

Hospital Preparedness, Infection Prevention and Control for COVID-19

10 April 2020

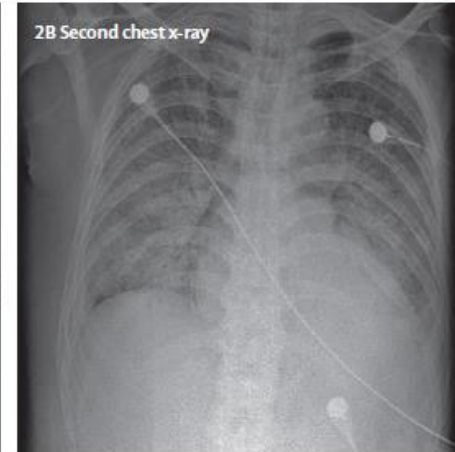
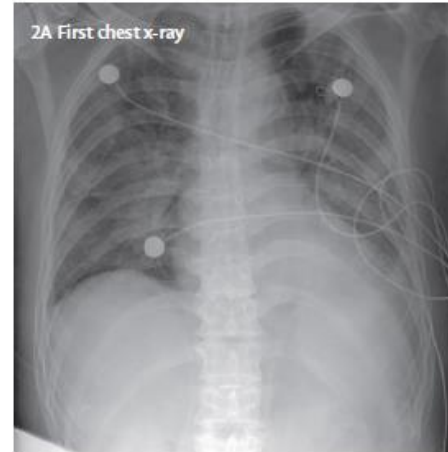


How it spreads

- Investigations are ongoing to better understand spread
- Largely based on what is known from other coronaviruses
 - Presumed to occur primarily through close person-to-person contact
 - May occur when respiratory droplets are produced when an infected person coughs or sneezes
 - Possibly by touching a surface or object that has the virus on it and then touching the mouth, nose, or eyes

Symptoms and Complications

- Symptoms may include fever, cough, shortness of breath
- Wide range of illness severity has been reported (mild to severe)
- Complications may include pneumonia, respiratory failure, or multisystem organ failure



Clinical Course of Corona virus disease (COVID-19)

- Most people with COVID-19 develop uncomplicated or mild illness (81%)
- ~14% develop severe disease that requires hospitalization and oxygen support
- ~ 5% require admission to an intensive care unit
- **Isolation to contain/mitigate virus transmission should be prioritized**

COVID-19 – Global Situation

COVID-19 - Global outbreak situation

213

Countries, Territories

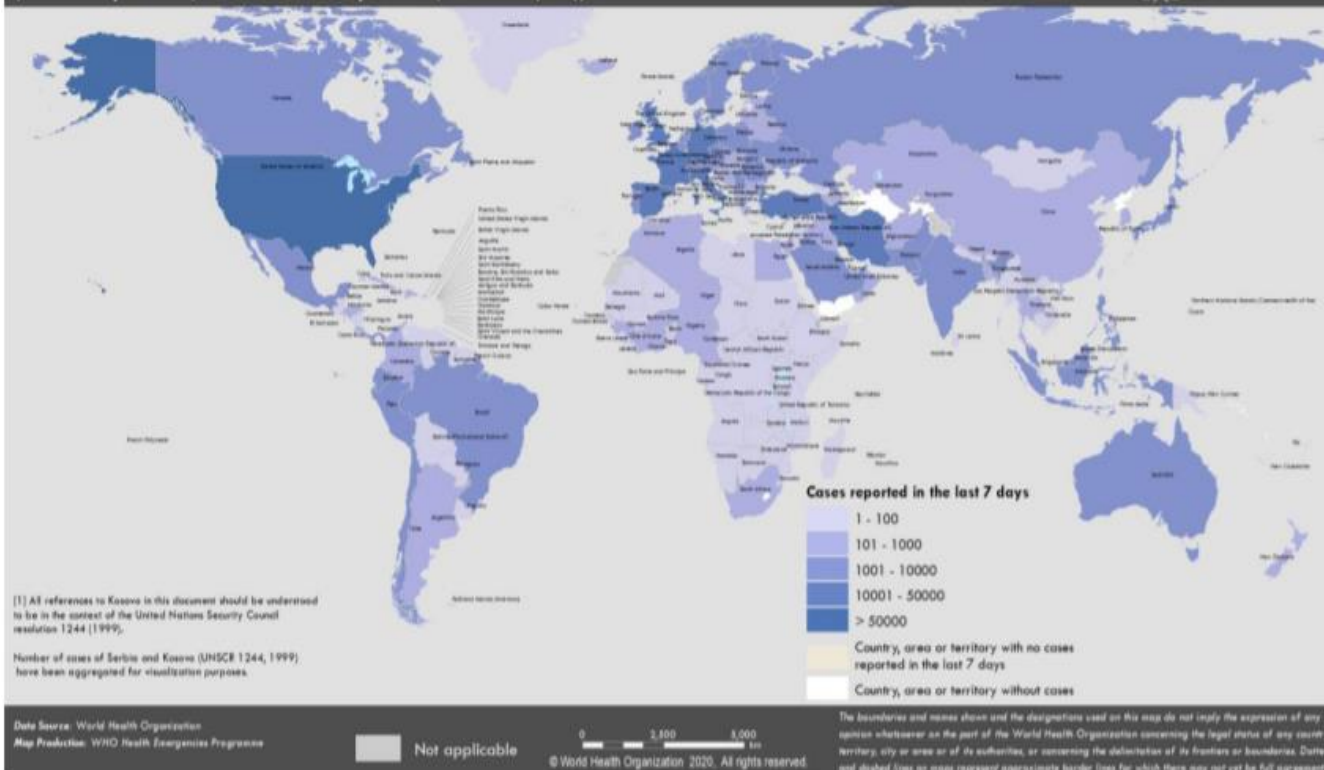
1 524 161

Confirmed cases

92 941

Confirmed deaths

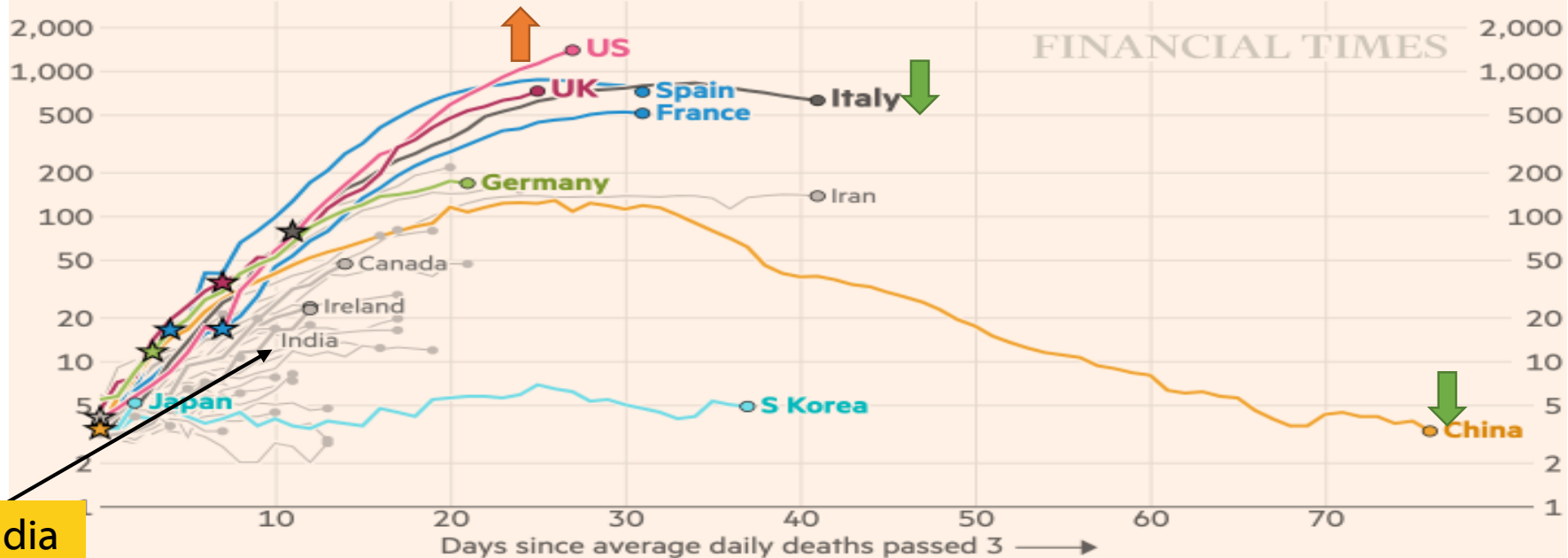
Countries, areas or territories with COVID-19 cases reported in the last 7 days
(From 03 April 2020, 10:00AM to 09 April 2020, 10:00AM (CET))



Daily COVID-19 death by number of days since 3 daily death first recorded

Italy and Spain's daily death tolls are plateauing, but in the UK and US every day brings more new deaths than the last

Daily coronavirus deaths (7-day rolling avg.), by number of days since 3 daily deaths first recorded



FT graphic: John Burn-Murdoch / @jburnmurdoch

Source: FT analysis of European Centre for Disease Prevention and Control; Worldometers; FT research. Data updated April 09, 19:00 GMT © FT

COVID-19 - Indian situation

Distribution of cases in India (Updated as on 09 April 2020)

31 States

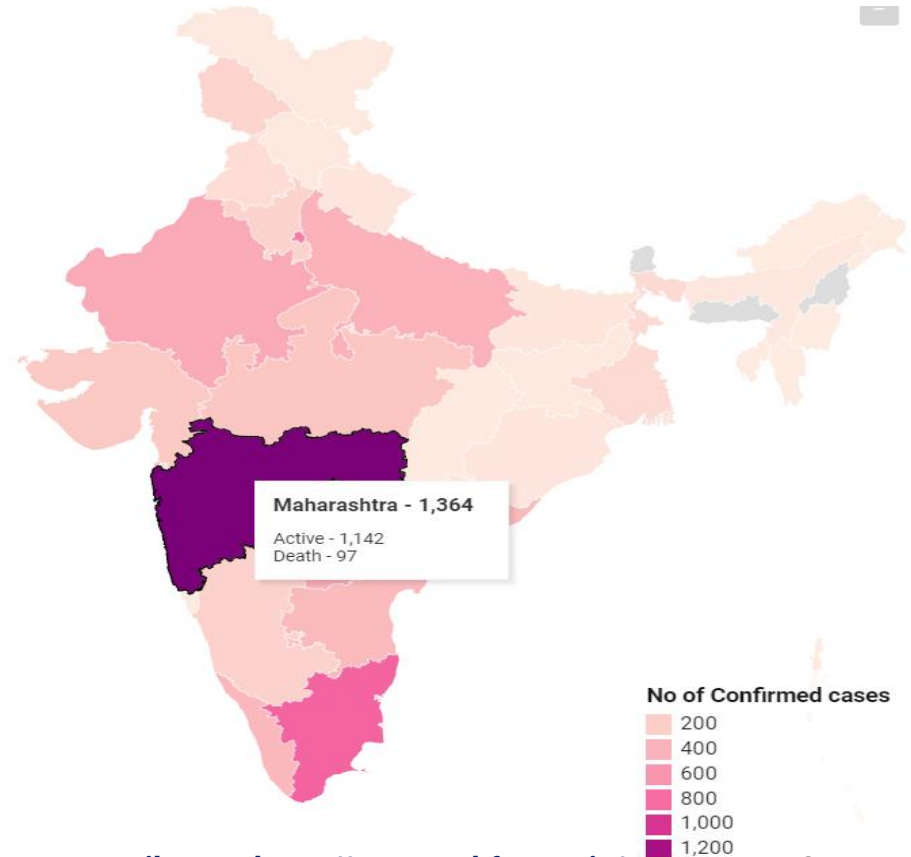
6761*
Confirmed Cases

516
Cured / Discharged

206 Died

***includes 71 Foreign nationals**

Source: MoHFW Statewide COVID-19 cases accessed on 01:30 Hrs, 10, April 2020: <https://www.mohfw.gov.in/#>



What is your primary objective?

- “Every hospital, in collaboration with other hospitals and public health agencies, will be able to provide appropriate care to COVID-19 patients requiring hospitalization while maintaining other essential medical services in the community, both during and after a pandemic”
- This definition recognizes that what constitutes “appropriate care” and the criteria for hospital admission may well change during a pandemic

What is your primary objective?

- Limit nosocomial spread to
 - protect the healthcare workers and, thus, maintain a hospital workforce
 - prevent the hospital from being a disease amplifier
 - protect the non-COVID-19 patients from infection, so as to maintain the ability to provide essential non-COVID-19 health care

Preparing for surge of cases

Table. Essential Components of a Hospital Preparedness Plan for COVID-19

Component	Function
Full-time emergency manager	To coordinate and oversee COVID-19 operations
Operations task force	Composed of key frontline personnel, such as emergency department physicians, hospitalists, critical care physicians, nurses, and infectious disease physicians, along with project managers to support activities—such as triage, staffing, and facilities management
Well-resourced infection prevention team	Develop and revise personal protective equipment protocols with backup plans in the event of supply shortages; facilitate personal protective equipment training; provide education about transmission risks; perform exposure investigations; and track epidemiology within the hospital
Bed capacity plan	Aim to be able to free up at least 30% of beds for an influx of patients at each facility; develop plans for critically ill patients and managing patients who may require advanced therapies, such as extracorporeal membrane oxygenation and mechanical ventilation
Regional coalition	Includes local, county, and state public health and emergency management partners and neighboring hospitals and health systems to coordinate bed capacity

COVID-19 = coronavirus disease 2019.

Barriers and solutions to Cohorting staff and patients

- Why geographically cohort?
 - To limit the number of health care personnel exposed and conserve supplies

- Barriers to geographic cohorting
 - Hospital at full capacity
 - Location of airborne isolation room / isolation rooms in the hospital

Potential solutions to Cohorting

- Converting single rooms to double occupancy
- Converting less used rooms like “pay rooms”
- Expediting discharges
- Slowing admission rates
- Use of temporary structures for less ill patients
- Converting spaces like
 - Catheterization laboratories
 - Lobbies
 - Postoperative care units
 - Waiting rooms

Example..

- Hospital designated beds in ICUs and wards for suspect and confirmed COVID-19 cases
- A dedicated team of doctors and critical care providers identified
 - clinical schedule roles for leadership, communication and activation criteria developed
- Worst case scenario contingency plans developed
 - Included activation criteria for opening a respiratory intensive care floor where Cohorting of both critically ill and noncritically ill patients can occur
- Planned for care of vulnerable patients, such as post-transplant and immunocompromised communities
 - Identified safe locations and staffing plans to separate vulnerable patients from COVID-19 activities

IPC and COVID-19 – Triage and Isolation

IPC priorities for COVID-19

■ IDENTIFY

- Early identification of suspected cases presenting for healthcare is critical

■ ISOLATE

- Prompt isolation of suspected cases to reduce opportunities for transmission in healthcare setting

■ INFORM

- Communication with public health response to initiate laboratory testing and coordinate patient management

IPC priorities for COVID-19

■ IDENTIFY

- Early identification of suspected cases presenting for healthcare is critical

**Focus on triage and isolation
procedures**

■ ISOLATE

- Prompt isolation of suspected cases to reduce opportunities for transmission in healthcare setting

■ INFORM

- Communication with public health authorities to initiate laboratory testing and coordinate patient management

Consider ways for patients to let health facilities know that they are seeking care for respiratory symptoms ahead of their visit



Are You Considering Coming to the ER with Coronavirus (COVID-19) Symptoms?



PLEASE CALL FIRST

EMERGENCY Dial 911

Nursing Triage Line:

360-537-5100

Emergency Room

360-537-4130

Identify suspect COVID-19 cases as soon as possible, ideally before they enter patient care areas



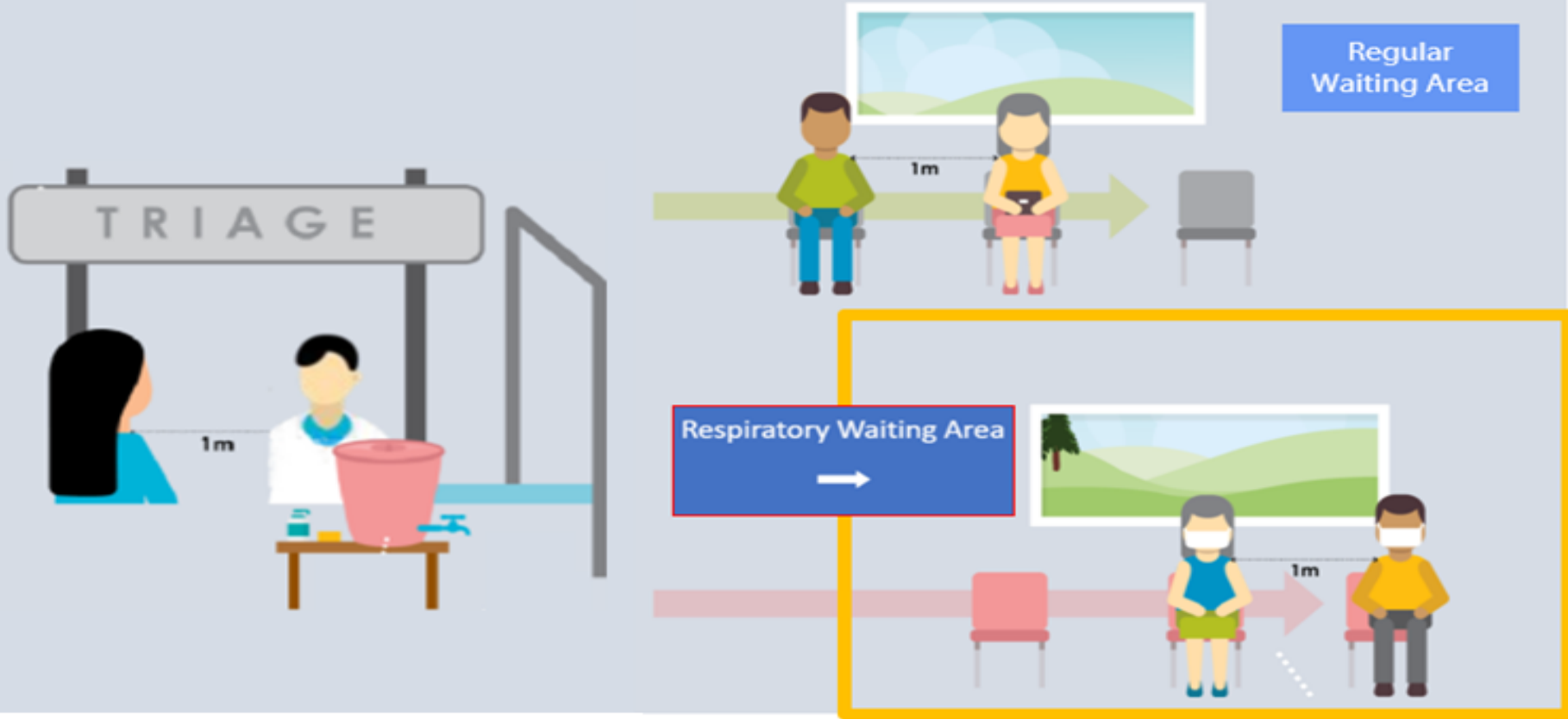
A woman leaves the a pre-triage medical tent in front of a hospital, in Cremona, Italy, last week.

MIGUEL MEDINA/AFP VIA GETTY IMAGES



Social distancing -Triage outside the healthcare facility, M Reddipatti PHC, Tamil Nadu

Setting up triage & waiting area



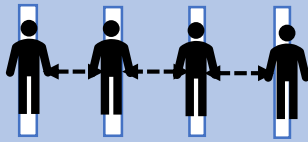


Separate patients during triage (waiting areas, etc.) as much as possible

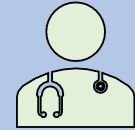
Outside Triage area
– Signage directs patients to different areas based on symptoms

COVID-19 Symptoms

COVID-19 Triage area



One meter distance between all patients and given masks



This Photo by Unknown Author is licensed under [CC BY-SA](#)

No COVID-19 Symptoms

Hospital Triage area



This Photo by Unknown Author is licensed under [CC BY-SA](#)

Preparing for triage

- Post clear signs at facility entrance to direct patients with respiratory symptoms to immediately proceed to triage or registration desk
- Ensure availability of face masks at triage or registration desk
 - All patients with respiratory symptoms should put on a mask
 - If masks not available, provide tissues or request patient to cover their face with clothing during entire triage process, including waiting room
- Install physical barriers (e.g. glass/plastic screens) at registration desk to limit close contact between triage staff and patients
- Identify isolation rooms or separate well-ventilated rooms where suspected COVID-19 patients will be placed while waiting for examination

Sample visual alerts to post at facility entry

STOP!

If you are experiencing cold or flu symptoms like:

- Fever
- Cough
- Shortness of breath

REPORT immediately to the registration desk!

COVID-19 & Flu Precautions

If you have ANY of the following symptoms
YOU MUST WEAR A MASK

 **FEVER**
or

 **SORE THROAT
RUNNY NOSE
COUGH**
or

 **TROUBLE BREATHING**

If you have any of these symptoms,
please ask for a mask, and inform the
receptionist, nurse, or physician.

 KAISER PERMANENTE.

Physical separation



Crowded OPD registration in a Hospital



OPD registration Desk with barrier protection

Protecting healthcare workers at triage

- All HCWs performing triage activities should adhere to standard precautions at all times
 - These HCWs should have convenient access to hand hygiene products
- HCWs conducting preliminary screening that does not require direct patient contact should maintain 1 m distance and do not require PPE
 - These activities included interviewing patients about symptoms and exposures and/or taking temperatures with non-contact infrared thermometer
- HCWs conducting physical examination of patients with respiratory symptoms should wear gowns, gloves, face mask, and eye protection (goggles or face shield)

Performing triage

- Patients presenting for care should be screened for signs and symptoms of respiratory infection and potential COVID-19 exposures at the triage station
- The questions asked during triage may vary depending on the COVID-19 epidemiological situation in the area
 - If there is no or little transmission in the community, then patients should be asked about recent travel history or contact with a patient with COVID-19
 - If there is widespread community transmission, questions about travel or contact with other COVID-19 patients are less relevant given the increased risk in the community and may not be asked
- Triage should be conducted according to protocols from local public health authorities

Sample triage of patients with suspected COVID-19 infection

Identify signs and symptoms of respiratory infection:

- Fever (>38°C)
- And-
- At least 1 sign or symptom of respiratory disease (e.g., cough or shortness of breath)

No



Continue with usual triage, assessment and care

Yes



Place facemask on patient

Identify Travel and Direct Exposure History:

- A history of travel to or residence in a country/area or territory reporting local transmission (see NCDC website for updated list) of COVID-19 disease during the 14 days prior to symptom onset
 - (OR)
- A patient/Health care worker with any acute respiratory illness **AND** having been in *contact* with a confirmed COVID-19 case in the last 14 days prior to onset of symptoms
- (OR)
- A patient with severe acute respiratory infection requiring hospitalization with no other etiology that fully explains the clinical presentation

No



Continue with usual triage, assessment and care

Yes



Separate from the rest of the patients:

- Place the patient in a single-person room with the door closed or in other designated area
- Ensure healthcare personnel (HCP) caring for the patient adhere to Standard, Contact, and Droplet Precautions
- Only essential HCP with designated roles should enter the room and wear appropriate personal protective equipment

Inform

- Notify the hospital emergency manager coordinating the COVID-19 response/ hospital infection control program and other appropriate staff

*A **contact** is a person who is involved in any of the following within 14 days after the onset of symptoms in the patient:

- providing direct care for patients with COVID-19 disease without using proper personal protective equipment;
- staying in the same close environment as a COVID-19 patient (including sharing a workplace, classroom or household or being at the same gathering);
- travelling in close proximity with (that is, having less than 1 m separation from) a COVID-19 patient in any kind of conveyance.

Isolation of suspect COVID-19 cases

- Patients who are identified as suspect COVID-19 cases through triage process must be separated from other patients as soon as possible
 - Give the patient a face mask and ask them to put it on
 - If face masks are not available, have patient cover their mouth with a cloth
 - Place the patient in a single-person room with the door closed
 - If single-person rooms are not available, designate a separate, well-ventilated area for these patients and ensure they maintain 1 m separation from each other
 - Only essential HCWs designated to care for suspect COVID-19 patients should enter the isolation area wearing appropriate PPE
 - Ensure that HCWs caring for patients in the isolation area adhere to standard, contact, and droplet precautions

Isolation facility



Rajiv Gandhi Government General hospital in Chennai, Picture courtesy <https://www.hindustantimes.com/india-news/isolation-wards-set-up-in-ncr-evacuees-awaited/story-obLXVkaJteu12hvw9Jhefl.html>

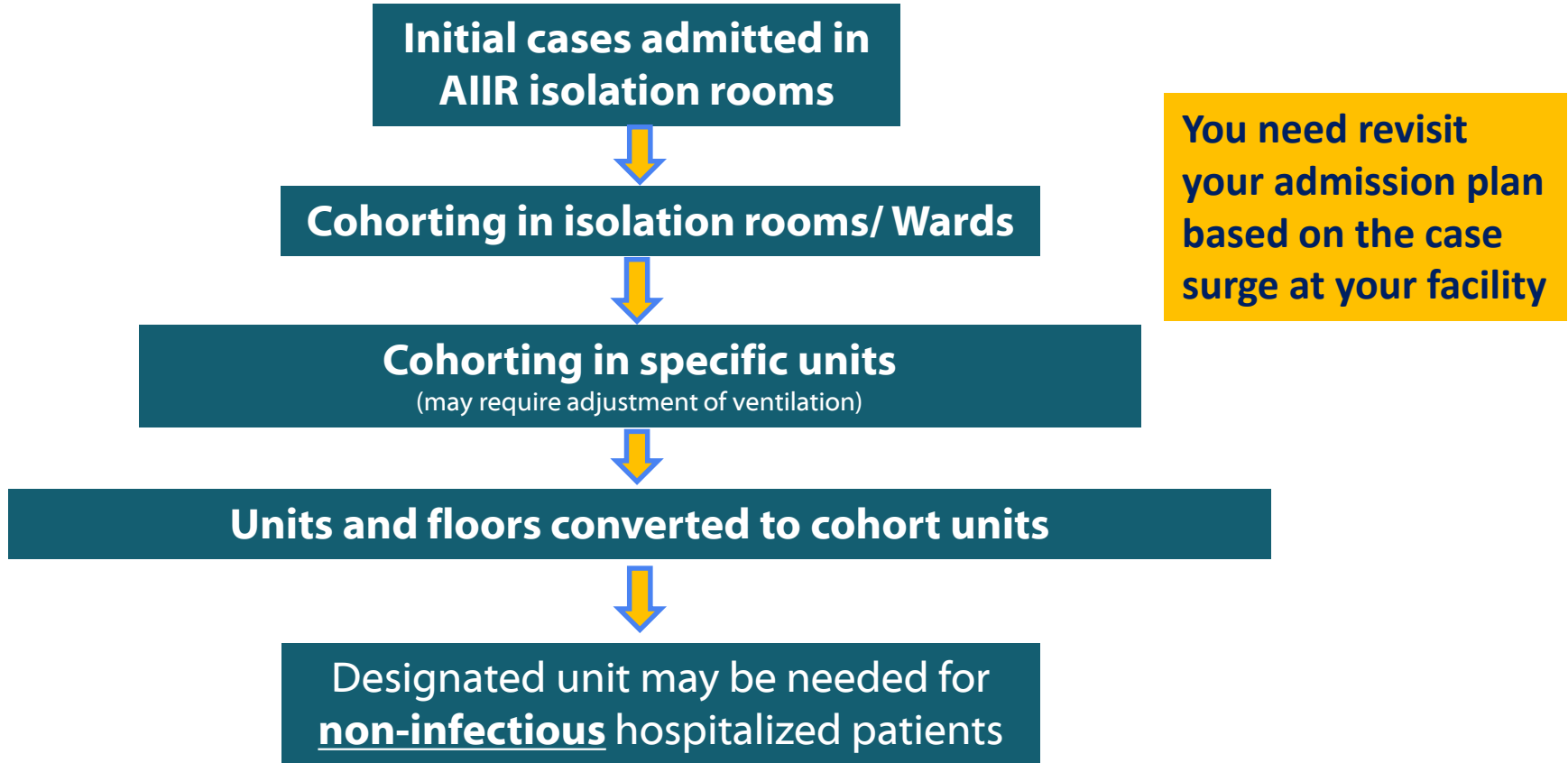


<https://www.thehitavada.com/Encyc/2020/2/4/Isolation-Ward-in-AIIMS-for-Coronavirus.html>



<https://www.indiatoday.in/india/story/quarantine-diaries-coronavirus-isolation-ward-delhi-1657438-2020-03-19>

Inpatient care strategies for COVID-19



Emergency Department care strategies for COVID-19

- EDs often operate at or above capacity on a daily basis
- In addition to above strategies for outpatient care, EDs should consider
 - Diversion of non-critical possible COVID-19 cases at a triage point prior to ED entry (“parking lot triage”)
 - Use of specific space (e.g., urgent care, pediatric, same-day surgery) for COVID-19 patients subject to appropriate isolation of that area from an air-handling and patient movement standpoint
 - Use of discharge waiting areas (if not routinely used)
 - Change in patient flow, placement and charting that can expedite non-emergency visits
 - Coordination with EMS, including through telephone triage, to avoid ED visits that can safely be cared for as outpatients

IPC in Critical Care for COVID-19

- Patients should wear simple flexible fabric masks to reduce droplet generation unless wearing an oxygen mask
- Intermittent rather than continuous oximetry and cardiac monitoring may be instituted with separate for each patient
- Use inhalers in lieu of nebulized medications to reduce droplet generation
- Coordinate with critical care physicians regarding threshold for intubation and use of bridging techniques (e.g., high flow cannula/BiPAP), which may require a special area and augmented PPE (e.g., PAPR) for providers given the higher risk of aerosol generation

IPC in critical care

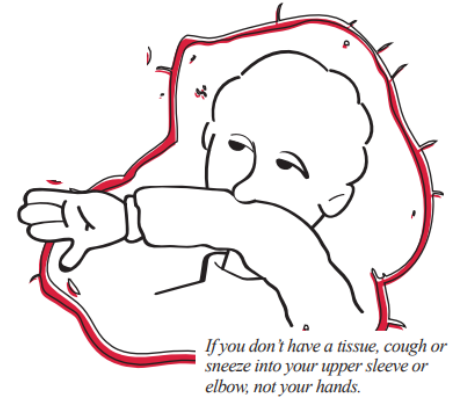
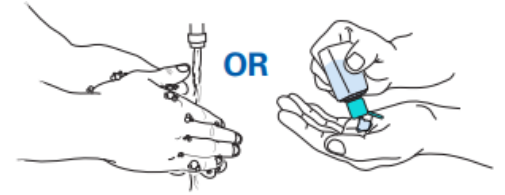
- Use rapid sequence intubation (RSI) techniques during intubation to minimize aerosol generation
- Aggressively control and suppress patient cough, as possible
- Consider more aggressive sedation/paralysis strategies to reduce coughing
- Reduce suctioning as possible
- Use of High Efficiency Particulate Air (HEPA) filters on ventilators or at minimum in-line HME/HEPA filters on the endotracheal tube
- Monitor the MoHFW and latest literature to determine potential efficacy of anti-virals (there is currently no known effective medications and limited evidence for bacterial super-infection) and other therapies

Additional IPC considerations



Standard precautions for all patient care

- Hand hygiene
- Respiratory hygiene
 - Ensure patients cover their nose and mouth with tissue or elbow when coughing or sneezing
 - Offer medical mask to patients with suspected COVID-19 while in waiting rooms/public areas
 - Perform hand hygiene after contact with respiratory secretions
- Rational and correct use of PPE
- Environmental cleaning and disinfection



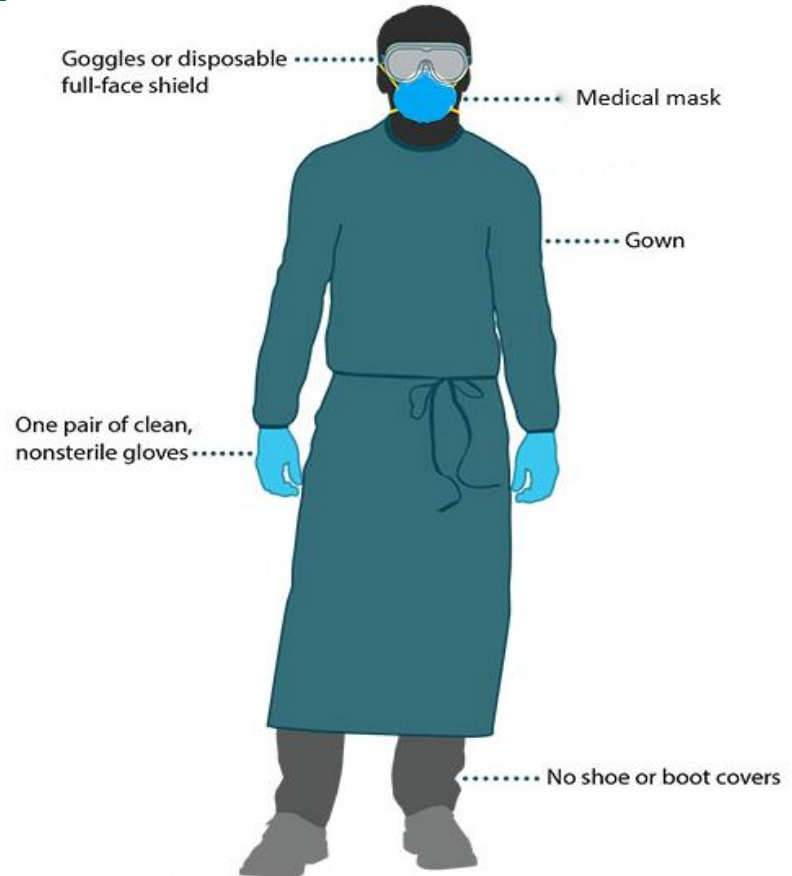
Transmission-based precautions for COVID-19

- Use adequately ventilated single rooms or ward rooms
- Wear PPE appropriate for contact and droplet precautions*
- Use disposable or dedicated patient care equipment (e.g., stethoscopes, blood pressure cuffs)
- Avoid transporting COVID-19 patients out of room unless medically necessary
- Limit number of HCWs, family members, and visitors in contact with suspected or confirmed cases

**WHO recommendations*

PPE for COVID-19*

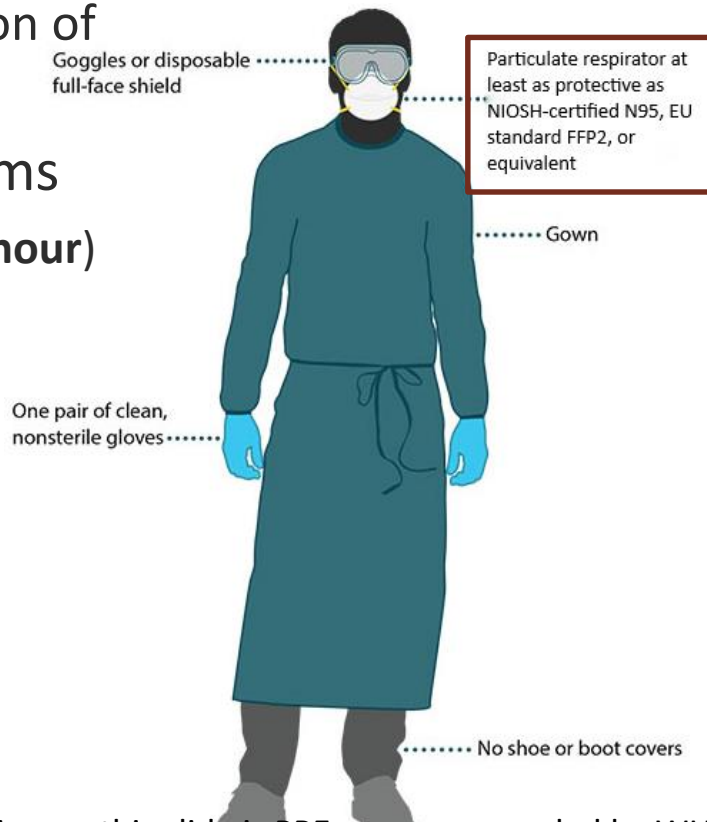
- Gloves (non-sterile, examination)
- **Medical mask**
- Eye protection (goggles or face shield)
- Gown (long-sleeved, non-sterile)



*Note: information on this slide is PPE as recommended by WHO

PPE for Aerosol-generating procedures (AGPs)

- AGPs associated with increased risk of transmission of other coronaviruses (SARS-CoV and MERS-CoV)
- Perform AGPs in adequately ventilated rooms
 - Negative pressure room (**at least 12 air changes/hour**)
 - **Natural ventilation (air flow at least 160 L/s per patient)**
- Wear appropriate PPE
 - Gloves (non-sterile, examination)
 - **Particulate respirator**
 - Eye protection (goggles or face shield)
 - Gown (long-sleeved, non-sterile)



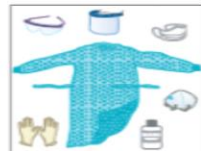
*Note: information on this slide is PPE as recommended by WHO

Key points for PPE use

- PPE relies on **consistent and correct use** by healthcare personnel
 - trainings and practice for healthcare personnel in advance
- **Risk of self-contamination** is higher when removing PPE
 - Remove PPE slowly and carefully
 - Do not touch front of masks, respirators, or facial protection (likely most contaminated)
- **Instructions** for putting on and removing PPE
 - <https://www.cdc.gov/hai/pdfs/ppe/ppe-sequence.pdf>



How to put on PPE (when all PPE items are needed)

**Step 1**

- Identify hazards & manage risk. Gather the necessary PPE.
- Plan where to put on & take off PPE.
- Do you have a buddy? Mirror?
- Do you know how you will deal with waste?

**Step 2**

- Put on a gown.



- Step 3** - Put on medical mask and eye protection (e.g. face shield, eye visor/goggles)

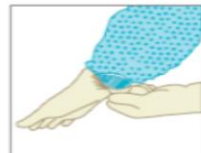
+



or



Note: If performing an aerosol-generating procedure (e.g. aspiration of respiratory tract, intubation, resuscitation, bronchoscopy, autopsy), a particulate respirator (e.g. US NIOSH-certified N95, EU FFP2, or equivalent respirator) should be used in combination with a face shield or an eye protection. Do user seal check if using a particulate respirator.

**Step 4**

- Put on gloves (over cuff).

How to take off PPE

**Step 1**

- Avoid contamination of self, others & the environment
- Remove the most heavily contaminated items first

Remove gloves & gown

- Peel off gown & gloves and roll inside, out
- Dispose gloves and gown safely

**Step 2**

- Perform hand hygiene

**Step 3a****If wearing face shield:**

- Remove face shield from behind
- Dispose of face shield safely

**Step 3b****If wearing eye protection and mask:**

- Remove goggles from behind
- Put goggles in a separate container for reprocessing
- Remove mask from behind and dispose of safely

**Step 4**

- Perform hand hygiene

Environmental cleaning and disinfection



- Routine cleaning and disinfection procedures sufficient
- Focus cleaning on frequently touched and frequently contaminated surfaces
 - Light switches, bed rails, door handles, sinks, bathrooms
- Hospital-grade disinfectants effective
 - Products active against enveloped viruses

Pic courtesy: Guidelines for Implementation of "KAYAKALP" Initiative

High-touch surfaces

Appendix C - Example of high-touch surfaces in a specialized patient area

Appendix C, Best Practices for Env. Cleaning in HCFs in Resource-Limited Settings, Appendix C

<https://www.cdc.gov/hai/pdfs/resource-limited/environmental-cleaning-508.pdf>



Optimizing PPE Supplies and Managing Shortages

Optimizing the use of PPE for COVID-19*

- Minimize the need for PPE
 - Consider use of telemedicine for evaluation of suspect cases
 - Use physical barriers in screening areas, such as glass or plastic windows, to reduce exposure to screeners
 - Restrict HCWs from entering the rooms of COVID-19 patients unless they are involved in direct care
 - Bundle activities to minimize the number of times a room is entered (e.g., check vital signs during medication administration)

Optimizing the use of PPE for COVID-19*

- Ensure PPE use is rational and appropriate
 - Select PPE based on risk of exposure (e.g., the type of activity being done)
 - Guidance on PPE to use for various activities is included in WHO document
 - Overuse of PPE will have further impact on supply shortages
 - Respirators (e.g., N95, FFP2, or equivalent standard) have been used for an extended period of time in previous outbreaks of acute respiratory illness when PPE was in short supply
 - This refers to using the same respirator for multiple patients with the same diagnosis without removing it
 - Using one respirator for longer than 4 hours can lead to discomfort and should be avoided

*WHO guidance, available at https://apps.who.int/iris/bitstream/handle/10665/331215/WHO-2019-nCov-IPCPPE_use-2020.1-eng.pdf

Managing PPE shortages

- Disposable PPE is generally intended for single use only and should not be reused unless no other options exist for additional PPE procurement
- In the situation of limited supplies, reusable PPE can be used where options exist (e.g., cloth gowns, reusable goggles or face shields), making sure that:
 - Manufacturer's instructions for cleaning and disinfecting are followed
 - Personnel are augmented as needed to ensure adequate cleaning and disinfection
 - Systems are established to routinely inspect, maintain, and replace reusable PPE

Managing PPE shortages

- Consider reprocessing and reuse of certain disposable PPE (specifically face-shields and goggles, if disposable)
- Consider using disposable PPE beyond shelf life / expiration date if they are in good condition and prioritizing use of these on mild/moderate cases
- Consider extended use of PPE by the same wearer for the same cohort of patients (with the exception of gloves which should not be used for more than one patient)
- Gloves:
 - 1) no need to double glove
 - 2) disposable gloves need to be reserved for clinical care, other tasks (laundry, cleaning) should be performed using reusable gloves

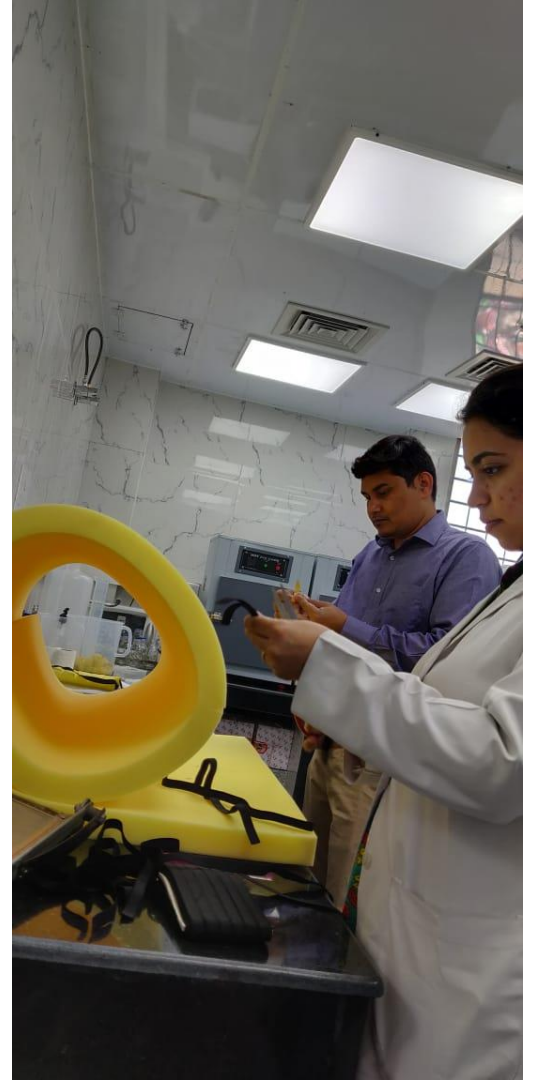


JPNATC, AIIMS New Delhi

**When there is surge
and stocks exhausts**



Identify alternate
mechanisms to
manage the crisis

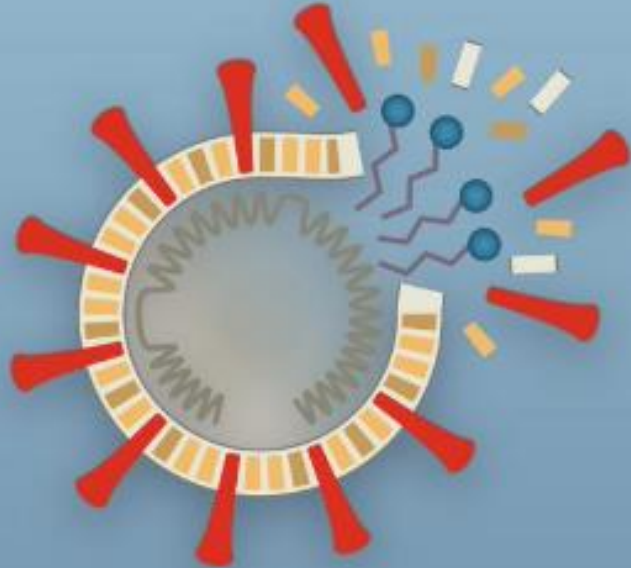


Procurement and stock management

- Procurement procedure in place and can be activated on short notice for supply of essential IPC supplies (eg. PPE, hand sanitizers, disinfectants, alcohol solutions etc.)
- A stock inventory conducted
- Buffer stock of key supplies available
- Alternate suppliers identified if the main supplier running out of stock
- Plan in place to keep track and custody of key supplies (e.g. (PPE, hand sanitizers, disinfectants, alcohol solutions etc.) to avoid
 - Misuse
 - Overuse
 - Theft

Should I use Soap or Sanitizer?

SOAP DESTROYS THE VIRUS when the water-shunning tails of the soap molecules wedge themselves into the lipid membrane and pry it apart.



Guide to Local Production: WHO-recommended Hand rub formulations



Dr Dhanapaal HoD Microbiology, MGGMH conducted a session on how to prepare hand rub for pharmacies, hospitals | M K ASHOK KUMAR

Prepare sanitiser. City runs out of liquid

INDIAN EXPRESS Wed, 18 March 2020
<https://epaper.newindianexpress.com/c/50075528>



Introduction: This Guide to Local Production of WHO-recommended Handrub Formulations is separated into two discrete but interrelated sections:

Part A provides a practical guide for use at the pharmacy bench during the actual preparation of the formulation. Users may want to display the material on the wall of the production unit.

Part B summarizes some essential background technical information and is taken from WHO Guidelines on Hand Hygiene in Health Care (2009). Within Part B the user has access to important safety and cost information and supplementary material relating to dispensers and distribution.




Resource Materials

Health Risk Communication Posters for Healthcare Facilities

How to Handrub?

RUB HANDS FOR HAND HYGIENE! WASH HANDS WHEN VISIBLY SOILED

 Duration of the entire procedure: 20-30 seconds



Apply a palmful of the product in a cupped hand, covering all surfaces;



Rub hands palm to palm;



Right palm over left dorsum with interlaced fingers and vice versa;



Palm to palm with fingers interlaced;



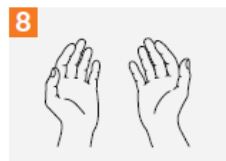
Backs of fingers to opposing palms with fingers interlocked;



Rotational rubbing of left thumb clasped in right palm and vice versa;




Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;

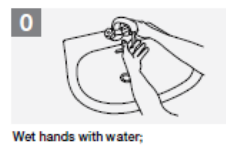


Once dry, your hands are safe.

How to Handwash?

WASH HANDS WHEN VISIBLY SOILED! OTHERWISE, USE HANDRUB

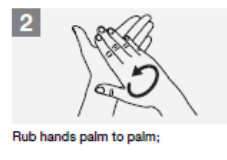
 Duration of the entire procedure: 40-60 seconds



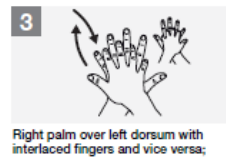
Wet hands with water;



Apply enough soap to cover all hand surfaces;



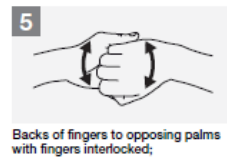
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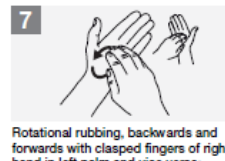
Palm to palm with fingers interlaced;



Backs of fingers to opposing palms with fingers interlocked;



Rotational rubbing of left thumb clasped in right palm and vice versa;



Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



Rinse hands with water;



Dry hands thoroughly with a single use towel;



Use towel to turn off faucet;



Your hands are now safe.



Patient Safety
A World Alliance for Safer Health Care

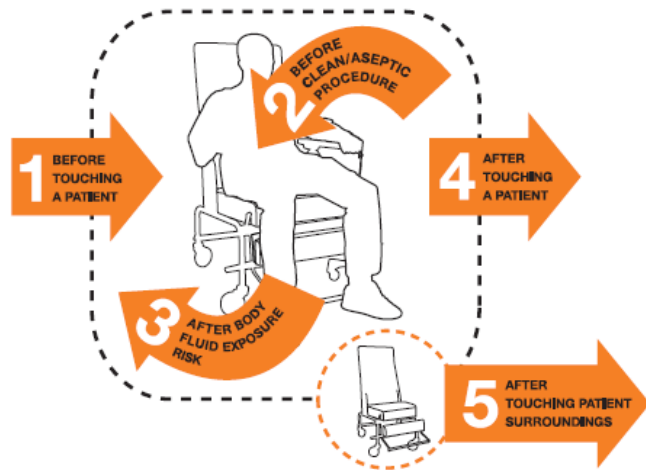
SAVE LIVES
Clean Your Hands



Patient Safety
A World Alliance for Safer Health Care

SAVE LIVES
Clean Your Hands

Your 5 Moments for Hand Hygiene



1	BEFORE TOUCHING A PATIENT	WHEN? Clean your hands before touching a patient when approaching him/her. WHY? To protect the patient against harmful germs carried on your hands.
2	BEFORE CLEAN/ASEPTIC PROCEDURE	WHEN? Clean your hands immediately before performing a clean/aseptic procedure. WHY? To protect the patient against harmful germs, including the patient's own, from entering his/her body.
3	AFTER BODY FLUID EXPOSURE RISK	WHEN? Clean your hands immediately after an exposure risk to body fluids (and after glove removal). WHY? To protect yourself and the health-care environment from harmful patient germs.
4	AFTER TOUCHING A PATIENT	WHEN? Clean your hands after touching a patient and her/his immediate surroundings, when leaving the patient's side. WHY? To protect yourself and the health-care environment from harmful patient germs.
5	AFTER TOUCHING PATIENT SURROUNDINGS	WHEN? Clean your hands after touching any object or furniture in the patient's immediate surroundings, when leaving – even if the patient has not been touched. WHY? To protect yourself and the health-care environment from harmful patient germs.



World Health
Organization

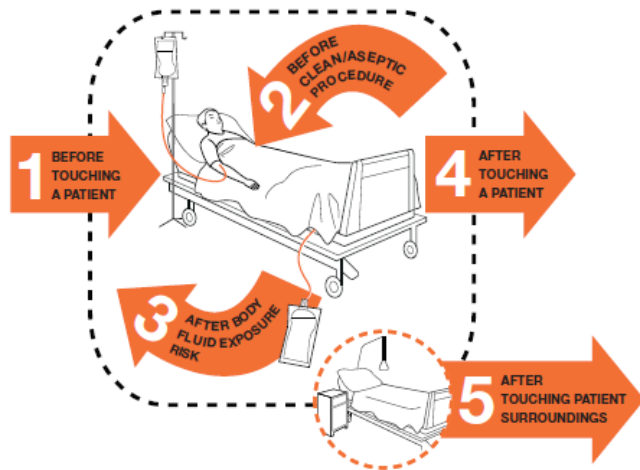
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WHO acknowledges the Hospital Universitario de Ginebra (HUG), in particular the members of the Infection Control Programme, for their active participation in developing this material.

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How to Remove Gloves

To protect yourself, use the following steps to take off gloves



1 Grasp the outside of one glove at the wrist. Do not touch your bare skin.



2 Peel the glove away from your body, pulling it inside out.



3 Hold the glove you just removed in your gloved hand.



4 Peel off the second glove by putting your fingers inside the glove at the top of your wrist.



5 Turn the second glove inside out while pulling it away from your body, leaving the first glove inside the second.



6 Dispose of the gloves safely. Do not reuse the gloves.



7 Clean your hands immediately after removing gloves.

How to put on PPE (when all PPE items are needed)



Step 1

- Identify hazards & manage risk. Gather the necessary PPE.
- Plan where to put on & take off PPE.
- Do you have a buddy? Mirror?
- Do you know how you will deal with waste?



Step 2

- Put on a gown.



Step 3a

- Put on face shield.

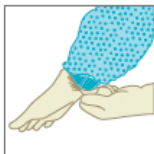
OR

Step 3b

- Put on medical mask and eye protection (e.g. eye visor/goggles)



Note: If performing an aerosol-generating procedure (e.g. aspiration of respiratory tract, intubation, resuscitation, bronchoscopy, autopsy), a particulate respirator (e.g. US NIOSH-certified N95, EU FFP2, or equivalent respirator) should be used in combination with a face shield or an eye protection. Do user seal check if using a particulate respirator.



Step 4

- Put on gloves (over cuff).

How to take off PPE



Step 1

- Avoid contamination of self, others & the environment
- Remove the most heavily contaminated items first

Remove gloves & gown

- Peel off gown & gloves and roll inside, out
- Dispose gloves and gown safely



Step 2

- Perform hand hygiene



Step 3a

If wearing face shield:

- Remove face shield from behind
- Dispose of face shield safely



Step 3b

If wearing eye protection and mask:

- Remove goggles from behind
- Put goggles in a separate container for reprocessing
- Remove mask from behind and dispose of safely



Step 4

- Perform hand hygiene



Ministry of Health & Family Welfare
Government of India

Help us to
help you

NOVEL CORONAVIRUS (COVID-19)



Protect yourself and others!

Follow these Do's and Don'ts

Do's



Practice frequent hand washing. Wash hands with soap and water or use alcohol based hand rub. Wash hands even if they are visibly clean



Cover your nose and mouth with handkerchief/tissue while sneezing and coughing



Throw used tissues into closed bins immediately after use



See a doctor if you feel unwell (fever, difficult breathing and cough). While visiting doctor wear a mask/cloth to cover your mouth and nose



If you have these signs/symptoms please call State helpline number or Ministry of Health & Family Welfare's 24X7 helpline at 011-23978046



Avoid participating in large gatherings



Have a close contact with anyone, if you're experiencing cough and fever



Touch your eyes, nose and mouth



Spit in public

Together we can fight Coronavirus

For further information :

Call at Ministry of Health, Govt. of India's 24X7 control room number
+91-11-2397 8046

Email at ncov2019@gmail.com



स्वास्थ्य एवं परिवार कल्याण मंत्रालय
भारत सरकार

Help us to
help you

नोवल कोरोनावायरस (COVID-19)



खुद रहें सुरक्षित, दूसरों को रखें सुरक्षित

क्या करें और क्या ना करें

क्या करें



बार-बार हाथ धोएं। जब आपके हाथ स्पष्ट रूप से गंदे न हों, एब भी अपने हाथों को अल्कोहल - आधारित हैंड सैब्स या सैबुन और पानी से साफ करें



छींकते और खांसते समय, अपना मुँह व नाक टिप्पू/सम्पत् से ढकें



प्रयोग के पुराने सब टिप्पू को फिल्ट्री बंद डिब्बे में फेंक दें



अगर आपको बुखार, खांसी और सांस लेने में कठिनाई है तो डॉक्टर से संपर्क करें। डॉक्टर से मिलने के दौरान अपने मुँह और नाक को ढकाने के लिए मास्क/कपड़े का प्रयोग करें



अगर आप में कोरोना वायरस के लक्षण हैं, तो कृपया राज्य हेल्पलाइन नंबर या स्वास्थ्य मंत्रालय की 24X7 हेल्पलाइन नंबर 011-23978046 पर कॉल करें



शौच-नाइट वाली जगहों पर जाने से बचें



यदि आपको खांसी और बुखार का अनुभव हो रहा हो, तो किसी के साथ संपर्क में ना आएं



अपनी आँख, नाक या मुँह को ना छूयें



सार्वजनिक स्थानों पर ना झूकें

क्या न करें

हम सब साथ मिलकर कोरोनावायरस से लड़ सकते हैं

अधिक जानकारी के लिए

स्वास्थ्य एवं परिवार कल्याण मंत्रालय भारत सरकार के 24X7 हेल्पलाइन नं.

+91-11-2397 8046 पर कॉल करें या

ई-मेल करें ncov2019@gmail.com

Reduce risk of coronavirus infection

1



Frequently clean hands by using alcohol-based hand rub or soap and water

2



When coughing and sneezing cover mouth and nose with flexed elbow or tissue – throw tissue away immediately and wash hands

3



Avoid close contact with anyone that has fever and cough

2019-NOVEL CORONAVIRUS

Advice for Travellers Returning from China

Coronaviruses cause illness from common cold to severe diseases such as Middle East Respiratory Syndrome (MERS)-CoV and Severe Acute Respiratory Syndrome (SARS-CoV)



PREVENTIVE MEASURES

If you have recently travelled to China (within last 14 days) or had possible contact with nCoV infected person, do the following to protect yourself and your family

SYMPTOMS



FEVER



COUGH



DIFFICULTY IN BREATHING



01

Stay at home
Limit contact with family, friends, visitors
Sleep alone in room

02

Cover nose and mouth while sneezing and coughing



03

Wash your hands regularly with soap and water

04

If you have travelled from Wuhan, after 15 January 2020, call helpline and get yourself tested for nCoV



05

If you develop fever, cough and difficulty in breathing within 28 days of return, call helpline



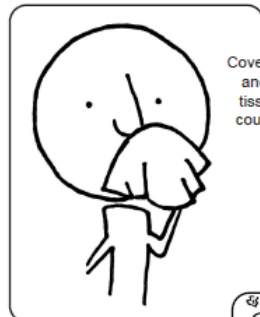
Help us to help you

Visit your nearest District Screening Facility for 2019-nCoV or Government Hospital



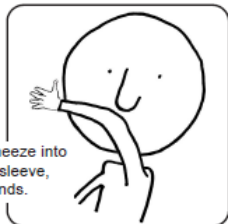
Stop the spread of germs that make you and others sick!

Cover your Cough

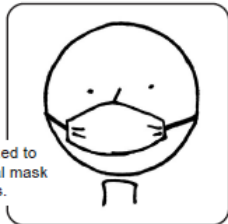


Cover your mouth and nose with a tissue when you cough or sneeze

or cough or sneeze into your upper sleeve, not your hands.



Put your used tissue in the waste basket.



You may be asked to put on a surgical mask to protect others.

Clean your Hands after coughing or sneezing.



or



MISSISSAUGA DEPARTMENT OF HEALTH
500 W. HURON STREET, 5TH FLOOR, SUITE 500
MISSISSAUGA, ONTARIO L4Z 1A7
905.874.1000 ext. 2327

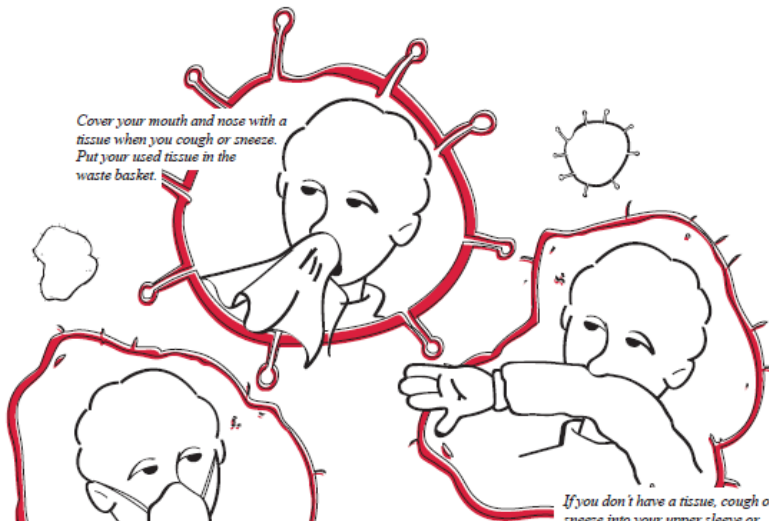


APIC
AMERICAN PUBLIC HEALTH ASSOCIATION

Cover your Cough

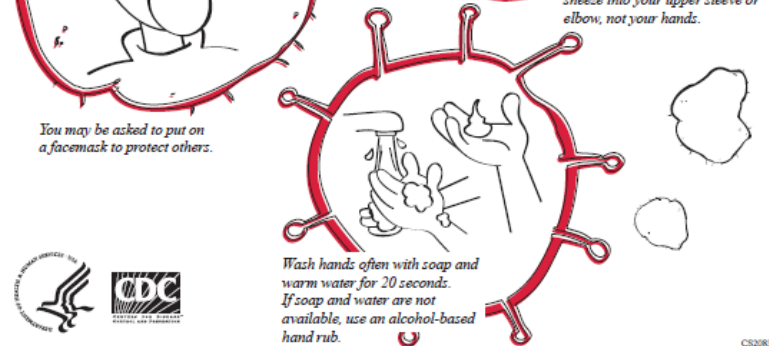
— Stop the spread of germs that can make you and others sick! —

Cover your mouth and nose with a tissue when you cough or sneeze. Put your used tissue in the waste basket.



If you don't have a tissue, cough or sneeze into your upper sleeve or elbow, not your hands.

You may be asked to put on a facemask to protect others.



Wash hands often with soap and warm water for 20 seconds. If soap and water are not available, use an alcohol-based hand rub.



Issued by the Office of the Principal
Scientific Advisor to the Government
of India_ March 30, 2020



Masks for Curbing the Spread of SARS-CoV-2 Coronavirus

A manual on homemade masks

You can easily make a face cover at home to protect yourself.

Option 1. Make a Face Cover using a Sewing Machine*

Things you will need:

1.



100% cotton material

Any used cotton cloth can be used to make this face cover. The colour of the fabric does **NOT** matter but **you must ensure that you wash the fabric well in boiling water for 5 minutes and dry it well before making the face cover. Adding salt to this water is recommended.**

2.



Four pieces of cloth strips

3.



Scissors

4.



Sewing Machine



Patients with COVID-19 have experienced mild to severe respiratory illness.

Symptoms* can include

FEVER



*Symptoms may appear 2-14 days after exposure.

COUGH



SHORTNESS OF BREATH



Seek medical advice if you develop symptoms, and have been in close contact with a person known to have COVID-19 or if you live in or have recently been in an area with ongoing spread of COVID-19.



For more information: www.cdc.gov/COVID19-symptoms



The COVID-19 Risk Communication Package For Healthcare Facilities



This package provides healthcare facility management and healthcare workers with an overview of the key actions to keep the facility and healthy in the workplace.

Updated March 10, 2020.

Content - What the package contains

The COVID-19 Risk Communication Package for Healthcare Facilities contains eight products:

No.	Format	Product Title	Primary Audience	Use In
1	Poster	Preparing for COVID-19 at your healthcare facility	Healthcare facility management	Share at staff trainings and meetings. Place in healthcare facility visible to all staff.
2	Poster	Managing patients with suspected or confirmed COVID-19 at your healthcare facility	Healthcare facility management	Share at staff trainings and meetings. Place in healthcare facility visible to all staff.
3	Poster	Protecting yourself at work from COVID-19	Healthcare workers	Share at staff trainings and meetings. Place in healthcare facility visible to all staff (e.g., at the entrance/exit to the isolation ward).
4	Poster	Personal Protective Equipment (PPE) According to Healthcare Activities	Healthcare workers	Share at staff trainings and meetings. Place in healthcare facility visible to all staff (e.g., at the entrance/exit to the isolation ward).
5	Flyer	Communicating with patients with suspected or confirmed COVID-19	Healthcare workers	Share at staff trainings and meetings. Place at the triage station and reception.
6	Flyer	Information sheet about COVID-19	Healthcare facility patients and visitors	Print and have readily available at the triage station and reception.
7	Poster	Coping with stress	All healthcare facility staff	Share at staff trainings and meetings. Place in healthcare facility visible to all staff (e.g., in the kitchen or lunchroom).
8	Poster	My 5 Moments of Hand Hygiene	All healthcare facility staff	Share at staff trainings and meetings. Place in healthcare facility visible to all staff (e.g., at the entrance/exit to the isolation ward).



Novel Coronavirus COVID-19

FOR HEALTHCARE FACILITY MANAGEMENT

Preparing for COVID-19 at your healthcare facility

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.



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.

Protect your workforce

Be ready! Ensure your healthcare and triage workers:

- Are trained on the importance, selection and proper use of personal protective equipment
- Are trained to spot symptoms of a potential COVID-19 infection and offer a medical mask to suspected cases
- Know the case definition and have a decision flow diagram available and accessible for reference at the triage station
- Isolate a suspected case promptly
- Perform hand hygiene frequently



Novel Coronavirus COVID-19

FOR HEALTHCARE WORKERS

Personal Protective Equipment (PPE) According to Healthcare Activities

Remember Hand hygiene is always important. Clean hands before putting on, and after taking off, PPE.

Triage/points of entry screening personnel

- medical mask

Collecting respiratory specimens

- goggles OR face shield
- medical mask
- gown
- gloves

Caring for a suspected/confirmed case of COVID-19 with NO aerosol-generating procedure

- goggles OR face shield
- medical mask
- gown
- gloves

Caring for a suspected/confirmed case of COVID-19 WITH aerosol-generating procedure

- goggles OR face shield
- Respirator (N95 or FFP2)
- gown
- gloves

Transport of suspected/confirmed case of COVID-19, including direct care

- goggles OR face shield
- medical mask
- gown
- gloves

World Health Organization
Western Pacific Region

कोरोना वायरस संक्रमण का खतरा घटाएं ये सरल उपाय अपनाएं



1 नियमित रूप से साबुन और पानी से हाथ धोएं



2 खांसते या छींकते समय नाक और मुँह टिपू या कोहनी से ढकें



3 जिस व्यक्ति से खाँसी, जुकाम या बुखार के लक्षण हों उससे दूरी बनाएं



4 अगर खाँसी, बुखार या रसिया लक्षणों में परेशानी हो तो तुरंत डॉक्टर से संपर्क करें

सुरक्षित रहें! कोरोना वायरस से बचे रहें!

यदि आप पिछले 14 दिनों में बड़े दुनियाँ की हो गई है तो आपको सावधान रहना चाहिए।

यदि आप पिछले 14 दिनों में बड़े दुनियाँ की हो गई है तो आपको सावधान रहना चाहिए।

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+91-11-23978046

Wash hands with soap and water frequently. When coughing or sneezing, cover mouth and nose with handkerchief, tissue or elbow.



3 Avoid close contact with anyone with cold, cough or flu like symptoms



4 If you have cough, fever or difficulty in breathing, contact a doctor immediately

Stay protected! Stay safe from Coronavirus!

If you have returned from Wuhan China after January 15, then get tested for COVID-19. To know about the testing centres, call the Ministry of Health and Family Welfare Helpline.

If you develop fever, cough and difficulty in breathing within 14 days of return from China, immediately call the Ministry of Health and Family Welfare Helpline.

+91-11-23978046

कोरोना वायरस संक्रमण का खतरा घटाएं ये सरल उपाय अपनाएं



1 खाँसने या छींकने के बाद

हाथों को साबुन से धोना रखें याद



4 शौचालय के इस्तेमाल के बाद



2 बीमार व्यक्ति की देख-रेख साफ हाथों से करें



3 खाना बनाने से पहले, खाना बनाने के बाद और खाना खाने से पहले



4 अगर खाँसी, बुखार या रसिया लक्षणों में परेशानी हो तो तुरंत डॉक्टर से संपर्क करें

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+91-11-23978046

After coughing and sneezing. After using toilet.



2 Clean your hands before and after caring for sick person



3 Before cooking, after cooking and before eating food



4 If you have cough, fever or difficulty in breathing, contact a doctor immediately

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If you develop fever, cough and difficulty in breathing within 14 days of return from China, immediately call the Ministry of Health and Family Welfare Helpline.

+91-11-23978046

कोरोना वायरस संक्रमण का खतरा घटाएं ये सरल उपाय अपनाएं



1 बुखार और खाँसी हो तो यात्रा करने से बचें



2 नियमित रूप से साबुन और पानी से हाथ धोएं



3 अपने स्वास्थ्यकर्मी के साथ पिछली यात्रा की जानकारी साझा करें



4 अगर खाँसी, बुखार या रसिया लक्षणों में परेशानी हो तो तुरंत डॉक्टर से संपर्क करें

सुरक्षित रहें! कोरोना वायरस से बचे रहें!

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+91-11-23978046

Avoid travel if you are suffering from fever and cough. Wash your hands frequently with soap and water.



3 Share your travel history with your health worker (ASHA/ ANM)



4 If you have cough, fever or difficulty in breathing, contact a doctor immediately

Stay protected! Stay safe from Coronavirus!

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If you develop fever, cough and difficulty in breathing within 14 days of return from China, immediately call the Ministry of Health and Family Welfare Helpline.

+91-11-23978046

Key Resources for Healthcare Facilities



सत्यमेव जयते



COVID -19 Outbreak Guidelines for Setting up Isolation Facility/Ward

National Centre for Disease Control
22 Sham Nath Marg, Delhi 110054
Directorate General of Health Services
Ministry of Health and Family Welfare

Annexure II

Hospital Preparedness & Isolation Facility Assessment Checklist - COVID19

I . GENERAL INFORMATION

II. HCF PREPAREDNESS TO MANAGE MAJOR EPIDEMICS & PANDEMICS

15. Core Emergency Response / Rapid Response Team for outbreak management Available In progress Not Started

III. TRIAGE

20. Triage protocols available at the healthcare facility? Available In progress Not Started
21. Type of isolation facility Temporary Refinement

IV Isolation Facility

38. Is the isolation facility near OPD/IPD/other crowded area? Yes No
Started

IV. INFECTION PREVENTION AND CONTROL PRACTICES

74. Does the hospital have Hospital Infection control Committee (HICC)? Yes No
75. Are there any infection control protocols/guidelines available? Available In progress Not Started

VI. ENVIRONMENTAL CLEANING

82. Are objects and environmental surfaces in patient care areas touched frequently Yes No
(e.g., bed rails, cranked table, bedside commode, bathroom, faucet, etc.)

IV. INFECTION PREVENTION AND CONTROL PRACTICES

74. Does the hospital have Hospital Infection control Committee (HICC)? Yes No
Started

VI. ENVIRONMENTAL CLEANING

82. Are objects and environmental surfaces in patient care areas touched frequently Yes No
(e.g., bed rails, cranked table, bedside commode, bathroom, faucet, etc.)

VII. BIOMEDICAL WASTE MANAGEMENT (BMWM)

102. Availability of SOP for BMW management? Available In progress Not Started

VIII. ICU FACILITY

112. Are there any beds dedicated for COVID 19 infection? Yes No

XII. OTHER ESSENTIAL SERVICES

121. Is there strategy available for optimizing the PPE supply Available In progress Not started

ECDC TECHNICAL REPORT

**Personal protective equipment (PPE) needs in
healthcare settings for the care of patients with
suspected or confirmed novel coronavirus (2019-nCoV)**

Table 2. Minimum number of sets for the different case scenarios

	Suspected case	Confirmed case <i>Mild symptoms</i>	Confirmed case <i>Severe symptoms</i>
Healthcare staff	Number of sets per case	Number of sets per day per patient	
Nursing	1–2	6	6–12
Medical	1	2–3	3–6
Cleaning	1	3	3
Assistant nursing and other services	0–2	3	3
Total	3–6	14–15	15–24

CDC Environmental Checklist for Monitoring Terminal Cleaning¹

Date:	
Unit:	
Room Number:	
Initials of ES staff (optional):²	

Evaluate the following priority sites for each patient room:

High-touch Room Surfaces³	Cleaned	Not Cleaned	Not Present in Room
Bed rails / controls			
Tray table			
IV pole (grab area)			
Call box / button			
Telephone			
Bedside table handle			
Chair			
Room sink			
Room light switch			
Room inner door knob			
Bathroom inner door knob / plate			
Bathroom light switch			
Bathroom handrails by toilet			
Bathroom sink			
Toilet seat			
Toilet flush handle			
Toilet bedpan cleaner			

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

High-touch Room Surfaces³	Cleaned	Not Cleaned	Not Present in Room
IV pump control			
Multi-module monitor controls			
Multi-module monitor touch screen			
Multi-module monitor cables			
Ventilator control panel			



Government of India
Ministry of Health & Family Welfare
Directorate General of Health Services
(EMR Division)

COVID-19: GUIDELINES ON DEAD BODY MANAGEMENT

Pre-shift check for HCW

Process for Pre-Shift Check for Healthcare Facilities that Provided Care for a Confirmed Case of 2019-nCoV

This process is useful when case counts are low or moderate. When case counts are high the administrative burden to do this for staff may be overwhelming and sites should consider screening all staff or put into place a self-screening program for all staff.

Preparation for implementation of pre-shift check for asymptomatic healthcare personnel (HCP) with "low but not zero risk" exposure to a confirmed case

1. Setting up the location for pre-shift symptom check
 - o Select a location to do Pre-Shift Check for asymptomatic potentially exposed HCP. Ideally, the location should be close to a unique entrance that has little extra foot traffic
 - Consider parking
 - Consider 24/7 access
 - o Place respiratory hygiene station (masks, alcohol based hand rub (ABHR), tissues, signage) at entrance/exit
 - o Print blank screening tickets and place them at the pre-shift checkpoint
2. Determine method to receive all relevant department schedules and shift change times
3. Determine method to receive up to date list of asymptomatic contacts
 - o Daily schedules will be obtained by shift, and compared to the asymptomatic potentially exposed HCP list who are allowed to work
4. Identify and train screeners (e.g., employee health or supervisors) to interview HCP about their symptoms, check temperatures and distribute screening tickets.
5. Notify affected HCP of the requirement to report to the pre-shift checkpoint upon arriving for work. HCP may need to arrive early to allow time for screening prior to starting their shift.
 - o Instruct HCP on what to expect during screening and how to contact the screening desc when they arrive for their shift.

Process for completing pre-shift symptom check

I have had my pre-shift check upon entrance

Date _____ Time _____ Afebrile ___ Asymptomatic _____

HCP Name _____

Checked by:

Name _____

Contact Info _____

I have had my pre-shift check upon entrance

Date _____ Time _____ Afebrile ___ Asymptomatic _____

HCP Name _____




Checked by:

Name _____

Contact Info _____

Preparing for a COVID-19 pandemic: a review of operating room outbreak response measures in a large tertiary hospital in Singapore

Se préparer pour la pandémie de COVID-19: revue des moyens déployés dans un bloc opératoire d'un grand hôpital tertiaire au Singapour

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COVID-19 and IPC Resources

- NCDC Disease Alerts webpage
<https://ncdc.gov.in/index4.php?lang=1&level=0&linkid=127&lid=432>
- MoHFW website - <https://www.mohfw.gov.in/>
- WHO IPC technical guidance for COVID-19
 - <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/infection-prevention-and-control>
- WHO Q&A for health care workers
 - <https://www.who.int/news-room/q-a-detail/q-a-on-infection-prevention-and-control-for-health-care-workers-caring-for-patients-with-suspected-or-confirmed-2019-ncov>
- Best practices for environmental cleaning in HCFs in Resource-Limited Settings
 - <https://www.cdc.gov/hai/pdfs/resource-limited/environmental-cleaning-508.pdf>
- IPC trainings (not specific for COVID-19)
 - <https://ipc.ghelearning.org/courses>
- Hand rub local preparation
 - <https://www.who.int/gpsc/5may/Guide to Local Production.pdf>

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