



COVID-19 Safety Guide for Healthcare Professionals

(version 3.0)

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- Updated Reduce Transmission among Employees
- Updated Hand Hygiene
- Updated Training and Education
- Updated Staffing
- Updated Maintain a Healthy Work Environment
- Added Best Practices to Protect HCPs, their Families, and Others
- Added Emergency Medical Services (EMS)
- Added Laboratory Services
- Updated Perioperative Services
- Added Endoscopy Services
- Updated Home Visits
- Updated Long-Term Care Facility

Table of Contents

Acknowledgment	2
Versions Updates	3
Introduction	5
COVID-19 Safety Guide for Hospital Healthcare Professionals	5
Healthcare Employers and Managers	5
1. Reduce Transmission among Employees.....	5
2. Maintain Business Operations.....	7
3. Maintain a Healthy Work Environment	8
4. Health, Safety and Wellbeing	8
Healthcare Professionals	9
Best Practices to Protect Healthcare Professionals, their Families, and Others	10
COVID-19 Safety Guide for Hospital Healthcare Professionals in Specialty Areas	12
Emergency Medical Services (EMS)	12
Patient Transfers and Transports	12
Patient Transfers and Transports - Continued	13
Cardiopulmonary Resuscitation (CPR).....	14
Emergency Department (ED).....	15
Laboratory Services	16
Intensive Care Units (ICU) / Isolation Units	17
Healthcare Management Considerations for ICU/Isolation Units and ED	17
Perioperative Services	18
Endoscopy Services	19
Healthcare Visitors	22
Outpatient Hemodialysis.....	22
Dental Services.....	23
Home Visits.....	25
Long-Term Care Facility	26
Staff Surge Capacity for ICU	27
Examples for Staff Surge Capacity	27
A. Augmenting Critical Care Staffing.....	27
B. Nursing Staff Model.....	29
C. Other Staff Surge Capacity Sources	30
References & Resources	30

Introduction

Healthcare professionals (HCPs) are individuals who deliver care and services to the sick and ailing either directly as physicians, nurses, and respiratory therapists or indirectly as aides, helpers, laboratory technicians, housekeepers, and medical waste handlers. Frontline healthcare professionals are the backbone of effective healthcare systems and face additional burdens and hazards as they respond to the current COVID-19 pandemic. These burdens include exposure to pathogens, psychological distress, fatigue, long working hours, burnout, and physical and psychological violence. All employers need to consider national and international best practices to reduce the transmission of COVID-19 amongst their workforce, maintain business operations, lower the impact in their workplaces, and maintain a healthy work environment.

Disclaimer: The information provided in this guide aims to assist healthcare professionals to maintain their safety as a top priority. SPSC highly recommends strict adherence to all COVID-19 recommendations released by the Ministry of Health (MOH) and the Saudi Center for Disease Prevention and Control (Saudi CDC) and follow the policies and procedures implemented in the institution.

COVID-19 Safety Guide for Hospital Healthcare Professionals

Healthcare Employers and Managers

1. Reduce Transmission among Employees

- Ensure the implementation of all necessary preventive and protective measures to minimize occupational safety and health risks.
- Establish sustainable infection prevention and control (IPC) infrastructures and share up to date IPC information and strategies with providers.
- Proactively communicate daily technical COVID-19 updates from official sources within the kingdom (MOH and Saudi CDC) with providers and patients via the established internal communication platforms.
- Implement non-punitive and flexible sick leave policies that are consistent with public health policies and allow ill HCPs to stay home.
- Consider actively screening everyone (e.g., HCPs, on-site contracted services personnel, patients, visitors), for COVID-19 symptoms (e.g., documented, or subjective fever, cough, shortness of breath, sore throat) before they enter the healthcare facility.
- Identify, monitor, and maintain log records for all HCPs with protected or unprotected exposures (without wearing PPE or improper PPE use) with suspected or confirmed COVID-19 patients for acute COVID-19 symptoms (e.g., documented or subjective fever, cough, shortness of breath, sore throat).
- Establish adequately trained and teams assigned to high-risk services for suspected or confirmed COVID-19 patients to reduce the risk of exposure, if possible.
- Reassign HCPs who might be at higher risk for severe illness from COVID-19 to tasks with less risk of exposure.
- Ensure that all HCPs understand how to quarantine at home and establish protocols to ensure HCPs safe return to work following quarantine or sick leave.

A. *Hand Hygiene*

- Hand hygiene is a standard precaution before and after all encounters with the patient and his surroundings, handling of potentially infectious material, before applying and after removing PPE, before an antiseptic task, before and after meals, and other times, as appropriate. Implement the World Health Organization's (WHO) "5 moments" for hand hygiene as recommended by the MOH and Saudi CDC.
- Healthcare facilities must ensure adequate numbers of wash stations, and sufficient hand hygiene supplies, such as water, soap, and hand sanitizers with at least 60% alcohol are readily available, continuously replenished, and accessible to all HCPs in every care location, as identified by IPC or equivalent entity for each facility.
- Develop safe and adequate approaches to optimize hand hygiene supplies.

B. *Personal Protective Equipment (PPE)*

- All HCPs must be fit tested for N95 respirators to ensure an appropriate seal according to the institution's guidelines. For HCPs who fail the N95 fit test, a Powered Air-Purifying Respirator (PAPR) must be provided as a safe alternative PPE.
- Provide all HCPs, including on-site contracted services personnel and non-medical service personnel with adequate training on IPC guidelines and sufficient supplies of PPE (e.g., surgical masks, N95 respirators, gloves, goggles, gowns, booties/shoe covers, hand sanitizer, soap and water, cleaning supplies).
- Monitor, observe and record any breach of PPE use in the incident management system as an occupational health and safety risk.
- Develop safe and adequate approaches to optimize the supply of PPE and implement protocols for the extended use of PPE.

C. *Training and Education*

- Explore innovative approaches to provide all HCPs with local training, online tutorials, online training, and mobile training applications (appropriate languages) on:
 - COVID-19 disease transmission and prevention, routine updates on COVID-19 situation, updated case definitions for suspected and confirmed COVID-19 cases, clinical management, adapted referral systems for COVID-19, and criteria of discharge and ending isolation.
 - IPC and occupational health safety guidelines and recommendations.
 - Instructions about the proper hand hygiene technique and respiratory hygiene, including cough and sneezing etiquette.
 - Frequent handwashing for at least 40-60 seconds using soap and water.
 - Use an alcohol-based hand sanitizer with at least 60% alcohol if soap and water are not available.
 - Instructions about respiratory hygiene and cough etiquette measures, such as the use of disposal tissues or sleeve when coughing and sneezing and dispose of used tissues properly.
 - Avoid touching the facial mucous membranes (i.e., eyes, nose, and mouth) with unwashed hands.
 - Proper donning, doffing, and rational use of PPEs, including surgical masks, N95 respirators, goggles, face shields, gowns, and gloves.
- Maintain a record of hand hygiene and PPE compliance and competency training for all HCPs.

- Provide HCPs with education and training on the proper use of tools to assess, triage, and treat patients with suspected or confirmed COVID-19. Develop adequate approaches to monitor, measure, and document HCP's competency post-training.
- Provide guidance and training for laboratory personnel on the safe and accurate handling and testing of collected samples.
- Provide guidance and training for radiology personnel on the safe and accurate principles for radiological services during the COVID-19 outbreak.
- Provide patients with instructions about the proper hand hygiene technique, and respiratory hygiene, including cough and sneezing etiquette instructions (appropriate languages):
 - Frequent handwashing for at least 40–60 seconds using soap and water.
 - Use an alcohol-based hand sanitizer with at least 60% alcohol if soap and water are not available.
 - Use a tissue or sleeve to cover sneezes and coughs.
 - Avoid touching the eyes, nose, and mouth.
 - Have tissues and hand sanitizer available.

2. Maintain Business Operations

A. Staffing

- Identify a workforce coordinator to assume the responsibility for COVID-19 concerns and their potential impact at the workplace.
- Monitor and respond to increased absenteeism at the workplace due to spikes in the numbers of sick employees, and those who stay home to care for ill family members as this will reflect the workforce levels.
- Teach, cross-train, and mobilize HCPs with the required skills to address shortages, ensure health workforce availability to perform essential functions, and maintain critical operations in the absence of key employees.
- Ensure that the designated laboratories performing COVID-19 diagnostic testing are adequately staffed and can mobilize personnel when needed.
- Provide guidance and training for surge capacity to all HCPs.

B. Surge Preparation

- Assess the healthcare facility's essential clinical and non-clinical functions and be prepared to establish, implement, and adjust business continuity plans to maintain critical operations as needed. For example: identify alternative suppliers or temporarily suspend some of your services as needed.
- Assess the healthcare facility's essential functions and be prepared for a surge of patients with suspected or confirmed COVID-19, including plans to isolate, cohort, and to provide safe staffing.
- The healthcare facility and IPC program must address workplace safety in the absence of guidance from an Occupational Medicine Consultant.
- In conjunction with national authorities, healthcare facilities should consider telehealth options (e.g., cell phones, videoconference, or teleconference) to assess, triage, and care for all patients and reduce the volume of persons seeking care in facilities, as appropriate.
- If a formal "telehealth" system is not available within the healthcare facility, HCPs can contact patients by telephone and reduce the volume of persons seeking care in facilities.

- Establish, activate, and monitor policies and practices for social distancing: implement social distancing as recommended by the Saudi CDC, increase physical space and maintain a distance (approximately 6 feet, equivalent to 2 meters) between employees and all people, including co-workers at all time. Healthcare facilities should consider the following strategies:
 - Flexible worksites (e.g., telework via phone, video, or web).
 - Flexible and supportive sick leave policies and practices.
 - Flexible work hours (e.g., staggered shifts).
 - Flexible meetings and travel options, for example, postpone non-essential meetings or events.
 - Schedule physical meetings only when necessary; take into consideration and maintain a log of the number of attendees, list of attendees, date, and time spent in meeting with contact numbers of those who attended.

3. Maintain a Healthy Work Environment

- Follow the organization approved respiratory and hand hygiene protocols for employees, customers, and worksite visitors.
- Ensure consistent and correct environmental cleaning and disinfection procedures are followed as per the healthcare organizations approved policies.
- Encourage the use of stairs (if possible), and review processes for the use of hospital elevators, place signs with instructions to stand facing the wall and limit the number of occupants. Dedicate separate elevators and routes to minimize physical contact of suspected or confirmed COVID-19, if possible.
- Ensure appropriate ventilation and negative pressure room functionality checks (e.g., operating rooms, laboratories, diagnostic areas, and support departments).
- Enforce a “No Smoking” policy within the facility, and if the facility has a designated smoking area, limit the number of occupants, and monitor the adherence to the recommended physical distance of 2 meters at any given time.

4. Health, Safety and Wellbeing

- Before the start of each shift, conduct health monitoring on all HCPs for COVID-19 symptoms (e.g., documented or subjective fever, cough, shortness of breath, sore throat).
- Establish and encourage a blame-free environment for HCP to report incidents and to adopt measures for immediate follow-up.
- Review processes and practices to minimize unnecessary physical contact with people or the environment to ensure patient and staff safety.
- Institutional leadership must eagerly implement structures and processes locally that tackle psychological safety at the same level of importance as the physical one. Leaders are encouraged to:
 - On a daily basis, reassure HCPs that they are empowered to speak up whenever they don't feel safe, or patients are at risk of harm through the facilitation of open, honest, and frequent communication.
 - Encourage HCPs to bring forward innovative ideas that may support the team and the institution, providing them the feeling of being part of the solution, restoring a sense of control.
 - Listen to the concerns of HCPs and reassure them that the institution's utmost priority is staff safety.
 - Provide training through simulation as frequently as possible to increase the feeling of perceived adequacy and competency to look after COVID-19 patients, focusing on the reduction of adverse events as well as workforce safety.
 - Establish a daily communication strategy with up-to-date information on COVID-19, with a specific focus on the institution's planned and executed initiatives for COVID-19, what the institution is currently doing to protect its HCPs. This measure will reduce the chances of misinformation, which can lead to increased stress and anxiety.

- Assign subject matter experts and a communication team to streamline communication and address concerns of both HCPs and patrons of the healthcare organization.
- Establish a formal **Second Victim task force** within the institution that will respond to calls continuously (24/7). This peer support group will provide emotional support to HCPs that are experiencing stressful events related to COVID-19, including the high influx of patients, the high number of deaths, fear of contamination, and if life-sustaining support becomes scarce, etc. The task force goal is to normalize the feelings of anxiety, loss of control, fear, and others by providing psychological first aid, identifying supportive resources, and directing staff to specialized support if needed.

Healthcare Professionals

- Follow the established healthcare organization's safety and health procedures, avoid exposing others to health and safety risks, and participate in employer-provided training.
- Ensure that all HCPs are familiar with and regularly trained on the recommended IPC guidelines for routine cleaning and disinfection and recommended PPE per the MOH and Saudi CDC guidelines.
- All HCPs should monitor their health on a daily basis, especially before each shift for COVID-19 symptoms (e.g., documented or subjective fever, cough, shortness of breath, sore throat) and report to management if experiencing any signs of illness to ensure appropriate follow-up.
- HCPs that are exposed to a suspected or confirmed COVID-19 patient should report concerns to management to ensure appropriate follow-up.
- HCPs with an unprotected exposure (e.g., not wearing recommended PPE) should report to management to ensure appropriate follow-up.
- HCPs that are exposed to a suspected or confirmed COVID-19 patient should monitor their health for COVID-19 symptoms (e.g., documented or subjective fever, cough, shortness of breath, sore throat). If symptoms develop, the individuals should report to management to ensure appropriate follow-up.
- Follow the established Saudi CDC protocols to assess and triage any patient with risk factors for and symptoms of COVID-19. These protocols include:
 - Place a facemask on the patient.
 - Place patient into a separate, well-ventilated waiting area with instructions to sit approximately 6 feet, equivalent to 2 meters apart from other patients, or into a designated and well-ventilated room with limited access, and the door should be closed.
- Follow the established Saudi CDC protocols for PPE during all interactions with patients with undiagnosed respiratory infections. The recommended PPE include N95 respirators, eye protection-goggles, face mask (OR face shields/masks worn over N95 respirators), or plastic disposable wrap-around glasses, gown, gloves, hair cover, and booties/shoe covers (if applicable).
- Apply proper donning and doffing of PPE, including N95 respirators, goggles, face shields, gowns, and gloves.
- Follow the manufacturer's recommendations, Saudi CDC guidelines, and institutional policies regarding the use, extended use, or re-use of N95 respirators and other PPE.
- Use dedicated and disposable (single use) instruments, equipment, and devices such as mouth mirror, syringes, and blood pressure cuff for the provision of patient care whenever possible, especially in suspected or confirmed COVID-19 cases to prevent cross-contamination.
- Report to the immediate supervisor if any situation observed with reasonable imminent and serious danger to life or health.

- Seek management advice and support if experiencing any signs of undue stress or mental health challenges that require supportive interventions.
- Follow the manufacturer's instructions for the cleaning and disinfection of electronic devices such as cell phones, tablets, touch screens, remote controls, and keyboards, remove visible contamination if present.

Best Practices to Protect Healthcare Professionals, their Families, and Others

Potential COVID-19 exposure to household members is a significant issue for the majority of HCPs. Highlighted below is guidance as to what you can do as an HCP to reduce that risk and protect others.

1. *At Work*

- Wear scrubs or work uniforms with washable shoes, if possible.
- Avoid wearing jewelry.
- All HCPs should strictly adhere to all COVID-19 recommendations posted by the MOH and Saudi CDC and follow the policies and procedures implemented in the institution.
- All HCPs should strictly adhere to instructions about the proper hand hygiene technique, respiratory hygiene, including cough and sneezing etiquette, and recommended PPE.
- Frequent handwashing for at least 40-60 seconds using soap and water.
- Use an alcohol-based hand sanitizer with at least 60% alcohol if soap and water are not available.
- Use a tissue or sleeve to cover sneezes and coughs.
- Avoid touching the facial mucous membranes (i.e., eyes, nose, and mouth) with unwashed hands.
- Ensure proper break periods, staggered break patterns, increase physical space in the break areas, and the use of disposable utensils, plates, and cups.

2. *End of Shift*

- Use disinfectant wipes to clean all personal belongings, including mobile phones, ID badges, glasses, pens, stethoscope, etc., and place these items in an ideally separate washable or wipe clean bag.
- Mobile phones and electronics are frequently handled items where germs can live and spread to others. Follow the manufacturer's instructions for cleaning and disinfecting electronics to ensure there are no warnings or products that should not be used and dry your device thoroughly afterward.
- Never wear scrubs or work uniforms to home. Change out of scrubs or work uniforms and place them in a washable or disposable waterproof bag for taking home. If available, use the hospital laundry service.
- Before going off duty, HCP must conduct necessary personal hygiene regimens to prevent possible infection of their respiratory tracts and mucosa.
- Wash your hands for at least 40-60 seconds using soap and water or use an alcohol-based hand sanitizer with at least 60% alcohol if soap and water are not available.
- Before going off duty, staff must conduct necessary personal hygiene regimens to prevent possible infection of their respiratory tracts and mucosa.
- Access to shower facilities, if possible.



3. *Arriving at Home*

- If using your own vehicle, regularly clean the inside of the car with disinfectant and sanitizer wipes.
- Leave shoes and work bag at the entrance (if not washing them), preferable outside the door.
- If possible, before talking to anyone, or touching anyone, immediately place your clothes straight in the washing machine, and wash at a minimum temperature of 71°C as recommended by the MOH using common laundry detergents to inactivate the virus.
- Wash your hands for at least 40-60 seconds using soap and water or use an alcohol-based hand sanitizer with at least 60% alcohol if soap and water are not available.
- Shower and wash hair if not able to do at work. If available, use a separate bathroom and towels.
- Limit time spent with family members and others at high risk and maintain social distancing as recommended by the Saudi CDC (approximately 6 feet, equivalent to 2 meters).
- Ensure appropriate home ventilation.
- Practice regular, thorough cleaning of all surfaces in the home, especially kitchens and bathrooms.
- Practice shielding by observing social and physical distancing, wherever possible.

4. *Alternative Accommodation Options*

Healthcare providers may also check with the MOH initiative regarding alternative accommodation options. If available, some healthcare professionals may prefer to reduce the risk to their family members by utilizing funded dedicated accommodation, transportation, and childcare services during the outbreak.

5. *Downtime at the End of the Day*

- Acknowledge and appreciate your efforts and achievements.
- HCPs are encouraged to explore innovative and health approaches for managing their physical health, mental health and psychosocial wellbeing including sufficient rest and relaxation periods, maintain healthy meals, read a book, engage in physical activity or games or craft projects, limit news and social media time, and stay in contact with family and friends.



COVID-19 Safety Guide for Hospital Healthcare Professionals in Specialty Areas

Emergency Medical Services (EMS)

- If the patient reports risk factors for and symptoms of COVID-19 (fever, cough, shortness of breath, or sore throat), offer the patient a surgical mask to minimize the dispersal of respiratory droplets, and EMS personnel should don the recommended PPE. The recommended PPE include N95 respirators, eye protection-goggles, face mask (OR face shields/masks worn over N95 respirators), or plastic disposable wrap-around glasses, isolation gown, and gloves.
- Apply the recommended precautions as per the Saudi CDC in the following aerosol-generating procedures (AGPs):
 - Cardiopulmonary resuscitation (CPR).
 - Bag-mask ventilation.
 - Non-invasive ventilation (including chronic CPAP/NIV used for chronic conditions).
 - High-flow nasal oxygen (i.e., Optiflow, Airvo, etc.)
 - Nebulized medications.
 - Intubation.
 - Tracheostomy.
 - Procedures likely to induce coughing (e.g., open suctioning of airways).
- If an AGP is required, EMS personnel are instructed to Only perform AGPs if medically necessary and cannot be postponed.
- Exercise caution when performing these procedures as AGPs are associated with a higher risk of transmission of infectious agents.
- Maintain the doors to the patient compartment of the ambulance open to allow ventilation of the area during these procedures. If the ambulance is equipped with an HVAC system, it should remain on during patient transport.
- If the transfer of patients with suspected or confirmed COVID-19 to a healthcare facility is required, EMS personnel should inform the receiving facility regarding the infectious status of the patient to ensure recommended IPC measures are carried out before the patient's arrival.
- During transport, limit the number of HCPs in the patient compartment to minimize potential exposure.
- Maintain a log to allow for contact tracing and activity mapping of suspected or confirmed COVID-19 cases.

Patient Transfers and Transports

Transfer from primary care/community settings

- If the transfer of patients with suspected or confirmed COVID-19 from a primary care facility or community setting to a healthcare facility is required, inform the ambulance service and receiving healthcare facility in advance regarding the infectious status of the patient to ensure recommended IPC measures are carried out before the patient's arrival.
- Use ambulance vehicles that have isolated driver and patient compartments that can provide separate ventilation, if possible.
- During transport, limit the number of HCPs in the patient compartment to minimize possible exposures.
- If the transport is necessary, offer the patient a surgical mask to be worn during transportation, to minimize the dispersal of respiratory droplets.

Patient Transfers and Transports - Continued

Transfer from primary care/community settings - Continued

- Ambulance personnel accompanying or providing care for a suspected or confirmed COVID-19 patient should adhere to the recommended precautions and the recommended PPE including N95 respirators, eye protection-goggles, face mask (OR face shields/masks worn over N95 respirators), or plastic disposable wrap-around glasses, isolation gown, and gloves.
- Develop a dedicated transport route and routes of entry involving source control for the patient, PPE for HCPs, and environmental cleaning.
- After transporting the patient, leave the rear doors of the transport vehicle open to allow for sufficient air changes to remove potentially infectious particles.
- Ensure adequate cleaning and disinfection of the ambulance before and after use and leave the rear doors of the transport vehicle open to allow for sufficient air changes during cleaning and disinfection.
- Maintain a log to allow for contact tracing and activity mapping of suspected or confirmed COVID-19 cases.

Inter-hospital transfers

- Avoid transport and movement of patients with suspected or confirmed COVID-19 from one healthcare facility to another except for medically essential purposes and specialist care arising out of complications or concurrent medical events.
- If the transfer of patients with suspected or confirmed COVID-19 is essential, inform the ambulance service and receiving healthcare facility in advance regarding the infectious status of the patient to ensure recommended IPC measures are carried out before the patient's arrival.
- Use ambulance vehicles that have isolated driver and patient compartments that can provide separate ventilation, if possible.
- If the transport is necessary, offer the patient a surgical mask to be worn during transportation, to minimize the dispersal of respiratory droplets.
- Ambulance personnel accompanying or providing care for a suspected or confirmed COVID-19 patient should adhere to the recommended precautions and the recommended PPE including N95 respirators, eye protection-goggles, face mask (OR face shields/masks worn over N95 respirators), or plastic disposable wrap-around glasses, isolation gown, and gloves.
- Develop a dedicated transport route and routes of entry involving source control for the patient, PPE for HCPs, and environmental cleaning.
- After transporting the patient, leave the rear doors of the transport vehicle open to allow for sufficient air changes to remove potentially infectious particles.
- Ensure adequate cleaning and disinfection of the ambulance before and after use and leave the rear doors of the transport vehicle open to allow for sufficient air changes during cleaning and disinfection.
- Maintain a log to allow for contact tracing and activity mapping of suspected or confirmed COVID-19 cases.



Patient Transfers and Transports - Continued

Intra-hospital transfers

- Limit the movement of patients with suspected or confirmed COVID-19 and ensure that the patient is initially admitted to the appropriate location.
- Restrict the transfer and movement of patients under isolation precautions for medically essential purposes and ensure selecting low traffic timings and short routes, whenever possible.
- If the transport is necessary, offer the patient a surgical mask to be worn during transportation, to minimize the dispersal of respiratory droplets.
- During transport, limit the number of HCPs accompanying the patient to minimize possible exposures.
- All HCPs accompanying or providing care for a suspected or confirmed COVID-19 patient should strictly adhere to the recommended PPE and proper hand hygiene technique. The recommended PPE include N95 respirators, eye protection-goggles, face mask (OR face shields/masks worn over N95 respirators), or plastic disposable wrap-around glasses, gown, and gloves.
- Develop a dedicated transport route and routes of entry involving source control for the patient, PPE for HCP, and environmental cleaning.
- Suspected or confirmed COVID-19 patients must not wait in public areas.

Cardiopulmonary Resuscitation (CPR)

- CPR involves a series of events with increased risk of aerosol generation, including suctioning, mask ventilation and intubation.
- All HCPs attending a resuscitation procedure should strictly adhere to the guidelines for hand hygiene and donning and doffing of the recommended PPE throughout the procedure. The recommended PPE include N95 respirators, eye protection-goggles, face mask (OR face shields/masks worn over N95 respirators), or plastic disposable wrap-around glasses, gown, and gloves.
- Ideally, resuscitation procedures for a suspected or confirmed COVID-19 patient should be performed in a single negative pressure room. Do not delay initial resuscitation procedures if a single negative pressure room is immediately unavailable.
- Consider apneic oxygenation instead of providing breaths via bag valve mask to maintain airway patency and ventilation.
- For patients with acute respiratory failure, consider proceeding directly to endotracheal intubation.
- During intubation, consider wearing double gloves in addition to the recommended PPE. Once the airway is confirmed and secured, immediately remove the outer glove, and it may be used to wrap disposable portions of airway equipment after use.
- During intubation, hold chest compressions temporarily to reduce the risk of aerosol inhalation by the intubating clinician.
- Avoid using high-flow nasal oxygenation and mask CPAP or BiPAP due to a higher risk of aerosol generation.
- Consider utilizing a chest compression system to deliver automated compressions if available to reduce the number of HCPs required in close proximity to the patient.
- Maintain a hospital log to allow for contact tracing and activity mapping of suspected or confirmed COVID-19 cases.



Emergency Department (ED)

- Signage should be visible and displayed prior to and upon entry to assessment units with instruction for patients with COVID-19 symptoms (fever, cough, shortness of breath, or sore throat) to inform reception staff immediately on their arrival.
- Assign an experienced HCP as a triage practitioner at the entrance of the respiratory triage station to:
 - Effectively manage patient flow, screen, identify, and segregate patients with COVID-19 symptoms to a separate and well-ventilated waiting area or assessment room immediately.
 - Provide these patients with a facemask (if tolerated), instructions to stay in the designated area, and not to visit other units, departments, or public areas.
 - Physically separate and triage patients with no COVID-19 symptoms requiring prompt acute care assessment to a specific waiting and examination area.
- If possible, use a telephone or telehealth for triage to reduce the number of individuals with COVID-19 symptoms of who come into contact with healthcare services and others.
- Maintain social distancing as recommended by the Saudi CDC (approximately 6 feet, equivalent to 2 meters).
- All HCPs involved in direct patient care with a suspected or confirmed COVID-19 patient should strictly adhere to the guidelines for hand hygiene and donning and doffing of the recommended PPE throughout the procedure. The recommended PPE include N95 respirators, eye protection-goggles, face mask (OR face shields/masks worn over N95 respirators), or plastic disposable wrap-around glasses, gown, and gloves.
- Minimize the number of HCPs who come in direct contact with a suspected or confirmed COVID-19 patient to include only essential and fully trained HCPs.
- Only dedicated and preferably disposable medical equipment should be used for the provision of patient care whenever possible.
- Maintain social distancing as recommended by the Saudi CDC (approximately 6 feet, equivalent to 2 meters). Avoid or minimize group activities, including team rounds, group studies, and case discussions.
- Maintain a hospital log to allow for contact tracing and activity mapping of suspected or confirmed COVID-19 cases.
- Only perform AGPs if medically necessary and cannot be postponed. Exercise caution when performing these procedures as AGPs are associated with a higher risk of transmission of infectious agents.
- HCPs should adhere to the guidelines for donning and doffing of the recommended PPE (N95 respirators, eye protection, gloves, gowns, and face shields) throughout these procedures and apply the recommended precautions as per the Saudi CDC in the following AGPs:
 - Cardiopulmonary resuscitation (CPR).
 - Bag-mask ventilation.
 - Non-invasive ventilation (including chronic CPAP/NIV used for chronic conditions).
 - High-flow nasal oxygen (i.e., Optiflow, Airvo, etc.)
 - Nebulized medications.
 - Intubation and extubation.
 - Tracheostomy.
 - Procedures likely to induce coughing (e.g., open suctioning of airways).
 - Bronchoscopy (strongly discouraged).
- Perform AGPs for any suspected or confirmed COVID-19 cases in a negative pressure room, if possible. If a negative pressure room is not available, consult with facility engineers to ensure that a negative pressure gradient is created or utilize portable HEPA units (refer to MOH guidelines for the use of HEPA filters in health care facilities).



Laboratory Services

- Testing is limited to qualified laboratories approved by the Saudi CDC with a certified Biological Safety Cabinet Class II (BSC-II) in a Biosafety level 2 facility (BSL-2) within a negative pressure room.
- The laboratory should use a nucleic acid detection system and testing on clinical specimens from suspected or confirmed COVID-19 patients using at least one confirmatory target in addition to the screening targets.
- Laboratories should not attempt viral isolation and cultures on clinical specimens from suspected or confirmed COVID-19 patients as recommended by the Saudi CDC.
- Access to laboratories should be restricted, and biohazard safety signage should be visible and displayed at the entrance.
- A site-specific and activity-specific risk assessment should be performed by all laboratories to identify and mitigate risks. These measures depend on the identification of:
 - Procedures performed.
 - Hazards involved in the process and procedures.
 - Competency level of the personnel.
 - Laboratory equipment and available resources.
- Laboratory personnel should wear the recommended PPE (surgical mask, clean gloves, goggles, or Face shields and isolation gown) when working with infectious materials.
- All procedures with a high likelihood to generate aerosols or droplets, use either a certified Class II Biological Safety Cabinet (BSC) or additional precautions. These additional precautions include donning recommended PPE include N95 respirators, eye protection-goggles, face mask (OR face shields/masks worn over N95 respirators), or plastic disposable wrap-around glasses, gown, gloves, and hair cover, or other physical barriers, like a splash shield; centrifuge safety cups; and sealed centrifuge rotors to reduce the risk of exposure.
- For providers collecting specimens or within approximately 6 feet, equivalent to 2 meters of patients suspected or confirmed COVID-19, adhere to the recommended IPC, and don the recommended PPE (N95 or higher-level respirator, eye protection, gloves, and isolation gown).
- For providers who are handling specimens but are not directly involved in the collection and not working within approximately 6 feet, equivalent to 2 meters of the patient, adhere to the recommended precautions (laboratory coats or gowns, gloves, and eye protection) and laboratory practices and procedures in the institution.
- Adhere to the laboratory practices and procedures when handling and processing specimens (including blood for serological testing).
- Adhere to the recommended guidelines for processing potentially infectious material when handling and processing of specimens from suspected or confirmed COVID-19 cases (including hematology or blood gas analysis).
- Use MOH-approved and facility-approved disinfectants with label claim to be effective against SARS-CoV-2 to decontaminate all work surfaces and equipment after any procedure and maintain a dry environment to prevent the spread of SARS-CoV-2 in the clinical setting. Follow manufacturer's recommendations for use, such as dilution, contact time, and safe handling.
- Laboratory waste from testing specimens of suspected or confirmed COVID-19 patients should be handled as all other biohazardous waste in the laboratory.



Intensive Care Units (ICU) / Isolation Units

- All patients in ICU should be assessed for potential COVID-19 infection.
- Arrange treatment, examination, and disinfection for each team to reduce the frequency of staff moving in and out of the isolation wards.
- All HCPs involved in direct patient care with a suspected or confirmed COVID-19 patient should strictly adhere to the guidelines for hand hygiene and donning and doffing of the recommended PPE throughout the procedure. The recommended PPE include N95 respirators, eye protection-goggles, face mask (OR face shields/masks worn over N95 respirators), or plastic disposable wrap-around glasses, gown, gloves, and hair cover.
- Avoid or minimize group activities, including team rounds, group studies, and case discussions.
- Maintain a hospital log to allow for contact tracing and activity mapping of suspected or confirmed COVID-19 cases.
- HCPs should adhere to the guidelines for donning and doffing of the recommended PPE (N95 respirators, eye protection, gloves, gowns, and face shields) throughout these procedures and apply the recommended precautions as per the Saudi CDC in the following AGPs:
 - Cardiopulmonary resuscitation (CPR).
 - Bag-mask ventilation.
 - Non-invasive ventilation (including chronic CPAP/NIV used for chronic conditions).
 - High-flow nasal oxygen (i.e., Optiflow, Airvo, etc.)
 - Nebulized medications.
 - Intubation.
 - Extubation.
 - Tracheostomy.
 - Procedures likely to induce coughing (e.g., open suctioning of airways).
 - Bronchoscopy (strongly discouraged).
- Exercise caution when performing these procedures as AGPs are associated with a higher risk of transmission of infectious agents.
- Perform AGPs for any suspected or confirmed COVID-19 cases in a negative pressure room, if possible. If a negative pressure room is not available, consult with facility engineers to ensure that a negative pressure gradient is created or utilize portable HEPA units (refer to MOH guidelines for the use of HEPA filters in health care facilities).

Healthcare Management Considerations for ICU/Isolation Units and ED

- Maintain an updated recommendation for the frontline HCPs in the ICU, ER, and isolation units with isolation accommodation.
- Conduct health monitoring for frontline HCPs in the isolation areas and immediately isolate and screen any HCP with COVID-19 symptoms.
- Address any psychological and physiological concerns of HCPs in the ICU, ER, and isolation units.
- Establish a dedicated roster to segregate “clean teams” from “COVID-19 teams.”
- Hospital-provided clean scrubs to be available for each shift, if possible.
- Provide HCPs in the ICU, ER, and other isolation units with a nutritious diet and proper break periods and ensure to increase physical space, a staggered break pattern, and the use of disposable utensils, plates, and cups.
- Discourage HCPs from group breaks, aggregation in confined spaces, and any sharing of items.
- Before going off duty, staff must conduct necessary personal hygiene regimens to prevent possible infection of their respiratory tracts and mucosa.
- Access to shower facilities, if possible.



Perioperative Services

Preoperative Considerations

- Identify surgical procedures in the operating theatre associated with a higher risk of aerosol-generation.
- For suspected or confirmed COVID-19 cases, only emergency or medically necessary surgical intervention is allowed. This decision should be established by a discussion between the infection control department and the treating surgeon with direct expertise in the relevant surgical specialty to determine what medical risks will be incurred by case delay.
- Suspected or confirmed COVID-19 cases should be placed at the end of the list where feasible.
- Before the transport of a patient with suspected or confirmed COVID-19 to the operative theatre:
 - All members of the operative team should conduct a huddle.
 - Review the anesthesia and surgical plans.
 - Ensure that all the required supplies, equipment, blood, and other materials are readily available in the theatre and in functional condition.
 - Directly transfer any suspected or confirmed COVID-19 case to the operating theatre and offer the patient a surgical mask to be worn during transportation.
- All HCPs accompanying or providing care for a suspected or confirmed COVID-19 patient should strictly adhere to the recommended PPE and proper hand hygiene technique. The recommended PPE include N95 respirators, eye protection-goggles, face mask (OR face shields/masks worn over N95 respirators), or plastic disposable wrap-around glasses, gown, and gloves.

Intraoperative Management

- Minimize the number of personnel present in the operating theatre to include only essential and fully trained HCPs.
- Consider establishing dedicated operating theatre teams to manage suspected or confirmed COVID-19 cases and support the team with comprehensive education.
- Consider creating an anteroom with separate access for donning/doffing of PPE with negative pressure, if possible.
- Ensure that a "COVID-19 ROOM" sign and log will be visibly displayed on the theatre doors to track all HCPs who enter the room and minimize exposure.
- Ensure all HCPs in theatre adhere to the recommended PPE and continue to wear the recommended PPE for the entire duration of the surgical procedure. The recommended PPE include N95 respirators, eye protection-goggles, face mask (OR face shields/masks worn over N95 respirators), or plastic disposable wrap-around glasses, gown, gloves, hair cover, and booties/shoe covers.
- Members of the sterile surgical team (surgeons, residents, and scrub personnel) should wear a disposable sterile operating gown and sterile gloves (double gloving) in addition to the recommended PPE to reduce the risk of exposure.
- Ensure all necessary medications, instrumentation, external equipment, and supplies required for the surgical procedure are available before the transfer of the patient into the room.
- Any external equipment needed for the procedure should be draped and not removed for the room until the room is terminally cleaned.



Perioperative Services - Continued

Intraoperative Management - Continued

- Ensure separate airway, medication, and equipment carts.
- Modifications of anesthetic practice are required to manage confirmed COVID-19 patients effectively.
- Any suspected or confirmed COVID-19 patient should be intubated and extubated in a negative pressure room. If a negative pressure room is not available, consult with facility engineers to ensure that a negative pressure gradient is created or utilize portable HEPA units (refer to MOH guidelines for the use of HEPA filters in health care facilities).
- During intubation, consider wearing double gloves in addition to the recommended PPE. Once the airway is confirmed and secured, immediately remove the outer glove, and it may be used to wrap disposable portions of airway equipment after use.
- Use video laryngoscopes with disposable single-use blades to optimize the first attempt.
- Establish a dedicated operating theatre for suspected or confirmed COVID-19 cases, which should be appropriately filtered and ventilated. Consider using a negative pressure room, if available.
- Minimize the use of monopolar electrosurgery, ultrasonic dissectors, and advanced bipolar devices to prevent aerosolization.
- If the monopolar electrosurgery is required to conduct the surgical procedure, ensure that the setting is calibrated to the lowest possible setting for the desired hemostatic effect.
- Routine breaks should be avoided to limit exposure and conserve supplies.

Post-Operative Management

- Any patient with suspected or confirmed COVID-19 should be recovered in a negative pressure room. If a negative pressure room is not available, consult with facility engineers to ensure that a negative pressure gradient is created or utilize portable HEPA units (refer to MOH guidelines for the use of HEPA filters in health care facilities).
- At the end of the surgical procedure, all unused items present on the drug tray and airway trolley should be discarded after each patient.
- Terminal cleaning and disinfection of the operating theater post-procedure should follow the housekeeping policy of the healthcare institute, including thorough cleaning and decontamination of all surfaces, screens, keyboards, cables, monitors, anesthesia machine and any equipment used during the procedure according to the manufacturer recommendations.
- Use MOH-approved and facility-approved disinfectants with label claim to be effective against SARS-CoV-2 to decontaminate all work surfaces and equipment after any procedure and maintain a dry environment to prevent the spread of SARS-CoV-2 in the clinical setting. Follow manufacturer's recommendations for use, such as dilution, contact time, and safe handling.

Endoscopy Services

Pre-Endoscopy Management

- Patients should be contacted before the scheduled appointment to inquire about any COVID-19 symptoms (e.g., fever, cough, shortness of breath, sore throat). This information will assist the setting with the preparation for the arrival of these patients or the decision to triage these patients in a more appropriate setting (e.g., an acute care hospital).
- Utilize telehealth resources to assist with the risk stratification of patients for possible COVID-19 infection one day before the scheduled endoscopy procedure, if available



Endoscopy Services - Continued

Pre-Endoscopy Management - Continued

- Maintain social distancing as recommended by the Saudi CDC (approximately 6 feet, equivalent to 2 meters).
- Signage should be visible and displayed prior to and upon entry to with instruction for patients with COVID-19 symptoms to inform reception staff immediately on their arrival.
- Any patient with COVID-19 symptoms (e.g., fever, cough, shortness of breath, sore throat) should inform staff upon arrival at the facility and provide these patients with a facemask at check-in with instructions to keep it on until they leave. And change it frequently if it becomes wet or damaged.
- Ideally, an appropriate screening area outside of the healthcare facility should be set up if feasible for screening purposes.
- Assign an experienced HCP as a triage practitioner at the entrance to visually triage and screen of all visiting patients for COVID-19 symptoms (e.g., fever, cough, shortness of breath, sore throat).
- Segregate patients with COVID-19 symptoms into a separate, well-ventilated waiting area with instructions to sit approximately 6 feet, equivalent to 2 meters from others. Provide these patients with a facemask if tolerated and instruct these patients to stay in this area and not visit other units, departments, or public areas. Medically stable patients might decide to wait in a personal vehicle and can be contacted by a phone call or text message when it is their turn to be seen.
- Segregate patients considered to be at high-risk for COVID-19 into separate pre and post endoscopy recovery areas or schedule the endoscopy procedure during identified downtimes of the schedule (fewer patients), if possible.
- Hand hygiene is recommended before the application of the facemask. Ensure access to a wash station or hand sanitizer with visible and clear signage and instructions for the proper hand hygiene technique.
- Signage with instructions on how to wear the facemask should be visible for the patient.
- All HCPs involved in direct patient care with a suspected or confirmed COVID-19 patient should strictly adhere to the guidelines for hand hygiene and donning and doffing of the recommended PPE throughout the procedure. The recommended PPE include N95 respirators, eye protection-goggles, face mask (OR face shields/masks worn over N95 respirators), or plastic disposable wrap-around glasses, gown, and gloves.
- Caregivers or relatives of patients should be strictly prohibited from entering the endoscopy area except in exceptional circumstances in which patients require specific assistance. Ensure caregivers are wearing appropriate PPE as per facility protocol, i.e., mask, gown, and perform hand hygiene.

Intra-Endoscopy Management

- Minimize the number of HCPs present in endoscopy cases to include only essential and trained endoscopy HCPs.
- Ensure physical separation between procedure rooms and the decontamination area.
- Ensure that the procedure rooms have dedicated wash stations with hand-free controls.
- Consider establishing dedicated endoscopy teams to manage suspected or confirmed COVID-19 cases and support the team with comprehensive education.

Endoscopy Services - Continued

Intra-Endoscopy Management - Continued

- Ensure that a “COVID-19 ROOM” sign and log will be visibly displayed on the theatre doors to track all HCPs who enter the room and minimize exposure.
- Consider creating an anteroom with separate access for donning/doffing of PPE, if possible.
- Ensure all endoscopy HCPs adhere to the recommended PPE and continue to wear the recommended PPE for the entire duration of the endoscopic procedure. The recommended PPE include N95 respirators, eye protection-goggles, face mask (OR face shields/masks worn over N95 respirators), or plastic disposable wrap-around glasses, gown, gloves, hair cover, and booties/shoe covers.
- Endoscopy procedure for patients at high risk of or with suspected or confirmed COVID-19 cases should be performed only if medically indicated and, if available, in a negative-pressure room by fully trained and experienced HCPs. If a negative pressure room is not available, consult with facility engineers to ensure that a negative pressure gradient is created or utilize portable HEPA units (refer to MOH guidelines for the use of HEPA filters in health care facilities).
- Perform bronchoscopy procedures in a negative pressure room (-2.5 Pa) with minimum air exchanges of 12 per hour and HEPA filtration system.
- Upper GI procedures are considered high-risk procedures with increased risk of aerosol generation. Apply the recommended precautions as per the Saudi CDC.
- Extra precaution is recommended during colonoscopies (see table 2) as prolonged fecal shedding of SARS- CoV-2 can occur. Endoscopes are often affected by gut flora, which might pose a risk to endoscopists, nursing staff, and other team members and could also be a vector for potential transmission.
- Routine breaks should be avoided to limit exposure and conserve supplies.

Post-Endoscopy Management

- Terminal cleaning and disinfection of the endoscopy room post-procedure should follow the housekeeping policy of the healthcare institute, including thorough cleaning and decontamination of all surfaces, screens, keyboards, cables, monitors, and any equipment used during the procedure according to the manufacturer recommendations.
- Use MOH-approved and facility-approved disinfectants with label claim to be effective against SARS-CoV-2 to decontaminate all work surfaces and equipment after any procedure and maintain a dry environment to prevent the spread of SARS-CoV-2 in the clinical setting. Follow manufacturer’s recommendations for use, such as dilution, contact time, and safe handling.
- Sufficient time should be allowed for implementing infection control measures before and after endoscopy.
- Contaminated waste and endoscopic devices from patients at high risk of or with suspected or confirmed COVID-19 should be handled as and disposed of using the specific regulations related to all other biohazardous waste management.

Healthcare Visitors

- Limit hospital visitors even for non-COVID-19 related patients.
- Do not allow ICU visitors for IPC purposes during the pandemic except under exigent circumstances as per the healthcare facility's policy.
- Arrange alternative methods for visitation, such as enabling remote communication between the resident and visitor or other consultant staff (e.g., video-call applications), or the use of plastic or glass barriers between residents and visitors.
- Communication with families and visitors should include posting visual alerts (e.g., posters) at the entrance and in strategic places (e.g., waiting areas, elevators) advising visitors not to enter the facility when ill. Notify families and others by email or letters when visitor restriction is implemented.
- Monitor and screen all visitors for risk factors for and signs and symptoms of acute respiratory infection COVID-19 (fever, cough, shortness of breath, or sore throat) as per the designated healthcare facility's policy. Visitors with COVID-19 symptoms (e.g., fever, cough, shortness of breath, sore throat) will not be permitted to visit a patient in any care setting.
- Define when visitor restrictions are lifted (e.g., end of life situation).
- Patients facing compassionate situation (e.g., end-of-life care), facilities should:
 - Make decisions regarding compassionate visitations on a case by case basis and if required, limit visitors to one.
 - Permitted visitors must wear a cloth face covering. If a cloth face covering is not available, a face mask must be used, while in the building. Also, visitors should be reminded to frequently perform hand hygiene.
 - Restrict visitor to the resident's room or another location designated by the facility. If possible, create dedicated visiting areas in a sanitized environment. (e.g., "clean rooms") near the facility entrance, where residents can meet with the visitor.
- Maintain a hospital visitor log to allow for contact tracing and activity mapping of confirmed cases.
- Control visitor access and movement within the facility.
- Visitors should not remove any items from COVID-19 patient rooms (clothes, personal belonging, utensils) and take it outside the facility.
- Ask visitors to inform the facility if they develop fever or symptoms related to COVID-19 within 14 days of visiting the facility.

Outpatient Hemodialysis

- Patients should be contacted before the scheduled appointment to inquire about any COVID-19 symptoms (e.g., fever, cough, shortness of breath, sore throat). This information will assist the setting with the preparation for the arrival of these patients or the decision to triage these patients in a more appropriate setting (e.g., an acute care hospital).
- Utilize telehealth resources to assist with the risk stratification of patients for possible COVID-19 infection one day before the scheduled dialysis, if available.
- Signage should be visible and displayed prior to and upon entry to with instruction for patients with COVID-19 symptoms to inform reception staff immediately on their arrival.
- Any patient with COVID-19 symptoms (e.g., fever, cough, shortness of breath, sore throat) should inform staff upon arrival at the facility and provide these patients with a facemask at check-in with instructions to keep it on until they leave. And change it frequently if it becomes wet or damaged.
- Ideally, an appropriate screening area outside of the healthcare facility should be set up if feasible for screening purposes.



Outpatient Hemodialysis - Continued

- Assign an experienced HCP as a triage practitioner at the entrance to visually triage and screen of all visiting patients for COVID-19 symptoms (e.g., fever, cough, shortness of breath, sore throat).
- All HCPs involved in direct patient care with a suspected or confirmed COVID-19 patient should strictly adhere to the guidelines for hand hygiene and donning and doffing of the recommended PPE throughout the procedure. The recommended PPE include N95 respirators, eye protection-goggles, face mask (OR face shields/masks worn over N95 respirators), or plastic disposable wrap-around glasses, gown, gloves, and hair cover.
- Segregate patients with COVID-19 symptoms into a separate, well-ventilated waiting area with instructions to sit approximately 6 feet, equivalent to 2 meters from others. Provide these patients with a facemask if tolerated and instruct these patients to stay in this area and not visit other units, departments, or public areas. Medically stable patients might decide to wait in a personal vehicle and can be contacted by a phone call or text message when it is their turn to be seen.
- Segregate patients considered to be at high-risk for COVID-19 into separate pre and post dialysis areas or schedule the endoscopy procedure during identified downtimes of the schedule (fewer patients), if possible.
- Hand hygiene is recommended before the application of the facemask.
- Ensure access to a wash station or hand sanitizer with visible and clear signage and instructions for proper hand hygiene technique.
- Signage with instructions on how to wear the facemask should be visible for the patient.
- All hemodialysis settings should have supplies positioned close to dialysis chairs and nursing stations to ensure compliance with the recommended hand and respiratory hygiene and cough etiquette.
- Patients with COVID-19 symptoms should be placed in an appropriate treatment area as soon as possible to minimize the time in waiting areas.
- Ideally, Patients with COVID-19 symptoms should be dialyzed in a separate room with the door closed, if possible.
- The hemodialysis settings should follow the following guideline if a separate room is not available:
 - Maintain a separation distance of approximately 6 feet, equivalent to 2 meters between symptomatic patients and other patients during dialysis treatment.
 - Treat symptomatic patients at a corner or end-of-row station, away from the main flow of traffic, if possible.
 - Arrange the dialysis sessions for patients with COVID-19 to be performed during identified downtimes of the schedule (fewer patients), if possible.
- Ensure that the facility has a written protocol for the care of suspected or confirmed COVID-19 patients.
- Avoid changing dialysis shifts and care personnel to avoid cross-contamination and infection. HCPs assigned to a suspected or confirmed COVID-19 patient should not rotate, if possible.
- All Hemodialysis HCPs should follow the recommended IPC guidelines for routine cleaning and disinfection are appropriate for COVID-19 in dialysis settings. Any surface, supplies, or equipment (e.g., dialysis machine) located within the proximity of symptomatic patients should be disinfected or discarded.

Dental Services

- Patients should be contacted before the scheduled appointment to inquire about any COVID-19 symptoms (e.g., fever, cough, shortness of breath, sore throat). This information will assist the setting with the preparation for the arrival of these patients or the decision to triage these patients in a more appropriate setting (e.g., an acute care hospital).
- Utilize telehealth resources to assist with the risk stratification of patients for possible COVID-19 infection one day before the scheduled dialysis, if available.



Dental Services - Continued

- Signage should be visible and displayed prior to and upon entry to with instruction for patients with COVID-19 symptoms to inform reception staff immediately on their arrival.
- Any patient with COVID-19 symptoms (e.g., fever, cough, shortness of breath, sore throat) should inform staff upon arrival at the facility and provide these patients with a facemask at check-in with instructions to keep it on until they leave. And change it frequently if it becomes wet or damaged.
- Ideally, an appropriate screening area outside of the healthcare facility should be set up if feasible for screening purposes.
- Assign an experienced HCP as a triage practitioner at the entrance to visually triage and screen of all visiting patients for COVID-19 symptoms (e.g., fever, cough, shortness of breath, sore throat).
- Segregate patients with COVID-19 symptoms into a separate, well-ventilated waiting area with instructions to sit approximately 6 feet, equivalent to 2 meters from others. Provide these patients with a facemask if tolerated and instruct these patients to stay in this area and not visit other units, departments, or public areas. (Follow the most updated triage criteria from the Saudi CDC). Medically stable patients might decide to wait in a personal vehicle and can be contacted by a phone call or text message when it is their turn to be seen.
- All HCPs involved in direct patient care with a suspected or confirmed COVID-19 patient should strictly adhere to the guidelines for hand hygiene and donning and doffing of the recommended PPE throughout the procedure. The recommended PPE include N95 respirators, eye protection-goggles, face mask (OR face shields/masks worn over N95 respirators), or plastic disposable wrap-around glasses, gown, and gloves.
- Hand hygiene is recommended before the application of the facemask. Ensure access to a wash station or hand sanitizer with visible and clear signage and instructions for proper hand hygiene technique.
- Ensure access to a wash station or hand sanitizer with visible and clear signage and instructions for proper hand hygiene technique.
- Signage with instructions on how to wear the facemask should be visible for the patient.
- During this period of the pandemic, dental services should be limited to urgent and emergency visits only, and all elective dental procedures, surgeries, and non-urgent dental visits should be temporarily postponed.
- Consider pharmacological management in the form of antibiotics and/or analgesics as an alternative to conventional dental treatment for patients with suspected or confirmed COVID-19 infections requiring urgent dental care for conditions such as tooth pain and/or swelling.
- Manage any suspected or confirmed COVID-19 patient seeking emergency care in a negative pressure treatment room or a single room with air handling routed through HEPA filters (refer to MOH guidelines for the use of HEPA filters in health care facilities).
- Establish relationships with key healthcare partners in the surrounding community. For example, if a negative pressure room is not available within a given setting, it is good to communicate with key healthcare partners in the surrounding community with a negative pressure treatment room to provide emergent dental care when needed.
- Before the start of any dental treatment, use a preprocedural mouth rinse with 0.2% povidone-iodine to reduce the coronavirus load in saliva.
- Use a rubber dam to minimize the generation of splatter, which is the standard recommendation for non-surgical endodontic care and treatment. Also, it may be advantageous to place the rubber dam to cover the nose.
- Avoid performing invasive dental procedures with a minimum generation of aerosol. For example, ultrasonic instruments should be avoided as it forms a high-risk of generating contaminated aerosols. However, dentists should avoid using high-speed handpieces and three-way syringes.



Dental Services - Continued

- Use MOH-approved and facility-approved disinfectants with label claim to be effective against SARS-CoV-2 to decontaminate all work surfaces and equipment after any procedure and maintain a dry environment to prevent the spread of SARS-CoV-2 in the clinical setting. Follow manufacturer's recommendations for use, such as dilution, contact time, and safe handling.
- Extraoral imaging such as a panoramic radiograph or Cone-beam computed tomography systems (CBCT) are recommended to avoid any gag reflex or cough that may occur with intraoral imaging.
- When intraoral imaging is mandated, sensors should have a double barrier to prevent perforation and cross-contamination.
- Use MOH-approved and facility-approved disinfectants with label claim to be effective against SARS-CoV-2 to decontaminate all work surfaces and equipment after any procedure and maintain a dry environment to prevent the spread of SARS-CoV-2 in the clinical setting. Follow manufacturer's recommendations for use, such as dilution, contact time, and safe handling.

Home Visits

- HCPs should conduct a routine risk assessment by a phone call before the scheduled home visit to determine whether the environment is suitable for home care services, and the outcomes of this assessment should be documented. Questions include:
 1. Have or anyone else residing in the household been in contact with a suspected or confirmed COVID-19 case?
 2. Have or anyone else residing in the household had been unwell, experiencing COVID-19 associated symptoms (shortness of breath, cough, sore throat) associated with or without fever in the past 14 days?
 3. Do you reside in an area designated as high-risk as per MOH?
- If the patient has been unwell with COVID-19 symptoms or meets the risk criteria:
 - Consider alternative methods for the appointment (telephone or telehealth), if appropriate.
 - If it is not possible to conduct an alternative appointment, identify the required timeliness of clinical care:
 - a. Reschedule the appointment for as soon as possible, if the appointment can be safely delayed.
 - b. If the appointment is clinically necessary: HCPs ought to refer to the Home Visit Guidelines below.
- Arrange the home visit to be the last visit of the day, if possible.
- Remind patients at higher risk of transmission and in self-isolation to continue to self-isolate at home for the recommended 14 days after they departed from an at-risk country or have had close contact with a person with confirmed COVID-19.
- Provide patients with instructions (appropriate languages, if possible) regarding hand hygiene, respiratory hygiene, and cough etiquette. The instructions should include the following:
 - Proper donning and doffing of surgical masks.
 - Frequent handwashing for at least 40-60 seconds using soap and water.
 - Use an alcohol-based hand sanitizer with at least 60% alcohol if soap and water are not available.
 - Use a tissue or sleeve to cover sneezes and coughs.
 - Avoid touching the facial mucous membranes (i.e., eyes, nose, and mouth) with unwashed hands.
 - Environmental cleaning and disinfection resources.
- All HCPs involved in direct patient care with a suspected or confirmed COVID-19 patient should strictly adhere to all COVID-19 IPC policies and procedures, the recommended PPE, and proper hand hygiene technique. The recommended PPE include N95 respirators, eye protection-goggles, face mask (OR face shields/masks worn over N95 respirators), or plastic disposable wrap-around glasses, gown, and gloves.
- Maintain social distancing as recommended by the Saudi CDC (approximately 6 feet, equivalent to 2 meters).

Long-Term Care Facility

A facility that offers rehabilitative, restorative, and/or continuing skilled nursing care to patients or residents that require support with activities of daily living. Long-term care facilities include rehabilitation facilities, nursing homes, inpatient behavioral/mental health facilities, and long-term chronic care hospitals.

Considering long-term care facilities congregate nature and residents served (e.g., older adults often with underlying chronic medical conditions, dementia, disabilities), placed these populations at a high risk of being affected by COVID-19 and at increased risk of serious illness.

- Restrict volunteers, consultant staff, and non-essential personnel as appropriate unless deemed necessary to directly support care.
- Consider the cancellation and rescheduling of all non-essential outpatient appointments.
- Consider the use of telehealth, videoconferencing, and alternative methods to conduct appointments and activities.
- Consider the discontinuation of all group activities (e.g., therapy gym, recreation activities, field trips) and communal dining. If possible, serve meals in the rooms of the long-term facility residents or have staggered dining times with a smaller group and keep the same group together to reduce the risk of exposure.
- Provide residents with instructions (appropriate languages) regarding hand hygiene, respiratory hygiene, and cough etiquette, including routine updates about COVID-19 and confirmed cases within the facility.
- Employees and residents should avoid touching (e.g., hugging, kissing, shaking hands) except for necessary care.
- Long-term care facilities must ensure adequate numbers of wash stations, and sufficient hand hygiene supplies, such as water, soap, and hand sanitizers with at least 60% alcohol are readily available, continuously replenished, and accessible to all residents and HCPs in every care location, as identified by IPC or equivalent entity for each facility.
- Ensure access to hand sanitizer with at least 60% alcohol within every resident room (both inside and outside of the room) and in other resident care and common areas - post visible and clear signage and instructions for the proper hand hygiene techniques.
- Signage should be posted outside of resident rooms to indicate the recommended IPC guidelines and recommended PPE as per MOH Infection Prevention and Control Guidelines of Long-term Care Facilities.
- Place a waster container near the exit inside the resident room to make it easier to discard PPE prior to exiting the room or before providing care for another resident in the same room.
- Ensure that COVID-19 testing is provided to all residents with a history of close contact with a confirmed COVID-19 case or exhibiting COVID-19 symptoms.
- Facilities should implement measures to ensure the capacity to isolate residents with suspected or confirmed COVID-19 and assign a quarantine area that includes designated restrooms. If positive, transfer to the COVID-19 unit in the facility, if available.
- Segregate any resident exposed to COVID-19 and/or exhibits COVID-19 symptoms into a separate, well-ventilated room with the door closed, whenever possible. Ensure meals and medication are provided in the room.
- If there are multiple suspected or confirmed COVID-19 residents within the facility, it may be necessary for these residents to share rooms with a designated restroom. Ensure to place resident beds at approximately 6 feet, equivalent to 2 meters, when possible.
- Do not cohort suspected or confirmed COVID-19 patients next to immunocompromised residents.
- The cohort of HCPs caring for suspected or confirmed COVID-19 residents should exclusively care for these cases to reduce the risk of spreading transmission.



Long-Term Care Facility - Continued

- In the event of an outbreak, cohort residents, HCPs, equipment, and supplies, as possible.
- Ensure measures to transport a resident with suspected or confirmed COVID-19 to a specialized facility if they require a higher level of care or the facility is unable to implement all recommended precautions.
- Depending on the extent of COVID-19 exposure, facilities may consider closing units or the entire facility to new admissions as deemed necessary.
- Consider the discharge of any resident that can be cared for in the home setting.

Staff Surge Capacity for ICU

The COVID-19 viral pandemic denotes a unique challenge to intensive care services. During an epidemic, the major problem is around preparing ICU units and the HCPs for the expected surge in caseload, which may be complicated by supply chain issues and workforce challenges with potential difficulty in maintaining standard staffing ratios.

This section aims to provide examples of approaches for hospitals to consider as approaches to enhance their surge capacity for staffing ICUs to enable continued high-quality clinical care during a pandemic.

As a significant number of critically ill patients are admitted to critical care units such as step-down, ICU, and other expansion beds, it must be determined who will care for them. Having a sufficient supply of beds and equipment is not enough; HCPs are also required. All ICU HCPs (e.g., Physicians, Nurses, respiratory therapists) will also be in short supply. These critical members of the ICU team are required to deliver adequate and safe, high-quality critical care. Furthermore, an undetermined number of experienced ICU HCPs may become ill, adding more strain on the system as the need and capacity surge.

At anticipated pandemic levels, the projected shortfall of ICU consultants, intensivists, critical care nurses, and respiratory therapists trained in mechanical ventilation would impact the care of critically ill ventilated patients. Consequently, the focus needs to be not only on increasing the numbers of mechanical ventilators but on addressing the number of trained professionals that will be required to care for both mechanically ventilated COVID-19 patients and for other critically ill patients requiring ICU care.

Examples for Staff Surge Capacity

A. Augmenting Critical Care Staffing

The approaches outlined below are examples of innovative ways to scale up staffing capacity during pandemics. As each facility's staffing resources are varied, the approach can be modified to align with the facility's staffing circumstances.

1. *Ontario Health Plan for an Influenza Pandemic Care Team Approach (OHPIPI)*

The Ontario Health Plan for an Influenza Pandemic Care Team Approach (OHPIPI) has proven to be effective in past emergencies and is based on how much critical care capacity can be increased and will depend largely on the availability of ventilators and personnel skilled in managing critically ill patients.

In the OHPIH approach, the scaling back of elective services and surgery sets free areas in hospitals such as surgical intensive care units, endoscopic units, step-down units, and post-anesthetic care units (PACU) that are well equipped to provide critical care services and personnel. The additional personnel might lack clinical experience in a critical care setting but have readily transferable skills and significant potential for increasing the critical care capacity (Figure 1):

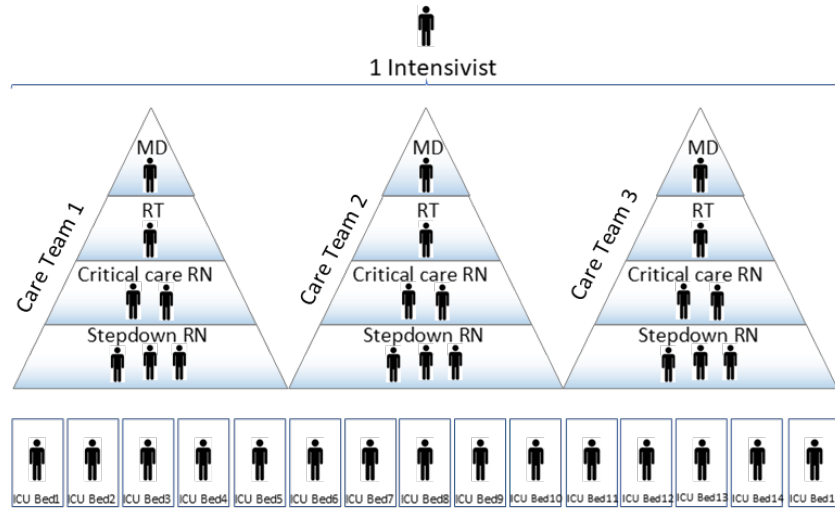


Figure 1 Care Team Model

- HCPs who have useful skills but lack experience in a specific area can work in teams, supervised by those with the relevant experience.
- Instead of individual HCPs caring for one to two patients, a team of HCPs, who amongst them possess a complete skill set and relevant experience, collectively care for a group of patients.

As an example, in this model, a team composed 2 ICU nurses supervising 3 step-down nurses working in conjunction with a respiratory therapist, and a physician could care for 6 to 8 patients. This model opposes the traditional staff compliment of 1:1 or 1:2 ratio of critical care nurses, for example, 4 ICU nurses caring for five ventilated patients.

2. Tiered Staffing Strategy for Pandemic Requiring Mechanical Ventilation

The Fundamental Disaster Management program was adapted by the Society of Critical Care Medicine (SCCM) from the original Ontario Health Plan for an Influenza Pandemic model above (Figure 1) to create the Tiered Staffing Strategy for Pandemic Requiring Mechanical Ventilation below (Figure 2).

According to SCCM, the Tiered Staffing Strategy for Pandemic Requiring Mechanical Ventilation is an effective approach to incorporate non-ICU-trained HCPs of all disciplines (physicians, nurses, and others [in red] to significantly augment the trained and experienced ICU staff [in green]).

- While dietitians, pharmacists, rehabilitation specialists, and other professionals are considered key members of the ICU team, this model speaks to HCPs needed to address a pandemic requiring a dramatic increase in the need for mechanical ventilation.

- Though this approach focuses on hospitals with intensivists, hospitals without intensivists can modify the model, and critical care teams may be directed by anesthesiologists, pulmonologists, hospitalists, or others with experience caring for critically ill patients.
- This model recommends adding staff dedicated to the management of multiple ventilators, while other staff (experienced and additive) provide overall patient support. While the ratios shown in the figure illustrate generally accepted models of critical care staffing augmentation, each hospital will need to adjust to its own demands for critical care while using its available supply of personnel.
- While the level of care may not be the same as in the typical ICU in non-crisis times, having care directed by trained and experienced intensivists or others with critical care clinical experience is an effective way to maximize care for large numbers of critically ill patients.

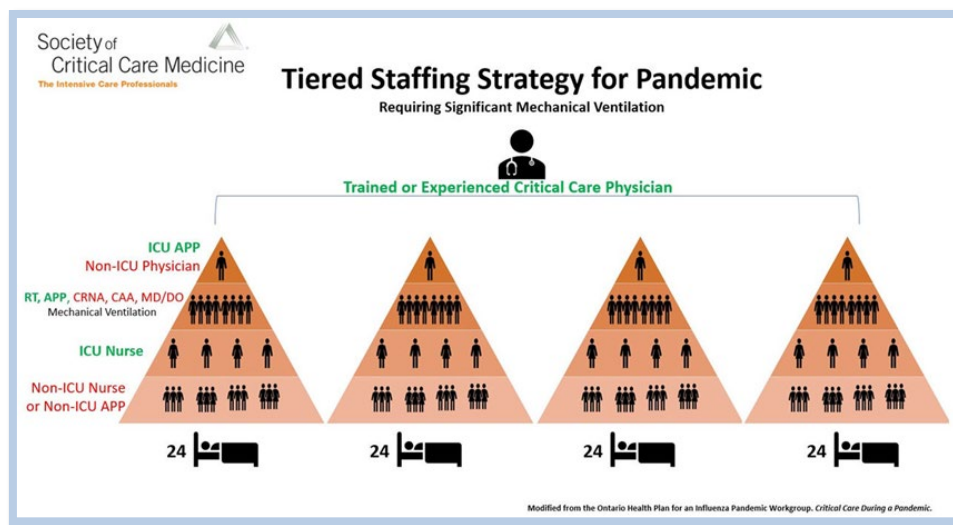


Figure 2. Tiered Staffing Strategy for Pandemic Requiring Mechanical Ventilation (SCCM | United States Resource Availability for COVID-19)

Figure 2 Note: In the Tiered Staffing model presented above, care is provided by a team for each of the four groups of 24 patients, led by a physician trained in critical care or regularly manages ICU patients.

- A single team cares for 24 patients.
- A physician trained in critical care or regularly manages ICU patients oversees four teams.
- A non-ICU physician who ideally has had training but does not routinely perform ICU care is added as a way of extending the trained and experienced ICU physicians' knowledge while working alongside critical care advanced practice providers (APPs) who regularly care for ICU patients.
- Similarly, to augment the ability to mechanically ventilate more patients, experienced ICU respiratory therapists and APPs are amplified by adding clinicians such as physicians (either MD or DO), nurse-anesthetists, and certified anesthesiologist assistants experienced in managing patients' ventilation needs.

B. Nursing Staff Model

The National Nurses United recommends the following nursing staffing model:

- Minimum 1 RN:1 patient assignment to prevent possible exposure to other patients via contaminated objects or surfaces.
- Additional staffing must be assigned to ensure safety, including a buddy or observer system to ensure safe donning and doffing of PPE.

- Additional staffing must be assigned to ensure that the nurse assigned to the patient has rest breaks and relief as needed.

C. Other Staff Surge Capacity Sources

Most countries that have already been hit hard by COVID-19 have attempted to increase the supply of HCPs to respond to the surge in demand in both testing large numbers of people and providing acute treatment for those who need it. Several countries have tried to mobilize:

- Inactive and retired health professionals, although this has raised a concern that retired health professionals may be at higher risk of severe consequences and mortality from the coronavirus if they catch it, as it affects older people more severely.
- Military health professionals, to assist both in treatment and the relocation of patients or suspected cases.
- Students in medical, nursing, and other health education programs are nearing the end of their studies to provide services to patients or to help in responding to public concerns through telephone hotlines.

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* **BodyInteract™** - a Virtual Simulator Platform that allows healthcare professionals to virtually treat a patient with suspected COVID-19 through clinical scenarios while applying the most up to date management guidelines: <https://covid19.bodyinteract.com/>

* **Psychological First Aid Approaches** - As an example, executive leadership may choose to apply:

- **RISE (Resilience in Stressful Events)**, widely implemented internationally: <https://www.safeathopkins.org/resources/johns-hopkins/rise/>
- **RISE second victim support programme** at the Johns Hopkins Hospital: a case study: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5051469/>

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