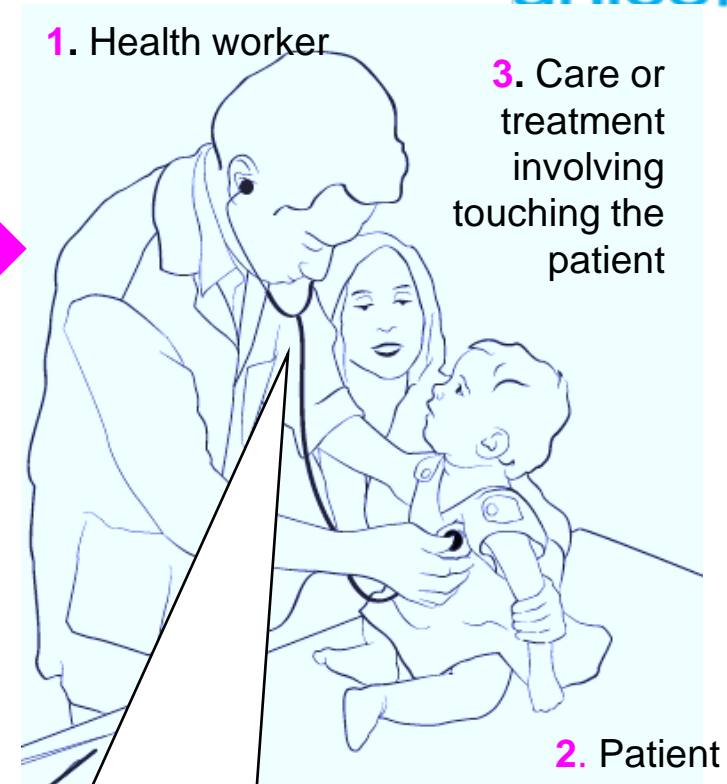
- 1 Hand hygiene must be performed at the **point-of-care***
- 2 During care delivery, there are **five moments** when it is essential to perform hand hygiene
- 3 **Hand rubbing** with an alcohol-based formulation, if available, makes hand hygiene possible at the point of care, is faster, more effective and better tolerated
- 4 **Hand washing** with soap and water is necessary when hands are visibly soiled
- 5 The appropriate **technique** and time taken to clean hands is also important

(right time)

(right technique)

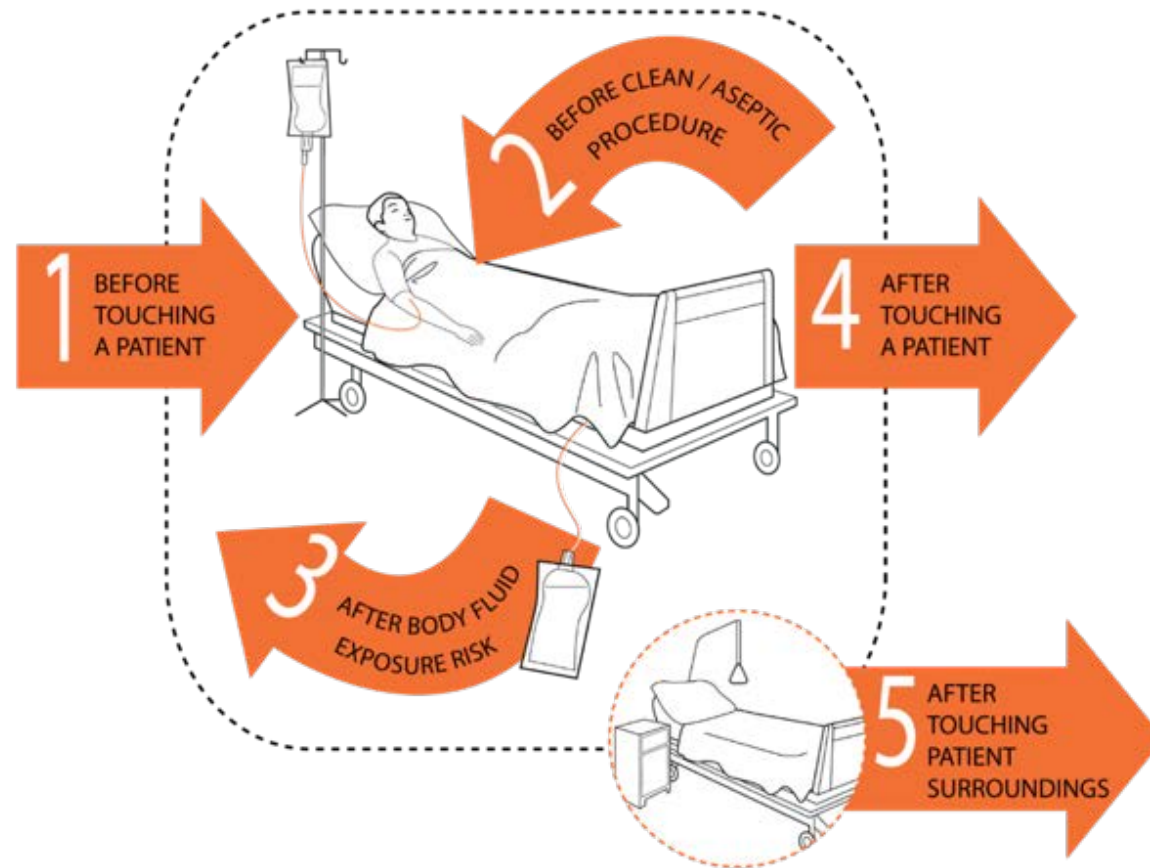
* “Point of care” – a definition

- The place where **three** elements occur together and facilitates the “**when**” for hand hygiene
- Hand hygiene infrastructures including products (e.g. alcohol-based handrub if available, water, soap, sinks) should be **in place & easily accessible** at the point of care



“Can I clean my hands easily to keep this child safe?”

When to clean your hands? The WHO Five Moments for hand hygiene



Benefits

- Simplifies **when** to do hand hygiene
- Applicable in any care setting
- Logical - it integrates hand hygiene action into the workflow
- Easy to remember
- Encourages a consistent approach across training and observations of health workers
- Consistent with evidenced-based risk assessment of health care associated infection and spread of drug resistant organisms

The Five Moments is about hand hygiene at the right time to stop germ transmission

WHO SAVE LIVES: CLEAN YOUR HANDS IN THE CONTEXT OF COVID-19

Hand Hygiene in the Community
 You can play a critical part in fighting COVID-19.

- Hands have a crucial role in the transmission of COVID-19.
- COVID-19 virus primarily spreads through droplet and contact transmission. Contact transmission means by touching infected people and/or contaminated objects or surfaces. Thus, your hands can spread virus to other surfaces and/or to your mouth, nose or eyes if you touch them.

Why is Hand Hygiene so important in preventing infections, including COVID-19?

- Hand hygiene is one of the most effective actions you can take to reduce the spread of pathogens and prevent infections, including the COVID-19 virus.
- Community members can play a critical role in fighting COVID-19 by adopting frequent hand hygiene as part of their day-to-day practices.

Wash your hands

Wash your hands with soap and running water when hands are visibly dirty.

If your hands are not visibly dirty, frequently clean them by using alcohol-based hand rub or soap and water.

Join the #SAFEHANDS challenge now and save lives! Post a video or picture of yourself washing your hands and tag #SAFEHANDS

WHO calls upon policy makers to provide:

- the necessary infrastructure to allow people to effectively perform hand hygiene in public places;
- to support hand hygiene supplies and best practices in health care facilities.

Protect yourself and others from getting sick

Wash your hands

- after coughing or sneezing
- when caring for the sick
- before, during and after you prepare food
- before eating
- after toilet use
- when hands are visibly dirty
- after handling animals or animal waste

Hand Hygiene in Health Care

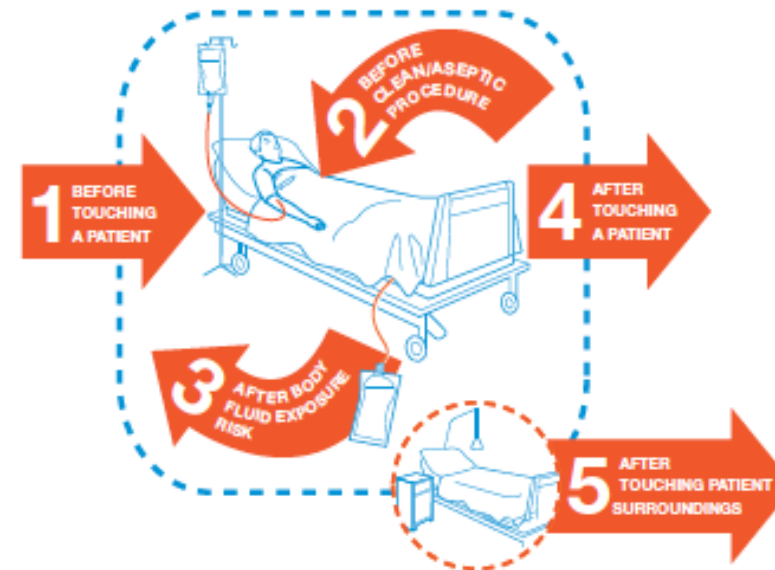
Why is it important to participate in the WHO global hand hygiene campaign for the fight against COVID-19?

- The WHO global hand hygiene campaign **SAVE LIVES: Clean Your Hands** mobilizes people around the world to increase adherence to hand hygiene in health care facilities, thus protecting health care workers and patient from COVID-19 and other pathogens.
- Nurses and other health care workers are the front-line heroes saving lives from COVID-19. In alignment with the **Year of the Nurse and the Midwife**, the global hand hygiene campaign 2020 recognizes their critical role in the prevention of infections.
- The campaign also contributes to the **United Nations Secretary-General's Global Call to Action on WASH** in health care facilities.

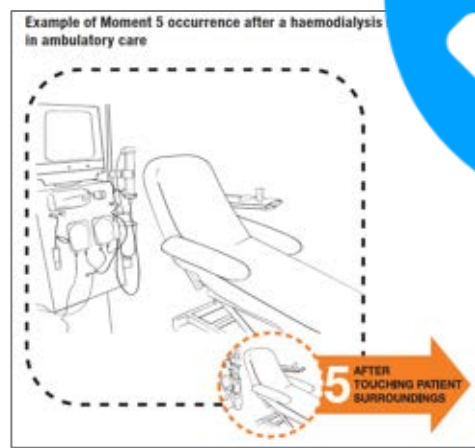
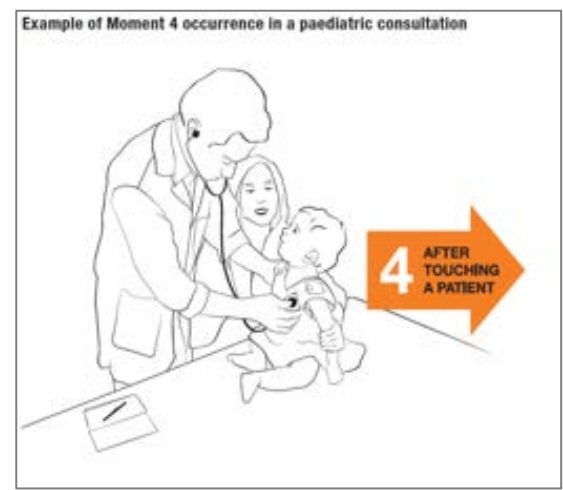
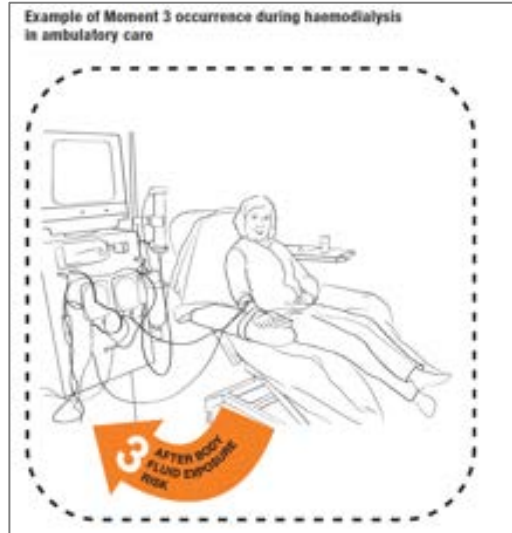
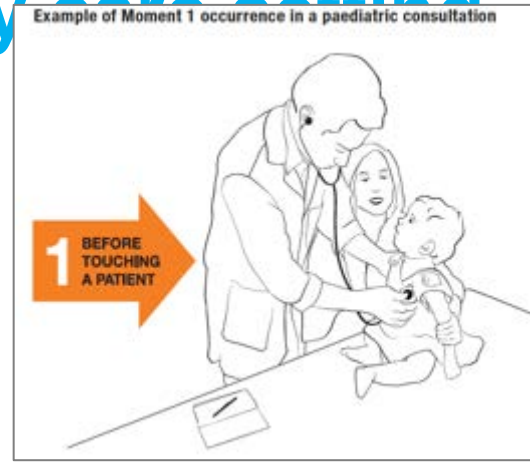
Follow the 5 May 2020 **SAVE LIVES: Clean Your Hands** here: <https://www.who.int/infection-prevention/campaign/clean-hands/en/>

SAVE LIVES CLEAN YOUR HANDS #safehands #handhygiene #infectionprevention

RIGHT TIME

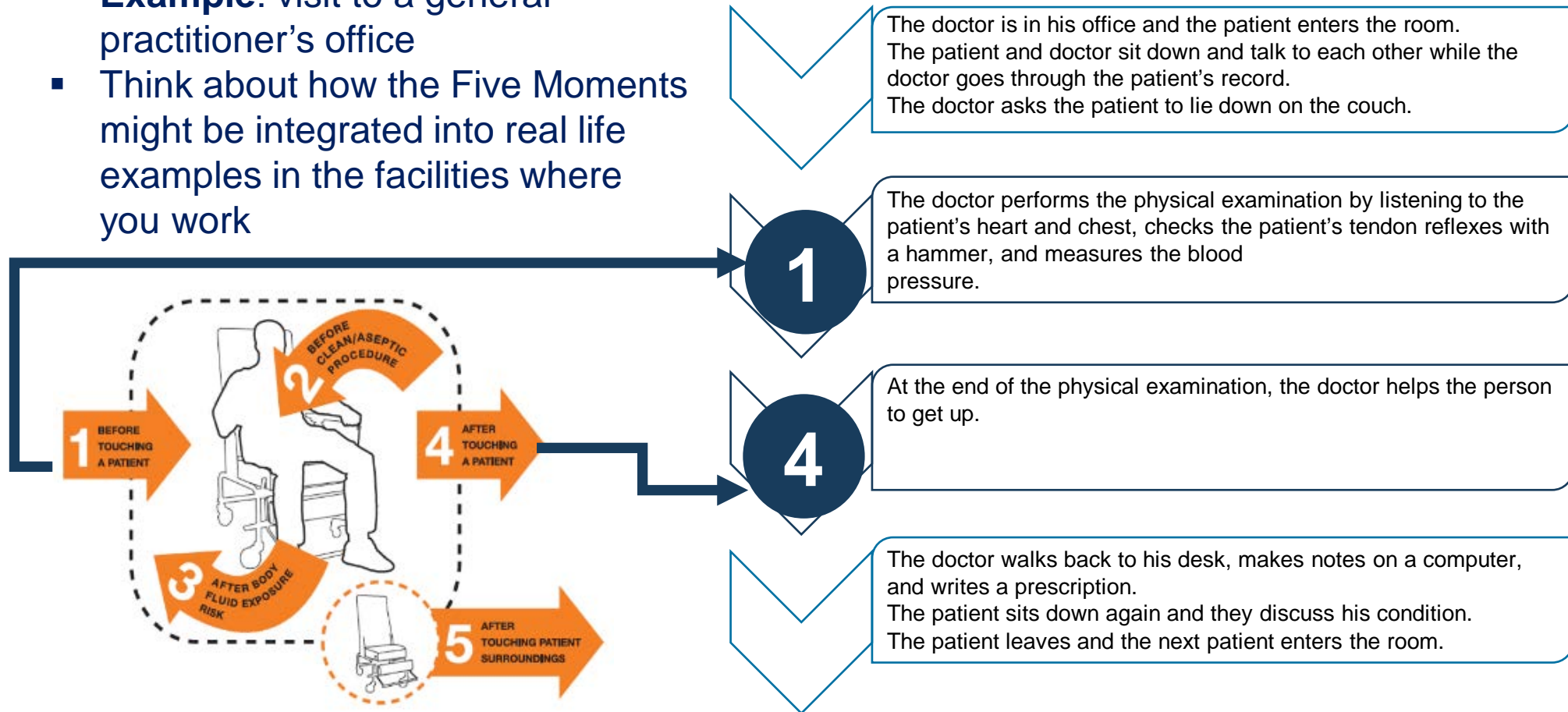


Applicable in any care setting



The 5 Moments in a workflow scenario

- **Example:** visit to a general practitioner's office
- Think about how the Five Moments might be integrated into real life examples in the facilities where you work



Find out more about the 5 moments – a useful training video

(explains the moments i.e. indications for hand hygiene)

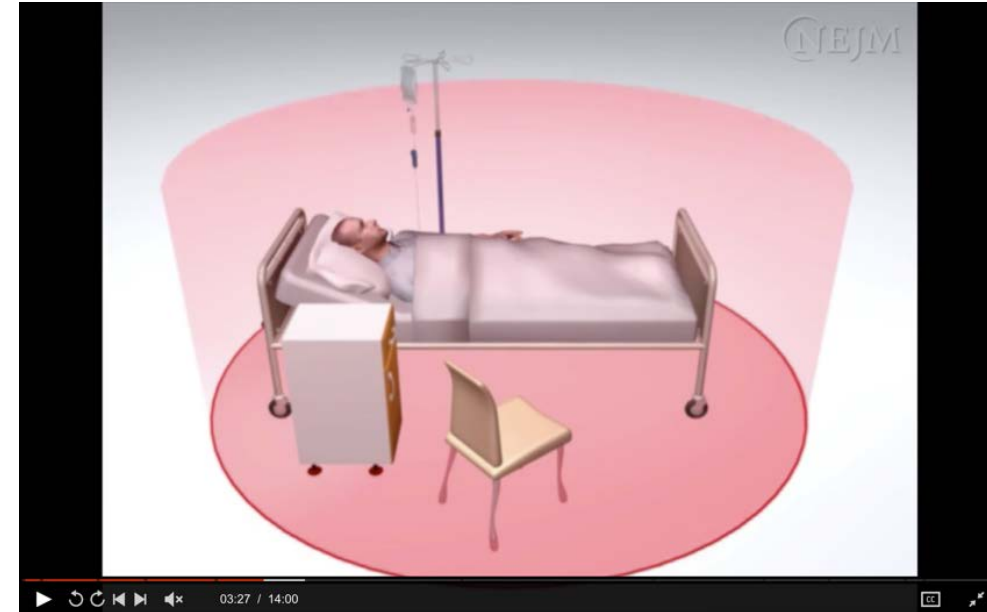


The NEW ENGLAND JOURNAL of MEDICINE

VIDEOS IN CLINICAL MEDICINE

Hand Hygiene

Yves Longtin, M.D., Hugo Sax, M.D., Benedetta Allegranzi, M.D.,
Franck Schneider, and Didier Pittet, M.D.



See from 2m44s to 6m16s

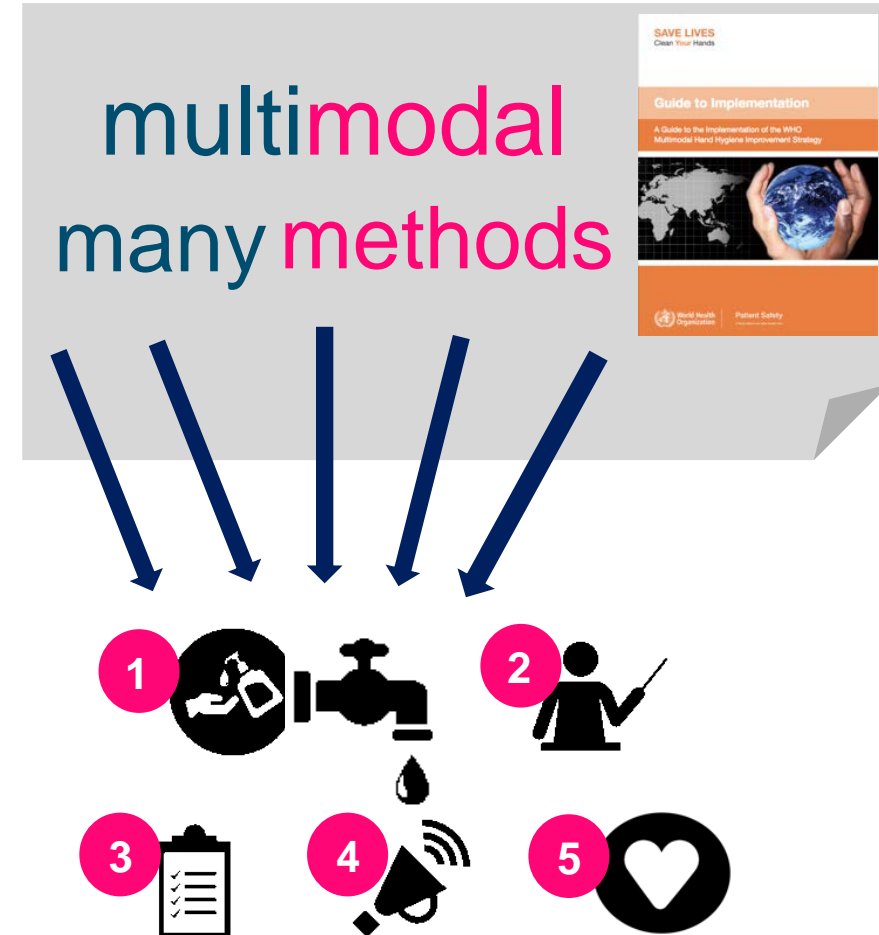
An evidence-based, effective formula for improving hand hygiene: the multimodal approach

▪ **All the guidance (COVID and ‘peace time’):**

- Reinforces the importance of hand hygiene for preventing the spread of the COVID-19 virus.
- States that all health care facilities should have regular programmes aimed at promoting best hand hygiene practices.
- **Highlights that improvement is achievable using a combination of different strategies**

▪ **WHO call this a multimodal approach or multimodal strategy**

▪ Multiple approaches target the many different influencers of human behavior including potential barriers & facilitators





Build It - System change (infrastructure and resources)



Systems to procure, deliver and manage resources (including budget), to improve hand hygiene are available (infrastructure, supplies, policy)

In your facility, ask – can staff clean their hands easily at each (and every) point of care (reflecting the system is in place)?

WHAT MIGHT THIS LOOK LIKE IN A FACILITY?

- An annual planned budget, which includes funding for infrastructure, services, personnel and the continuous procurement of hand hygiene products, annual water service plans and supplies to repair pipes, etc., which is sufficient to meet the needs of the facility in terms of WASH and IPC
- Hand hygiene stations at all points of entry, points of care & within 5m of toilets (new WHO hand hygiene obligatory note)
- Functioning hand hygiene stations in service areas and waste disposal areas
- Health care facility policies and SOPs which outline hand hygiene action and support WASH and IPC



The technical note reinforces system change

Functional hand hygiene facilities should be present/available:

- For all health care workers at all points of care
- In areas where PPE is put on or taken off,
- Where health care waste is handled.
- For all patients, family members and visitors
- Within 5 m of toilets
- At the entry/exit of the facility
- In waiting and dining rooms and other public areas.

An effective alcohol-based hand rub (ABHR) product:

- Should contain between 60% and 80% of alcohol and its efficacy should be proven according to the European Norm 1500 or the standards of the ASTM International (formerly, the American Society for Testing and Materials) ASTM E-1174.

ABHRs are available from the market but can be produced locally in pharmacies using the formula and instructions provided by WHO



A new WHO recommendation making hand hygiene obligatory



Recommendation to Member States to improve hand hygiene practices widely to help prevent the transmission of the COVID-19 virus:

1. Provide universal access to public hand hygiene stations and make their use obligatory on entering and leaving any public or private commercial building and any public transport facility.
2. **Improve access to hand hygiene facilities and practices in health care facilities.**



Teach it – training & education

Health workers are trained on the right moments and technique for hand hygiene

In your facility, ask:

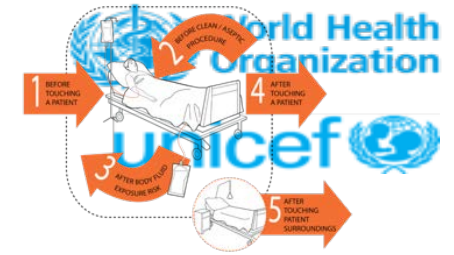
- Who needs to be trained/educated to address gaps in knowledge and practice?
- How will this happen and who will undertake the training/education?
- Are training resources up-to-date and does training reinforce and embed the Five Moments for Hand Hygiene?

WHAT MIGHT THIS LOOK LIKE IN A FACILITY?

- A current, targeted training package
- A range of tools/approaches used
- An accessible training schedule/programme
- Health care personnel new to the facility receive training as part of their orientation programme
- Health care personnel are trained each year



e.g. training materials for hand hygiene technique, as one part of your training



Use the existing WHO posters and other materials to train on hand hygiene

“If hands are not visibly dirty, the preferred method is to perform hand hygiene with an alcohol-based hand rub for 20–30 seconds using the appropriate technique.”

“When hands are visibly dirty, they should be washed with soap and water for 40–60 seconds using the appropriate technique.”



20–30 seconds



40–60 seconds

⁵ Further resources are available at <https://www.who.int/infection-prevention/campaigns/clean-hands/5moments/en/>

- The right things are in place to monitor hand hygiene, including the use of valid tools

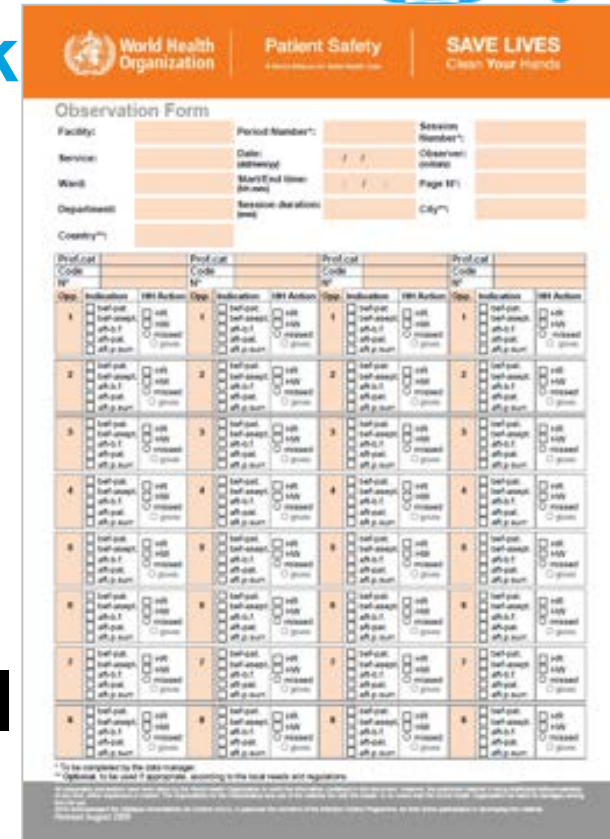
Check it – monitoring & feedback

In your facility, ask:

- Does the facility monitor hand hygiene compliance among a range of health workers?
- Does the facility monitor hand hygiene perceptions and knowledge in a range of health workers?
- How is feedback given to support improvement? How will the facility know that an improvement has taken place?

WHAT MIGHT THIS LOOK LIKE IN A FACILITY?

- Hand hygiene compliance is monitored regularly and feedback posted to inform health care personnel
- Audits are undertaken within a schedule to assess the availability of handrub, soap, single use towels and other hand hygiene resources, with feedback to those who manage supplies to ensure timely replenishment
- Use of WASH FIT and the WHO HHSAF to support the improvement journey



The image shows a WHO Hand Hygiene Observation Form. It includes a header with the WHO logo, 'Patient Safety', and 'SAVE LIVES Clean Your Hands'. The form is divided into sections for facility information (Facility, Service, Ward, Department, Country), observation details (Period Number, Session Number, Date, Start/End Time, Page #), and a grid for recording observations. The grid has columns for 'Observation' and 'HHS Action' for five different moments (1-5). Each cell in the grid contains a checklist of items to be observed, such as 'Hand rub used', 'Hand washed', 'Hand dried', 'Hand hygiene performed', and 'Hand hygiene performed correctly'. The form also includes a footer with instructions and a reference to the WHO HHSAF.

This WHO hand hygiene observation form checks compliance and provides feedback according to the Five Moments for hand hygiene



Sell it – communications & reminders

Promoting hand hygiene through effective communications including posters and other reminders

In your facility, ask

- How would you publicize actions to support hand hygiene improvement?
- Do you engage health care personnel to help produce a range of reminders?
- Do the posters and reminders used reinforce and promote the Five Moments for Hand Hygiene related to the setting?


WHAT MIGHT THIS LOOK LIKE IN A FACILITY?

- A range of hand hygiene promotion and educational materials clearly visible and understandable, at key places (and replaced on a scheduled basis)
- Participation in hand hygiene campaigns



SAVE LIVES: CLEAN YOUR HANDS & COVID-19

WHO SAVE LIVES: CLEAN YOUR HANDS IN THE CONTEXT OF COVID-19



Hand Hygiene in the Community

You can play a critical part in fighting COVID-19

- Hands have a crucial role in the transmission of COVID-19.
- COVID-19 virus primarily spreads through droplet and contact transmission. Contact transmission means by touching infected people and/or contaminated objects or surfaces. Thus, your hands can spread virus to other surfaces and/or to your mouth, nose or eyes if you touch them.


Why is Hand Hygiene so important in preventing infections, including COVID-19?

- Hand Hygiene is one of the most effective actions you can take to reduce the spread of pathogens and prevent infections, including the COVID-19 virus.
- Community members can play a critical role in fighting COVID-19 by adopting frequent hand hygiene as part of their day-to-day practices.

Wash your hands

Wash your hands with soap and running water when hands are visibly dirty.

If your hands are not visibly dirty, frequently clean them by using alcohol-based hand rub or soap and water.



Join the **#SAFEHANDS challenge** now and save lives! Post a video or picture of yourself washing your hands and tag **#SAFEHANDS**


WHO **calls** upon policy makers to provide:

- the necessary infrastructure to allow people to effectively perform hand hygiene in public places;
- to support hand hygiene supplies and best practices in health care facilities.

Protect yourself and others from getting sick

Wash your hands

- after coughing or sneezing
- when caring for the sick
- before, during and after you prepare food
- before eating
- after toilet use
- when hands are visibly dirty
- after handling animals or animal waste




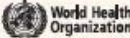

Hand Hygiene in Health Care

Why is it important to participate in the WHO global hand hygiene campaign for the fight against COVID-19?


- The WHO global hand hygiene campaign **SAVE LIVES: Clean Your Hands** mobilizes people around the world to increase adherence to hand hygiene in health care facilities, thus protecting health care workers and patient from COVID-19 and other pathogens.
- Nurses and other health care workers are the front-line heroes saving lives from COVID-19. In alignment with the **Year of the Nurse and the Midwife**, the global hand hygiene campaign 2020 recognizes their critical role in the prevention of infections.
- The campaign also contributes to the **United Nations Secretary-General's Global Call to Action on WASH** in health care facilities.

Follow the **5 May 2020 SAVE LIVES: Clean Your Hands** here: <https://www.who.int/infection-prevention/campaigns/clean-hands/en/>

SAVE LIVES CLEAN YOUR HANDS **#safehands #handhygiene #infectionprevention**

SAVE LIVES CLEAN YOUR HANDS



NURSES AND MIDWIVES

CLEAN CARE IS IN YOUR HANDS

#SupportNursesAndMidwives
#HandHygiene #InfectionPrevention

The #safehands challenge 2020

Is part of the global, high level advocacy on hand hygiene to address the huge existing gaps in access & to remind people of its importance, considering:

- 2 in 5 health care facilities globally lack hand hygiene at point of care
- 3 in 4 households in least developed countries lack water and soap for handwashing and 3 billion, globally, without basic hand hygiene facilities
- Only half of schools globally have hand washing facilities with soap and water



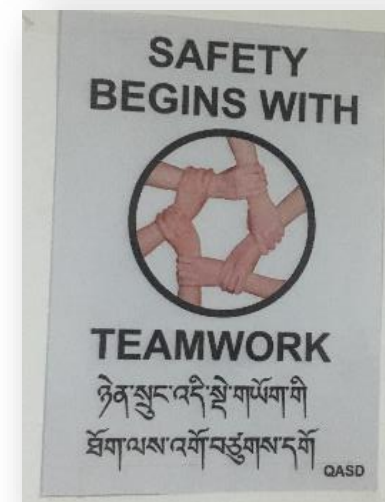
Share your video to support sustained hand hygiene improvement across all communities

Live it – institutional safety climate (a safe culture)

- Patients and staff “feel” safe and cared for in a hygienic environment that **values** the importance of hand hygiene at the right times
- **In your facility, ask:**
 - How do you make and maintain hand hygiene as a facility priority? Is it discussed at senior management level?
 - How are senior managers, champions and opinion leaders engaged over time?
 - Do all levels of staff, including senior managers and other leaders understand, role model and value the importance of the Five Moments for Hand Hygiene?

WHAT MIGHT THIS LOOK LIKE IN A FACILITY?

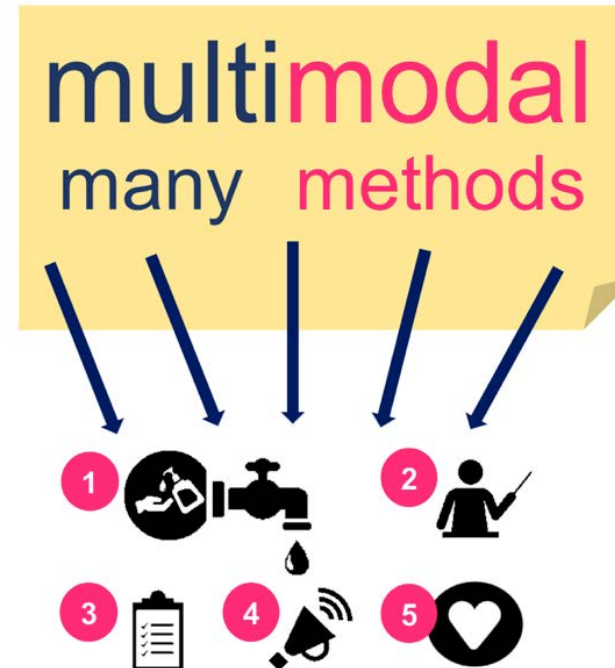
- Training, monitoring and communication plans are supported (inc budget allocation)
- Messages from leaders are visible/audible
- Leaders are seen to attend training and role model hand hygiene as per the Five Moments
- Staff have WASH and IPC related responsibilities and are appraised, with high performing staff recognized & rewarded and those who do not perform managed according to the local culture



In summary: establish or strengthen your hand hygiene program to be WASH FIT, IPC and COVID-19 ready

Health care facilities should establish or strengthen their hand hygiene improvement programme and act rapidly in the following areas (at a minimum):

- Procurement of adequate quantities of hand hygiene supplies
- Refreshers of hand hygiene training
- Refreshers of reminders/communications about its importance to prevent the spread of the COVID-19 virus.



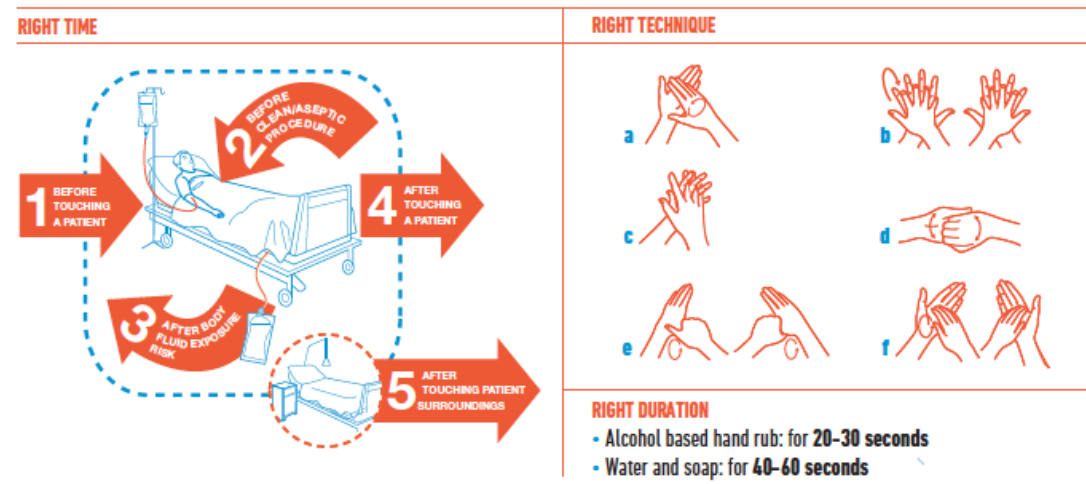
And finally.....

Frequent, timely and effective hand hygiene is one of the most important measures to prevent all avoidable health care infections including COVID-19.

Hand hygiene

Conducting hand hygiene at the right time, using the right technique, with either alcohol based hand rub (ABHR) or soap and water is critical.

- It stops transmission of microbes, including coronavirus, from infected individuals and contaminated surfaces.
- WASH & IPC practitioners - work to enable more frequent and regular hand hygiene by improving access to hand hygiene facilities and using **multimodal approaches** to support improved hand hygiene behaviour.



All WHO Hand hygiene tools and resources <https://www.who.int/infection-prevention/tools/hand-hygiene/en/>

Resources

New England Journal of Medicine hand hygiene video article (link to all available languages)

http://www.who.int/gpsc/5may/hand_hygiene_video/en/

Hand Hygiene: A Handbook for Medical Professionals <https://www.wiley.com/en-gb/Hand+Hygiene:+A+Handbook+for+Medical+Professionals-p-9781118846865>

Some extra training ideas:

- WHO IPC Training Package (e-learning) Standard Precautions: Hand Hygiene & Standard Precautions: Environmental Cleaning <https://ipc.ghelearning.org/course/123>

General IPC and AMR resources

- WHO Minimum Requirements for infection prevention and control (IPC) programmes <https://www.who.int/infection-prevention/publications/min-req-IPC-manual/en/>
- WHO Guidelines on core components of infection prevention and control programmes at the national and acute health care facility level <https://www.who.int/infection-prevention/publications/ipc-components-guidelines/en/>
- WHO multimodal improvement strategy <https://www.who.int/infection-prevention/publications/ipc-cc-mis.pdf?ua=1>
- Antimicrobial stewardship programmes in health-care facilities in low- and middle-income countries. A WHO practical toolkit <https://apps.who.int/iris/rest/bitstreams/1257395/retrieve>
- WHO Antimicrobial resistance pages: <https://www.who.int/health-topics/antimicrobial-resistance>

COVID-19



Rick Johnston
WHO/JMP

When soap/water or alcohol handrub are not available

Soapy water

- Mix powder detergent with water
 - Less costly than bar soap, less prone to theft

Traditional materials

- Ash or soil has been shown to be effective
- Ash may inactivate pathogens by raising the pH
- May trap particles under fingernails
- Soil may be faecally contaminated
 - Weigh benefits vs risks of contaminating hands

Water alone

- Handwashing with water alone can reduce faecal contamination

What about water-scarce settings?

- Hands can be washed with <1 litre of water

Regardless of the type of material, the washing of both hands, rubbing of hands, and the amount of rinsing water, are important determinants in the reduction of pathogen contamination on hands.



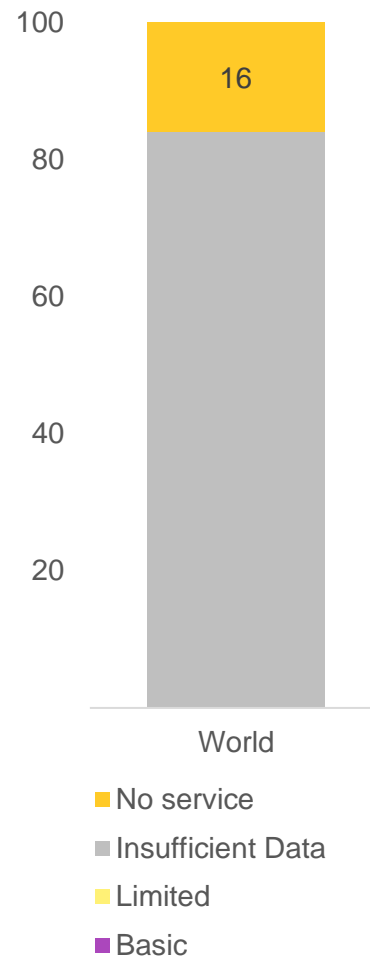
www.washinhcf.org

<https://www.who.int/publications-detail/water-sanitation-hygiene-and-waste-management-for-covid-19>

Hand hygiene in health care facilities



	HYGIENE
BASIC SERVICE	Functional hand hygiene facilities (with water and soap and/or alcohol-based hand rub) are available at <u>points of care</u> , and within five metres of <u>toilets</u> .
LIMITED SERVICE	Functional hand hygiene facilities are available either at points of care or toilets but not both.
NO SERVICE	No functional hand hygiene facilities are available either at points of care or toilets.



Estimates for handwashing materials at toilets were available for 16 countries in 2016

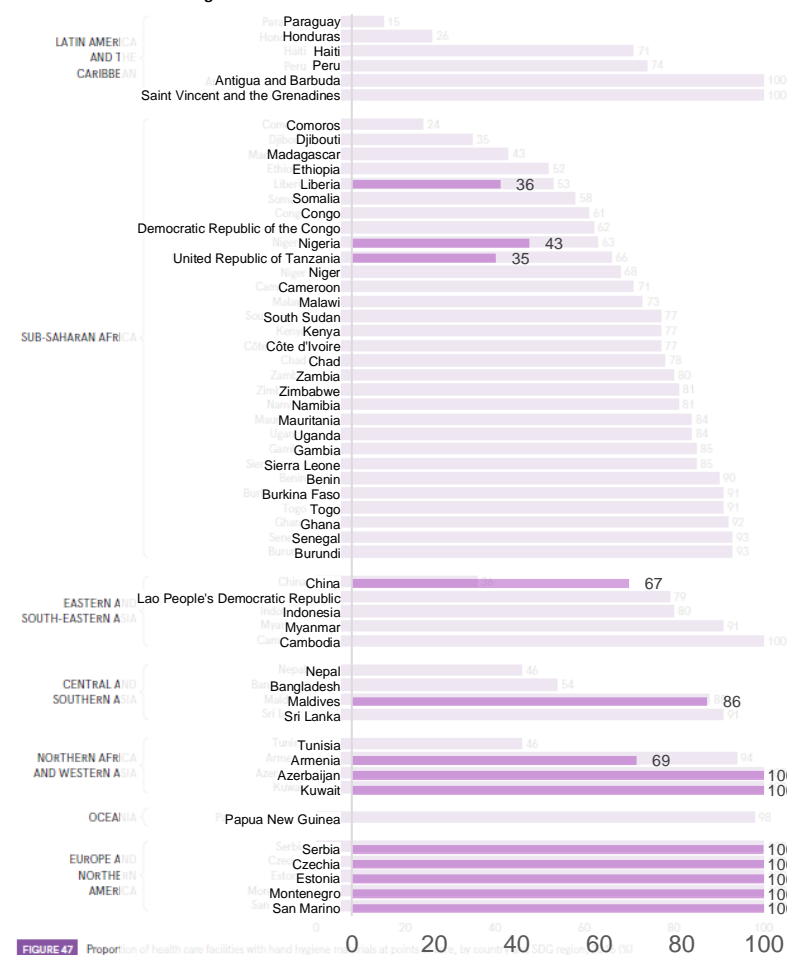


FIGURE 47 Proportion of health care facilities with hand hygiene materials at points of care, by country, 2016

WHO Multimodal MI Improvement STRATEGIES and CHALLENGES



-System Change

-Training & Education

-Evaluation & Feedback

-Reminders

-Institutional safety climate

Organizational Culture
Social Networks





WaterAid/Tom Greenwood



WaterAid/Tom Greenwood



WaterAid/Mani Karmacharya



WaterAid/Mani Karmacharya

Who needs to practice hand hygiene at health care facilities?

- Whose needs are catered for, where?
- Who is left behind?

Which technology, who can use it?

- What considerations for COVID-19?
- Who is left behind?

Is infrastructure enough?

- Behaviour-centered design approaches
- Nudges, cues, prompts, instructions, continuity of services



Join our webinars to support your action on water, sanitation and hygiene (WASH) and infection prevention and control (IPC) in health care facilities (HCF).
Supporting you to be COVID-19 ready.



- **Thursday 9th April.** Focus on water
- **Tuesday 14th April.** Focus on healthcare waste management
- **Thursday 16th April.** Focus on hand hygiene
- **Tuesday 21st April.** Focus on environmental cleaning
- **Thursday 23rd April.** Focus on sanitation

All webinars will last 60 minutes & take place at the following times:



- 7am EST
- 12pm BST
- 1pm CEST
- 4.30pm IST
- 7pm PHT

Register here to join the webinars via Zoom
<https://who.zoom.us/j/414362052>

Twitter @WASH_FOR_HEALTH

#besafe #besmart #bekind

Today's agenda



- Introduction & overview of webinar series (Julie Storr, WHO)
- Reflections on WASH FIT (Silvia Gaya, UNICEF)
- Latest guidance on water requirements in health care facilities during the COVID-19 outbreak (Maggie Montgomery, WHO)
- Country reflections
 - Waltaji Kutane, WHO Mozambique
- Questions and answers

WASH in health care facilities for preventing COVID-19



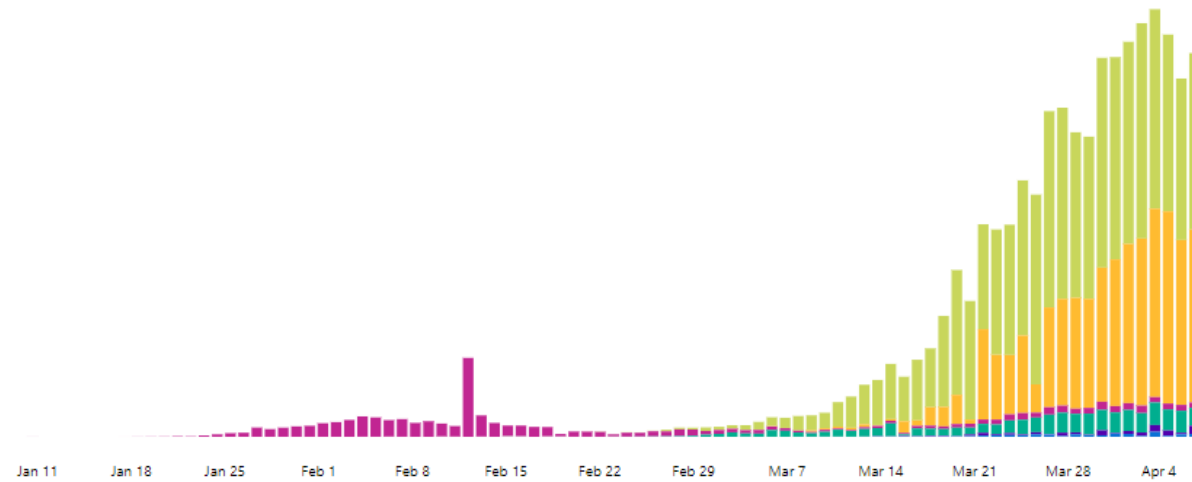
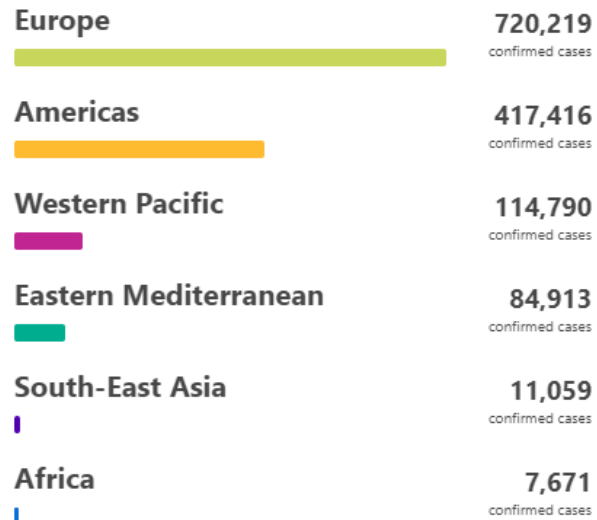
Session 1: WATER
09 April 2020

Latest figures (09 April 2020)



Case Comparison

WHO Regions



Total global cases: 1.4 million

Total global deaths: 79,000

Key documents on water in HCF

Water, sanitation, hygiene, and waste management for the COVID-19 virus

Interim guidance
19 March 2020

Background

This interim guidance supplements the infection prevention and control (IPC) documents by summarizing WHO guidance on water, sanitation and health care waste relevant to viruses, including coronaviruses. It is intended for water and sanitation practitioners and providers and health care providers who want to know more about water, sanitation and hygiene (WASH) risks and practices.

The provision of safe water, sanitation, and hygienic conditions is essential to protecting human health during all infectious disease outbreaks, including the COVID-19 outbreak. Ensuring good and consistently applied WASH and waste management practices in communities, homes, schools, marketplaces, and health care facilities will help prevent human-to-human transmission of the COVID-19 virus.

The most important information concerning WASH and the COVID-19 virus is summarized here.

- Frequent and proper hand hygiene is one of the most important measures that can be used to prevent infection with the COVID-19 virus. WASH practitioners should work to enable more frequent and proper hand hygiene by improving facilities and using proven behavior-change techniques.
- WHO guidance on the safe management of drinking-water and sanitation use COVID-19 outbreak. Extra measures (disinfection) will facilitate more COVID-19 virus.
- Many co-benefits will be realized by managing water and sanitation applying good hygiene practices.

Currently, there is no evidence about the morphology and chemical structure of the virus similar to those of other human coronaviruses. There are also no data about how well served in the effective inactivation measures. This does the evidence base and WHO guidance against viruses in sewage and drinking-water will be updated as new information becomes available.

1. COVID-19 transmission

There are two main routes of transmission of the COVID-19 virus: respiratory droplets and contact. Respiratory droplets are generated when an infected person coughs or sneezes. Any person who is in close contact with someone who has respiratory symptoms (coughing, sneezing) is at risk of being exposed to potentially infectious respiratory droplets. Droplets may also land on surfaces where the virus could remain viable; thus, the immediate environment of an infected individual can serve as a source of transmission (contact transmission).

Approximately 2–10% of cases of confirmed COVID-19 disease present with diarrhoea,¹⁷ and two studies detected COVID-19 viral RNA fragments in the faecal matter of COVID-19 patients.¹⁸ However, only one study has cultured the COVID-19 virus from a single stool specimen.¹⁹ There have been no reports of faecal-oral transmission of the COVID-19 virus.

2. Persistence of the COVID-19 virus in drinking-water, faeces and sewage and on surfaces

Although persistence in drinking-water is possible, there is no evidence from seroprevalence studies that they are present in surface or groundwater sources or transmitted through contaminated drinking water. The COVID-19 virus

Recommendations to Member States to improve hand hygiene practices to help prevent the transmission of the COVID-19 virus

Interim guidance
1 April 2020

Recommendations

Member States to improve hand hygiene practices widely to help prevent the transmission of the COVID-19 virus by:

1. Providing universal access to public hand hygiene stations and making their use obligatory on entering and leaving any public or private commercial building and any public transport facility;
2. Improving access to hand hygiene facilities and practices in health care facilities.

Background

Current evidence indicates that the COVID-19 virus is transmitted through respiratory droplets or contact. Contact transmission occurs when contaminated hands touch the mucous of the mouth, nose, eyes; the virus can also be transferred from one surface to another by contaminated hands, which facilitates indirect contact transmission. Consequently, hand hygiene is extremely important to prevent the spread of the COVID-19 virus. It also interrupts transmission of other viruses and bacteria causing common colds, flu and pneumonia, thus reducing the general burden of disease. Although awareness of the importance of hand hygiene in preventing infection with the COVID-19 virus is high, access to hand hygiene facilities that include alcohol-based hand rubs as well as soap and water is often suboptimal in the community and in health care facility settings, especially in low- and middle-income countries. WHO and UNICEF estimate that globally 3 billion people lack hand hygiene facilities at home and two out of five health care facilities lack hand hygiene at points of care.²⁰ Further, access has become increasingly challenging as a result of stock-outs of supplies. When hand hygiene is provided free of charge and is made obligatory by public health authorities, acceptability and adherence to hand hygiene best practices are improved, including in public health emergencies of international concern.²¹ Hand hygiene is the most effective single measure to reduce the spread of infections through multidrug-resistant organisms, including access to the appropriate supplies.²² Therefore, this guidance is relevant for all countries.

¹⁷ Where ABHR or hot soap is not feasible, a liquid soap solution, mixing detergent with water, can be used. The ratio of detergent to water will depend on the type and strength of locally available product.

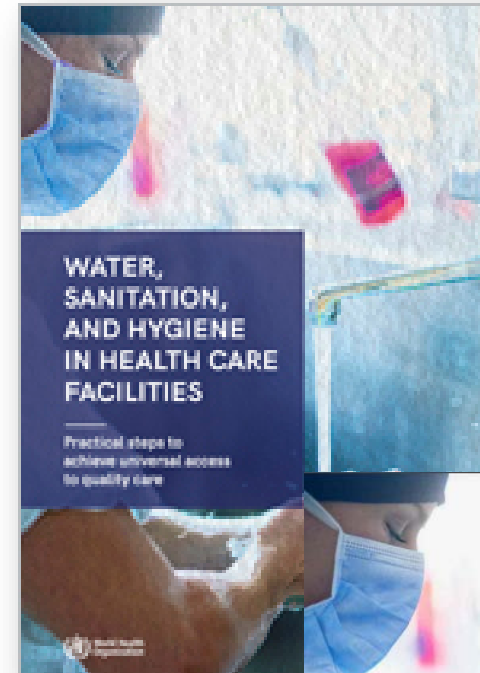
and is recommended particularly for areas without ready access to hand hygiene locations.

WHO recommendations:

1. One or several hand hygiene stations (either for handwashing with soap and water^a or for hand rubbing with an alcohol-based hand rub^b) should be placed in front of the entrance of every public (including schools and healthcare facilities) or private commercial building, to allow everyone to practice hand hygiene before entering and when leaving it.
2. Facilities should be provided at all transport locations, and especially at major bus and train stations, airports, and seaports.
3. The quantity and usability of the hand hygiene stations should be adapted to the type (e.g. young children, elderly, those with limited mobility) and number of users to better encourage use and reduce waiting time.
4. The installation, supervision, and regular refilling of the equipment should be the overall responsibility of public health authorities and delegated to building managers. Private sector and civil society initiatives to support the construction, maintenance, and effective use are welcome.
5. The use of public hand hygiene stations should be obligatory before passing the threshold of the entrance to any building and to any means of public transport during the COVID-19 pandemic. Reported hand hygiene whenever outside private homes can in this way become part of the routine of everyday life in all countries.
6. All private and public health care facilities should establish or strengthen their hand hygiene.

^a Chlorine hand washing solutions are not recommended because of potential harm to users and their making the solution, as well as dependence of chlorine exposed to sunlight or heat. Soap is generally cheap and easy to find, and liquid soap solutions can also be used.

COVID-19 technical note and hand hygiene recommendations



WATER, SANITATION, AND HYGIENE IN HEALTH CARE FACILITIES

Practical steps to achieve universal access to quality care



WASH IN HEALTH CARE FACILITIES

Global Baseline Report 2019

Baseline report and practical actions

Main messages

- 1. Hand hygiene:** Frequent and effective hand hygiene - one of the most important prevention measures. **All health care facilities and public areas** should have hand hygiene facilities.
- 2. Environmental hygiene:** Effective inactivation on surfaces can be achieved within 1 minute using common disinfectants.
- 3. Water, sanitation and waste:** Existing WHO guidance on the safe management of drinking-water and sanitation services applies to the COVID-19 outbreak. Disinfection important and effective.
- 4. WASH investments and actions:** Should be fundamental to all country preparedness and response plans. No regrets investment.
- 5. WASH service providers:** Water and sanitation utility workers, hygiene promoters, informal sanitation workers should all be deemed “essential”, have proper protection, ability to travel to work, and hand hygiene at home and work.

WASH FIT essential WATER indicators

SUPPLY: Improved water supply is piped into the facility or on premises
Additional improved source(s) identified and can be accessed in case main source is no longer functioning/available.

AVAILABILITY: Water services available at all times throughout the day (and night, if facility is open)
Water services available throughout the year (i.e. not affected by seasonality, climate change-related extreme events or other constraints)

QUANTITY: Water of sufficient quantity for all uses

SAFE STORAGE: Safe water storage exists to meet needs of facility for two days

DRINKING WATER: Safe drinking water is available and accessible for staff, patients and carers at all times in main waiting areas and/or entrance to each ward and in all rooms where patients stay overnight or receive specialized care.

Drinking-water has appropriate chlorine residual (0.2mg/L or 0.5mg/L in emergencies) or 0 E. coli/100 ml.

SURVEILLANCE: The facility water supply is routinely tested by a staff member/and or independent authority (e.g. the surveillance agency)

Most recent water quality testing results confirm that water quality meets national water quality standards



Water needs and standards

Water should be **available** for

- drinking
- personal hygiene including hand washing, bathing and cleaning
- cleaning
- medical activities
- cooking
- laundry

Water must be **on-site** from an **improved** source

- Water system in buildings/ water system on facility grounds/public tap/borehole /protected well /protected rainwater collection

Water should be **safely treated, reliable**, sufficient and located at all points of care.



World Health Organization
icef 

Refer to WHO UNICEF Core questions and indicators for monitoring WASH in health care facilities for definitions of “improved”
www.who.int/water_sanitation_health/publications/core-questions-and-indicators-for-monitoring-wash/en/

How might climate change and/or COVID-19 affect these items?

Water needs and standards

Water should be **available** for

- drinking
- personal hygiene including hand washing, bathing and cleaning
- cleaning
- medical activities
- cooking
- laundry

Water must be **on-site** from an **improved** source

- Water system in buildings/ water system on facility grounds/public tap/borehole /protected well /protected rainwater collection

Water should be **safely treated, reliable**, sufficient and located at all points of care.

Droughts, floods, extreme weather events, sea level rise, and temperature increases can affect

- availability
- quality (including increased microbial contamination and salinity)
- Functioning and safety of plumbing systems

Patient loads may increase during extreme weather events and COVID-19

response, putting a strain on a facility's ability to respond.

Water utility workers, plumbers, and technicians may have restricted movements/be sick; supplies may be limited especially if imported or coming from capital cities

Water requirements

What should you be doing differently for COVID-19?

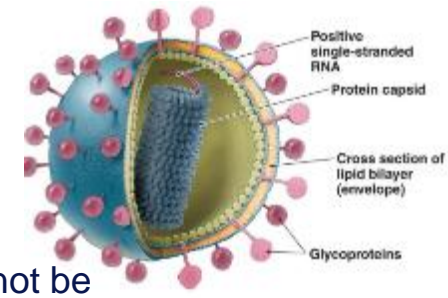
- **Water access:** It is critical that health care facilities treating or who may treat COVID-19 patients have water.
- **Water quantity:** Water, at a minimum for hand hygiene, cleaning and drinking.
- **Water quality:** Drinking water should be from an improved source; ideally water should be treated and have chlorine residual.
- **Prepare:** Contingency plans for limited water services and supplies.



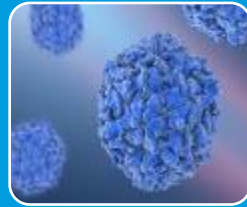
World Health
Organization



Spotlight on microbiological contamination of drinking-water



SARS-CoV2:
Enveloped virus; has not be detected in water supplies or water sources



Viruses

- E.g. Hepatitis A, poliovirus A
- Smallest; 0.02-0.3 μm



Bacteria

- E.g. *Escherichia coli*, *Vibrio cholerae*
- 0.5-2.0 μm in diameter



Protozoan cysts

- E.g. *Giardia*, *Cryptosporidium*
- Largest; >2 μm -2 mm

Legionella:
Bacterium increasingly associated with waterborne outbreaks in health care facilities

Water supplies & drinking water

- While the presence of the COVID-19 virus in untreated drinking-water is possible, it has not been detected in drinking-water supplies.
- Other coronaviruses have not been detected in surface or groundwater sources → the risk of coronaviruses to water supplies is low.
- COVID-19 is an enveloped virus. As such it has a fragile outer lipid membrane which makes it **less stable**, compared to non-enveloped viruses in the environment.
- **More susceptible to chlorine** than other viruses
- Ensure a residual concentration of **free chlorine of ≥ 0.5 mg/L** after at least **30 minutes** of contact time at pH < 8.0.
- **Centralized distribution**: chlorine residual should be maintained throughout the distribution system.



Where safely managed, treated piped water is not an option

Choose wisely: 30 products tested, 6 fail



Comprehensive protection ★★★ or ★★	Targeted protection ★	Little or no protection –
<ul style="list-style-type: none">• Aquapak• Aquasure TAB10• DayOne Waterbag™• JAMEBI Solar Water Pasteurizer• SolarBag®• Lifestraw Family 1.0• Lifestraw Family 2.0• Lifestraw community filter• P&G Purifer of H2O	<ul style="list-style-type: none">• Aquatabs• Aquatabs Flo• BlueQ™ 2-stage• Mesita Azul °• Nazava Water Filter• Oasis Water Purification Tablets*• SPOUTS Water Purifaaya Filter• Tulip Table Top Water Filter• Uzima Filters UZ-01• WATA-Standard™• Water Elephant• Wadi Solar• H2g0 Purifier	<ul style="list-style-type: none">• Biocool CleanWater• Chloritard• GrifAid®M3• LifeFilta LFJC Jerrycan• Silverdyne• Tembo ceramic pot

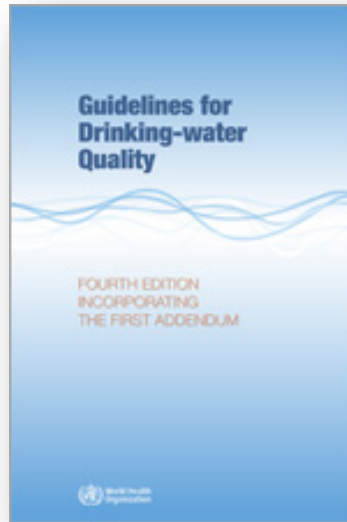


WHO Scheme to Evaluate Household Water Treatment Performance

https://www.who.int/water_sanitation_health/water-quality/household/scheme-household-water-treatment/en/

Safely managed water supply

World Health Organization



Guidelines



Water safety planning



Water treatment performance

E.g. boiling, high performing ultra or nano filters, solar, UV, or appropriately dosed chlorine

KEY CONSIDERATIONS

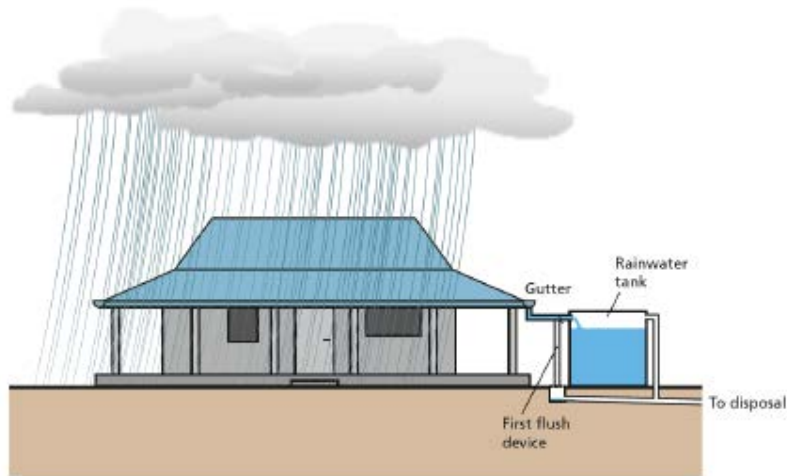
- Use water safety plan approach (protection from source to consumer)
- Residual chlorine of ≥ 0.5 mg/l after at least 30 minute of contact time and at pH < 8.0
- Point of use treatment where safe, piped supplies are not available



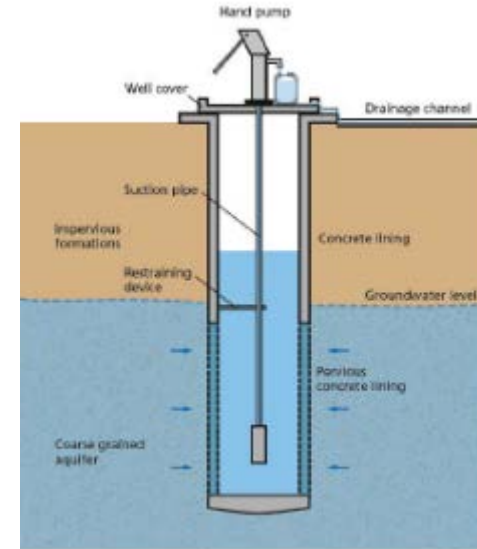
Health care facilities

Water needs & standards:

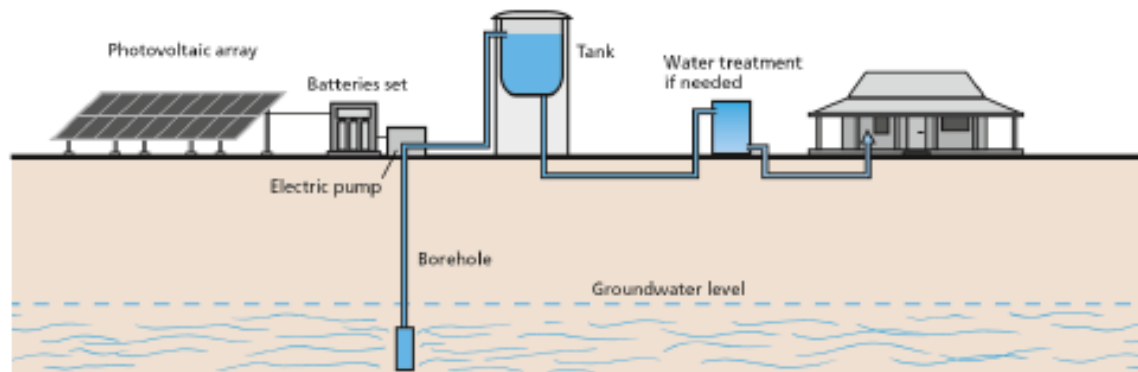
Water must be on-site, from an improved source, and climate resilient



Rainwater harvesting



Protected well with handpump



Solar powered borehole with piped-in network

Minimum water quantities in health care facilities (WHO Standards)



Source: WHO (2008). Essential environmental health standards in healthcare

https://www.who.int/water_sanitation_health/publications/ehs_hc/en/

Out patients	5 litres/consultation
In patients	40–60 litres/patient/day
Operating theatre / maternity	100 litres/ intervention
Dry or supplementary feeding centre	0.5–5 litres/ consultation
Wet supplementary feeding centre	15 litres/ consultation
Inpatient therapeutic feeding centre	30 litres/ patient/day
Cholera treatment centre	60 litres/ patient/ day
Severe acute respiratory diseases isolation centre	100 litres/ patient/ day
Viral haemorrhagic fever isolation centre	300–400 litres/ patient/ day

COVID-19 FAQ: How much water is needed for handwashing in resource-limited settings?

The amount of water needed for handwashing is not well studied. If a tap was kept open for 20-40 seconds, about 2.5-5 litres per handwashing event would be needed (assuming a flow of 7.5 litres per minute). In resource-limited settings use of 0.5-2 litres per wash has been shown to reduce faecal contamination of hands.



Examples of additional measures to improve climate resilience

- Rainwater harvesting
- Solar powered water pumping
- Elevated water storage
- Sourcing additional water supplies
- Water treatment
- Portable drinking-water and handwashing stations

Water quantity: how to ensure sufficient water for handwashing



ACTION YOU SHOULD TAKE

Where water is limited:

- Wet hands with water
- Turn off water while lathering with soap (for at least 20 seconds)
- Turn tap on again to rinse.
- Water should always be allowed to flow to waste and hands should not be rinsed in a communal basin as this may increase contamination of the wash water and could possibly re-contaminate hands.

The quality of water used for handwashing does not need to meet drinking-water standards.

- Even water with moderate faecal contamination, when used with soap and the correct technique, can be effective in removing pathogens.
- Reported **quantities of water** used for handwashing that have enabled reduction of faecal contamination ranges from 0.5-2 litres per person.
- Quantity of water used has been associated with less viral contamination of hands.

Efforts should be made to use and source water of the highest quality possible (e.g. an improved water source).

WHO Hand Hygiene Campaign and global recommendations

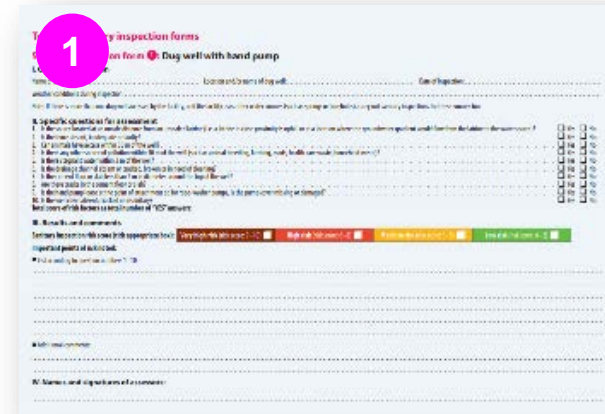
- High level advocacy and action on hand hygiene (HH)
- Need to address huge gaps in access:
 - 2 in 5 health care facilities globally lack hand hygiene at point of care
 - 3 billion individuals, globally, without basic hand hygiene facilities at home
 - Only half of schools globally have hand washing facilities with soap and water
- WHO recommends obligatory HH in front of all public buildings, transit hubs, etc. under leadership of public health authorities
- Health care facilities serve as models for hygiene behaviour



ABHR at grocery store in Geneva

Available methods for understanding risks associated with water quality

1. Sanitary inspection forms
2. Review of regulatory data
3. Check chlorine residual
4. Conduct fecal indicator bacteria testing



WANGDUEPHRAMS Date: 19.12.2013

Sample collected from: water supply
 Source of water source: spring Stream River Ground water
 or Tank water Others (specify): Main

Sample collected by: Mr. I Date: 18.12.2013 Time: 4:45:00pm

Sl.no	Sample	Turbidity	Ph	Chlorine content	FCC/100ml
1	Raw water (Phayuel water source)	<5	8.2	-	03
2	Source Storage Tank	<5	8.2	-	15
3	Storage Tank at Reservoir Tank	<5	8.2	-	25
4	Filtered water tank 1	<5	8.2	-	Filter under renovation
5	After chlorination Tank	<5	8.2	-	20
6	CPS	<5	8.2	-	30
7	tal area	<5	8.2	-	35
8	an(MHT)	<5	8.2	-	33
9	SS (Tap Water)	<5	8.2	-	29
10	Tap Water)	<5	8.2	-	---
11	ap Water Dzong)	<5	8.2	-	10



Safe plumbing

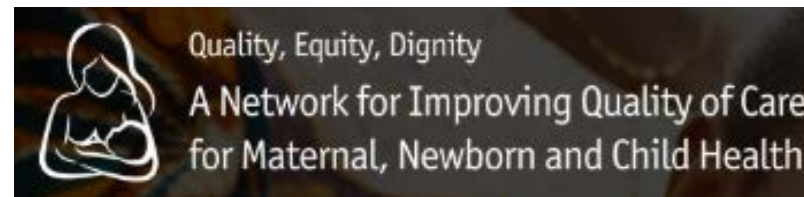
- Plumbing should not have any **cross connections** (e.g. between safe water supply and contamination)
- Piping connections should **be regularly checked** and leaks fixed
- Safe water pipes should be placed **above black or grey water pipes** to avoid cross contamination
- Bathroom showers and sprayers should have **backflow protectors** to prevent blackwater or fecal matter entering system
- After an adverse event where water quality is compromised, **treatment** should be used and **water system flushed**.



What risks, linked to unsafe plumbing, do you notice in this photo?

Lessons from implementation

- Engage and work with health actors (e.g. emergency response quality improvement, IPC committees, AMR)
- Start with small, low/no-cost, high impact actions-i.e. hand hygiene and drinking water stations, improved and regular cleaning
- Identify game changers-i.e. availability of water
- Incentivize change and support learning
- Secure dedicated WASH budgets for reoccurring costs



Community Quality Scorecards in Ghana



Regular mentoring and review in Liberia



Key take-aways



- Water is fundamental for providing safe and clean care and for respecting the dignity and rights of staff, patients and caregivers *and even more so during outbreaks.*
- The risk of coronaviruses to water supplies is low.
- When possible, water should be treated: many low-cost options exist.
- What you can do:
 - Advocate for investments in safe and sufficient water supplies to health care facilities as part of broader WASH COVID-19 efforts.
 - Identify health care facilities most in need of water and develop plans to improve services
 - Engage civil society, NGOs, existing community groups to promote and help maintain hand hygiene facilities.

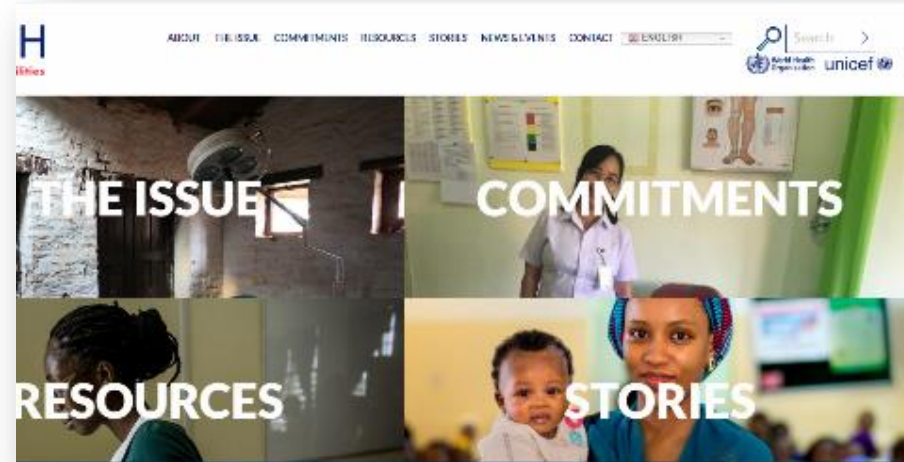
Join the Revolution! Be a part of the solution.

LEARN: Visit www.washinhcf.org for practical tools, case studies, news and stories.

CONNECT: Join the community
[@wash_for_health](https://twitter.com/wash_for_health) 

COMMIT: Support country commitments and/or encourage others to commit at www.washinhcf.org/commitments

IMPROVE: Identify health entry points; work on one or more practical actions; implement & document.



WATER: Key resources

Id Health
anization



Download the WASH and COVID-19 technical brief at: <https://www.who.int/publications-detail/water-sanitation-hygiene-and-waste-management-for-covid-19>

Obligatory hand hygiene recommendations: <https://www.who.int/who-documents-detail/interim-recommendations-on-obligatory-hand-hygiene-against-transmission-of-covid-19>

WASH in HCF knowledge portal www.washinhcf.org

WHO, 2008. *Essential environmental health standards in health care*. World Health Organization, Geneva. http://www.who.int/water_sanitation_health/hygiene/settings/ehs_hc/en/

WHO, 2011. *Guidelines for drinking-water quality, 4th edition*. World Health Organization, Geneva. http://www.who.int/water_sanitation_health/publications/2011/dwq_chapters/en/index.html

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CDC, 2019. Best practices for environmental cleaning in health care facilities: in resource limited settings. US Centers for Disease Control. USA. <https://www.cdc.gov/hai/pdfs/resource-limited/environmental-cleaning-508.pdf>

WHO, 2020. Infection prevention and control during health when novel coronavirus (nCoV) infection is suspected. [https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-\(ncov\)-infection-is-suspected-20200125](https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-(ncov)-infection-is-suspected-20200125)

Countries with WASH FIT implementation (33 countries)



AFRO

Ghana, Guinea, Guinea-Bissau, Chad, Comoros, DRC, Ethiopia (modified version integrated with an existing national programme – CASH), Kenya, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, South Sudan, Tanzania, Togo and Zambia.

EURO

Tajikistan

SEARO

Bangladesh (Cox's Bazaar), Bhutan, India, Indonesia, Maldives, Myanmar and Nepal.

EMRO

Iraq

WPRO

Cambodia, Laos, the Philippines and Viet Nam.

PAHO

Nicaragua

WASH in health care facilities for preventing COVID-19



Technical guidance and adaptation of the water, sanitation and hygiene for health facility improvement (WASH FIT) process



@WASH_for_health

Today's agenda



- Introduction & overview of webinar series (Ruth Stringer, HCWH)
- Basic Health Care Waste Management and latest guidance on HCWM during the COVID-19 outbreak (Dr. Ute Pieper, WHO)
- Disposal options in emergency situations and management considerations (Dr. Emilia Raila, UNICEF)
- Country reflections (Malala Ranarison, WHO Madagascar)
- Questions and answers
- Closing remarks (Maggie Montgomery, WHO)

WASH in health care facilities for preventing COVID-19



**Session 2 (14 April 2020):
Health Care Waste Management**



Waste management process



What is the typical composition of waste generated in a health care facility?

Between XX% and XX% of the waste produced is similar to domestic waste and usually called ‘non-hazardous’ or ‘general health care waste’

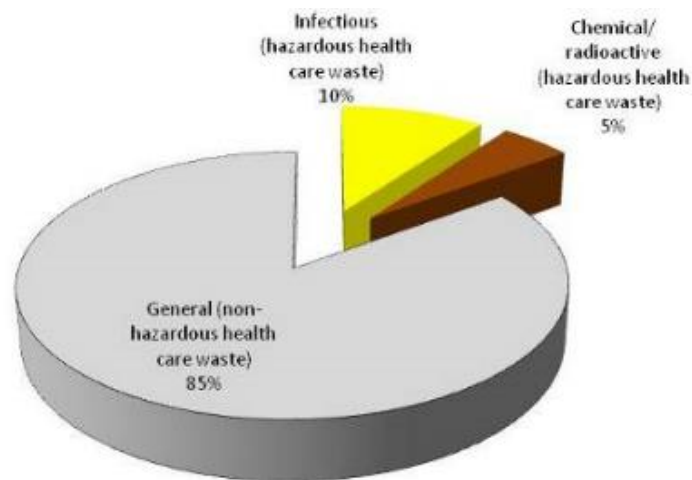
XX - XX% of health care waste is regarded as ‘hazardous’ and may pose a variety of environmental and health risks



What is the typical composition of waste generated in a health care facility?

Between 75% and 90% of the waste produced is similar to domestic waste and usually called 'non-hazardous' or 'general health care waste'

10-25% of health care waste is regarded as 'hazardous' and may pose a variety of environmental and health risks



Non-hazardous waste is usually similar in characteristics to municipal solid waste. More than half of non-hazardous waste from hospitals is paper, cardboard and plastics, whilst the rest comprises discarded food, metal, glass, textiles, plastics and wood.

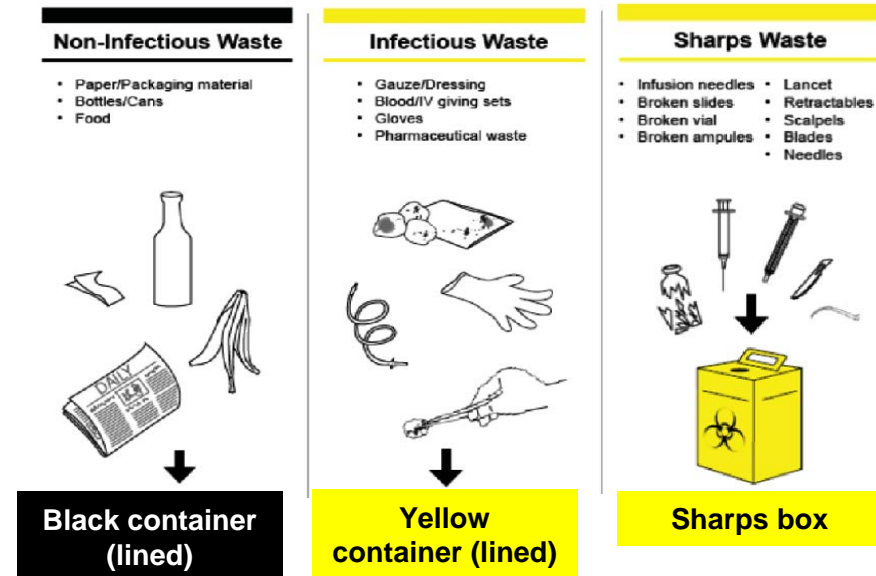
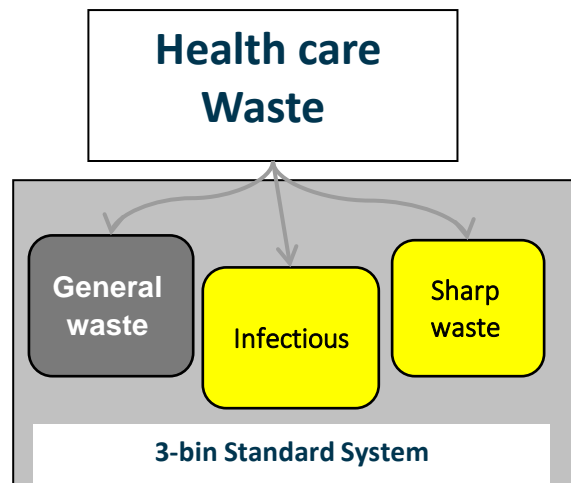


Which categories of hazardous waste do you know?

Category	Examples
Sharps waste	Used or unused sharps (i.e. hypodermic, intravenous or other needles; auto-disable syringes; syringes with attached needles; infusion sets; scalpels; pipettes; knives; blades; broken glass)
Infectious waste	Waste suspected to contain pathogens and pose a risk of disease transmission (i.e. waste contaminated with blood and other body fluids; laboratory cultures and microbiological stocks)
Pathological waste	Human tissues, organs or fluids; body parts; fetuses; unused blood products
Pharmaceutical waste, cytotoxic waste	Pharmaceuticals that are expired or no longer needed; items contaminated by or containing pharmaceuticals Cytotoxic waste containing substances with genotoxic properties, e.g. waste containing cytostatic drugs (used in cancer therapy); genotoxic chemicals
Chemical waste	Waste containing chemical substances (i.e. laboratory reagents; film developer; disinfectants that are expired or no longer needed; solvents; waste with high content of heavy metals, e.g. batteries; broken thermometers and blood pressure gauges)
Radioactive waste	Waste containing radioactive substances (i.e. unused liquids from radiotherapy or laboratory research; contaminated glassware, packages, or absorbent paper; urine and excreta from patients treated or tested with unsealed radionuclides; sealed sources)






Segregation

- Different types of waste require different handling, treatment and disposal
- Segregation must start at the source, i.e. where waste is generated
- In most wards three waste categories are generated and should be segregated accordingly:
 1. General waste
 2. Infectious waste
 3. Sharp waste



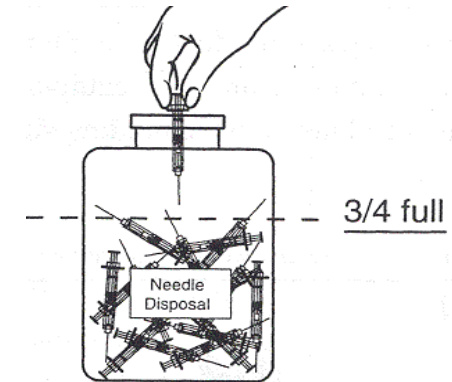


Guidance for bins and containers

Waste categories	Colour and markings	Type of container	Collection frequency
Infectious waste		Leak-proof strong plastic bag placed in a container (bags for highly infectious waste should be capable of being autoclaved).	When three-quarters filled or at least once a day.
Sharp waste		Puncture-proof container.	When filled to the line or three-quarters filled.
Pathological waste		Leak-proof strong plastic bag placed in a container.	When three-quarters filled or at least once a day.
Chemical and pharmaceutical waste		Plastic bag or rigid container.	On demand.
Radioactive waste		Lead box.	On demand.
General health-care waste	Black or grey coloured bag	Plastic bag inside a container or container which is disinfected after use.	When three-quarters filled or at least once a day.

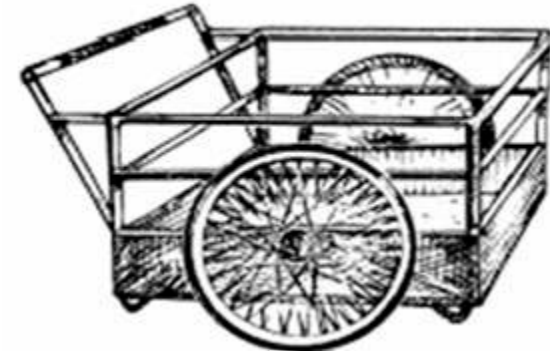
Safe appropriate collection

- A **schedule** should be available for reference: e.g. collection of waste after each shift.
- **PPE use and hand hygiene** action should be followed
- Waste bags should be **collected** when 3/4 full or at least daily
- **Sharp waste** should be collected when the container is 3/4 full
- Hazardous and non-hazardous waste should **never be collected at the same time** as then all waste has to be considered hazardous
- **Tie** bags securely
- After removing the waste bag, **replace** with a new one



Safe and appropriate transport

- Waste handlers should wear appropriate **PPE** and perform **hand hygiene** after handling waste
- Transport waste with covered trolley, wheel barrow, wheeled bin or cart
- **Separate transport** of hazardous and non-hazardous waste (yellow - black)
- Transport equipment should be **dedicated** for waste transportation only
- The equipment must be **cleaned** and disinfected at the end of each working day.



Waste storage: infectious & sharp waste

- Only infectious and sharp waste should be stored here – **no mixture** with other waste.
- **Inaccessible** to unauthorized persons, animals, insects and birds
- Marked with **biohazard symbol**
- **Floor and walls** are sealed or tiled to allow easy disinfection
- Keep well **ventilated & protected** from rain



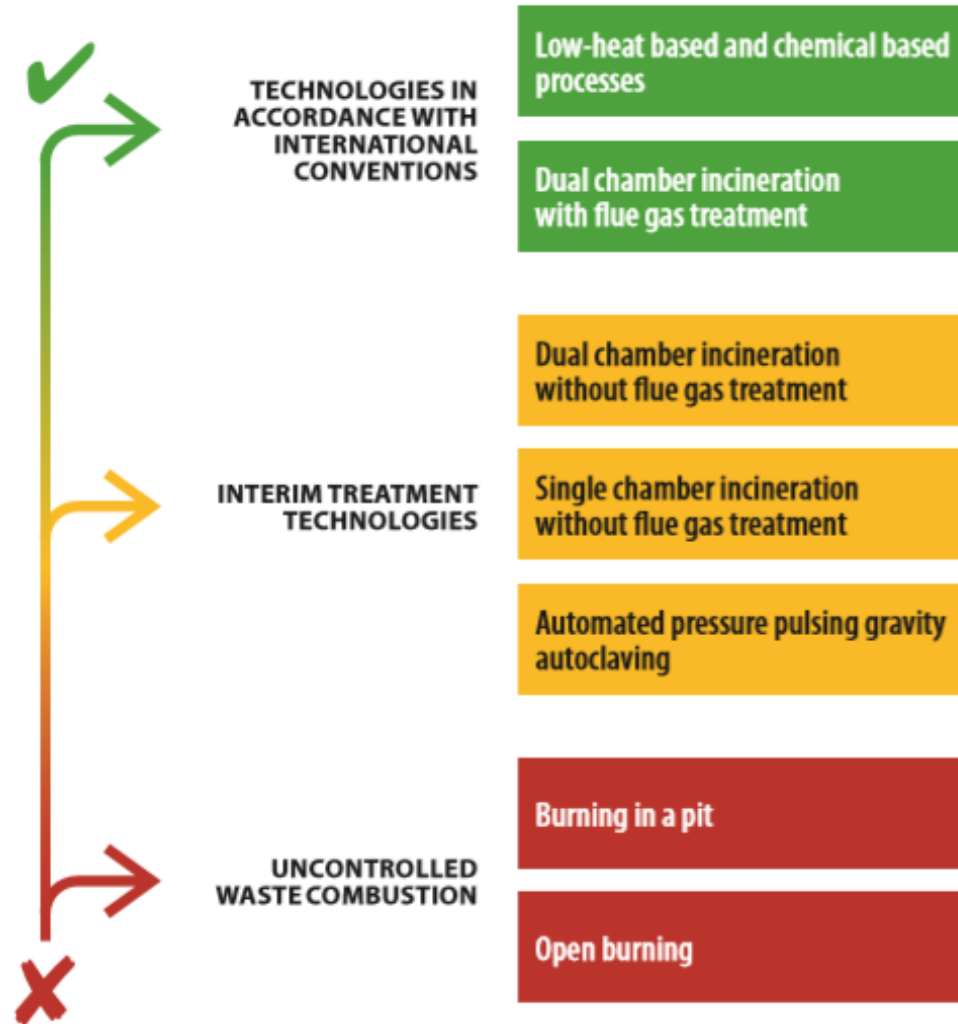
Temperate climate:

- 72 hours in winter
- 48 hours in summer

Warm climate:

- 48 hours during the cool season
- 24 hours during the hot season

Heirarchy of waste treatment options



Incineration

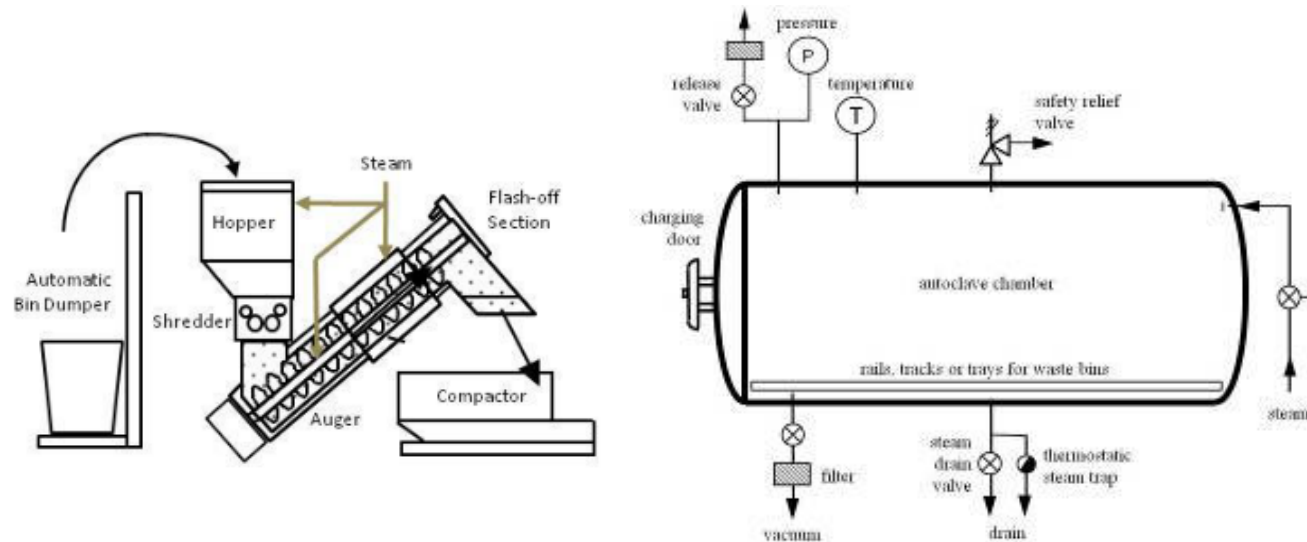
- Incineration should comply with Stockholm Convention (BAT):
 - 2 burning chambers (1st: 850 ° C and 2nd: 1,100° C),
 - auxiliary burners
 - sufficient resident time of air in the 2nd chamber
 - sufficient oxygen content and high turbulence of exhaust gases
 - As well as flue gas treatment
- Small Scale incinerators:
 - Commonly used technology in low recourse settings
 - Low cost, easy to install....
 - Generation of hazardous emissions like dioxin and furans



Stockholm Convention: treaty to protect human health and environment from POPs. Parties are required to use the BAT and BEP limit the levels of dioxins and furans in air emissions to 0.1 ng I-TEQ/Nm³.

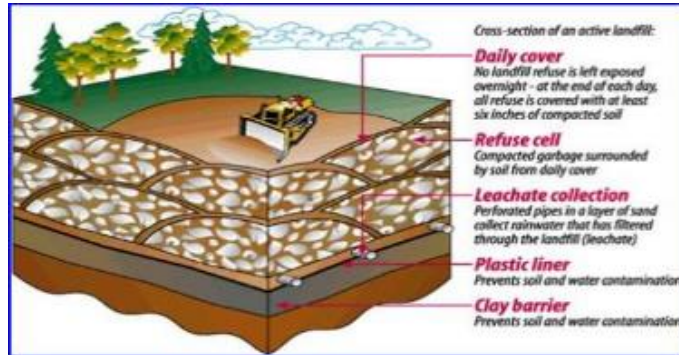
Examples of treatment technologies that **Do Not** generate Dioxins/Furans

- Non-Burn Thermal Technologies (in accordance with Stockholm Convention) like
 - Autoclaves
 - Hybrid Steam Systems
 - Microwave Units

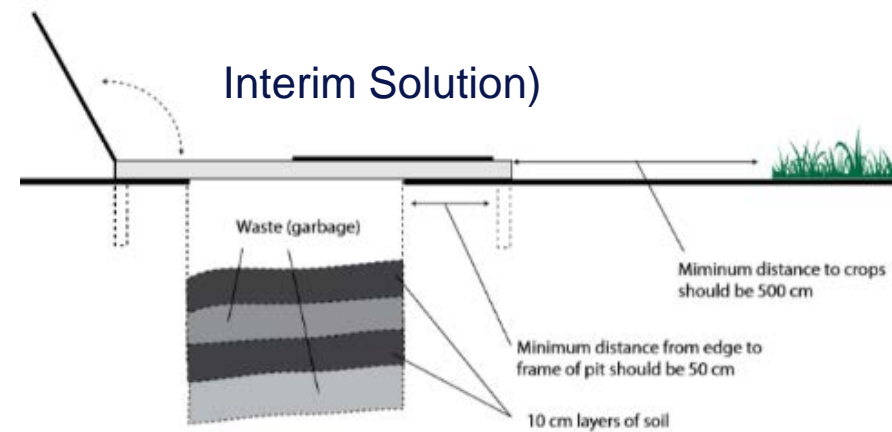


Waste disposal options

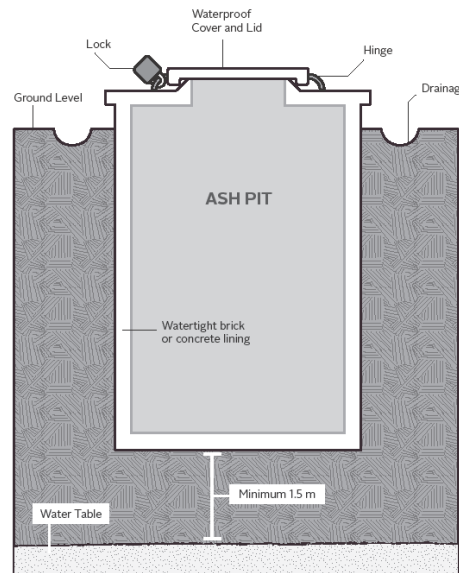
General Waste



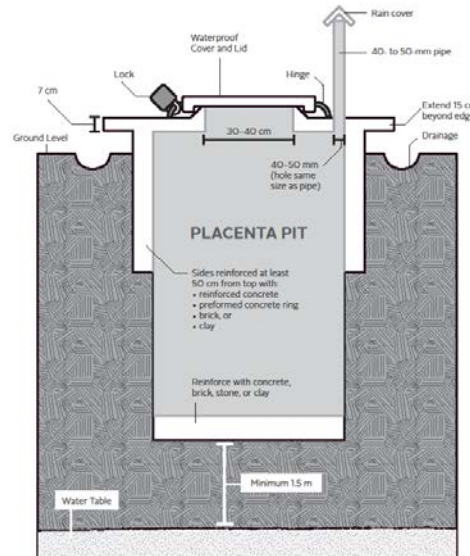
Municipality: Lined landfill (preferable)



Source: Safe management of waste from health-care activities, WHO, 2014



Refer to the text for more information about sizing.



Protected Pits for ash and placenta waste

Source: Technical Specifications, Healthcare Without Harm / MSF

Waste from COVID-19 patients

- **Best practices for safely managing health care waste should be followed, including assigning responsibility and sufficient human and material resources to dispose of waste safely.**
- There is no evidence that direct, unprotected human contact during the handling of health care waste has resulted in the transmission of the COVID-19 virus.
- All health care waste produced during the care of confirmed COVID-19 patients **is considered as infectious** (infectious, sharps and pathological waste) and should be collected safely in clearly marked lined containers and sharp boxes.
- This waste should be treated, preferably on-site, and then safely disposed.
- If waste is moved off-site, it is critical to understand where and how it will be treated and disposed.



Prepare for extra waste generation

- Waste generated in **waiting areas of health care facilities or at home during home based** quarantine can be classified as **non-hazardous** and should be packed in strong black bags and closed properly before disposal by municipal waste services.
- It is important to **asses** the existing waste treatment capacity as the volume of waste during an outbreak will increase (mainly PPE) and additional treatment capacity might be needed.

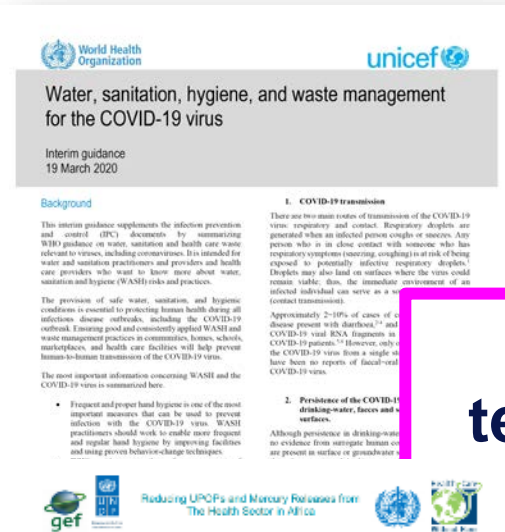
Waste handlers:

- wear appropriate PPE (boots, long-sleeved gown, heavy-duty gloves, mask, and goggles or a face shield) and
- perform hand hygiene after removing it.

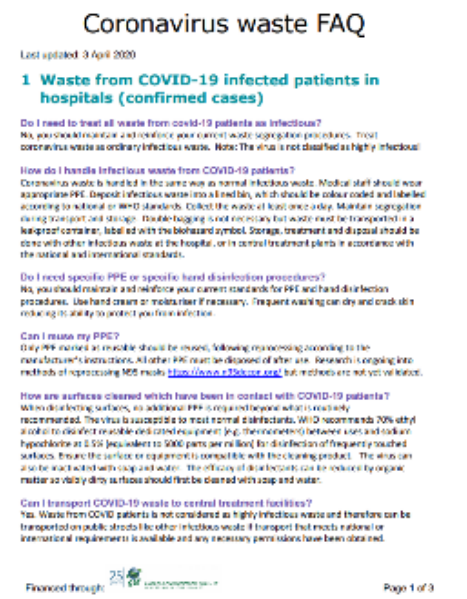
Note: .

A surgical or even a cloth mask can protect against splashes and also help prevent workers touching their faces (N95, FFP2 or 3 masks are not essential).

Key documents on waste in HCF



COVID-19 technical note and FAQs



Baseline reports and practical actions



Disposal options in emergency situations

Encapsulation (disposal of expired vaccines & medications)

Add immobilizing materials (i.e. cement) and seal the container



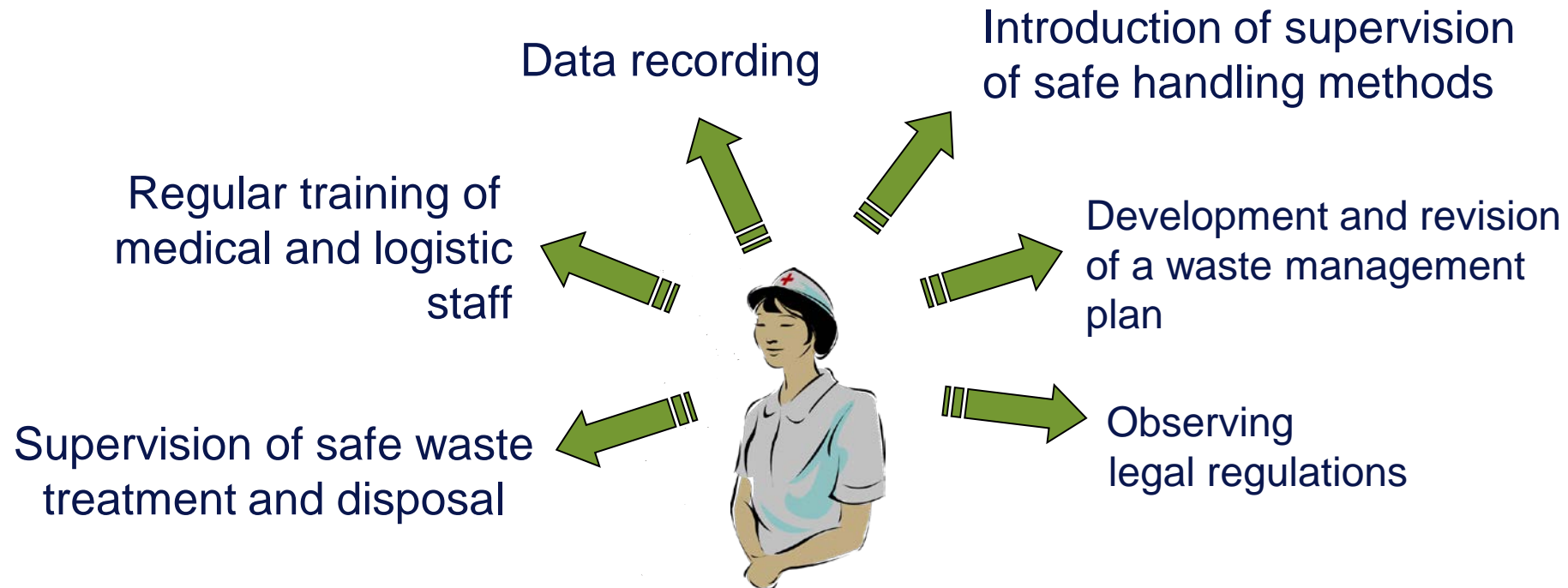
Burning pit

- Disposal of waste only during emergency in the absence of incinerators/autoclaves.
- It causes higher smoke pollution and other health risks

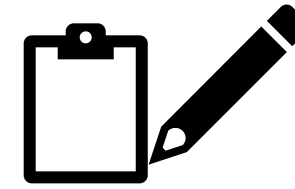


Healthcare waste staff

- A responsible person for the management of healthcare waste should be appointed and trained (Healthcare Waste Officer – HWO)
- This person is often from the Infection Control Committee
- The HWO should be trained on HCWM



Documentation

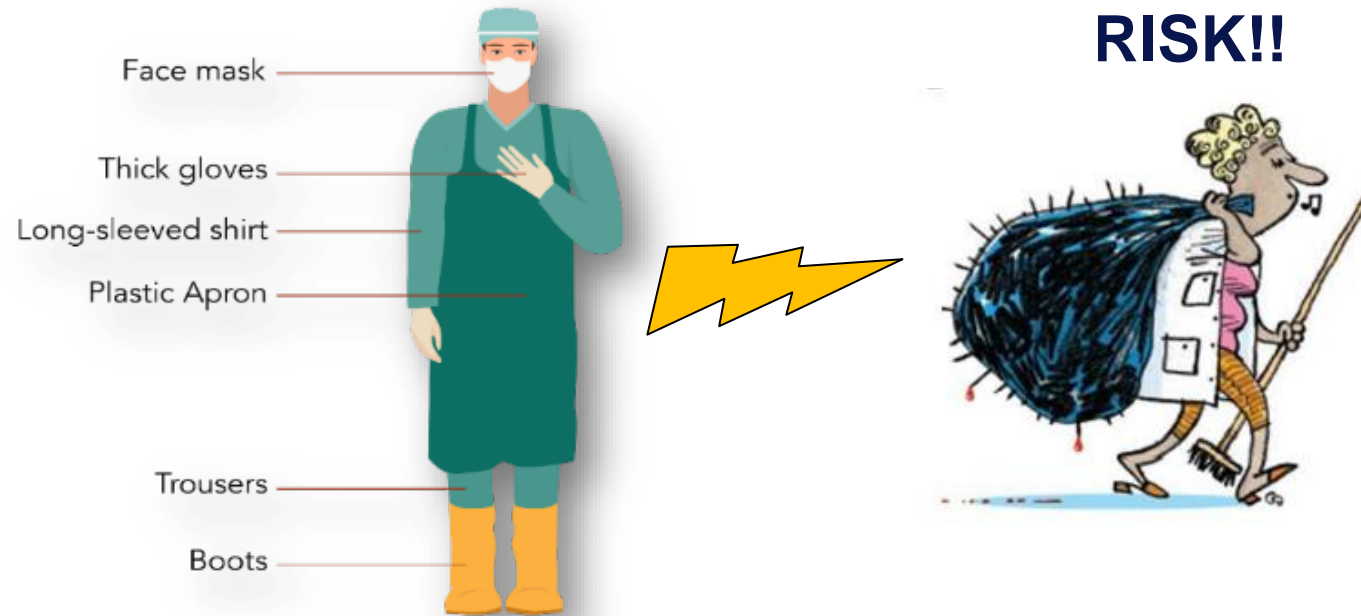


- The following documentation should be available:
- Standard Operation Procedures (SOPs) Protocols (e.g. for segregation, collection, transport, storage, treatment, disposal, spillages):
 - Possible Hazards,
 - Responsible Person, Emergency Contact,
 - Step for step procedure, dos and don'ts.
- Incident Reports (sharp incidents etc.)
- Weighing records of the generated infectious and sharp waste

SOPs Segregation: ⇒ General waste ⇒ Infectious medical waste ⇒ Sharp medical waste	
SOP Collection of waste	
SOP Internal transport from the departments to the waste storage room	
SOP Medical Waste Storage	
SOP Waste bin cleaning	
SOP Spillages	

Safe handling of waste for health care workers

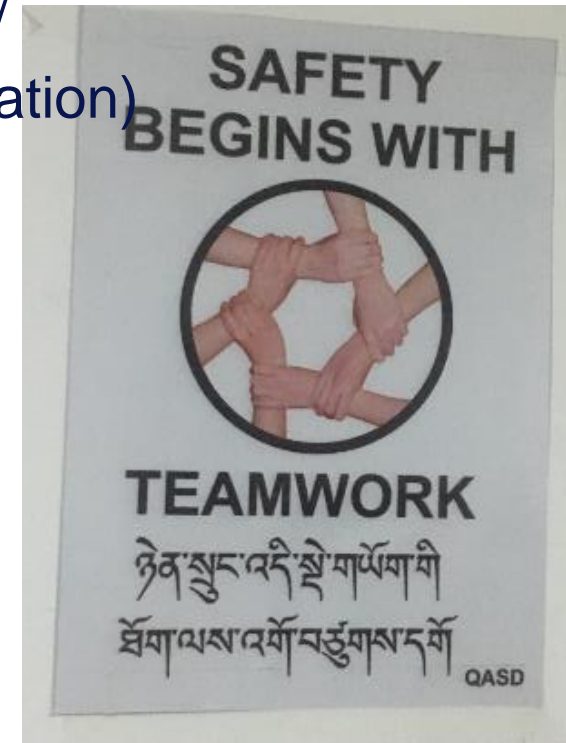
When handling hazardous or infectious waste, always wear personal protective equipment (PPE). PPE should include:



Remember to remove PPE and perform hand hygiene after handling waste!

How to increase sustainability?

- Stakeholders are **convinced** that proper HCWM is important for health and environment!
- **Legal framework, rules and guidance** is available, standardized, known and available for all
- **Training** on HCWM need to be part of the country / district / facility organization / culture (institutionalization)
- Adequate **budget** for HCWM is available
- Equipment and infrastructure is **maintenance and repaired**
- Continues **monitoring and mentoring...**



Key takeaways

1. Segregate hazardous and non-hazardous waste at the point of generation
2. Use sharp boxes – never recap or reuse needles
3. Keep infectious and sharp waste away from patients and public
4. Treat infectious and sharp waste before disposal
5. Plan for incremental improvement of your waste management system



Questions?

Today's slides available at www.washinhcf.org/resource/covid-19-webinar-series-hcwm/
Visit www.washinhcf.org/resources and search "COVID-19" for related resources & slides

References

UNEP (2003). Technical guidelines on the environmentally sound management of biomedical and healthcare waste. <http://archive.basel.int/pub/techguid/tech-biomedical.pdf>

UNEP (2007). Guidelines on best available techniques and provisional guidance on best environmental practices relevant to Article 5 and Annex C of the Stockholm Convention on Persistent Organic Pollutant. <http://chm.pops.int/Implementation/BATandBEP/BATBEPGuidelinesArticle5/tabid/187/Default.aspx>

WHO (1999). Guidelines for safe disposal of unwanted pharmaceuticals in and after emergencies. <http://apps.who.int/medicinedocs/en/d/Jwhozip51e/>

WHO (2003a). Aide-memoire for a strategy to protect health workers from infection with bloodborne viruses. http://www.who.int/occupational_health/activities/1am_hcw.pdf

WHO (2014). Safe management of wastes from health-care activities. http://www.who.int/water_sanitation_health/publications/wastemanag/en/

WHO (2017). Safe management of wastes from health-care activities - A summary;" https://www.who.int/water_sanitation_health/publications/safe-management-of-waste-summary/en/

WHO (2019). Overview of technologies for the treatment of infectious and sharp waste from health care facilities"; https://www.who.int/water_sanitation_health/publications/technologies-for-the-treatment-of-infectious-and-sharp-waste/en/index.html



NEW! WHO & UNICEF webinar series

Responding to country and partner requests for training on WASH in health care facility guidance for **COVID-19**.

Join our webinars to support your action on water, sanitation and hygiene (WASH) and infection prevention and control (IPC) in health care facilities (HCF).

Supporting you to be COVID-19 ready.



- **Thursday 9th April.** Focus on water
- **Tuesday 14th April.** Focus on healthcare waste management
- **Thursday 16th April.** Focus on hand hygiene
- **Tuesday 21st April.** Focus on environmental cleaning
- **Thursday 23rd April.** Focus on sanitation

All webinars will last 60 minutes & take place at the following times:



- 7am EST
- 12pm BST
- 1pm CEST
- 4.30pm IST
- 7pm PHT

Register here to join the webinars via Zoom
<https://who.zoom.us/j/414362052>

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Today's agenda

- Introduction & framing of topic (UNICEF WASH; 5 minutes)
- Introduction to environmental cleaning during COVID-19 outbreak (Maria Clara Padoveze, WHO IPC; 10 minutes)
- Latest guidance on environmental cleaning in health care facilities during the COVID-19 outbreak (Molly Patrick, CDC) – 25 minutes
- Perspective from African content – (Professor Folasade T Ogunsola; University of Lagos, Nigeria and Chair, Infection Control Africa Network; 5 minutes)
- UNICEF WASH – 5 minutes
- Questions and answers (chat box)

WASH in health care facilities for preventing COVID-19



**Session 4 (21 April 2020):
Environmental cleaning**

Introduction to environmental cleaning during COVID-19 outbreak



MARIA CLARA PADOVEZE, RN, MsC, PhD

IPC Expert – WHO Technical Officer

IPC Technical and Clinical Hub, WHO

Thanks for Alice Simniceanu, MPH, CIC, IPC Consultant

Goals of Infection Prevention and Control



Protecting yourself



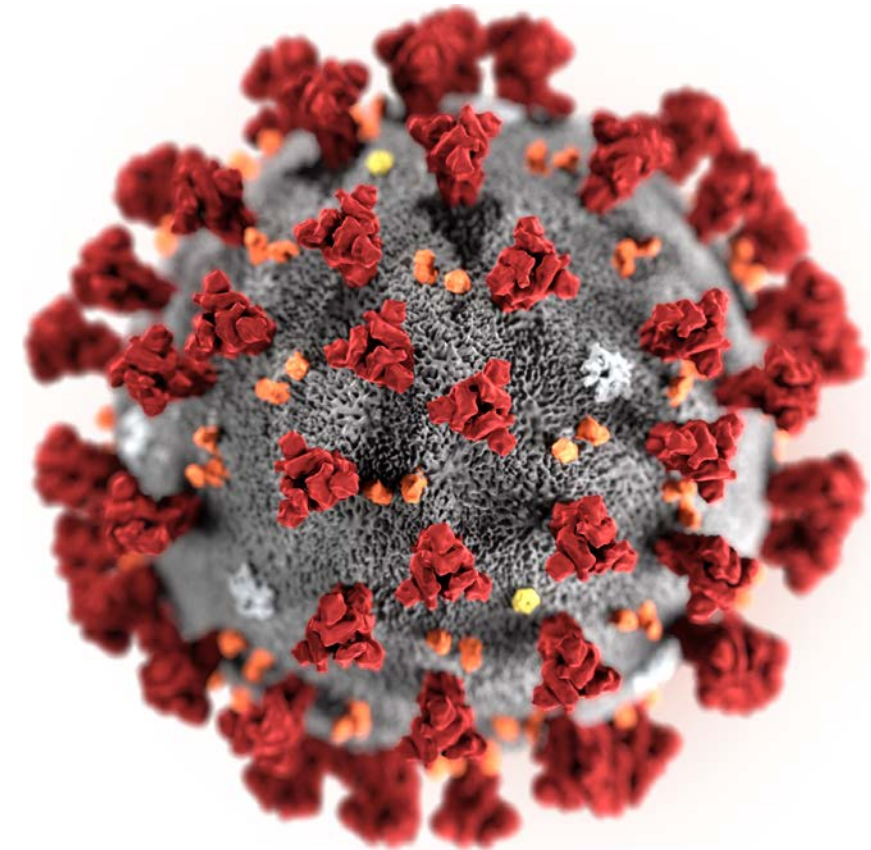
Protecting your patients



Protecting your family &
community

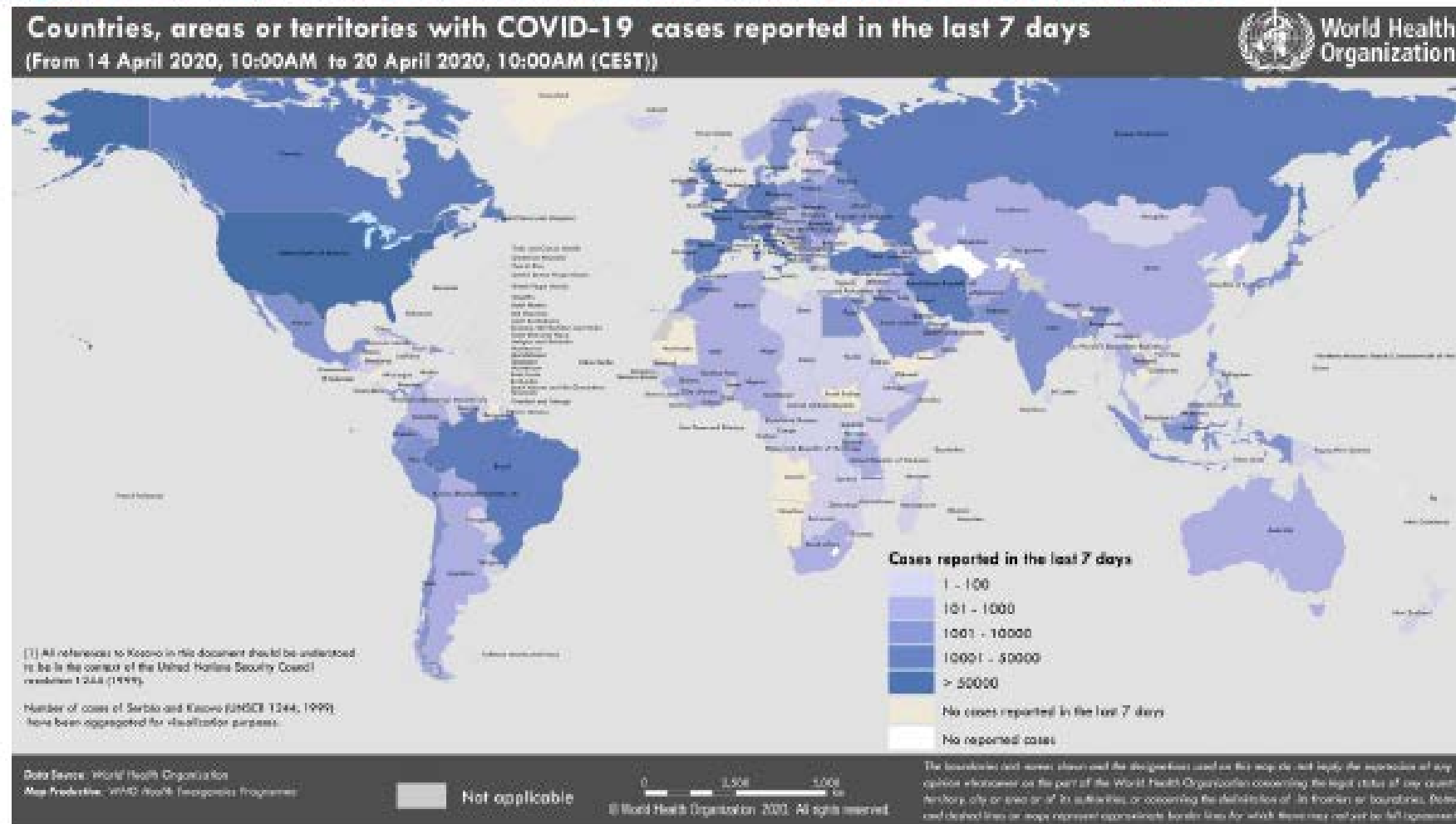
What is a coronavirus?

- Coronaviruses (CoV) are a large family of viruses that cause a wide range of illness from the common cold to more severe diseases
 - i.e., Middle East Respiratory Syndrome [MERS] and Severe Acute Respiratory Syndrome [SARS]
- The novel coronavirus (SARS-CoV-2) is a new strain that has not been previously identified in humans.

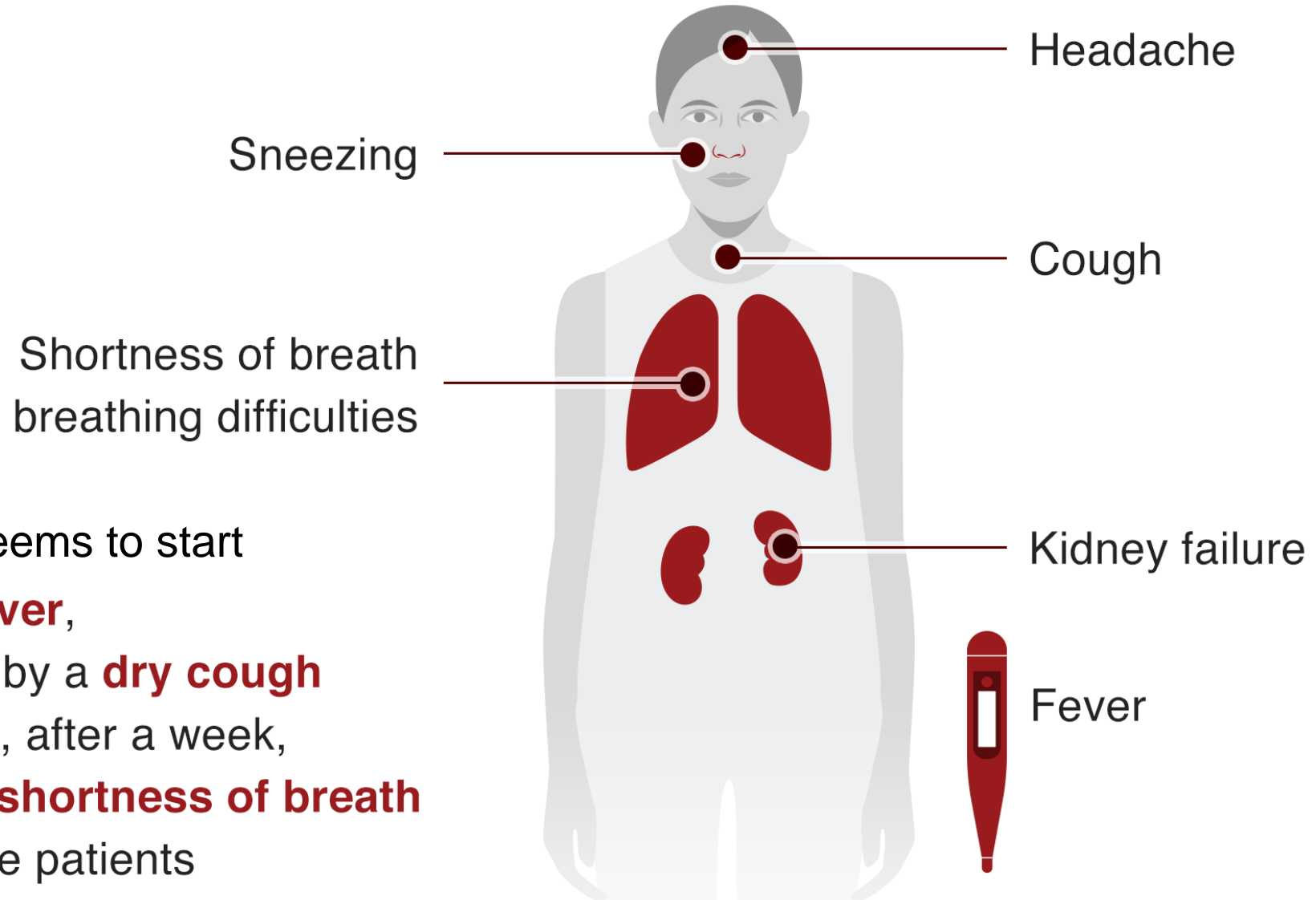


Countries affected (19-04-2020)

Figure 1. Countries, territories or areas with reported confirmed cases of COVID-19, 20 April 2020



COVID-19 signs and symptoms



Illness seems to start with a **fever**, followed by a **dry cough** and then, after a week, leads to **shortness of breath** and some patients needing hospital treatment

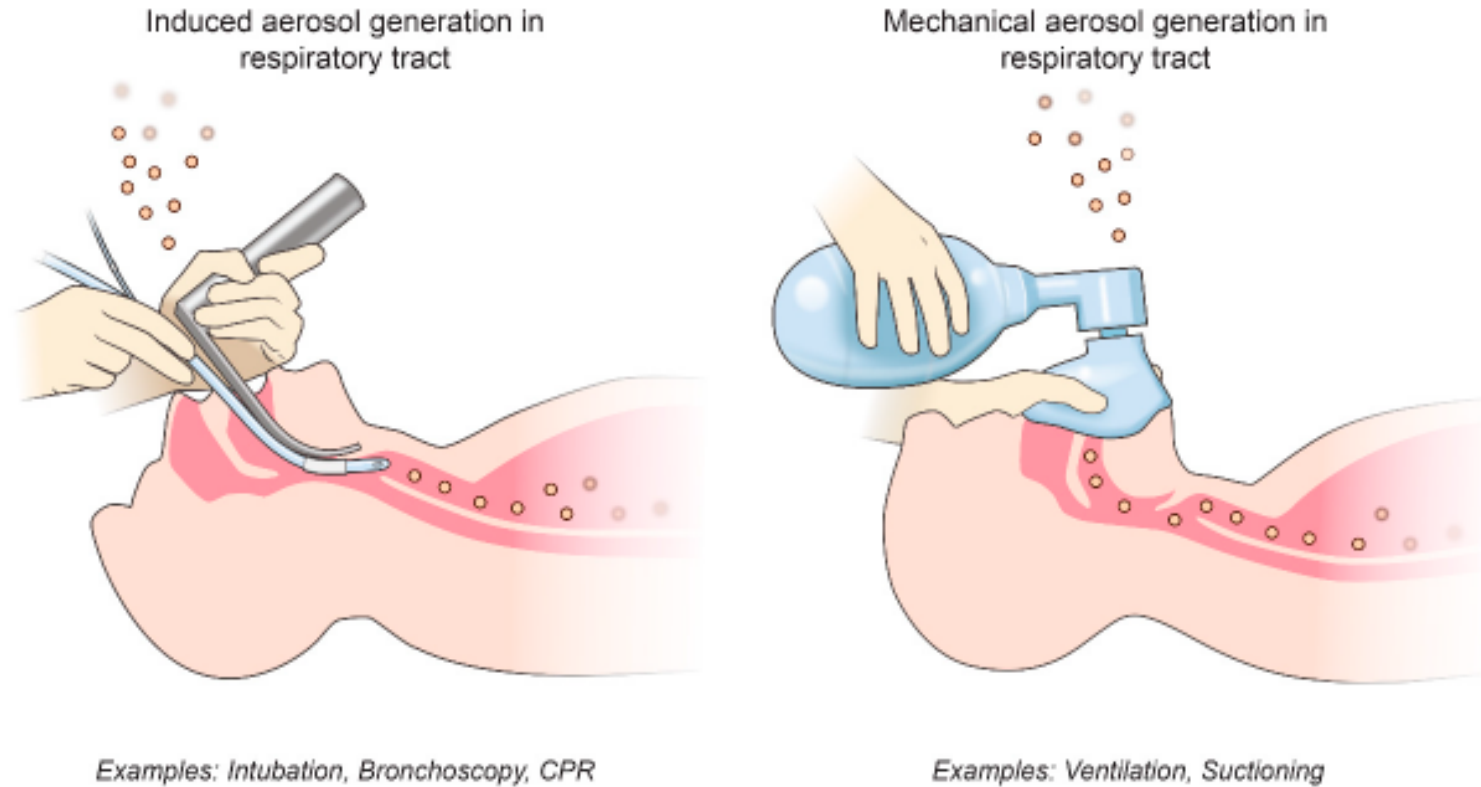


Figure 1. Potential types of aerosol-generating medical procedures (AGMPs). AGMPs can be divided into procedures that induce the patient to produce aerosols and procedures that mechanically generate aerosols themselves.

What do we know about environmental survival?

Many clinically important healthcare pathogens can survive on surfaces for days to possibly months

Laboratory-based studies (see table):

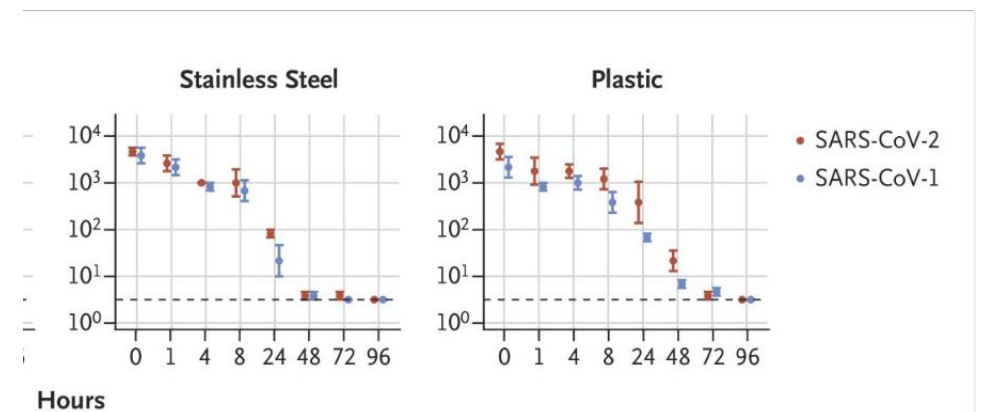
- Actual survival based on temperature, humidity, surface type and other factors

Organism	Survival time
Methicillin-resistant <i>Staphylococcus aureus</i>	7 days→7 mo
<i>Acinetobacter</i> <i>Clostridium difficile</i>	3 days→5 mo >5 mo
Vancomycin-resistant <i>Enterococcus</i>	5 days→4 mo
<i>Escherichia coli</i>	2 h–16 mo
<i>Klebsiella</i>	2 h→30 mo
Norovirus	8 h–7 days

(Dancer, 2014 adapted from Kramer, 2006)

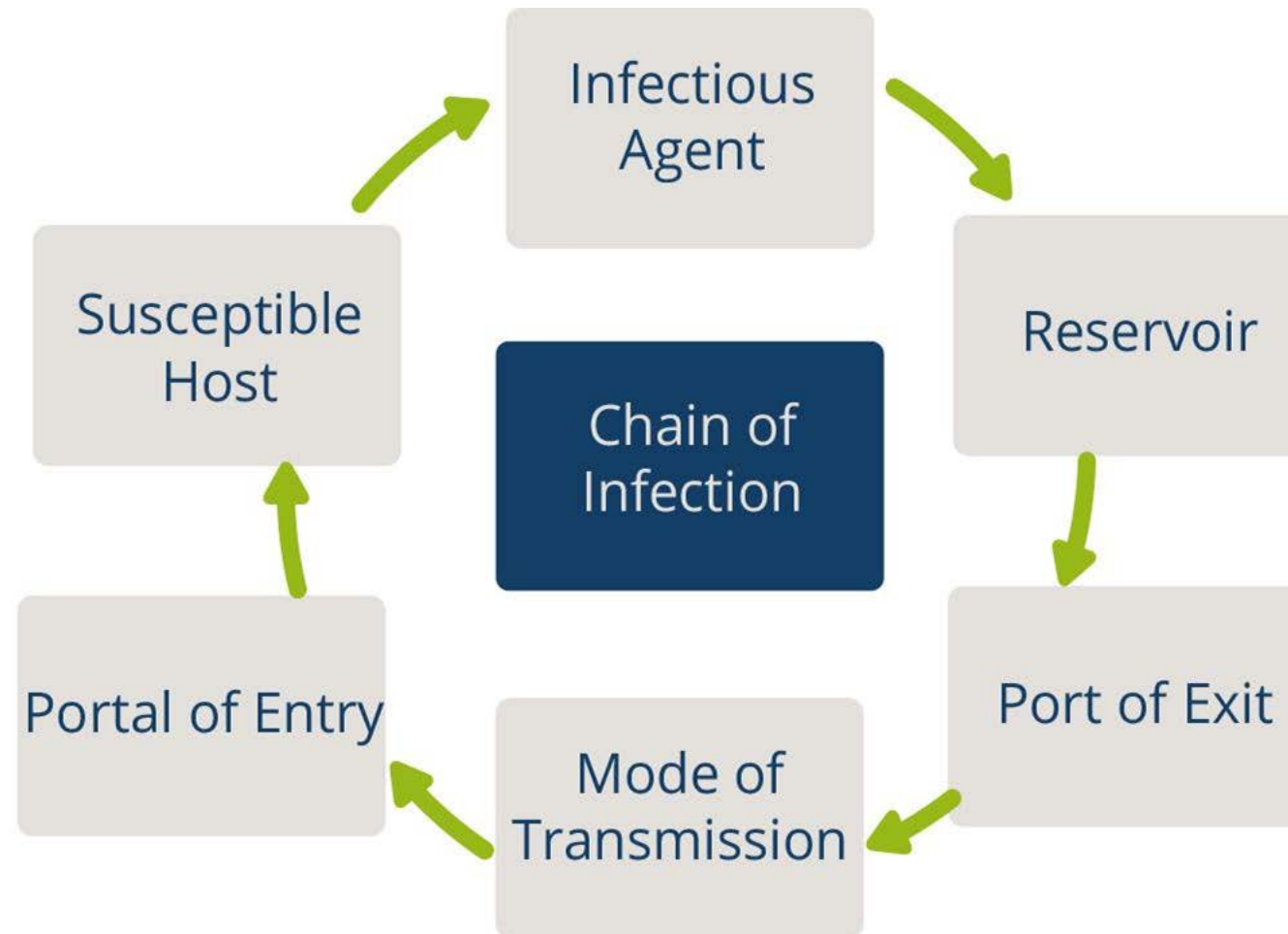
COVID-19 (laboratory studies):

- 2-7 days (wood 2 days; plastic and stainless steel 7 days) (Chin et al, 2020)
- ~ 4 days (plastic and stainless steel) (van Doremalen et al, 2020)



(van Doremalen et al, 2020)

Chain of Transmission



- For an infection to spread, all links must be connected
- Breaking any one link, will stop disease transmission!

Environmental cleaning in health care

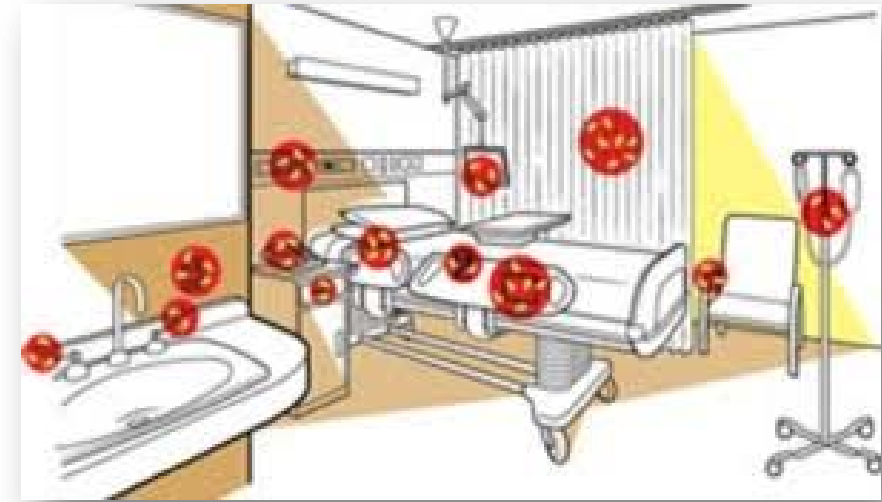
Cleaning and disinfection (when needed based on risk) of *environmental surfaces* and *non-critical patient care equipment*

Environmental surfaces include:

- Tables, chairs, floors, walls, bedrails, light switches

Non-critical patient care equipment means:

- Comes into contact with intact skin only (not mucous membranes, for example)
- Examples in a clinical setting: IV poles, blood pressure monitors, stethoscopes, mobile computers and workstations, incubators, wheelchairs

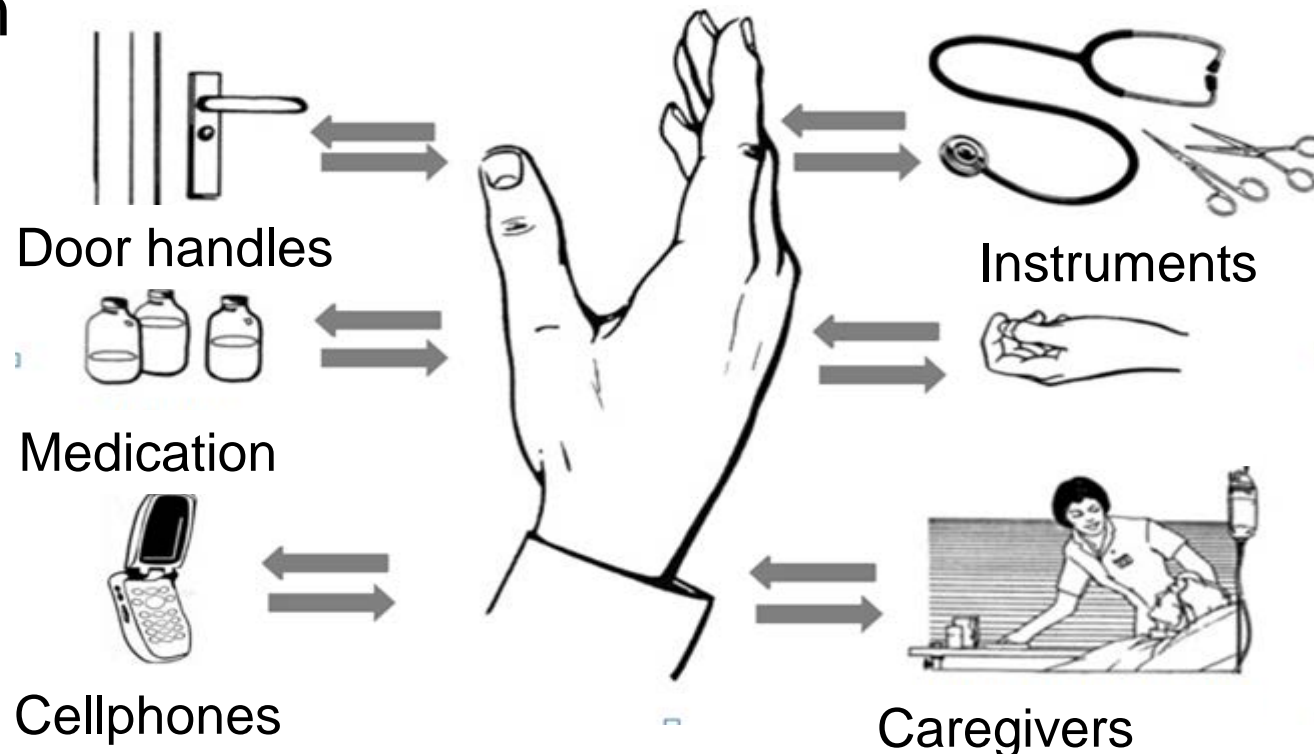


Emphasis is always on surfaces that are frequently touched by HCWs and/or patients “high-touch surfaces”



Hand Hygiene

- Best way to prevent the spread of germs in the health care setting and community
- Our hands are our main tool for work as health care workers- and they are the key link in the chain of transmission



Key messages for environmental cleaning in context of COVID-19

1. COVID-19 can survive on environment surfaces for days, but environmental survival is low compared to many other important pathogens
2. Environmental cleaning is important to mitigate the spread of COVID-19 (contact transmission route)
3. Environmental cleaning using existing best practice methods and strategies is effective against COVID-19
4. COVID-19 is susceptible to standard environmental cleaning and disinfection methods (enveloped virus)

Key messages for environmental cleaning in context of COVID-19

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Key documents for environmental cleaning in health care



Essential environmental health standards in health care

Edited by John Adams, Jamie Bartram, Yves Dhartier

World Health Organization



Implementation manual to prevent and control the spread of carbapenem-resistant organisms at the national and health care facility level

Interim practical manual supporting implementation of the Guidelines for the prevention and control of carbapenem-resistant Enterobacteriaceae, *Acinetobacter baumannii* and *Pseudomonas aeruginosa* in health care facilities

World Health Organization



Best Practices for Environmental Cleaning in Healthcare Facilities: in Resource-Limited Settings

VERSION 2

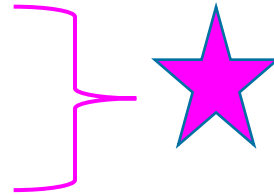
Centers for Disease Control and Prevention
National Center for Emerging and Zoonotic Infectious Diseases
Division of Healthcare Quality Promotion

WHO 2020 [Technical guidance on IPC / WASH for COVID-19](#) ★

Environmental cleaning requires a multi-modal approach

For all types of healthcare facilities, **best practices for cleaning programs** should include:

1. Organizational structures
2. Staffing and training
3. Policies and standardized procedures
4. Supporting infrastructure and supplies
5. Monitoring, feedback and audit



These elements are needed for all types of facilities

- More resource-intensive and complex at acute care hospitals

These are relevant no matter whether cleaning is provided by in-house services or contracted

Refer to CDC Guidance for more information: www.cdc.gov/hai/pdfs/resource-limited/environmental-cleaning-508.pdf

Best Practices for Environmental Cleaning Programs

1. Organizational structures

- Administrative/leadership support:

- Designated facility-based manager or focal person
- Validation of cleaning policy
- Annual budget

- Communication and integration of cleaning program:

- Multisectoral planning committee
- Routine meetings with key stakeholders

- Management and supervisory structures:

- Cleaning program organizational chart

- On-site supervisors



Who are the key stakeholders that should meet regularly?

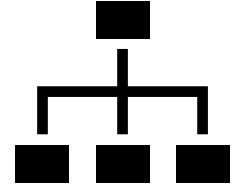
Essential Management Roles for Cleaning Program

Focal Point/Onsite Program Manager



- Part- or full-time
- Facility staff
- Should have JD/TOR and salary allocation
- Liaise with IPC committee, contracting company, ward in-charge staff

Onsite Cleaning Supervisors



- Should have assigned cleaning staff (max 20)
- Conduct monitoring and give feedback
- Address work-day issues (supplies, safety concerns)

Best Practices for Environmental Cleaning Programs



2. Staffing and training

- Formal staffing:
 - Job descriptions, performance standards
 - Adequate staffing levels
- Formal training:
 - Introduction to IPC
 - Practice and review
 - Workplace safety

Training best practices:

- Participatory
- Practical (hands-on)
- Appropriate literacy level
- Repeated annually (refresher)
- Conducted prior to staff working on their own
- Led by experienced trainers

Without a structured training program, cleaning staff put themselves and others at risk

Refer to LSHTM for a great training program for low-resource settings: <https://www.lshtm.ac.uk/research/centres/march-centre/soapbox-collaborative/teach-clean>

Lessons Learned from Implementation

TEACH-CLEAN Training Package: provides information & tools to deliver comprehensive participatory training in basic IPC & environmental hygiene to all staff who clean in healthcare facilities in LMICs.

Experiences from implementation in Gambia, India, Myanmar & Tanzania:

- Participatory approach greatly appreciated
- Important to consider including in training, healthcare professionals who clean &/or supervise cleaners → helps improve mutual respect
- Scheduling training can be challenging as must fit around cleaning rotas
- High turn-over of cleaners, so need for repeat training
- Important training is matched by regular availability of equipment & supplies
- Post-training supportive supervision is key, including reminders using illustrated guidelines

TEACH CLEAN was created by The Soapbox Collaborative & the London School of Hygiene & Tropical Medicine. For free copy, visit: <https://www.lshtm.ac.uk/research/centres/march-centre/soapbox-collaborative/teach-clean>



HEALTH WORKERS WHO CLEAN ARE ENVIRONMENTAL HEALTH CHAMPIONS

Environmental cleaning is known to play a key role in reducing the global burden of healthcare associated infections (HAIs) and antimicrobial resistance (AMR). In line with WHO & UNICEF recommendations, system wide changes are necessary to establish improvements in environmental hygiene to strengthen infection prevention and control (IPC) and achieve global goals, including addressing:

- Training for all staff responsible for cleaning
- Resource availability
- Availability & monitoring of cleaning protocols & records
- Supportive supervision
- Increasing the emphasis on health for all

Participatory Teaching for a Cleaner Environment and Health for All

The **TEACH CLEAN** package presents information and materials required to deliver comprehensive, participatory training in environmental hygiene and IPC in healthcare facilities.


Tailored towards use within low-resource settings, TEACH CLEAN is a freely available, evidence and best practice based resource which is:

- Intended for use by organisations & individuals who want to improve knowledge & practices of those who clean
- Accessible for staff with limited literacy skills through its participatory approach to training
- Adaptable to the local context
- Suitable for a cascade approach to training (Training of Trainers)

The TEACH CLEAN package contains:

- A 'How to Train' instruction document and ToT modules on Supportive Supervision & Quality Improvement
- Seven essential Clean Box training modules addressing IPC and environmental hygiene
- Competency Assessment Checklists
- Written and Illustrated Cleaning Procedure Guidelines
- An Advocacy & Communications Resource Pack

TEACH CLEAN helps address a lack of formal training for those who clean and promotes IPC and WASH standards for a safer environment. It underpins quality health for all.



How To Clean A Blood Spillage

Materials: Chlorine jug, chlorine solution, detergent solution, absorbent material, cloths and mop

- 1 Wash and dry hands
- 2 Put on apron
- 3 Put on gloves
- 4 Cover the spillage with absorbent material
- 5 Allow the spillage to be absorbed into the material
- 6 Gather the contaminated absorbent material
- 7 Dispose of as clinical waste
- 8 Dampen cloth in chlorine solution
- 9 Clean spillage area
- 10 Dispose of cloths as contaminated waste **OR** as clinical waste linen
- 11 Dampen a second cloth or mop in detergent and go over the area again to remove any chlorine
- 12 Remove gloves and dispose of them safely
- 13 Remove apron and dispose of it safely
- 14 Wash and dry hands

TEACH CLEAN

Best Practices for Environmental Cleaning Programs



3. Policies and standardized procedures

• Facility cleaning policy

- Reporting lines and responsibilities
- **Cleaning schedules**
- Training requirements
- Monitoring requirement
- Approved cleaning products, supplies and equipment

• Standard operating procedures (SOPs) and job aids

- **Step-by-step process** for performing cleaning in each patient care area
- Should include all of the products, supplies and equipment required (including cleaning staff PPE)
- SOPs and job aids also needed for preparing cleaning and disinfectant products, reprocessing non-critical equipment

Appendix B Table 2. Cleaning Procedure Summaries for General Inpatient Areas (Adult)

Type of Clean	Frequency	Person / Staff Responsible	Products/Technique	Additional Guidance / Description of Cleaning
Routine clean	At least daily	Cleaning staff	Clean (neutral detergent and water): <ul style="list-style-type: none">• high-touch surfaces in the patient zone• handwashing sinks• floors	In addition, clean low-touch surfaces on a scheduled basis (e.g., weekly).

What are the recommended cleaning schedules in the context of COVID-19?

Patient area	Frequency	Person / staff responsible	Products/Supplies	Additional guidance
Triage area	At least daily, twice daily preferable	Environmental cleaning (EC) staff	Cleaning solution (neutral detergent and water); Disinfectant (alcohol, chlorine-based, other as approved*) *will address in more detail later in slides Freshly made solutions, cloths, and mops for each cleaning session PPE: gowns and/or impermeable aprons, rubber gloves, medical mask, and eye protection (preferably face shield)	Focus on high-touch surfaces, then floors (last)
Inpatient rooms / cohort – occupied	At least daily, twice daily preferable	EC staff OR clinical staff if possible		Focuses on high-touch surfaces, starting with shared/common surfaces, then move to each patient bed; use new cloth for each bed if possible
Inpatient rooms – unoccupied (terminal clean)	Upon discharge/transfer	EC staff		Low-touch surfaces, high-touch surfaces, floors (in that order); waste and linens removed, bed thoroughly cleaned and disinfected
Outpatient / Ambulatory Care rooms	After each patient visit and at least once daily terminal clean	Clinical staff (after each patient); Terminal clean (EC staff)		High touch surfaces to be disinfected after each patient visit; terminal clean as above (end of day)
Hallways / Corridors	At least daily, twice daily preferable	EC staff		High-touch surfaces (e.g., railings)
Patient toilets	Private (at least daily); Shared (at least three times daily)	EC staff		High-touch surfaces, including door handles, light switches, counters, faucets, then sink bowls, then toilets and finally floor (in that order)

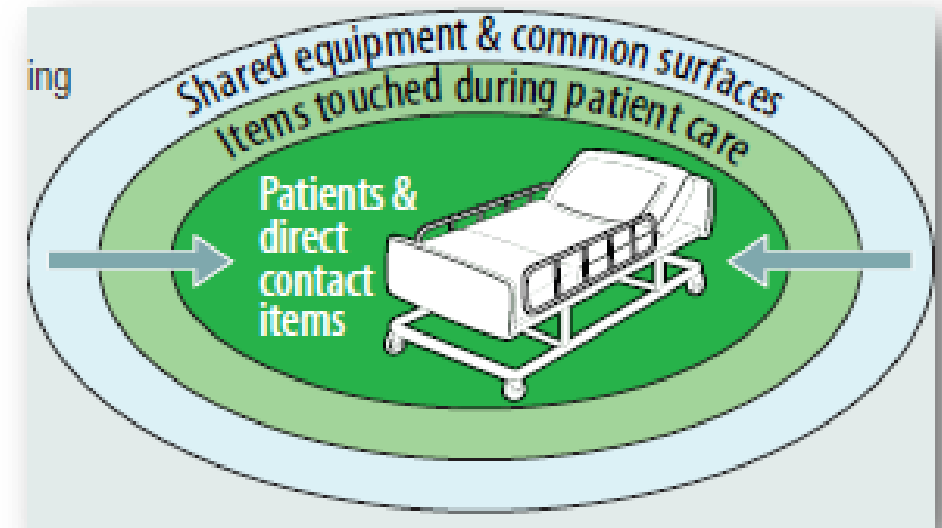
Best practices for cleaning procedures

1. Proceed from cleaner to dirtier:

- Clean high-touch surfaces outside the patient zone before high-touch surfaces inside the patient zone
- Clean patient beds before patient toilets
- Clean low-touch surfaces before high-touch surfaces (terminal clean)
- Clean general patient areas before isolation areas

Priority!

Immediately attend to any **body fluid spills** prior to starting routine cleaning



Example of a cleaning strategy from cleaner to dirtier areas

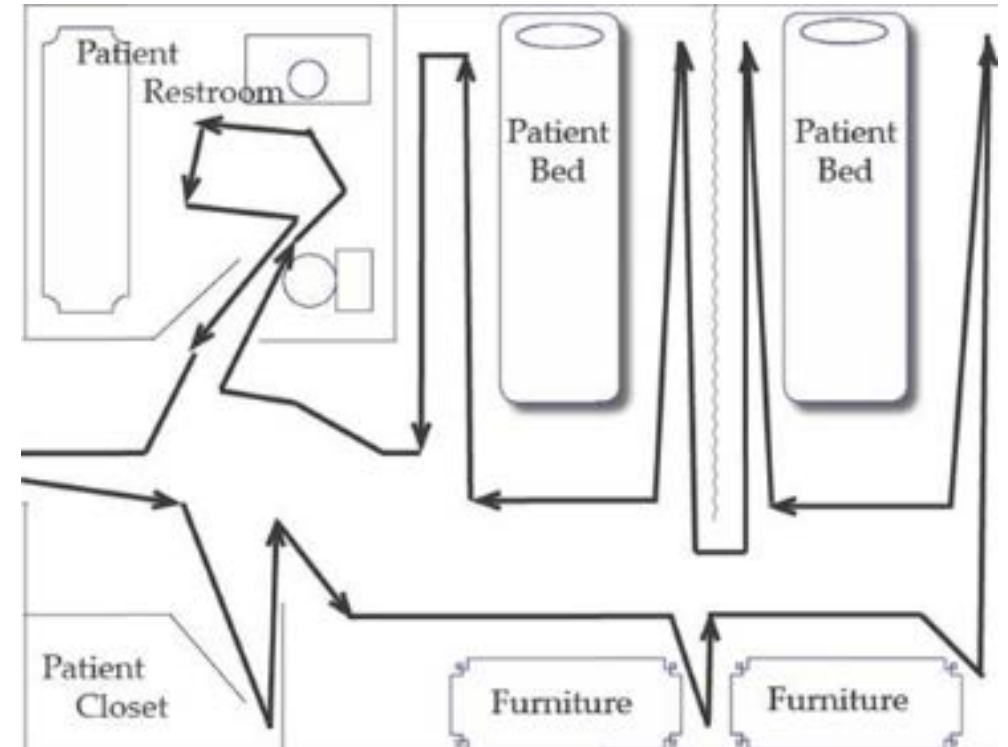
Best practices for cleaning procedures

2. Proceed **from high to low** (top to bottom):

- Clean bed rails before bed legs
- Clean environmental surfaces before floors

3. Proceed in a **methodical, systematic manner**:

- Left to right
- Clockwise or counterclockwise

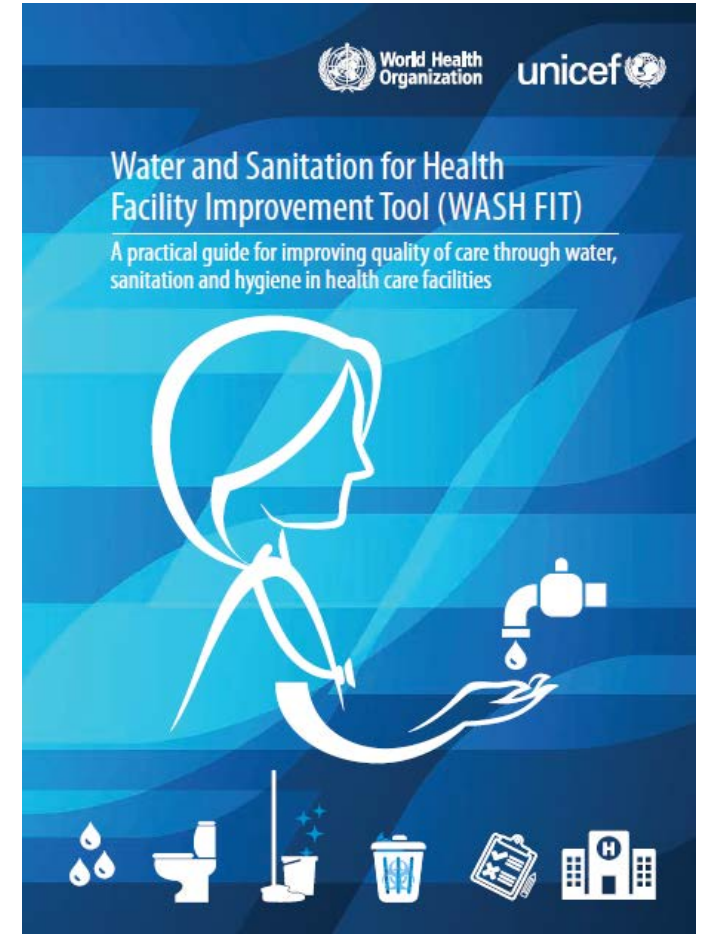


Example of surface cleaning, moving in a systematic manner around the patient care area

Best Practices for Environmental Cleaning Programs

4. Supporting infrastructure and supplies

- Designated space at facility
 - Environmental cleaning services area
 - Decontamination / sluice area
- Water and wastewater services
 - Adequate water supply and wastewater management!
- Approved cleaning products, supplies and equipment
- Procurement and supply management systems
 - Avoid stock-out of cleaning supplies and equipment
 - Furniture and patient equipment that can be cleaned



General definitions

Cleaning: the physical removal of foreign material (e.g., dust, soil) and organic material (e.g., blood, secretions, excretions, microorganisms). Cleaning physically removes rather than kills microorganisms. It is achieved with water, detergents, and using 'mechanical action' (e.g., friction, scrubbing). **Cleaning is always the first step in environmental cleaning.**

Disinfection: a thermal or chemical process for inactivating microorganisms (with the exception of bacterial spores) on inanimate objects. **Disinfection occurs after the cleaning process.**

- **Low-level disinfection**: inactivates most vegetative bacteria, some fungi, and some viruses, but does not kill more hardy viruses (e.g. non-enveloped), bacterial genus (e.g. mycobacteria), or bacterial spores
- **Mid-level disinfection**: kills inactivate vegetative bacteria, including mycobacteria, most viruses, and most fungi, but might not kill bacterial spores
- **High-level disinfection**: kills all microorganisms, with the exception of small numbers of bacterial spores (**not used for environmental cleaning, used for invasive device reprocessing**)

Correspond to
Spaulding
classification

Cleaning and disinfectant products for environmental cleaning

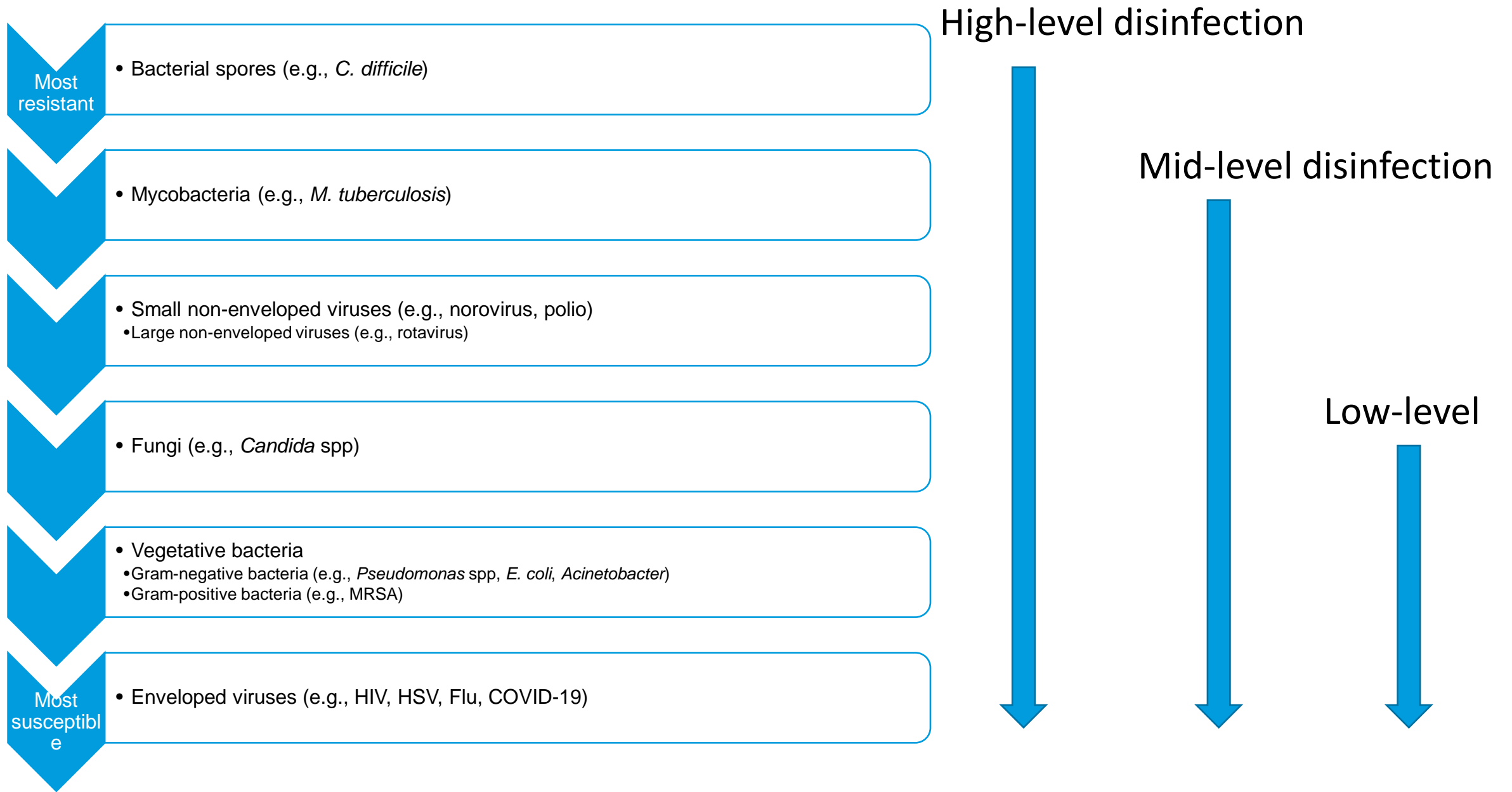
Cleaning products: liquids, powders, sprays, or granules that remove organic material (e.g., dirt, body fluids) from surfaces and suspend grease or oil. Can include liquid soap, enzymatic cleaners, and **detergents**.

- For most surface cleaning procedures: neutral detergent (pH 6-8), easily soluble in warm and cold water is best

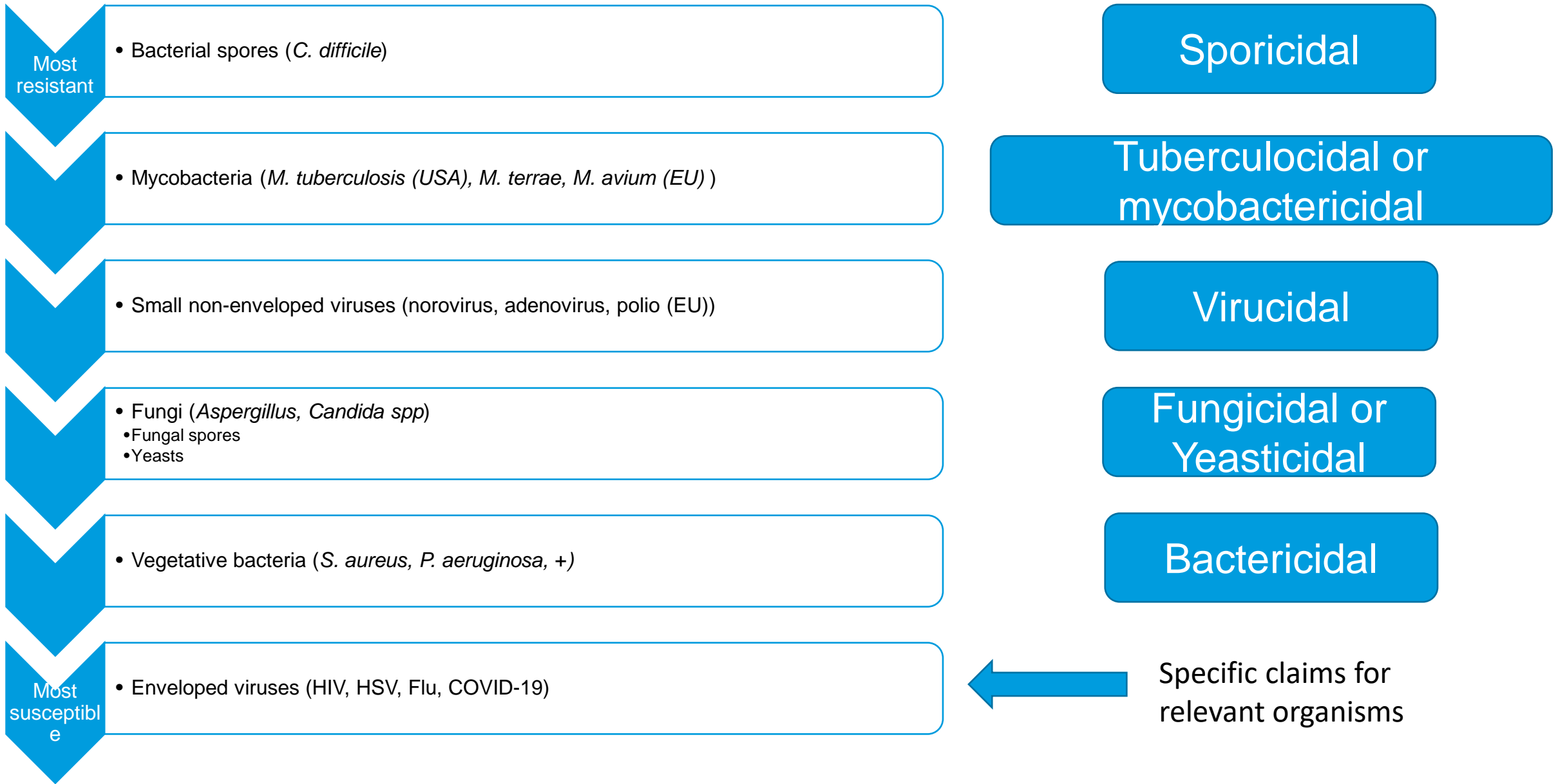
Disinfectants: Chemical compounds that inactivate (i.e., kill) pathogens and other microbes and fall into one of three categories based on chemical formulation: low-level, mid-level, and high-level. Disinfectants are applied only to inanimate objects. **All organic material and soil must be removed by a cleaning product before application of disinfectants.**

- For most surface disinfection procedures: low-level disinfectants are used (mid-level disinfectants are often required)
- Some products combine a cleaner with a disinfectant (combined detergent-disinfectants)
- There are some situations where separate cleaning and disinfectant products are required

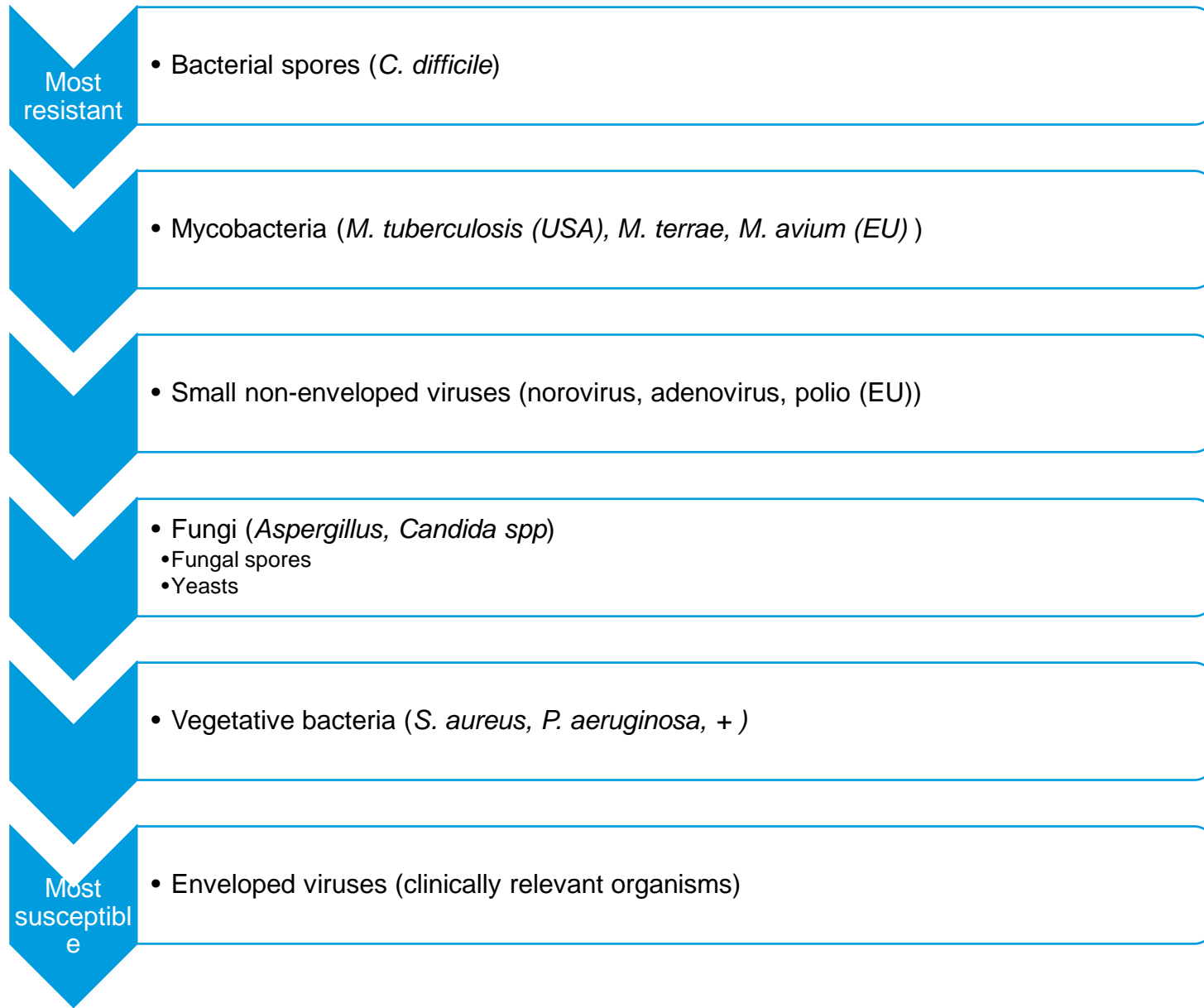
Microbial disinfectant hierarchy – intrinsic resistance



Microbial disinfectant hierarchy – spectrum of activity



Microbial disinfectant hierarchy – role of test organisms



- Test organisms are used to make a claim regarding the spectrum of activity
- They should be representative of the class of microbes in the hierarchy (e.g., *P. aeruginosa* or *S. aureus* for all vegetative bacteria)
- Should generally have following characteristics:
 - Microbiologically well characterized
 - A clinically important human pathogen or a validated surrogate for a human pathogen
 - Standardized stock strains available from commercial sources
- Test organisms are sector specific (e.g., food industry, health care) and also vary by country/geography

Disinfectants

Note:

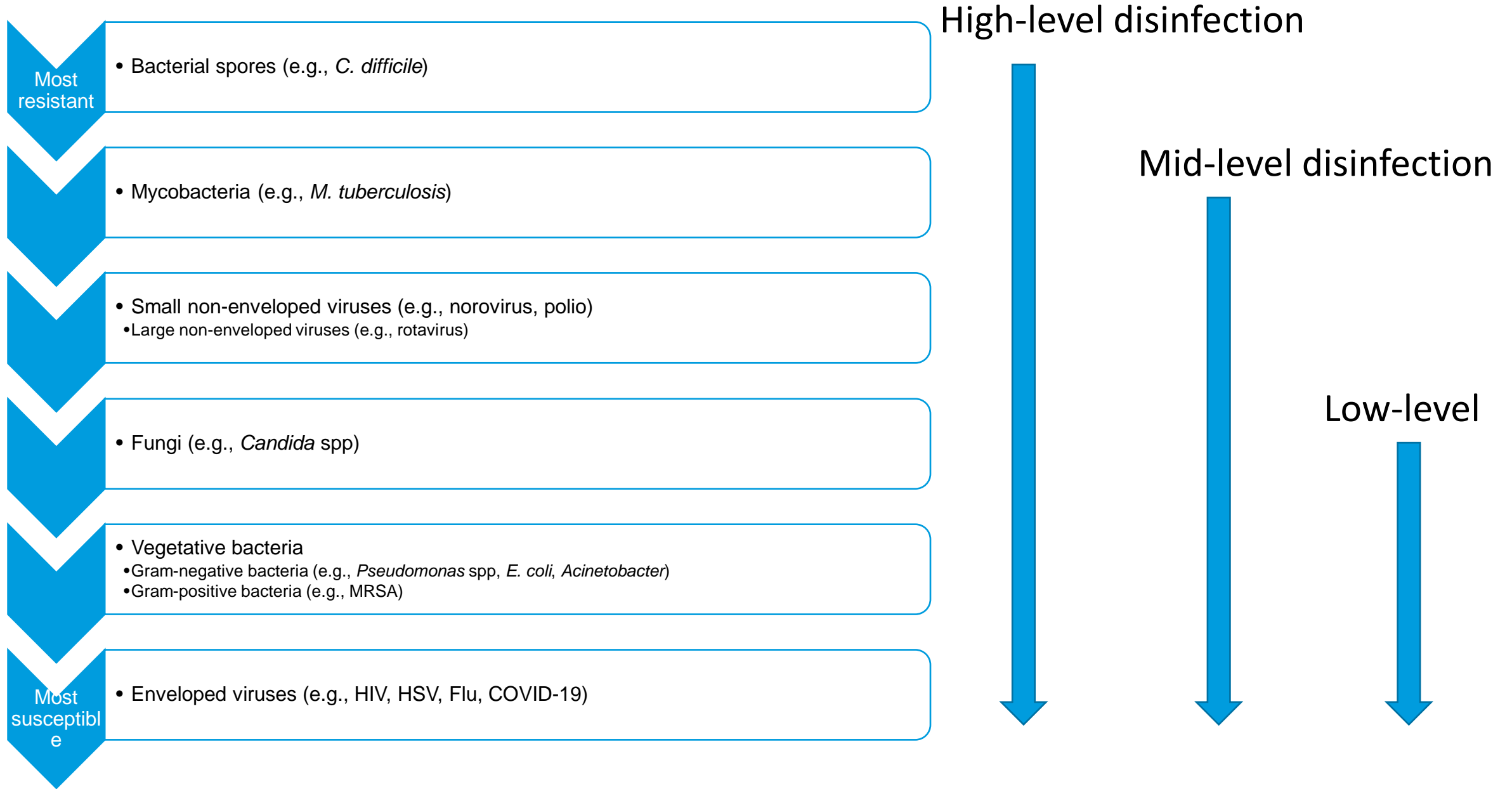
- alcohols, chlorine and chlorine compounds, standard and improved hydrogen peroxide, phenolics, iodophors, peracetic acid, and quaternary ammonium compounds.
- Table includes the most common disinfectants used for env cleaning in HCFs.
 - Iodophors are sometimes used as disinfectants, but more so used as antiseptics
 - Phenolics are not used so much any more due to health effects (newborns)

Most important to look at:

- Active ingredient(s)
- Label claim (spectrum of activity, test organisms)
- Remember the disinfectant hierarchy!

Active ingredient(s)	Spectrum of activity	Level of disinfection
Quaternary ammonium compounds (e.g., alkyl dimethyl benzyl ammonium chloride) (0.1-1%) *newer formulations dimethyl ammonium bromide	Bactericidal Fungicidal	Low-level
Chlorine-releasing agents (e.g., sodium or calcium hypochlorite, sodium dichloroisocyanurate (NaDCC)) at 500ppm	Bactericidal Fungicidal	
Alcohols (60-80%) (e.g., isopropyl alcohol, ethyl alcohol/ethanol) *Ethyl alcohol doesn't inactivate poliovirus or HAV, but does adenovirus, enterovirus, rhinovirus	Bactericidal Fungicidal Virucidal* Mycobactericidal	Mid-level
Chlorine-releasing agents (e.g., sodium or calcium hypochlorite, NaDCC) at ≥1,000ppm	Bactericidal Fungicidal Virucidal Mycobactericidal	
Improved hydrogen peroxide (e.g., 0.5% enhanced action formulation hydrogen peroxide, 3% hydrogen peroxide)	Bactericidal Fungicidal Virucidal Mycobactericidal	
Hypochlorites at 5,000ppm; Hydrogen peroxide at 4-5%	Bactericidal Fungicidal Virucidal Mycobactericidal Sporicidal	Sporicidal

Microbial disinfectant hierarchy – intrinsic resistance



What are the disinfectants we should use in healthcare facilities in the context of COVID-19?

- Disinfection of environmental surfaces in healthcare facilities should consider the logarithmic reduction not only for SARS-CoV-2, but also for other clinically important healthcare pathogens
 - hospitalized patients at increased risk of other infections due to underlying medical conditions and invasive procedures
- The following disinfectants and defined concentrations can be used on environmental surfaces to achieve a >3 log reduction of human coronavirus (Kampf, 2020), and they are also proven to be effective against other clinically relevant pathogens in the healthcare settings (**contact time 5 minutes**):
 - Ethanol $\geq 70\%$
 - Hydrogen peroxide 0.5%
 - Hypochlorite from 0.1% (1,000 ppm) or 0.5% (5,000 ppm)
- Other disinfectants can be used, provided they have demonstrated action against other coronaviruses or harder to kill organisms (e.g., non-enveloped viruses) for the health care settings, according to the local authorities or regulatory bodies (**use manufacturer recommended contact time**).



Use 5,000ppm on hardy pathogens when facility has history with hardy pathogens (*C. auris*, *C. difficile*)
Also use 5,000ppm for large blood and body fluid spills

Hypochlorite-based disinfectants

How to Make 0.1% (1,000ppm) Chlorine Solution

Use 0.1% (1,000ppm) chlorine solution to disinfect frequently touched surfaces and items.

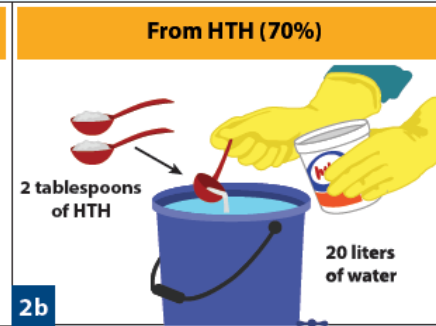
Make new 0.1% chlorine solution every day. Throw away any leftover solution from the day before.



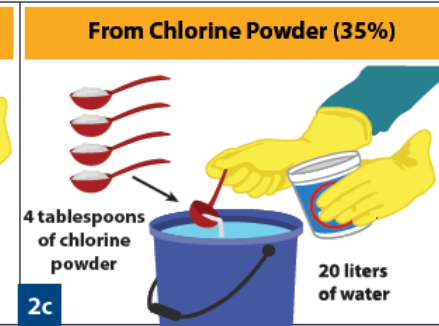
Make sure to wear **required PPE** (healthcare setting).



Pour 4 parts water and 1 part strong (0.5%) solution into a bucket. Repeat until full.



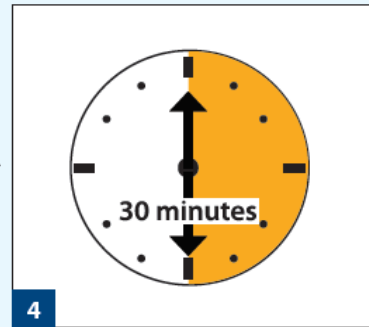
Add TWO tablespoons (30g) of HTH (70%) to 20 Liters of water in a bucket.



Add FOUR tablespoons (60g) of chlorine powder (35%) to 20 Liters of water in a bucket.



Stir well for 10 seconds, or until chlorine powder/granules have dissolved.



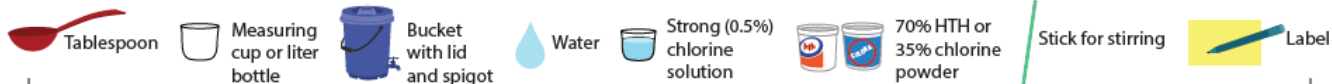
Wait 30 minutes before use.



Label bucket "0.1% Chlorine Solution - Disinfecting."



Cover bucket with lid. Do not store in direct sunlight.



WARNING



Do NOT drink chlorine water.



Do NOT put chlorine water in mouth or eyes.

Key takeaways

1. Implementing environmental cleaning according to best practices requires multiple strategies and strong organizational/leadership support
2. Environmental cleaning schedules and protocols should be developed for all patient areas based on risk-level
3. Environmental cleaning requires a standardized process, always apply the best practices for cleaning techniques (clean to dirty, systematic order, high to low)
4. Environmental cleaning staff should always be trained and should be given support through monitoring and feedback
5. Cleaning products and disinfectants should be carefully selected and managed at the facility level (minimize the number of types of products used)

Key messages for environmental cleaning in context of COVID-19

1. COVID-19 can survive on environment surfaces for days, but environmental survival is low compared to many other important pathogens
2. Environmental cleaning is important to mitigate the spread of COVID-19 (contact transmission route)
3. Environmental cleaning using existing best practice methods and strategies is effective against COVID-19
4. COVID-19 is susceptible to standard environmental cleaning and disinfection methods (enveloped virus)

References

CDC and ICAN (2019) Best Practices for Environmental Cleaning in Healthcare Facilities in Resource-Limited Settings. Atlanta, GA: US Department of Health and Human Services, CDC; 2019. Available at: [Environmental Cleaning in Resource-Limited Settings | HAI | CDC](#)

WHO (2019) Implementation manual to prevent and control the spread of carbapenem-resistant organisms at the national and health care facility level [WHO 2019: Implementation manual to prevent and control the spread of carbapenem-resistant organisms at the national and health care facility level \[PDF – 98 pages\]](#)

WHO (2020) [Technical guidance on IPC / WASH for COVID-19](#).

WHO (2008) Essential environmental health standards in health care. https://www.who.int/water_sanitation_health/publications/ehs_hc/en/

LHSTM (2019). TEACH CLEAN. Available from: <https://www.lshtm.ac.uk/research/centres/march-centre/soapbox-collaborative/teach-clean>





**Thank you for participating in the
WHO global annual hand hygiene campaign
SAVE LIVES: Clean Your Hands**

***NURSES AND MIDWIVES
Clean care
is in your hands!***

Learn more at:

<https://www.who.int/infection-prevention/campaigns/clean-hands/5may2020/en/>

Some slides in this presentation were from:
[Infection Prevention and Control \(IPC\) for COVID-19 Virus](#)

Access free online courses on COVID-19
in your national language!

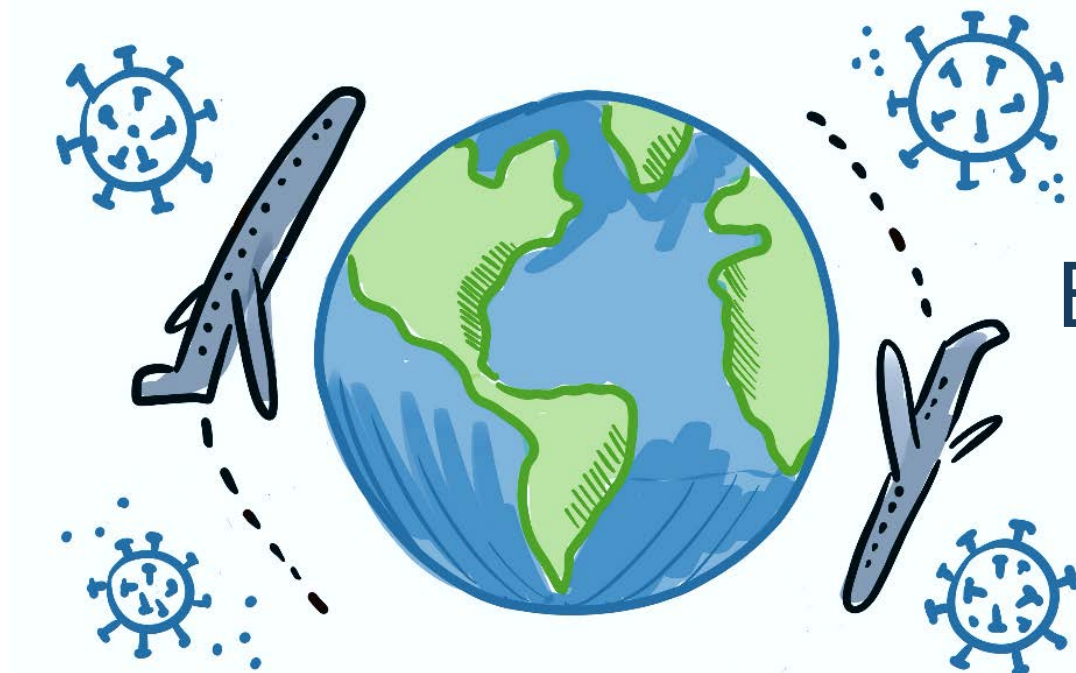
Italiano

日本語

Türk

српски језик

Tiếng Việt



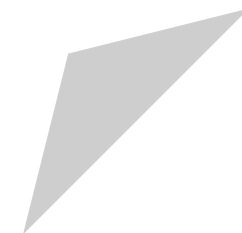
فارسی

Português

Bahasa Indonesia

हिन्दी, हिंदी

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NEW! WHO & UNICEF webinar series

Responding to country and partner requests for training on WASH in health care facility guidance for COVID-19.

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- **Thursday 9th April.** Focus on water
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- **Thursday 16th April.** Focus on hand hygiene
- **Tuesday 21st April.** Focus on environmental cleaning
- **Thursday 23rd April.** Focus on sanitation

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- 7am EST
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- 1pm CEST
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- 7pm PHT

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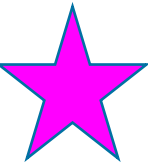
Supplementary slides

The following slides are supplementary to the main slide deck.

They provide a summary of additional environmental cleaning best practices but are considered beyond the scope of a short webinar.

Healthcare disinfectants (US)

- All of these are ‘hospital disinfectants’ → meaning have been tested against test organisms for ‘bactericidal’ claim and are equivalent with ‘low-level disinfection’
- These lists delineate additional clinically important pathogens



Those included in List N include disinfectants that:

- Have demonstrated efficacy against another human coronavirus similar to SARS-CoV-2
- Have been tested against a harder-to-kill virus than SARS-CoV-2 (non-enveloped virus)

EPA updates these registered disinfectant lists periodically to reflect label changes, cancellations, and transfers of product registrations. Information in the lists does not constitute a label replacement. Inclusion of products in these lists does not constitute an endorsement of one product over another. Before applying any EPA-registered disinfectant product, users must read the label to determine if the product is approved for the intended-use site or pest.

Information about listed products is current as indicated by the dates on the lists.

- [List A: EPA’s Registered Antimicrobial Products as Sterilizers](#)
- [List B: EPA Registered Tuberculocide Products Effective Against *Mycobacterium tuberculosis*](#)
- [List C: EPA’s Registered Antimicrobial Products Effective Against Human HIV-1 Virus](#)
- [List D: EPA’s Registered Antimicrobial Products Effective Against Human HIV-1 and Hepatitis B Virus](#)
- [List E: EPA’s Registered Antimicrobial Products Effective Against *Mycobacterium tuberculosis* Human HIV-1 and Hepatitis B Virus](#)
- [List F: EPA’s Registered Antimicrobial Products Effective Against Hepatitis C Virus](#)
- [List G: EPA’s Registered Antimicrobial Products Effective Against Norovirus](#)
- [List H: EPA’s Registered Antimicrobial Products Effective Against Methicillin Resistant *Staphylococcus aureus* \(MRSA\) and Vancomycin Resistant *Enterococcus faecalis* or *faecium* \(VRE\)](#)
- [List J: EPA’s Registered Antimicrobial Products for Medical Waste Treatment](#)
- [List K: EPA’s Registered Antimicrobial Products Effective Against *Clostridium Difficile* Spores](#)
- [List L: EPA’s Registered Antimicrobial Products That Meet the CDC Criteria for Use Against the Ebola Virus](#)
- [List M: Registered Antimicrobial Products with Label Claims for Avian \(Bird\) Flu Disinfectants](#)
- [List N: Disinfectants for Use Against SARS-CoV-2](#)

Best practices

A **master list of facility-approved products** should be developed in the facility policy, as well as approved suppliers

The number of approved products should be **minimized** to:

- Simplify the environmental cleaning process
- Simplify training requirements for staff
- Reduce potential for errors in preparation and use

Products should be **stored** to **prevent exposure** and **degradation**



Other factors to consider

- Contingency planning
- Supply-chain
- Ease of use & preparation
- Safety
- Environmental disposal

Preparing solutions



Prepare solutions in **dedicated environmental cleaning services area**

Provide training and simple instructions for preparing solutions

- Pictorial job aids (e.g., posters) helpful if possible

Provide any required PPE needed for preparing solutions according to the product SDS

If feasible, use an automatic dispensing system to prepare solutions (calibrated regularly)

- If preparing manually, use standardized containers for measuring

If feasible, use test strips to confirm correct concentrations



Environmental Cleaning Supplies and Equipment

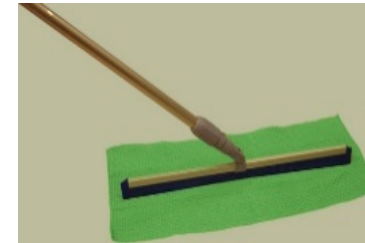
Surface cleaning: cloths can be cotton or microfiber

- Different colored cloths should be stocked to allow color-coding (e.g.,
 - one color for cleaning and one color for disinfection steps
 - one color for toilets, one color for general patient areas, one color for isolation areas



Floor cleaning: mop heads or floors cloths can be used (cotton or microfiber)

- Two or three-buckets needed, depending on need for floor disinfection
- Always use wet floor sign!



Environmental Cleaning Supplies and Equipment

Cleaning carts should be stocked with sufficient quantities so that cleaning tasks can be completed without having to return to the storage area

Separate clean and soiled items (e.g., cleaning cloths)

Use color-coded cloths or buckets if possible

Never put personal items, food or beverages on the cart

Clean and disinfect cart at the end of the day

Never leave unattended, store in the dedicated EVS area



Personal Protective Equipment (PPE) for Cleaning

Hand hygiene action should always be applied, including after PPE removal



Type of cleaning task	Required personal protective equipment for cleaning staff
Routine cleaning (standard precautions)	None (unless spills or contamination risk—see below)
Terminal cleaning (standard precautions)	Reusable rubber gloves
Blood and body fluid spills and high contamination risk areas (e.g., cleaning bed of an incontinent patient, labor and delivery wards)	Gown and/or plastic apron Reusable rubber gloves Face shield or face mask and goggles (if splash risk or large spill)
Droplet precautions (routine and terminal cleaning)	Gown and/or plastic apron Reusable rubber gloves Face shield or face mask and goggles
Contact precautions (routine and terminal cleaning)	Gown and/or plastic apron Reusable rubber gloves
Airborne precautions (routine and terminal cleaning)	Respirator (N95 or FFP2), fit tested Reusable rubber gloves
Preparation of disinfectant products and solutions	According to specifications in SDS (manufacturer instructions) If SDS not available, then: Chemical-resistant gloves (e.g., nitrile) Gown and/or apron Face shield or face mask and goggles



Cleaning staff PPE for COVID-19

Environmental cleaning services area should:

- ✓ be well-ventilated and illuminated (lighting or window access)
- ✓ be labeled with a biohazard sign on the door
- ✓ have an appropriate water supply (hot and cold water access, if feasible)
- ✓ have a utility sink/floor drain for safe disposal of used solutions
- ✓ be designed so that, whenever possible, buckets can be emptied into utility sink/floor drains without lifting them or creating splashes
- ✓ have a dedicated handwashing sink, used only for handwashing
- ✓ have access to an eyewash station
- ✓ have appropriate PPE available
- ✓ have enough space to keep reprocessing (dirty areas) separate from storage areas for cleaned equipment
- ✓ be easily accessible in relation to the areas it serves (i.e., easily accessible throughout the facility)
- ✓ be appropriately sized to the amount of materials, equipment, and chemicals stored in the room/area
- ✓ have printed copies of the SDS for all environmental cleaning products, manufacturer's instructions, and job aids for preparation of cleaning and disinfectant solutions
- ✓ never contain personal clothing or grooming supplies, food or beverages (there should be a separate area for cleaning staff to store these items)
- ✓ have safe chemical storage and access
- ✓ have locks fitted to all doors to restrict access only to cleaning staff
- ✓ be free from clutter
- ✓ have washable surfaces (floors, walls, shelves)

Best practices: Surface cleaning

- Use fresh cleaning cloths to start
- Change cleaning cloths when no longer saturated
- Change cleaning cloths between each patient zone (in high-risk areas)
- Make sure you have enough cleaning cloths to finish the cleaning session
- Never double-dip!



- 3** Submerge the folded cloth into cleaning solution only once, do not “double dip” as this will contaminate the solution



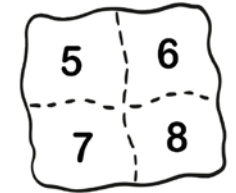
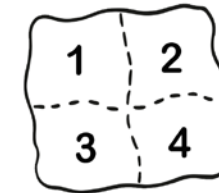
- 1** Start by folding the cloth in half



- 2** Then fold the cloth in half again



- 4** You now have a cloth with eight different cleaning surfaces

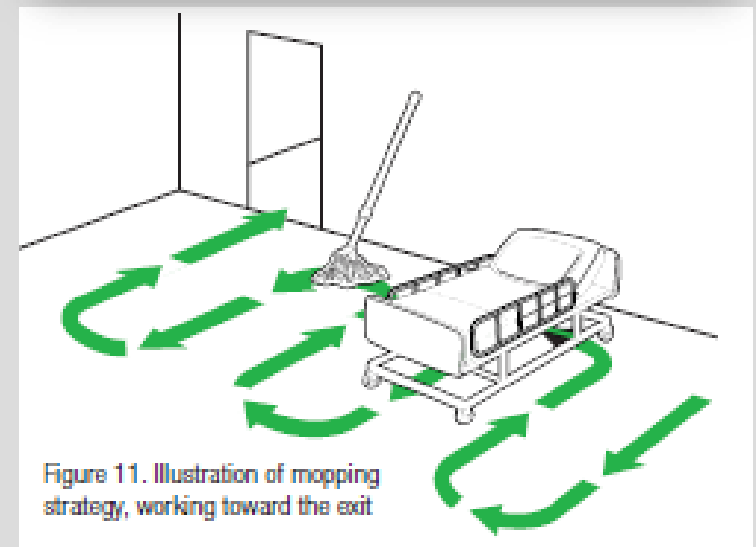


Switch to a different side after each one has been soiled. When all sides have been used, dispose of cloth appropriately as waste or laundry and use a new cloth to continue the task

(From Soapbox, 2018 “TEACH CLEAN”)

Best practices: Floor cleaning

1. Display wet-floor sign
2. Immerse mop in bucket with cleaning solution and wring out
3. Mop in a figure eight, overlapping stroke, turn the mop head regularly (e.g., every 5-6 strokes)
4. After cleaning a small area (e.g., 3m x 3m), immerse mop in bucket with rinse water and wring out
5. Repeat from step 2





What do staffing needs depend on?

Based on:

- # of inpatient beds
- Types of services (e.g., high-risk areas)
- Bed occupancy levels
- Type of cleaning (e.g., routine vs terminal)

And should take into account:

- Reasonable shift length
- Regular breaks
- Contingencies (e.g., outbreaks or other emergencies)

No single-best practice method for determining staffing needs, but consider using:

- Workload software
- Comparisons with other facilities
- Empirical calculations at facility level

Monitoring & feedback

- Routine monitoring
 - Use **objective** (e.g., ATP system) **over subjective** methods (visual assessment of cleanliness)
 - Use both **direct** (e.g., performance observation) and **indirect** methods (e.g., marking with fluorescent gel)
- Direct feedback
 - Timely feedback to staff
 - Used for coaching, inform training needs
 - Also monthly reporting, summary, trends



CDC Environmental Checklist for Monitoring Terminal Cleaning¹

Date: _____
 Unit: _____
 Room Number: _____
 Initials of EIC staff (optional): _____

Indicate the following priority sites for each patient room:

High-touch Room Surface ²	Cleaned	Not Cleaned	Not Present in Room
Bed rails / controls			
Tray table			
TV pole (grab bar)			
Call box / Buzzer			
Telephone			
Reception table/counter			
Chair			
Exam table			
Exam light switch			
Room entry door handle			
Medication room door handle / plate			
Medication light switch			
Medication handrails in lobby			
Reception table			
Locker room			
Locker door handle			
Locker baggage claim			

Indicate the following additional sites if these equipment are present in the room:


High-touch Room Surface ²	Cleaned	Not Cleaned	Not Present in Room
TV panel control			
Multi-useable monitor controls			
Multi-useable monitor touch screen			
Multi-useable monitor cables			
Ventilator control panel			

Mark the monitoring method used:

Visual observation Fluorescent gel Agar plate culture
 ATP system ATP system Agar plate culture

¹Version of this protocol and checklist should be according to institutional policies and procedures.
²High-touch sites should include identification of associated environmental services staff for feedback on care.
 Sites used frequently and touched by patients and/or staff have asterisks.

National Center for Emerging and Zoonotic Infectious Diseases
 Division of Healthcare Quality Promotion



For assessing:	Use these methods:
Cleaning practice	<ul style="list-style-type: none"> - Performance observation - Visual assessment - Fluorescent markers
Cleanliness	<ul style="list-style-type: none"> - ATP system (residual bioburden) - Environmental cultures (agar plate, swab)

SARI CRITICAL CARE TRAINING

SEVERE ACUTE RESPIRATORY INFECTION (SARI)

TREATMENT FACILITY DESIGN

MODULE 1: OVERVIEW OF BASIC OPERATIONAL AND

IPC PRINCIPLES IN COVID-19 CONTEXT

MARCH 2020

Learning objectives

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

- Describe the public health objectives at all stages of the preparedness and response plan;
- Identify ventilation and exhausted air treatment as IPC measures within a COVID-19 context; and
- Explain the different modes of transmission and apply a rational use of PPE.

Modules

This lecture is organized in three different sections:

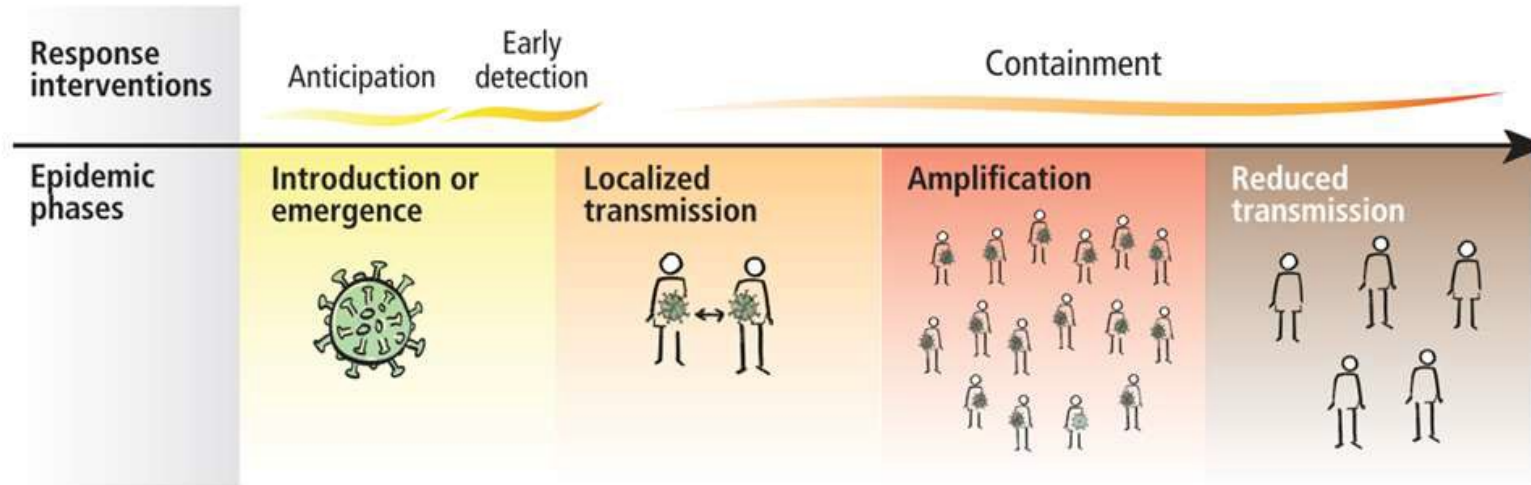
- 1A Public health objectives and strategic priorities by scenario
- 1B Ventilation and exhausted air treatment as IPC measures within a COVID-19 context
- 1C Modes of transmission and rational use of PPE.

Module: 1A

Module 1A

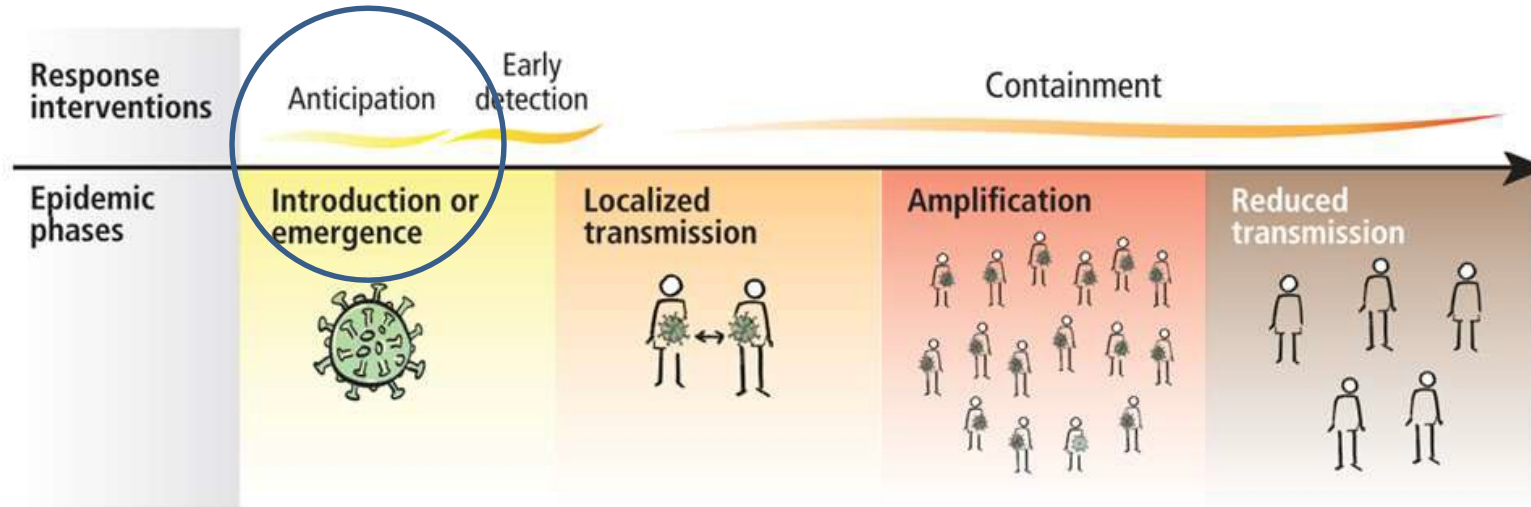
Public health objectives and strategic priorities by scenario

Epidemic phases



Four transmission scenarios are observed:

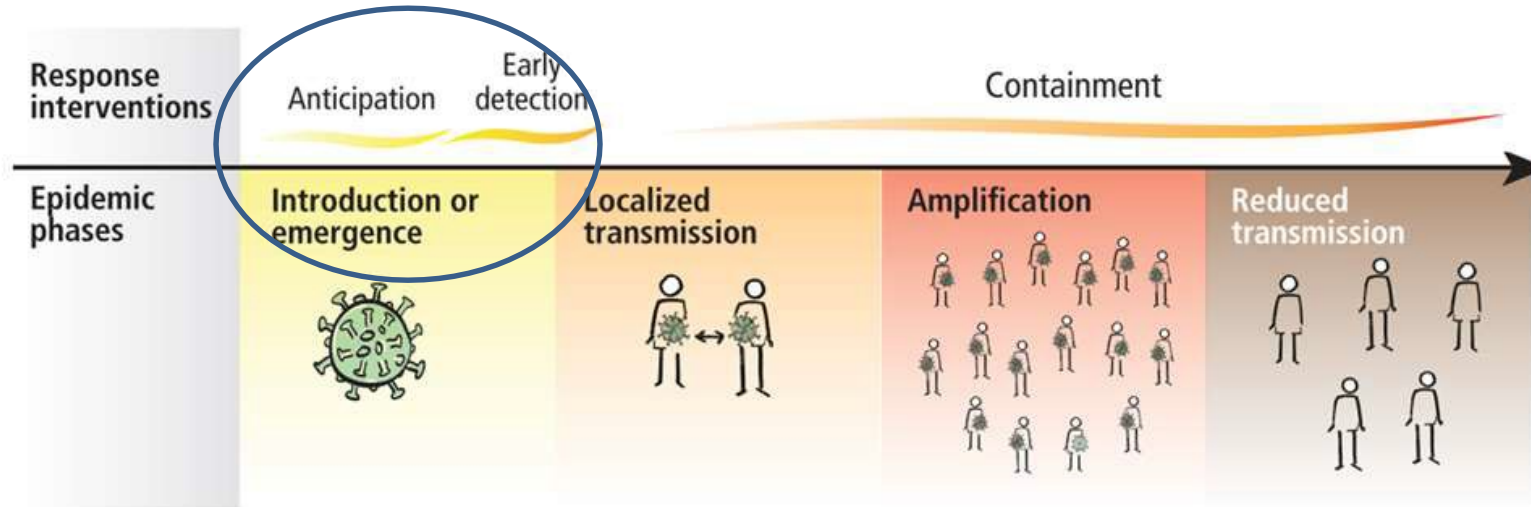
Epidemic phases



Four transmission scenarios are observed:

- Countries with no cases (no cases);

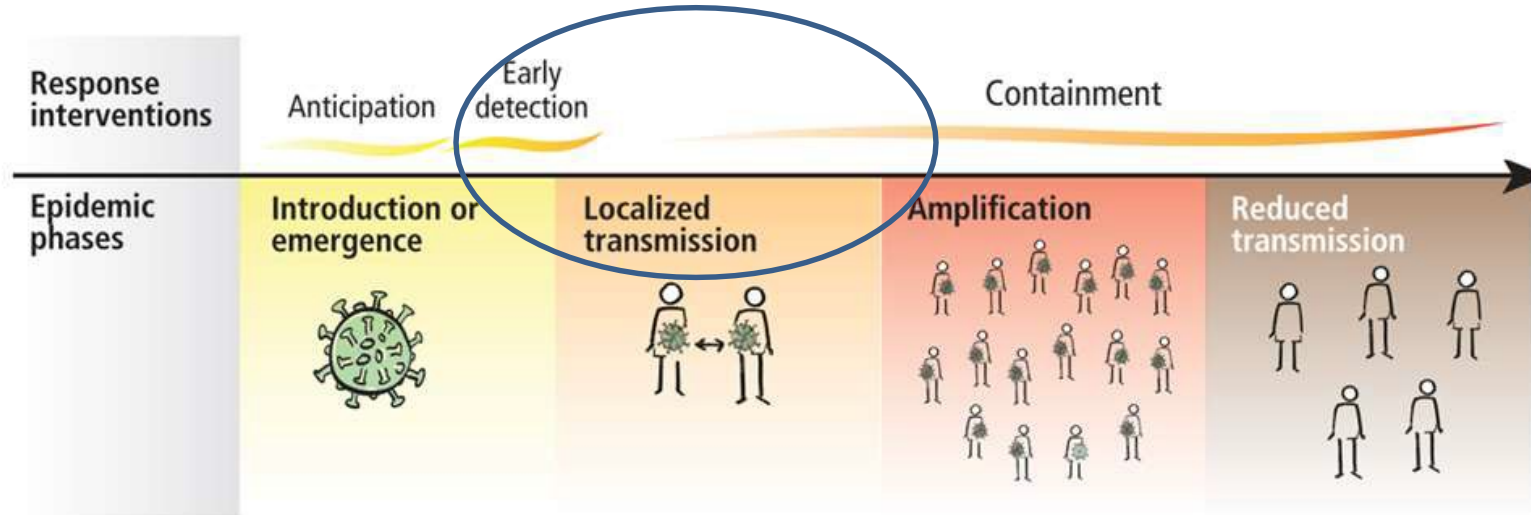
Epidemic phases



Four transmission scenarios are observed:

- Countries with no cases (no cases);
- Countries with one or more cases, imported or locally acquired (sporadic cases);

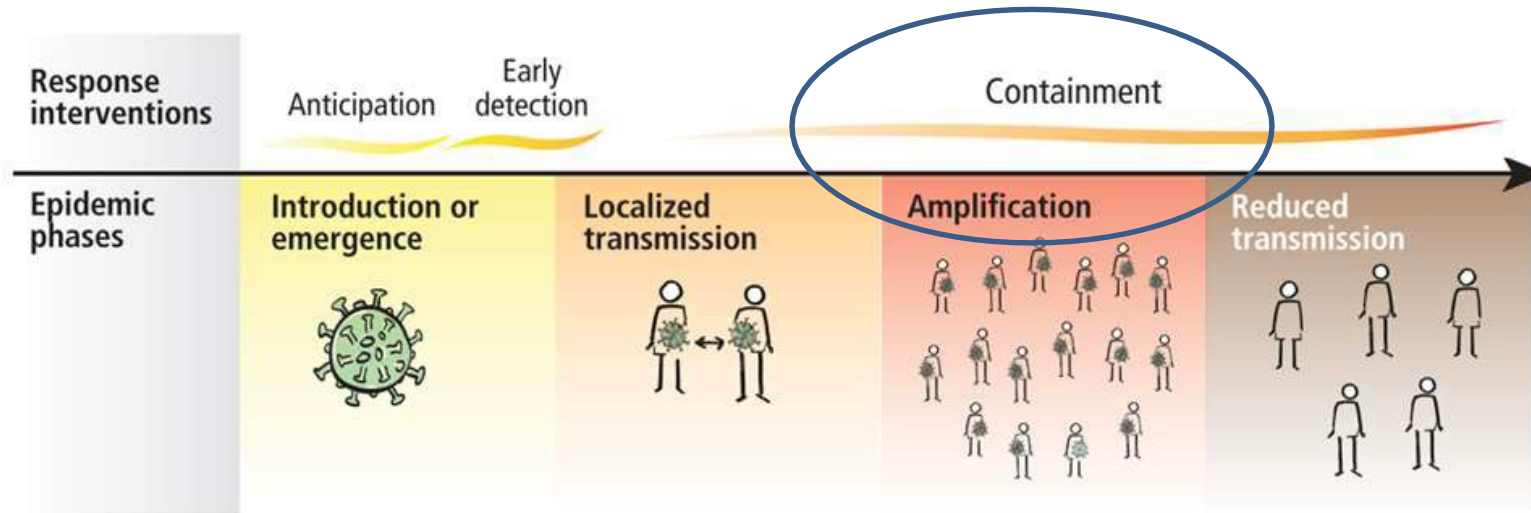
Epidemic phases



Four transmission scenarios are observed:

- Countries with no cases (no cases);
- Countries with one or more cases, imported or locally acquired (sporadic cases);
- Countries experiencing clusters of cases in time, geographic location, or common exposure (clusters of cases);

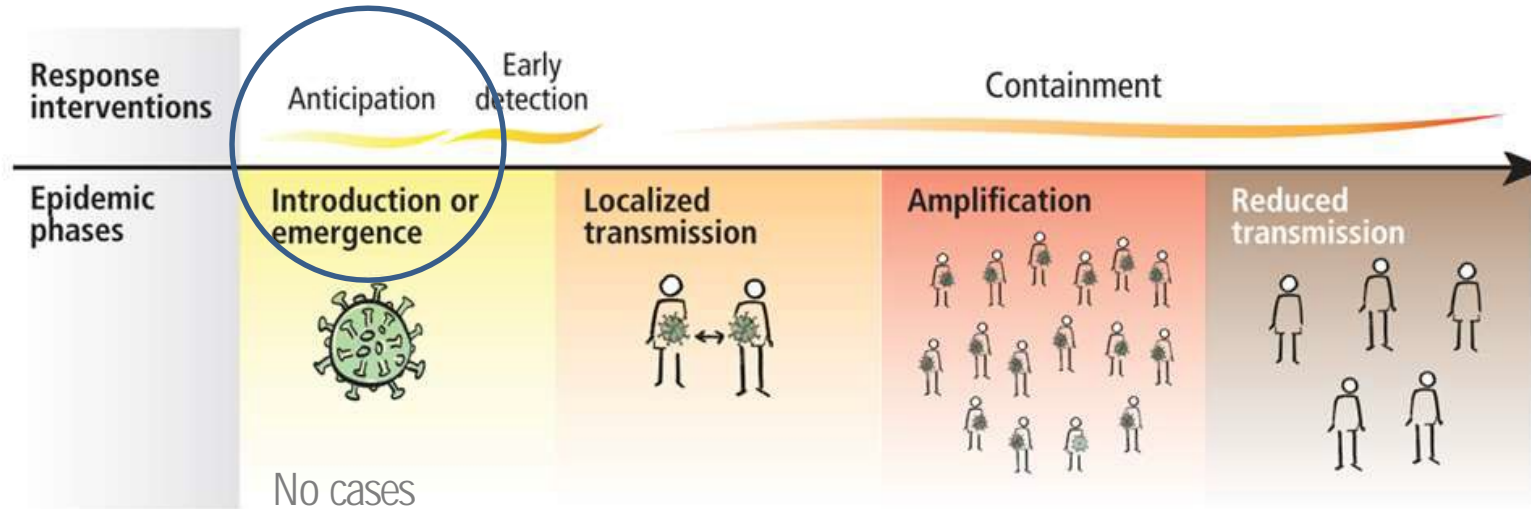
Epidemic phases



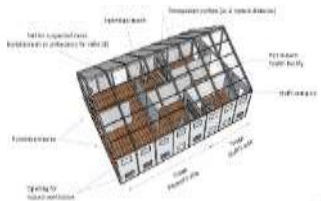
Four transmission scenarios are observed:

- Countries with no cases (no cases);
- Countries with one or more cases, imported or locally acquired (sporadic cases);
- Countries experiencing clusters of cases in time, geographic location, or common exposure (clusters of cases);
- Countries experiencing larger outbreaks of local transmission (community transmission).

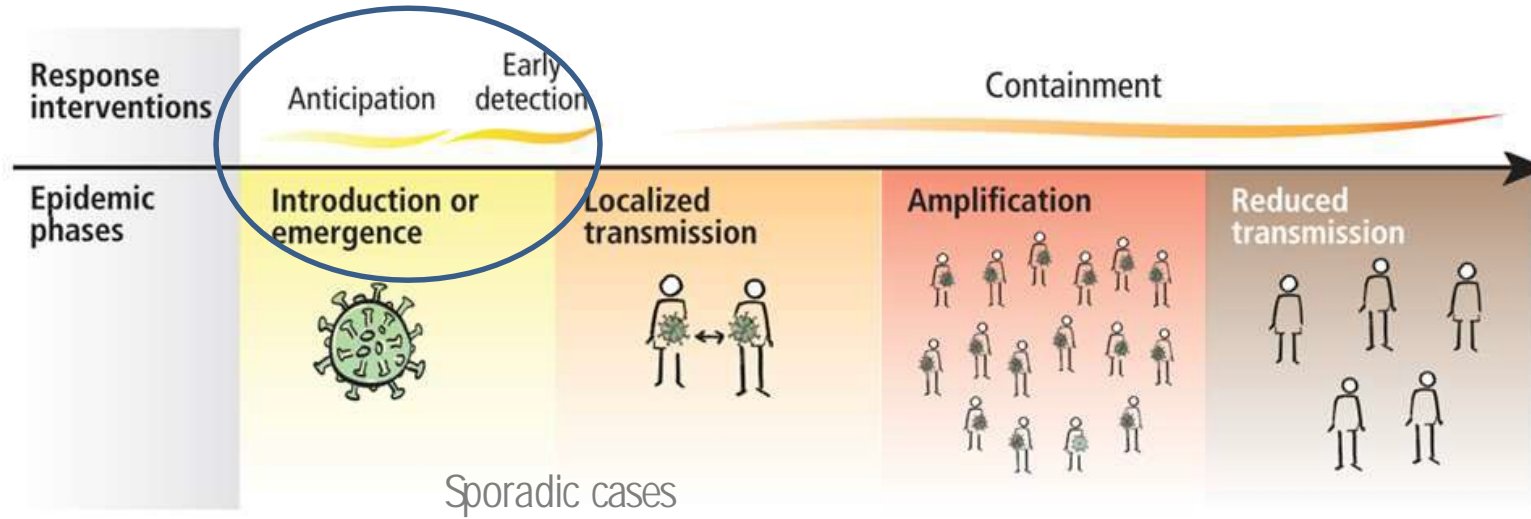
Epidemic phases and response interventions



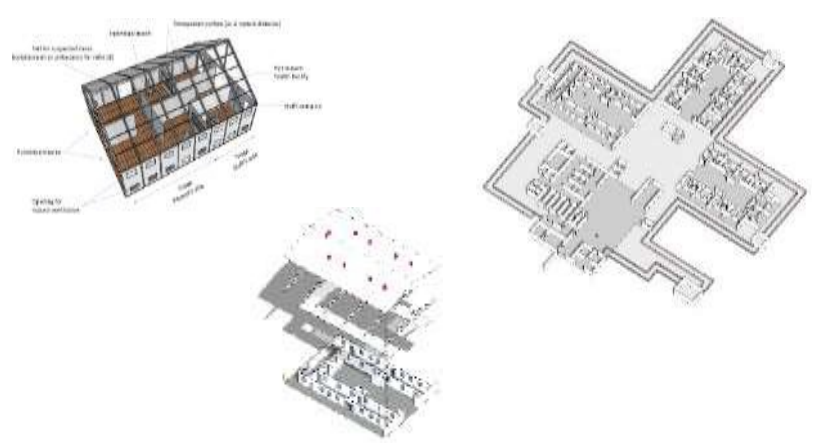
1. Set up screening and triage.
2. Set up COVID-19 designated wards in health facilities.



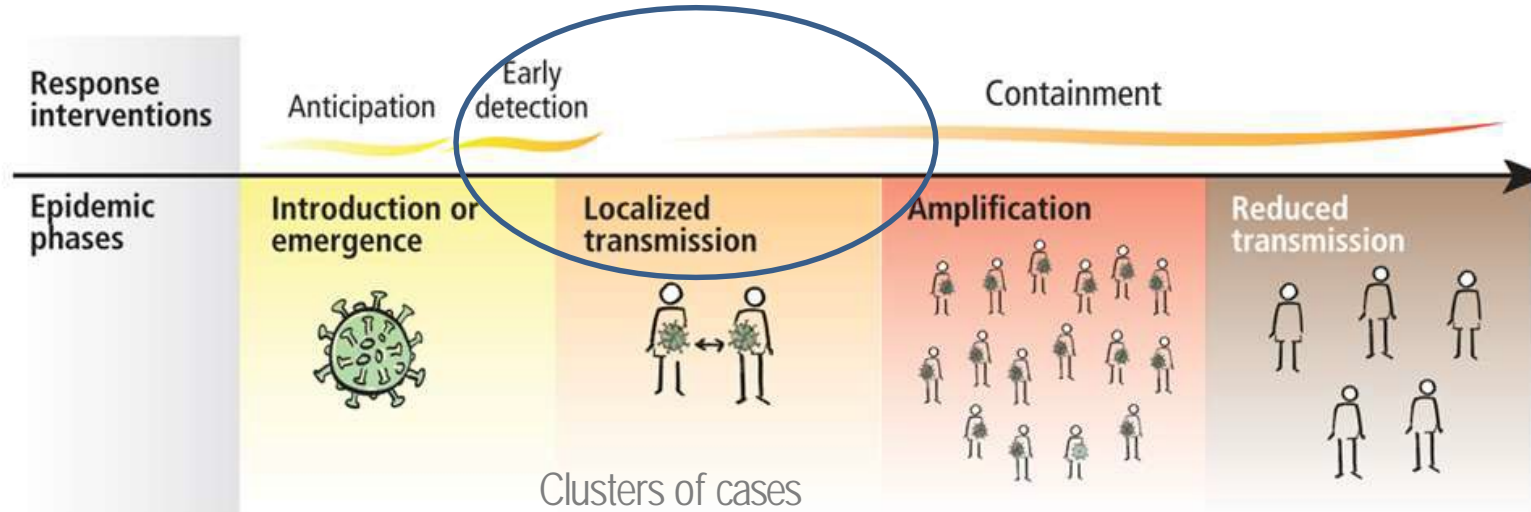
Epidemic phases and response interventions



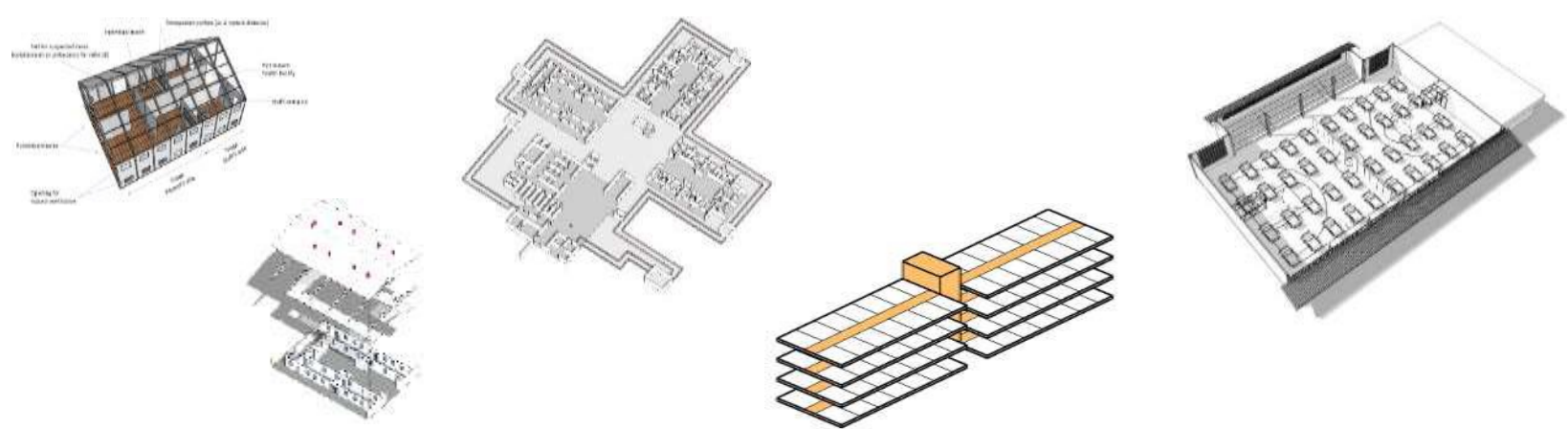
1. Set up screening and triage.
2. Set up COVID-19 designated wards in health facilities.
3. COVID-19 designated treatment area.



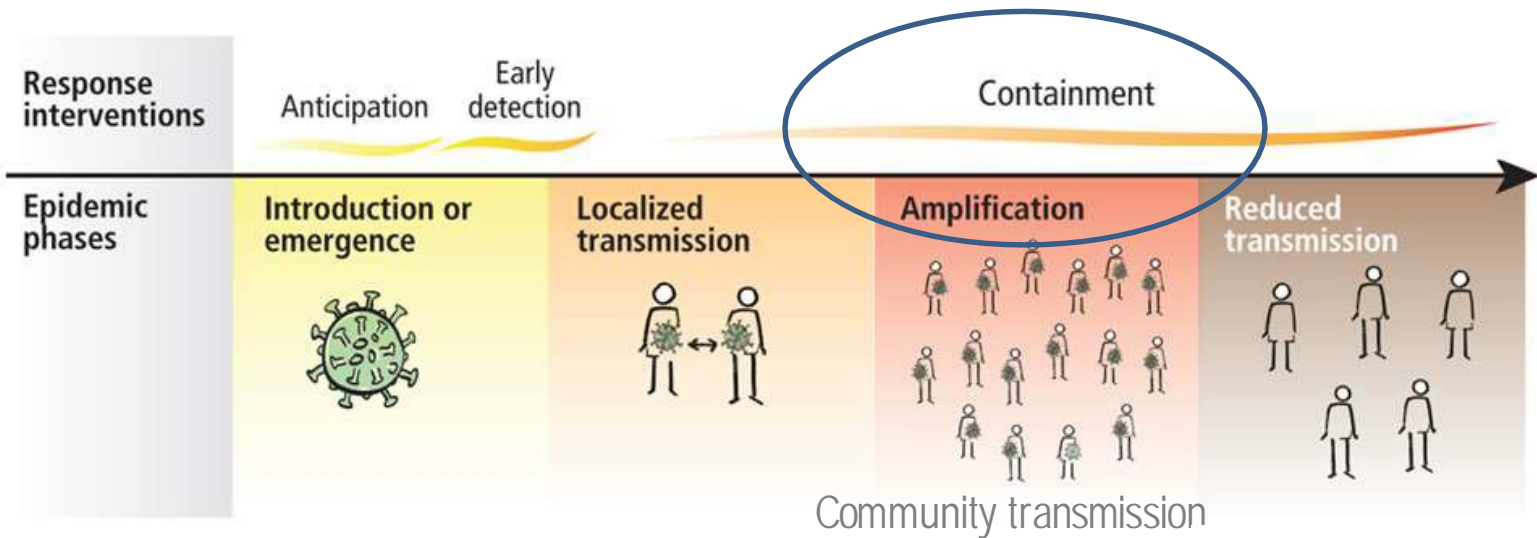
Epidemic phases and response interventions



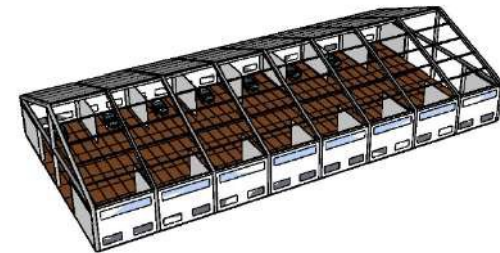
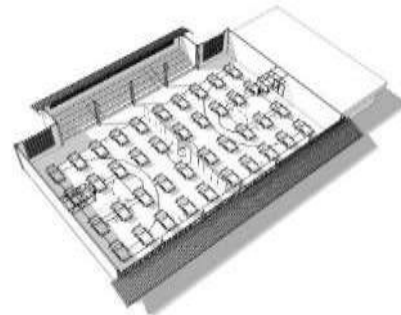
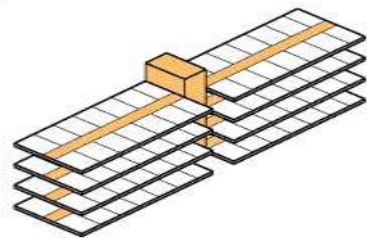
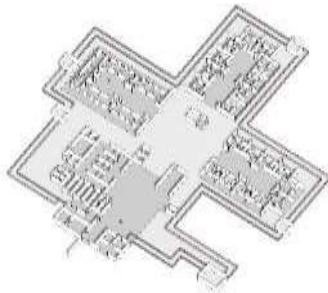
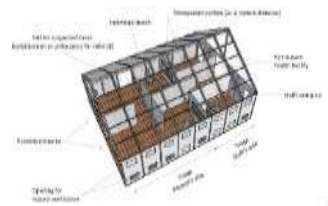
1. Set up screening and triage.
2. Set up COVID-19 designated wards in health facilities.
3. COVID-19 designated treatment area.
4. Repurpose existing buildings.
5. Community facilities.



Epidemic phases and response interventions



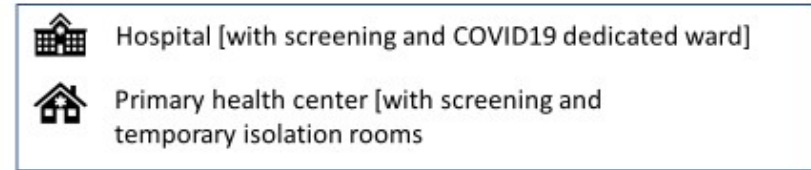
1. Set up screening and triage.
2. Set up COVID-19 designated wards in health facilities.
3. COVID-19 designated treatment area.
4. Repurpose existing buildings.
5. Community facilities.
6. New COVID-19 facilities.



Referral pathway

According to specific epidemiological scenario:

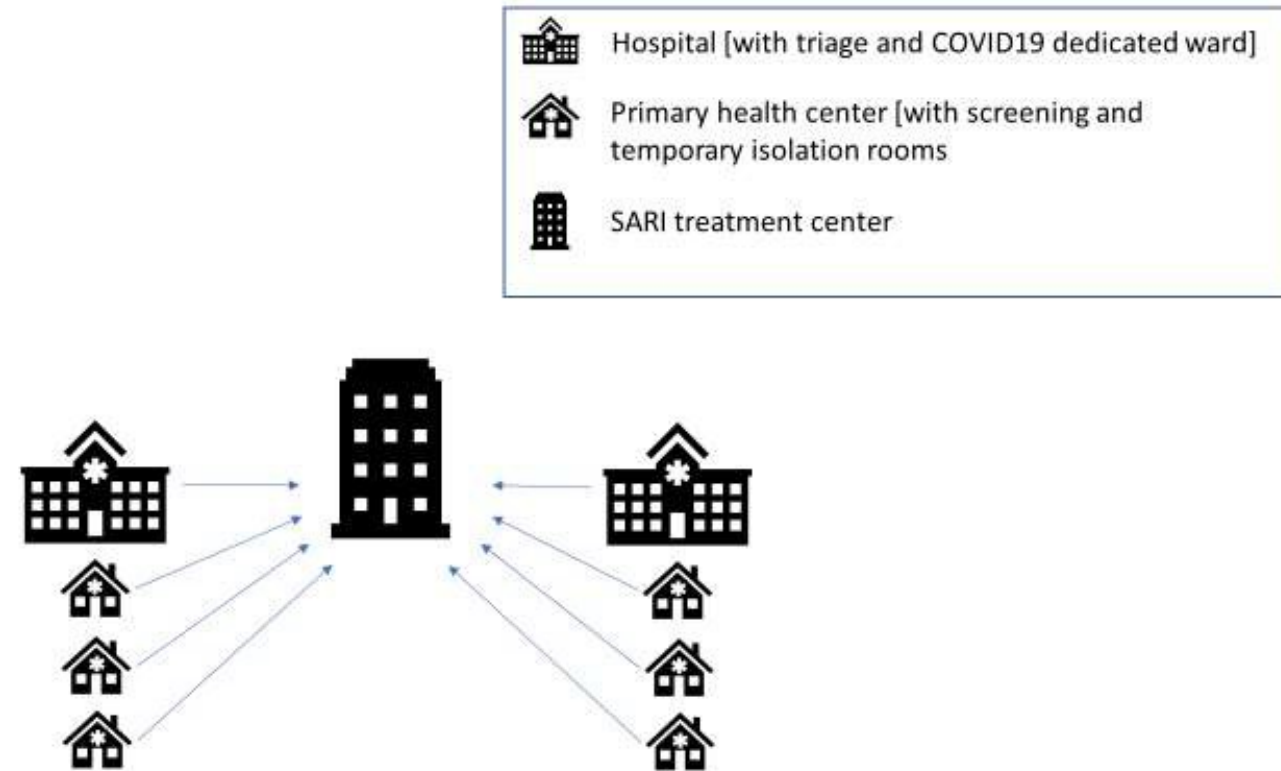
- Sporadic cases [introduction];
- Cluster: discrete groups of cases with epi-link [localized transmission];



Referral pathway

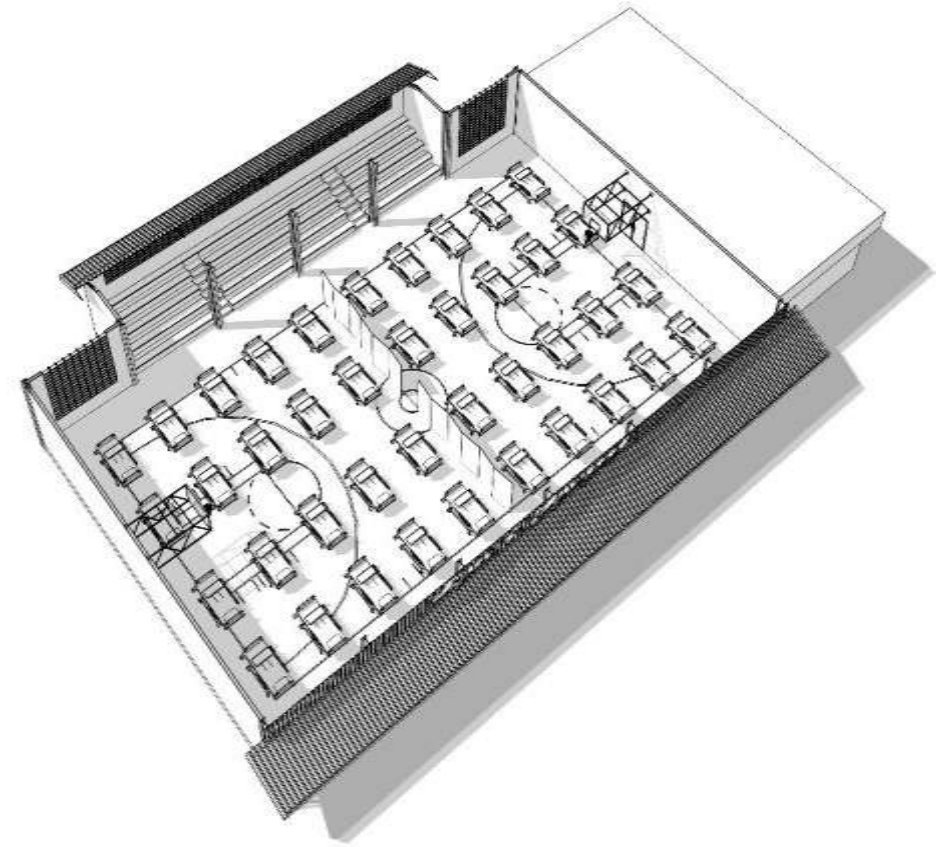
According to specific epidemiological scenario:

- Community transmission: areas experiencing outbreaks with local transmission, many without identifiable epidemiological link [amplification].



Community facilities

Where health facilities can no longer manage patients with mild or moderate disease, isolate patients who are not at high risk for severe disease (< 60 years of age, no co-morbid diseases) either in community facilities (e.g. stadium, gymnasium, hotel or tent) with access to rapid health advice (i.e. via adjacent dedicated COVID-19 health post, telemedicine) or at home according to WHO guidance.



Surge capacity

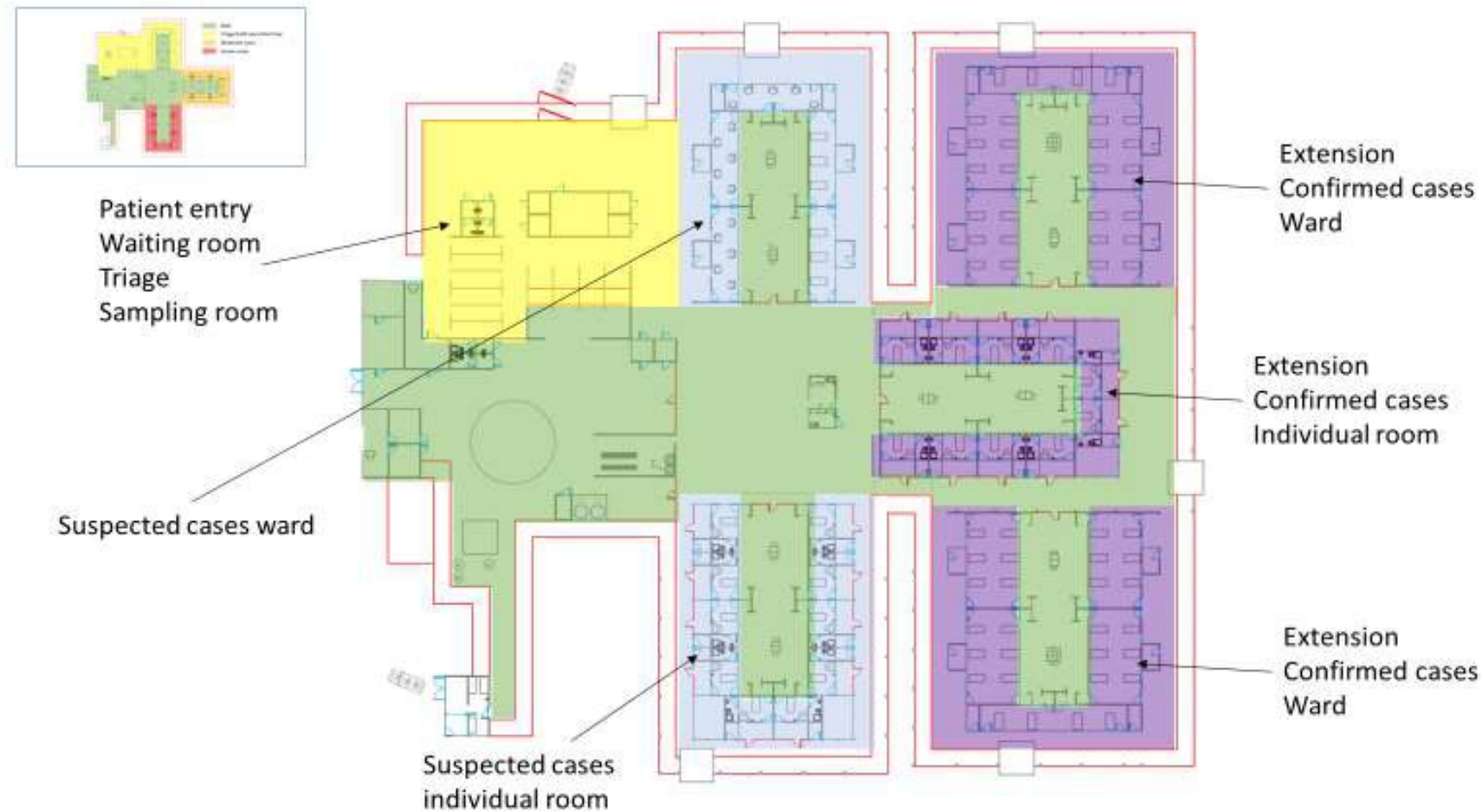
Surge capacity entails:

- human resource management, especially staffing;
- supplies, equipment, logistics and resupply mechanisms;
- specific expertise for critical areas of care; and
- overall management of hospital resources, such as expanding space and premises.



Planning for surge capacity should allow for progressive scale-up of activities over several stages, with clearly defined activation thresholds for each stage.

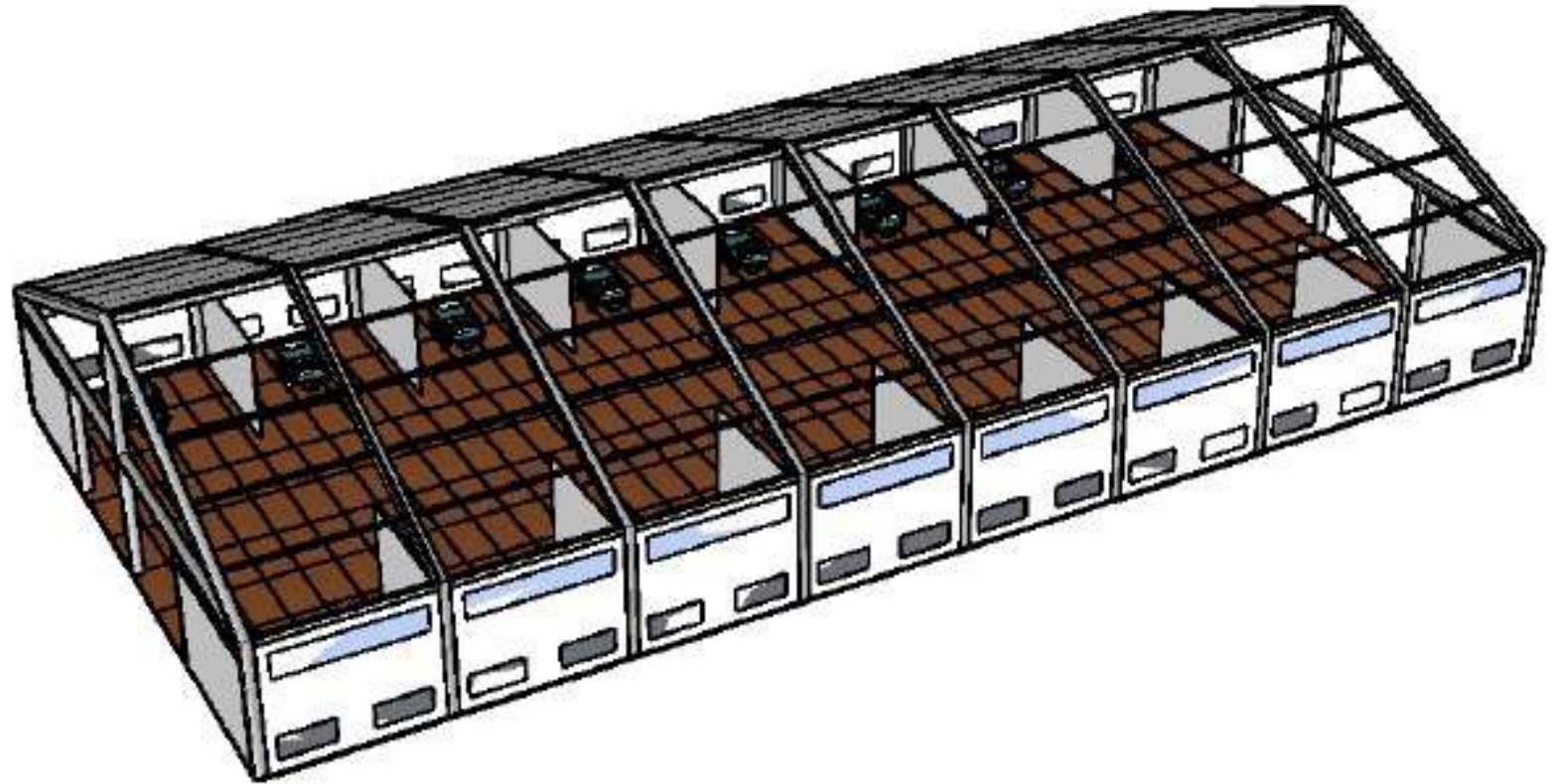
Surge capacity – from severity to cohorting



Surge capacity – from severity to cohorting

Surge capacity:

If needed, big facilities can be used to set up cohorted wards for severe and critical patients.



Module: 1B

Module 1B

Ventilation and exhausted air treatment as IPC measures within a COVID-19 context

Ventilation

The purpose of ventilation is to provide healthy air for breathing by both diluting the pollutants originating in the building and removing the pollutants from it.

Building ventilation has three basic elements:

- ✓ Ventilation rate — the amount of outdoor air that is provided into the space, and the quality of the outdoor air;
- ✓ Airflow direction — the overall airflow direction in a building, which should be from clean zones to dirty zones; and
- ✓ Air distribution or airflow pattern — the external air should be delivered to each part of the space in an efficient manner and the airborne pollutants generated in each part of the space should also be removed in an efficient manner.

Ventilation

There are three methods that may be used to ventilate a building:

Natural ventilation

Natural forces (e.g. winds) drive outdoor air through the building openings such as windows, doors, solar chimneys, wind towers and trickle ventilators.

Mechanical ventilation

Mechanical fans drive mechanical ventilation. Fans can either be installed directly in windows or walls, or installed in air ducts for supplying air into, or exhausting air from, a room.

Hybrid ventilation

Hybrid (mixed-mode) ventilation relies on natural driving forces to provide the desired (design) flow rate. It uses mechanical ventilation when the natural ventilation flow rate is too low.

Ventilation

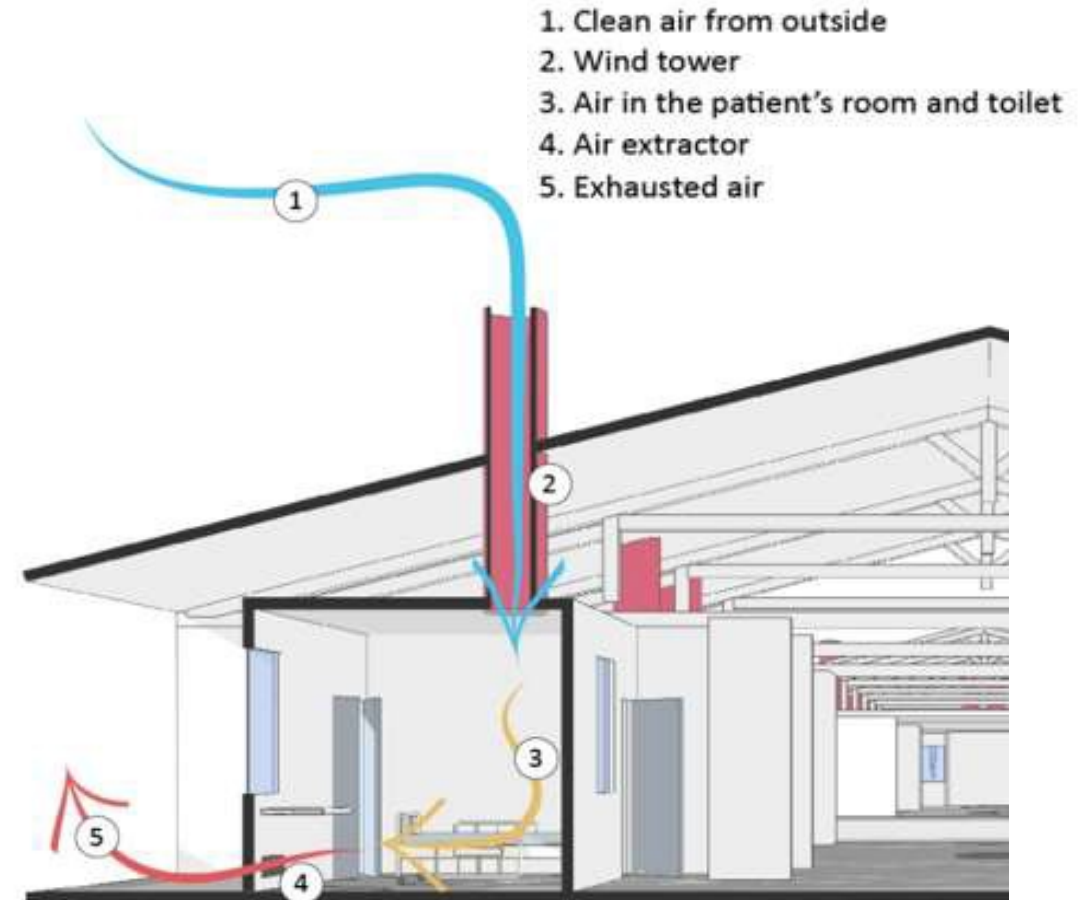
The decision whether to use mechanical or natural ventilation for infection control should be based on needs, the availability of the resources and the cost of the system to provide the best control to counteract the risks.

Area or service	Proposed ventilation system	Proposed exhausted air treatment
Staff area	Natural ventilation	Dilution
Triage	Natural ventilation	Dilution
Waiting room	Natural ventilation	Dilution
Sampling room	Natural ventilation	Dilution
Mild and Moderate cases ward	Hybrid ventilation Natural ventilation	HEPA filter Dilution
Severe and critical cases ward	Hybrid ventilation	Dilution
Waste zone	Mechanical ventilation Natural ventilation	HEPA filter Dilution
Morgue	Natural ventilation	Dilution

Ventilation – Hybrid ventilation

Top-down ventilation (fan-assisted stack plus a wind tower)

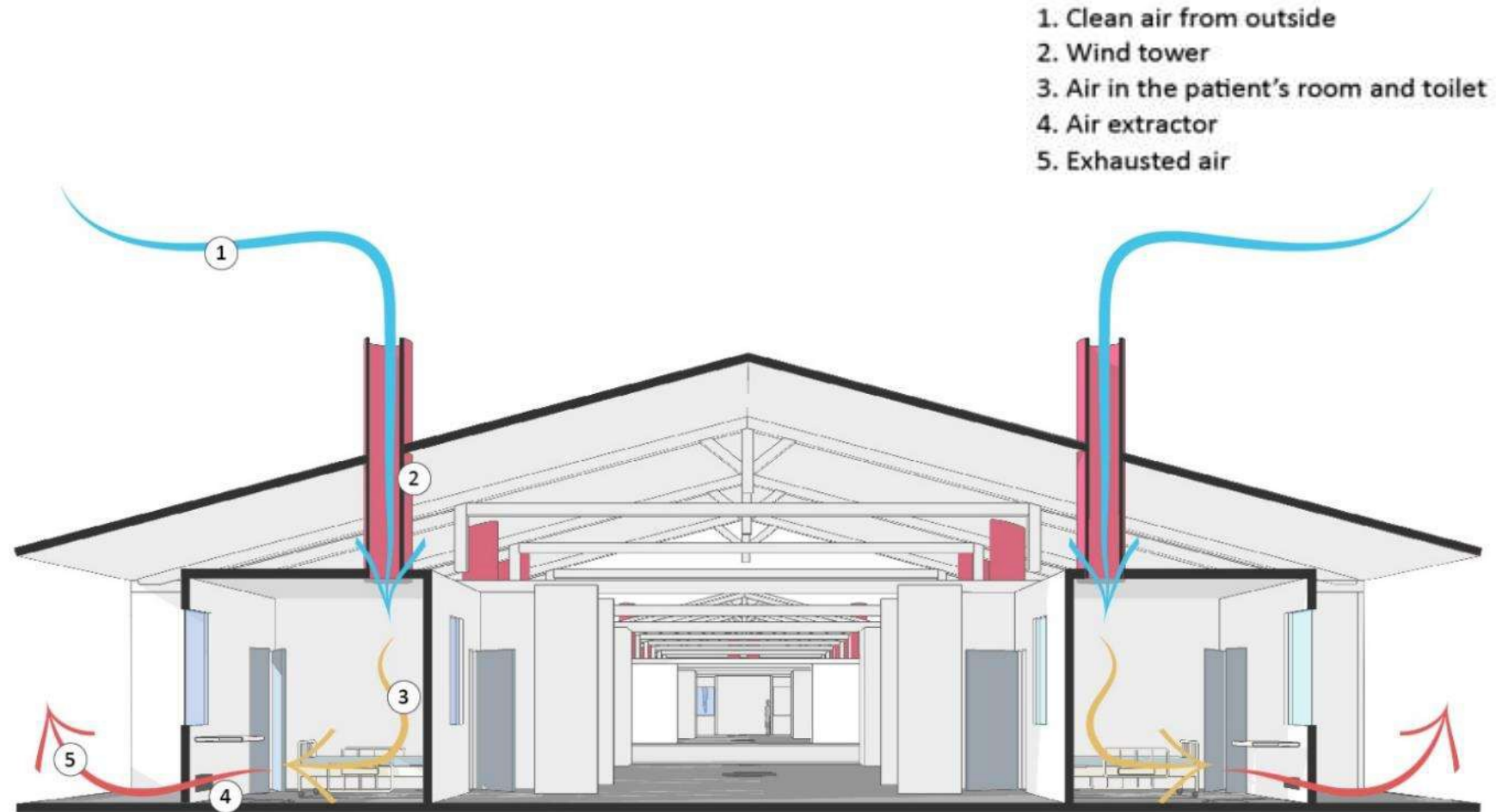
The air extractor will easily allow for control of the ventilation rate, meeting the ACH standard required and assuring a constant unidirectional top-down airflow.



How to install air extractor

In warm climate countries, due to temperature and pressure, the airflow will naturally move the opposite direction.

For the this reason, it is essential that air extractor is turned on whenever the room is occupied.



Exhausted air treatment

Air from the room can be exhausted directly to the outdoors where the droplet nuclei will be diluted in the outdoor air. It's essential to exhaust air away from air-intake vents, persons, and animals.

If for structural reasons dilution is not possible, exhausted air should be passed through a special high efficiency particulate air (HEPA) filter that removes most (99.97%) of the droplet nuclei.

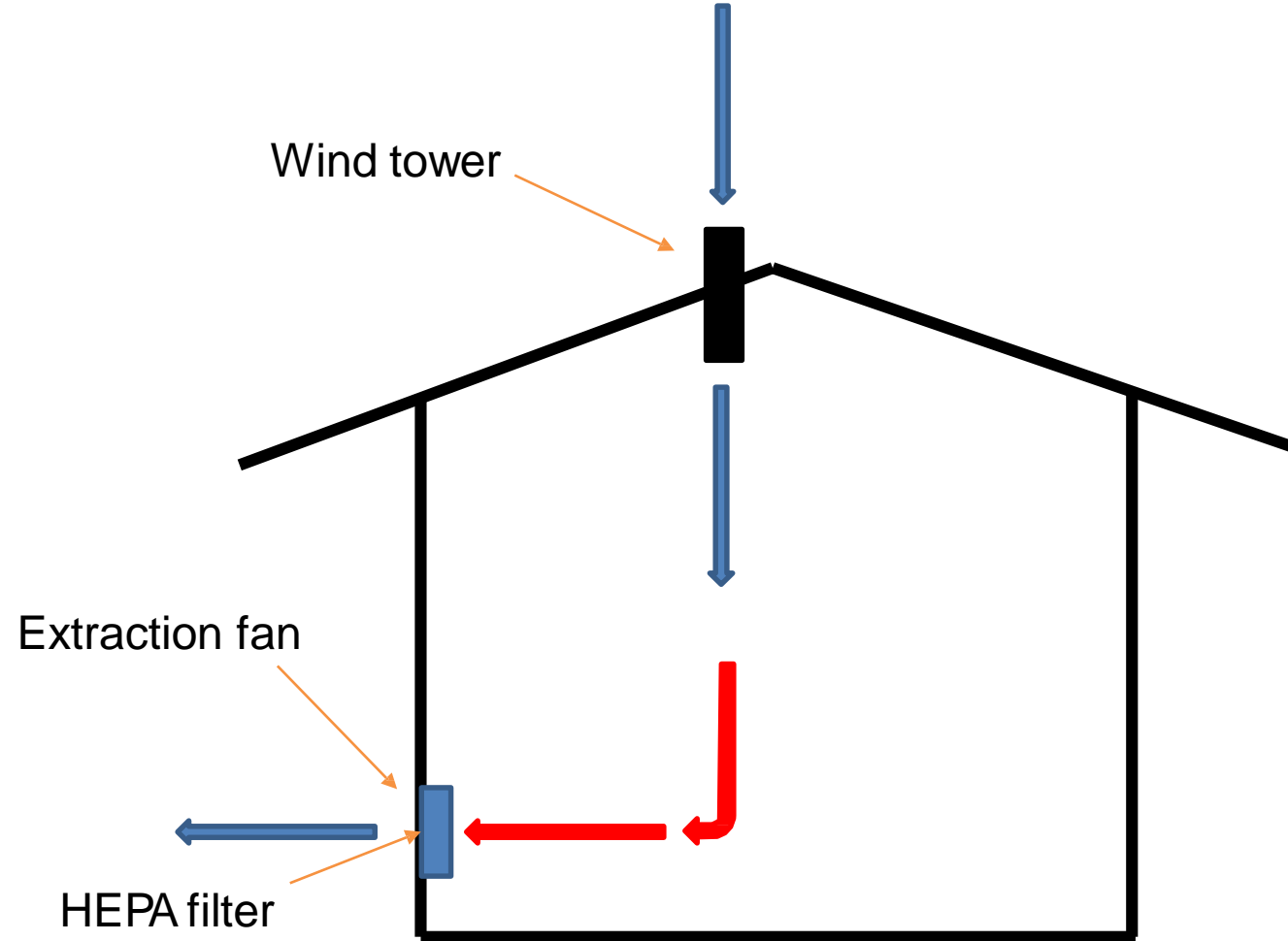
DILUTION IS THE RECOMMENDED SYSTEM

However, if not possible

HEPA FILTERS OR PORTABLE HEPA SYSTEMS ARE ADVISED

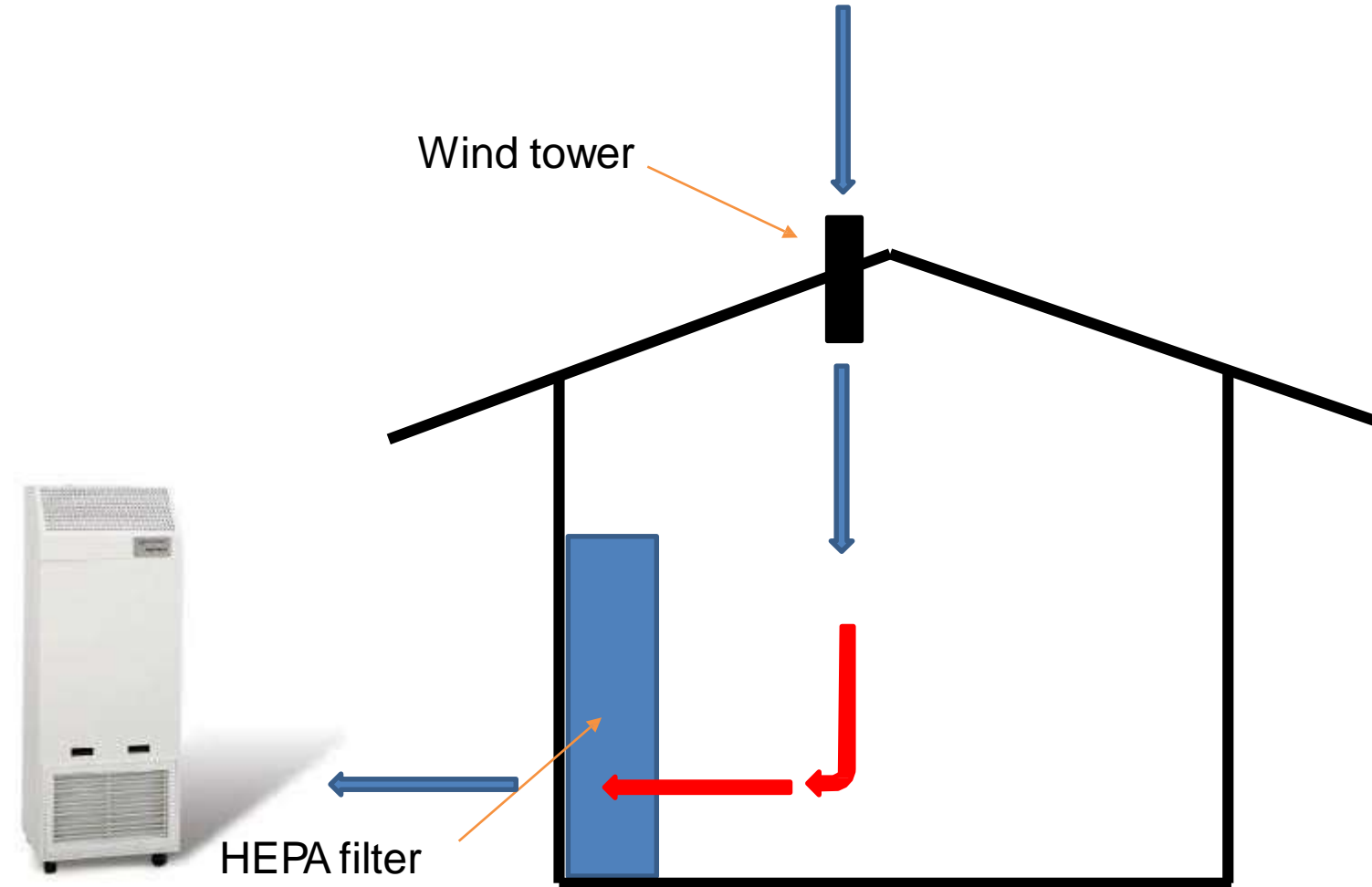
Exhausted air treatment - HEPA

HEPA is a type of pleated mechanical air filter. It is an acronym for "high efficiency particulate air [filter]". This type of air filter can theoretically remove at least 99.97% of dust, pollen, mold, bacteria, and any airborne particles with a size of 0.3 microns (μm).



Exhausted air treatment – portable HEPA

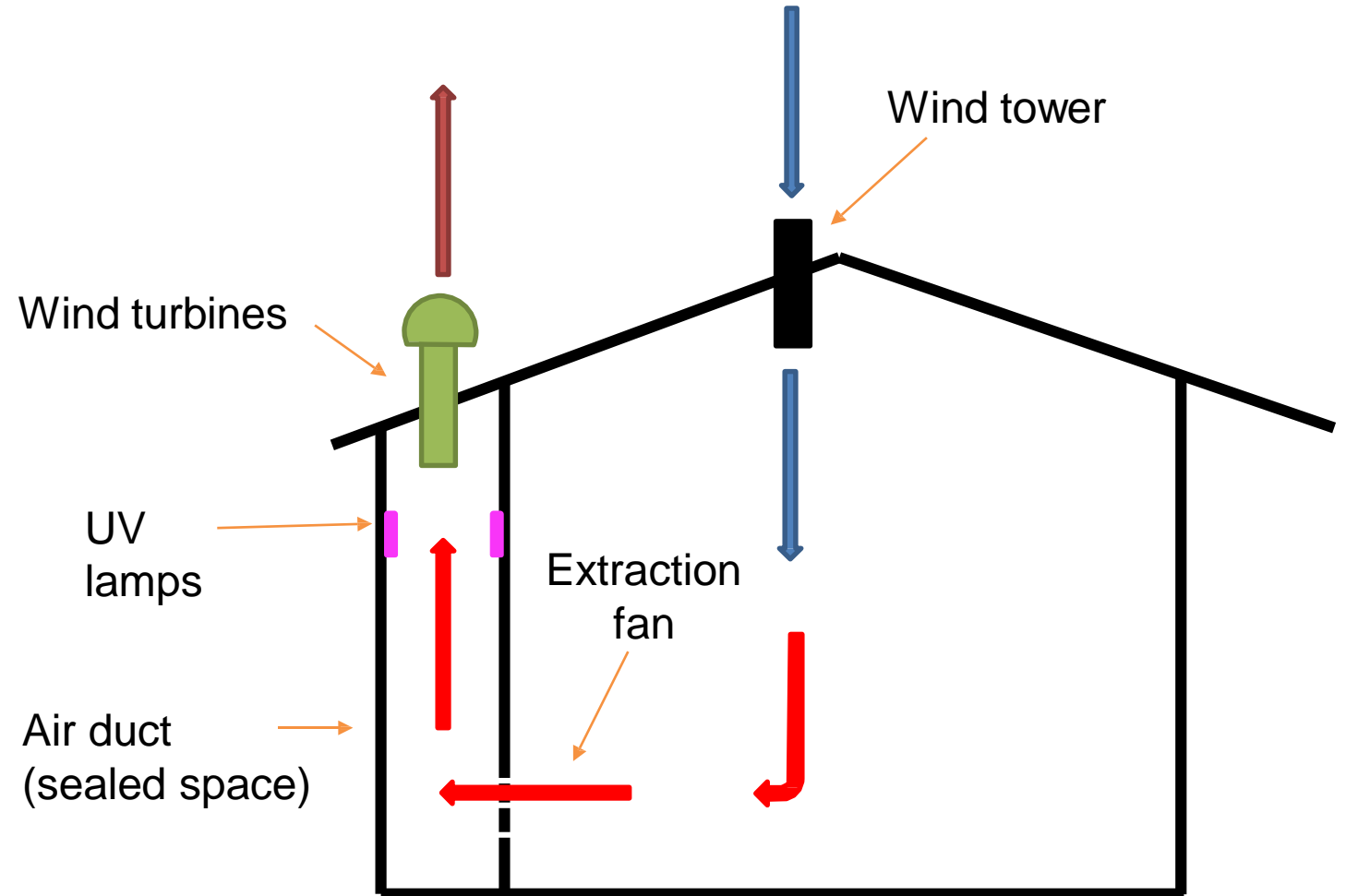
In order to simplify the installation, reducing the construction time and assuring proper air treatment, facilities may benefit from the use of a portable HEPA filter unit equipped with the proper fittings/ducting to exhaust air from a selected room to create the required ventilation flow rate and exhausted air treatment as well.



Exhausted air treatment - Ultraviolet Germicidal Irradiation (UVGI)

UVGI is electromagnetic radiation that can destroy the ability of microorganisms to reproduce by causing photochemical changes in nucleic acids.

UVGI is not recommended as stand-alone system but only as complementary to HEPA filtration in case of air recirculation.



Module: 1C

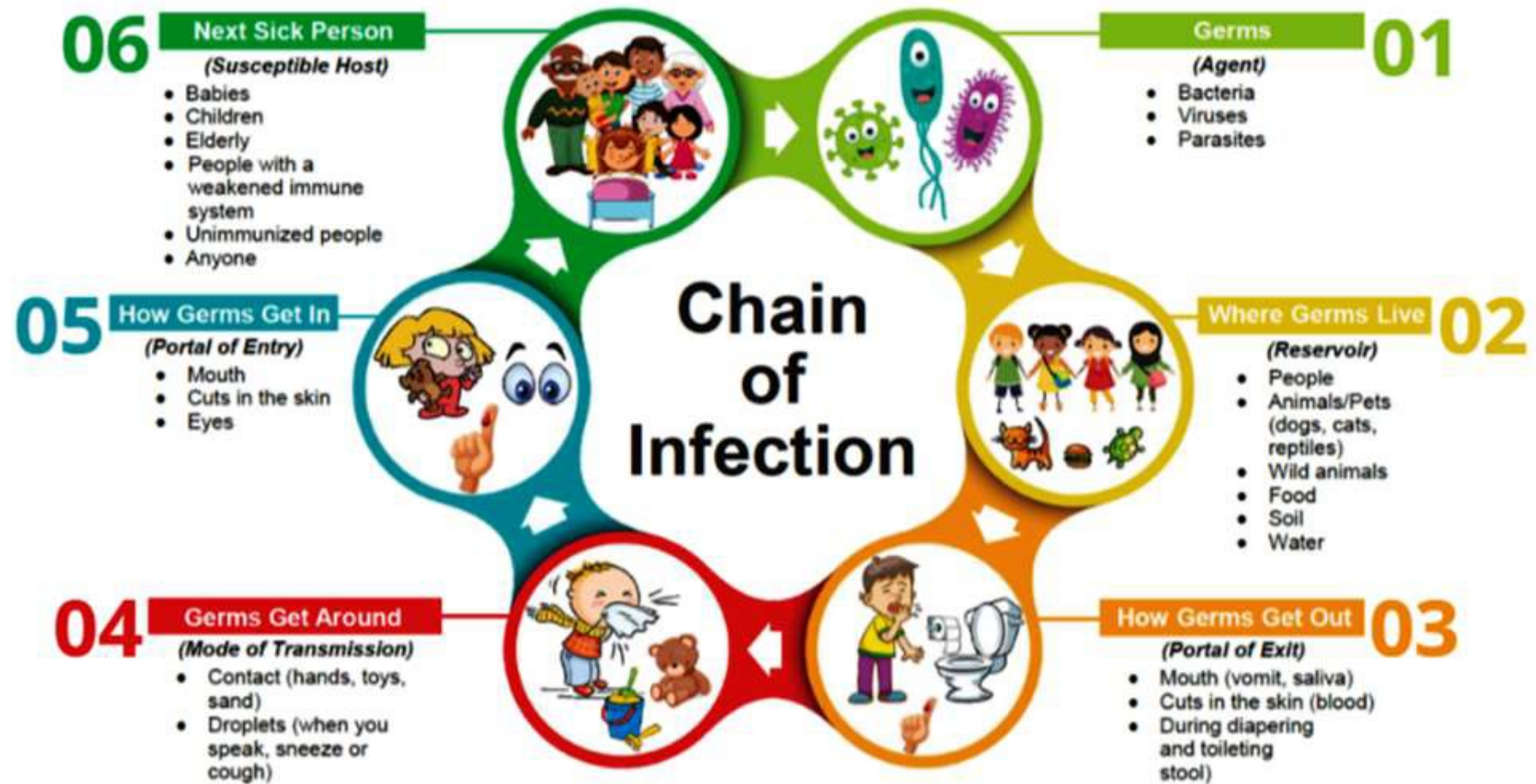
Module 1C

Modes of transmission and rational use of PPE

Modes of transmission

For infection to spread, all links must be connected.

IPC goal is to break a link in the chain to prevent the transfer of the pathogen.



Modes of transmission

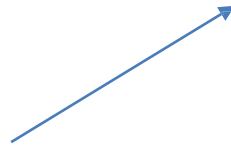
An infectious agent may be transmitted from its natural reservoir to a susceptible host in different ways. There are different classifications for modes of transmission.

In order to be able to assess the risk and rationalize the PPE, it's essential to understand the mode of transmission.

Contact	Direct contact	Direct Vertical Transmission	Mother to child
	Indirect contact	Direct Horizontal Transmission	Direct physical transfer between one susceptible host and an infected/colonized person
			Personal contact between a susceptible host and a contaminated intermediate object, usually inanimate
Airborne			By inhalation of infective small particles (< 5 μ) which once dispersed remain suspended in the air.
Droplet			By inhalation of infective large particles via close contact with an infected patient sneezing or coughing
Vector			Contact (e.g. stings, bites) with insects, arthropods and other parasites contaminated by excreta, secretions or blood from infected patients
Vehicle	Water borne		Transmission through contaminated water
	Food borne		Transmission through contaminated food

Modes of transmission

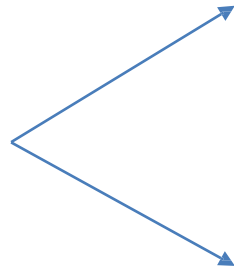
COVID-19



	Direct contact	Direct Vertical Transmission	Mother to child
Airborne			By inhalation of infective small particles ($< 5 \mu$) which once dispersed remain suspended in the air.
Droplet			By inhalation of infective large particles via close contact with an infected patient sneezing or coughing
Vector			Contact (e.g. stings, bites) with insects, arthropods and other parasites contaminated by excreta, secretions or blood from infected patients
Vehicle	Water borne Food borne		Transmission through contaminated water Transmission through contaminated food

Modes of transmission

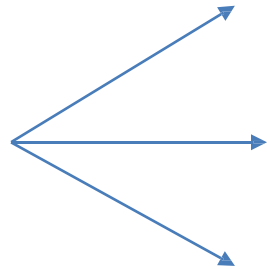
COVID-19



	Direct contact	Direct Vertical Transmission	Mother to child
Airborne			By inhalation of infective small particles (< 5 μ) which once dispersed remain suspended in the air.
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	Food borne		Transmission through contaminated food

Modes of transmission

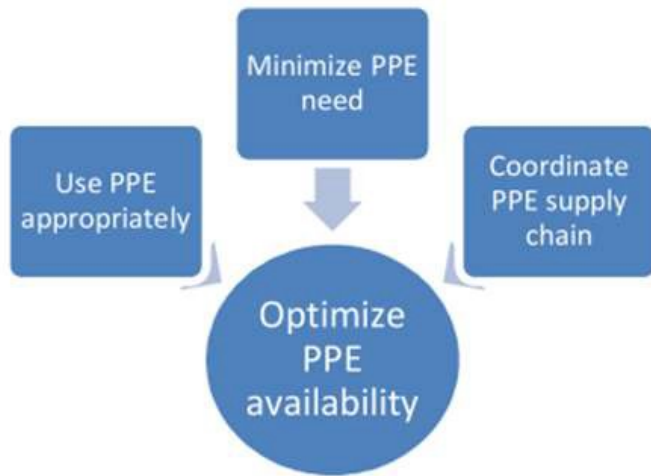
COVID-19



ONLY when performing aerosol-generating procedures, such as tracheal intubation, non-invasive ventilation, etc.

	Direct contact	Direct Vertical Transmission	Mother to child
Vector	Contact (e.g. stings, bites) with insects, arthropods and other parasites contaminated by excreta, secretions or blood from infected patients		
Vehicle	Water borne	Transmission through contaminated water	
	Food borne	Transmission through contaminated food	

Rational use of PPE



- Use physical barriers to reduce exposure to the virus, such as glass or plastic windows. This approach can be implemented in areas of the healthcare setting where patients will first present, such as triage areas, the registration desk at the emergency department or at the pharmacy window where medication is collected.



Rational use of PPE



- Use physical barriers to reduce exposure to the virus, such as glass or plastic windows. This approach can be implemented in areas of the healthcare setting where patients will first present, such as triage areas, the registration desk at the emergency department or at the pharmacy window where medication is collected.
- Restrict healthcare workers from entering the rooms of SARI patients if they are not involved in direct care. Consider bundling activities to minimize the number of times a room is entered (e.g., check vital signs during medication administration or have food delivered by healthcare workers while they are performing other care) and plan which activities will be performed at the bedside.

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Thank you

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

Anna Silenzi – WHO - Architect

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 45m^2]



Screening for health facilities – Building

4: Patient side triage

5: Staff side triage

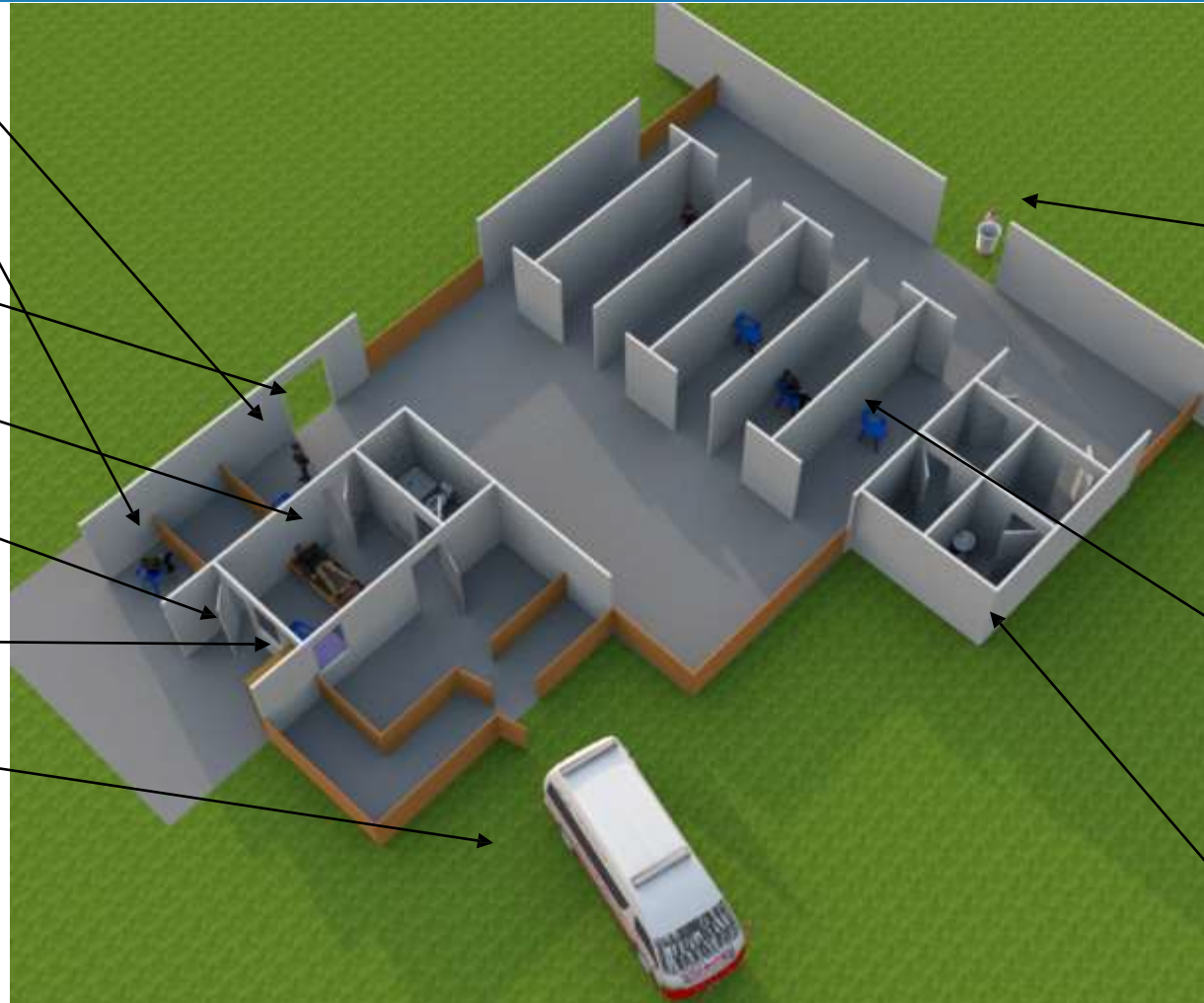
6: To the health facility

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

SCREENING FACILITY

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.

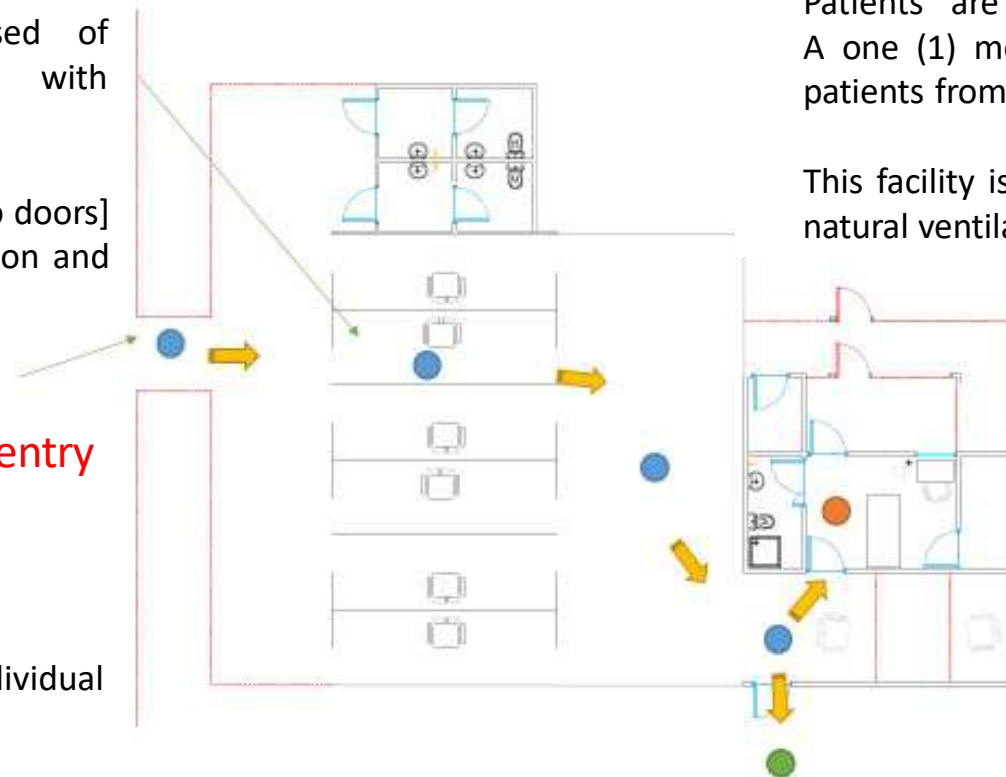
This facility is completely open [no doors] to allow a proper natural ventilation and is equipped with dedicated toilets.

4. Suspected case

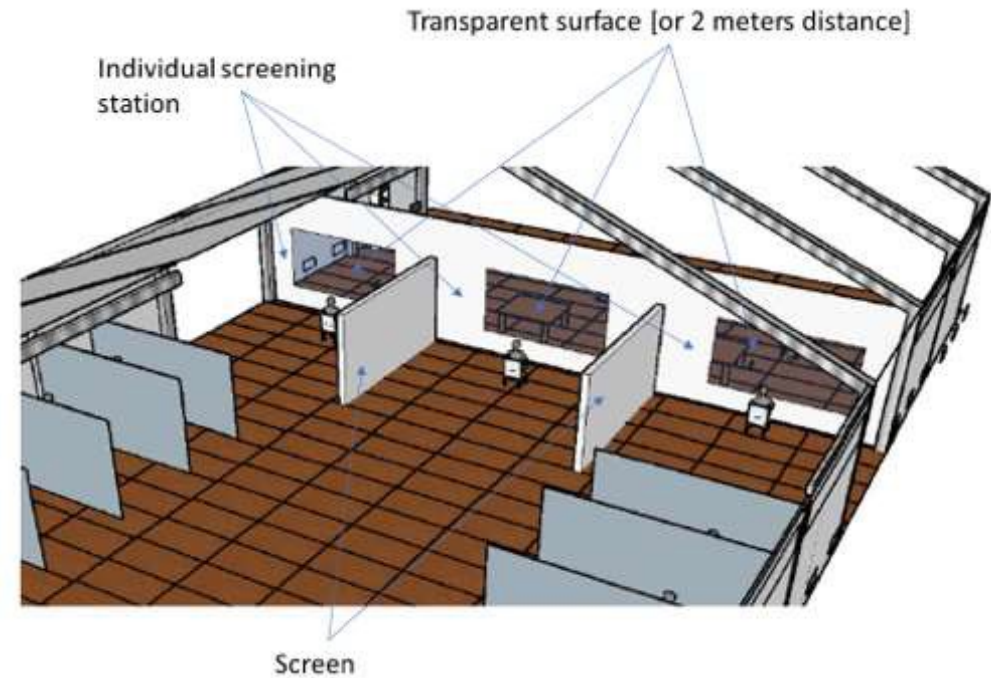
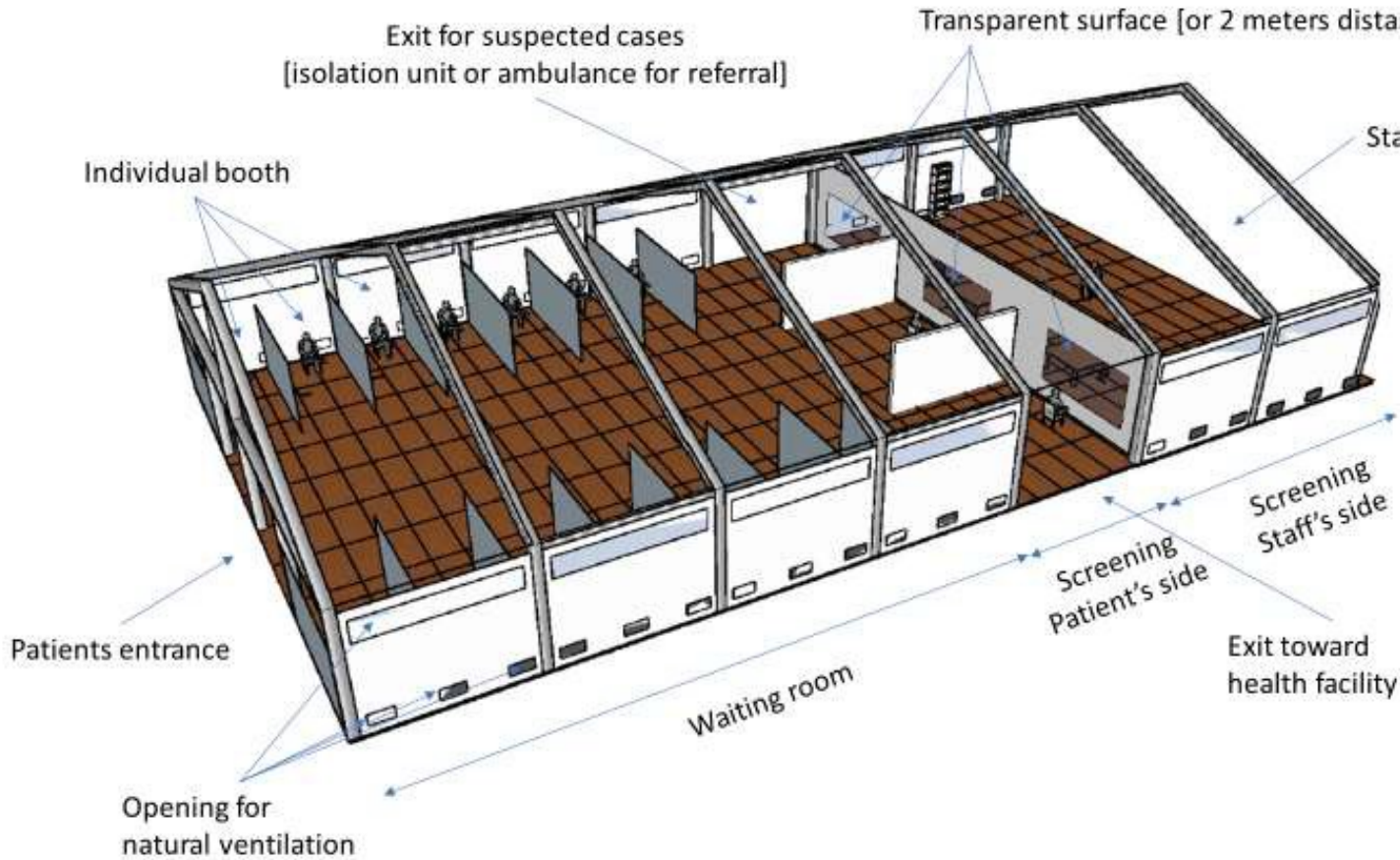
Patient moves to the isolation room, waiting to be referred to a specific treatment centre.

5. Non case

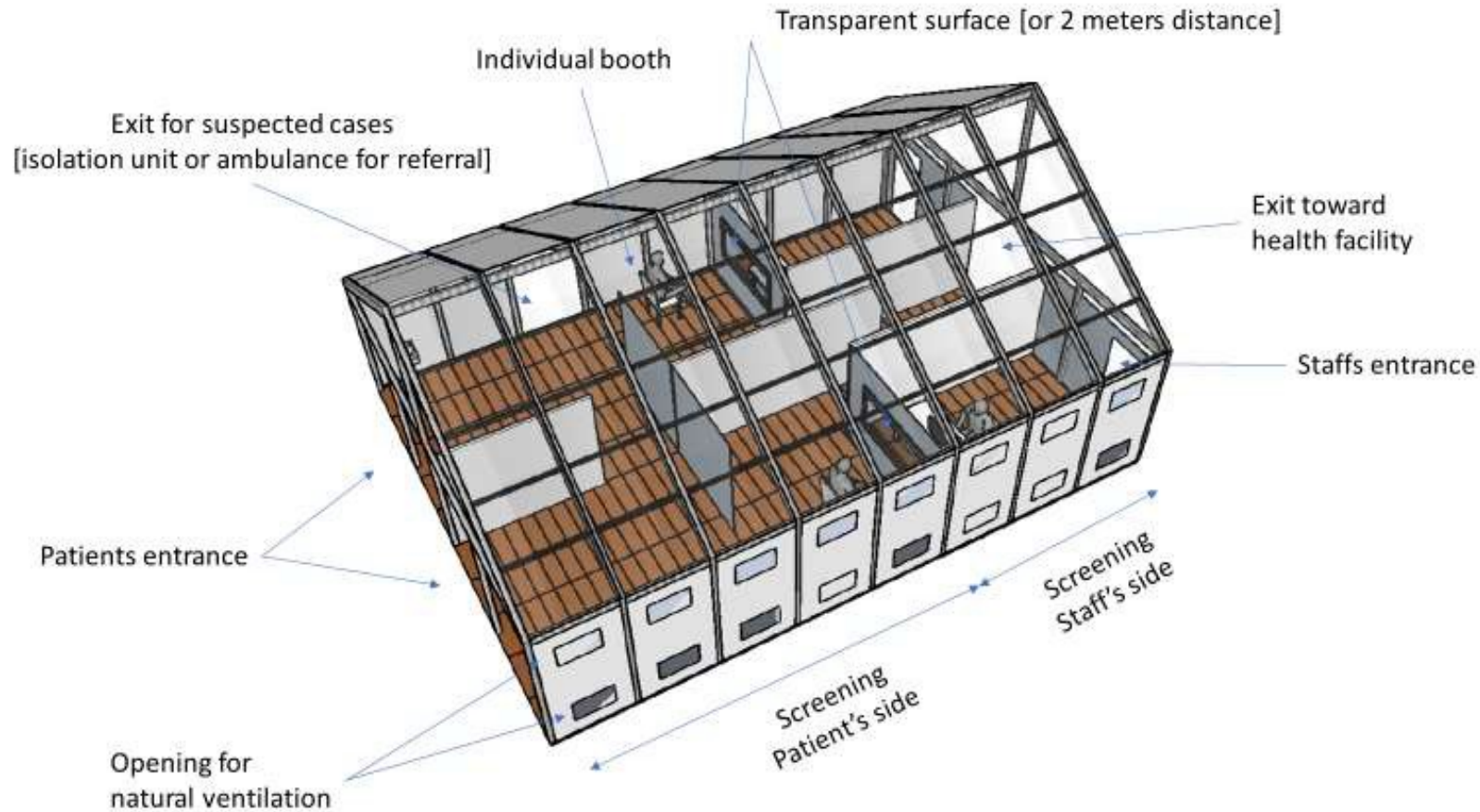
Patient moves to the health facility.



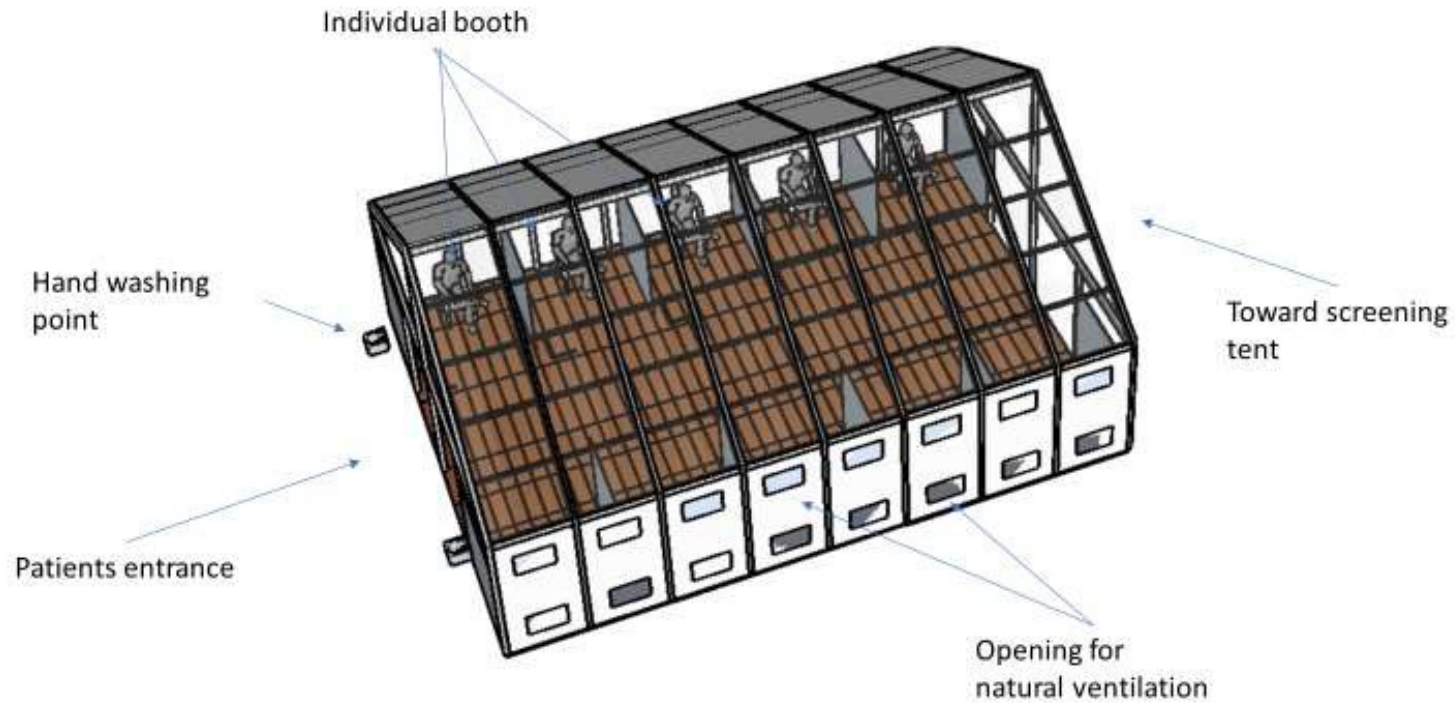
Screening for health facilities – Big tents



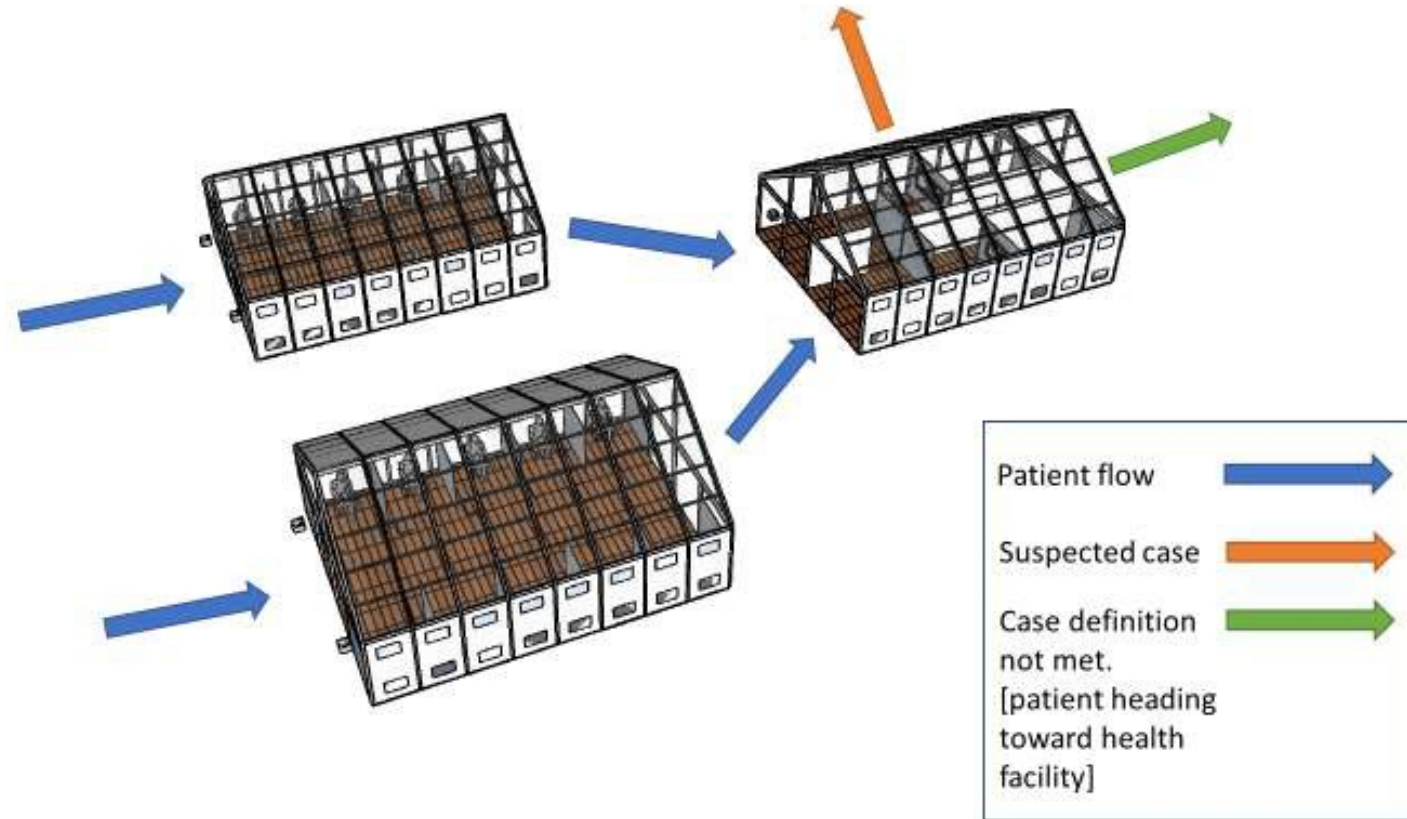
Screening for health facilities – Small tents



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.

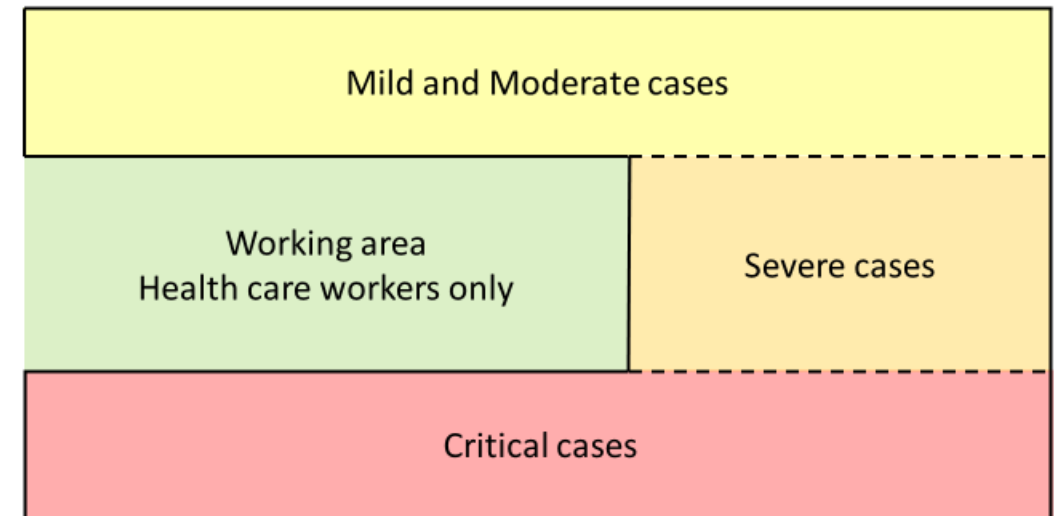
Basic layout principle

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].

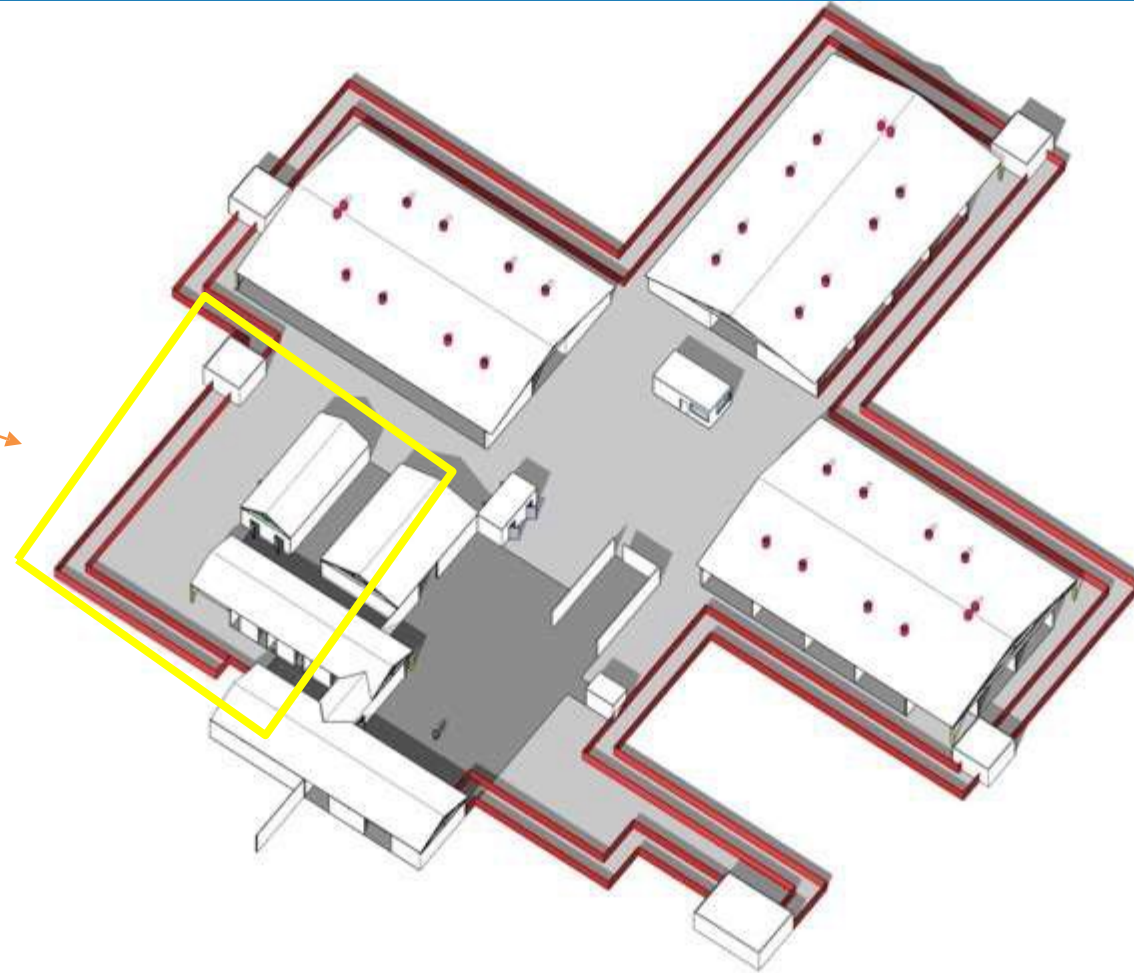


Basic layout principle

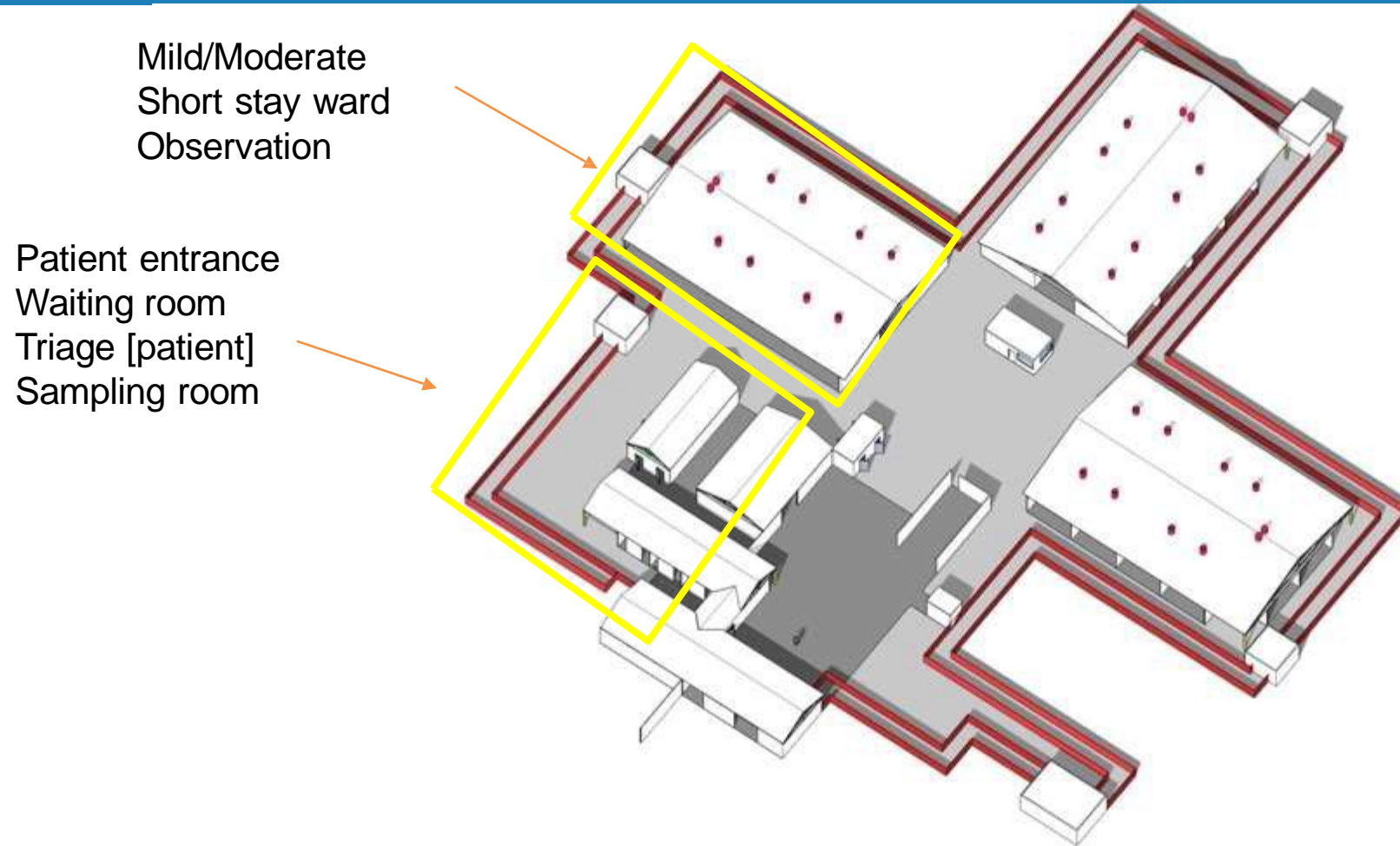


Key elements

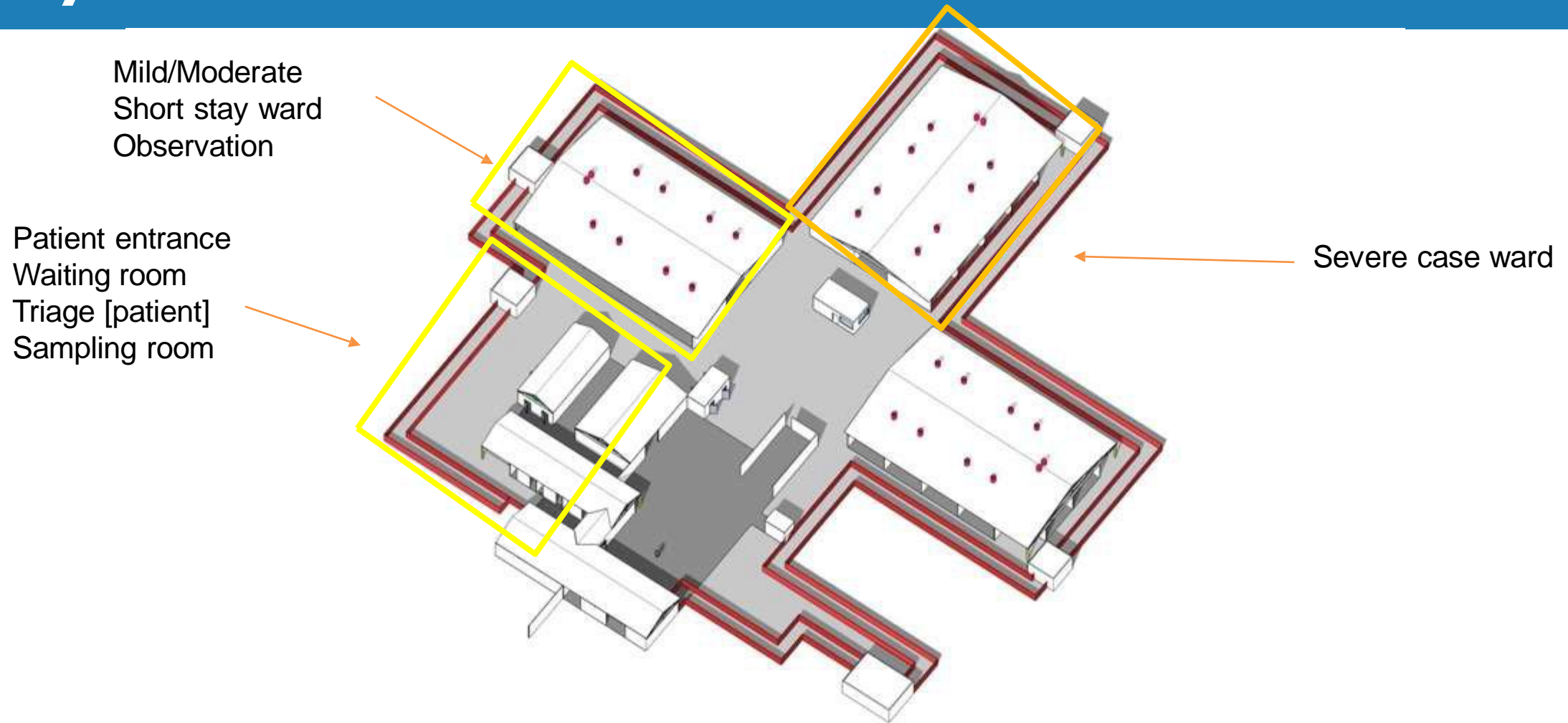
Patient entrance
Waiting room
Triage [patient]
Sampling room



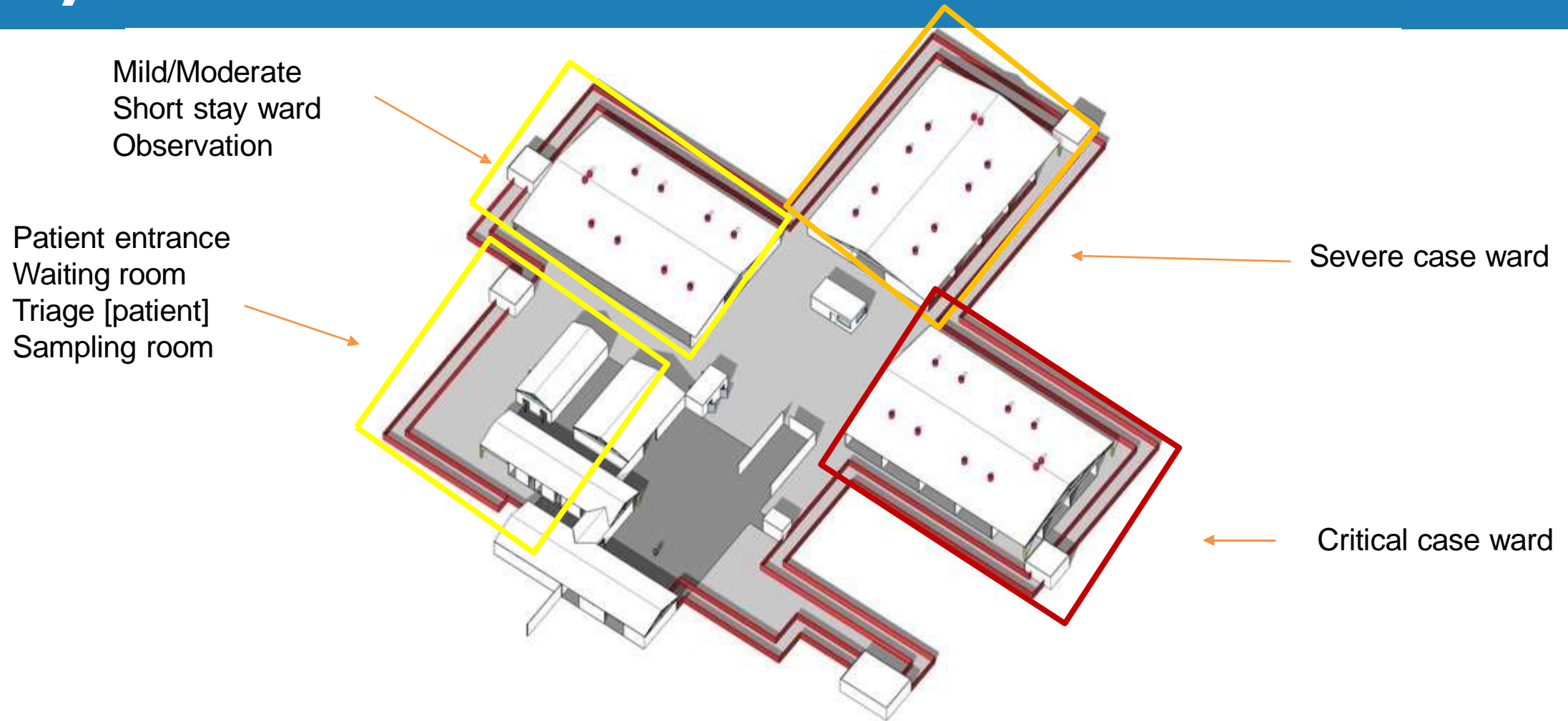
Key elements



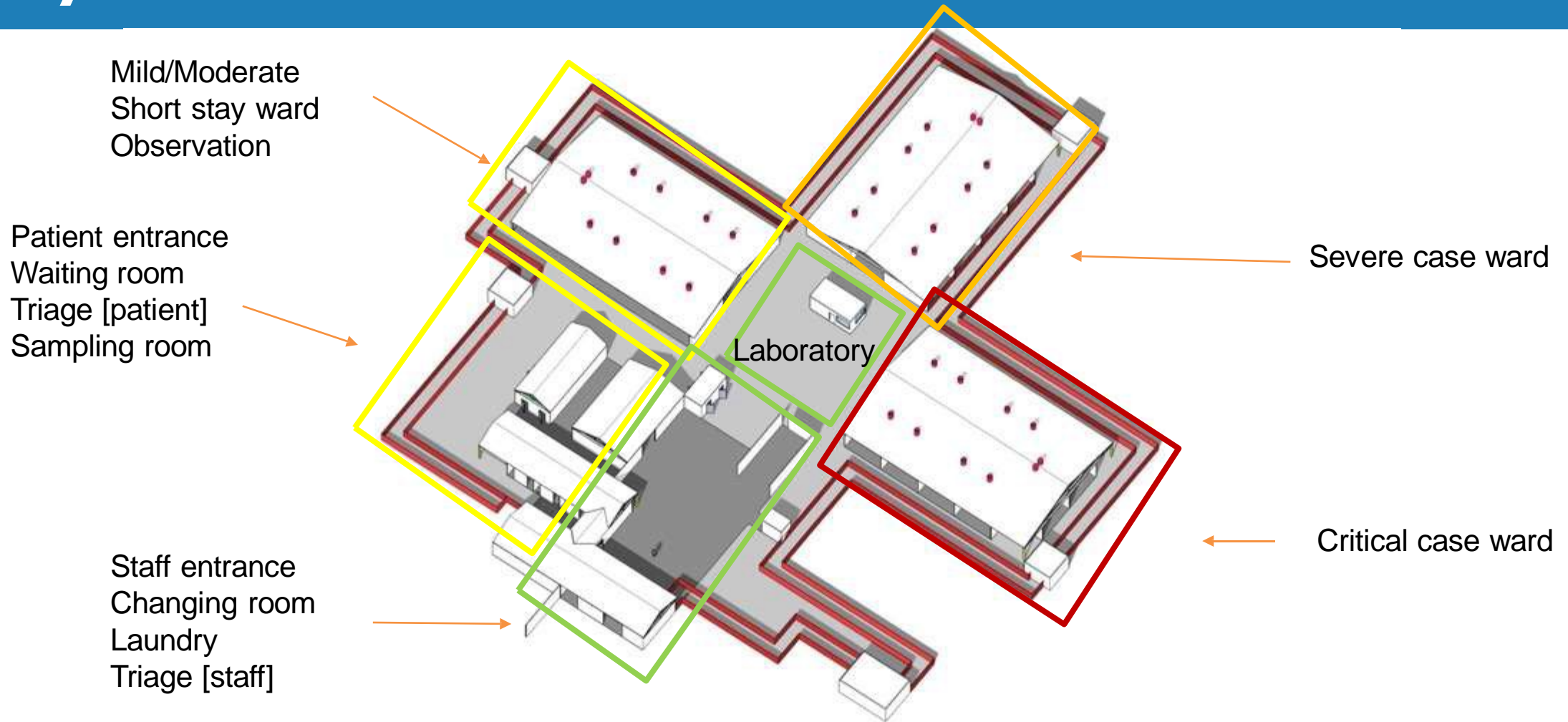
Key elements



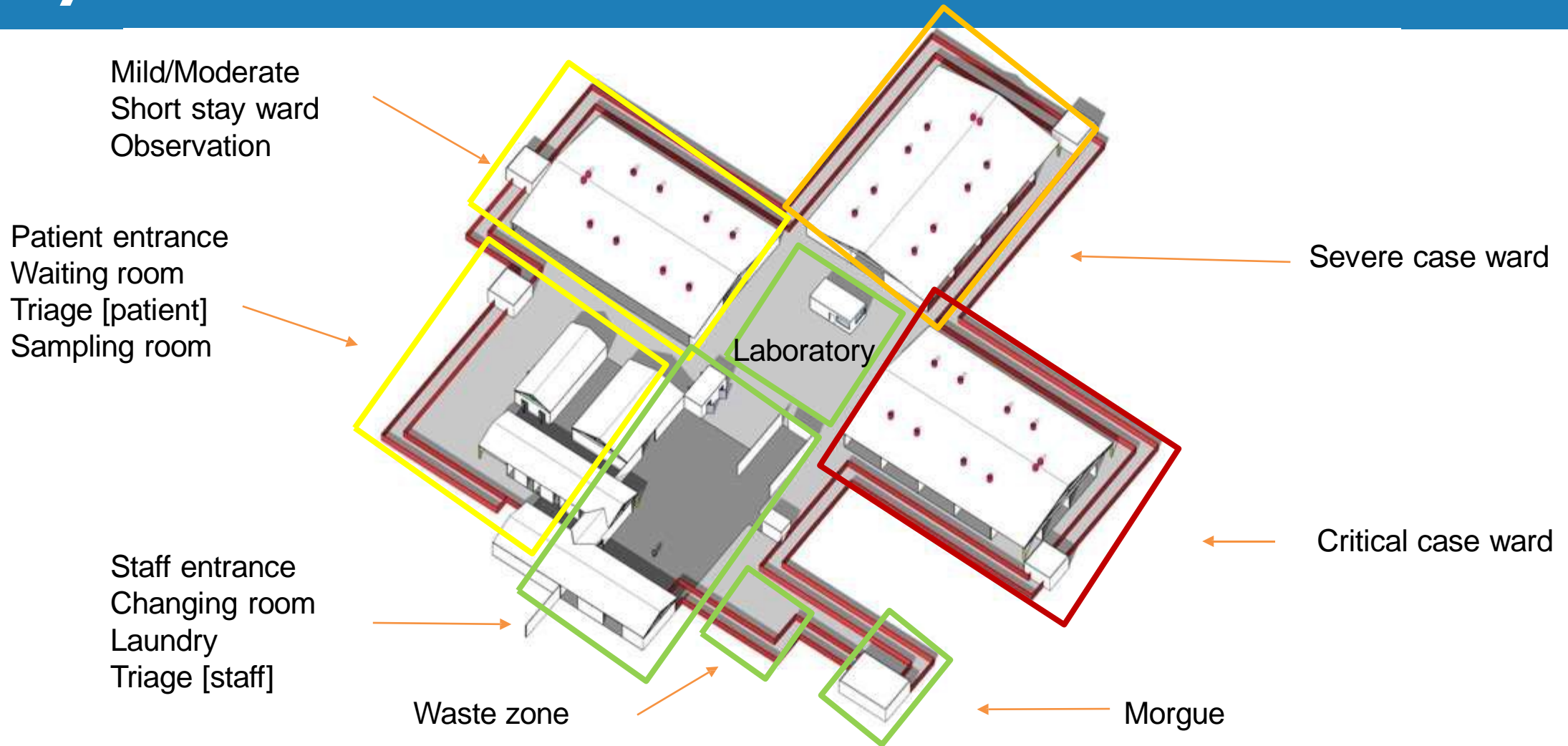
Key elements



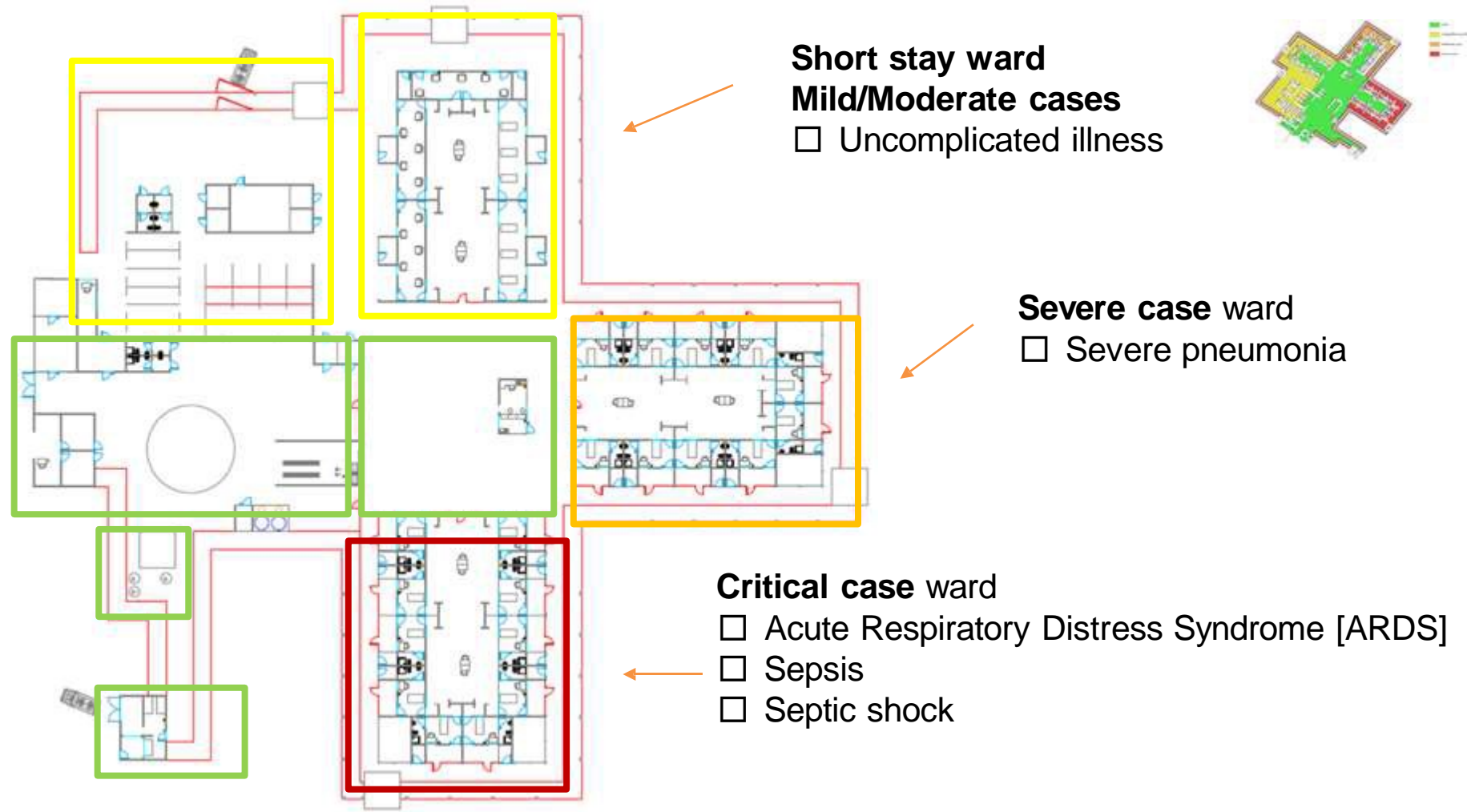
Key elements



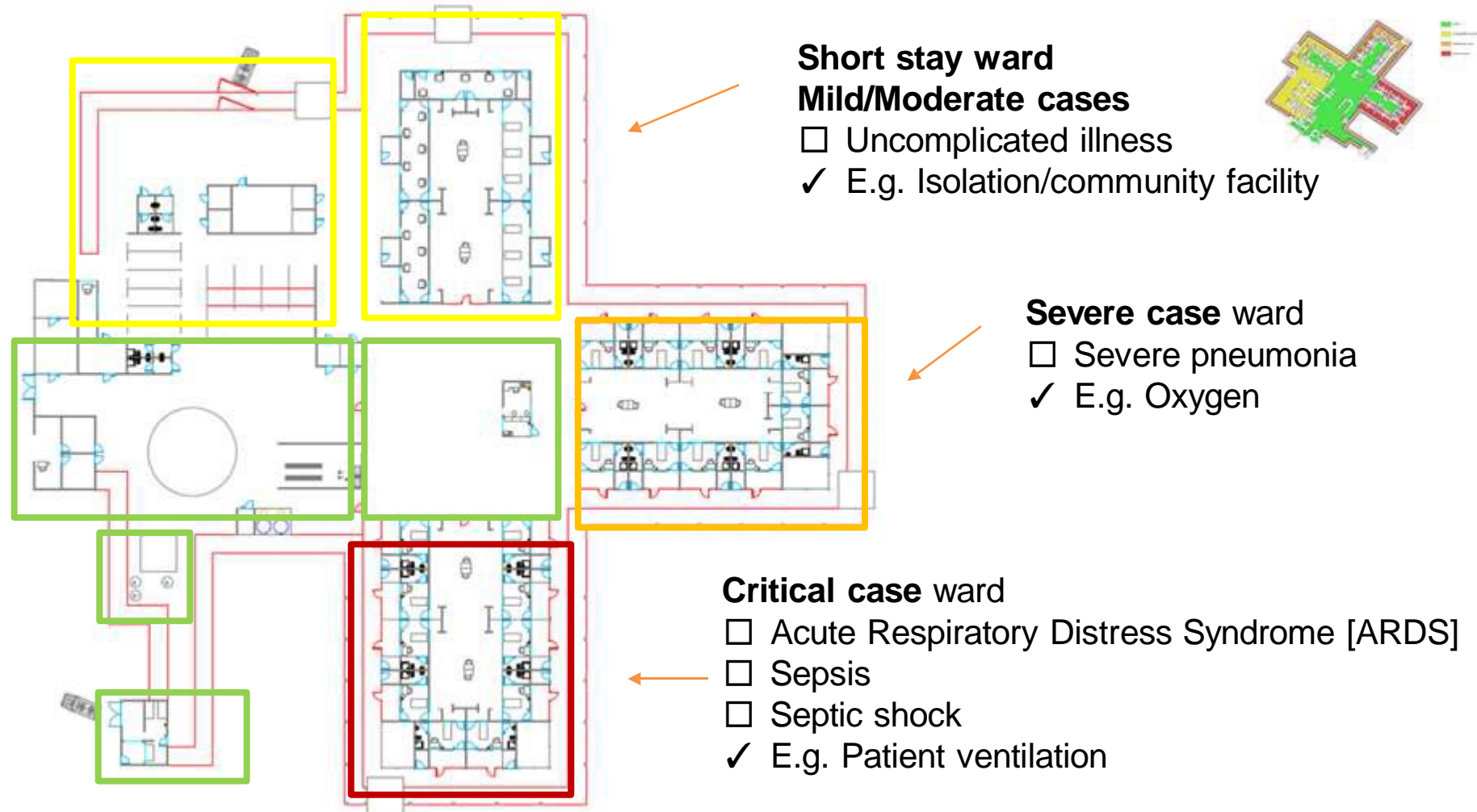
Key elements



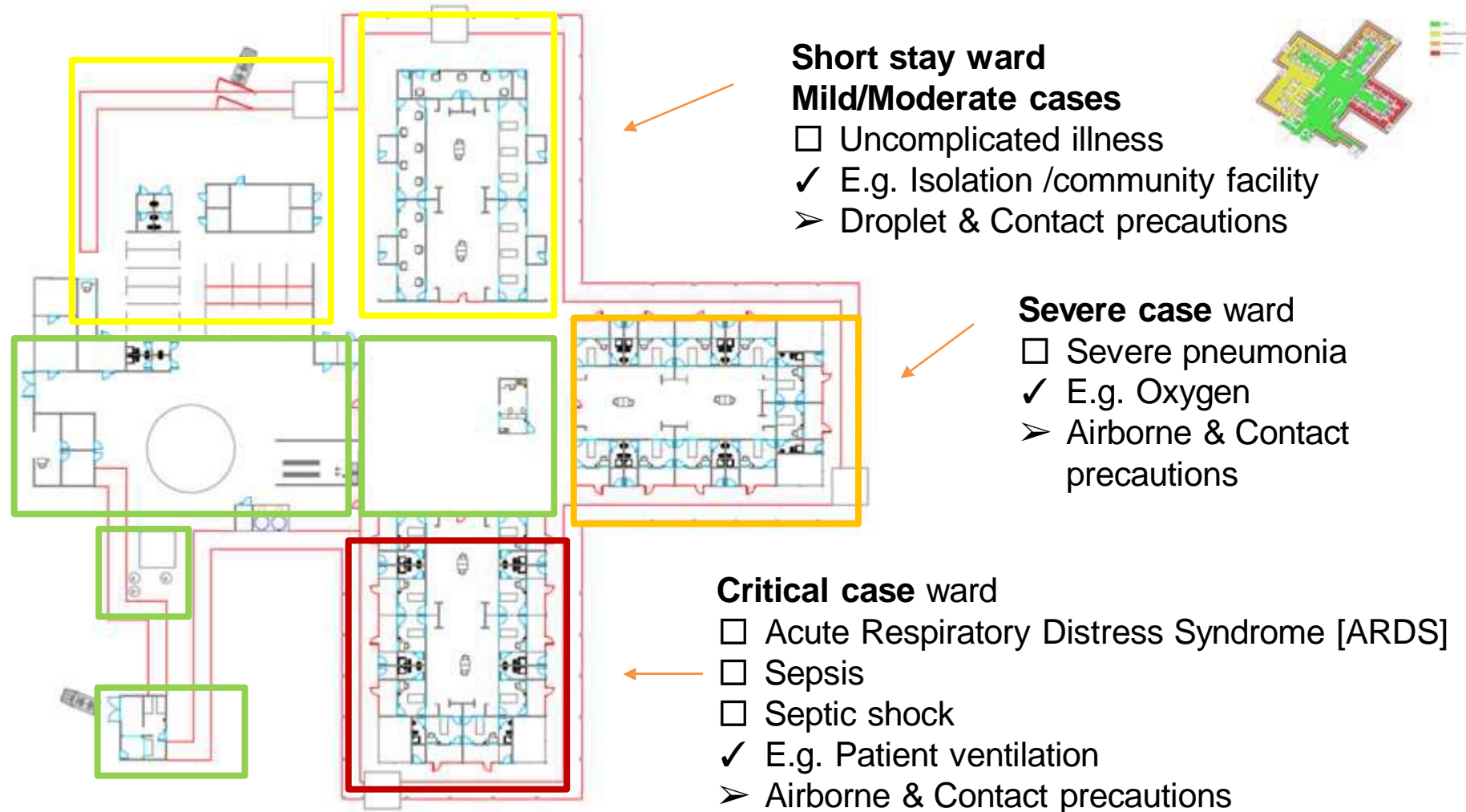
Key elements – Clinical categorization



Key elements – Case management



Key elements – PC measures /PPE



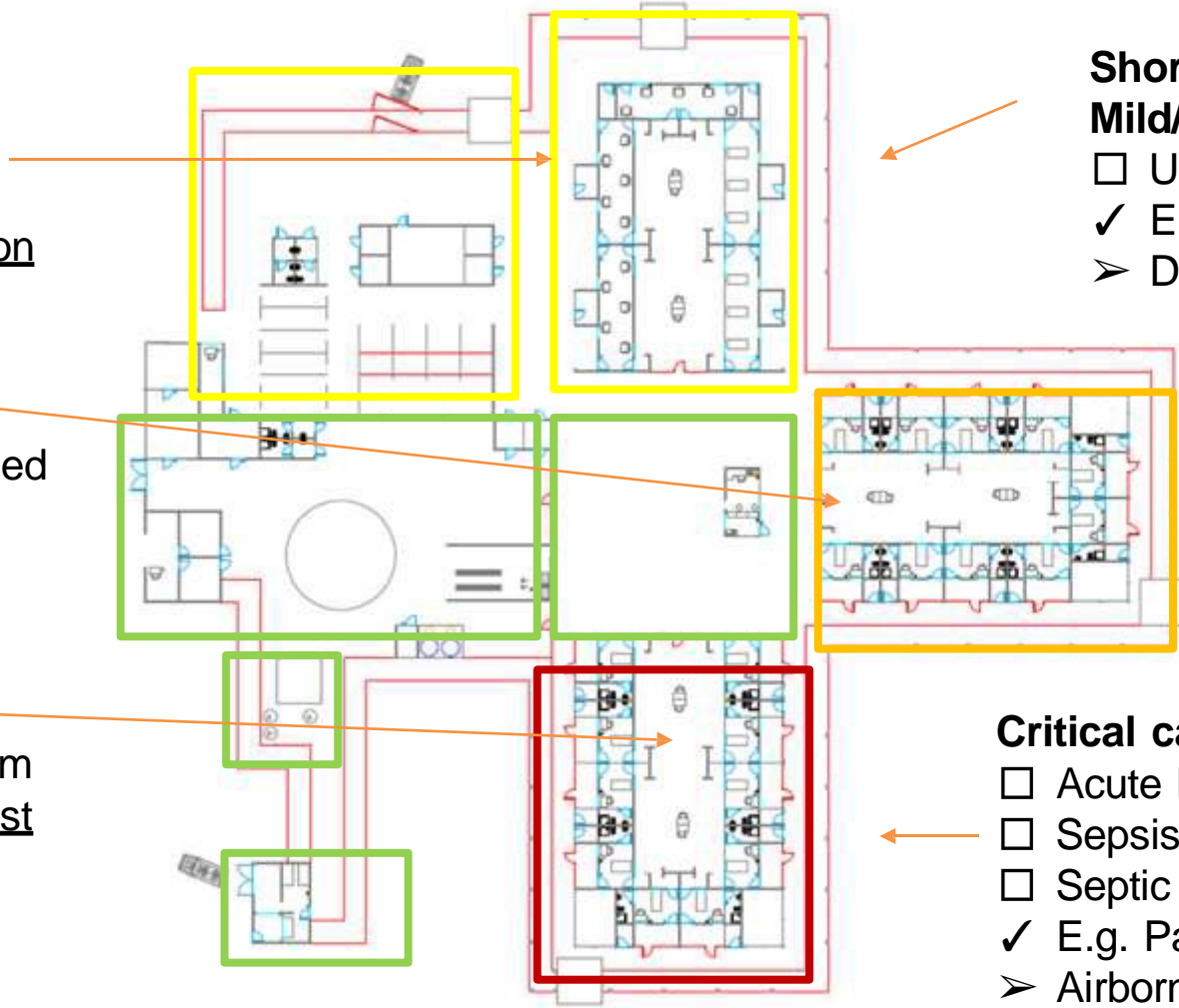
Key elements – PC measures / engineering

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 case ward

Severe pneumonia

✓ E.g. Oxygen

➤ Airborne & Contact precautions

Critical case ward

Acute Respiratory Distress Syndrome [ARDS]

Sepsis

Septic shock

✓ E.g. Patient ventilation

➤ Airborne & Contact precautions

Severe cases

Ward or individual self-contained room

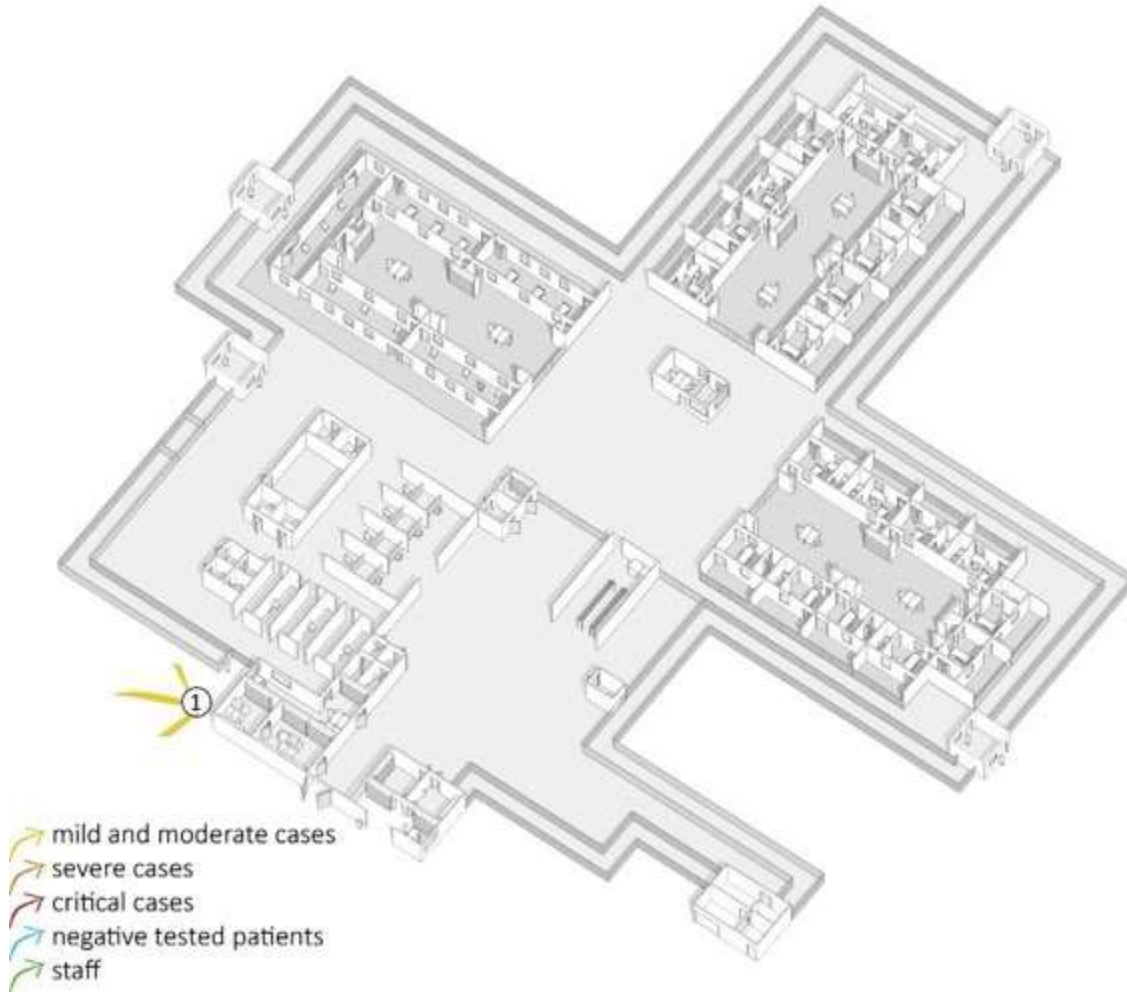
Ventilation: Ventilation at least 160 l/s/patient

Critical cases

Individual self-contained room

Ventilation: Ventilation at least 160 l/s/patient

Patient's flow

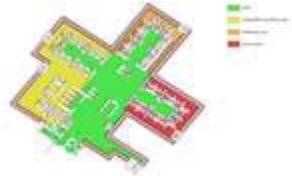


1. Patient entry

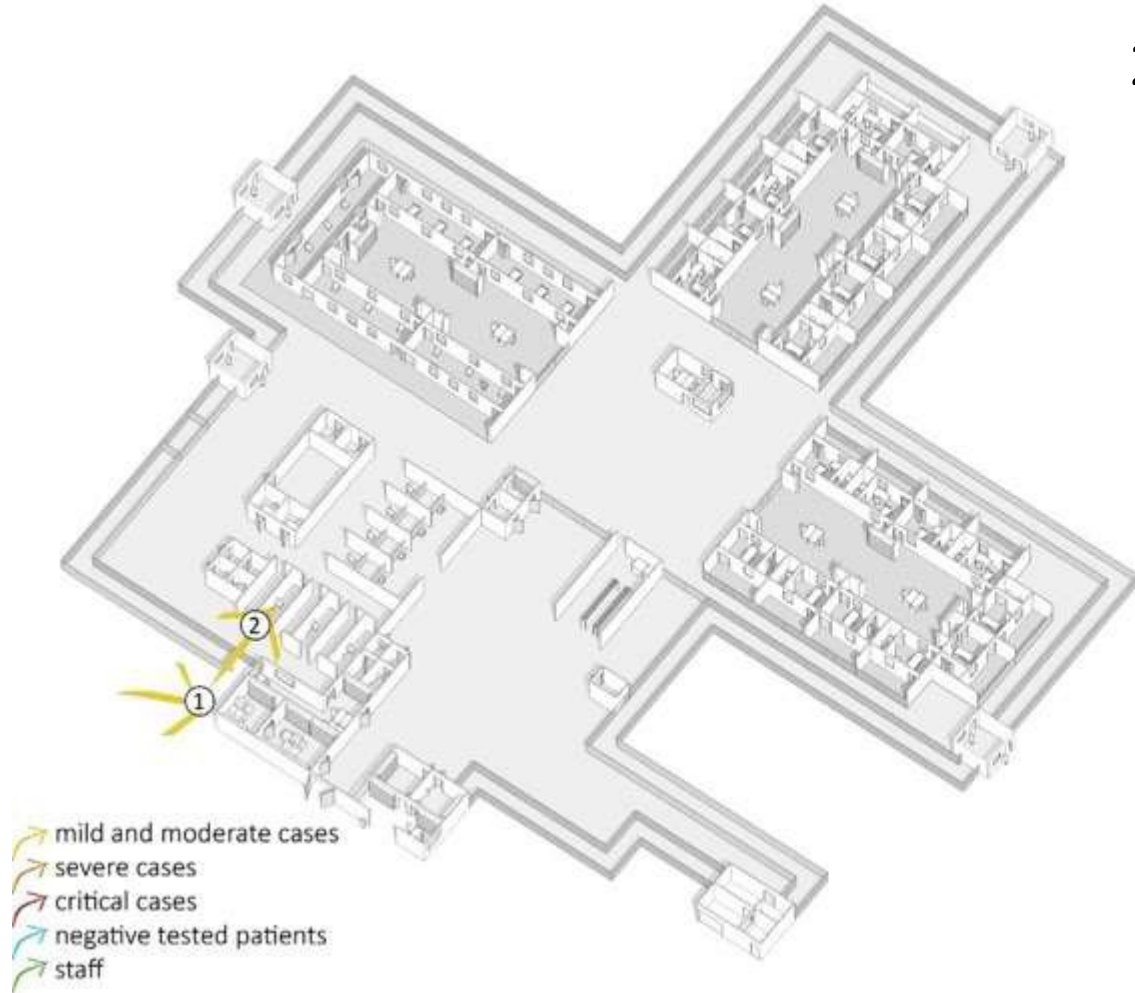
NOTE: Patients have already been triaged in another medical facility and are referred to the SARI treatment center.

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

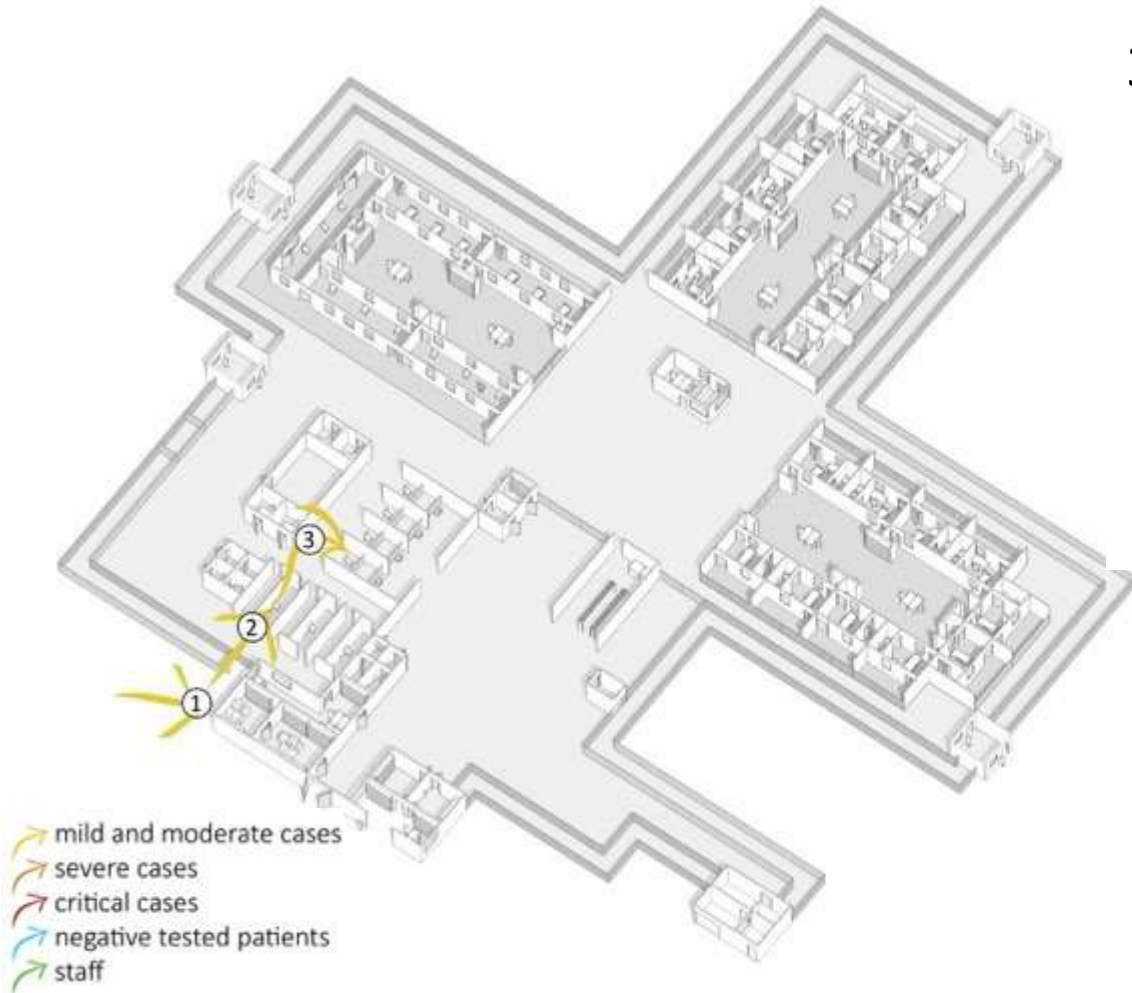


2. Waiting room

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.

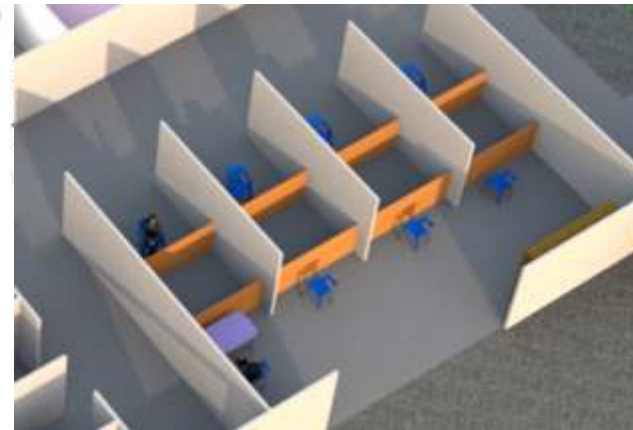


Patient's flow

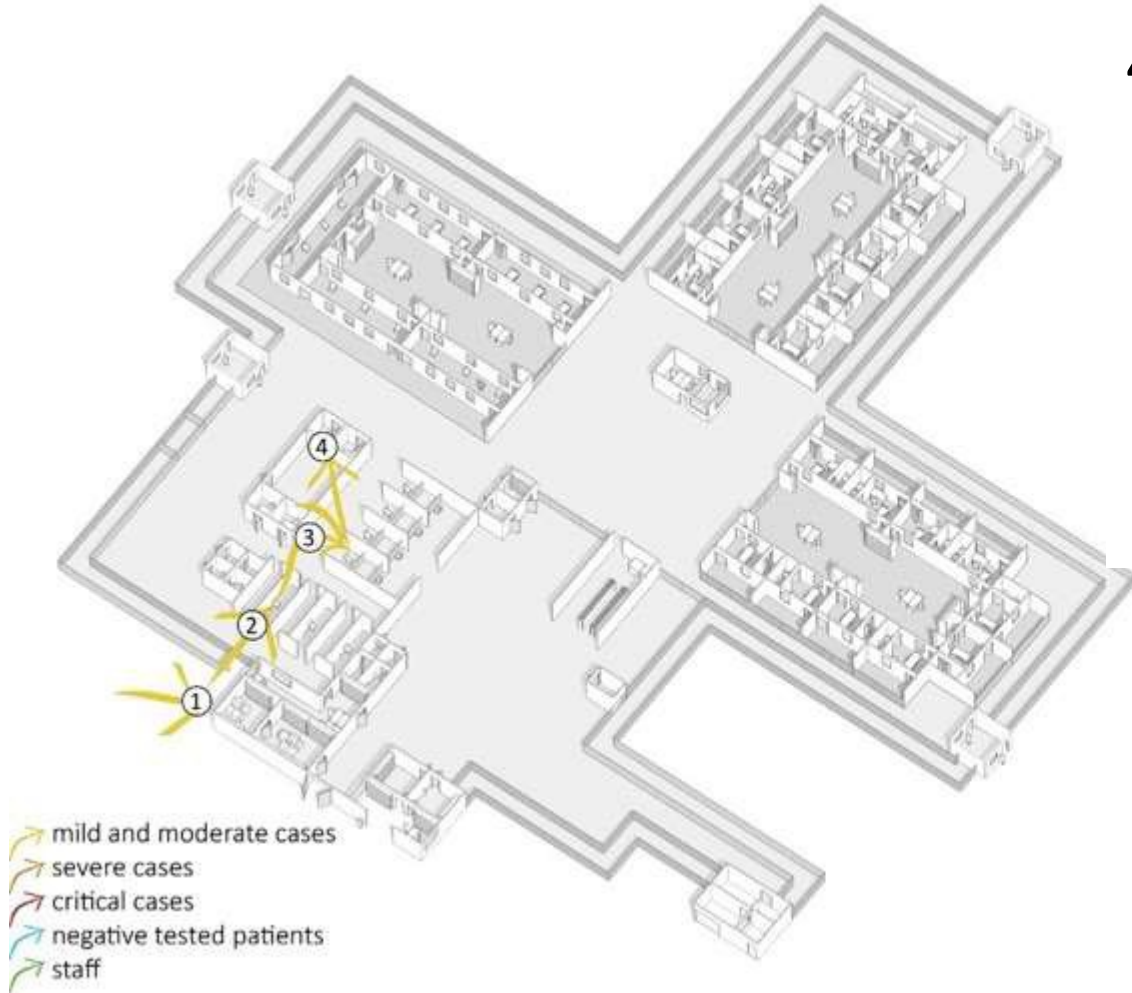


3. Triage

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

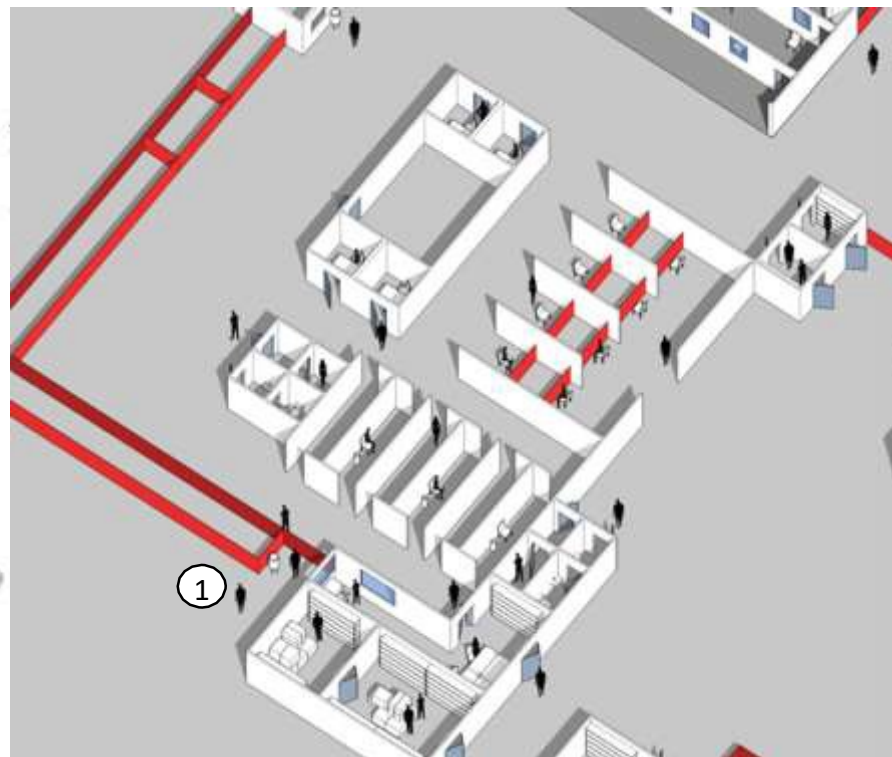
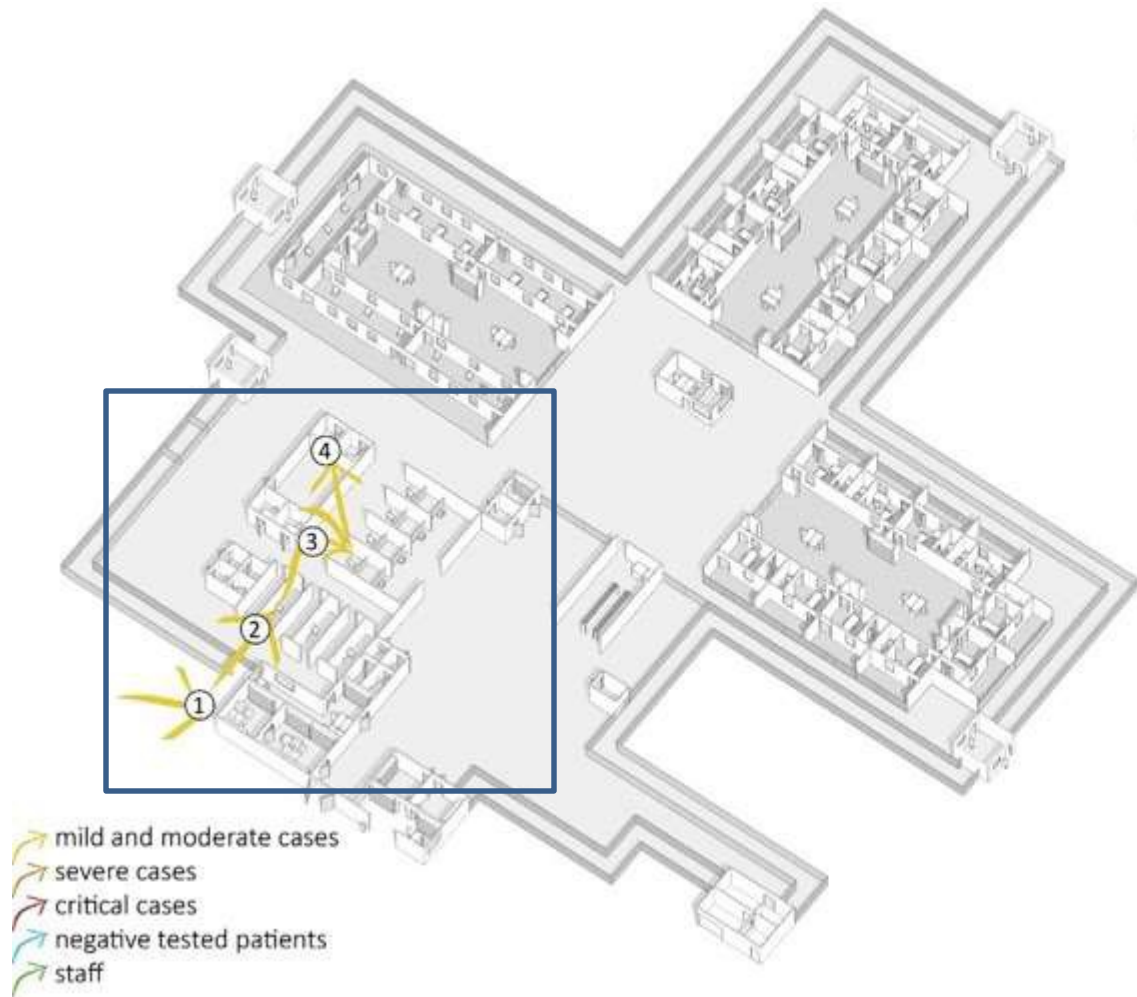


4. Sampling

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

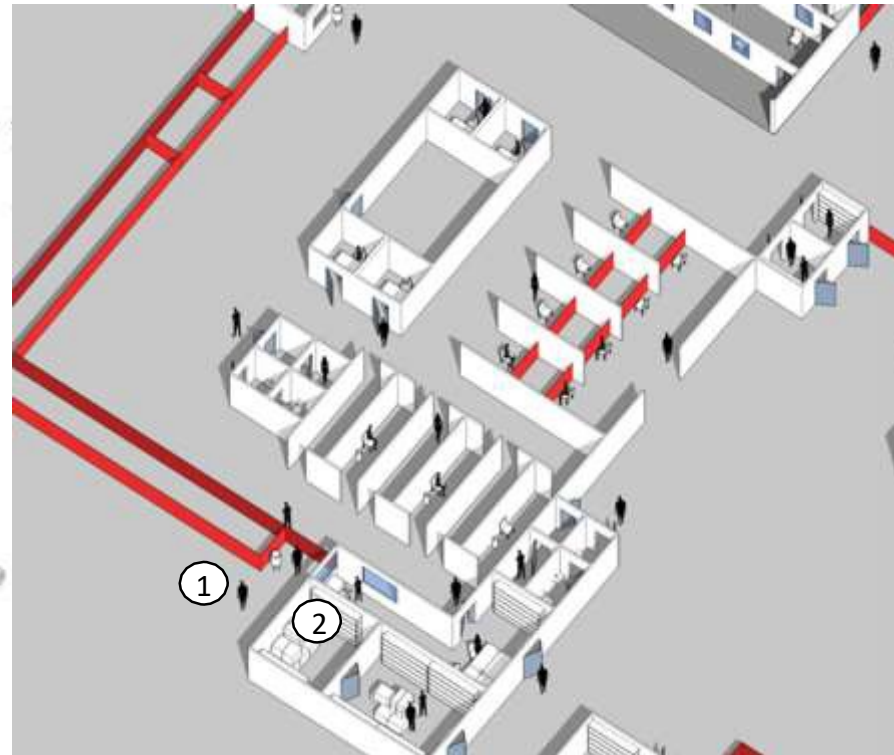
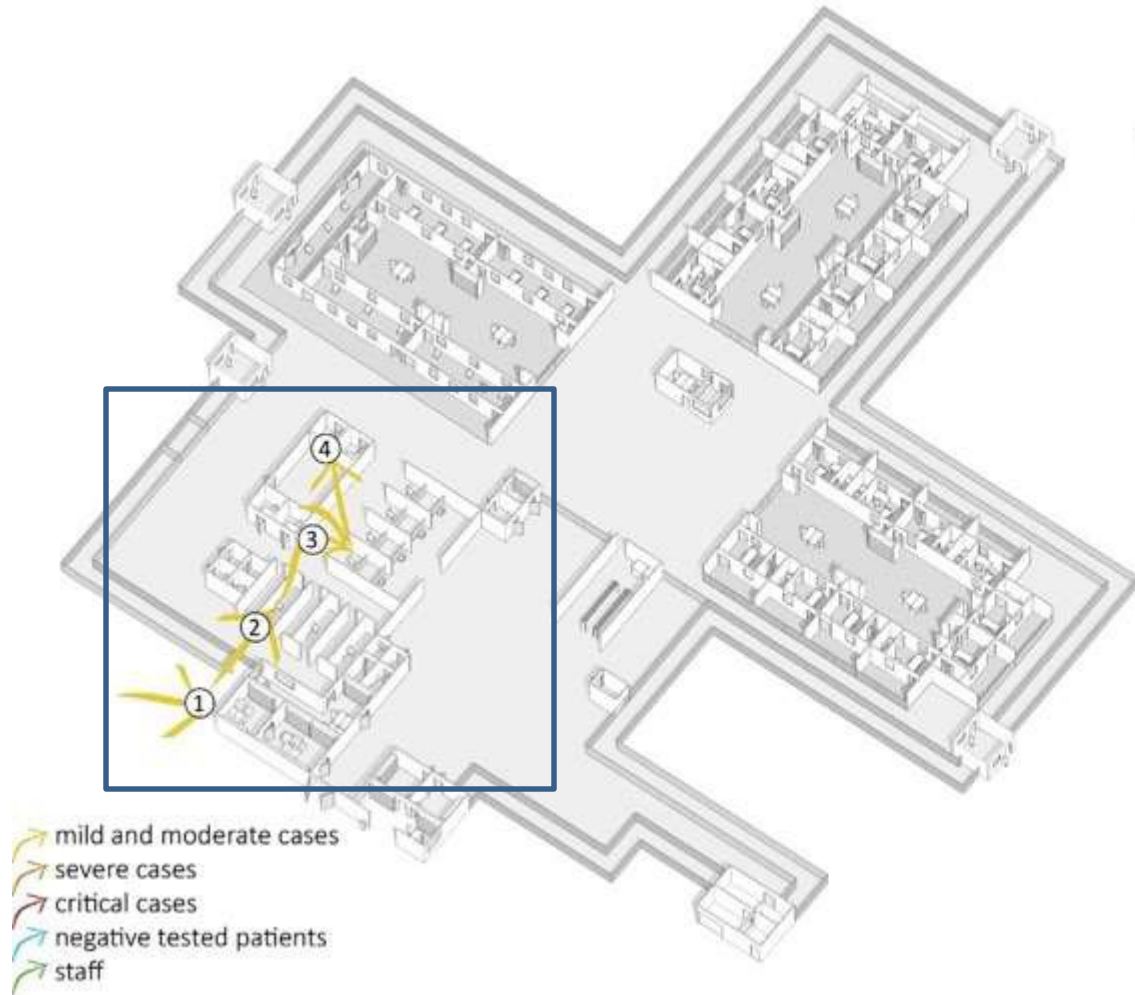
NOTE: Not all of the patients have been tested, this is according to medical decision.

Patient's flow



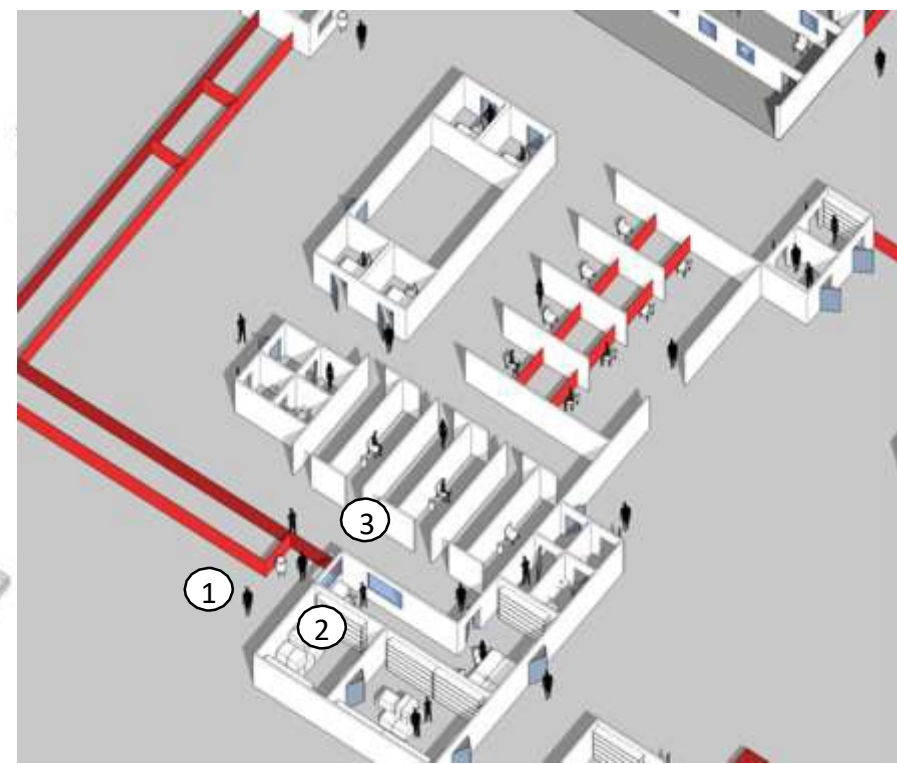
1. Patient entry

Patient's flow



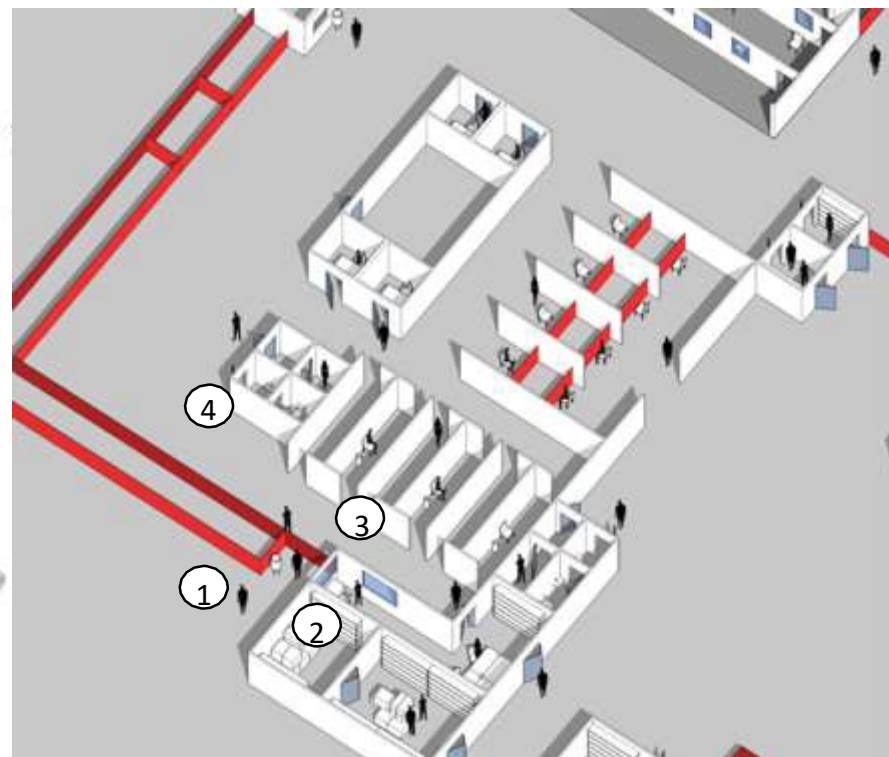
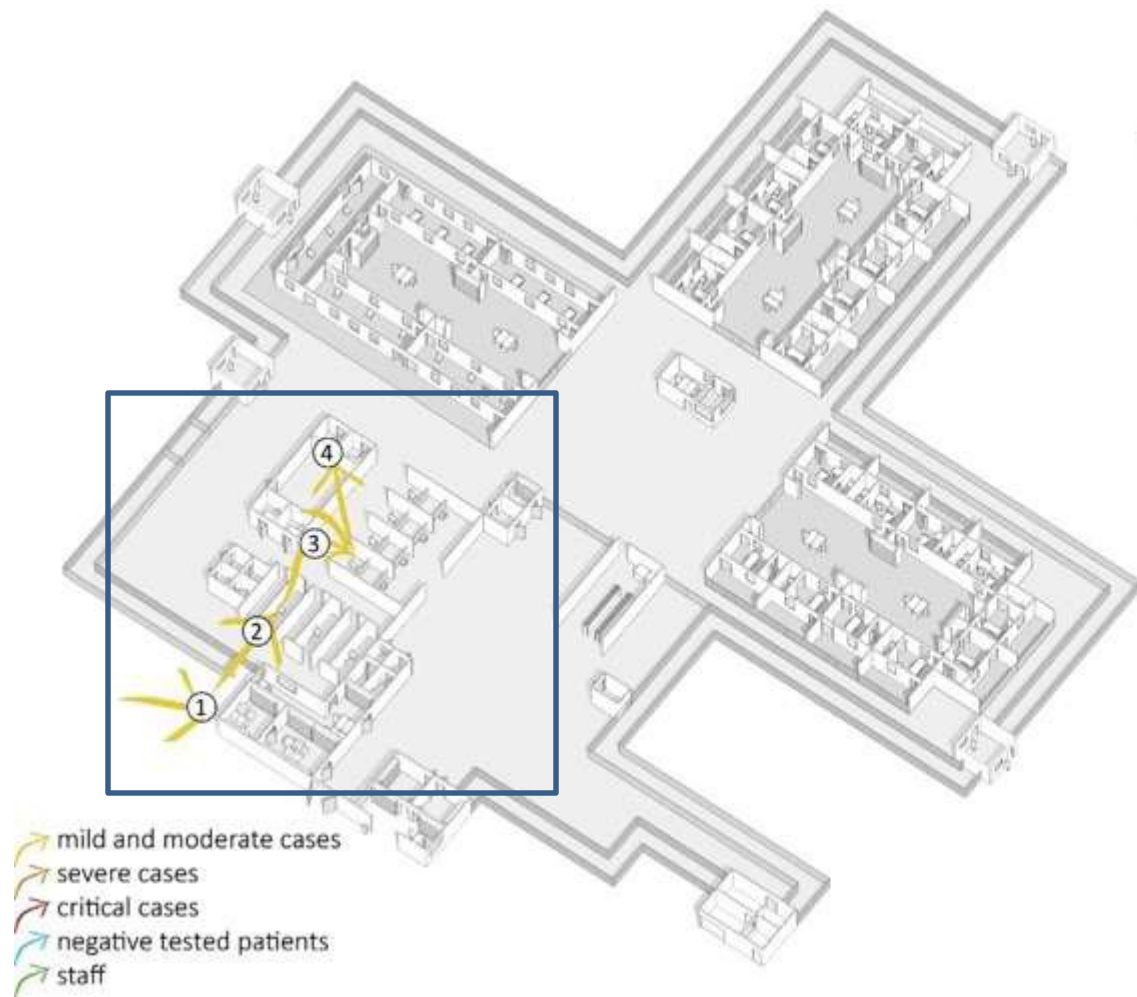
1. Patient entry
2. Reception/screening

Patient's flow



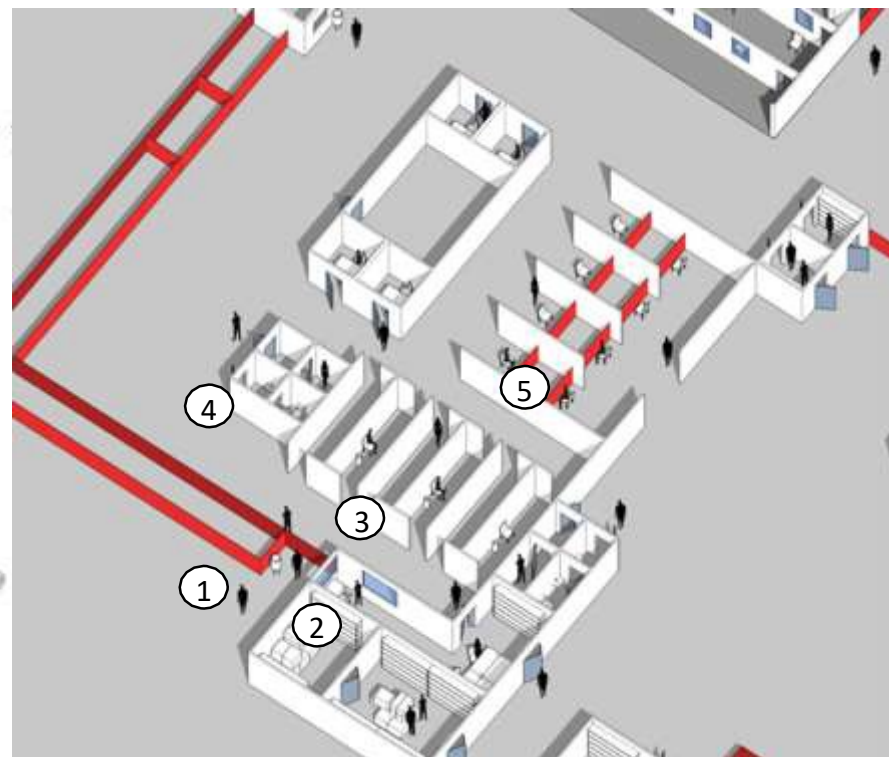
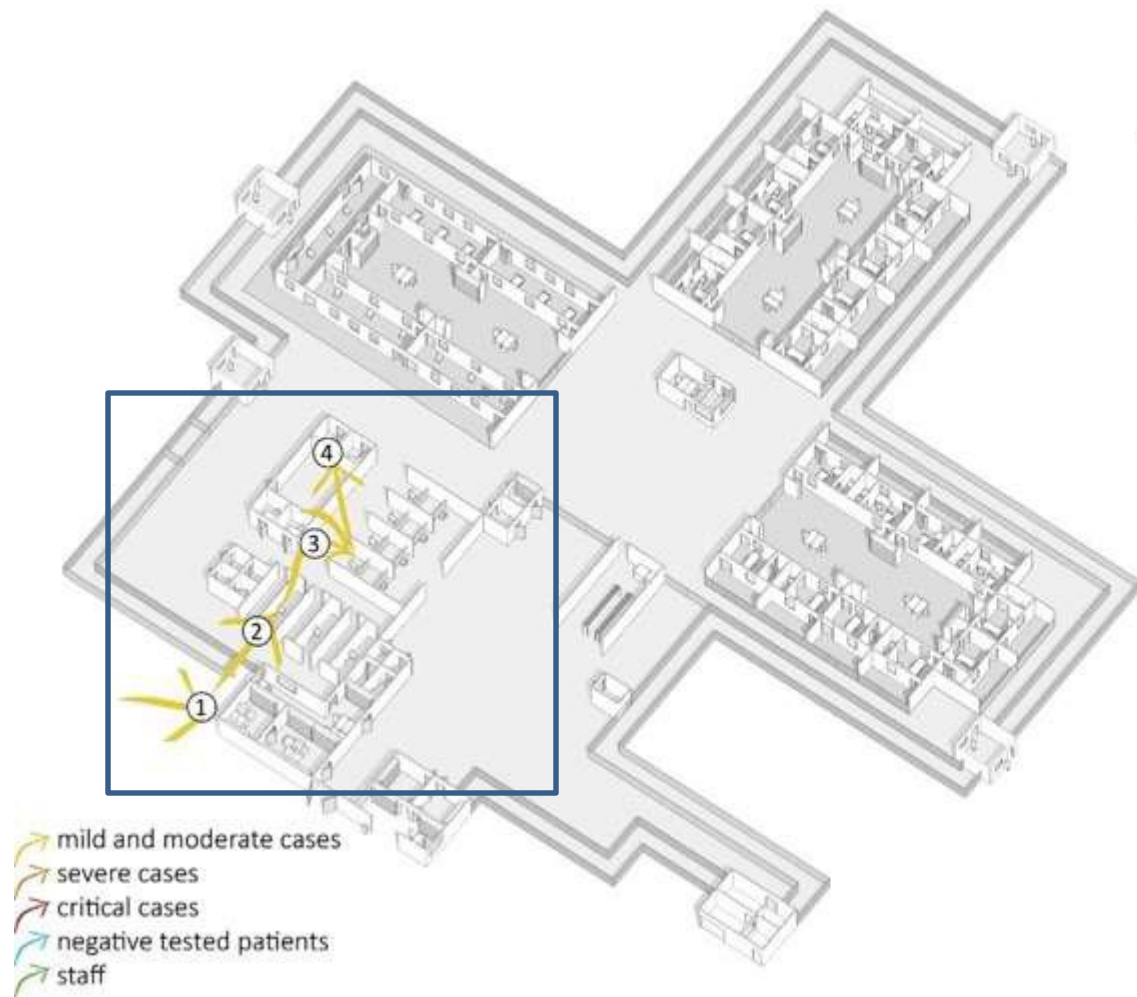
1. Patient entry
2. Reception/screening
3. Waiting room

Patient's flow



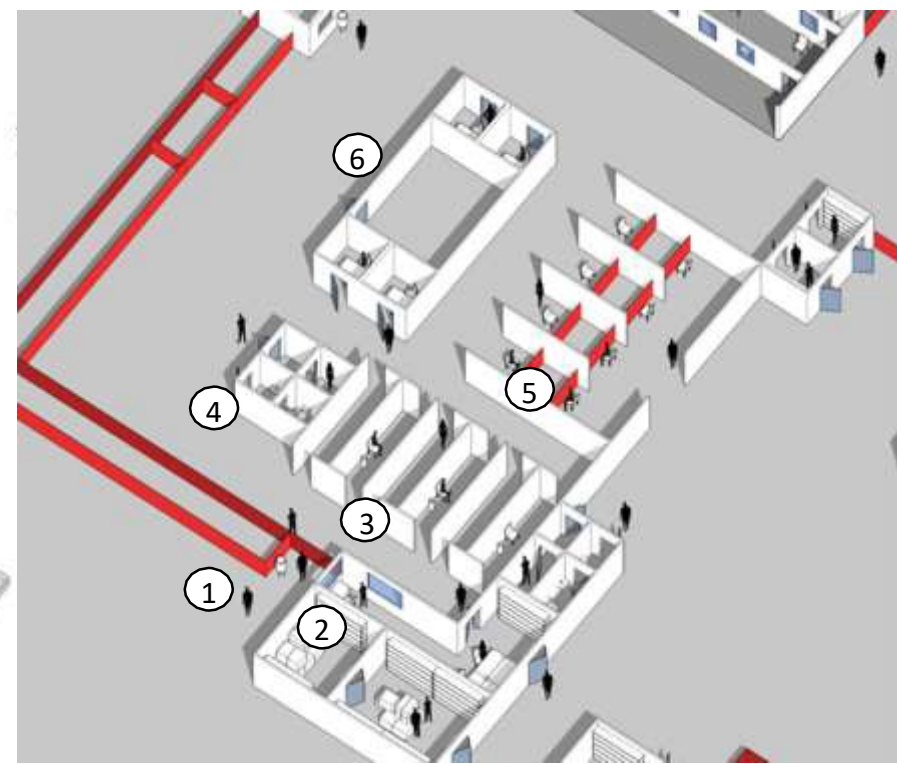
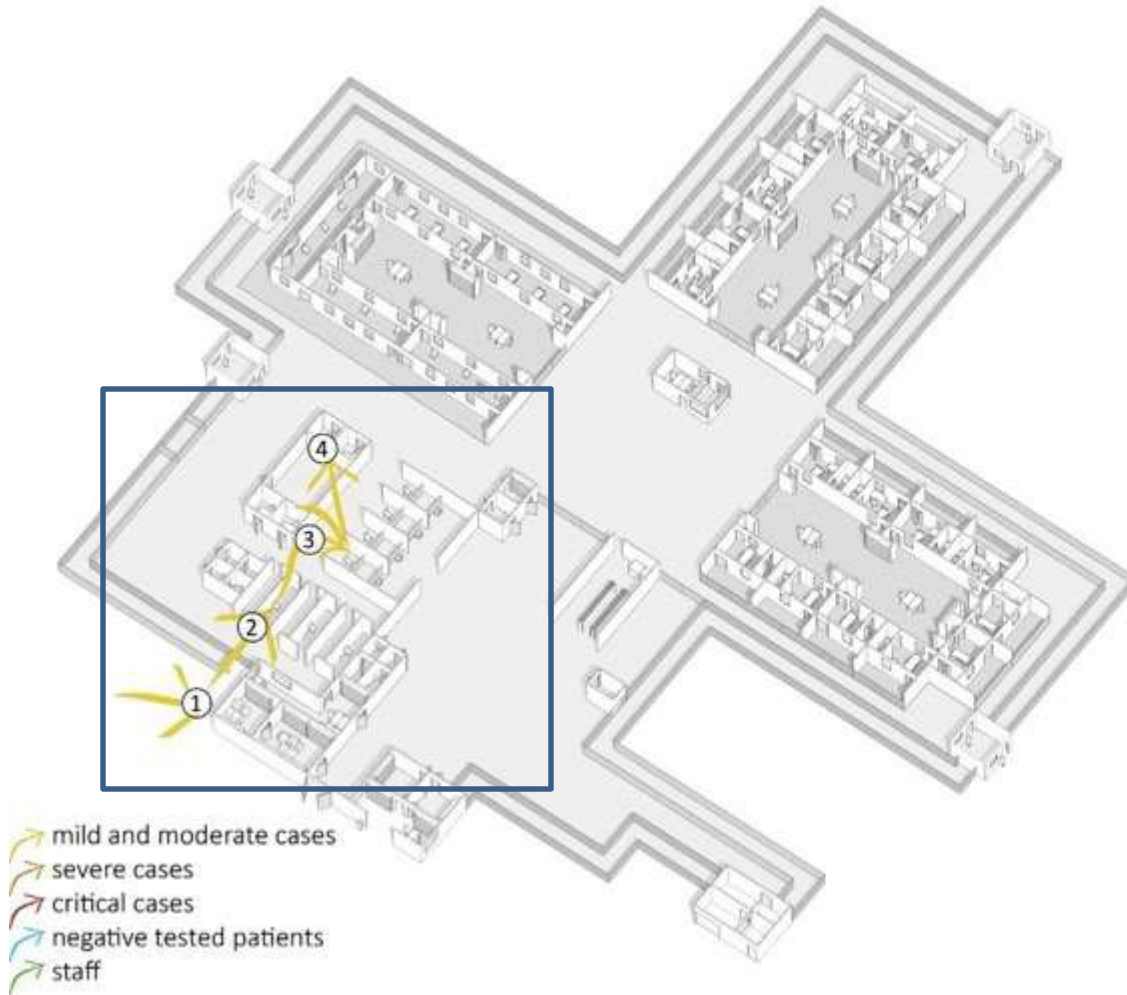
1. Patient entry
2. Reception/screening
3. Waiting room
4. Patient toilets

Patient's flow

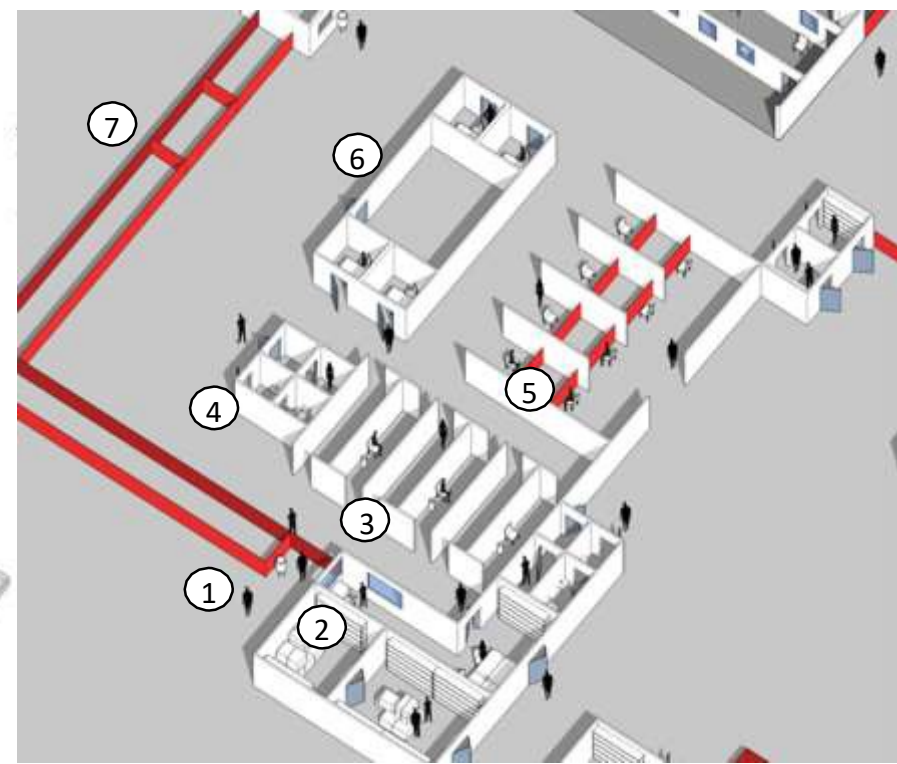
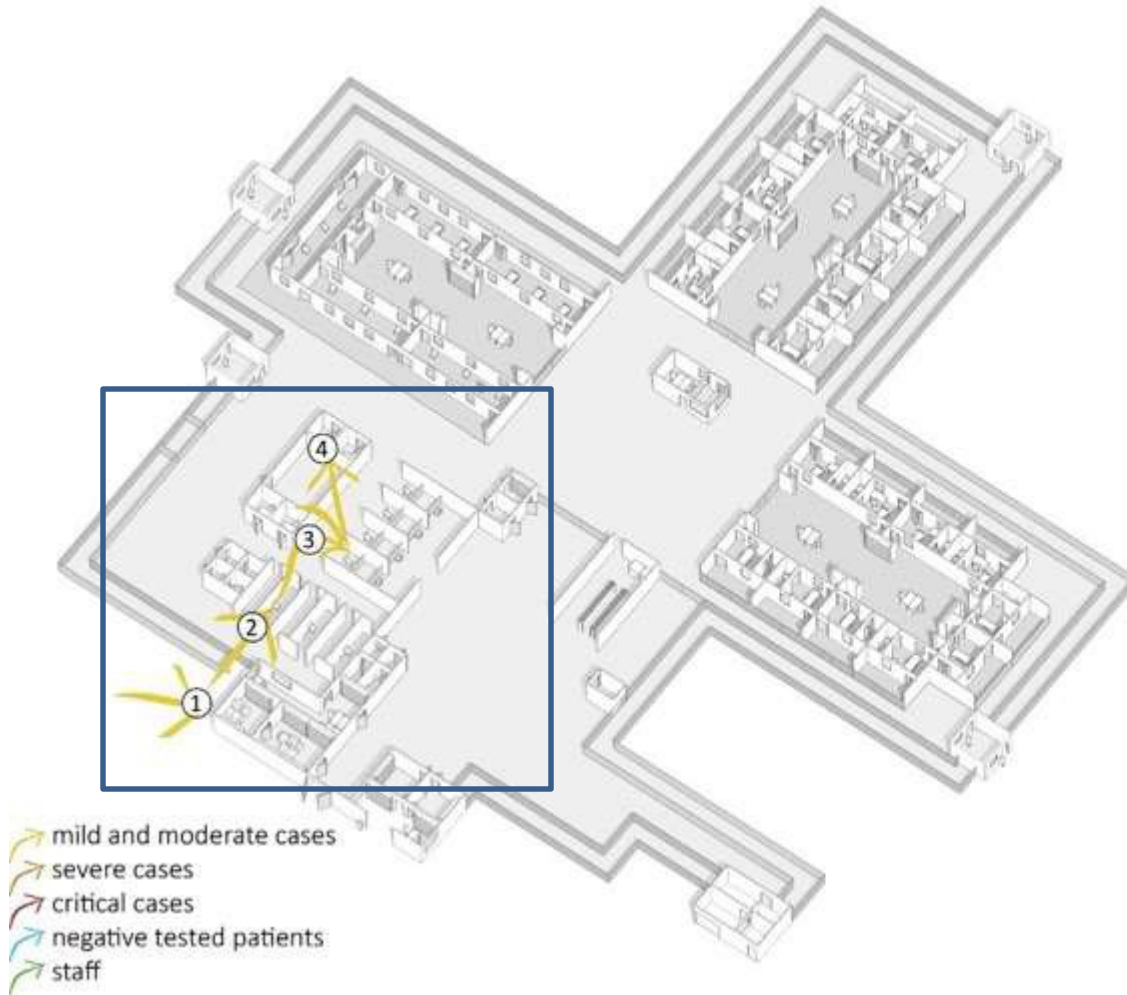


1. Patient entry
2. Reception/screening
3. Waiting room
4. Patient toilets
5. Triage

Patient's flow

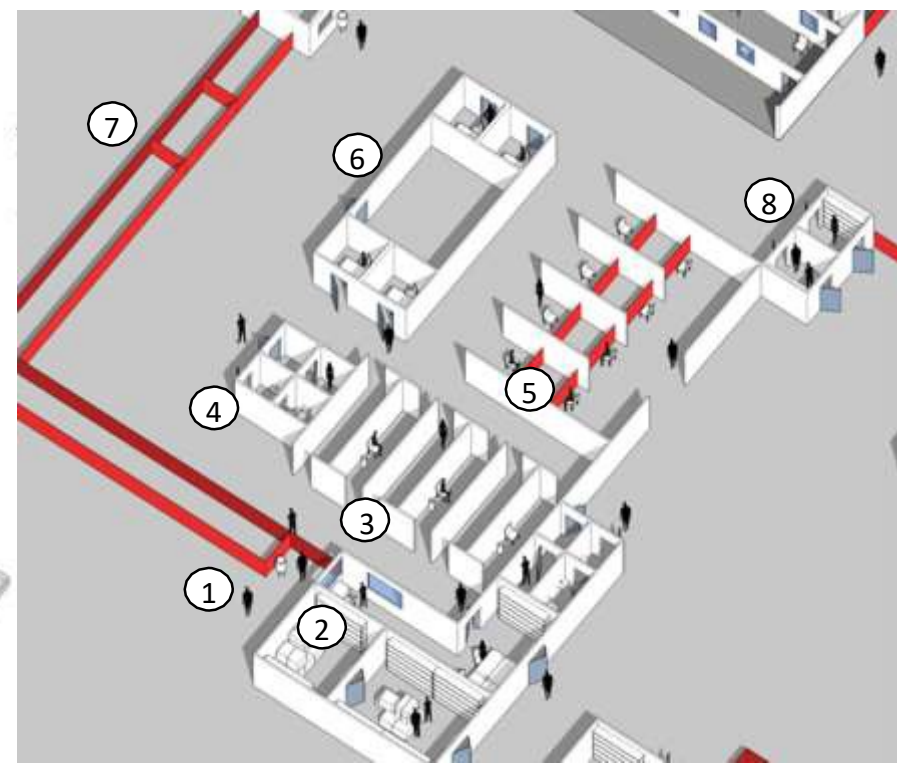
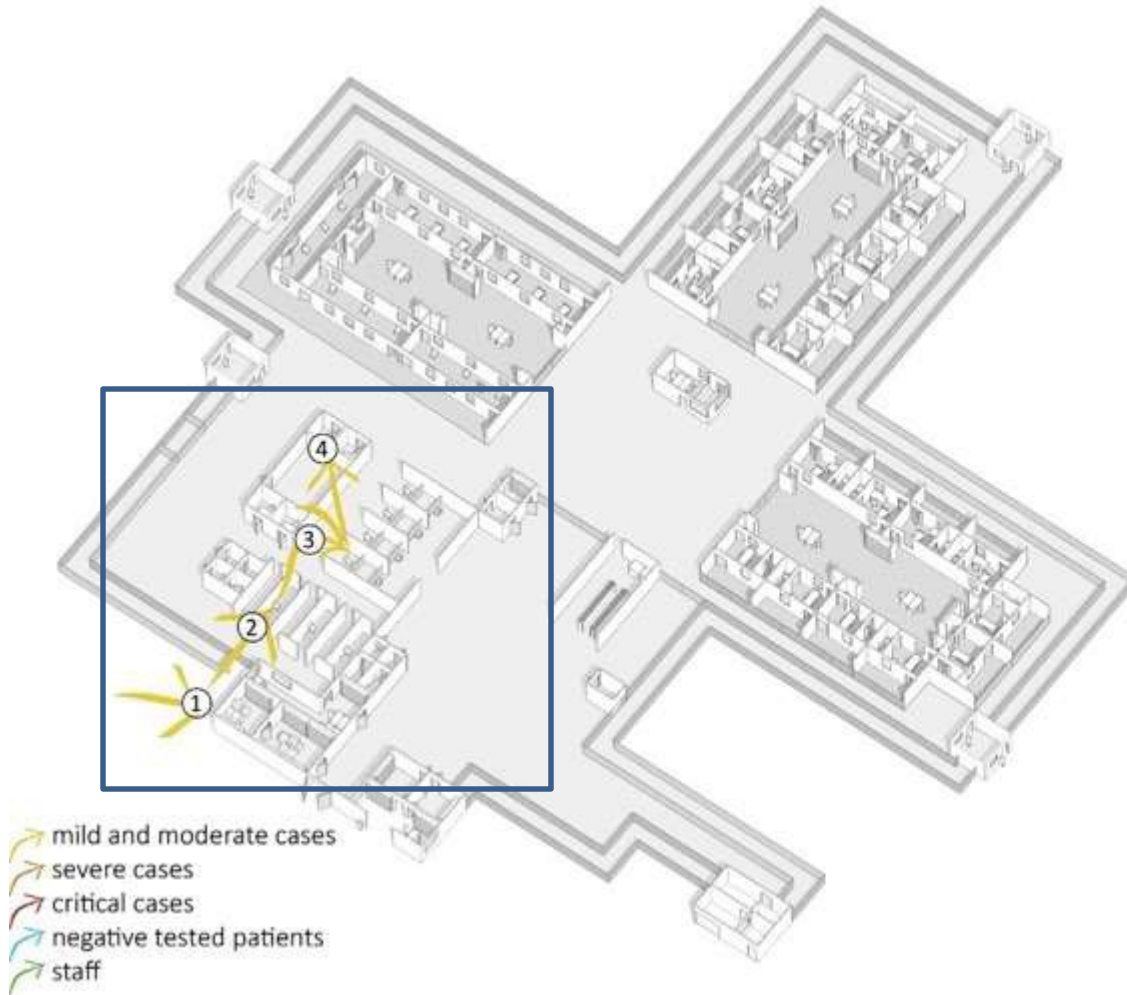


Patient's flow



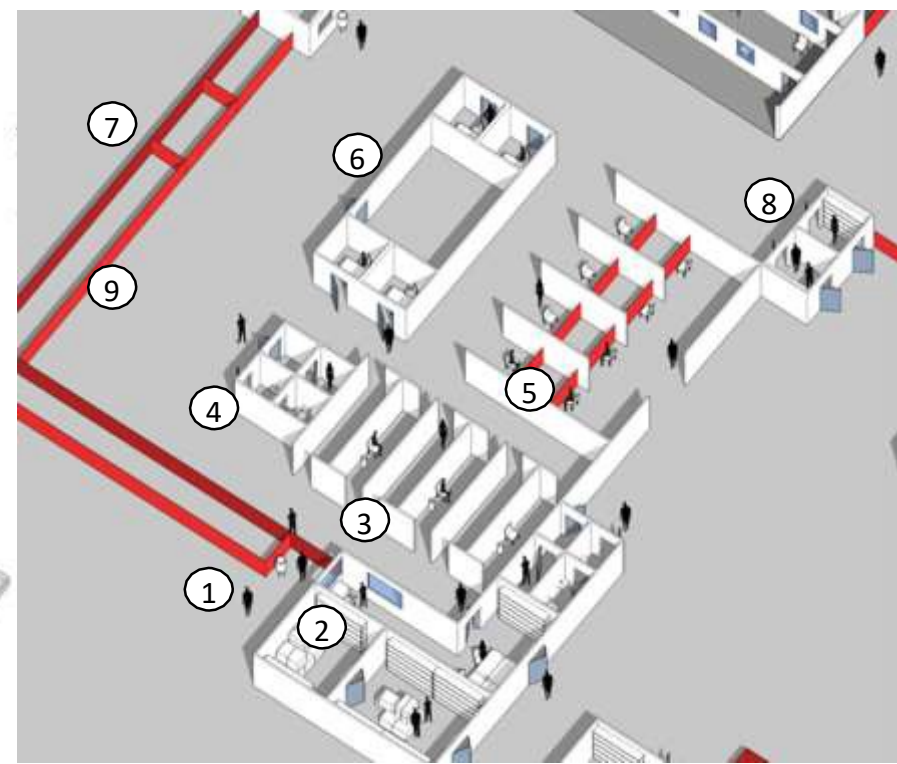
1. Patient entry
2. Reception/screening
3. Waiting room
4. Patient toilets
5. Triage
6. Sampling rooms
7. Ambulance entrance

Patient's flow



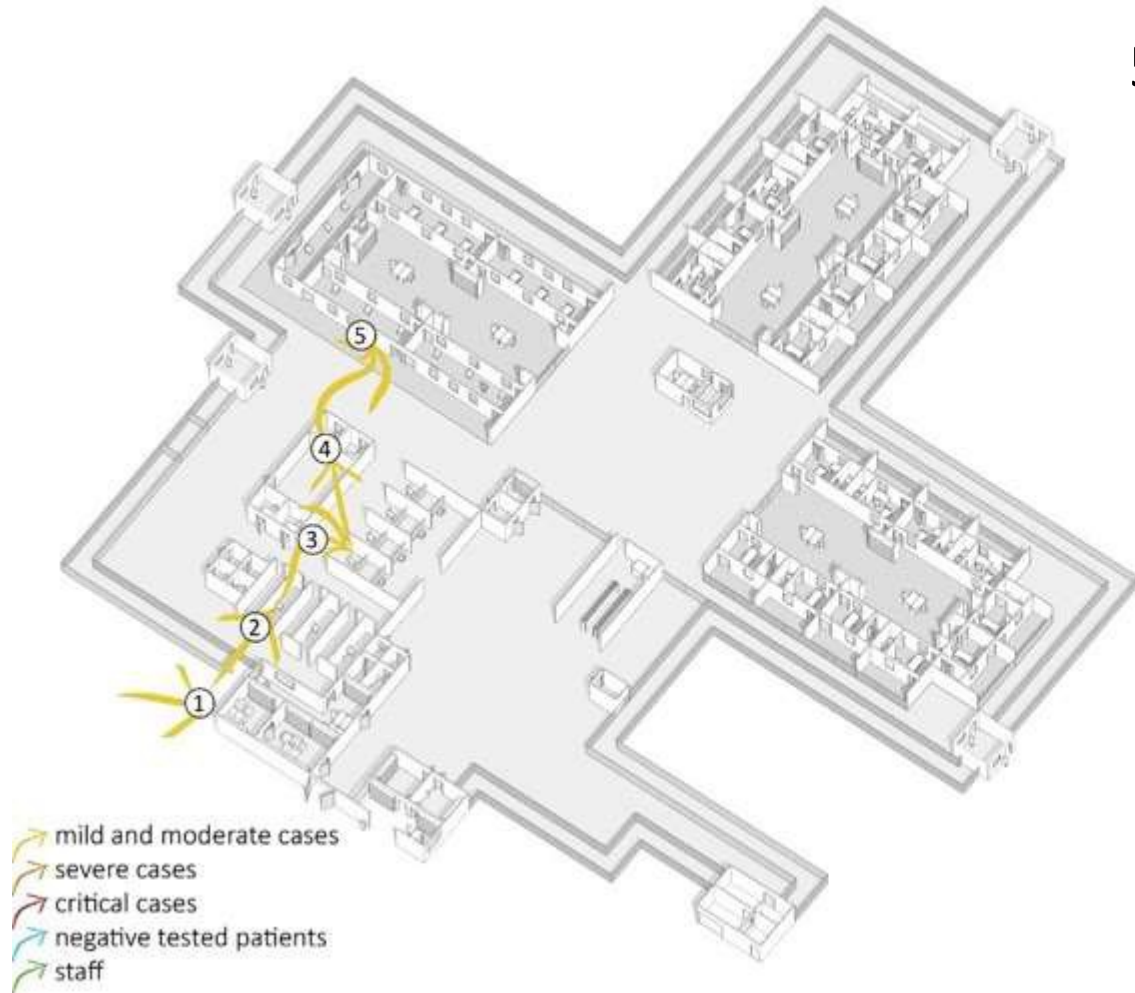
1. Patient entry
2. Reception/screening
3. Waiting room
4. Patient toilets
5. Triage
6. Sampling rooms
7. Ambulance entrance
8. Donning/doffing

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 barrier [1.2 meter high] is to identify the centre area*

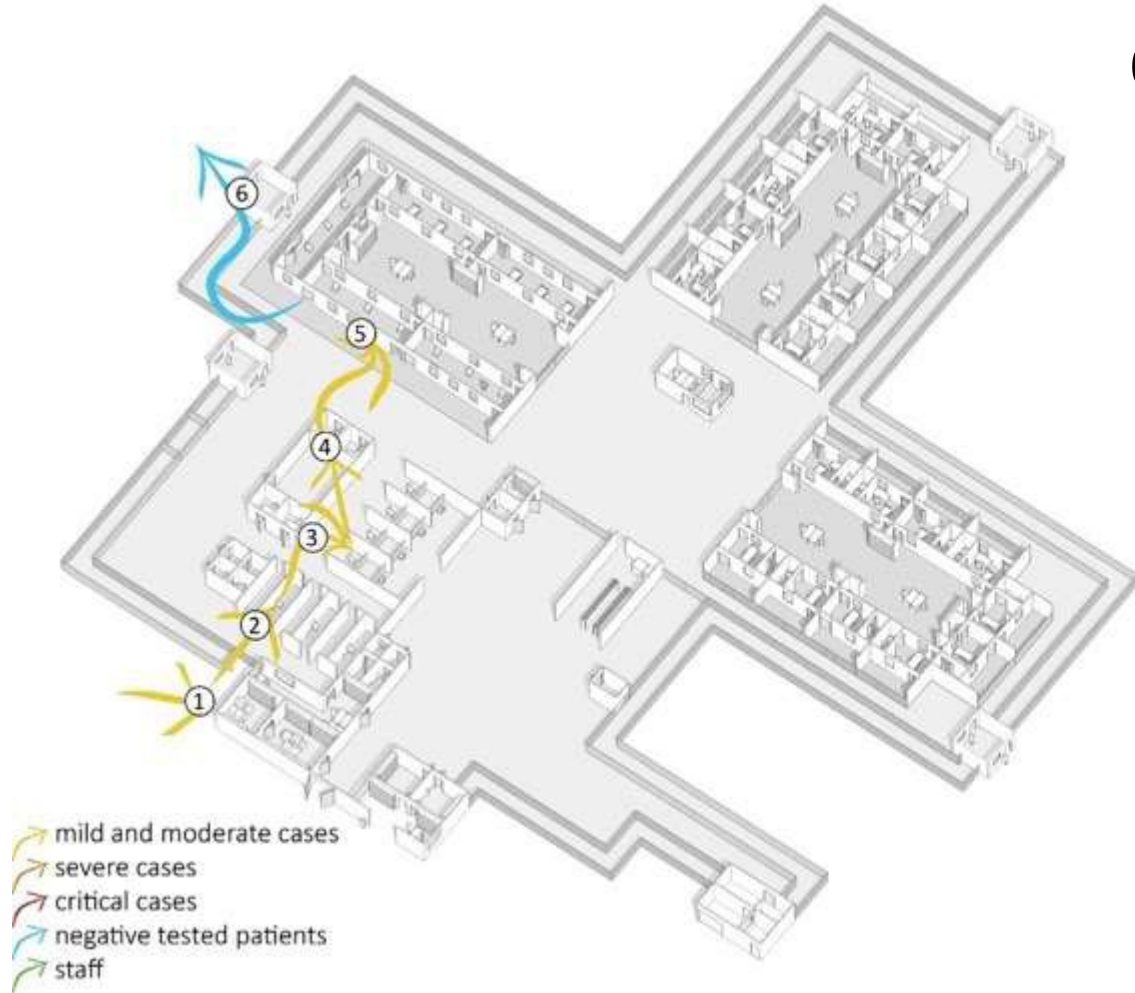
Patient's flow



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.

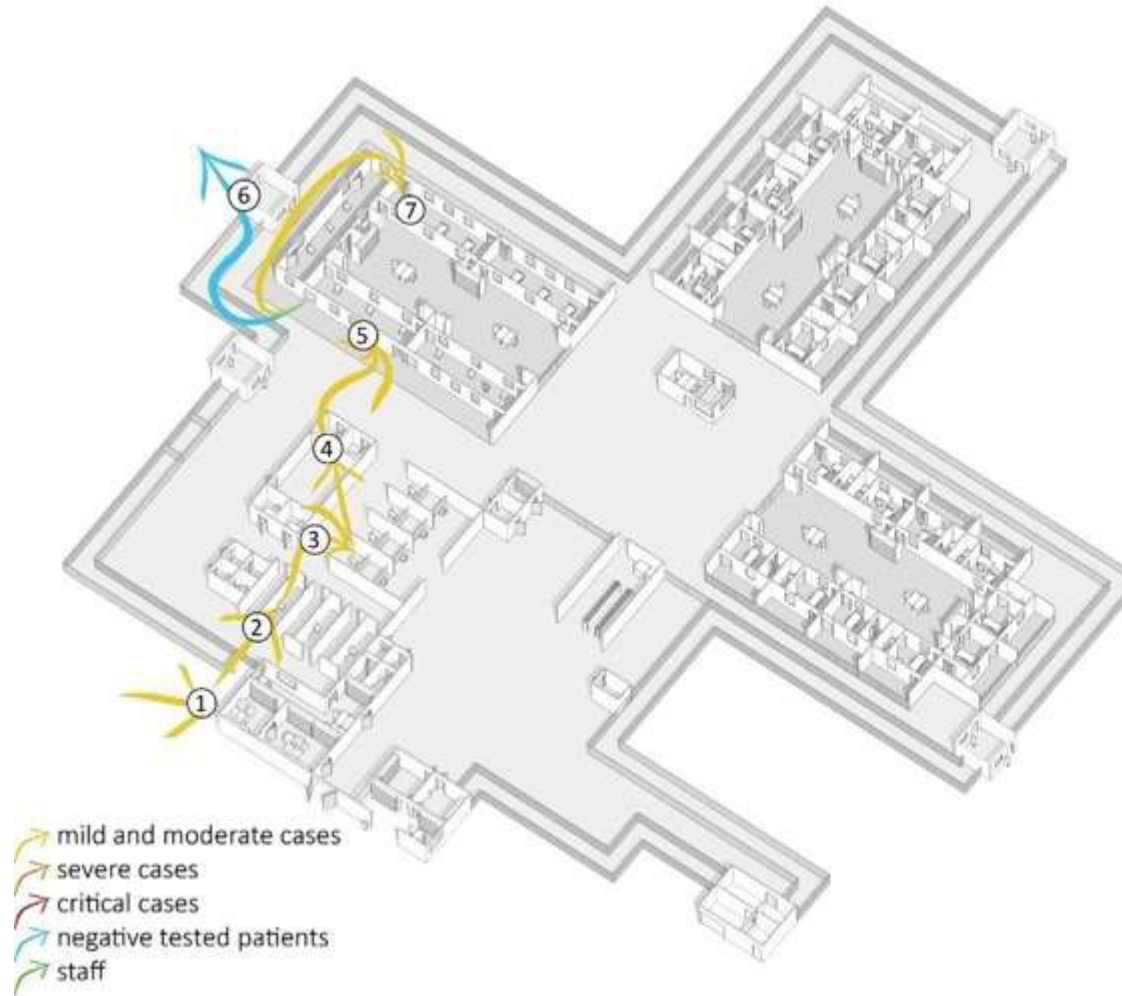
Patient's flow



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.

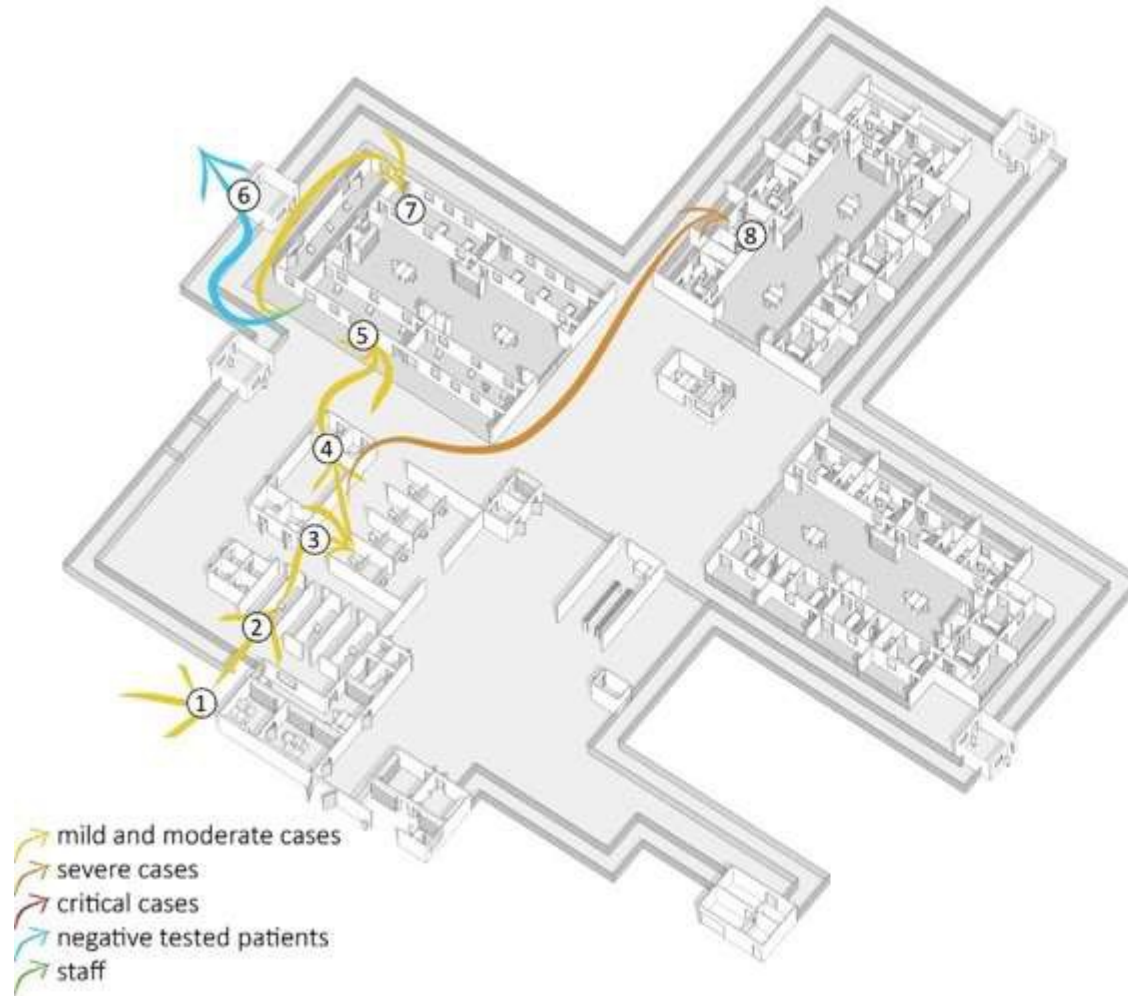
Patient's flow



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.

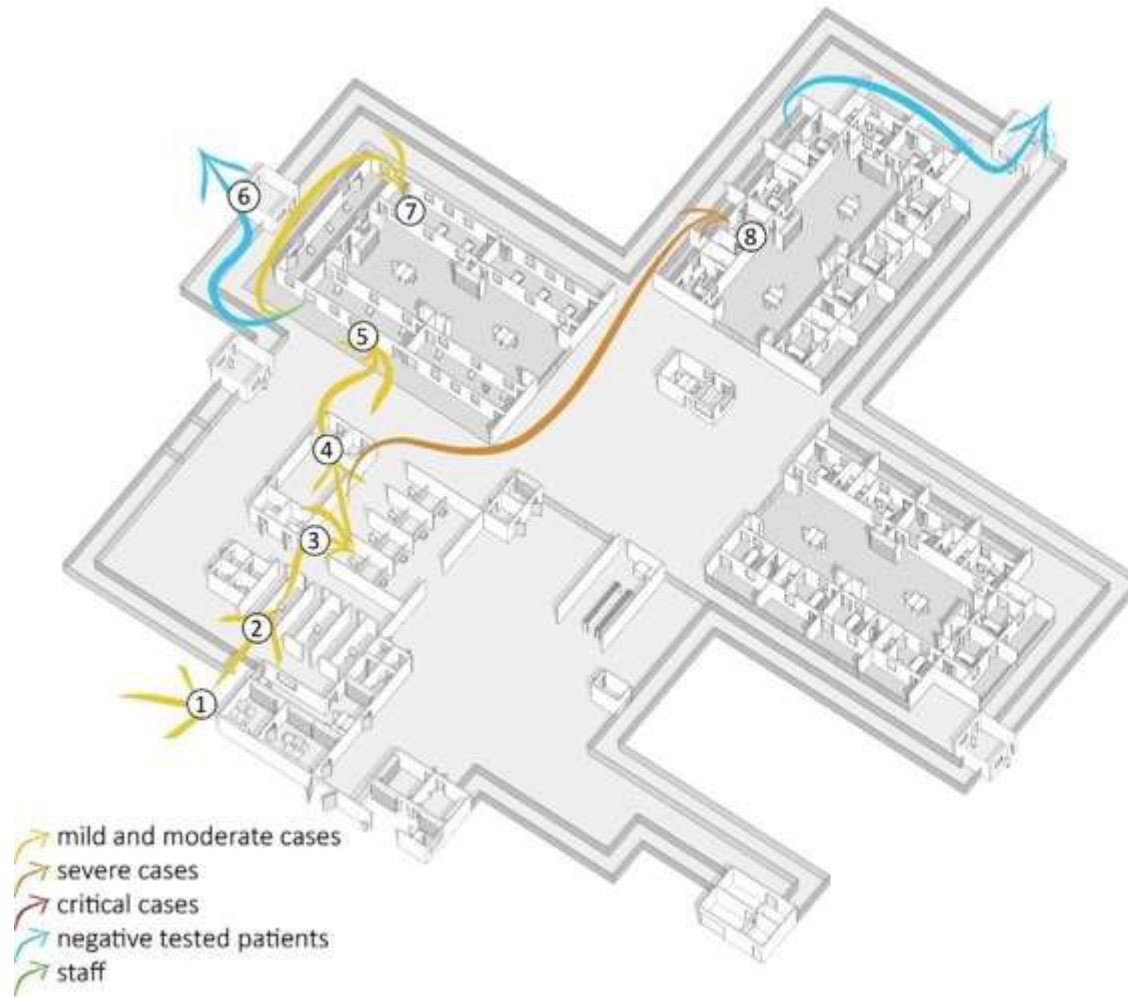
Patient's flow



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

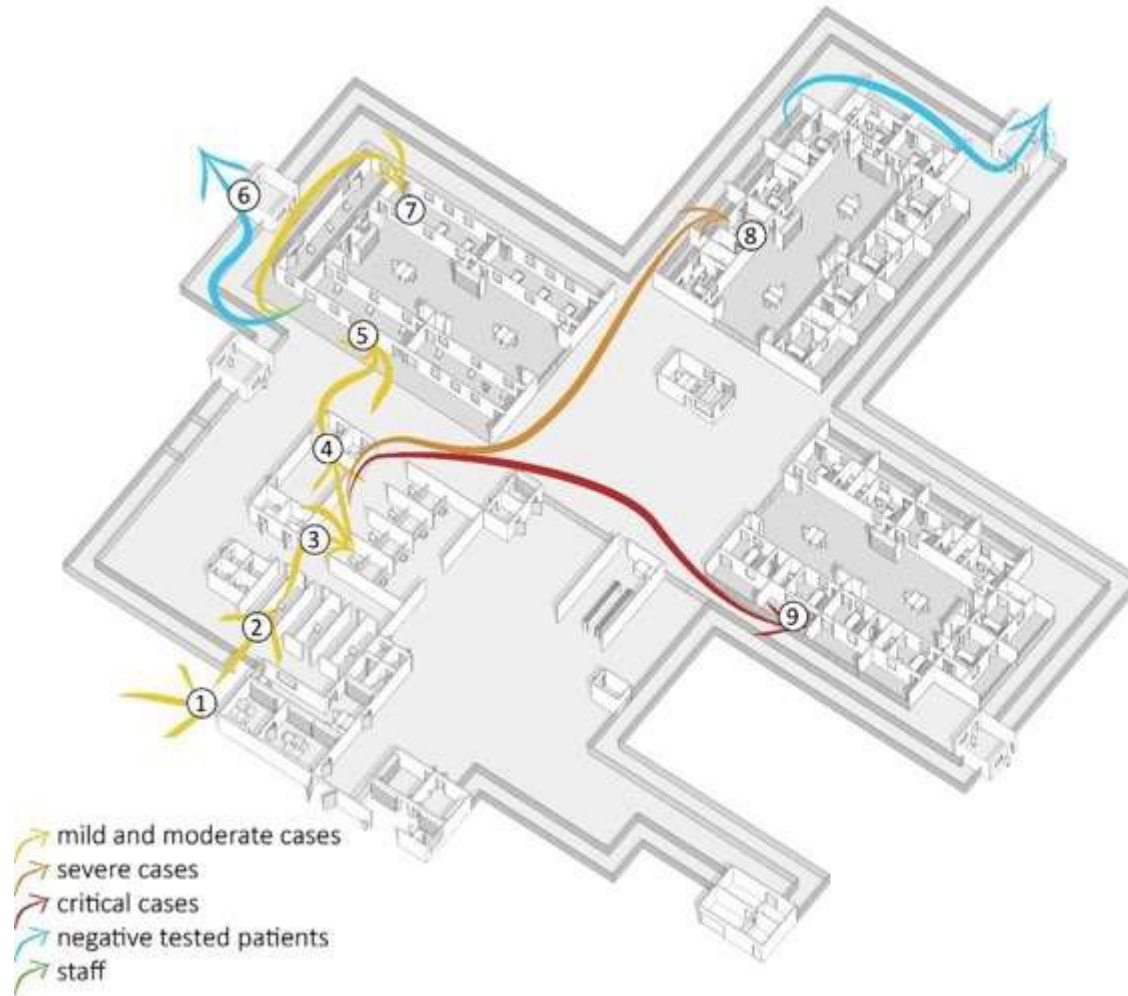


8. Severe case

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.

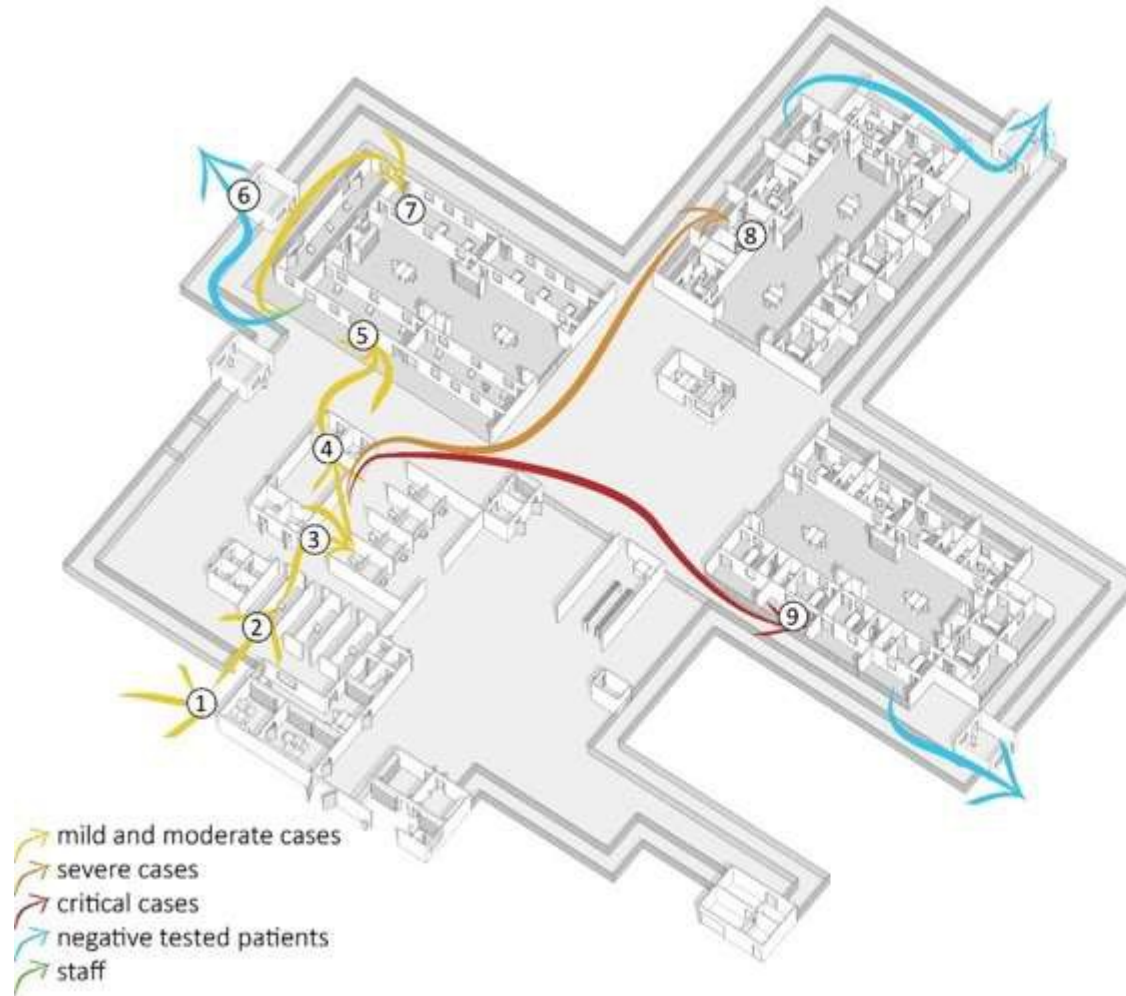
Patient's flow



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

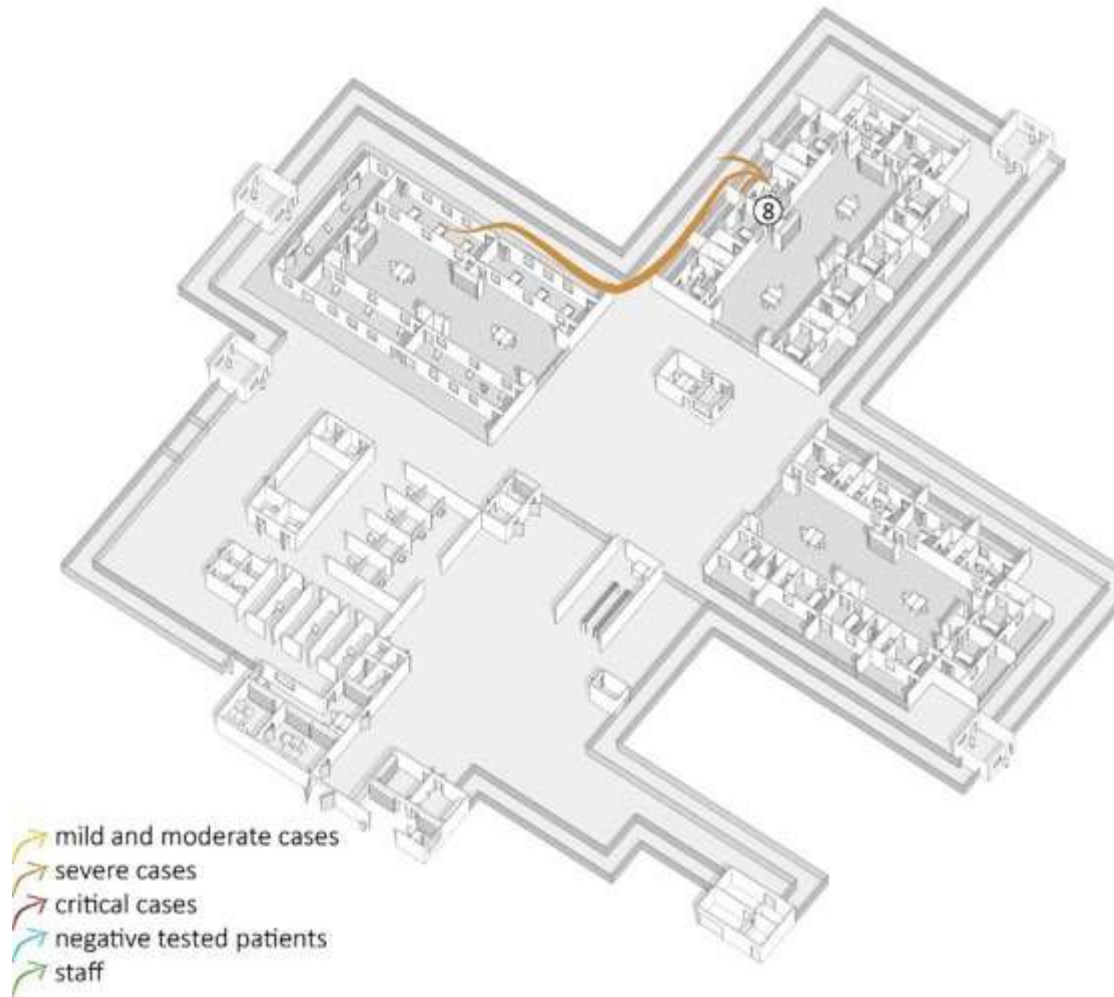


9. Critical case

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.

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

Patient's flow – Worsening & improving medical condition

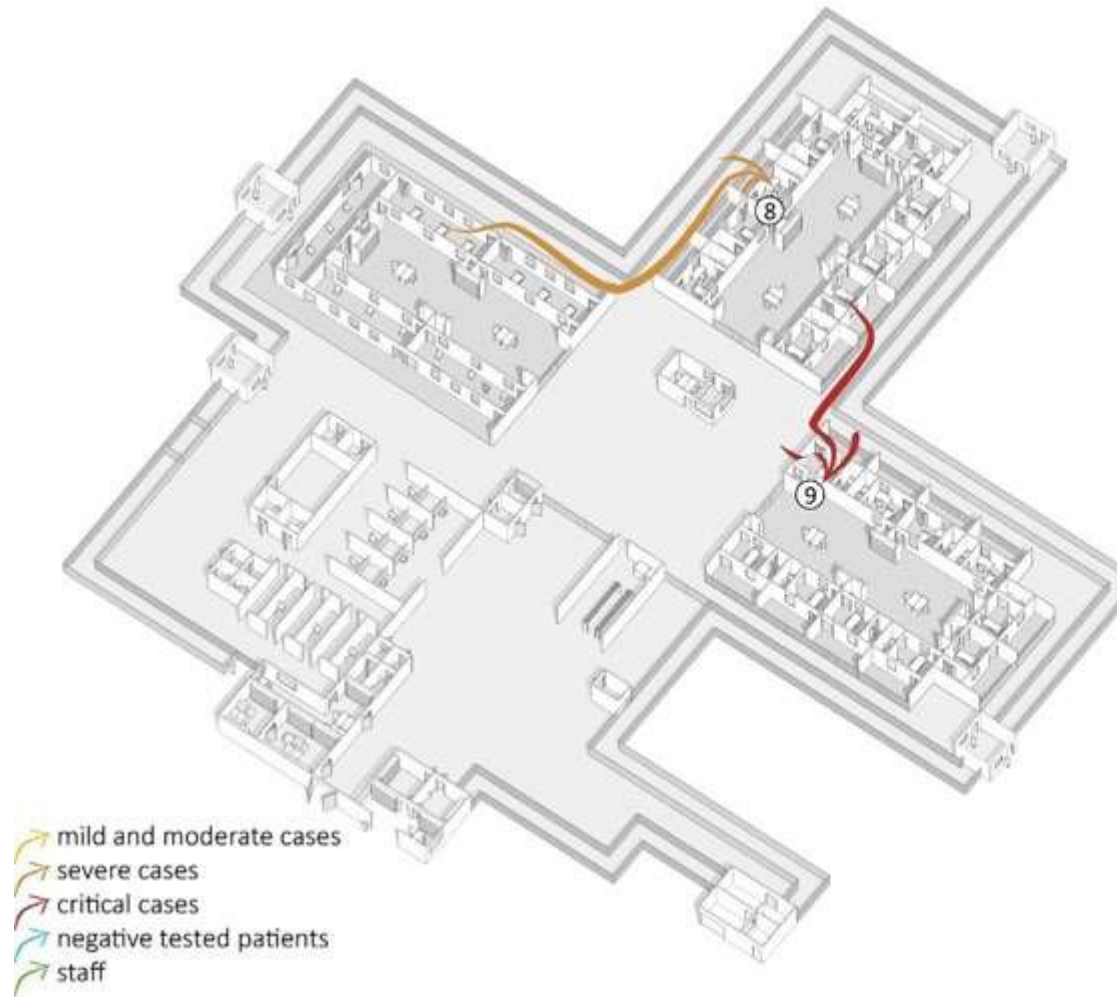


Patient journey

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 moved to the severe ward...

Patient's flow – Worsening & improving medical condition

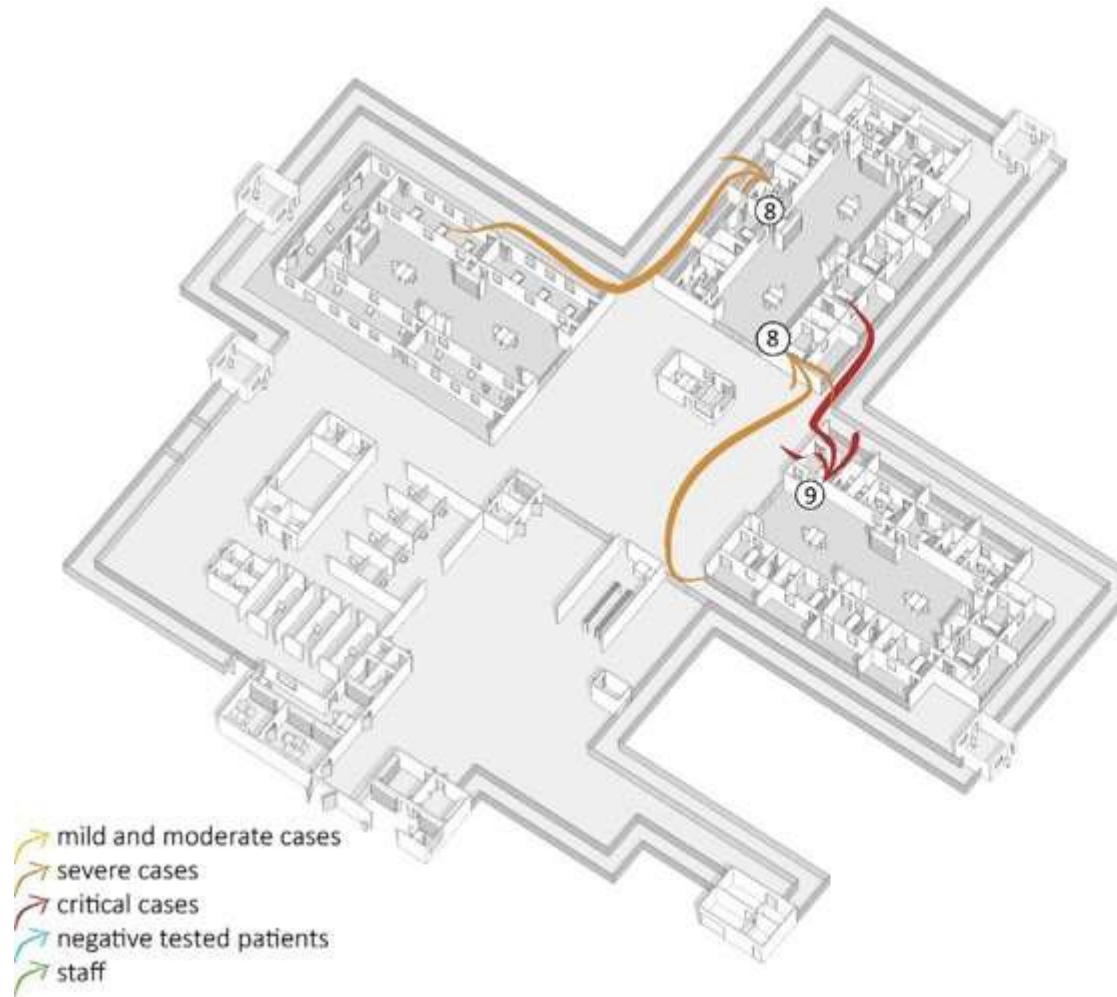


Patient journey

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 moved to the severe ward... or to the critical ward.

Patient's flow – Worsening & improving medical condition

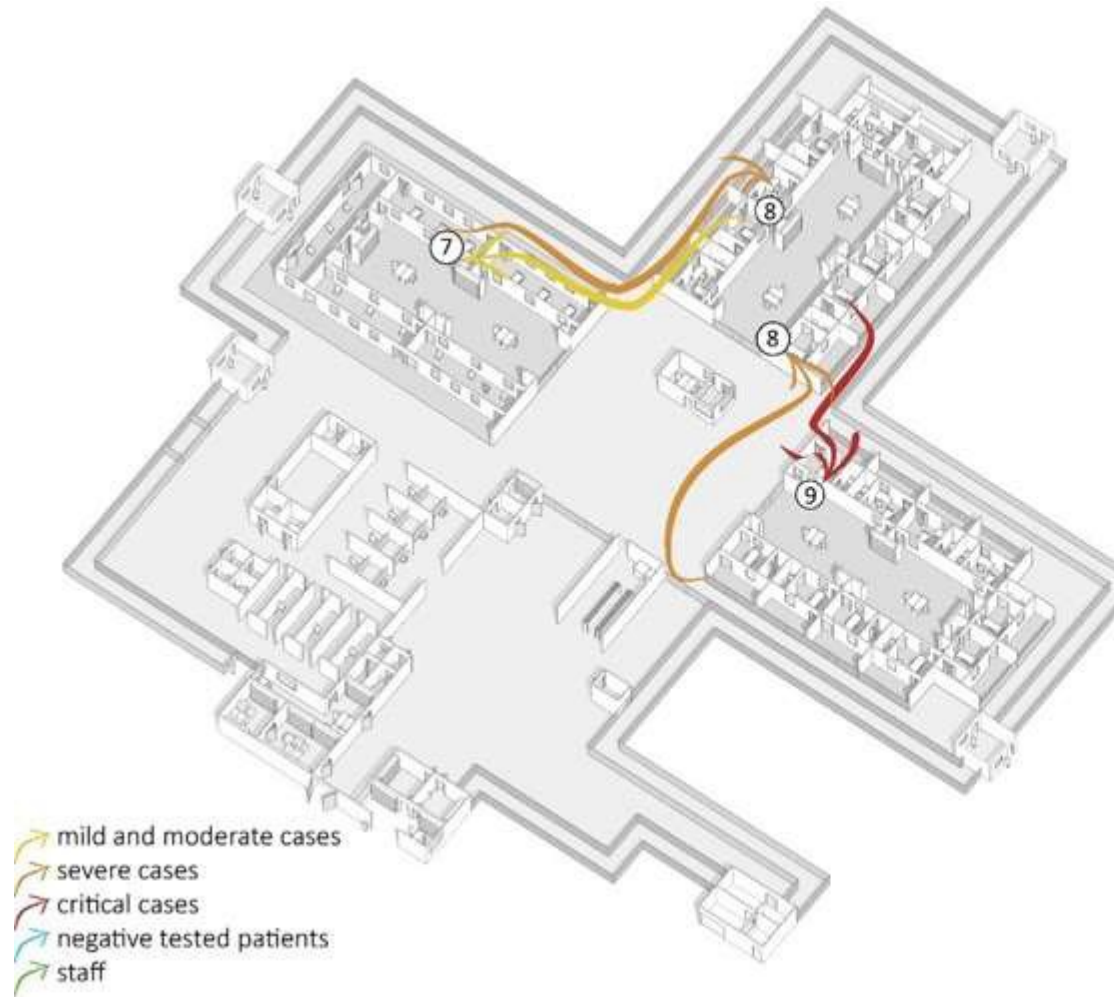


Patient journey

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 moved from the severe ward...

Patient's flow – Worsening & improving medical condition

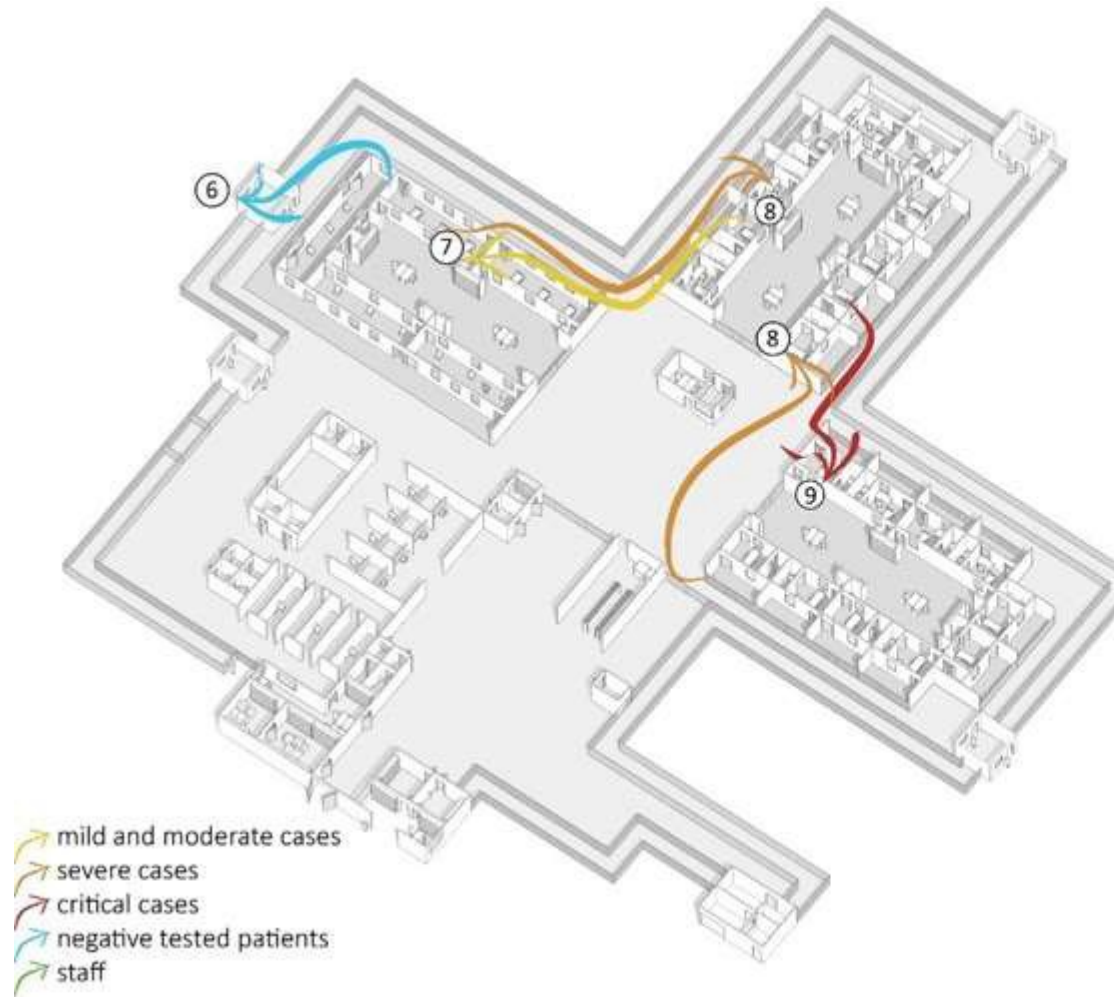


Patient journey

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 moved from the severe ward... and to the short stay ward...

Patient's flow – Worsening & improving medical condition

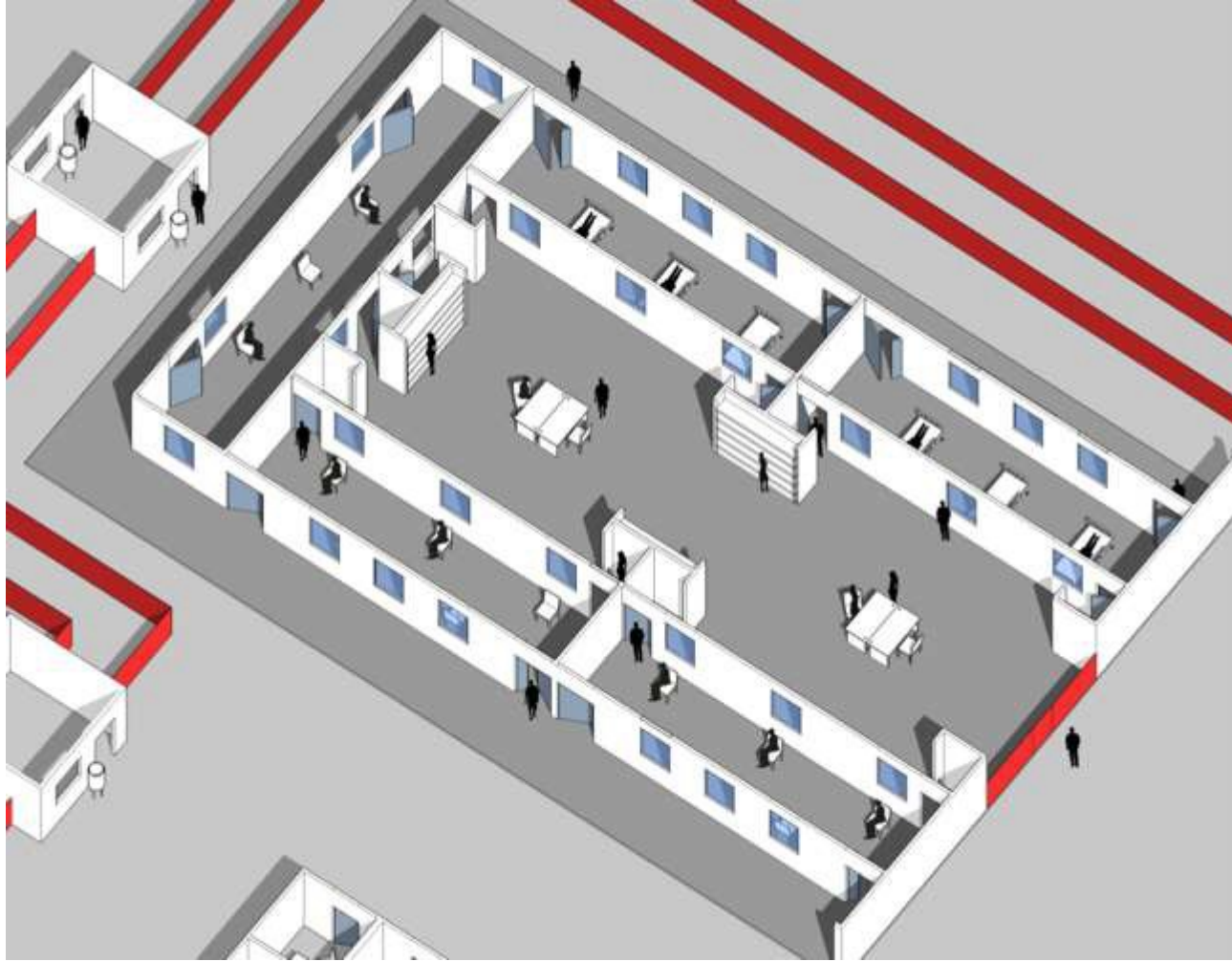


Patient journey

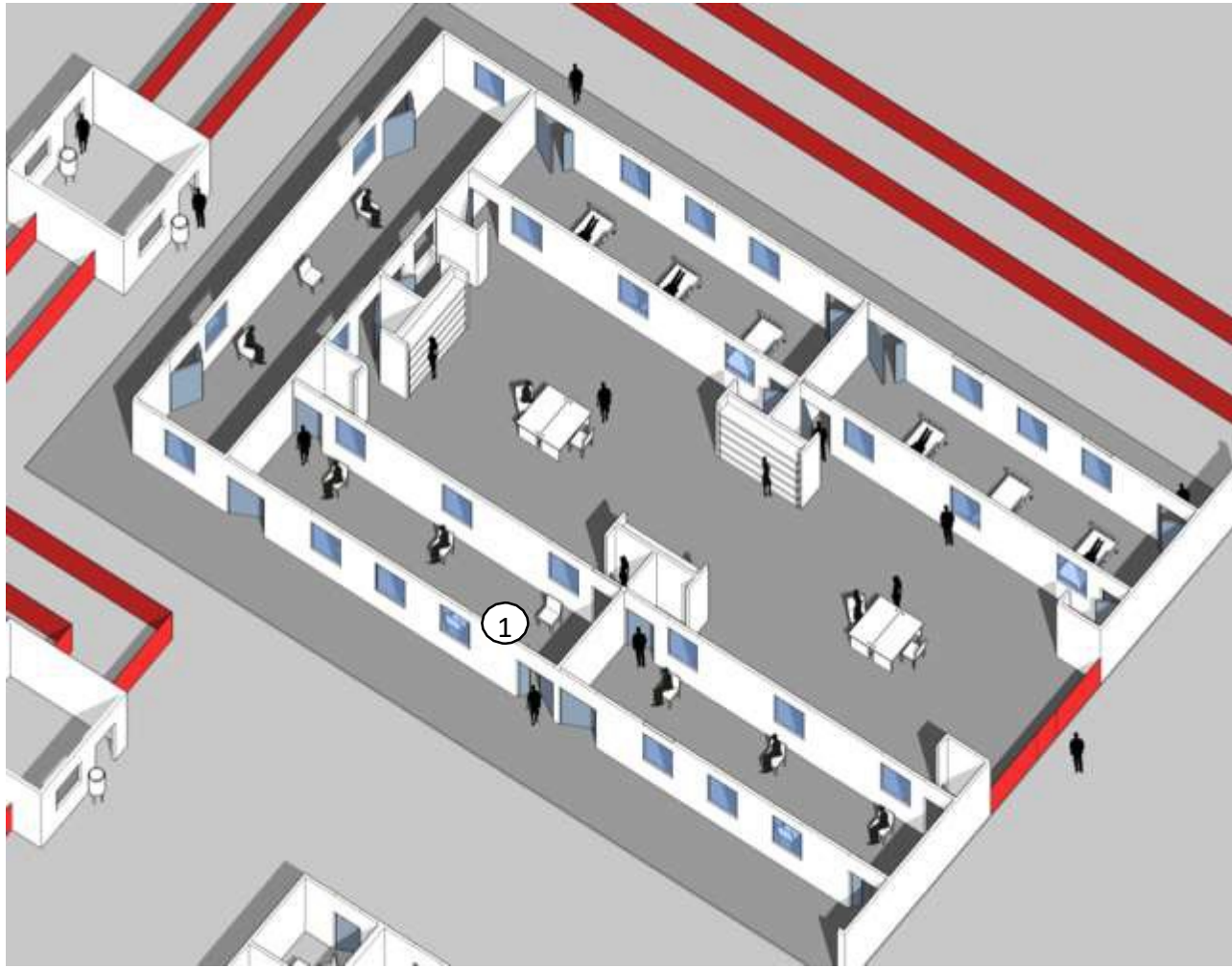
Similarly, once medical conditions improve, a patient can be moved to another ward.

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

Patient's flow / mild & moderate cases

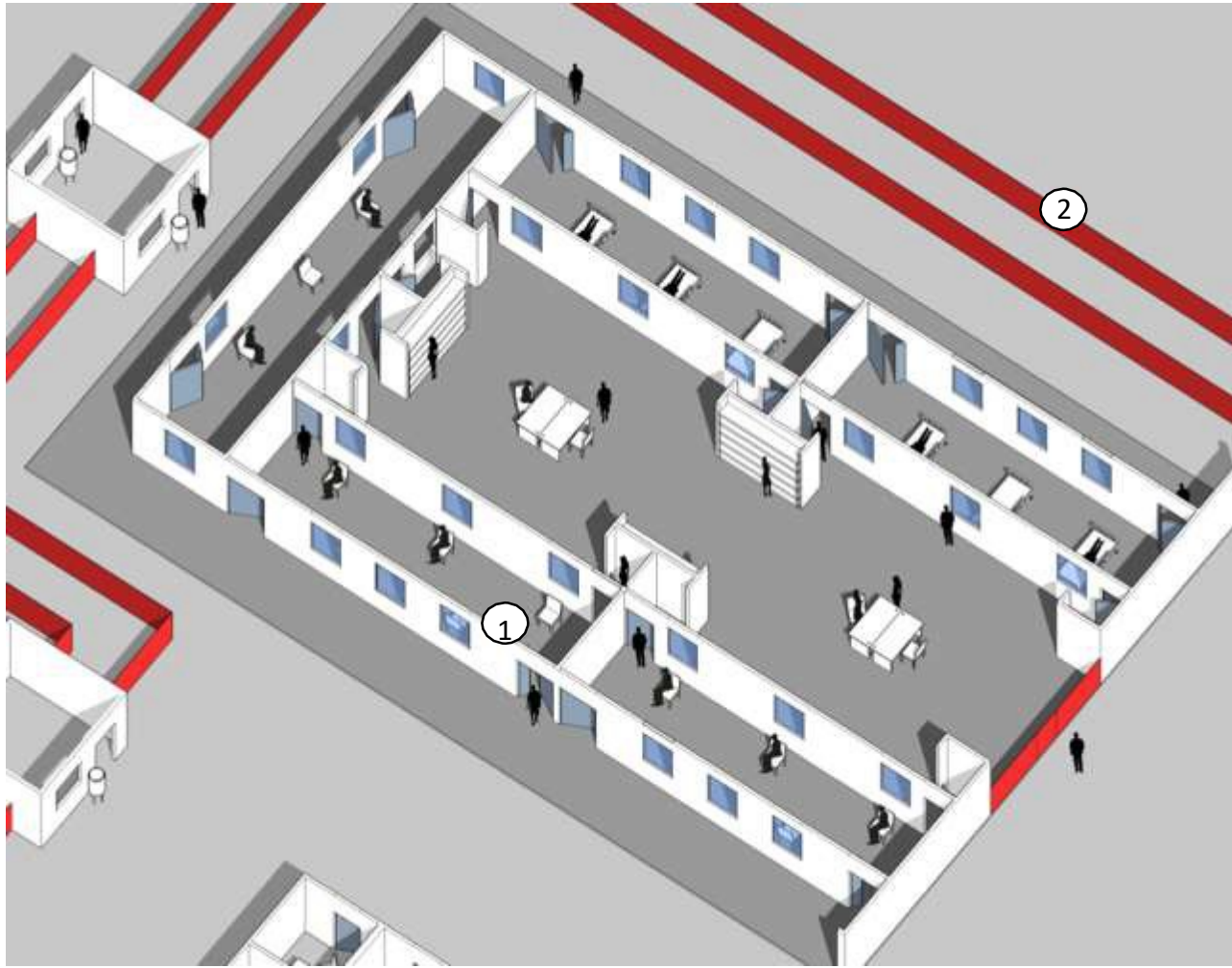


Patient's flow / mild & moderate cases



1. Patients [2 m distance*]

Patient's flow / mild & moderate cases



1. Patients [2 m distance*]
2. Single barrier [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]

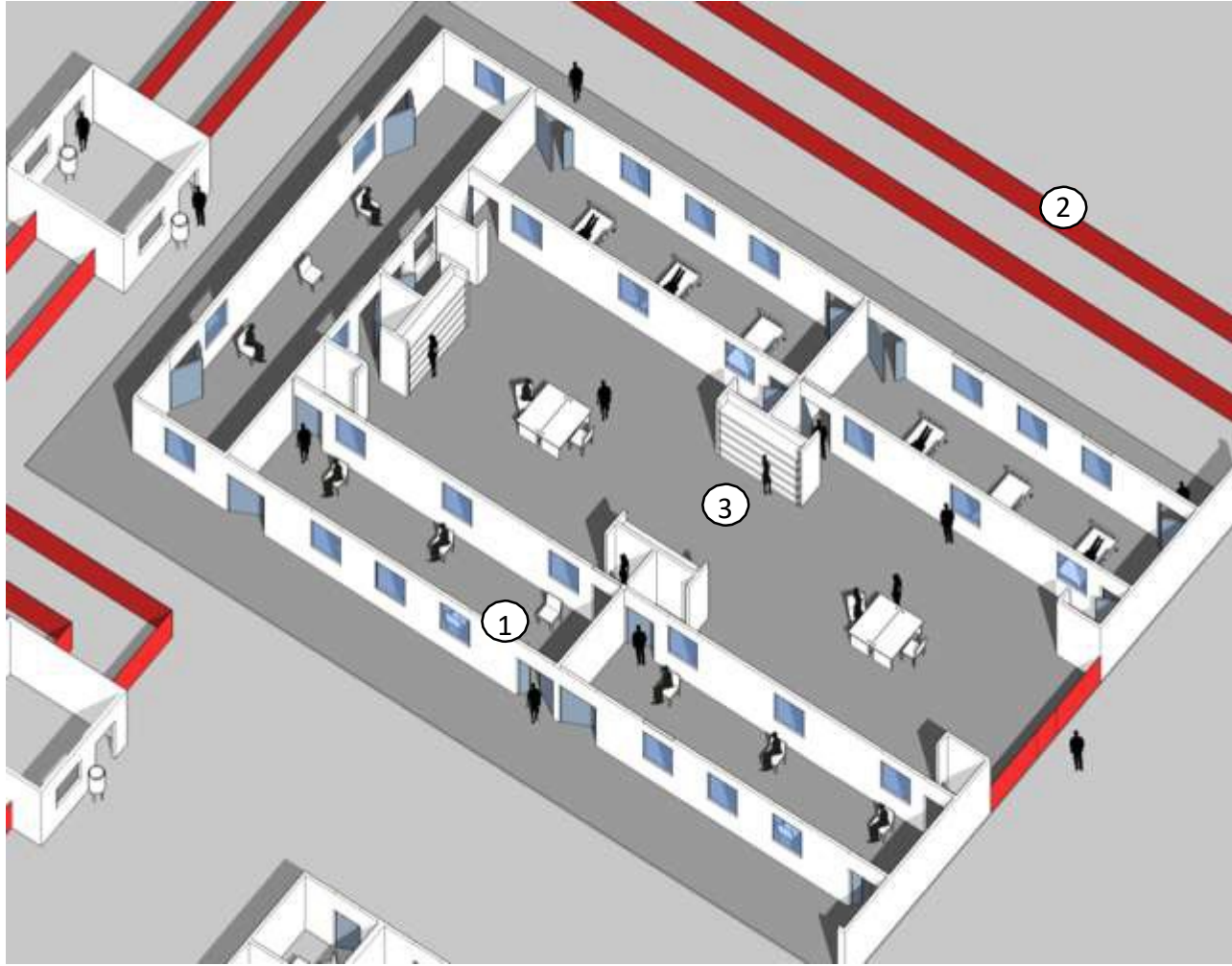


**World Health
Organization**

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.

**HEALTH
EMERGENCIES**
programme

Patient's flow / mild & moderate cases



1. Patients [2 m distance*]
2. Single barrier [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]

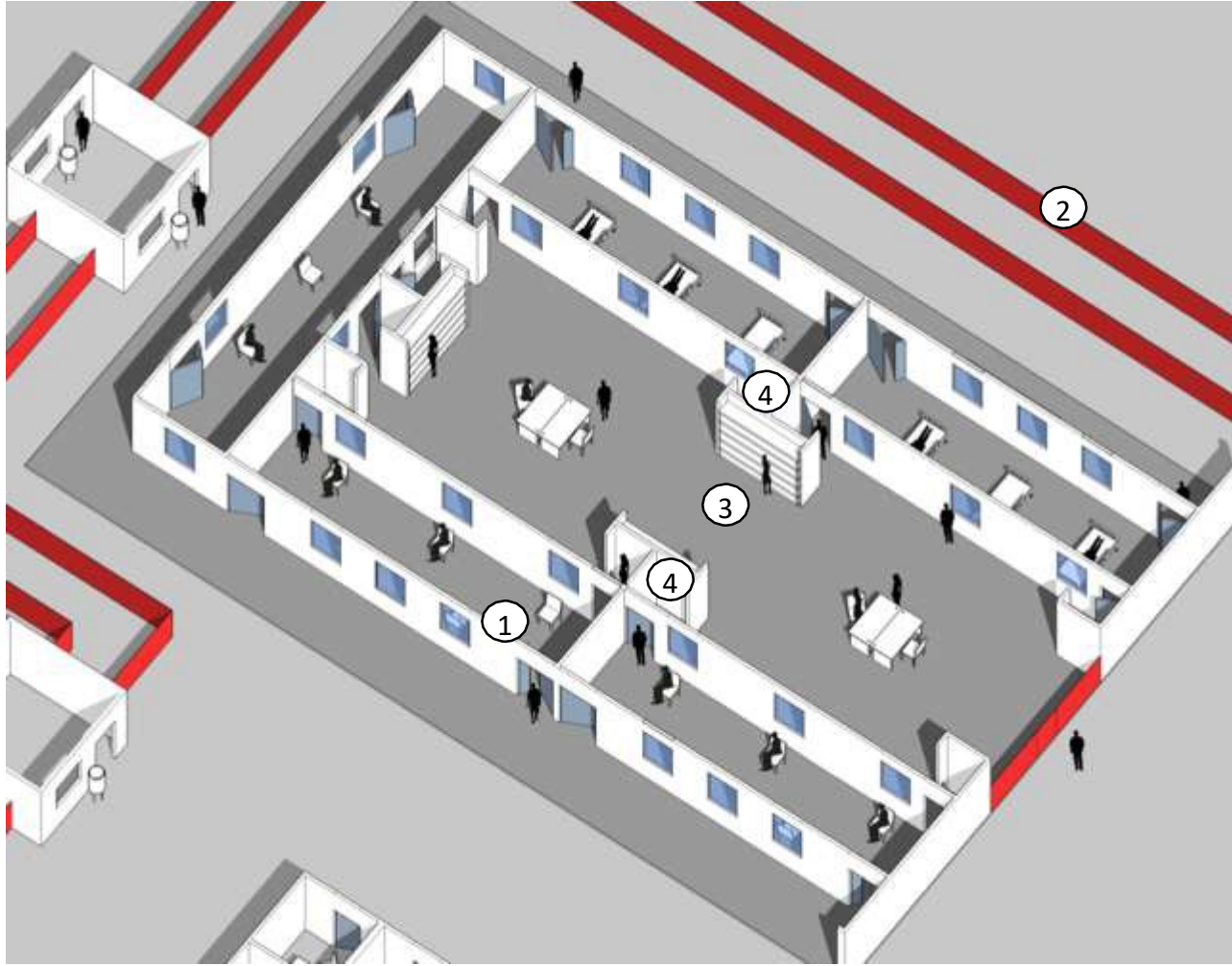


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**HEALTH
EMERGENCIES**
programme

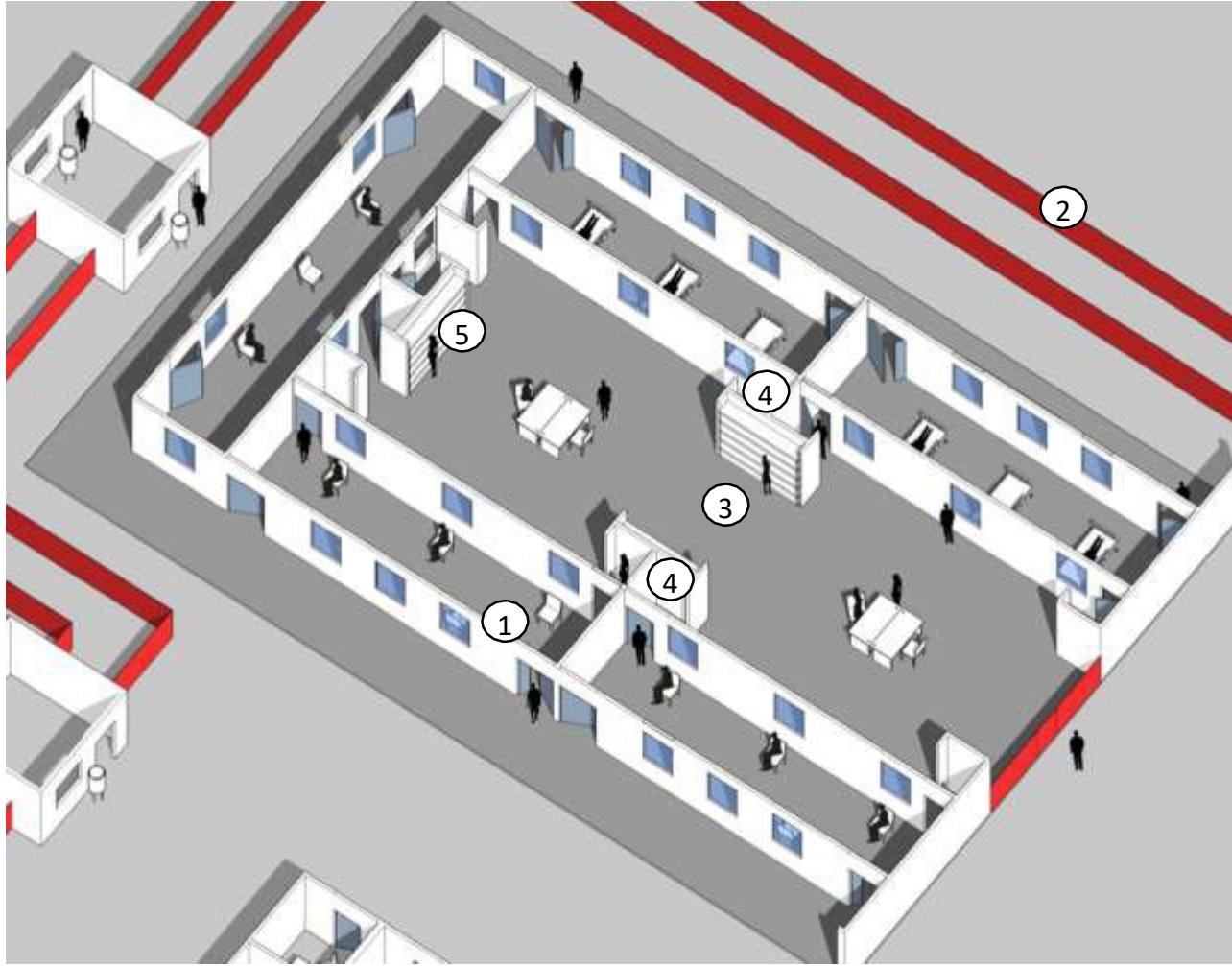
Patient's flow / mild & moderate cases



1. Patients [2 m distance*]
2. Single barrier [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



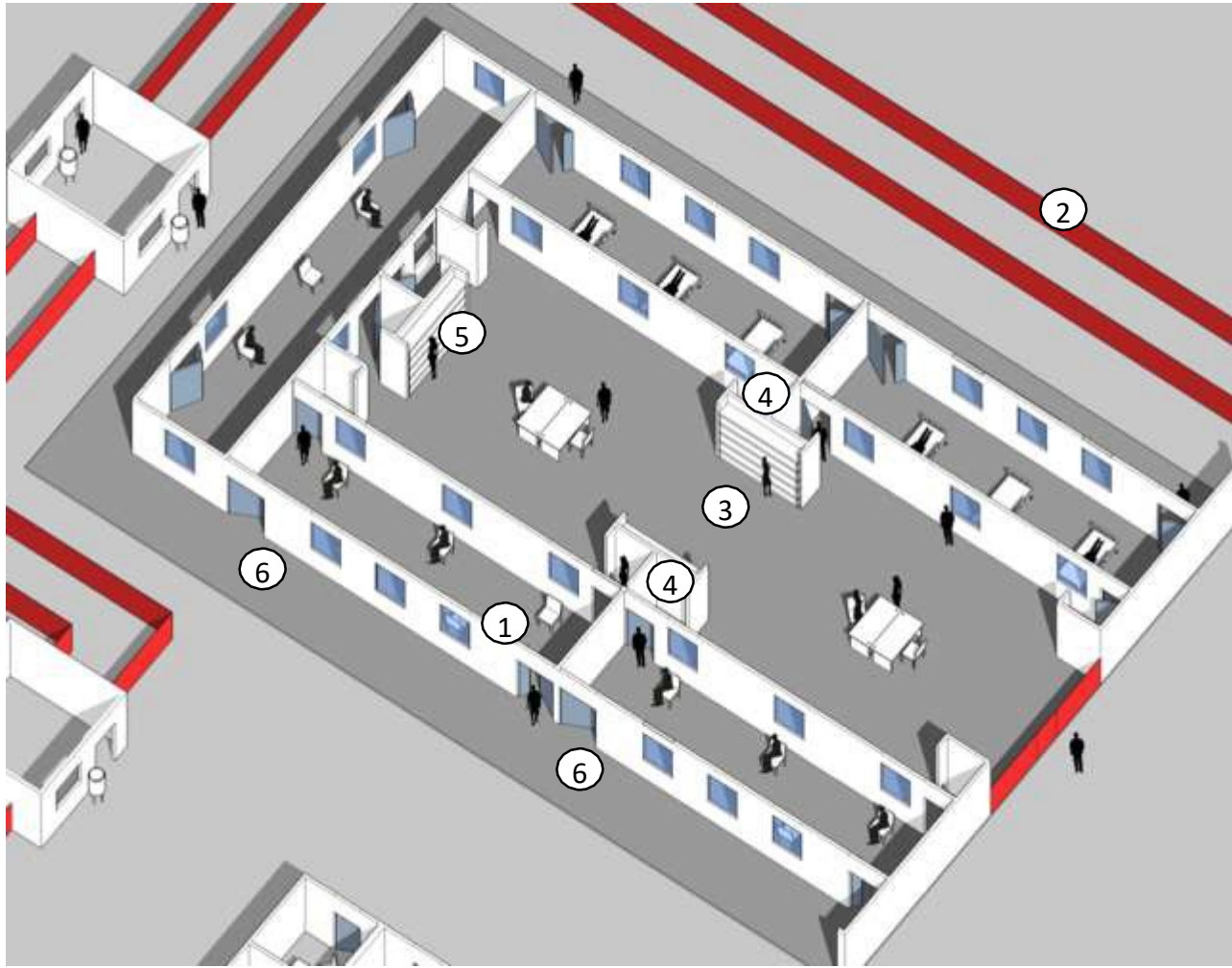
Patient's flow / mild & moderate cases



1. Patients [2 m distance*]
2. Single barrier [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

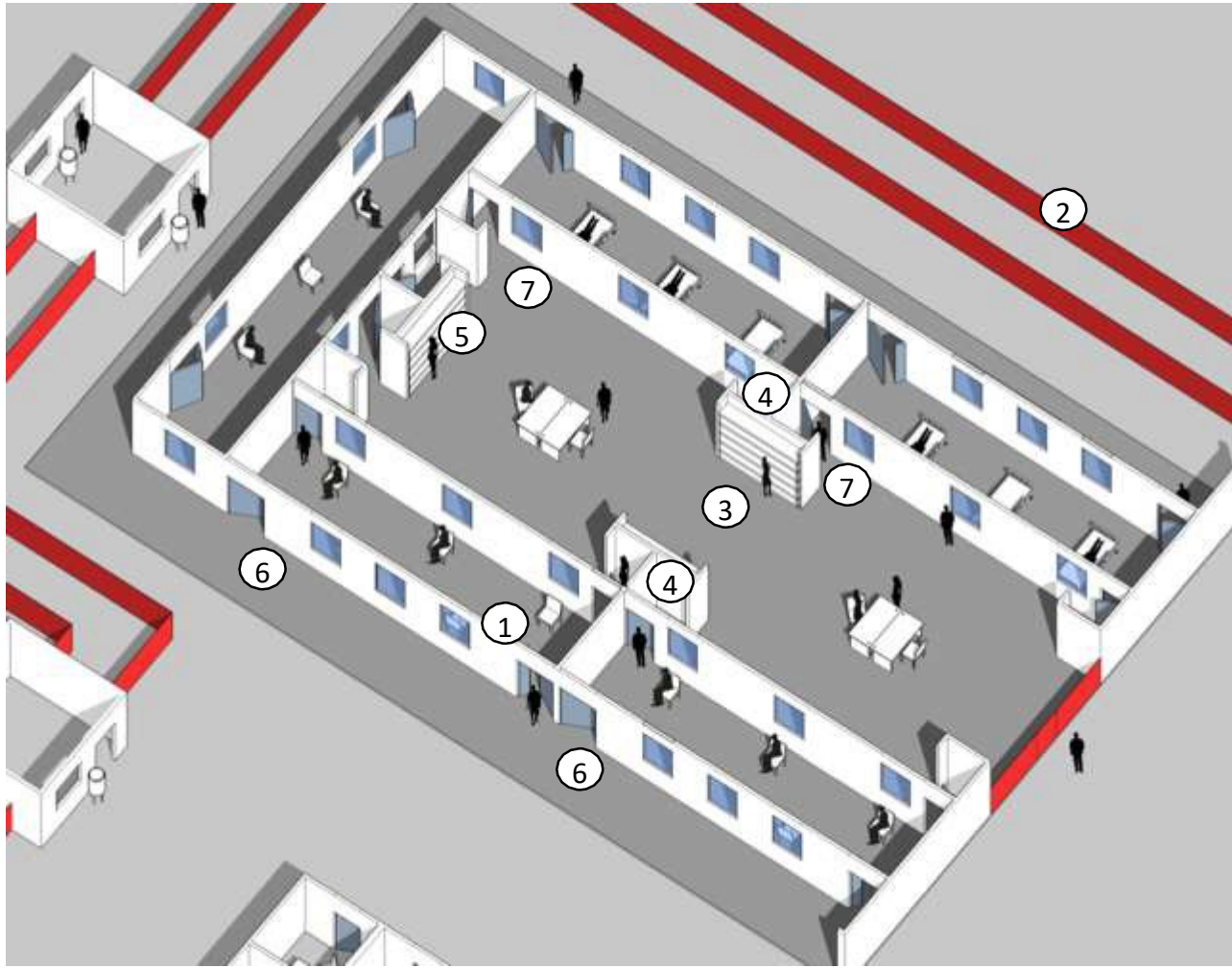


Patient's flow / mild & moderate cases



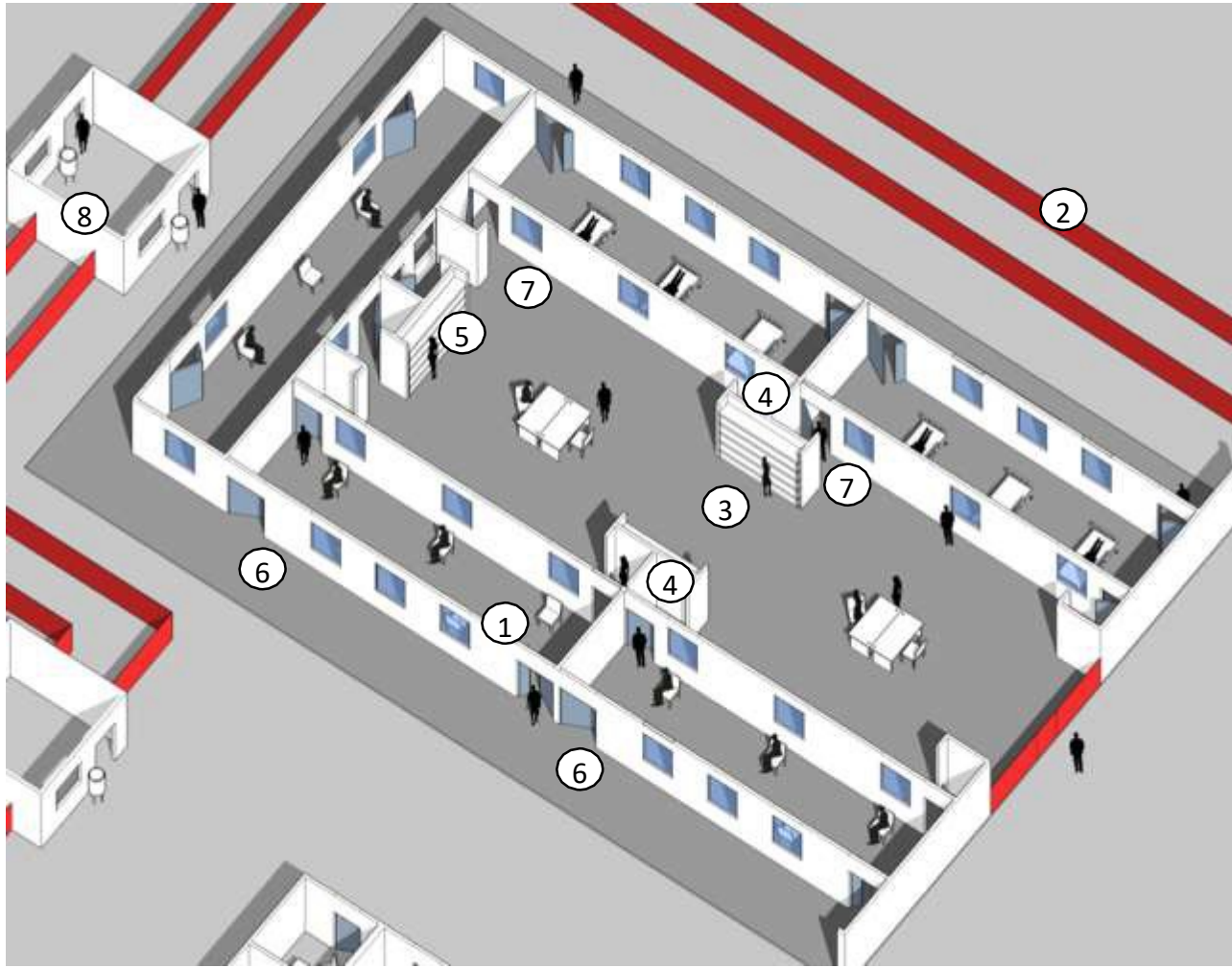
1. Patients [2 m distance*]
2. Single barrier [1.2 meter high] is to identify the centre area. Double fence with 1 meter distance can be used to help visitors to respect the spatial distance while visiting patients [not mandatory]
3. Working area [Staff only]
4. Doffing space
5. Shelf for PPE
6. Patient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

Patient's flow / mild & moderate cases



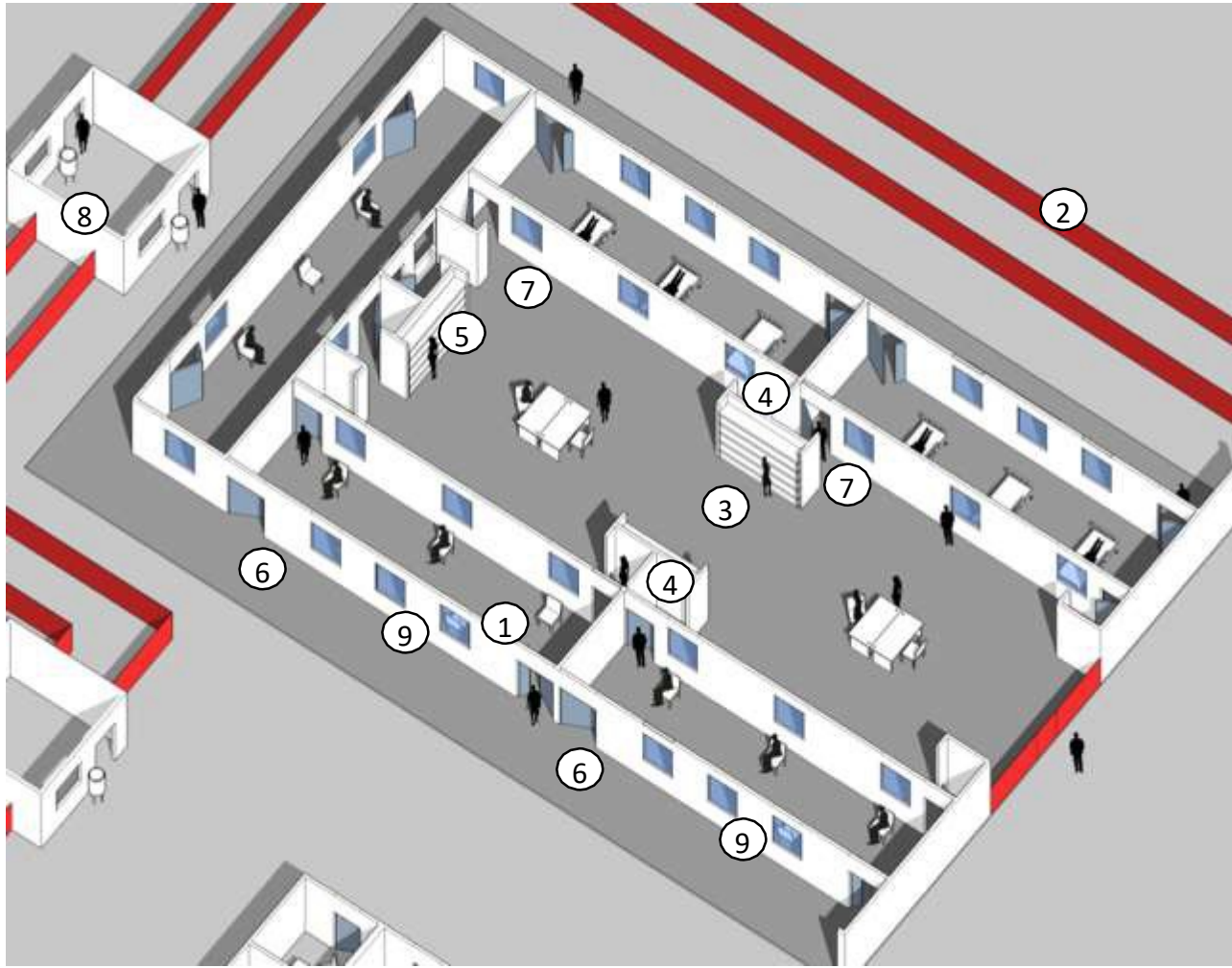
1. Patients [2 m distance*]
2. Single barrier [1.2 meter high] is to identify the centre area. Double fence with 1 meter distance can be used to help visitors to respect the spatial distance while visiting patients [not mandatory]
3. Working area [Staff only]
4. Doffing space
5. Shelf for PPE
6. Patient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

Patient's flow / mild & moderate cases



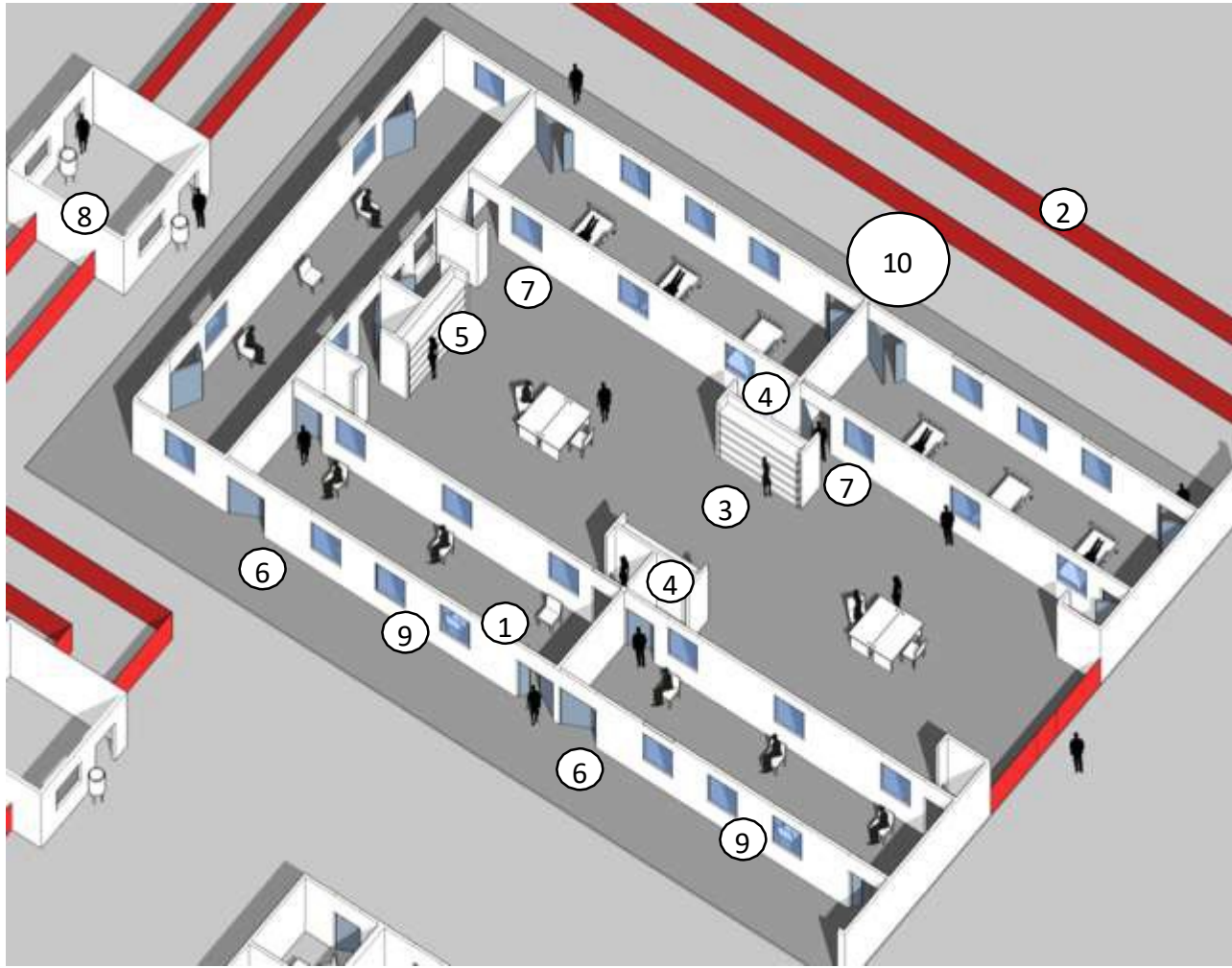
1. Patients [2 m distance*]
2. Single barrier [1.2 meter high] is to identify the centre area. Double fence with 1 meter distance can be used to help visitors to respect the spatial distance while visiting patients [not mandatory]
3. Working area [Staff only]
4. Doffing space
5. Shelf for PPE
6. Patient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

Patient's flow / mild & moderate cases



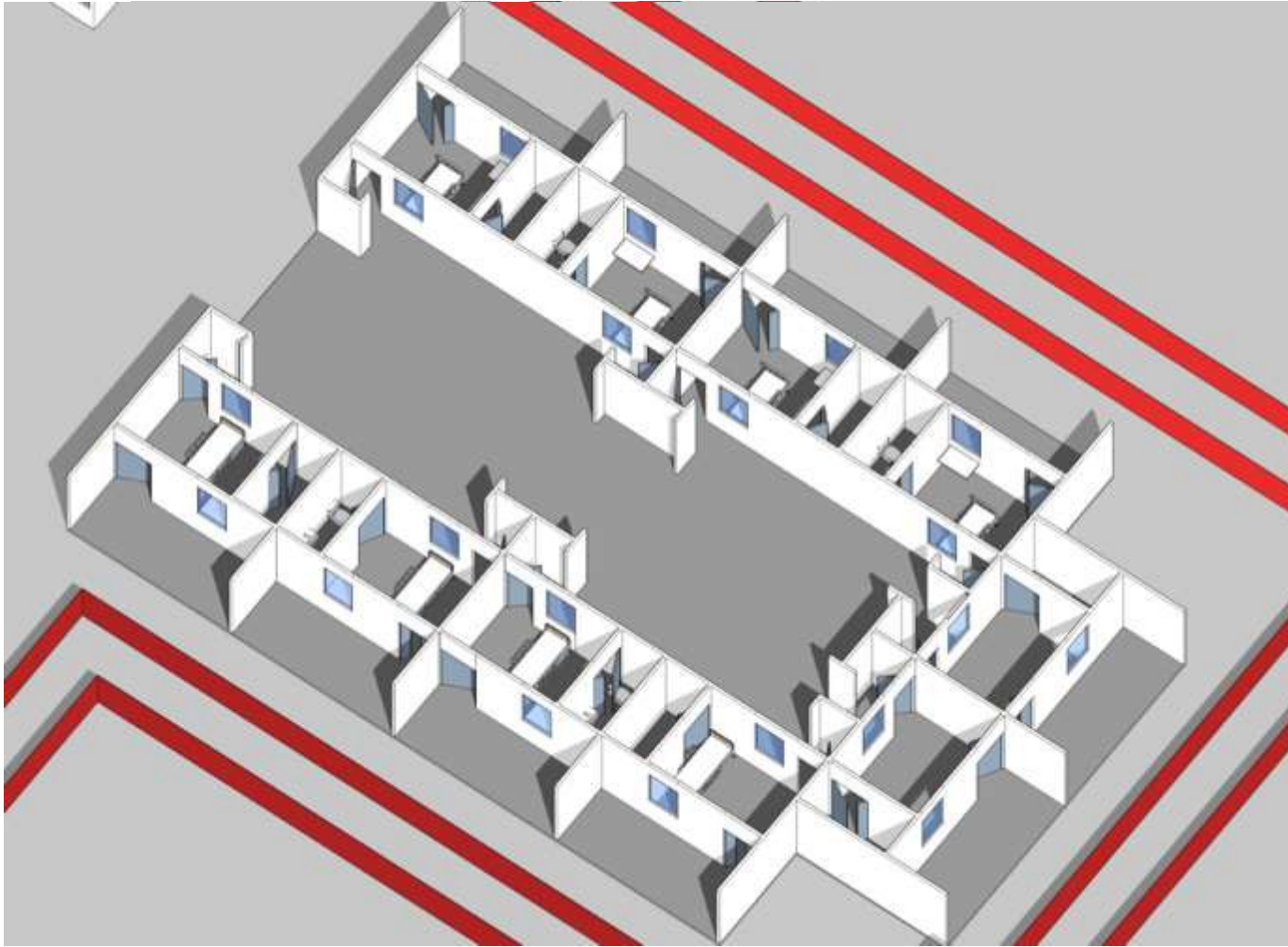
1. Patients [2 m distance*]
2. Single barrier [1.2 meter high] is to identify the centre area. Double fence with 1 meter distance can be used to help visitors to respect the spatial distance while visiting patients [not mandatory]
3. Working area [Staff only]
4. Doffing space
5. Shelf for PPE
6. Patient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

Patient's flow / mild & moderate cases



1. Patients [2 m distance*]
2. Single barrier [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.

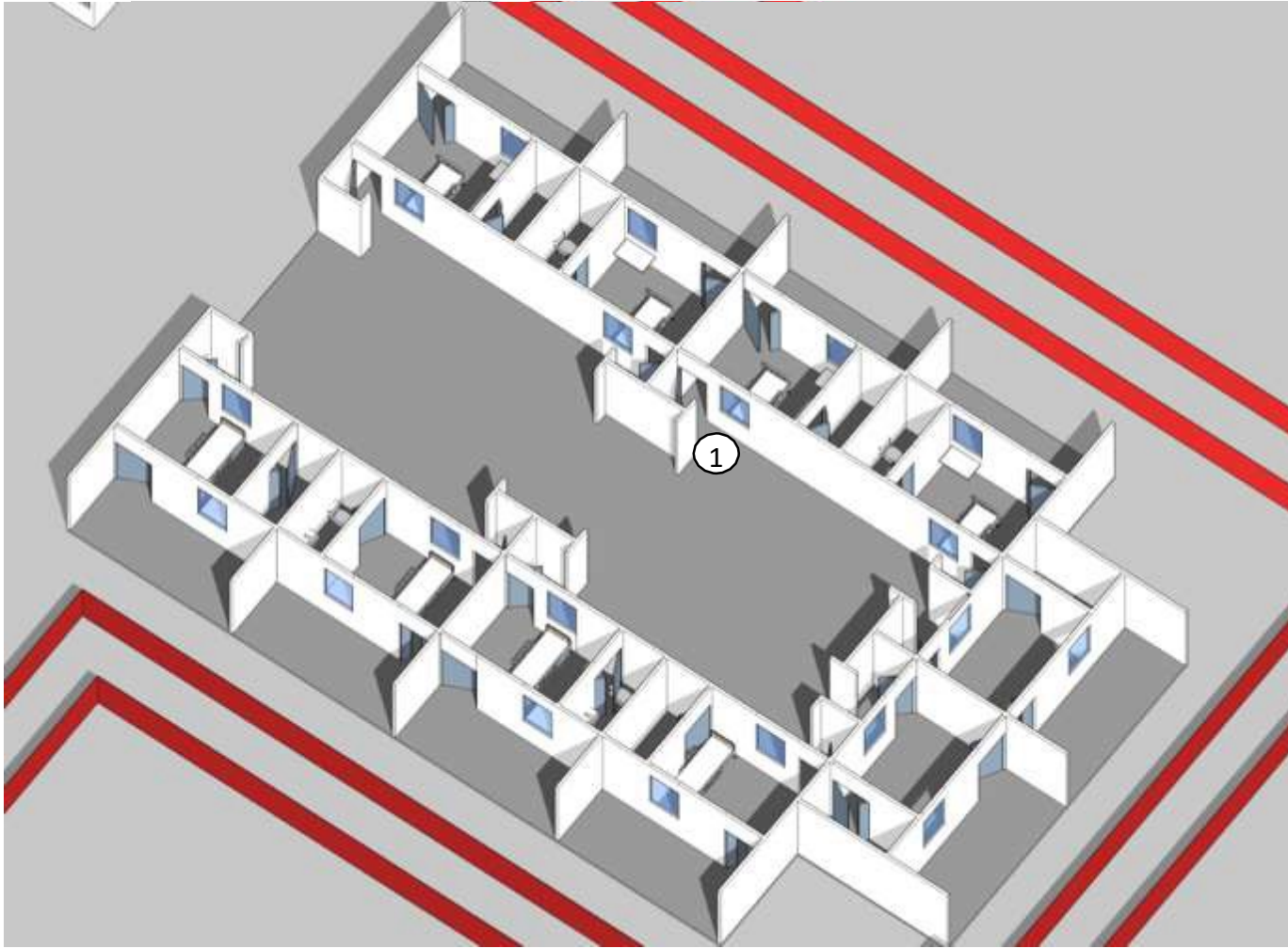
Patient's flow / severe & critical cases



World Health
Organization

HEALTH
EMERGENCIES
programme

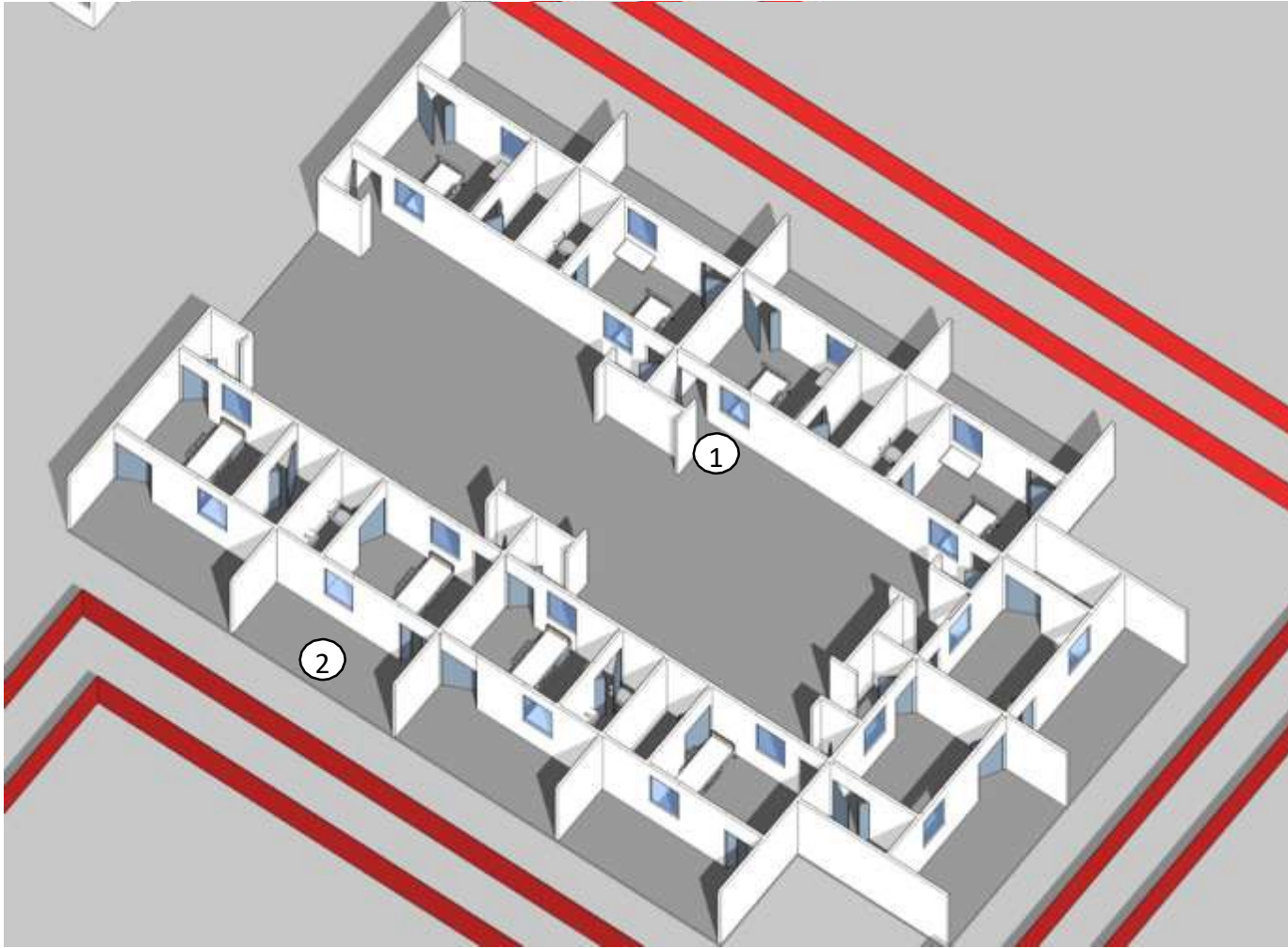
Patient's flow / severe & critical cases



1. Individual doffing [one per room]



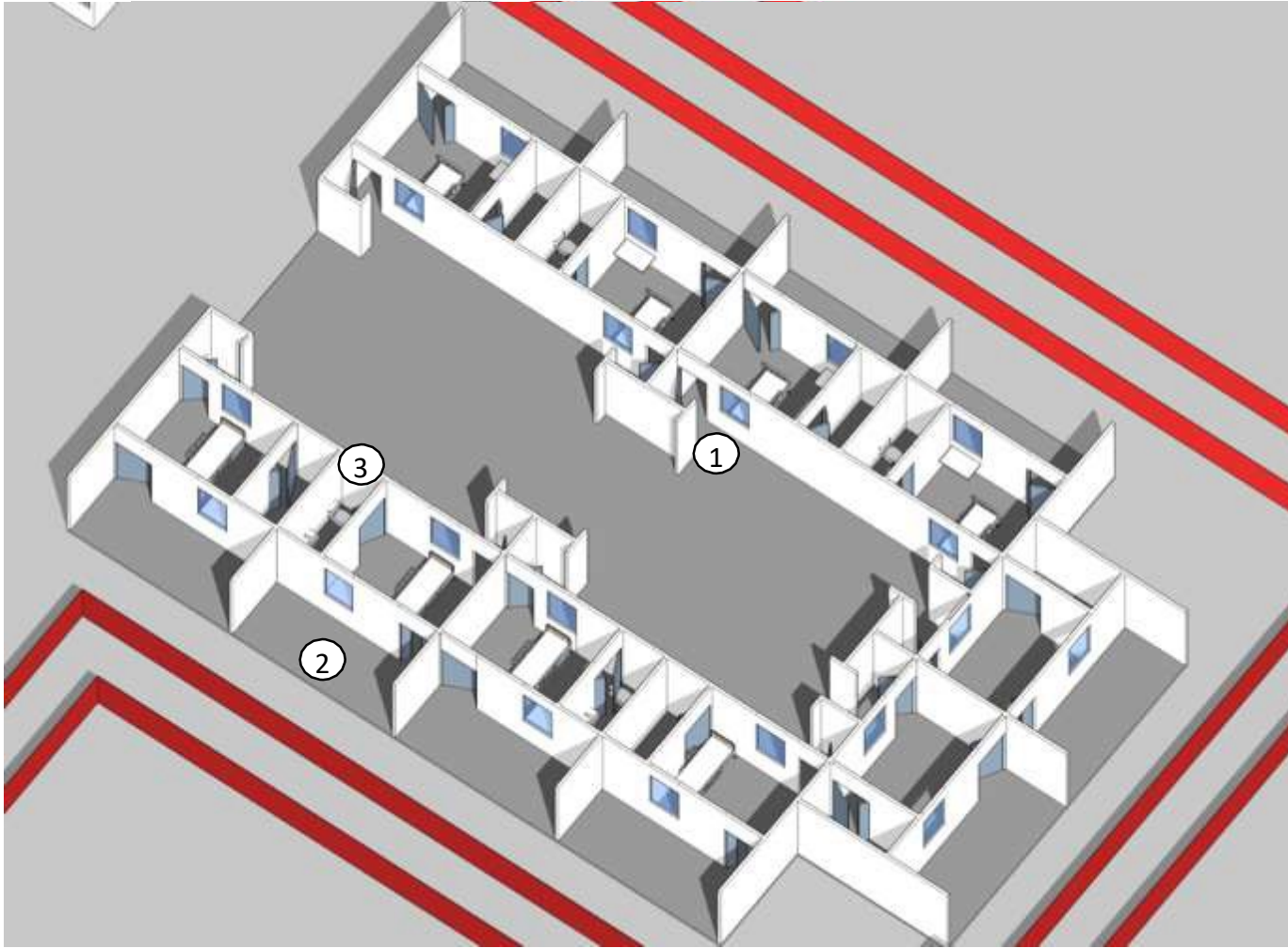
Patient's flow / severe & critical cases



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

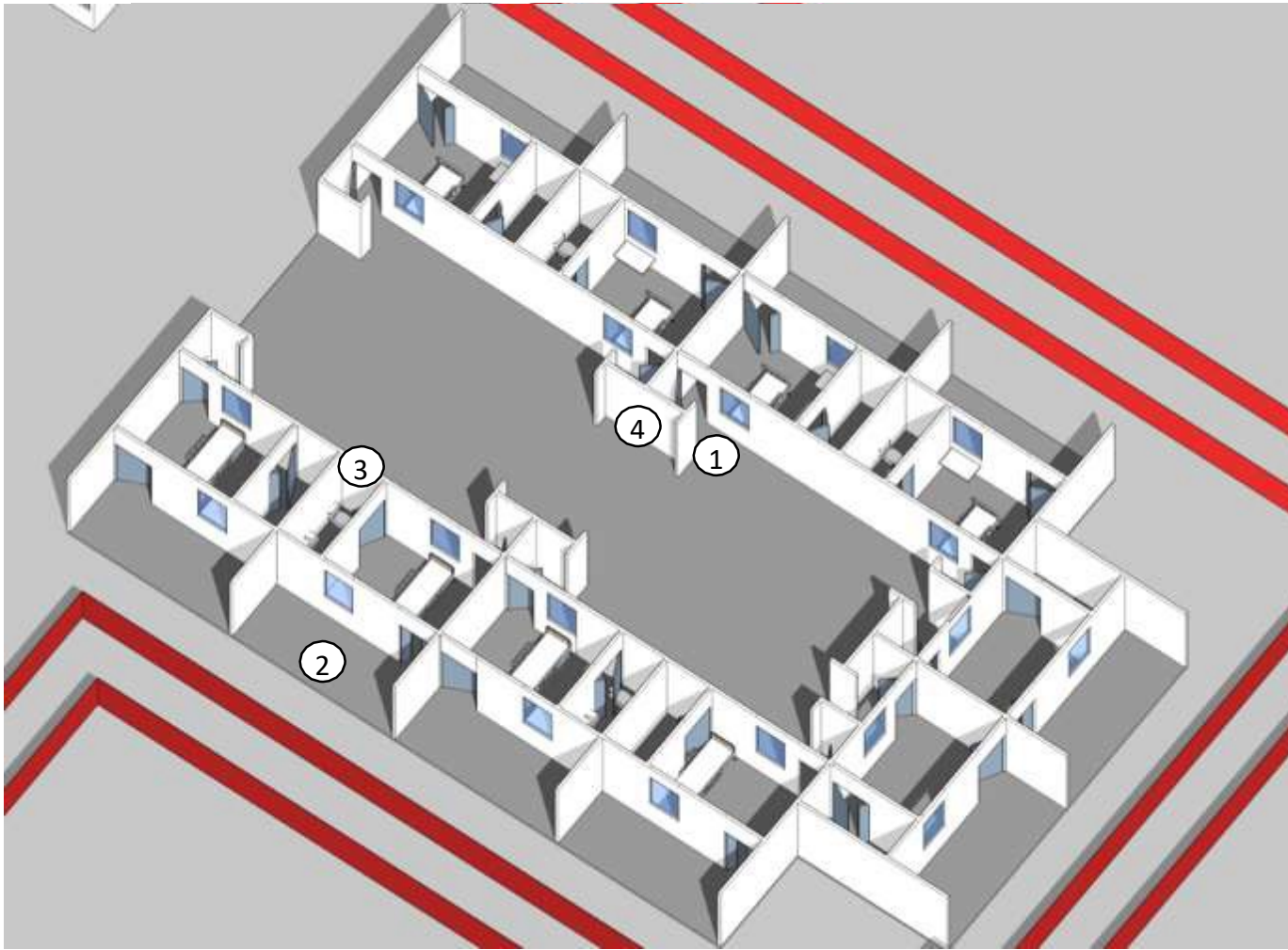


Patient's flow / severe & critical cases



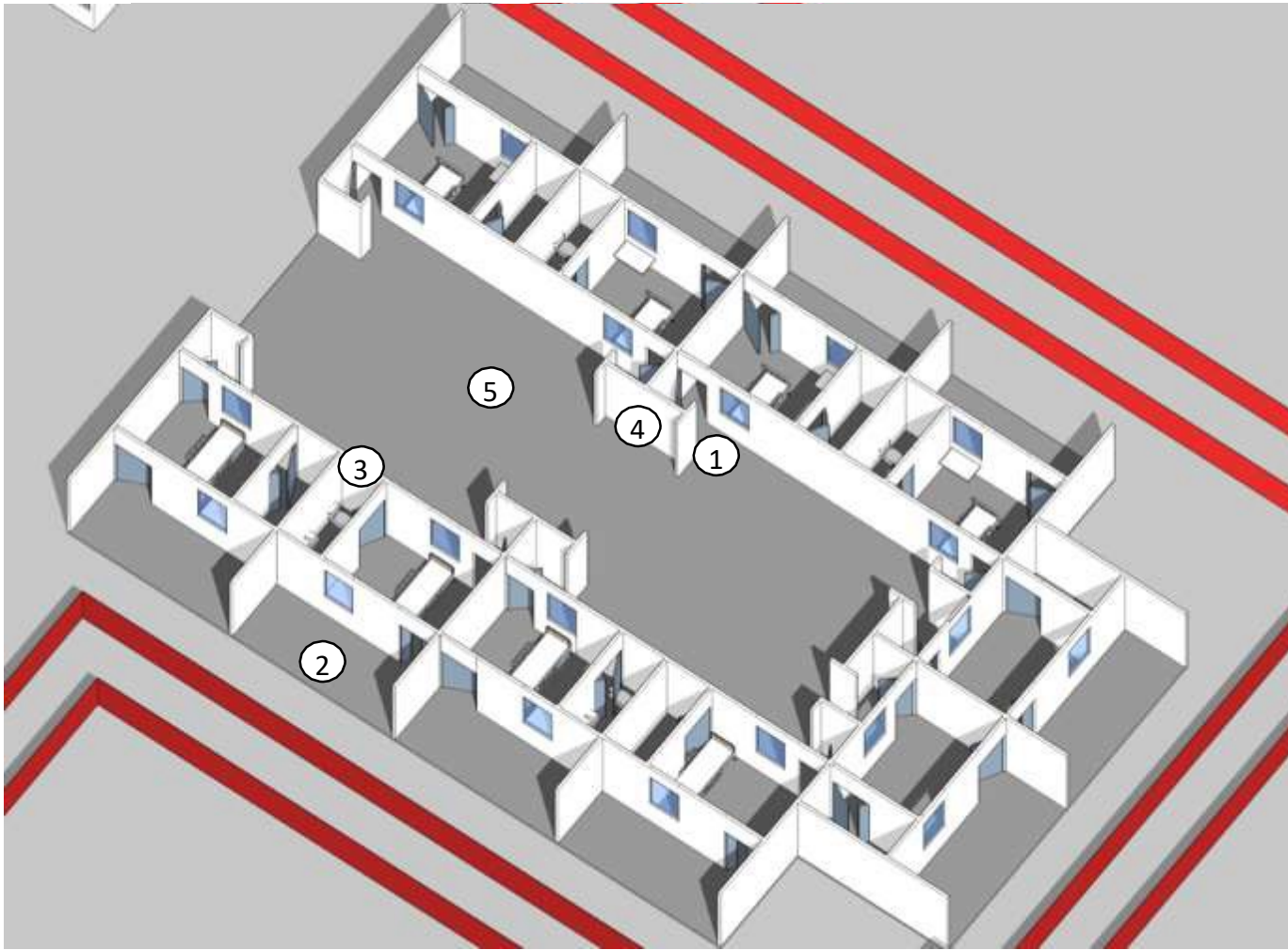
1. Individual doffing [one per room]
2. Self-contained room with individual terrace
3. Individual toilet/shower

Patient's flow / severe & critical cases



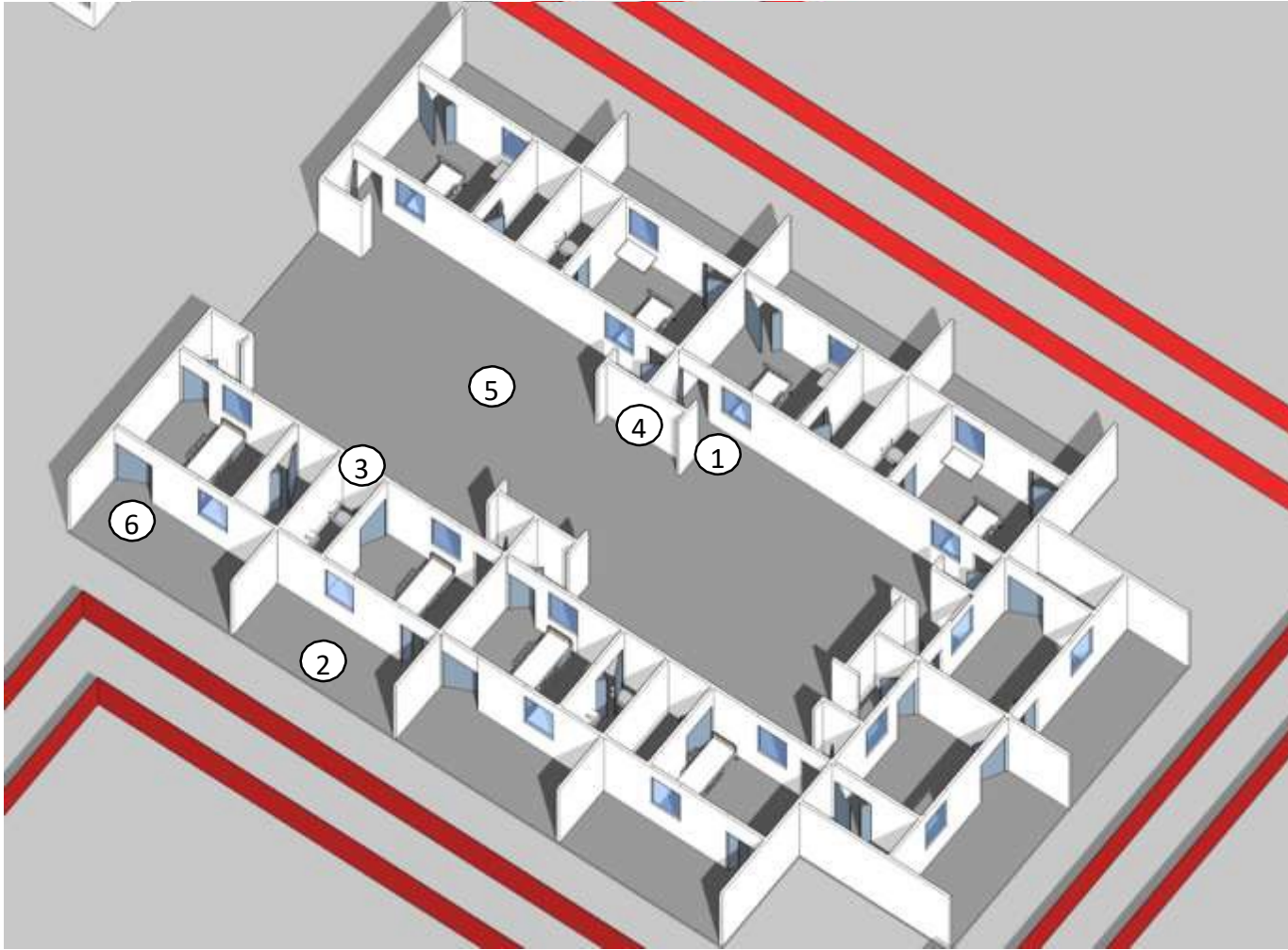
1. Individual doffing [one per room]
2. Self-contained room with individual terrace
3. Individual toilet/shower
4. Shelf for PPE

Patient's flow / severe & critical cases



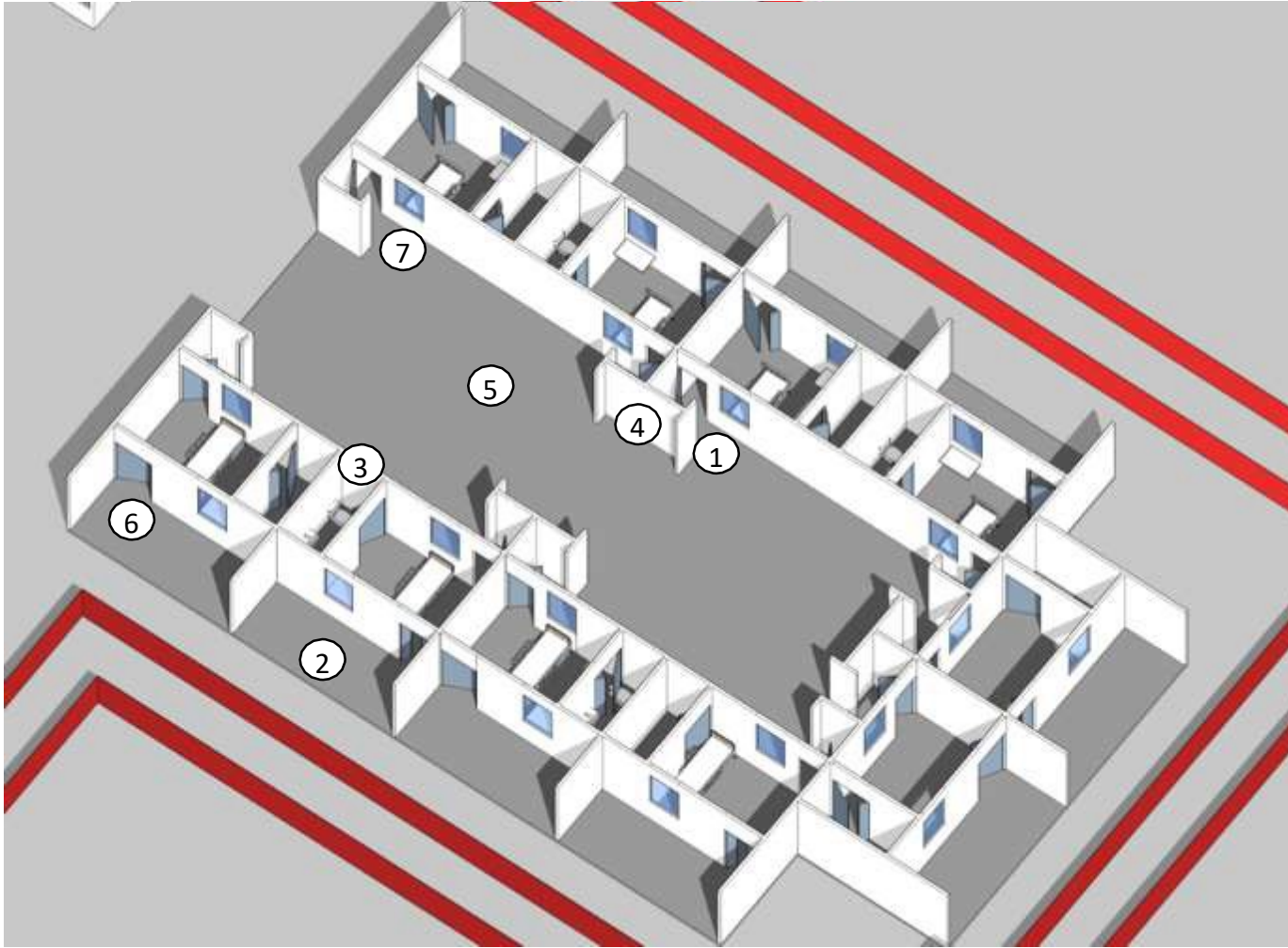
1. Individual doffing [one per room]
2. Self-contained room with individual terrace
3. Individual toilet/shower
4. Shelf for PPE
5. Working area [Staff only]

Patient's flow / severe & critical cases



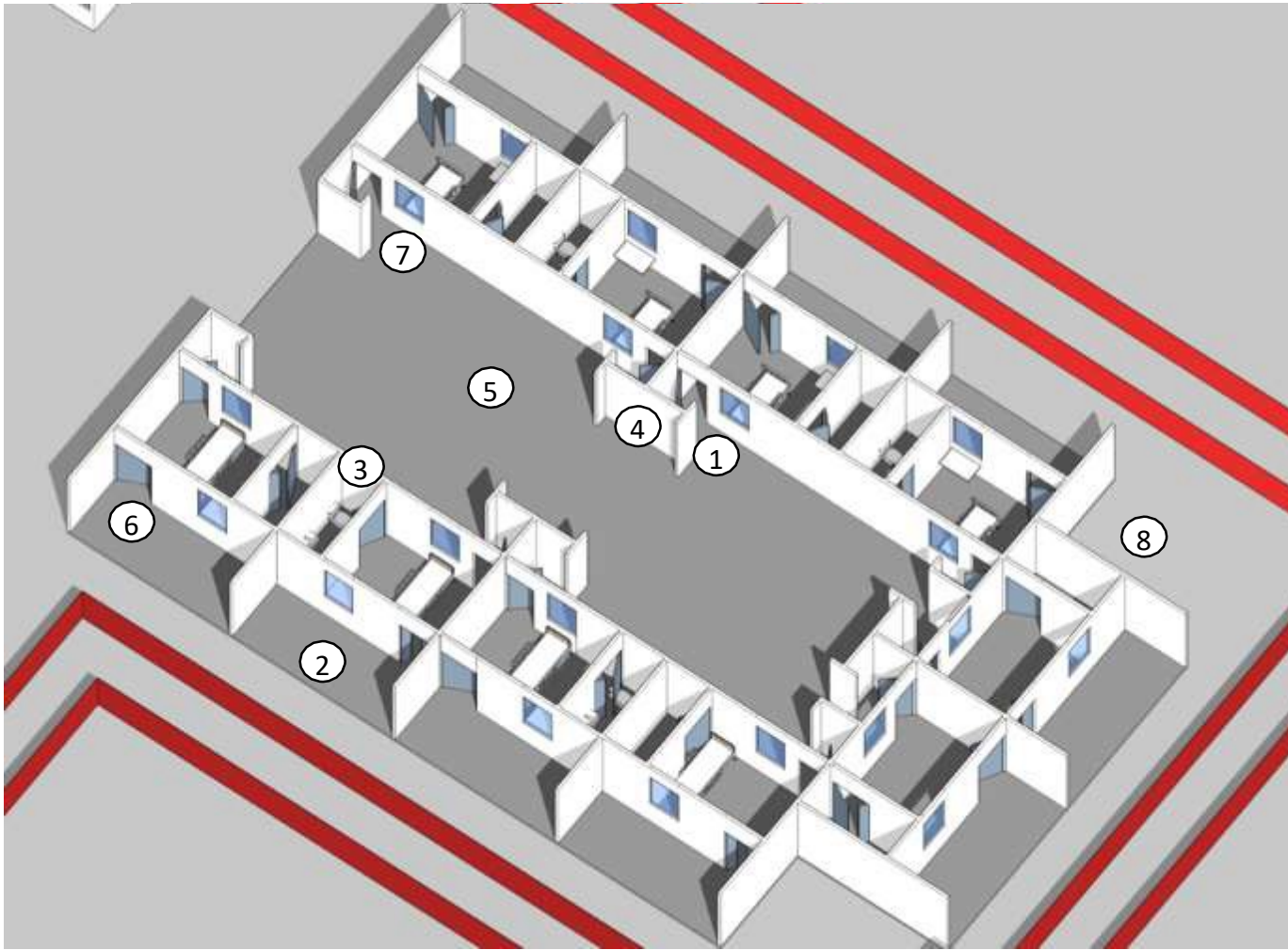
1. Individual doffing [one per room]
2. Self-contained room with individual terrace
3. Individual toilet/shower
4. Shelf for PPE
5. Working area [Staff only]
6. Patient entrance

Patient's flow / severe & critical cases



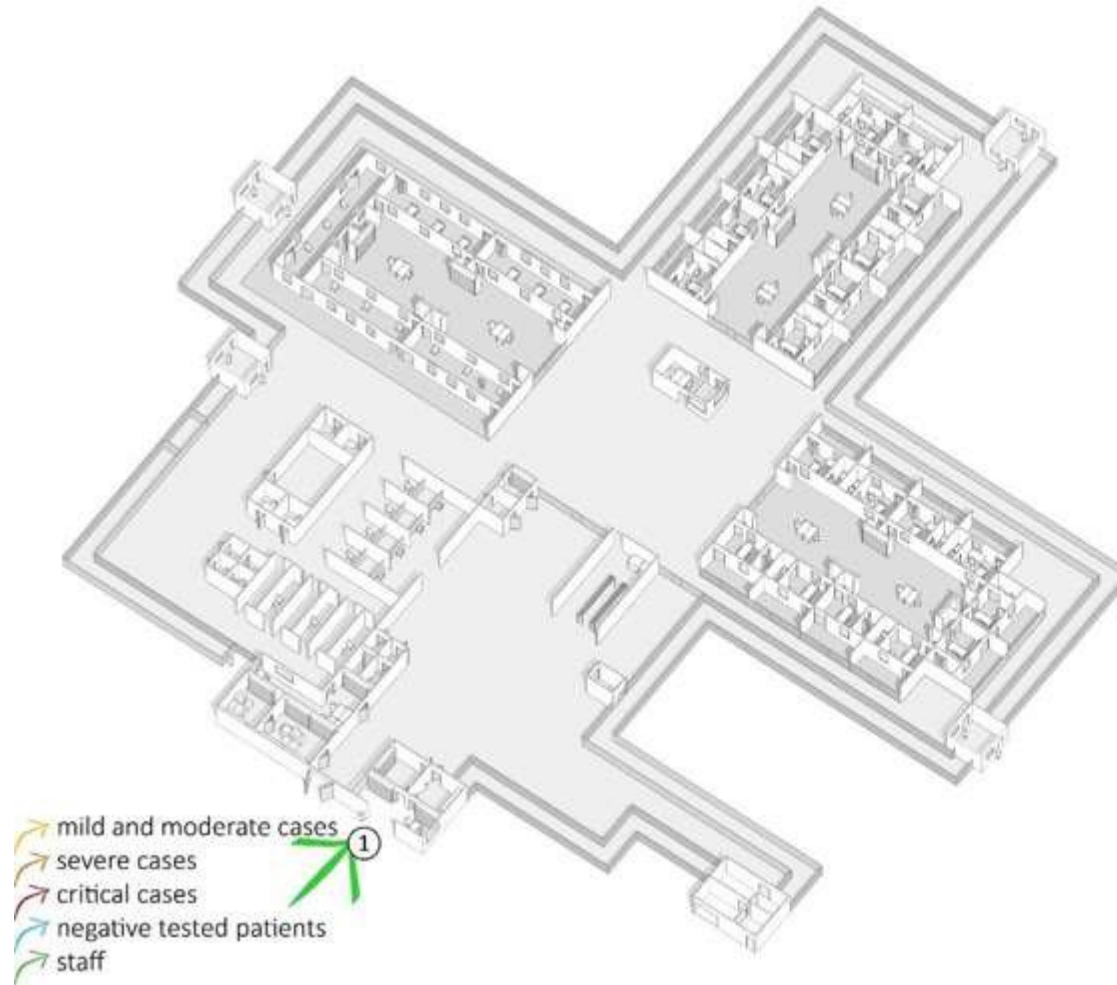
1. Individual doffing [one per room]
2. Self-contained room with individual terrace
3. Individual toilet/shower
4. Shelf for PPE
5. Working area [Staff only]
6. Patient entrance
7. Staff entrance only

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

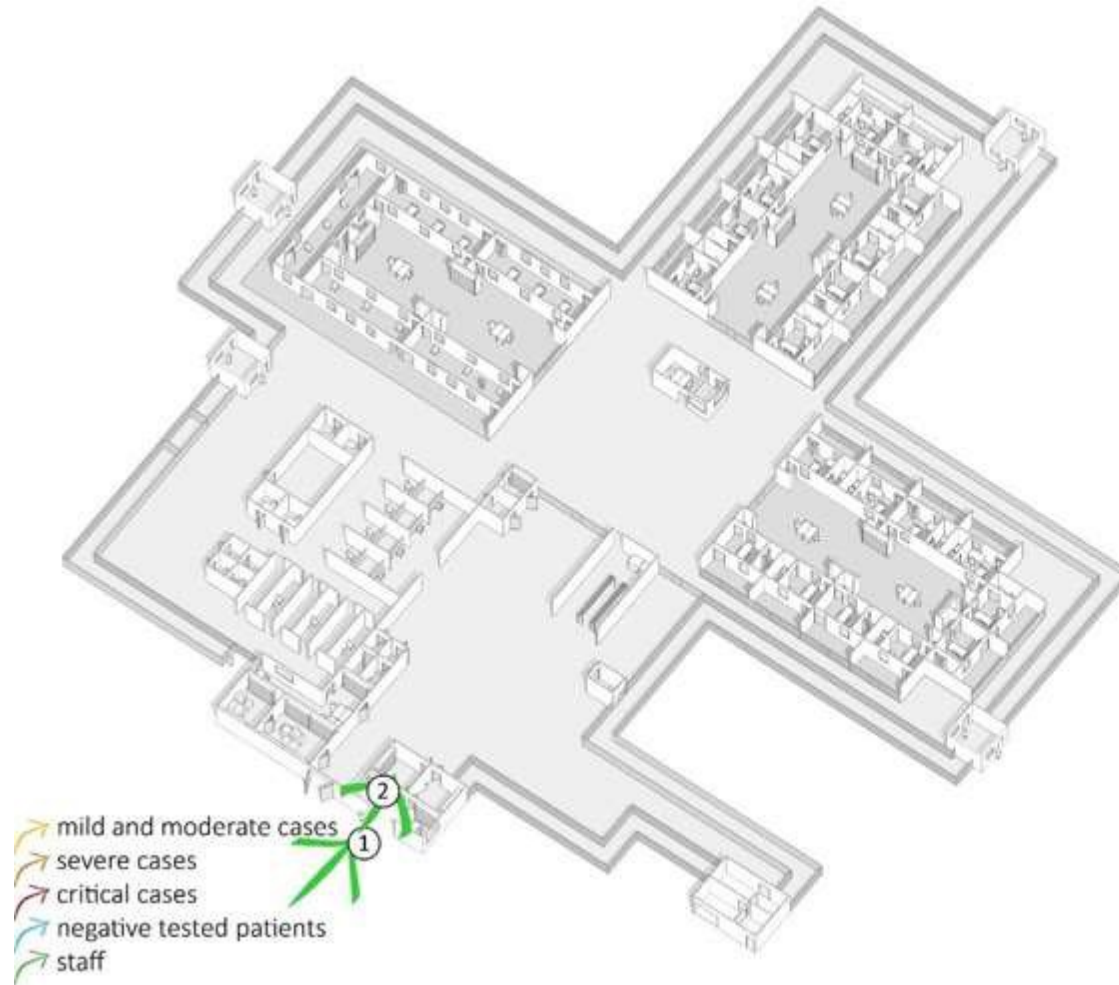


1. Staff entry

At this point all staff:

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

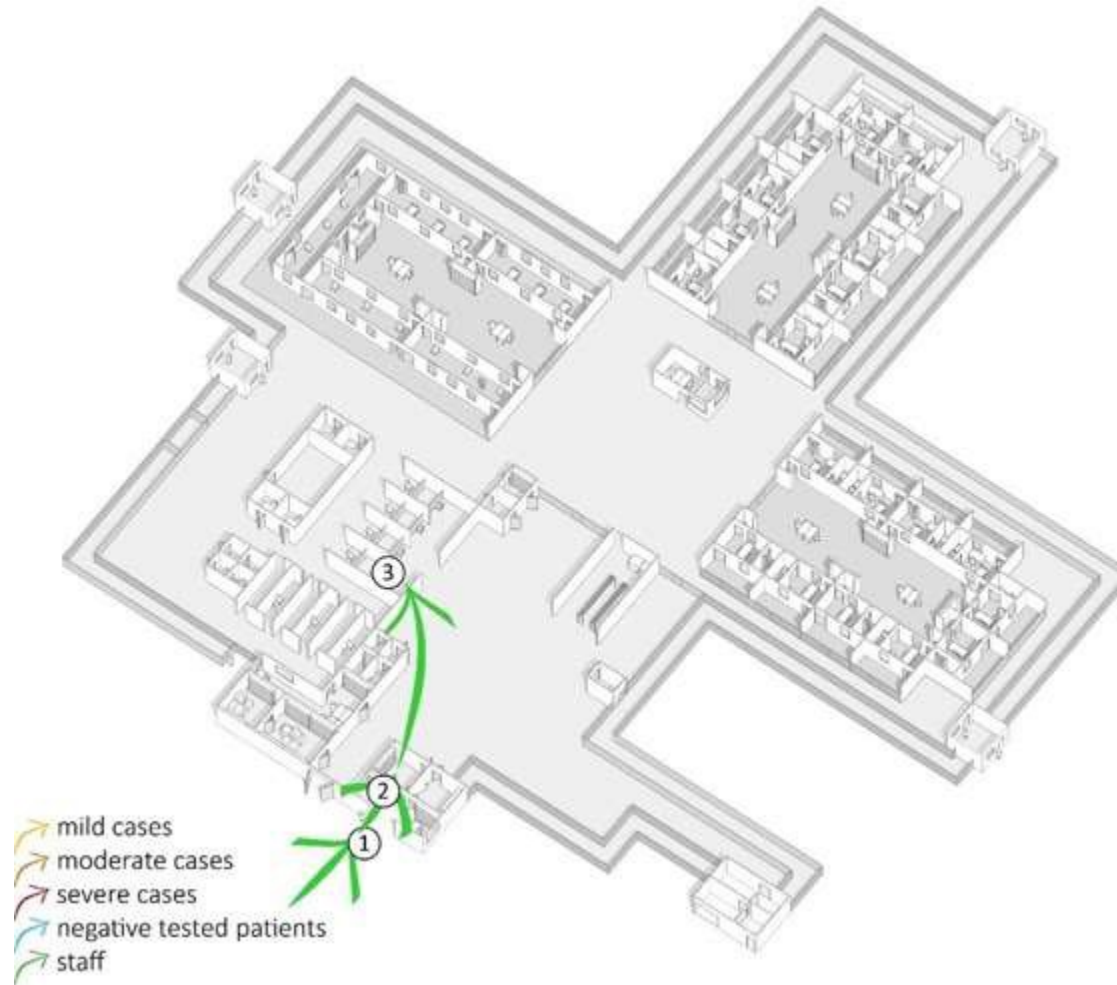
Staff's flow



2. Changing room

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

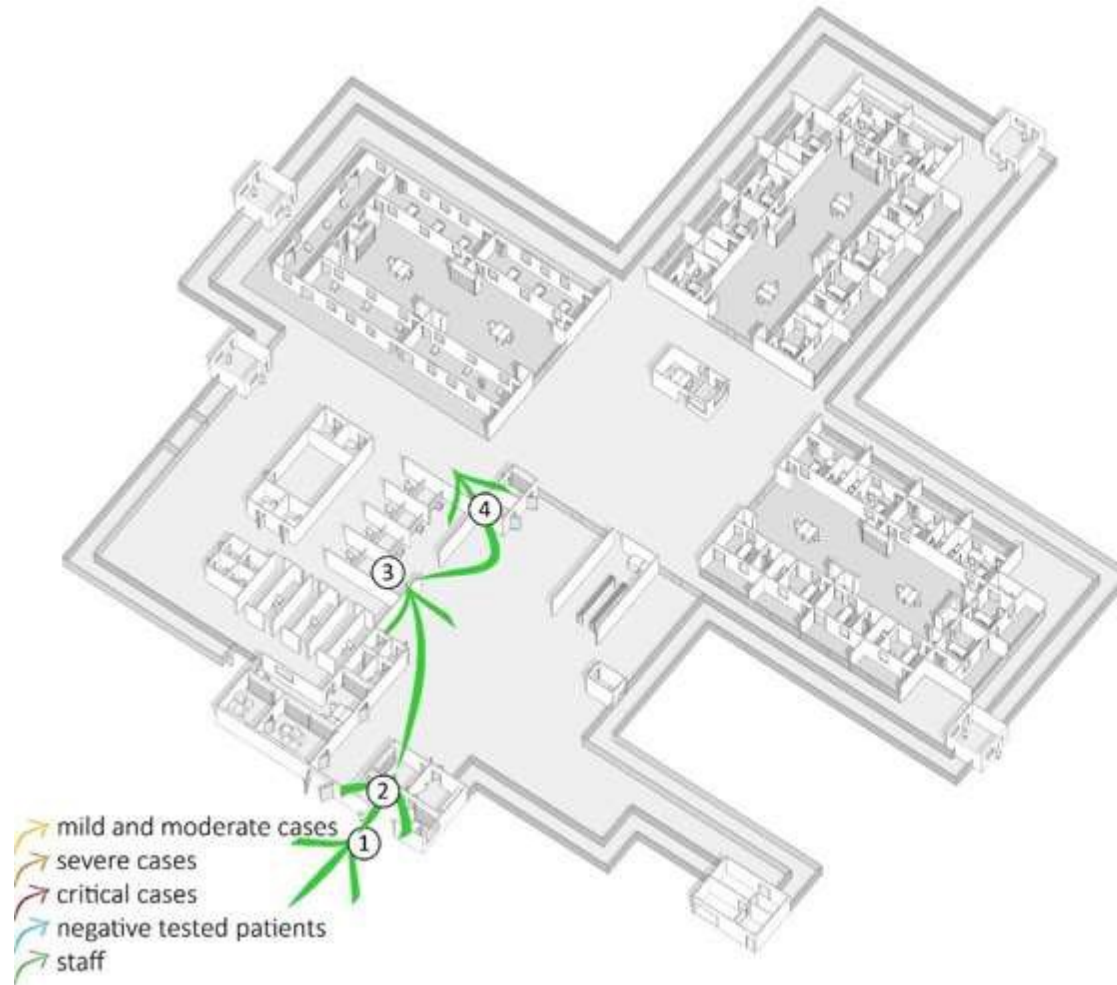
Staff's flow



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.

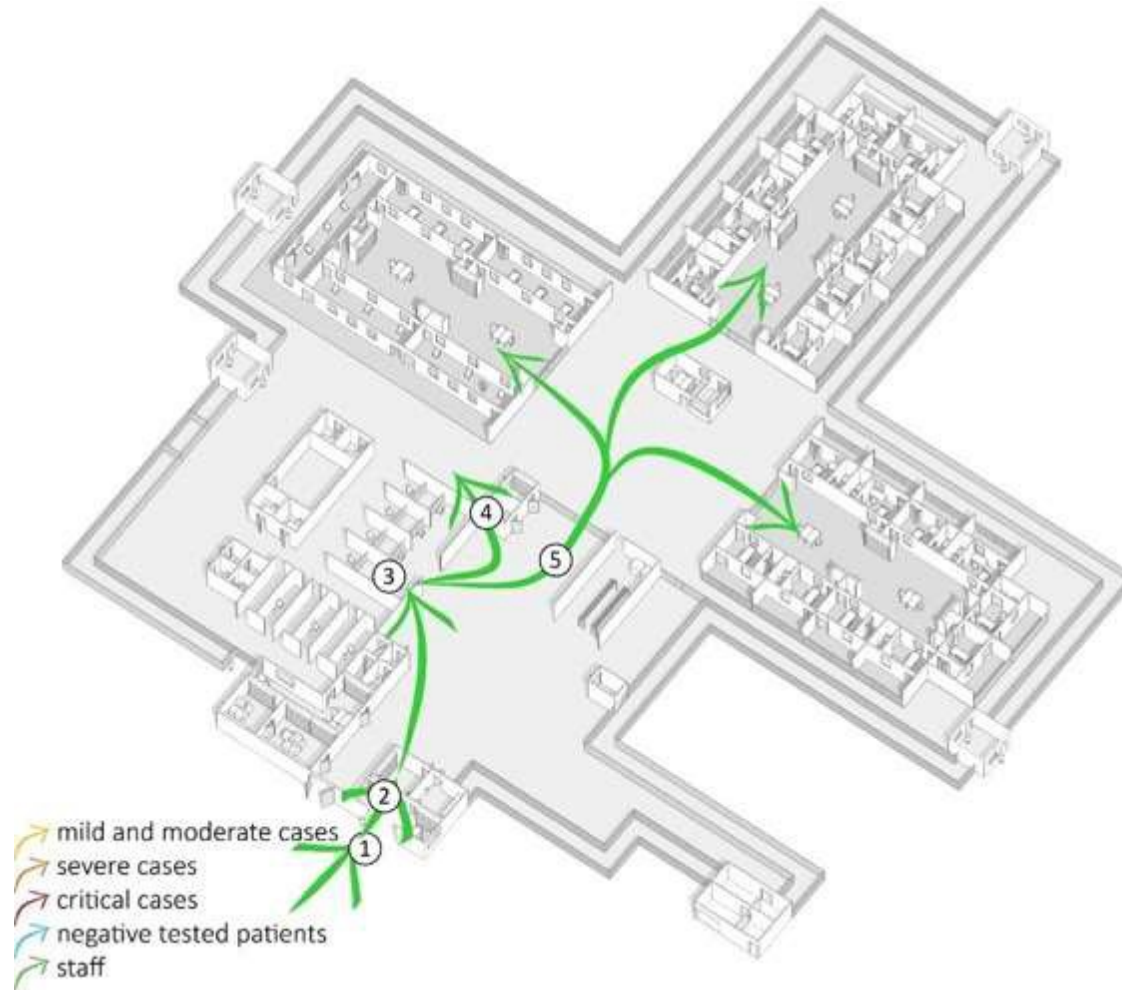
Staff's flow



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.

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**

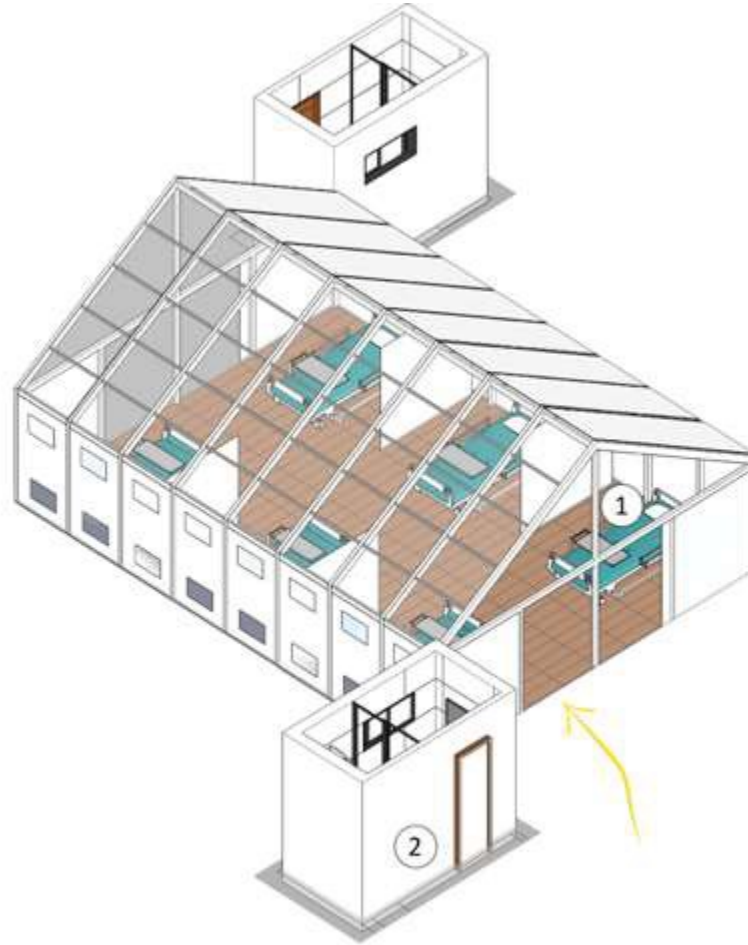
Module: 2C

Module 2C


SARI treatment centre in tents

SARI treatment centre in tents – Mild & Moderate cases

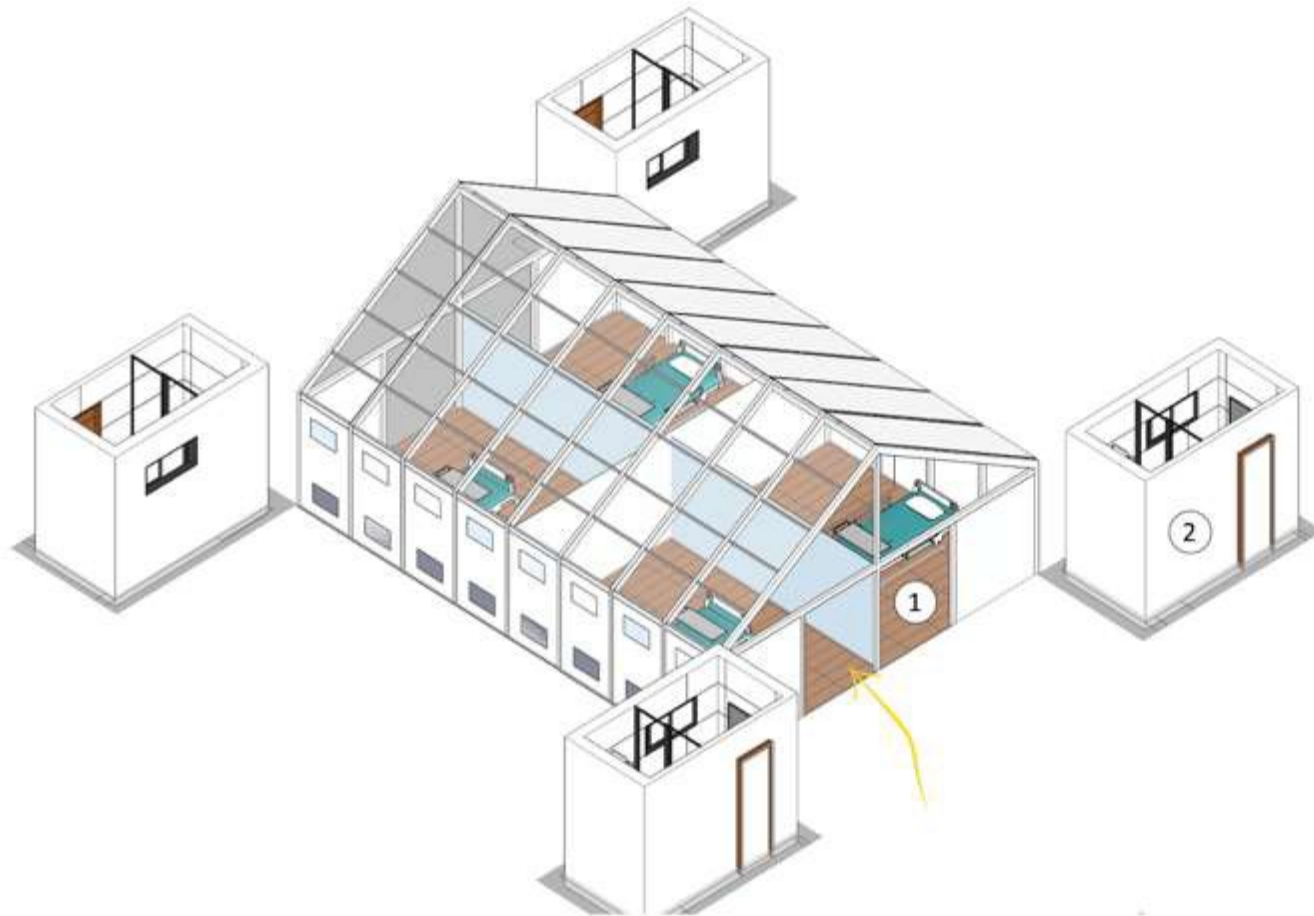
Small tents [$\sim 45 \text{ m}^2$] can be used to set up wards for mild and moderate cases.



1. Individual booth with bed
2. Toilet

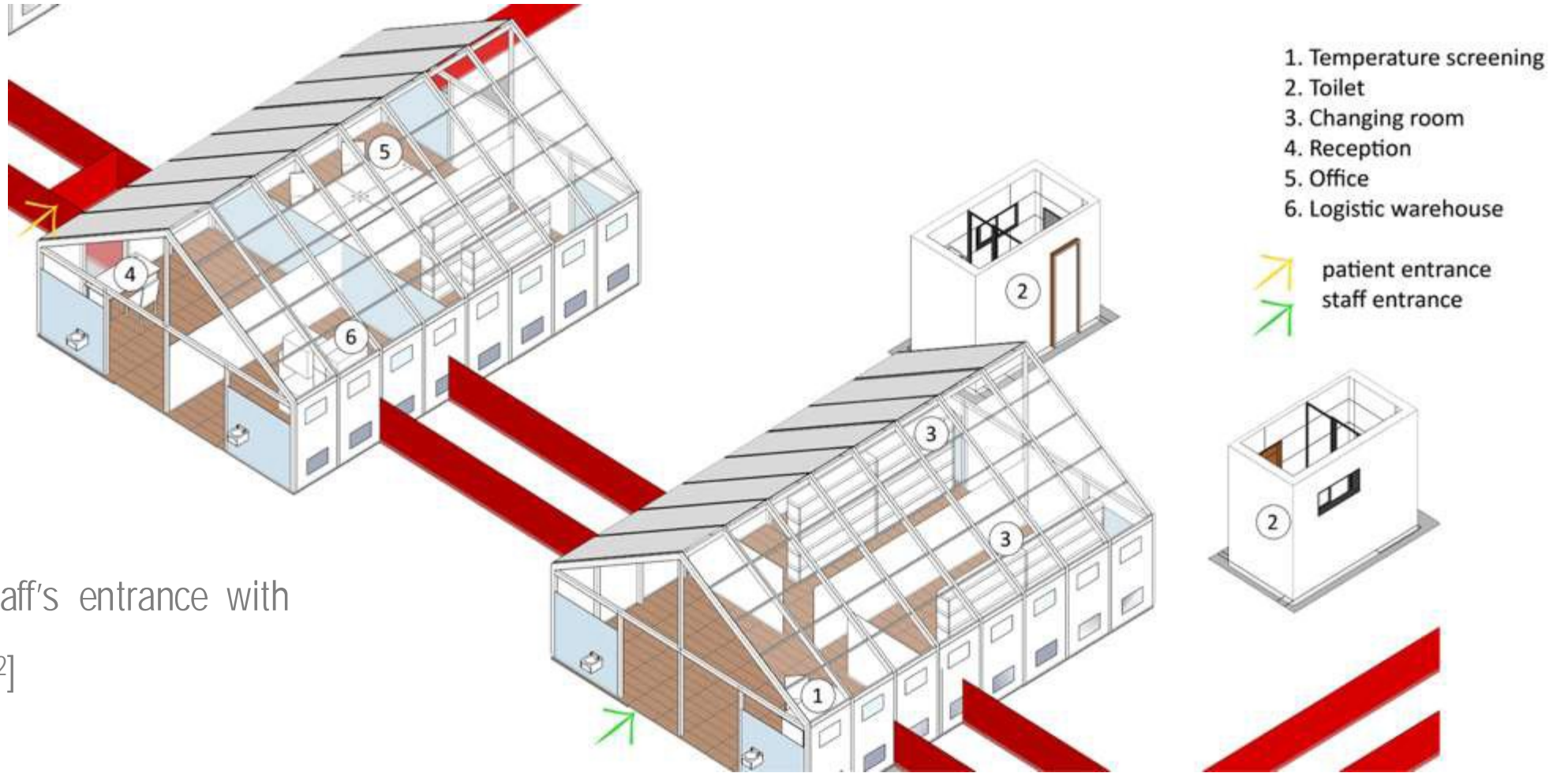
 patient entrance

SARI treatment centre in tents – Severe & Critical cases



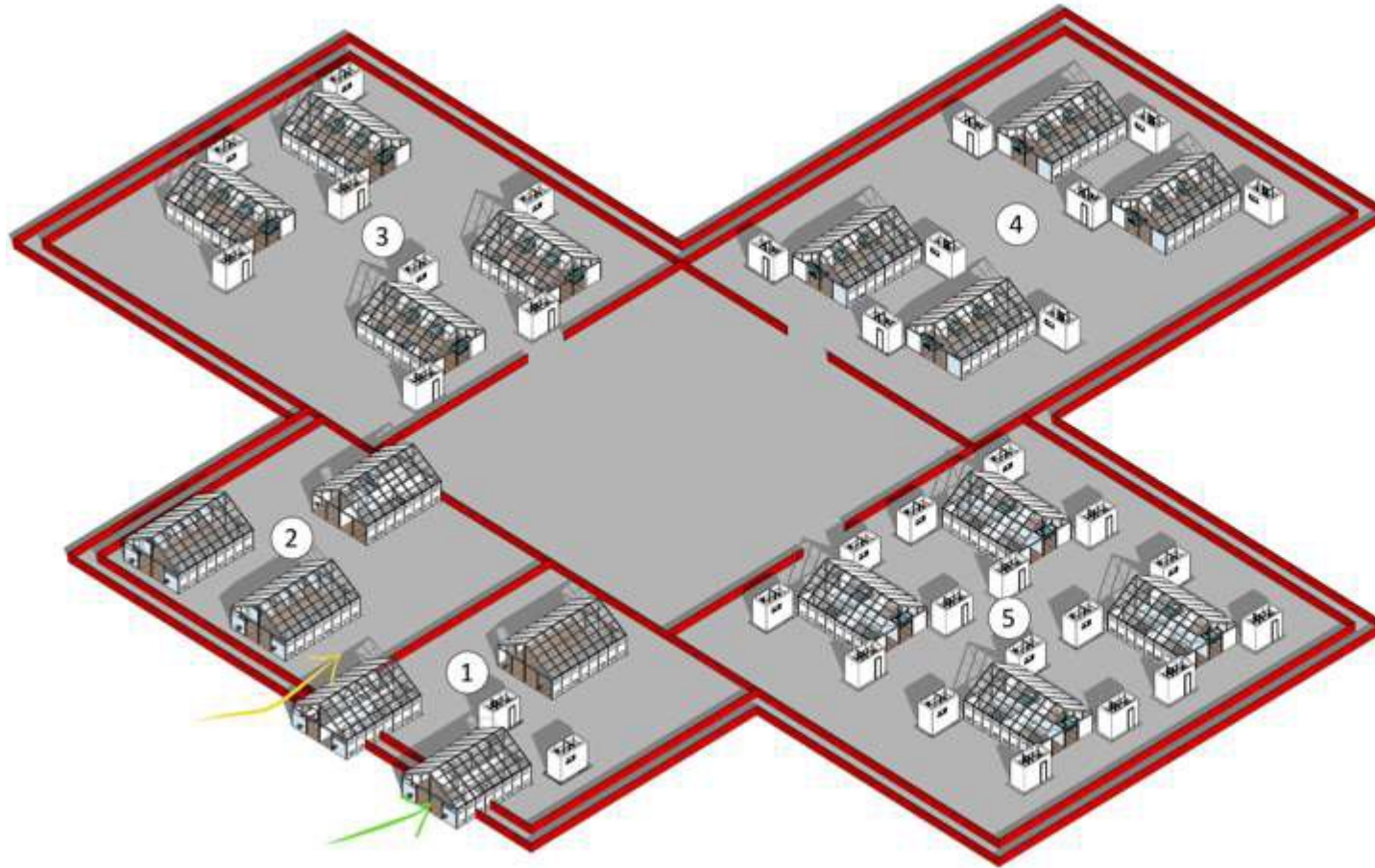
For severe and critical patients self-contained rooms are recommended.

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



1. Staff area
2. Triage
3. Short stay and mild cases
4. Moderate cases
5. Severe cases

➤ patient entrance

➤ staff entrance

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Thank you

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

Anna Silenzi – WHO - Architect

SARI CRITICAL CARE TRAINING

SEVERE ACUTE RESPIRATORY INFECTION (SARI)

TREATMENT FACILITY DESIGN

MODULE 3: REPURPOSING AN EXISTING BUILDING INTO A SARI TREATMENT CENTRE [STC]

MARCH 2020

Learning objectives

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

- Assess and evaluate available existing structures;
- Identify key and essential structural elements; and
- Describe how to adapt an existing building into a SARI treatment centre.

Modules

This lecture is organized in two different sections:

- 3A Basic design principle
- 3B Existing building selection.

Module: 3A

Module 3A

Basic design principle

Basic design principles

There are some essential features a **SARI** treatment centre must have.

are:

- Accesses and flows
- Space allocation (mixed areas and restricted areas)
- Proximity between areas
- Dimensions and distances
- Ventilation and light
- Materials.

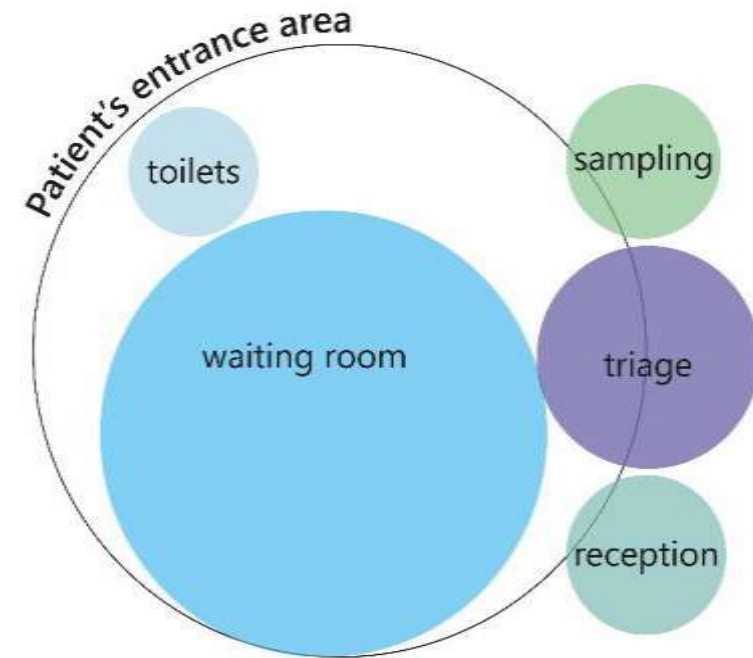
These essential design elements

NOTE: Expected bed capacity should lead the building selection process!!!

Essential structural elements

Essential elements:

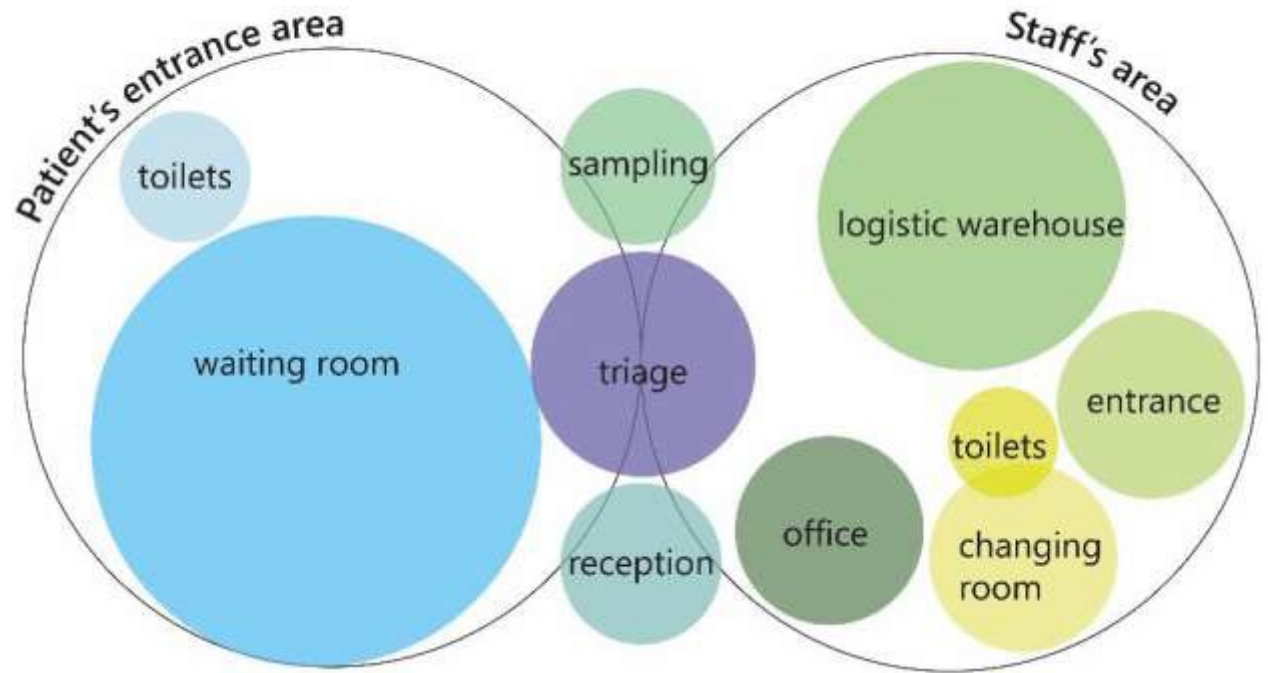
- Patient's entrance area: reception, waiting room, patient's toilet and triage, sampling.



Essential structural elements

Essential elements:

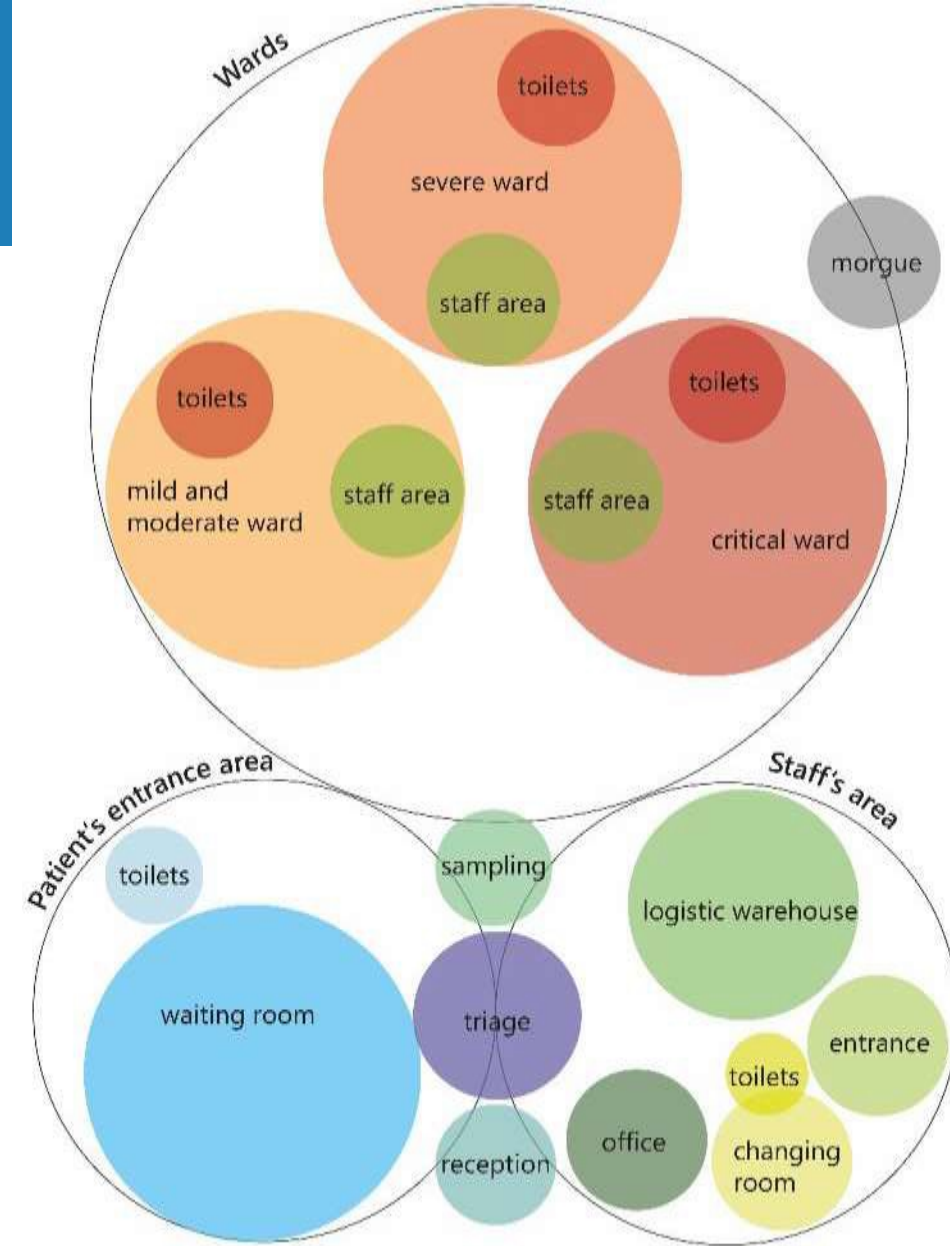
- Patient's entrance area: reception, waiting room, patient's toilet and triage, sampling.
- Staff's area: entrance, changing room, staff's toilet, office, logistic area.



Essential structural elements

Essential elements:

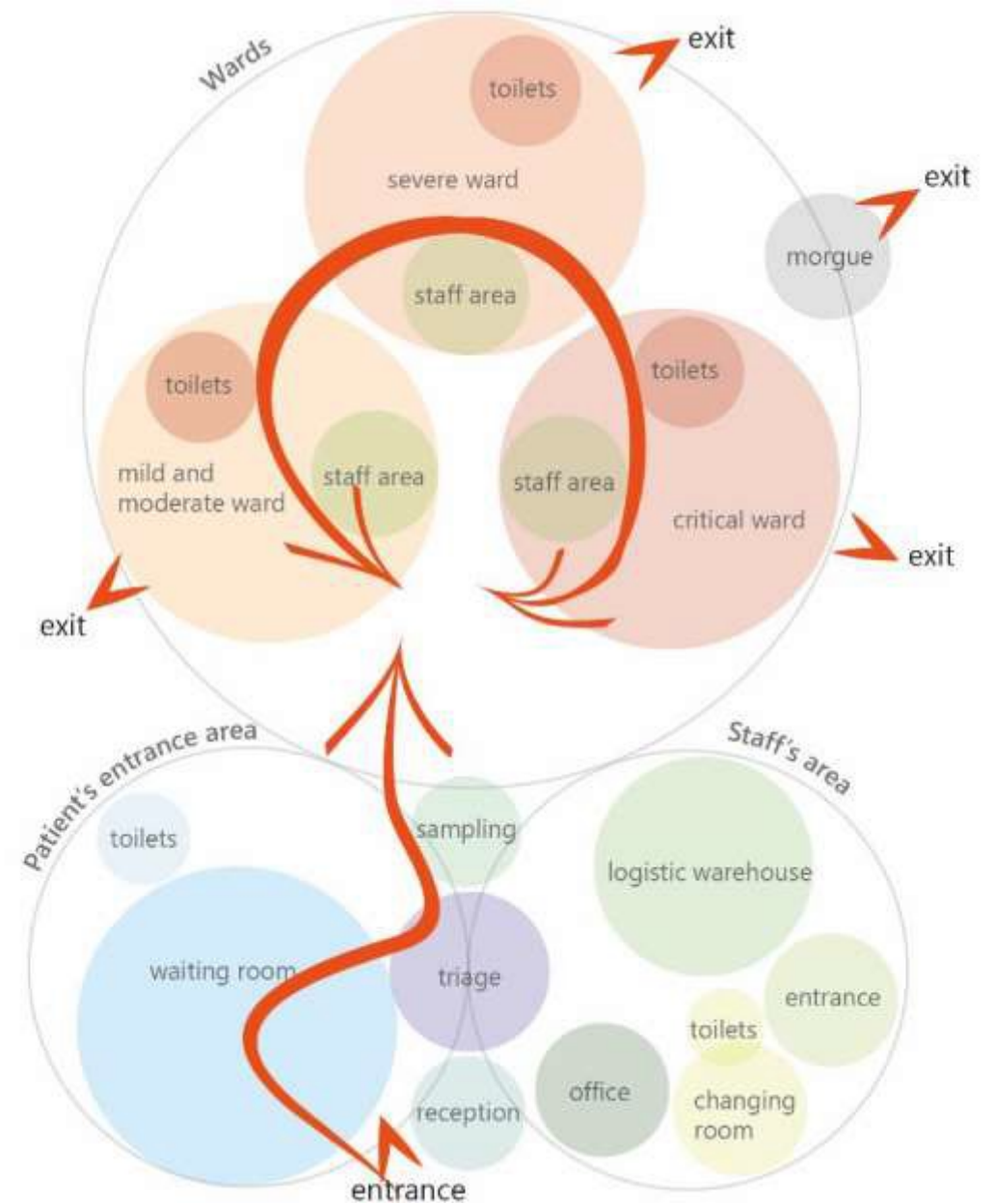
- Patient's entrance area: reception, waiting room, patient's toilet and triage, sampling.
- Staff's area: entrance, changing room, staff's toilet, office, logistic area.
- Ward: Mild/moderate, severe and critical wards



Accesses and flows

Two main flows:

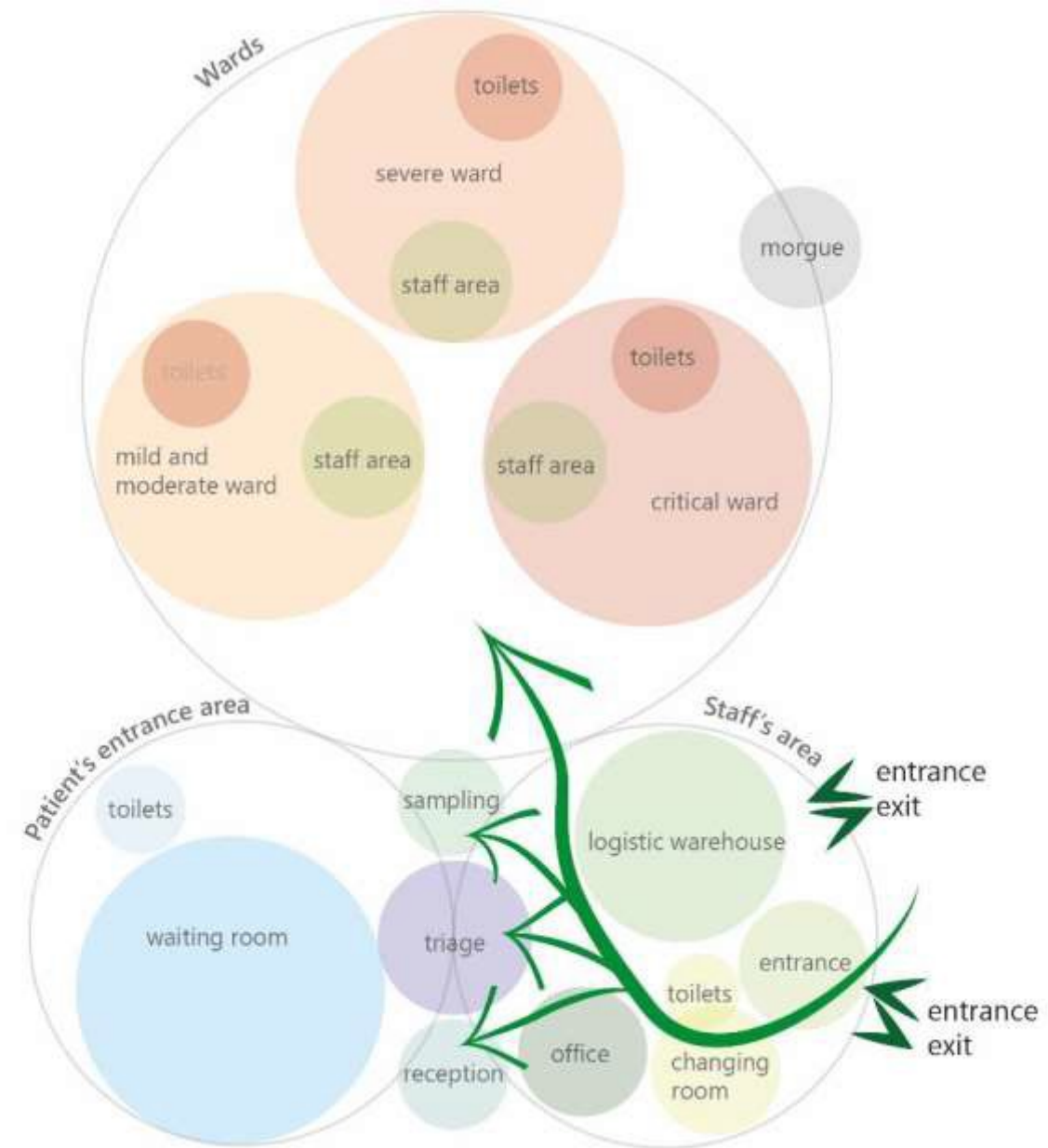
- Patient flow: Patients who present symptoms access the facility.



Accesses and flows

Two main flows:

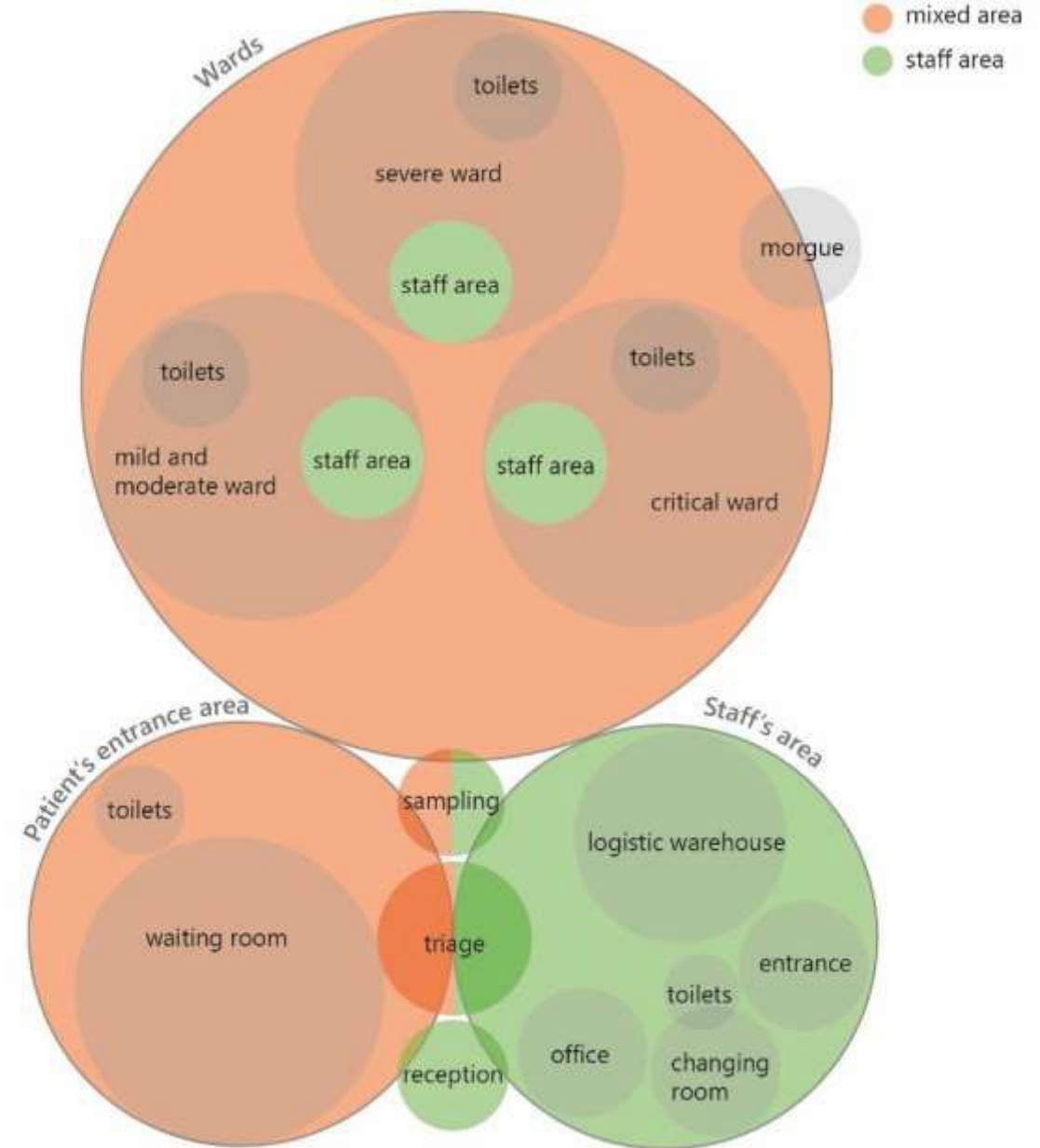
- Patient flow: Patients who present symptoms access the facility.
- Staff flow: After the temperature screening, staff can move from staff area to triage, reception or wards.



Space allocation

Two main areas:

Have two separate areas, one mixed for staff and patients, and the other one for staff only. This reduces the risk of infection for HCW, and allows a rationalized use of PPE, leading to a significant reduction in consumption and providing a safe place for staff to rest.

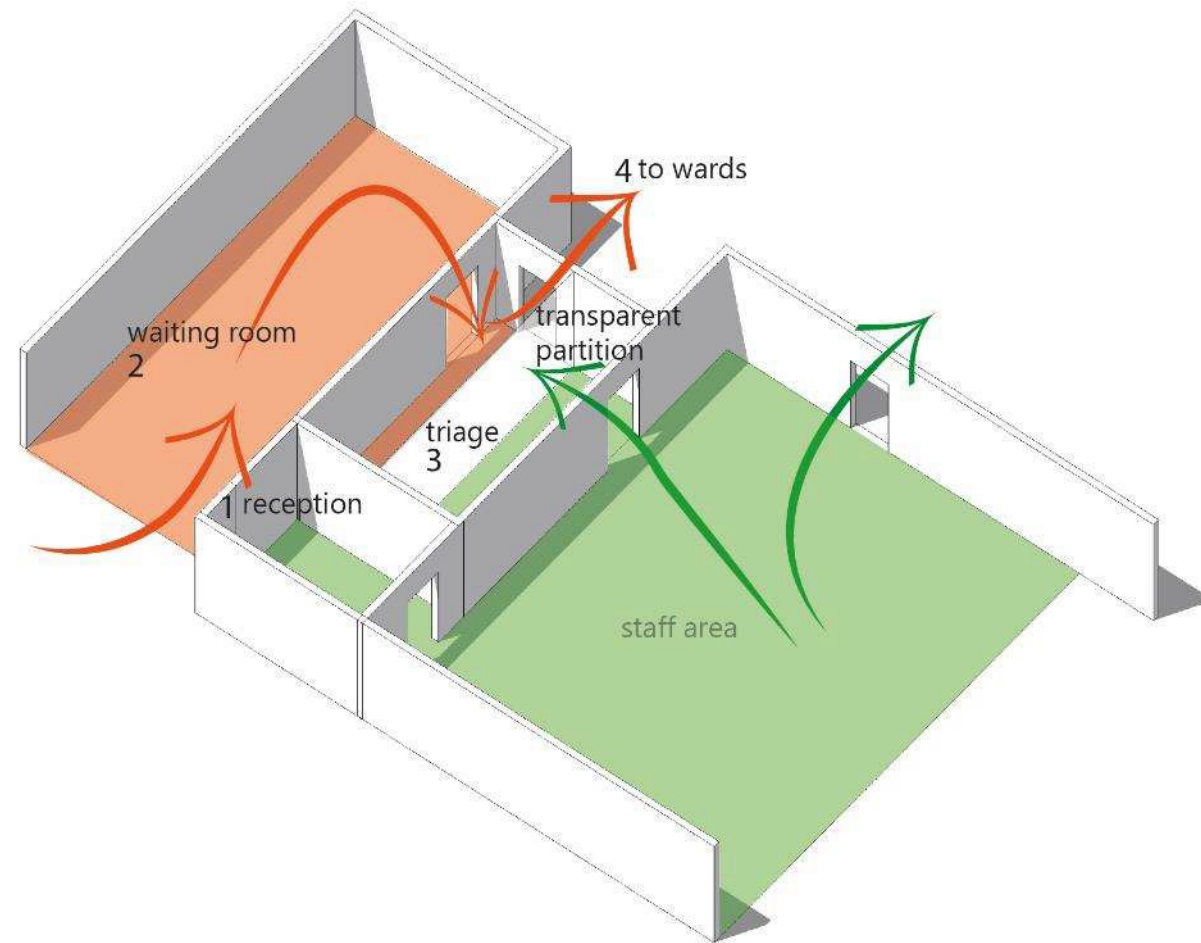


Proximity between areas

Some areas need to be in proximity:

Some spaces have to be close to each other with a determined spatial arrangement in order to ensure a proper flow, both for patients and staff.

A clear example is the patient's entrance complex composed of the reception, waiting room, and triage [patient's and staff's side].



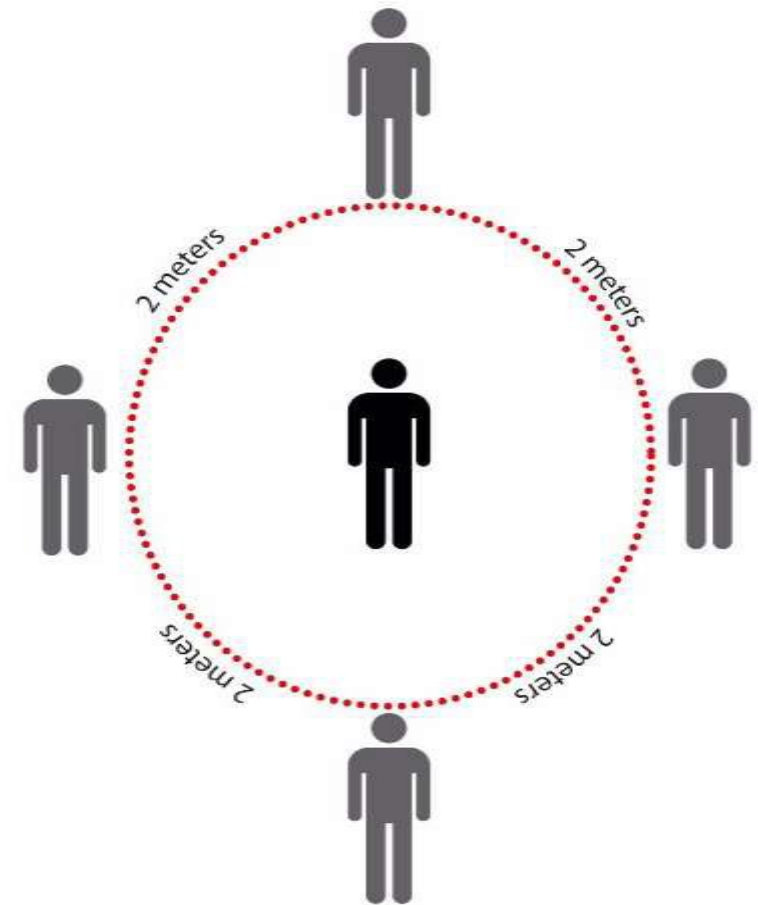
Surfaces, distances and openings

Spatial separation

Some spaces, such as the waiting room, screening, triage and mild/moderate wards, should be spacious enough to ensure two (2) meters* of spatial separation in between patients.

This distance can be enforced with the use of screens and transparent surfaces.

Two (2) meters of distance is also recommended in between suspected cases in case of a cohorting approach.



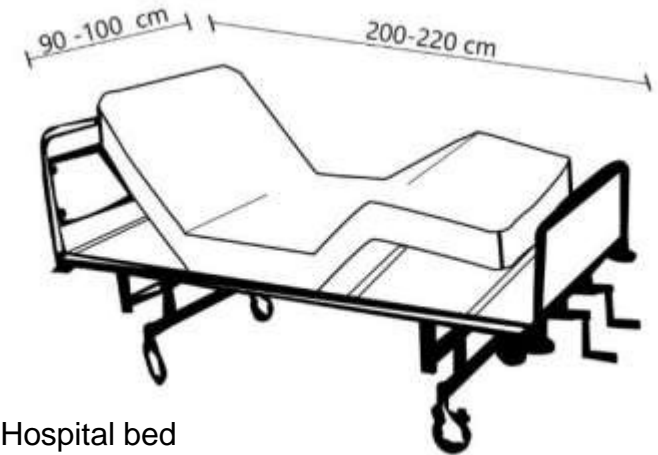
Surfaces, distances and openings

Doors, corridors and elevator dimensions

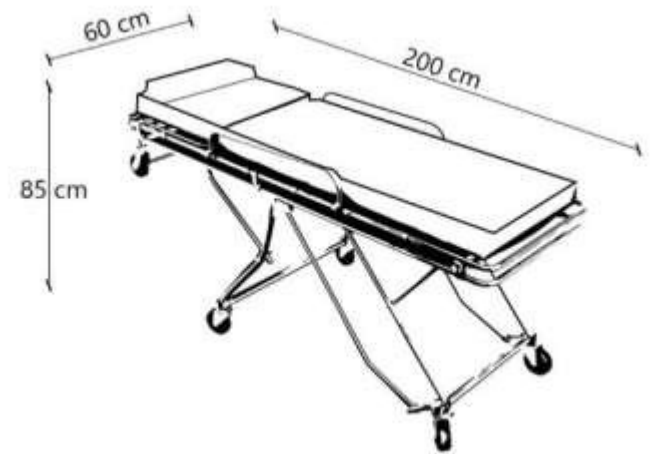
Severe and critical cases may need to be transported to their respective wards with a hospital bed.

Once possible locations for critical and severe wards have been identified, check the pathways heading to these areas to see if they are accessible with a hospital bed.

If pathways are not wide enough, check if the areas are accessible with stretchers.



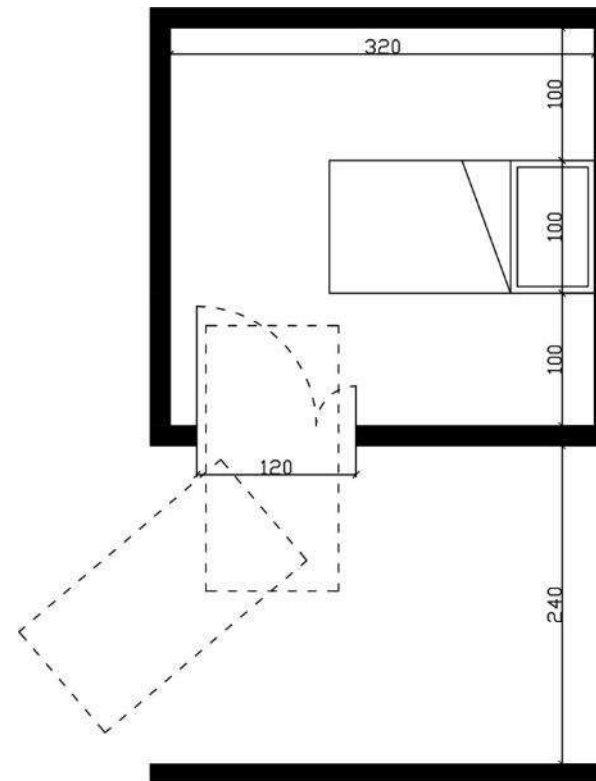
Hospital bed



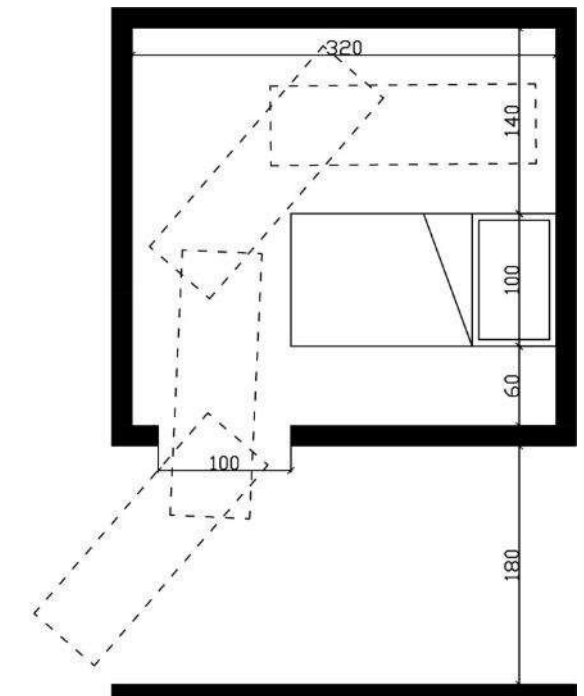
Stretcher

Doors, corridors and elevator dimensions

	Elevators and hoists	Corridors	Doors
Minimum dimensions for hospital bed	240 cm x 140 cm	240 cm	120 cm
Minimum dimensions for stretchers	240 cm x 100 cm	180 cm	100 cm



Hospital bed



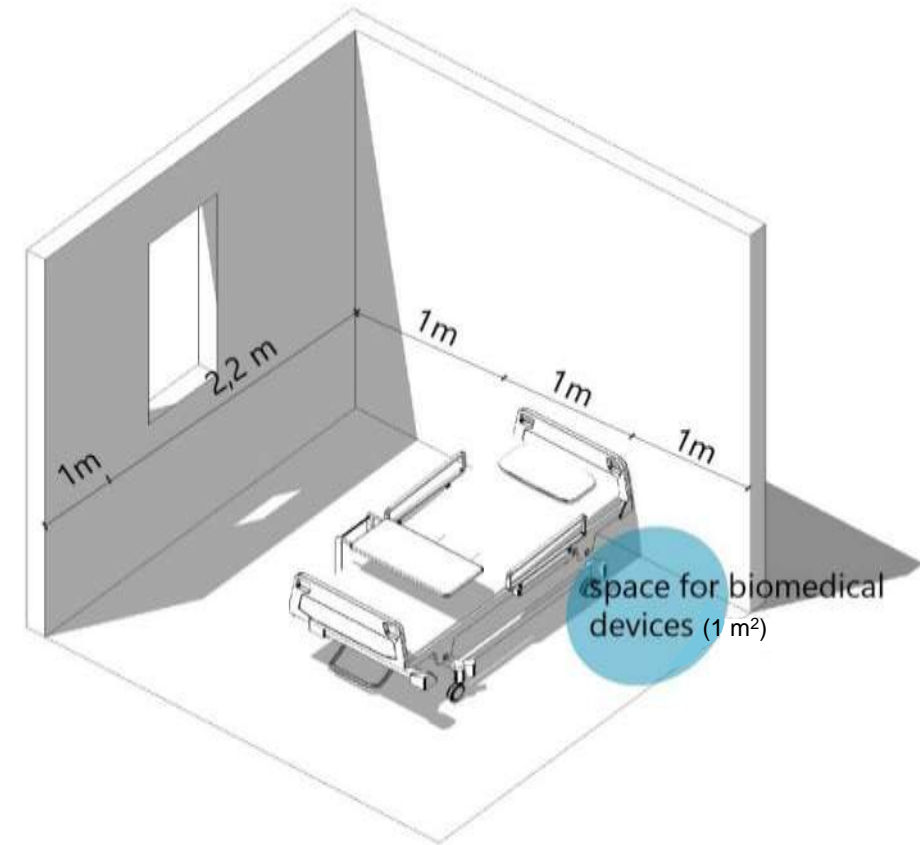
Stretcher

Surfaces, distances and openings

Severe and critical ward rooms

Self-contained rooms for severe and critical patients should be spacious enough to contain all the needed biomedical devices and for medical staff to stay at the bedside without issue.

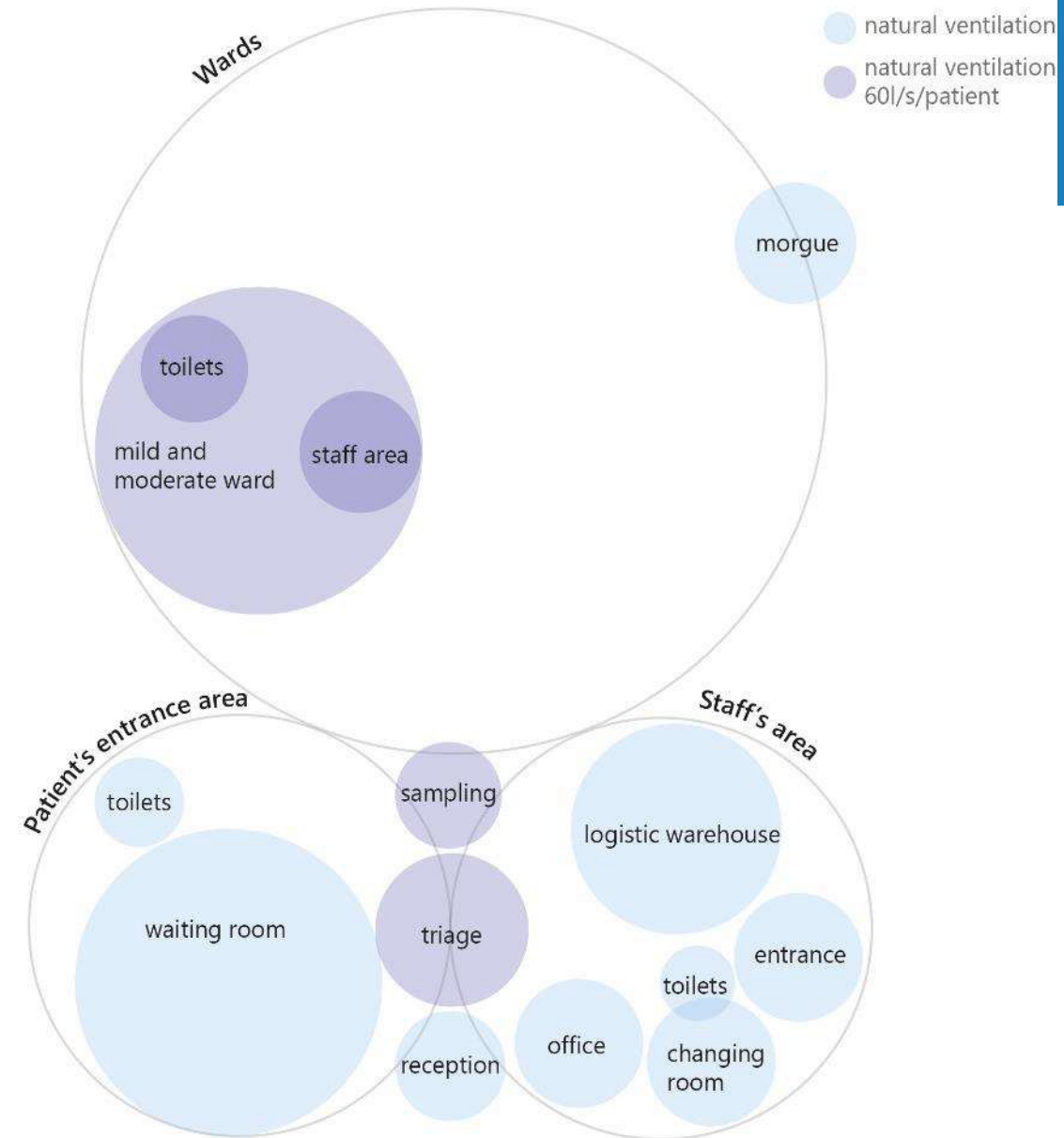
Recommended surface is at least 9.6 square meters (m²).



Ventilation and light

Two different types of ventilation are required

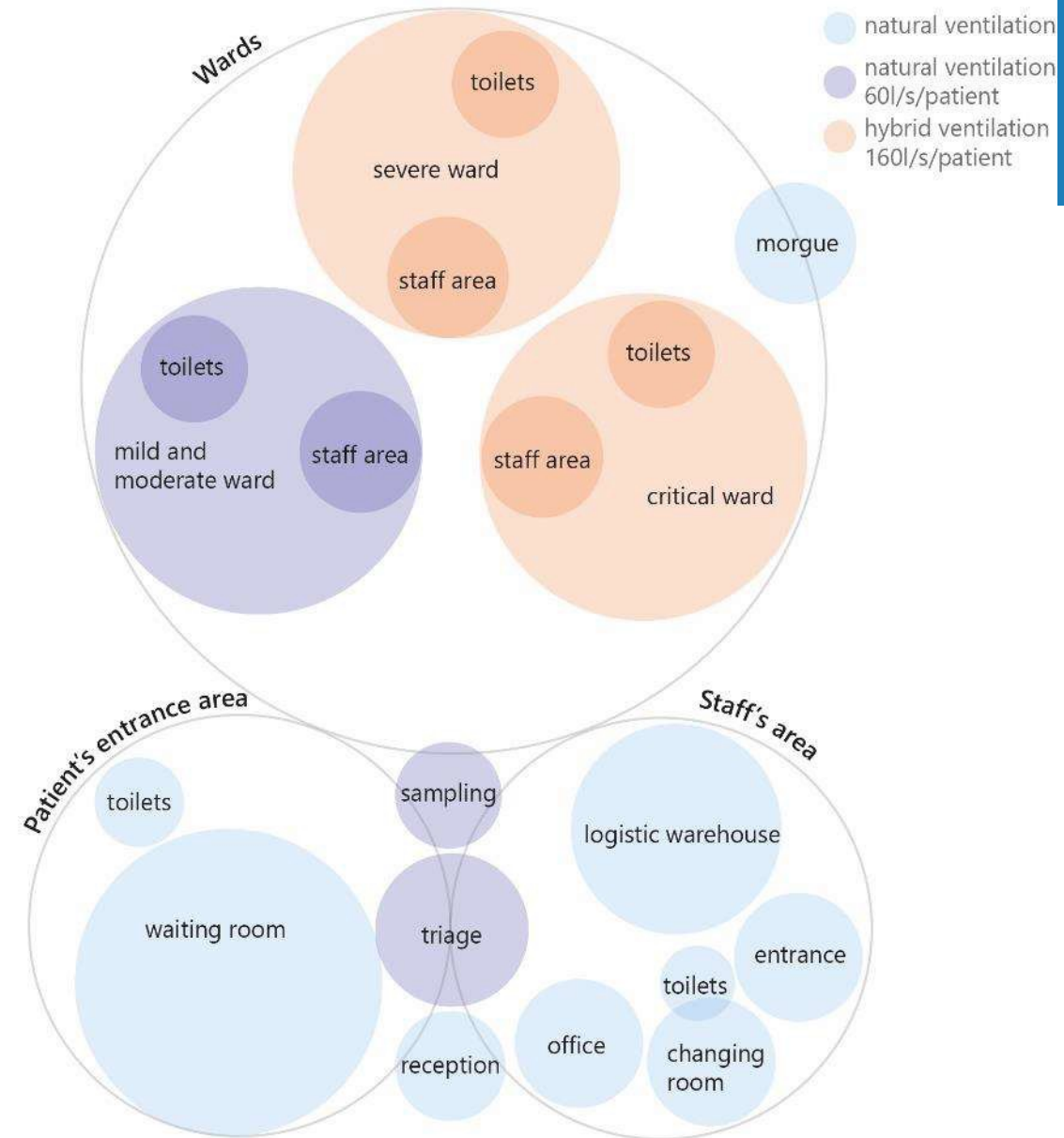
- Natural ventilation should be assured for the waiting room, triage, mild and moderate wards, staff working area with a minimum flow rate of 60 l/s/patient.



Ventilation and light

Two different types of ventilation are required

- Natural ventilation should be assured for the waiting room, triage, mild and moderate wards, staff working area with a minimum flow rate of 60 l/s/patient.
- Hybrid ventilation should be assured for severe and critical wards. A top-down airflow moving from clean to dirty zones with a minimum flow rate of 160 l/s/patient.



Ventilation and light

Some buildings, especially high density index facilities such as sports halls, health care facilities, offices and schools, may already have mechanical ventilation.

If already available, assess the flow rate, flow direction and how the exhausted air is treated or diluted.

Materials

The recommended characteristics for finishes and furniture are:

- Cleanable (material easy cleanable and resistant to repeated cleaning)
- Easy to maintain and repair (Select materials that are durable and/or easy to repair)
- Resistant to microbial growth (Select metals and hard plastics)
- Nonporous (Avoid porous plastics, such as polypropylene, in patient care area)
- Seamless (Avoid upholstered furniture in patient care areas).

Module: 3B

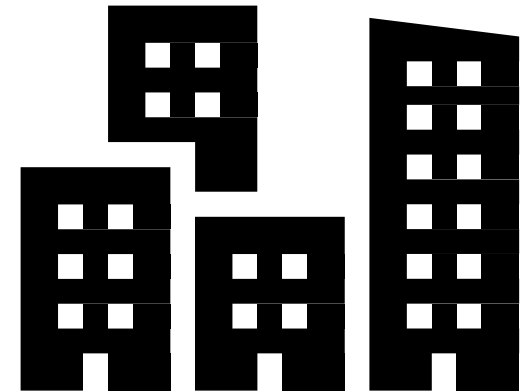
Module 3B

Existing building selection

Existing buildings selection

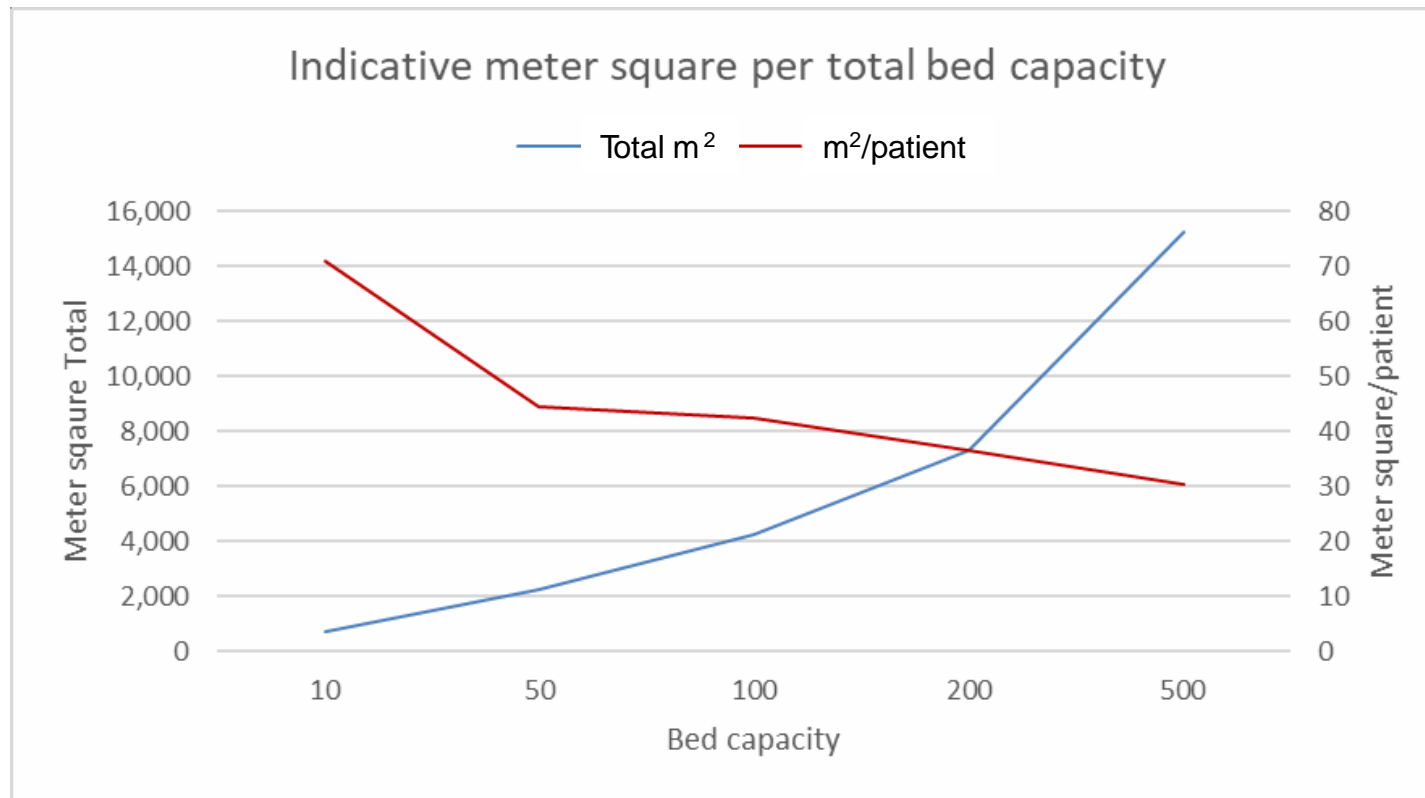
Which buildings are suitable to be repurposed into a SARI treatment centre?

- How to identifying an existing building according to structural layout and surface;
- Key structural elements; and
- Examples.



Existing buildings selection

Surface needed

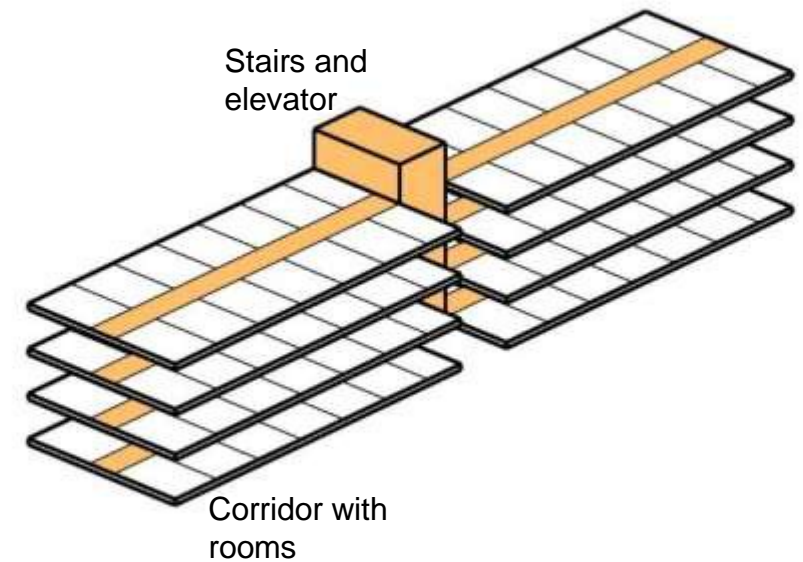


These measures are indicative and based on architectural standards and previous field experiences with other infectious diseases.

Existing buildings

Which buildings are suitable to be repurposed into a SARI treatment centre?

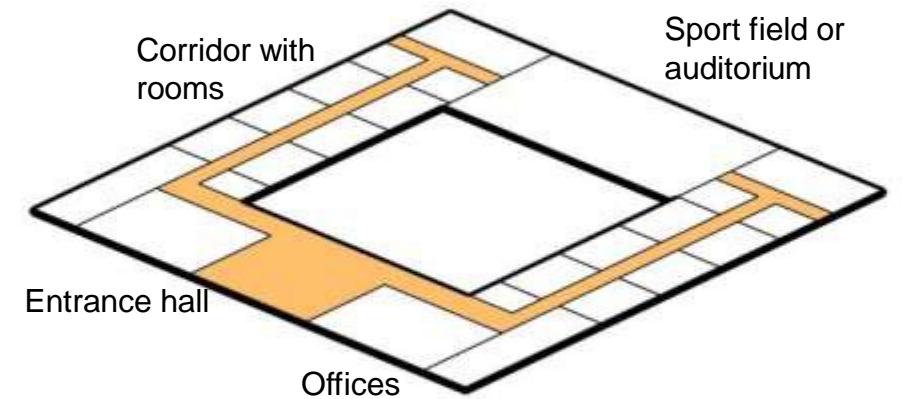
- Buildings with a vertical distribution (accommodation facilities such as hotels, students accommodations, schools, offices, etc.)



Existing buildings

Which buildings are suitable to be repurposed into a SARI treatment centre?

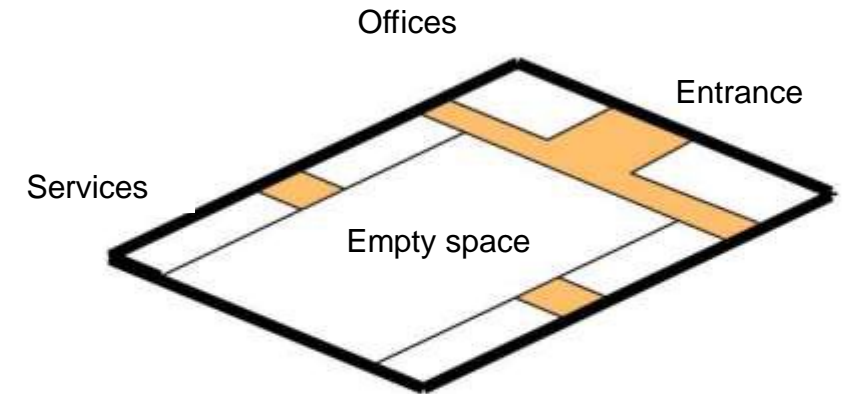
- Buildings with a vertical distribution (accommodation facilities such as hotels, students accommodations, schools, offices, etc.)
- Buildings with horizontal distribution (schools, offices, etc.)



Existing buildings

Which buildings are suitable to be repurposed into a SARI treatment centre?

- Buildings with a vertical distribution (accommodation facilities such as hotels, students accommodations, schools, offices, etc.)
- Buildings with horizontal distribution (schools, offices, etc.)
- Big open spaces (such as sport halls, trade fair pavilions, polyvalent buildings, etc.)

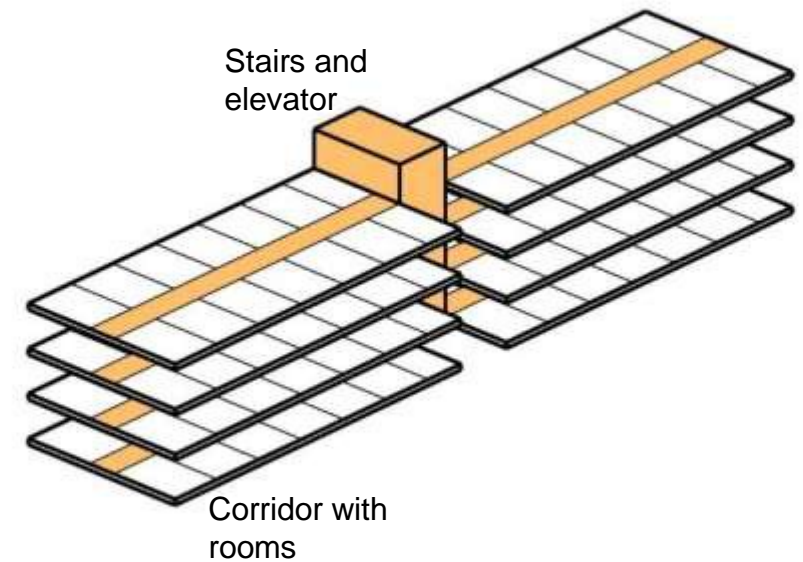


Vertical distribution buildings

Vertical distribution buildings, such as hospitals, residential complexes, offices or schools, are usually characterized by a similar layout reproduced on all floors with support services gathered at ground floor.

The ground floor could have a hall with a reception, big rooms for conferences, canteen, or meetings.

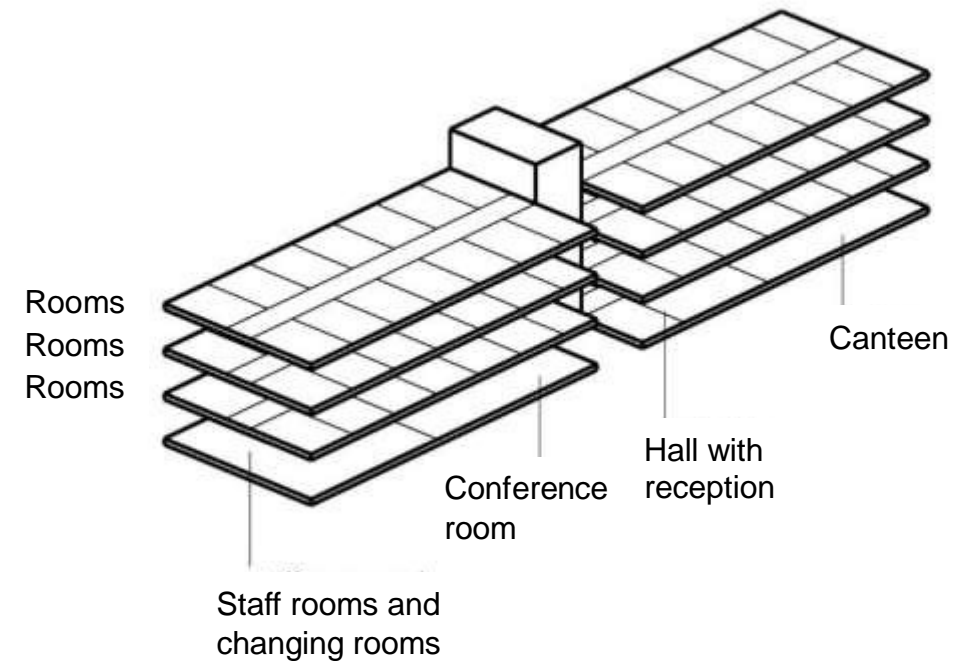
The other floors have one side or double sided rooms with a corridor. Bathrooms could be individual or public.



Vertical distribution buildings

Hotel example

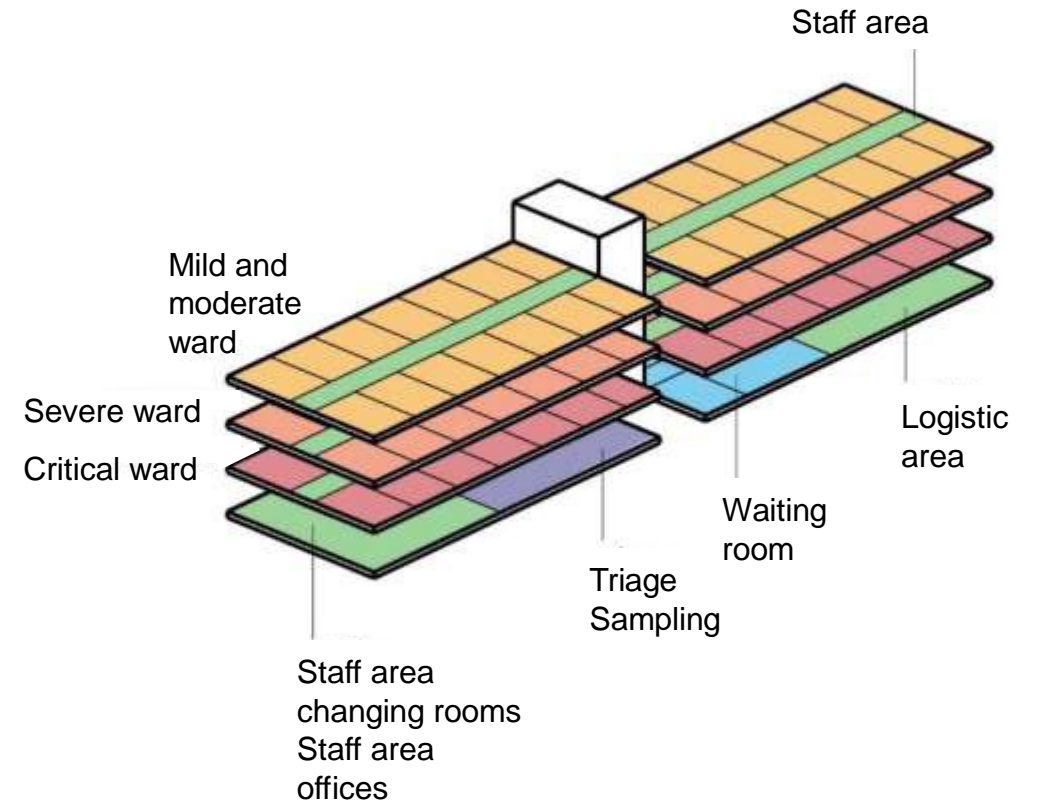
- Hall
- Canteen
- Conference room
- Staff zone
- First floor rooms
- Second floor rooms
- Third floor rooms



Vertical distribution buildings

Hotel example

- Hall
- Reception, waiting room
- Canteen
- Staff area, warehouse, offices
- Conference room
- Triage, sampling
- Staff zone
- Staff changing room
- First floor rooms
- Critical ward
- Second floor rooms
- Severe ward
- Third floor rooms
- Mild and moderate ward

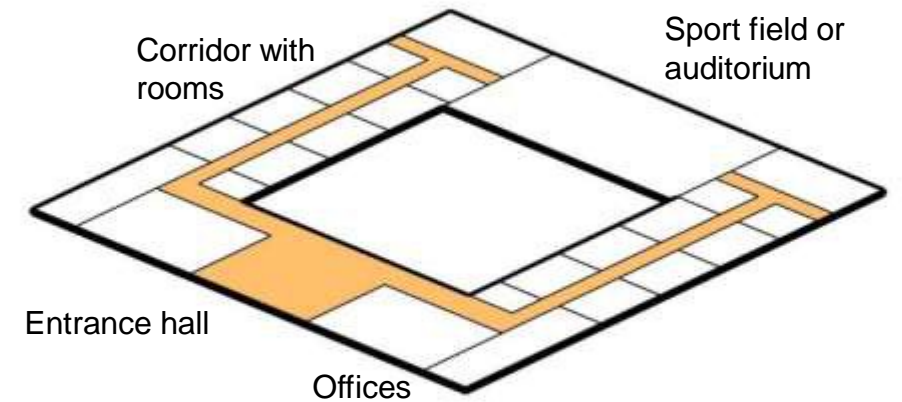


Horizontal distribution buildings

Horizontal distribution buildings, such as residential complex, offices or schools, usually are characterized by a central hall, offices nearby and one or more corridors.

Usually corridors start from the hall.

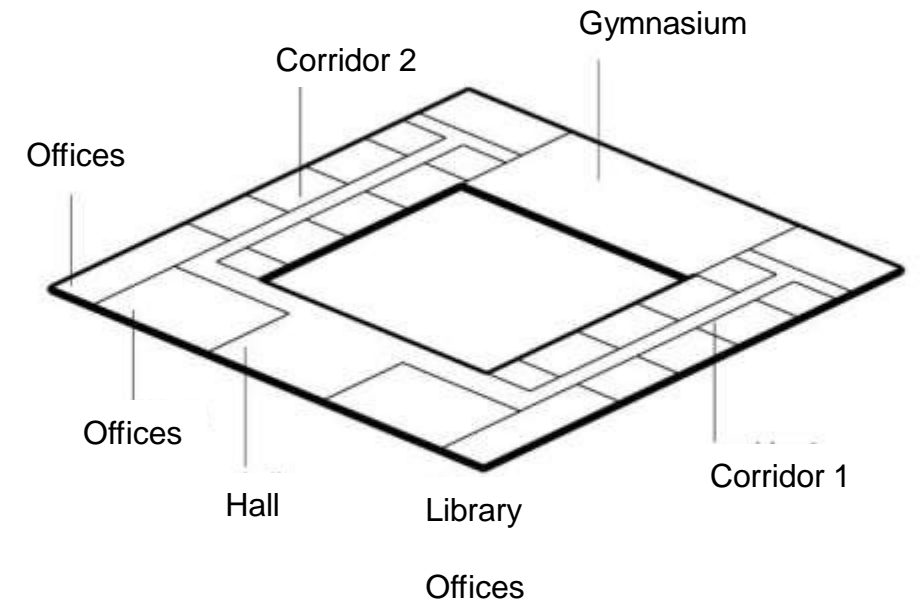
They could also host big areas [open space] such as gymnasium or conference rooms, libraries, etc.



Horizontal distribution buildings

School example

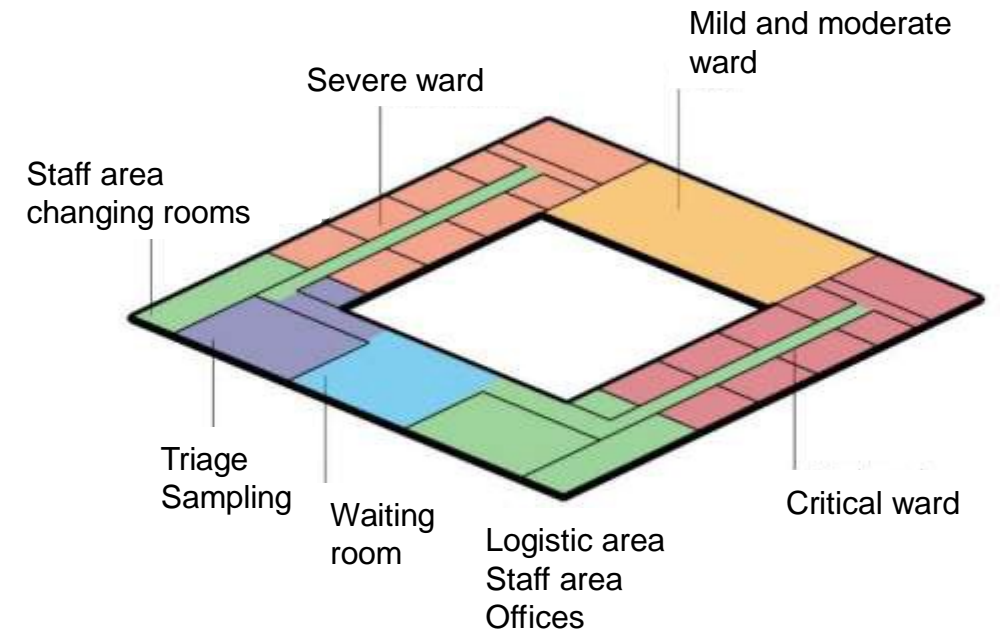
- Hall
- Offices
- Corridor 1
- Corridor 2
- Gymnasium
- Library



Horizontal distribution buildings

School example

- Hall
- Offices
- Corridor 1
- Corridor 2
- Gymnasium
- Library
- Waiting room, reception
- Offices, triage, sampling
- Critical ward
- Severe ward
- Mild and moderate ward
- Staff area, logistic warehouse

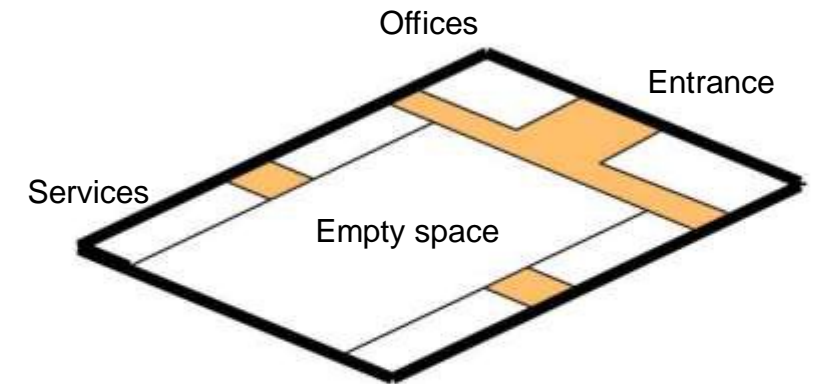


Open space buildings

This includes fair trade pavilions and sports halls such as basketball and volley courts. Usually present wide halls, offices, public bathrooms and big open and empty space such as the playfield.

Due to their layout, open space buildings could be easily adapted to temporarily isolate patients with a cohorting approach such as community facilities

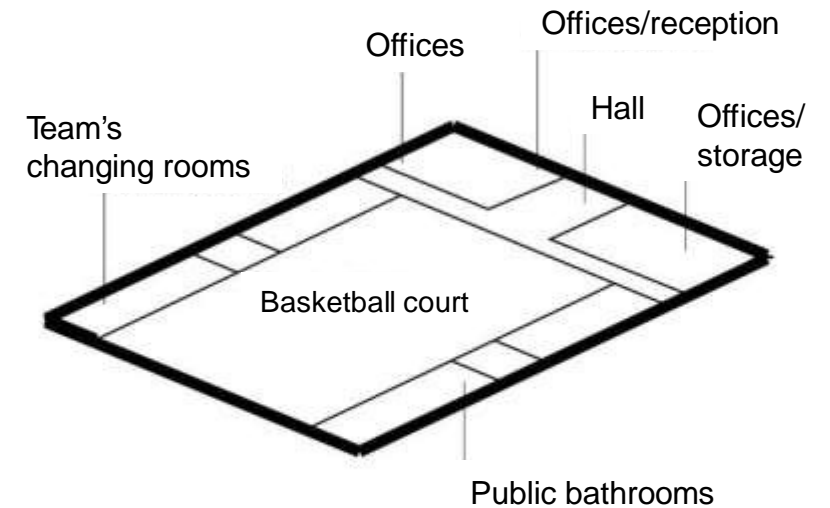
Big fair trade pavilions, due to their dimensions, are able to host the whole STC.



Open space buildings

Basketball court example for cohorting approach

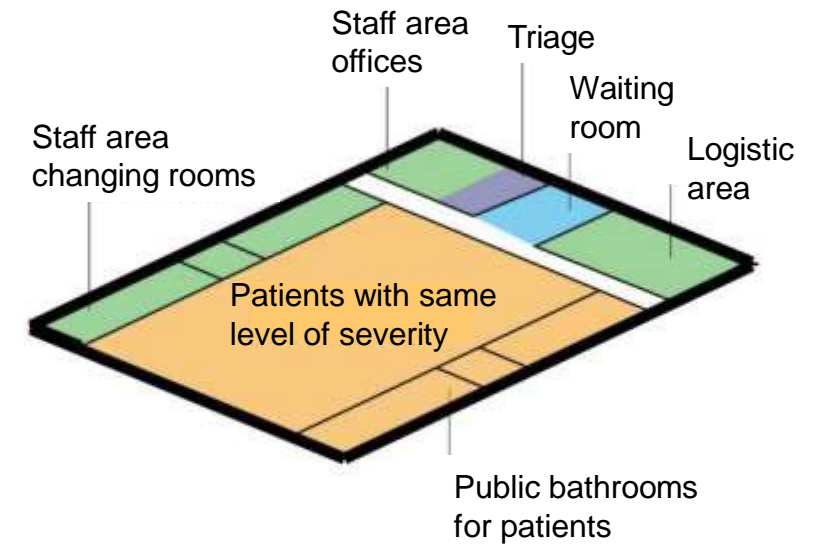
- Big hall
- Offices
- Team's changing room
- Public bathroom
- Basketball court



Open space buildings

Basketball court example for cohorting approach

- Big hall
- Offices
- Team's changing room
- Public bathroom
- Basketball court
- Waiting room, reception
- Offices, logistic warehouse
- Staff changing room
- Patient's bathroom
- Patients with same level of severity or cohorting



Assessment tools

Building	Whom	Minimum requirements & recommendations								
		Access requirements		Adjacent area	Minimum recommended size & distances	Space allocation	Ventilation	Exhausted air system	Recommended location	Dedicated toilet
		IN & OUT	From/to							
Reception	Patients	IN	From outside	Waiting room, triage	5 mq	Staff only	Natural	Dilution	Ground floor	In staff area
		OUT	Toward waiting room							
	Staff	IN	From staff area	waiting room						
		OUT	Back to staff area							
waiting room	Patients	IN	From reception	reception, triage, toilet, staff area	2m between patients in all directions	Mixed	Natural	Dilution	Ground floor	Patients only, wc and washbasin
		OUT	Toward triage							
	Staff	IN	From staff area							
		OUT	To mixed area							
triage	Patients	IN	Waiting room	Waiting room, toilet, staff area, sampling room	Transparent surface: 2 m deep x 1 m wide for patient; without: 1 m distance between patient and staff	Mixed	Natural 60/l/s/patient	Dilution	Ground floor	Patients only, wc and washbasin
		OUT	Patient wards							
	Staff	IN	From staff area							
		OUT	Back to staff area							
Sampling	Mixed	IN	From mixed area	Triage, patient wards	9 mq, one room for each patient	Mixed	Natural 60/l/s/patient	Dilution	Ground floor	Patients only, wc and washbasin
		OUT	Back to mixed area							
Staff entrance	Staff	IN	From outside	Staff area		Staff only	Natural	Dilution	Ground floor	In staff area
		OUT	Toward outside							
Changing room	Staff	IN	From staff entrance	Staff entrance, staff area		Staff only	Natural	Dilution	Ground floor	In staff area
		OUT	Toward staff area							
Offices	Staff	IN	From staff area	Staff area		Staff only	Natural	Dilution		In staff area
		OUT	Toward staff area							
Logistic area	Staff	IN	From staff area	Staff area, outside for goods offloading	According to bed capacity and estimated consumption	Staff only	Natural	Dilution	Ground floor	In staff area
		OUT	Toward staff area							
	Goods	IN	From outside							
		OUT	Toward staff area							
Mild/Moderate cases wards	Patients	IN	From mixed area	Mixed area, staff area	2m between patients in all directions	Rooms: mixed	Natural 60/l/s/patient	Dilution	It can be replaced by community facility	Patients toilet only
		OUT	Toward mixed area			Corridor: staff only				
	Staff	IN	From staff area or form mixed area							
		OUT	Toward staff area or toward mixed area							
Severe wards	Patients	IN	From mixed area	Mixed area, staff area	3,5 x 3,2 meters	Rooms: mixed	Natural or mechanical 160/l/s/patient	1. Dilution 2. Portable HEPA 3. HEPA + air extractors	As closed as possible to triage and critical ward	Patients toilet only
		OUT	Toward mixed area			Corridor: staff only				
	Staff	IN	From staff area or form mixed area							
		OUT	Toward staff area or toward mixed area							
Critical ward	Patients	IN	From mixed area	Mixed area, staff area	3,5 x 3,2 meters	Rooms: mixed	Natural or mechanical 160/l/s/patient	1. Dilution 2. Portable HEPA 3. HEPA + air extractors	As closed as possible to triage	Patients toilet only
		OUT	Toward mixed area			Corridor: staff only				
	Staff	IN	From staff area or form mixed area							
		OUT	Toward staff area or toward mixed area							
Morgue	Body	IN	From mixed area	Mixed area, staff area			Natural	Dilution		
		OUT	Toward outside							
	Staff	IN	From staff area or form mixed area							
		OUT	Toward staff area or toward mixed area							

Step by step design

The building to be repurposed has been identified

Necessary prerequisites to start the design process:

- Be sure to have all the technical drawings, plans of the existing building.
- Be sure to have plans and technical specifications for:
 - Ventilation,
 - Plumbing,
 - Electrical systems.

Step by step design

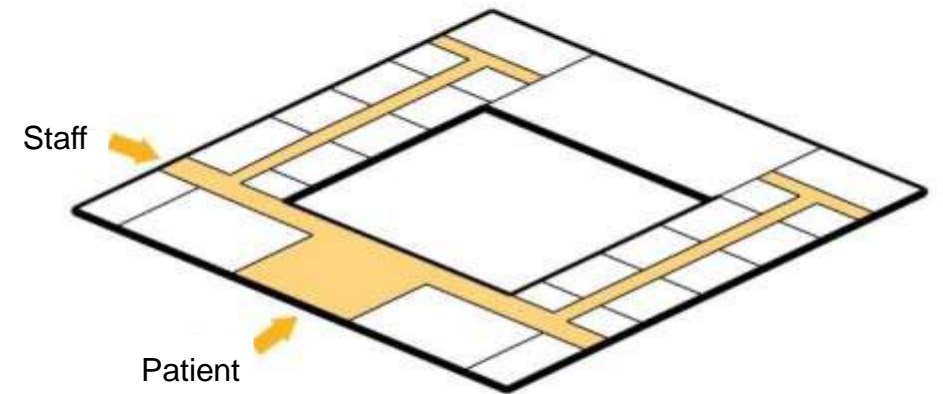
Design phases:

- Identify existing accesses and building distribution system. Try to find out two different main accesses: one for patients and one for staff, as shown in this presentation.
- Considering dimensions, proximity and flows, try to assign STC areas to existing areas.
- Check if electrical, ventilation and plumbing systems and waste management are appropriate for STC.
- Check if emergency pathways and doors are correct also according to the new layout.
- Decide which kinds of interventions you need to adapt the existing buildings to STC requirements.

Step by step design

Design phases:

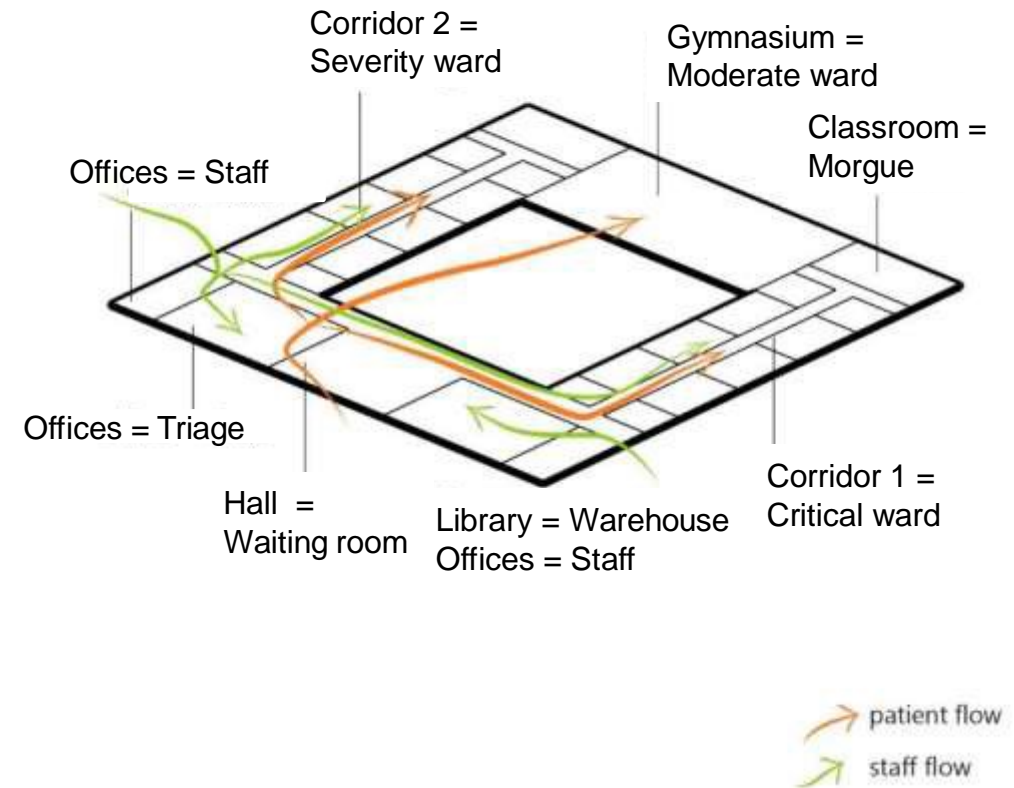
- Identify existing accesses and building distribution system.
Try to find out two different main accesses: one for patients and one for staff, as shown in this presentation.



Step by step design

Design phases:

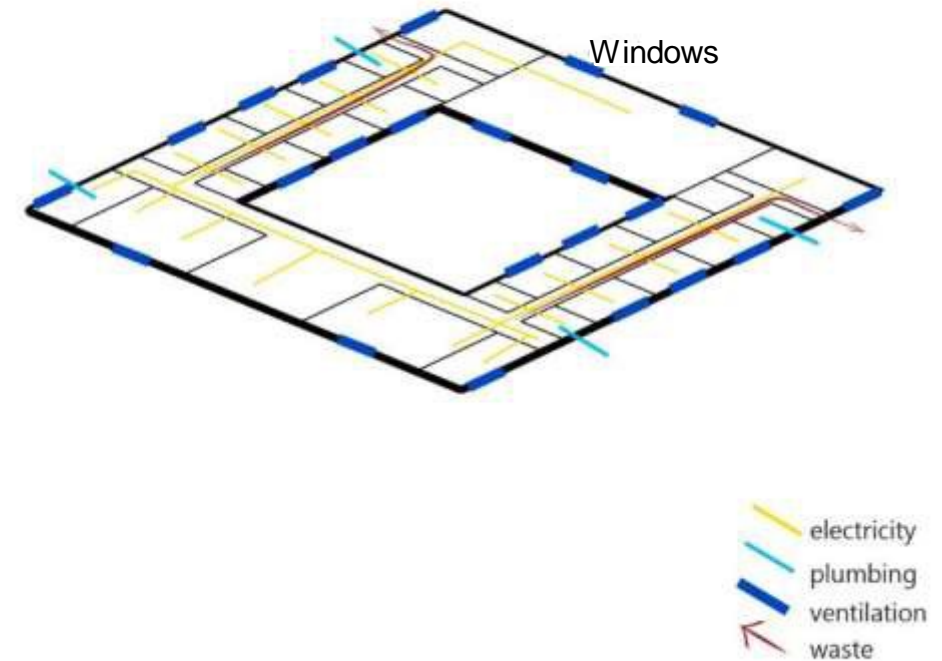
- Considering dimensions, proximity and flows, try to assign specific COVID-19 areas to existing areas.



Step by step design

Design phases:

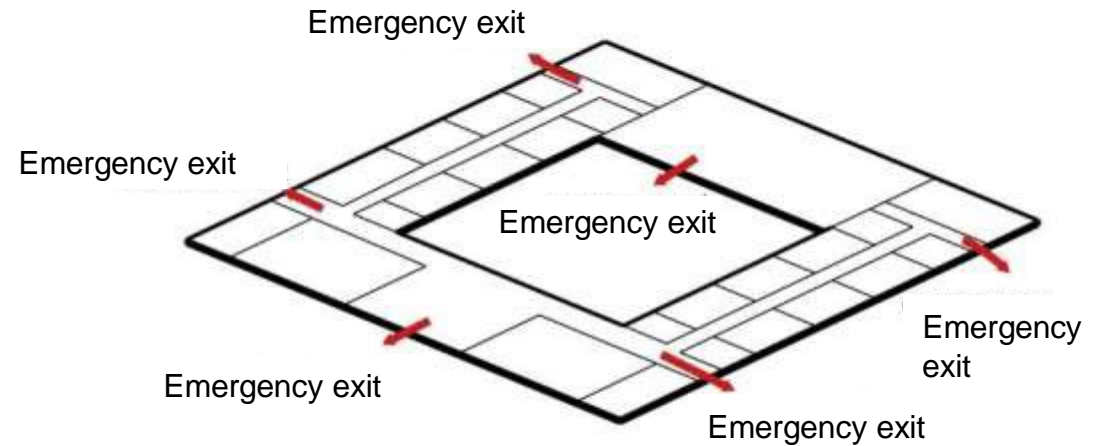
- Check if electrical, ventilation, plumbing systems and waste management are appropriate for the repurposing.



Step by step design

Design phases:

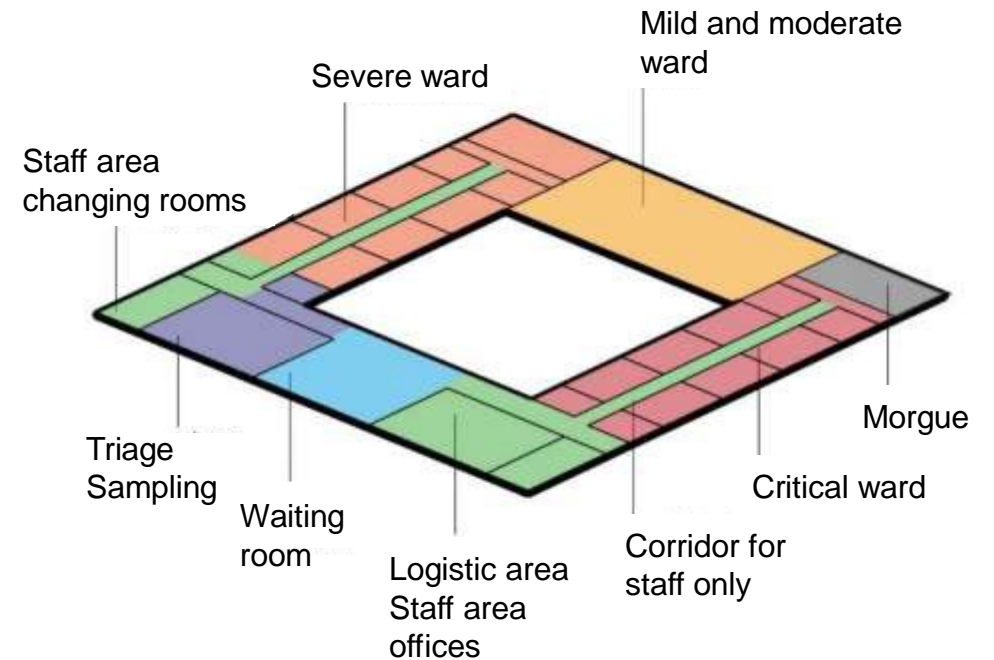
- Check if emergency pathways and doors are still accessible according to the new layout.



Step by step design

Design phases:

- Project the intervention to repurpose the existing buildings.



Helpdesk

For further information and to share your proposal for feedbacks, please contact us:

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Thank you

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