Standard Operative Procedures

COVID—19

Surat Municipal Institute of Medical Education and Research,

Surat, Gujarat

Departments

(Prepared after input received from all head of the departments)

Department of Anesthesiology

Steps for Getting Consent for Investigation / Intervention / Intubation / Ventilator support from a COVID 19 patient / relative:

1. **Rapport Building: Try to talk to them, ask about general health & wellbeing, listen to their queries & concerns, and reassure them about due care being taken, share the current health status & ongoing treatment, discuss the treatment related decisions to be taken & their role in giving consent for the same.**
2. **Prepare: Select an ideal place to sit & talk. Sit face to face. Offer a glass of water. Keep a video device / phone ready for live recording. Keep an ideal 'Consent Form' ready. Keep writing in the medical notes about what you talk / happens.**
3. **Taking the Consent: Share the current status of the patient & need for Investigation / Intervention / Intubation / Ventilator support. Explain about the risk & benefit of opting for it versus refusing it. Provide enough information & address all concerns, to help them to make an informed decision.**
4. **Negative Consent / Informed Refusal: If the patient / relative refuse to agree for the procedure, take an ideal negative consent & document in medical records.**
5. **Check Competency to give Consent: If patient is minor / of unsound mind – the relative / legal guardian (preferable) or a panel of medical experts takes the decision in the 'best interests' of the patient & document the same.**
6. **Restore Competency to give Consent: If patient is confused / delirious / incapable to make decisions due to reversible medical conditions affecting his sensorium, the same should be corrected & consent taken thereafter.**
7. **Not competent to give Consent: If the patient / relative are not competent to give a valid consent – kindly go ahead with the intended procedure in emergency / life threatening situation, in the 'best interests' of the patient, with appropriate documentation & signature of three doctors & a nurse involved in treatment process.**
8. **Refusal to give Negative Consent: If the patient / relative competent to give valid consent, refuses to give even negative consent / sign the papers – kindly document the same in medical notes with exact timing, make detailed notes of the efforts made to take consent with signature of three doctors & a nurse involved in treatment process, preserve the video recording as well as the black consent form with medical records.**
9. **Honor Patient's / Relative's wish: If the patient / relative competent to give a valid consent - gives negative consent / refuses to sign papers – kindly withhold / withdraw the procedure / treatment. Continue to monitor the patient regularly, continue to provide alternative treatment / supportive treatment & document the same. Continue to discuss about treatment options & make attempt to seek consent again at regular intervals & document the same. Continue isolation / quarantine measures even forcibly, as under the Epidemic Disease Act, for larger safety of community.**

General Anaesthesia for COVID 19 Suspected/Confirmed case

Pt. transfer from COVID designated area to Operation theatre DONNED with PPE, N95/Triple layered surgical mask

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DON level-3 PPE

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Allocating Roles

Team Leader & Intubator
Cricoid force & Intubator's assistant
Drugs, Monitor & Timer
Runner with PPE (Outside of OT)
eFONA (Emergency Front of Neck Airway)

↓

Inside the Operation Room

- **PAC on OT table**
- **Apply aerosol box**
- **Check IV access**
- **Apply Monitors**
  - **ECG**
  - **Blood Pressure**
  - **SpO_2 Probe**
  - **Capnography**
- **Optimise Position**
- **Prophylactic anti-emetic to reduce the risk of vomiting & virus spread.**
- **Optimise patient condition before intubation**
  - **Fluid/Pressors/Inotropes**
  - **Aspiration of Nasogastric tube if present**
- **Consider Ramping or Reverse Trendelenburg's Position**
- **Put 2 wetgauze piece covering nose & Mouth**
- **Preoxygenation for 5 minutes SpO_2>85%**
- **2 handed Face Mask Ventilation with proper seal (VE technique)**
- **Share plan for failure**
- **Avoid manual ventilation to prevent aerosolization.**
- **If required, apply small Tidal Volume**

Tracheal intubation → **Succeed**

↓

Confirm With capnography

↓

Tracheal intubation

- **Laryngoscopy (Max 3 attempts)**
- **Maintain oxygenation**
  - **Low flow, low pressure, 2 person mask ventilation**
- **Apply 2 HME filter one at Y piece (at pt.'s end) & another at expiratory limb (anesthesia machine)**
- **Rapid Sequence Intubation,**
  - **Induction (choice of induction according to pt's hemodynamic condition)**
  - **Full Neuromuscular blockade (Rocuronium 1-2 mg/kg) (Scholine 1.5 mg/kg)**
- **After relaxation, intubation should be tried after clamping the ET tube by expertise anaesthesiologist.**
- **Videolaryngoscopy +/- bougie or stylet**
- **External Laryngeal Manipulation**
- **Remove Cricoid**
- **Immediately inflate the tracheal tube cuff before starting ventilation.**
- **If indicated, Insert NGT only after intubation & relaxation**
- **Avoid awake Fibreoptic intubation & nebulisation**
- **Presheath the Laryngoscopy blade immediately post intubation with outer glove worn by incubator.**
- **Use low gas flows, closed circuits & closed airway suction.**
- **Supraglottic Airway Devices if cannot intubate situation.**

Tracheal extubation

should be done on table within aerosol box in deeper plane of anesthesia.
Apply high flow nasal cannula
Clamp the ET tube, disconnect the anesthesia machine,
Oral suction gently
Deflate the ET tube cuff & extubate the patient

If extubation not feasible

Clamp the ET tube
Disconnect the ET from circuit
Connect disposable AMBU bag with HME filter
With O_2 via cylinder.
Release the clamp
Shift the pt to ICU

Regional Anesthesia in Suspected/Positive Covid-19 Patient

Intra-hospital Transport

Isolation ward

Operating room (designated route)

- **Pt wearing triple layered surgical mask/N95.**
- **Accompanying health worker with PPE.**

Preoperative Preparation

- **Single use equipment should be used.**
- **The Required equipment & drugs should be prepared & packed in plastic bag before procedure.**
- **Do not bring a cart or trolley with drugs & equipment to the procedure room.**
- **MINIMIZE the number of personnel present during the performance of the procedure.**
- **Help should be readily available outside (Out runner).**

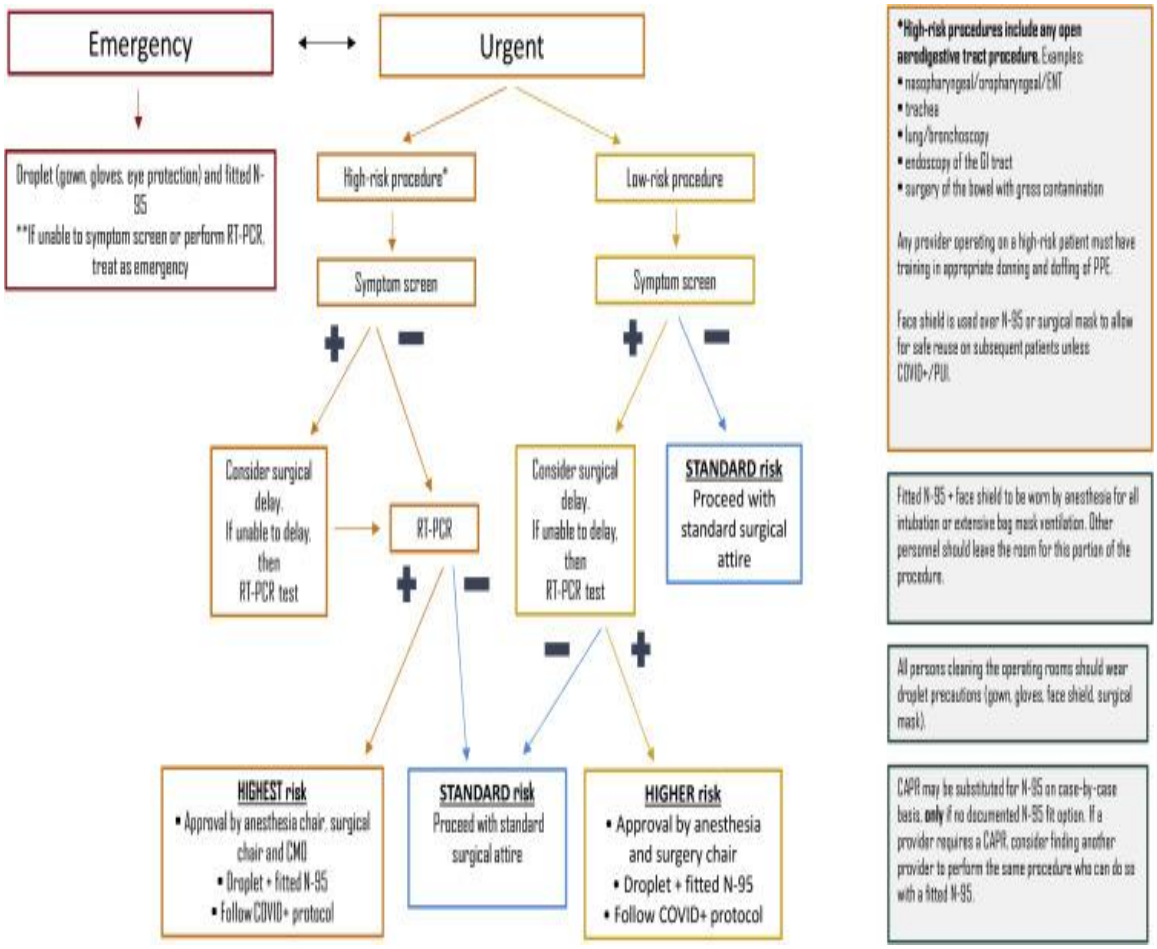
Intra operative

- **PAC on table**
- **Person performing the procedure should get scrubbed & don the PPE**
- **Routine asepsis**
- **Patient should wear 3 layered surgical masks/N95 mask throughout the procedure.**
- **No or safe use of O_2 therapy with nasal cannula.**
- **Do not allow CSF to drip freely after lumbar puncture.**

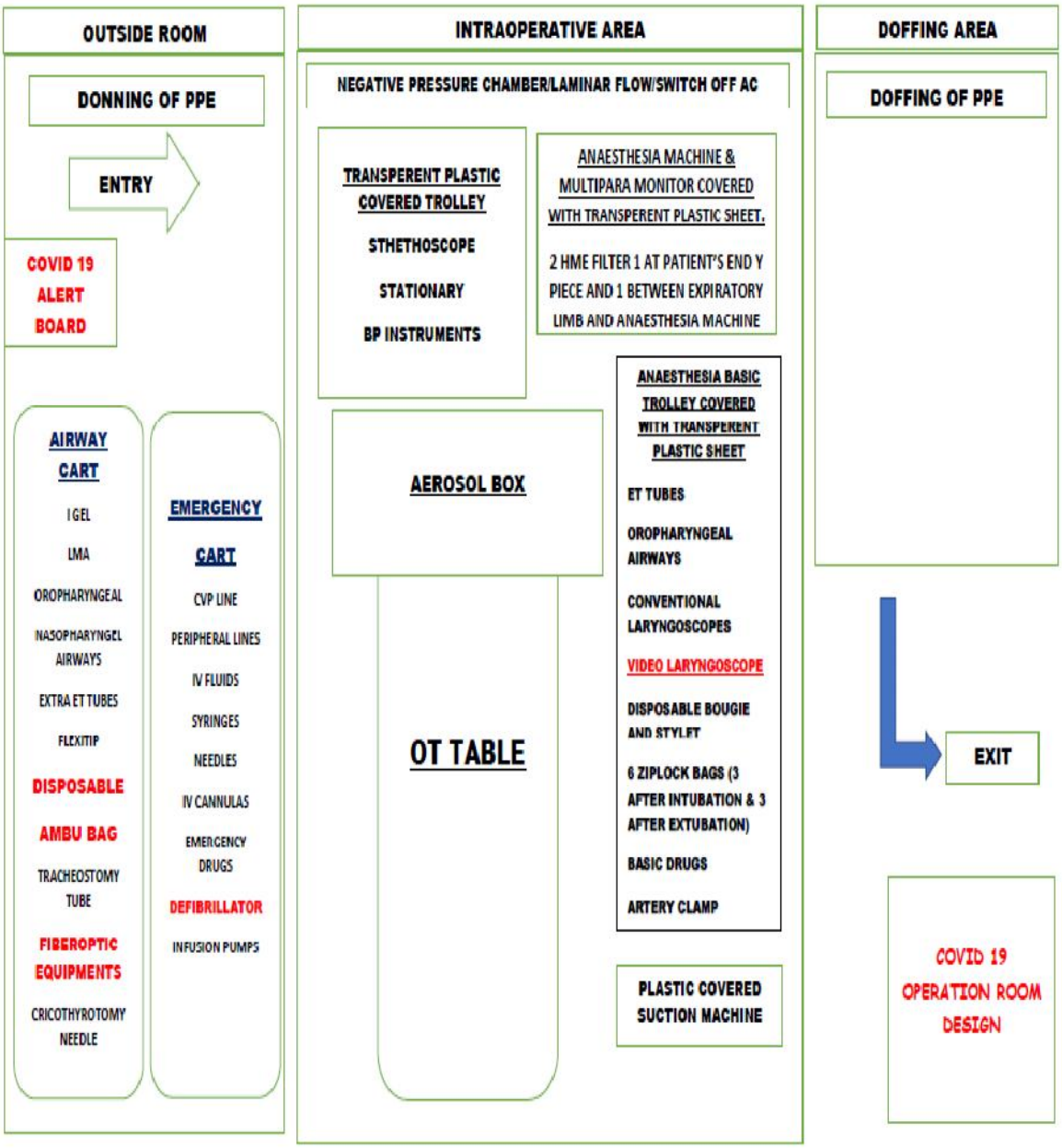
Post Operative

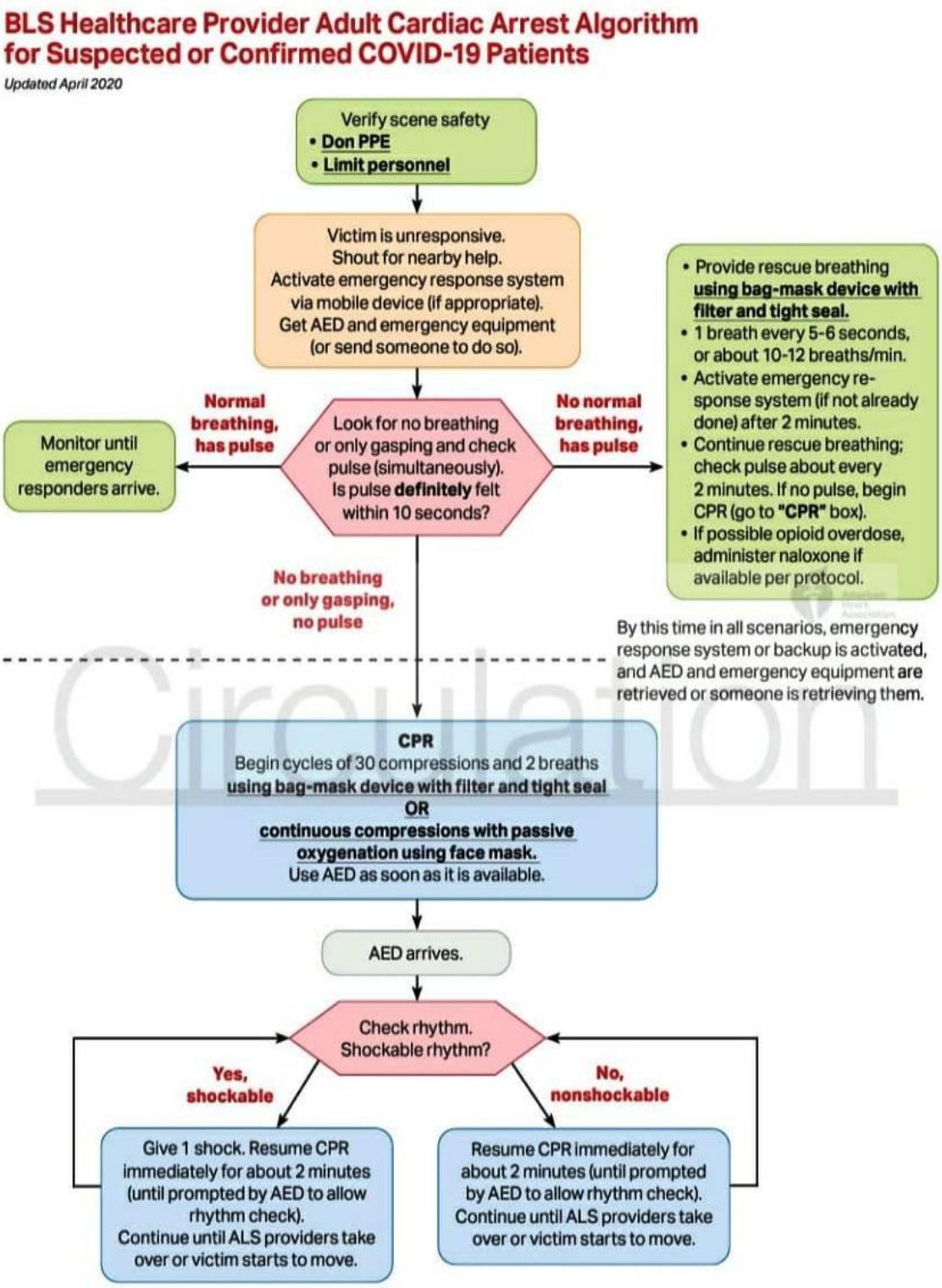
Post procedure patient remain in OT or transfer to COVID-19 designated area.

Algorithm describing institutional precaution for operating room covid 19


Emergency
Urgent
Droplet (gown, gloves, eye protection) and fitted N-95
**If unable to symptom screen or perform RT-PCR, treat as emergency
High-risk procedure*
Low-risk procedure
Symptom screen
Symptom screen
Consider surgical delay. If unable to delay, then RT-PCR test
RT-PCR
Consider surgical delay. If unable to delay, then RT-PCR test
STANDARD risk
Proceed with standard surgical attire
HIGHEST risk
• Approval by anesthesia chair, surgical chair and CMO
• Droplet + fitted N-95
• Follow COVID+ protocol
STANDARD risk
Proceed with standard surgical attire
HIGHER risk
• Approval by anesthesia and surgery chair
• Droplet + fitted N-95
• Follow COVID+ protocol
*High-risk procedures include any open aerodigestive tract procedure. Examples:
• nasopharyngeal/oropharyngeal/ENT
• trachea
• lung/bronchoscopy
• endoscopy of the GI tract
• surgery of the bowel with gross contamination
Any provider operating on a high-risk patient must have training in appropriate donning and doffing of PPE.
Face shield is used over N-95 or surgical mask to allow for safe reuse on subsequent patients unless COVID+/PUI.
Fitted N-95 + face shield to be worn by anesthesia for all intubation or extensive bag mask ventilation. Other personnel should leave the room for this portion of the procedure.
All persons cleaning the operating rooms should wear droplet precautions (gown, gloves, face shield, surgical mask).
CAPR may be substituted for N-95 on case-by-case basis, only if no documented N-95 fit option. If a provider requires a CAPR, consider finding another provider to perform the same procedure who can do so with a fitted N-95.

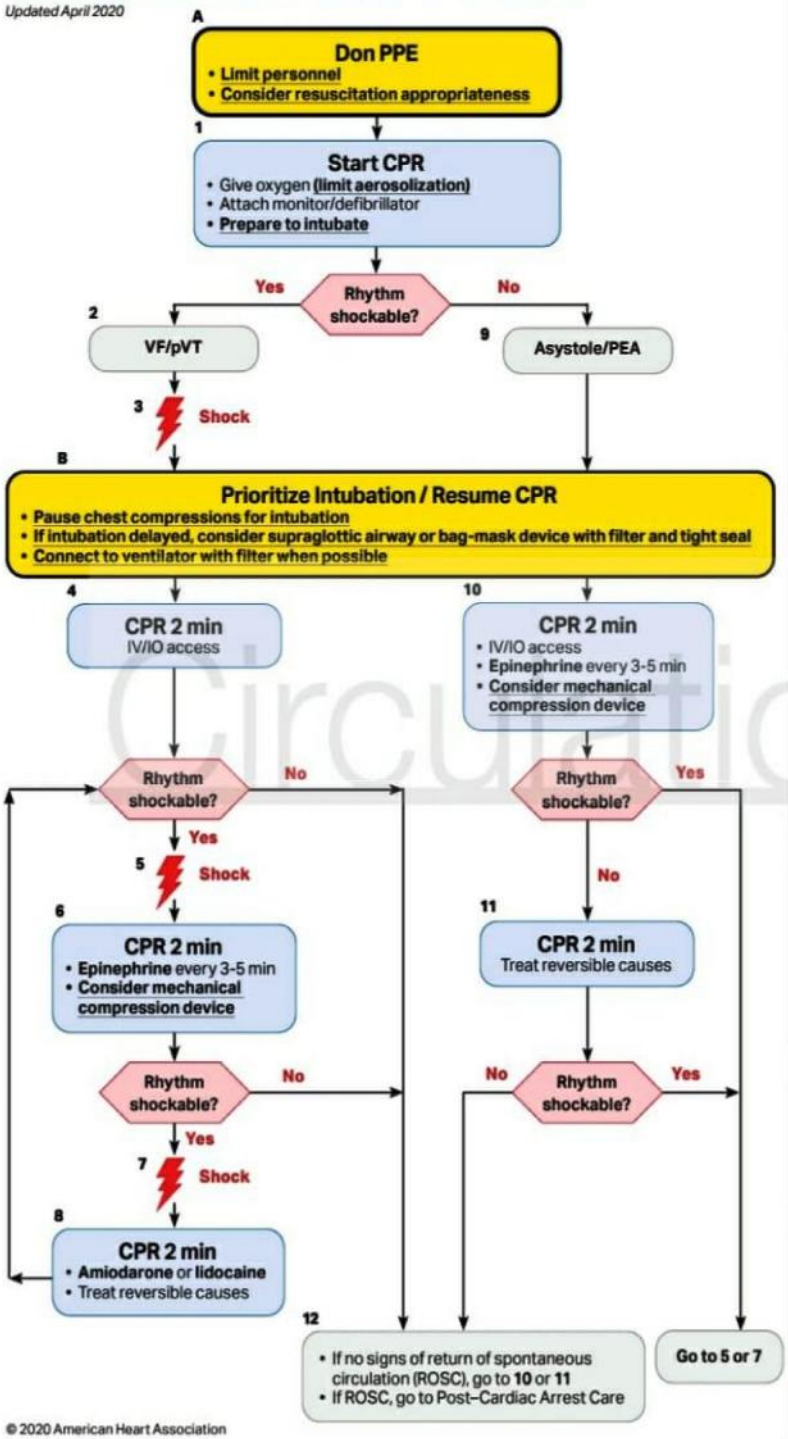
OT degine


OUTSIDE ROOM
DONNING OF PPE
ENTRY
COVID 19 ALERT BOARD
AIRWAY CART
I GEL
LMA
OROPHARYNGEAL
NASOPHARYNGEL AIRWAYS
EXTRA ET TUBES
FLEXITIP
DISPOSABLE
AMBU BAG
TRACHEOSTOMY TUBE
FIBEROPTIC EQUIPMENTS
CRICOTHYROTOMY NEEDLE
EMERGENCY CART
CVP LINE
PERIPHERAL LINES
IV FLUIDS
SYRINGES
NEEDLES
IV CANNULAS
EMERGENCY DRUGS
DEFIBRILLATOR
INFUSION PUMPS
INTRAOPERATIVE AREA
NEGATIVE PRESSURE CHAMBER/LAMINAR FLOW/SWITCH OFF AC
TRANSPERENT PLASTIC COVERED TROLLEY
STHETHOSCOPE
STATIONARY
BP INSTRUMENTS
ANAESTHESIA MACHINE & MULTIPARA MONITOR COVERED WITH TRANSPERENT PLASTIC SHEET.
2 HME FILTER 1 AT PATIENT'S END Y PIECE AND 1 BETWEEN EXPIRATORY LIMB AND ANAESTHESIA MACHINE
AEROSOL BOX
ANAESTHESIA BASIC TROLLEY COVERED WITH TRANSPERENT PLASTIC SHEET
ET TUBES
OROPHARYNGEAL AIRWAYS
CONVENTIONAL LARYNGOSCOPES
VIDEO LARYNGOSCOPE
DISPOSABLE BOUGIE AND STYLET
6 ZIPLOCK BAGS (3 AFTER INTUBATION & 3 AFTER EXTUBATION)
BASIC DRUGS
ARTERY CLAMP
OT TABLE
PLASTIC COVERED SUCTION MACHINE
DOFFING AREA
DOFFING OF PPE
EXIT
COVID 19 OPERATION ROOM DESIGN


BLS Healthcare Provider Adult Cardiac Arrest Algorithm for Suspected or Confirmed COVID-19 Patients
Updated April 2020
Verify scene safety
• Don PPE
• Limit personnel
Victim is unresponsive.
Shout for nearby help.
Activate emergency response system via mobile device (if appropriate).
Get AED and emergency equipment (or send someone to do so).
Look for no breathing or only gasping and check pulse (simultaneously).
Is pulse definitely felt within 10 seconds?
Normal breathing, has pulse
Monitor until emergency responders arrive.
No normal breathing, has pulse
• Provide rescue breathing using bag-mask device with filter and tight seal.
• 1 breath every 5-6 seconds, or about 10-12 breaths/min.
• Activate emergency response system (if not already done) after 2 minutes.
• Continue rescue breathing; check pulse about every 2 minutes. If no pulse, begin CPR (go to "CPR" box).
• If possible opioid overdose, administer naloxone if available per protocol.
No breathing or only gasping, no pulse
By this time in all scenarios, emergency response system or backup is activated, and AED and emergency equipment are retrieved or someone is retrieving them.
CPR
Begin cycles of 30 compressions and 2 breaths
using bag-mask device with filter and tight seal
OR
continuous compressions with passive oxygenation using face mask.
Use AED as soon as it is available.
AED arrives.
Check rhythm.
Shockable rhythm?
Yes, shockable
Give 1 shock. Resume CPR immediately for about 2 minutes (until prompted by AED to allow rhythm check).
Continue until ALS providers take over or victim starts to move.
No, nonshockable
Resume CPR immediately for about 2 minutes (until prompted by AED to allow rhythm check).
Continue until ALS providers take over or victim starts to move.

ACLS Cardiac Arrest Algorithm for Suspected or Confirmed COVID-19 Patients

Updated April 2020



CPR Quality

- Push hard (at least 2 inches [5 cm]) and fast (100-120/min) and allow complete chest recoil.
- Minimize interruptions in compressions.
- Avoid excessive ventilation.
- Change compressor every 2 minutes, or sooner if fatigued.
- If no advanced airway, 30:2 compression-ventilation ratio.
- Quantitative waveform capnography
  - If P_{ETCO_2} <10 mm Hg, attempt to improve CPR quality.
- Intra-arterial pressure
  - If relaxation phase (diastolic) pressure <20 mm Hg, attempt to improve CPR quality.

Shock Energy for Defibrillation

- **Biphasic:** Manufacturer recommendation (eg, initial dose of 120-200 J); if unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.
- **Monophasic:** 360 J

Advanced Airway

- Minimize closed-circuit disconnection
- Use intubator with highest likelihood of first pass success
- Consider video laryngoscopy
- Endotracheal intubation or supraglottic advanced airway
- Waveform capnography or capnometry to confirm and monitor ET tube placement
- Once advanced airway in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions

Drug Therapy

- **Epinephrine IV/IO dose:** 1 mg every 3-5 minutes
- **Amiodarone IV/IO dose:** First dose: 300 mg bolus. Second dose: 150 mg.
  or
  Lidocaine IV/IO dose: First dose: 1-1.5 mg/kg. Second dose: 0.5-0.75 mg/kg.

Return of Spontaneous Circulation (ROSC)

- Pulse and blood pressure
- Abrupt sustained increase in P_{ETCO_2} (typically ≥40 mm Hg)
- Spontaneous arterial pressure waves with intra-arterial monitoring

Reversible Causes

- **H**ypovolemia
- **H**ypoxia
- **H**ydrogen ion (acidosis)
- **H**ypo-/hyperkalemia
- **H**ypothermia
- **T**ension pneumothorax
- **T**amponade, cardiac
- **T**oxins
- **T**hrombosis, pulmonary
- **T**hrombosis, coronary

References:

1. Guidance for managing ethical issues in infectious disease outbreaks. World Health Organization 2016

2. Vilanilam GC, Sasidharan GM. Informed refusal – A gray area in informed consent. Neurol India 2016;64:1393-5.

3. Kumar A, Mullick P, Prakash S, Bharadwaj A. Consent and the Indian medical practitioner. Indian J Anaesth 2015;59:695-700.

4. Chaturvedi A. Consent – Its Medico-legal aspects. Medicine Update; 883-887.

5. Sharma R. Informed consent in clinical practice and research: ethical and legal perspective. International J. of Healthcare and Biomedical Research, Volume: 03, Issue: 01, October 2014, Pages 144-151

Department of General Surgery

All patient management is to be done as per unit arrangement.

All dealing with patients have to take adequate precautions to prevent the spread of infection including personal safety as defined in training sessions.
All teaching faculties and Residents have to follow the standard guidelines of Institution and Govt.

OPD:

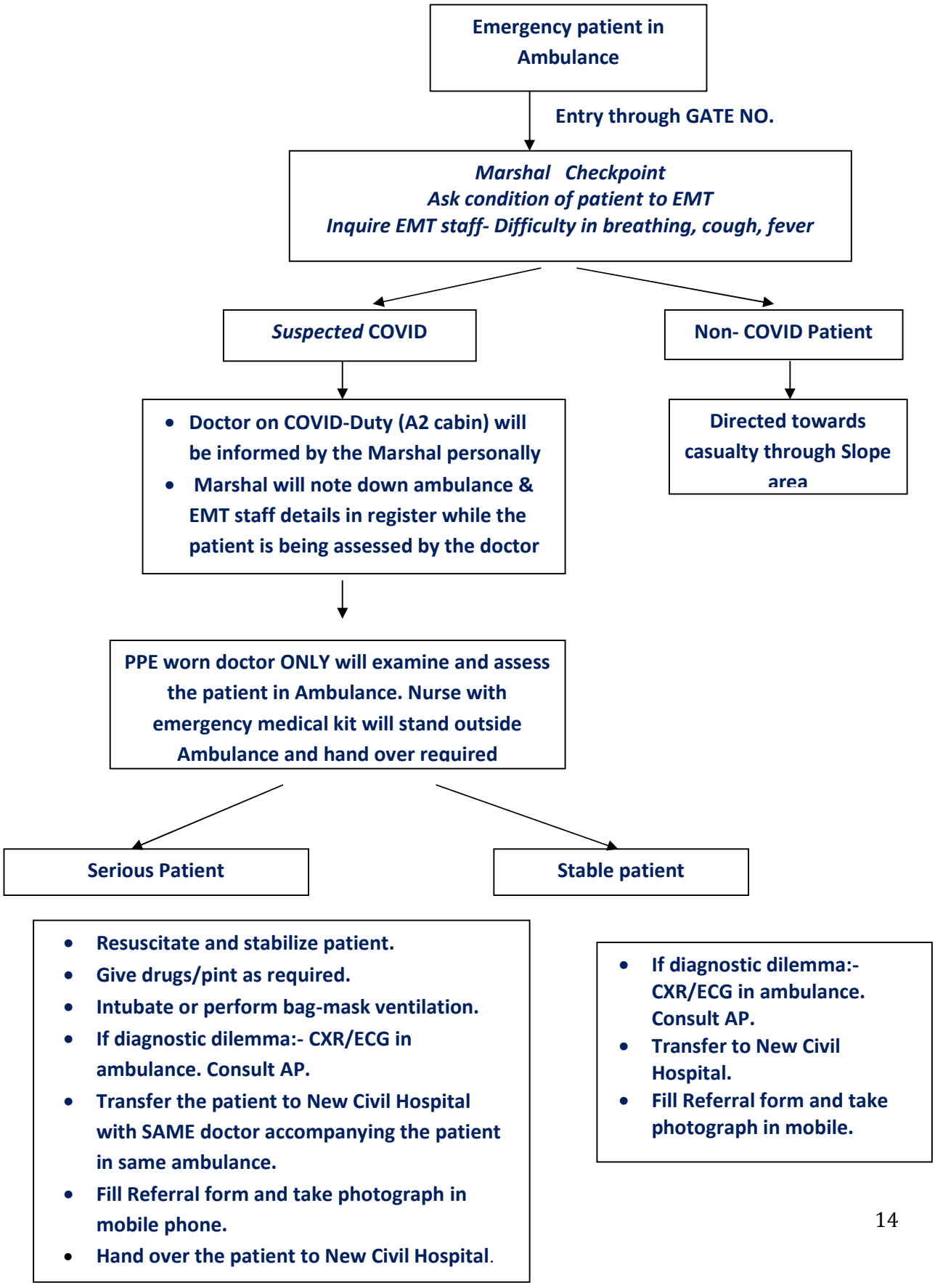
1. **All COVID positives and suspected of COVID (Confirmed/ endorsed by Medicine department) are to be transferred to New Civil Hospital Surat.**
2. **A patient coming to surgery OPD with any of four complaints (Cough, fever, dyspnoea, Throat Pain) is to be referred to screening/ COVID OPD.**
3. **Admit patients requiring emergency treatment.**

INDOOR:

4. **Before Emergency admissions, if suspected- symptoms and/or X-ray findings of covid-19 get done medicine reference and plan to shift the patient to New Civil hospital Surat as above.**
5. **Manage patients with conservative treatment as far as possible, keeping operative treatment for emergency management only.**
6. **Emergency surgery needs to be carried out as per merit and discharge the patients as earliest as possible.**
7. **Preoperative x-ray chest compulsory incase of any doubtful x-ray findings get done physician reference first.**
8. **In case of suspected cases that cannot be shifted, patient will be admitted in isolation ward, and surgical treatment be given there till the definitive report of COVID-19 is available. For operative treatment of such patients and those who cannot be shifted safely (hemodynamic instability), OT No 6 is to be utilized with all universal precautions including Full PPE, and shifted to SICU/ isolation ward post-operatively.**
9. **For all other emergencies admit the patients in Non COVID designated wards on 2nd floor. If operative treatment needs to be given then use OTs one by one only in OT No. 1, 2 and 3. (With due exception during dire emergency patients when 2 Operation tables can be utilized simultaneously) so that adequate time is allotted to ensure cleaning and disinfection of utilized OT.**
10. **No Routine planned surgeries are to be done.**

11. **In case of Septic patients, No. 4 OT is to be utilized; Provision of at least two hrs is done between two operations in OT4 to ensure adequate time for cleaning and disinfection of OT.**
12. **All Patients undergoing Surgery will be treated as suspected and to be operated under all Universal Precaution using HIV kits in all patients.**
13. **Spinal Anesthesia is preferred over GA. Switch off AC during induction and reversal of patients under GA with intubation.**
14. **All patients are tested for COVID -19 before surgery based on emergency situations. (??**
15. **Cleaning / disinfection of OT and surfaces as per guidelines provided by MOHFW.**

Department of General Medicine



Guidelines for transfer to New Civil Hospital, Surat

- **In case of transfer of serious patient to NCH, Assistant professor, Medicine department on COVID duty (A2 cabin) will call on 0261-2208470 (New Civil hospital, COVID ward) and inform about patient being transferred. Also, convey instructions received from NCH to the Doctor in Ambulance accompanying the serious patient.**

- **If unable to contact on landline number, then any of the following doctors (NCH) should be contacted:**
    - **Dr Mahesh Solu - 9825233273**
    - **Dr Tinkle Patel - 9898713223**
    - **Dr Ashwin Vasava - 9879584442**

- **If patient/ relative wishes to transfer to Mission hospital, call - Dr Chatvani- 9913224898.**
- **Photograph of referral form to be sent to Dr Rana on whatsapp- 9825965838 by Doctor in ambulance**
- **Information to be noted down in Ambulance register (to be kept and maintained by Marshal).**
    1. **Ambulance registration number**
    2. **Ambulance belongs to which hospital**
    3. **Date and time of arrival**
    4. **Driver's name and contact number.**

CHECKLIST FOR MARSHAL

- **Ask condition of patient to EMT staff- serious/stable**
- **Inquire about difficulty in breathing, cough, and fever.**
- **Quickly inform to Doctor in COVID OPD (A2 cabin) personally.**
- **Enter following details in Ambulance Register while the patient is being examined by the doctor:**
    1. **Ambulance registration number**
    2. **Ambulance belongs to which hospital**
    3. **Date and time of arrival**
    4. **Driver's name and contact number**

CHECKLIST FOR DOCTOR IN A2 CABIN (attending the patient in ambulance)

- **Get ready with PPE kit on, all the time in A2 cabin.**
- **(N95 mask, Goggles, cap, gloves, gown as per standard guidelines)**
- **Quickly attend the patient in ambulance along with nurse carrying medical kit.**
- **Enter the ambulance alone and examine the patient.**
- **If patient is serious, do appropriate intervention. Take instruments from nurse, if required.**
- **Convey message via nurse to AP, Medicine in A2 cabin regarding the patient's condition.**
- **Instruct driver to quickly move to NCH.**

- **Follow the instructions from AP, Medicine in A2 cabin during transport.**
- **After reaching NCH, fill referral form and take photograph.**
- **Hand over the patient to NCH.**
- **Send photograph of referral form to Dr Rana on whatsapp - 9825965838**

CHECKLIST FOR ASSISTANT PROFESSOR, MEDICINE IN A2 CABIN

- **Take the message from the Nurse conveyed by Doctor in ambulance.**
- **Make a phone call to New Civil hospital, COVID Ward (0261-2208470)**
- **If unable to contact on above number, call:**
    - **Dr Mahesh Solu - 9825233273**
    - **Dr Tinkle Patel - 9898713223**
    - **Dr Ashwin Vasava - 9879584442**
- **Inform about transferring patient and get instructions from NCH**
- **Convey the received instructions to the doctor in ambulance.**

CHECKLIST FOR NURSING STAFF (accompanying the doctor to ambulance)

- **Keep emergency medical kit ready in A2 cabin all the time.**
- **Get ready with mask and gloves on**
- **Accompany (with medical kit) the doctor going to ambulance.**
- **Hand over instruments from medical kit to doctor, if required.**
- **Take message from doctor in ambulance regarding patient's condition and convey to AP, Medicine in A2 cabin**

Department of Otorhinolaryngology

OPD AREA

- **All staff members including faculty, residents ,paramedical staff and interns must put on face mask(Triple layer surgical mask; preferably N95 mask).**
- **Make sure:-**
  - **All ENT patients should wear mask or cover their mouth and nose with cloth.**
  - **Maintain a distance of at least 1 meter (3 feet) while standing in a queue for registration and sitting in the waiting area.**
  - **Maintain a distance of > 1 meter between nursing staff at registration table and the patient.**
  - **Keep hand sanitizer at the registration table.**
  - **Ask patient to sanitize hands before entering in the OPD room.**
- **Instruct the patient not to touch any surfaces like door knobs, table tops, walls etc. in the OPD room.**
- **Allow only 1 patient (preferably without attendant, if not required) to enter the OPD room.**
- **All patients having complain of cough, fever and difficulty in breathing and history of contact with suspected COVID or COVID positive must be referred to COVID OPD.**
- **Nasal ,oral, oro-pharyngeal, laryngeal examination should be avoided as far as possible. If required, take all precautions to protect oneself and to minimize aerosol generation.**
- **Wash hand with soap and water/sanitizer after examination of each patient.**
- **Sterilize instruments adequately before examining the next patient.**
- **Foreign body removal from nose/ear, nasal packing/removal, aural syringing, tracheostomy suction should be done in procedure room separately with all necessary precautions including face-shield.**
- **Do not use mobile/laptop in OPD.**
- **Sanitize mobiles after OPD hours.**
- **Clean surfaces like table tops, door knobs frequently with alcohol based solution or sodium hypochlorite.**
- **Admit only patients who need urgent treatment (medical/surgical).**

INDOOR AREA:

- **All medical and paramedical staff should wear triple layer surgical mask (or preferably N95 / FFP2).**
- **Use standard protective barriers (gloves, gown, goggles, face shield etc.) during procedure like aural suction, tracheostomy suction, aspiration and wound dressing.**
- **Hand hygiene must be performed by all staff members frequently.**

- **Use all disposable items for patient if possible.**
- **Keep distance of 1.5 meters between 2 cots.**
- **Clean and sterilize suction bottles and tubings adequately.**
- **Clean surfaces like table tops, door knobs frequently with alcohol based solution or sodium hypochlorite.**
- **Not more than 1 attendant with patient should be allowed in ward.**
- **Discharge patients as soon as possible after completion of treatment.**

OPERATION THEATER

PRESURGICAL PROTOCOLS:

1. All routine surgeries should be deferred as per the government notifications. Only emergencies cases should be operated.
2. All patients to be treated as a suspected COVID positive case unless proven otherwise.
3. All mandatory precautions should be taken with use of N 95 and PPE right from preoperative, intra operative as well as post operative care to protect not only patients/relatives but also all healthcare providers at risk.
4. Consent: A well framed consent should be discussed with patient and relatives covering a clear statement that hospital as well as health care providers will not be responsible for the risk of COVID-19 exposure and the potential consequences.

5. Pre-Operative Investigations:

- **All routine investigations for general anesthesia.**
- **Suspected covid case must be referred to physician.**
- **X-ray chest PA view - mandatory in all cases.**
- **HRCT Thorax (in suspected cases).**

6. An OT no. 5 is designated for all confirmed or suspected COVID -19 cases
7. Preoperative surgical site preparation should be done with extreme care taking all universal precautions who so ever does.
8. The patient shifting staff should be well versed with all necessary precautions
9. Time lag of at least 3 hours between two surgeries & OT to be cleaned or sanitized before the next case.

SURGICAL PROTOCOLS FOR ENT PROCEDURES AND SURGERIES:

• Only emergency OTs to be done.

• Most of the ENT operative procedures are high risk owing to exposure of airway and mucosal surfaces with the high possibility of generating aerosols.

• Adequate awareness and education of health care workers is essential.

- **Procedures that are commonly performed outside the Operating Room & are considered high risk:**
    1. **Routine suctioning of patients with a tracheotomy.**
    2. **Nasal packing placement, removal, or manipulation.**
    3. **Drainage of peritonsillar abscesses. Consider avoiding drainage through the use of antibiotic management or needle drainage instead of open drainage.**
    4. **Foreign body removal: Deferring may not be possible. If the location is such that it will be particularly challenging to access in an awake patient or if the individual is particularly intolerant of manipulation, performing the removal under general anaesthesia may be necessary.**

Operative Procedures — General Considerations

1. **COVID-19 Status: If possible, determine the COVID-19 status of the patient beforehand. If a patient test positive, refer the patient to NCHS after due counseling of the patient.**
2. **Operating Room Setting: Unprotected personnel should not be allowed in a room where an aerosol-generating procedure is being or has been conducted. If a patient is known or suspected to have COVID-19, appropriate PPE must be worn by all.**
3. **Ultra-High-Risk Procedures:-**
    - **Any procedures on the glottis/airway, oropharynx, nasopharynx, mastoid, or sinuses.**
    - **Any ENT/OMFS procedures using cautery, laser, drill or saw use within airway/oral cavity.**
    - **Any procedures utilizing operative rigid laryngoscopy or rigid bronchoscopy**
    - **Any procedures on the subglottic airway involving incision of the airway (tracheostomy), dilation of the airway, laser or electrocautery debridement of the airway.**

A list of AGP (Aerosol Generating Procedures) considered Ultra high risk:

- **Office-based nasal and laryngeal endoscopy**
- **Bronchoscopy**
- **I&D of peritonsillar abscess**
- **Placement of nasal packing**
- **Foreign body management in the nose or airway**
- **Tracheostomy & tracheostomy care**
- **Powered instrumentation in mucosal head and neck surgery**
- **Endoscopic Sinus surgery**
- **Mastoid surgery**

4. High-Risk Procedures:-

- **Any operation that involves nasal mucosal, oral, pharyngeal, and pulmonary secretions. (Considering the high viral titres in these surfaces)**
- **Use of energy devices used for haemostasis and dissection such as electrocautery, powered devices (e.g. drills, microdebriders, harmonic scalpel, etc.)**

General Considerations for each of these Ultra high-risk procedures:

1) **Patients undergoing these procedures whether high risk or ultra-high risk for aerosol generation should get mandatory laboratory testing for COVID-19.**
2) **All other, COVID +, or unknown COVID status emergency procedure - Proceed as if COVID positive.**
3) **Minimize the number of healthcare personnel present throughout the procedure.**

Site specific precautions:

1) **Nose and sinus and oral cavity: - It may be considered, prior to cautery in the nose, a tracheal suction catheter with bone wax covering the finger hole is placed in the contralateral nostril on a second suction to direct and control the plume. A similar principle may be followed for cautery in oral cavity.**
2) **Ear Surgery: - Drilling through the mastoid creates droplets and aerosols in significant clouds that, if the virus is present, could risk infecting everyone in the operating room environment. As contaminated mists harbour viable virus for several hours, especially in enclosed spaces, caution is warranted. Mastoidectomy therefore is considered a high-risk procedure. Ideally, any patient undergoing any ear surgery should be tested for COVID-19 preoperatively. If a patient is positive, surgery should be delayed until the patient has cleared the disease.**
3) **Management of Facial Trauma: - After following the trauma triage protocol, if assessment and treatment of facial trauma is needed, treat patients of unknown COVID-19 status as COVID-19 positive and proceed with adequate PPE. Lacerations that involve mucosal surfaces should be treated as high risk. For injuries that require operative intervention (for example, reduction of fractures), the infection status of the patient should be confirmed first and then definitive treatment initiated if at all possible. In areas with significant shortage of medical capacity and personnel, non-operative approaches should be considered as much as medically acceptable.**

Guidelines for Tracheotomy

Important aspects:

- **Very high risk procedure**
- **Significant aerosol generating procedure (even suction cleaning is a significant aerosol generating procedure)**
- **Always weigh the risk and burden to the patient and staff**
- **Designate a COVID airway team**
- **Run significant simulation training with ICU / anesthetist and theatre staff**
- **Starts planning now and continuously monitor the developments.**

Planning:

• PPE:

- **Must for surgeons and assistants**
- **With N95 mask, head gear, eye protection, gloves and shoe cover**

• Place:

- **Closed chamber for procedure**
- **Turn off the Air conditioners and laminar flow (if available)**
- **Designated and separate changing and scrubbing area (for donning and doffing and for clean runner**

• Patient:

Review indications for tracheotomy with OCU; especially timing, prognosis and risk to the patient and the surgeons/nursing staff

• Equipment:

- **Pre-prepare the tracheotomy sets (annexure attached)**
- **Only use cuffed, non-fenestrated tracheotomy tubes (check cuff before the procedure)**
- **Attach separate syringe in prepared state to the cuff before starting the procedure**

• COVID Airway team:

One faculty, one 3rd year resident and one 2nd / 1st year resident, nursing staff and designated ward boy.

PREPARATION (At the time of Procedure)

• Check

- **Ensure availability of PPE.**

- Check availability of Team members including an anesthetist and physician.
- Check tracheotomy tray.
- Check tracheotomy tube of 7.0,8.0,8.5 with their cuff.
- Attach syringe to the cuff of appropriate tracheotomy tube.
- Ensure that the surgical knife is secure on the handle with a suture/linen.
- Check HME with Viral filter.

- **Confirm**
  - Re-confirm the appropriateness and indication of tracheotomy with the physician and anesthetist
  - Confirm the prognosis and consent with patients attendants.
  - Confirm the vitals of the patient along with pressure support agents.
  - Confirm whether the patient will tolerate the period of apnea.
  - Check the amount of tidal volume delivered to the patient.
  - Check sPo2 of the patient.
- **Briefing**
  - General steps of tracheotomy to the team members.
  - Inform physician / anesthetist to completely paralyze the patient and stop ventilating during tracheal opening.
  - Inform physician or anesthetist to block and then partially remove the tube till the cuff is out of view of tracheal opening.
- **Equipment**
  - Don PPE and perform "buddy check"
  - Lay out tracheotomy equipment including tube
  - Attach syringe to tracheotomy balloon ready for inflation
  - Consider preloading the HME onto the inner tube
  - Ensure only closed in-line suction is used for ETT and tracheotomy tube.

PERFORMANCE (Once trachea is exposed)

- **Pause**
  - Inform anesthetist of readiness to open trachea
  - Confirm paralysis
  - Pre-oxygenate with PEEP then stop ventilation and turn off flows
  - Allow time for passive expiration with open APL valve
- **Tracheal window**
  - Create tracheal window taking care ET- cuff is not damaged.
  - Turn off flows with open APL valve, allow passive expiration, consider clamping ETT
  - Deflate ETT cuff and draw back proximal to the tracheal window under direct vision

- Ensure window is of sufficient size to allow easy insertion of tracheostomy tube without injury to cuff. o Insert cuffed, non-fenestrated tracheal tube

- **Circuit connection**
  - Immediately inflate tracheotomy tube cuff
  - Replace introducer with non fenestrated inner tube and HME
  - Prompt attachment of circuit o Resume ventilation
- **Confirmation**
  - Confirm position of the tube in a 30 degree head up (ICU nursing) position
  - Confirm position with end-tidal CO2 only (avoid contamination of stethoscope by auscultation)
  - Withdraw clamped ETT carefully
- **Secure**
  - Secure tube with sutures and tracheotomy straps.
  - Use appropriate betadine dressing.

REMOVAL OF PPE.

Doffing of PPE to is be done in a separate room following all standard guidelines with head gear/goggles and mask to be removed at last.

POST-PROCEDURE (ICU and beyond)

- **First week**
  - Exercise extreme care in transfer
  - One dedicated team member allocated to holding tracheotomy tube whenever being prone or turned
  - Humidified oxygen to be avoided if possible, HME only.
- **Nursing care**
  - Use only in line closed suction circuits at all times
  - Periodic check of cuff pressures
  - Cuff should not be deflated without considering risks to patient, staff and the environment.
  - Do not change dressings unless frank signs of infection
- **First tube change**
  - Delay first tube change to 7-10 days o Full PPE
  - Perform same sequence of pause in ventilation with flows off before deflating cuff and inserting new tube with immediately re-inflation of cuff and reconnection of circuit.
- **ICU step down**
  - Ideally to a dedicated COVID tracheotomy ward with trained nursing staff
  - Cuffed non-fenestrated tube to be used until the patient is confirmed COVID negative

- Subsequent planned tube changes at 30 day intervals

- **Decannulation**
  - If patient is confirmed COVID negative and is to be moved to a COVID negative ward then consider trials of cuff deflation.
  - Gradual decannulation after the patient stabilizes.

Annexure

Tracheotomy tray instruments

- Draping sheet
- 2 Bowls
- Gauze pieces
- Roller gauze
- Betadine ointment
- Sponge holder
- Suction catheter & cannula
- Knife handles (size no. 3) – 2 nos.
- Surgical knife (size no. 15) – 2 nos.
- Mosquito artery forceps – 3 nos.
- L- retractors (medium size) – 2 nos.
- Single hook retractors – 1 no.
- Double hook retractor – 1 nos
- Tracheal dilator – 1 no.
- Scissors (tissue cutting 6") – 1 no.
- Needle holder

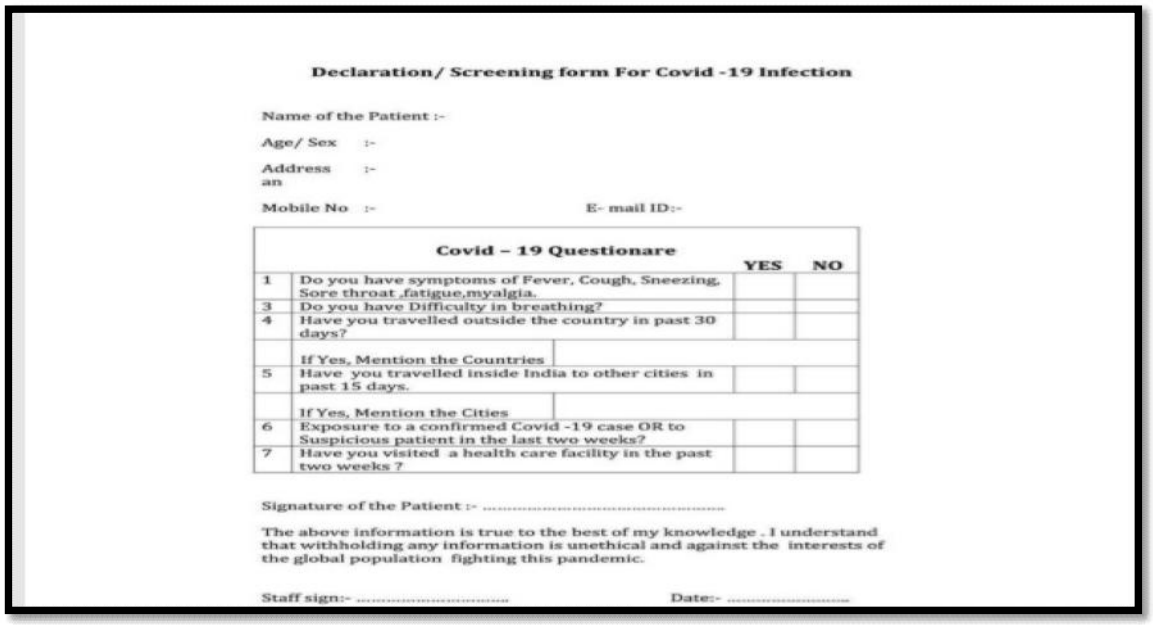
Additional preparations along with tray:

- Light source- torch light/top light
- Syringes 10 cc (2 in no.), 5 cc (1 no.)
- Needles 1.5" (24G and 26G -1 each)
- Silk 2-0 / 3-0 o Injection Lignocaine 2% + Adrenaline 1:1,00,000 (pre-filled in 10 cc syringe with 24G 1.5" needle)
- Injection Lignocaine 4% (pre-filled in 5 cc syringe with 26G 1.5"

Department of Ophthalmology

For staff:

- **All staff members to mandatorily wear face mask in hospital premises**
- **ONE attendant per patient policy to be strictly followed.**
- **Educate patient and their families about early identification of symptoms and essential preventive actions.**
- **All persons (patients, attendant, visitor & Staff) coming to hospital shall PASS the "THERMAL SCREENING" (Based on history and non-contact thermometer, if available)**
- **Every person shall DO HAND WASH in the hospital at entry point**
- **Following questions shall be asked to every patient / visitor**



Declaration/ Screening form For Covid -19 Infection

Name of the Patient :-

Age/ Sex :-

Address :-
an

Mobile No :- E- mail ID:-

	Covid – 19 Questionare	YES	NO
1	Do you have symptoms of Fever, Cough, Sneezing, Sore throat ,fatigue,myalgia.		
3	Do you have Difficulty in breathing?		
4	Have you travelled outside the country in past 30 days?		
	If Yes, Mention the Countries		
5	Have you travelled inside India to other cities in past 15 days.		
	If Yes, Mention the Cities		
6	Exposure to a confirmed Covid -19 case OR to Suspicious patient in the last two weeks?		
7	Have you visited a health care facility in the past two weeks ?		

Signature of the Patient :- .....

The above information is true to the best of my knowledge . I understand that withholding any information is unethical and against the interests of the global population fighting this pandemic.

Staff sign:- ..... Date:- .....

- **All the OPDs will have hand sanitizers for the staff use**
- **Staff shall practice hand wash on an hourly basis**
- **Information and Education content should be displayed periodically in waiting areas, if available.**

For Patient:

1. **Patient with fever and symptom of sneezing must wear face mask.**
2. **Maintaining 1 meter / 3 feet distance between 2 patients and the same distance between Healthcare workers and patients (this also includes distance from registration desk surface / other surfaces)**

3. Reducing instances of hand to hand transfer (handing over of prescription.
4. In case of sneezing, cover mouth with tissue / flexed elbow, the used tissue to be immediately thrown in a CLOSED bin
5. Discourage self-medication.

Eye emergencies- OPD services

1. Chemical Injuries
2. Blunt Trauma or Perforating Injuries
3. Open globe Injuries with or without foreign body
4. Lid trauma
5. Angle closure glaucoma
6. Neovascular Glaucoma
7. Elevated Intraocular pressure>38mm Hg
8. History of recent onset sudden vision loss (<2weeks) -CRAO/CRVO/VH/ Retinal Detachment
9. Retinal Tears 10.Endophthalmi
10. Expulsive Choroidal Haemorrhage
11. Exposed infected buckle 13.Orbital cases with vision loss 14.Severe inflammation-lid/ orbit 15.Tumour cases with vision loss
12. Corneal abrasion/ Superficial FB (including Contact lens lost in eye)/ Ulcer
13. Post-operative follow-ups
14. Conjunctivitis (rule out fever as this may need screening for COVID- hence need to be referred)
15. Patients requiring intravitreal injections with fresh bleed or those requiring for endophthalmitis
16. One eyed patients on anti VGEF with sudden loss of vision

Procedures in OPD

OPD and minor procedures and surgeries as required for the alleviation of the above, which, if not performed, will have a bearing on loss of vision, eye or life.

1. Avoid DCR and nasal endoscopy procedures.
2. No routine AR & NCT for each patient. To be done only if required by the doctor
3. Minimize procedures requiring touching of the eye by hand and/or lenses/equipment, where not of immediate critical importance for patient management.
4. A list of presenting complaints to filter out the emergencies:

- **Injury to eye (chemical, thermal, mechanical)**
- **Sudden loss of vision**
- **Sudden onset of pain in eyes**
- **Acute red eye**
- **Acute onset lid lesions**
- **Sudden onset of diplopia**
- **Sudden onset of drooping of lids**
- **Sudden onset of Halos**
- **Photophobia**
- **Sudden onset of discharge from the eye**
- **Sudden onset floaters and or flashes**

5. **Social distancing may be ensured in waiting space.**

In examination rooms, more detailed cleaning to be done as per hospital protocol.

6. **All slit lamps to have acrylic/ plastic / X-ray sheets attached so that the direct contact with the patients is avoided. Material used should be able to clean with alcohol swabs (To be cleaned every 2 hours)**
7. **In the exam rooms, slit lamp/ mouse/ keyboard/tablets will be cleaned by staff twice a day and in between patients as often as needed using alcohol wipes**
8. **Clean hands with sanitizers before touching any equipment once patient has been touched**
9. **While performing any contact procedure like tonometry, gonioscopy, keratometry, A scan, B Scan, UBM, Humphrey Visual Fields, thoroughly clean instruments before and after every new case**
10. **OPD –Trial frames, lenses to be wiped with alcohol swabs after doing refraction for each case. All non-essential, non-critical examinations should be avoided and patient explained need for more elaborate testing in future as feasible**
11. **Special handling of conjunctivitis patients with non-contact gloves and cotton buds, after triaging for any COVID-risk factors**
12. **Open door policy at all locations (except operating room)**
13. **All used items MUST be disposed off in proper color bins.**
14. **Additional Recommendations**
    - **Stop Direct Ophthalmoscopy**
    - **Stop Contact lens trial**
    - **Stop routine refraction**

Monitoring

Monitoring to be initiated and reinforced by Faculty members. This includes monitoring of maintenance of personal hygiene measures, wearing masks, gloves by health care workers, proper history taking, one attendant policy, awareness of health messages and compliance

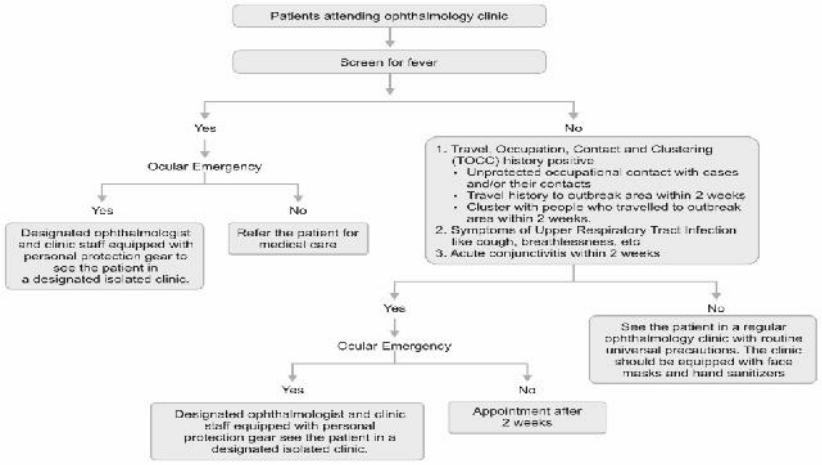
Precautions at Ophthalmic Evaluation and OPD Procedures

1. **Protection for mouth, nose, and eye (with triple layered/N95 masks if available , goggles/ face shield)**
2. **Slit lamp barriers or breath shields**
3. **Alcohol based hand sanitizer before and after examining each patient**
4. **Speak as less as possible**
5. **Disposable gowns, gloves and eye protection, and N95 mask are recommended if a procedure is planned that will result in aerosols**
6. **Avoid nasolacrimal syringing if possible**
7. **Avoid all aerosol-based procedures including NCT**
8. **Disinfect (using standard protocols) all instruments and probes used in direct contact to the patient's tear film and ocular surface before re-use**
9. **In case of urgent ophthalmic problem in a patient who is at high risk for COVID-19, eye care is best provided in the multispecialty hospital setting designated for treating COVID19 patients. Transmission precautions for treating ophthalmologists include a full- body protection (HIV kit)**
10. **In case of urgent ophthalmic problem in a patient with documented COVID-19 or a person under investigation, the patient should remain in the multispecialty hospital setting designated for treating COVID19 patients, ICMR-GOI guidelines should be followed, transmission precautions for treating ophthalmologists include full-body protection.**
11. **Patients with conjunctivitis should be seen in a designated OPD room with an isolated waiting room by a designated ophthalmologist with PPE**

Precautions at Surgery

1. **All surgeries must be day care unless the medical conditions or the Govt of India rule strictly mandate admission.**
2. **Routine screening Chest X-ray before each surgery, if possible**
3. **Avoid surgeries off-hours or with an incomplete team**
4. **Faculty or senior fellows or senior residents should preferably do the surgery – quick and safe surgery is warranted**
5. **Choose the quickest possible surgical procedure**

6. **Try to avoid GA unless mandatory**
7. **Prefer topical anesthesia over local anesthesia**
8. **PPE for all OT staff (HIV Kit for non-COVID-19 patients and a full-body suit for COVID-19 patients and suspects)**
9. **All universal precautions as usual**
10. **Minimum number of staff in the OT**
11. **Stop positive ventilation in theatre during procedure and for at least 20 minutes after the patient has left theatre**
12. **Smoke evacuation for diathermy**
13. **Aerosol generating procedures such as intubation, extubation, bag masking, electrocautery should be done by anesthetist and the surgeon while wearing full personnel protective equipment**
14. **Bare minimum staff should be present when the patients are intubated and extubated in the OT**
15. **No two patients should be handled together. There should be a 20-min time out between each surgery**
16. **Protocol based disinfection of the OT should be done after each surgical procedure**
17. **All HCW coming in direct patient contact and ophthalmologists should be encouraged to take a soap bath at once they reach home.**
18. **Screening of all preoperative patients for COVID19 as decided by hospital authority.**



Triage System

Reference:

Standard operating procedure in emergency

Before approaching to the patient following measures to be done:

- **History regarding respiratory symptom., fever , covid positive patient contact , travel history and positive patient in neighborhood.**
- **Let the relatives to stay away from the area**
- **Health care personal should maintain distancing with patient about 1 metre.**
- **Before examination of patient, Surgical mask/ N95 mask should be worn.**
- **Wear the plastic gown available in casualty.**
- **Wear the face shield to cover the face, if performing any emergency procedure.**
- **Head cover should be done.**
- **Double gloves should be worn.**
- **Ask the patient also to wear the mask.**
- **Doffing of all the personal protectives should be done as per IPC guidelines**
- **Senior resident third year should approach to casualty for patient examination and treatment.**

Reference: As per AIIMs guideline based on WHO recommendations.

Doffing of every PPE as per standard CDC guidelines

For ROP screening in OPD :

The Indian Retinopathy of Prematurity (IROP) Society has decided to frame guidelines for screening and treatment for the use of those involved in the care of ROP in India.

Screening guidelines:

- **The baby born with</=2000gmat birth**
- **The baby born with</=34weeks of gestation**
- **Outside the criteria if requested by the treating neonatologist**
- **First screening before the baby is 30 days old.**
- **If possible high-risk babies (< 1200 grams and < 30 weeks) may be screened earlier between 2-3 weeks of life**

- **With the aim of reducing the number of screening visits and restricting them to have the highest yield of detection of vision threatening ROP**
- **Before screening, ask the following 4 questions: (as per Govt guidelines)**

1. **International / Domestic travel in last 4 week?**
2. **In quarantine period? (See stamp on hand or arm)**
3. **In isolation as some in family was COVID-19 positive or had contact with COVID positive patient**
4. **Fever, cough, cold.**
5. **Maintain social distance while undergoing dilatation, screening or counseling with mother**
6. **Mother must place the infant on a designated traywith a polythene sheet, uncovers the face of the infant and step away more than 6 feet. The screener walks to the baby and screens (using indirect ophthalmoscopy or a retinal camera).**
7. **Do not screen if the baby has conjunctivitis**
8. **The assistant or nurse (also wearing OT gown, head cover, gloves surgical mask) may handle the head only if needed during the screening.**
9. **After screening, screener must step back more than 6 feet. The mother then comes forward and picks up the baby and the ROP card with the findings documented.**
10. **Polythene sheet must be replaced or sanitized with alcohol based disinfectant**
11. **The tray must be cleaned before taking other baby with alcohol based disinfectant.**
12. **For each baby separate infant wire speculum with depressor to be used..**
13. **Dilating drops must be used without contact with the eye / eye lid of the infant. All drops must be discarded at the end of the screening session / day whichever is earlier**
14. **20 D lens rim / lens must be washed with soap and water and alcohol swabs must be used on the rim of the lens**
15. **Facial mask (preferably N95 grade), Head Cap, Eye protective glasses, Sterile gloves, surgical gown should be donned by retinal surgeon.**
16. **After each baby examination gloves should be changed with a proper degloving method as per IPC**

Follow-up suggestions:

Finding in either eye with respect to zone	Next follow up	Comment
Immature retina in zone 3 and zone 2 anterior	3-4 weeks or more	If the PMA is less then 34 weeks/ < 1500 grams / sick and admitted infant, consider a closer follow-up
Zone 3 and Zone 2 anterior disease	3-4 weeks	Spontaneously regressing ROP can be watched
Zone 2 Posterior disease	2 weeks	Unless associated with treatment requiring features (see below)
Zone 1 disease	Urgent / less than a week / treat	Have a low threshold for treatment
Pre-plus	Consider early treatment or early follow-up if pupil does not dilate well and media is not clear	Individualize for each case based on the tempo of disease and PMA
Pre-plus	With good pupillary dilatation and clear media and other low risk features	Can delay the next screening by an additional 1 week from the current guidelines

These guidelines are not designed to be ideal. But In a restrictive time in good faith and aim to reduce and mitigate blindness without risking the lives of our patients and our health care givers.

Department of Obstetrics & Gynaecology

(A) Obstetrics and Gynec. OPD

- All patients who enter in OPD should wear mask.
- All HCP should wear mask
- There should be strict social distancing in waiting area outside of OPD.
- All ANC patients are asked about corona related symptoms, if any symptom present then patient is referred to medicine for further assessment.
- Examine the patient from at least 1 metre of distance.
- No relative should be allowed in OPD.
- Avoid P/S, P/V examination, do it only if necessary.
- In ANC patient supto 28 week, call patients at 45-60 days for next visit, and hematinics supplements are given for the same period.
- >28weeks-36weeks call patient at 1 month
- >36weeks , if no high risk factor(PIH, GDM, Placenta previa), then patient is called if bleeding P/V, leaking P/V, if severe pain in abdomen or on the date of EDD.
- In between patient is advised to go nearby health center for regular check up.
- Telephonic consultations is advised for routine follow up and minor ailments.

(B) Obstetrics and gynec surgeries

- COVID suspected patient should be referred to medicine for further assessment.
- Consider alternatives to surgical management as far as possible.
- Do not operate non urgent cases.

Time frame for particular surgery:

1. Conditions need urgent attention
   - Ectopic pregnancy
   - Spontaneous abortion
   - Adnexal torsion
   - CS
   - Emergency cerclage based on findings

2. Surgeries if significant delay can cause significant harm
   - Cancer
   - Cerclage to prevent premature delivery
   - Pregnancy termination
3. Delay surgeries for few weeks
   - Amniocentesis
   - D & C

4. **Delay surgeries for few months**
    - **Sterilization procedure**
    - **Myomectomy**
    - **Hysterectomy**
    - **Infertility procedure**
    - **Prolapse surgeries**
    - **Incontinence surgeries**

When surgery is unavoidable and a surgical plan is decided, following things must be taken care of:

- **For anaesthesia, as far as possible avoid general anaesthesia.**
- **While in GA, intubation should always be done with HME filter.**
- **For Gynecological surgeries, open surgery is better than laparoscopic approach because of risk of aerosol spread during laparoscopy.**
- **Proper training of OT staff and floor swipers is mandatory to prevent transverse spread of infection.**
- **Facility should be available for proper donning and doffing of PPE.**

C. Guidelines for management of pregnant patients with suspected or confirmed COVID-19 Infection.

Pregnant women with a history of overseas travel or with exposure to a confirmed/suspected case of COVID-19 should be isolated by using the guidelines for non-pregnant adults. In the absence of community spread, isolation at the designated facility and in the presence of community spread, isolation by home quarantine may be preferred.

- **The criteria for offering a laboratory test are the same for pregnant women and the non-pregnant population.**
- **Pregnant women with active COVID-19 infection should be managed with supportive and specific therapy as recommended for non-pregnant adults,which are;**
    - **Oxygen therapy / Respiratory support**
    - **Fluid therapy**
    - **Antibiotics**
    - **Shock management.**
    - **Antepartum and intrapartum management.**

Management on basis of symptoms and signs

Mild symptoms, low risk	Moderate symptoms OR risk factors	Severe symptoms
• Routine obstetrical care • Consider discharge home unless there is other medical or obstetrical concern • Advise patient to monitor symptoms, and indications to present to Emergency Room.	• Detailed assessment: • Vitals,O2 saturation • Blood work • Chest x-ray as indicated • Decision regarding admission vs. discharge home to be made on a case by case basis.	• Admission • Multidisciplinary assessment and management • Consider transfer to a center with level 2/3 NICU if risk of preterm birth anticipated. • Indicated delivery should be decided on a case by case basis.

Intensive care (to be managed by critical care specialist)

- **Pregnant women with following criteria**
- **Respiratory rate > 30 breaths / min;**
- **Oxygen saturation <93% at a rest**
- **Arterial partial pressure of oxygen/oxygen concentration (FiO2) <300 mm Hg**
- **Patients with >50% lesions progression within 24 to 48 hours in lung imaging**
- **Quick Sequential Organ Failure Assessment Score (QSOFA) score can be a useful adjunct to decision making for ICU management.**

QSOFA score ≥2 is suggestive of sepsis and needs intensive care

It includes 1 point for each of 3 criteria.

1. **Respiratory rate ≥ 22 breaths/min**
2. **Mental status altered**
3. **Systolic blood pressure ≤ 100 mmHg.**

Antenatal and intrapartum management

- **Antenatal examination of pregnant females suspected of or infected with COVID-19 should be carried out in a negative pressure isolation room or the labor ward.**
- **Human traffic around this room should be minimum.**
- **Proper PPE for all HCP.**

Follow standard recommendations for PPE given by WHO

Health care workers	**Providing direct care to COVID- 19 patients**	• **Medical mask** • **Gown** • **Gloves** • **Eye protection (goggles or face shield)**
Screening area	**Staff**	• **Maintain spatial distance of at least 1 metre.** • **Surgical mask.**

- **When providing healthcare to women in labor with confirmed or suspected COVID-19 infection, follow standard universal precautions to prevent contact with body fluids.**
- **Reception and triage should be in the same room.**
- **Keep room free from unnecessary items.**
- **Restrict entry of visitors and staff into room.**
- **There should be facilities for HCP to remove and safely discard PPE at the exit of the room.**
- **Separate delivery room and operation theatres are required. both should have neonatal resuscitation corners located at least 2 metre away from delivery table.**

Mode of delivery

- **Mode of delivery in a pregnant woman infected with COVID-19 should be guided by her obstetric assessment and her physiological stability (cardiorespiratory status and oxygenation). COVID-19 infection itself is not an indication for induction of labor or operative delivery.**
- **Continuous electronic fetal monitoring/ manual monitoring should be done during labor as indicated for a high-risk delivery.**
- **Adequate equipment and trained HCP should be available for intrapartum monitoring and obstetric interventions as indicated in the separate childbirth facilities for infected pregnant women.**
- **Oxygenation status of women during labor should be monitored by a pulse oximeter and oxygen therapy should be titrated to maintain oxygen saturation of more than 94%.**

Timing of delivery

- **Not dictated by presence of maternal COVID-19 infection.**
- **Not an indication to induce labour.**
- **Recovery after infection in early pregnancy:**
  - **No alteration in usual timing of delivery.**
- **recovery after infection in third trimester:**
  - **reasonable to postpone delivery (if no other medical indications present) either until:**

- Negative test result obtained or,
- Quarantine status is lifted.

Exception : critically ill pregnant women

- **Delivery indicated: relieve the extra metabolic and pulmonary load**

Management of neonate

- **If possible, resuscitation of neonate can be done in a physically separate adjacent room. If not feasible, the resuscitation warmer should be physically separated from the mother's delivery area by a distance of at least 2 meters.**
- **Mother should perform hand hygiene and wear triple layer mask.**
- **Breast milk either expressed/ direct can be given to neonate.**

Scenario 1: Resources for isolation not available;

- **Healthy neonate may be roomed-in with mother.**
- **Direct breastfeeding can be given.**
- **Mother should wash hands frequently including before breastfeeding and wear mask.**

Scenario 2: If resources for isolation available;

- **After immediate cord clamping, the neonate should be isolated from the mother.**
- **During isolation, healthy neonates should preferably be cared for by family member not in contact with mother or other suspected/proven case.**
- **Mother can express milk after washing hands and breasts and while wearing mask.**
- **Mother and baby can be roomed-in once mother has been tested and declared to be clear of infection.**

Pharmacological management

1. **Antibiotics:**

Hydroxychloroquine ➢ **200 mgTDS with meals x 10 days OR** ➢ **400 mg BD on day 1 and 400 mg once a day x 4 days**	**+/-Azithromycin** • **500 mg twice a day x 7 days**

2. **Antiviral drugs- To be given in high risk group:**

DM, Renal failure, chronic lung disease, Severe PIH, cardiac disease
Immunocompromised patients

- **Lopinavir/ Ritonavir (200 mg/ 50 mg) – 2 tablets BD**
- **Duration: 14 days or for 7 days after becoming asymptomatic**

References:

- **Guidance for management of Pregnant Women in COVID-19 Pandemic; ICMR / NIRRH**
- **FOGSI, GCPR on Pregnancy with COVID-19 infection; Version 1, April 5, 2020**
- **RCOG, COVID-19 Infection in Pregnancy, Version 5, April 5, 2020**
- **IAGE, GCPR for Endoscopy During the COVID-19 Pandemic, Version 1: 16th April 2020**

Department of Respiratory Medicine

SOP for OPD:

1. **All the doctors, including faculty and resident doctors as well as the paramedical staff should be wearing masks (preferably N95 masks), gloves, surgical cap and goggles/face shield for attending and examining patients coming to our OPD.**
2. **DOTS service and collection of sputum specimen for Acid fast bacilli as well as CBNAAT would be in operation.**
3. **The staff working in the NTEP OPD including the medical officers as well as technicians should be provided with N95 masks as they deal with sputum collection of suspected Pulmonary TB patients, which is an aerosol generating procedure.**
4. **Sputum collection should be done in open areas, away from the COVID screening areas.**
5. **The following patients would be dealt with in our OPD:**
   - **All chronic patients of respiratory diseases, including COPD, Bronchial Asthma, Interstitial Lung diseases, Bronchiectasis, Malignancy, who donot present with ARI or high grade fever.**
   - **All patients of Tuberculosis (Pulmonary as well as Extra-pulmonary diseases), not presenting with ARI or High grade fever.**
   - **All patients of pleural diseases (Pleural effusion, Pyothorax, Pneumothorax, Hydro/Pyopneumothorax), not presenting with ARI or high grade fever.**
   - **Patients with Adverse Drug Reactions (ADRs) to any Anti-tubercular drug therapy, who doesn't present with ARI or high grade fever.**
6. **The following patients would be excluded and sent for evaluation in COVID OPD :**
   - **Any patient of consolidation/pneumonia as radiological finding**
   - **Any new patient presenting with ARI with/without high grade fever**
   - **Any patient with Chronic Lung Diseases, presenting with ARI or high grade fever.**
   - **Any patient of Tuberculosis (Pulmonary/Extra-pulmonary), on AKT, presenting with ARI or high grade fever.**

   (If such patients come with COVID negative report, they would be managed by us.)
7. **All the patients attending the OPD should be provided with surgical masks and only one attending should be allowed who should be wearing a homemade mask/surgical mask. The patient and the attending should follow proper hand hygiene before entering the OPD.**

SOP for indoor treatment:

1. **All the doctors as well nursing staff and other paramedical staff should be provided with masks (preferably N95 masks),gloves, surgical cap and goggles/face shield while attending indoor patients.**
2. **All the patients as well as their attending (one attending per patient) should be provided with surgical masks to be worn at all times.**
3. **The following patients will be admitted in the ward under our department**
   - **All chronic patients of respiratory diseases, including COPD, Bronchial Asthma, Interstitial Lung diseases, Bronchiectasis, Malignancy, presenting with acute exacerbation and who do not present with ARI or high grade fever.**
   - **All patients of Tuberculosis (Pulmonary as well as Extra-pulmonary diseases), presenting with complications, not presenting with ARI or High grade fever.**
   - **All patients of pleural diseases (Pleural effusion, Pyothorax, Pneumothorax, Hydro/Pyopneumothorax), not presenting with ARI or high grade fever.**
   - **Patients with Adverse Drug Reactions (ADRs) to any Anti-tubercular drug therapy, who doesn't present with ARI or high grade fever.**
4. **The following patients would be excluded and sent for evaluation in COVID OPD:**
   - **Any patient of consolidation/pneumonia as radiological finding**
   - **Any new patient presenting with ARI/SARI with/without high grade fever.**
   - **Any patient with exacerbation of Chronic Lung Diseases, presenting with ARI/SARI or high grade fever.**
   - **Any patient of Tuberculosis (Pulmonary/Extra-pulmonary), on AKT, presenting with ARI/SARI or high grade fever.**

     If such patients come with COVID negative report, they would be managed by us.
5. **All the patients requiring ventilator support would be managed in the Medical ICU.**

Department of Orthopedics

Introduction:

COVID-19 represents an uncertain challenge that could generate large numbers of patients in a short period of time. How best to manage this is evolving. There will not be an ideal solution so all are requested to work together to solve the challenge. The surgical workforce will need to adapt during the COVID-19 pandemic. They will need to balance optimum treatment of a patient's injury or condition against clinical safety and resources. The IOA supports reasoned pragmatic decision- making in these extraordinary circumstances and acknowledges that non-operative management of many injuries and reduced face to face follow up will be increasingly the norm.

I. **Maintain emergency surgery capabilities**
II. **Protect and preserve the surgical workforce**
III. **Fulfill alternate surgical roles**
IV. **Fulfill alternate non-surgical roles**

Surgical workforces are likely to be depleted as clinicians self-isolate. Maintaining normal Orthopaedic sub-specialty emergency services will be increasingly difficult. Surgical theatre capacity is likely to decrease and the surgeons are likely to be redeployed to support non-surgical specialties.

The main aims should be to triage and deliver healthcare to patients for maximal benefit as in a mass casualty scenario and to protect and preserve the surgical workforce. Any plans must be dynamic, reactive and will change as the situation/scale unfolds. Orthopaedic Surgeons will need to be flexible, collaborative and show leadership in what are expected to be testing times.

Main priorities in the list of importance should be:

1. **Maintain emergency surgery capabilities**
   Maintain emergency surgery provision, including major trauma. Initially, it should be delivered by individual specialty rotas. These will include rotas where some members of the team do not come into work and act as a healthy reserve. Surgeons may be required to take over running the major trauma service.
2. **Protect and preserve the surgical workforce. It is vital that risk to staff is minimised. This can be achieved by:**
   I. **Non-surgical solutions to be used to avoid surgery where possible**
   II. **Personal protective equipment (PPE) used correctly**
   III. **Rest and recuperation must be provided**
   IV. **Psychological support given to all the team members**
3. **Fulfill alternate surgical roles**

Due to the pressure on Emergency Departments, non-respiratory emergencies may be triaged to an alternate pathway which may need support from surgeons.

4. Fulfill alternate non-surgical roles
   If all other priorities have been met and the surgical workforce has been maintained, it may be possible for some surgeons to take on non-surgical roles.

Optimisation of resources:

a. Theatre resources. There should be a regular appraisal of available resources, including, at minimum, daily strategy meetings with a theatre coordinator and a consultant from anaesthetics and each relevant surgical specialty. All should have a clear understanding of the issues facing their own specialty prior to the meeting, including workload, relevant clinical details, ICU bed status, sickness absence and redeployment of staff. Resource allocation and patient prioritisation should be agreed.
b. Equipment & resources may need to be relocated to alternative locations.
c. Trauma meetings should have remote access options to minimise social contact.

Outpatient management:

During the coronavirus pandemic, there will be increased emphasis on managing patients with non-operative strategies and minimising outpatient visits. The following tips may be helpful in this regard:

1. The patients should have consultant-delivered, definitive decision-making at first attendance and, in particular, should not be scheduled for surgery without senior input.
2. Minor injuries can be left for the Emergency department to deal.
3. Those patients who need immediate management that requires sedation facilities, such as those with dislocations, may need to remain in the Emergency department and the Orthopaedic team members should manage these patients here.
4. Referring doctors and the patients should have a direct telephone access to the Orthopaedic surgeons to advice to minimise the need for the patients to attend the hospital. The risk of hospital attendance may outweigh the potential benefit of intervention, particularly for patients in vulnerable groups.
5. Impact on radiology services should be minimised. Imaging should be requested after the patient has been assessed by the Orthopaedic team member, so as to minimise the x-ray

   Requests and avoid repeat imaging. Avoid use of multiple imaging modalities and consider immediate use of the modality most likely to give a definitive diagnosis. Arrange for use of a mini C-arm in the Trauma Clinic if possible. CT scanning should be minimised as this is the investigation of choice for coronavirus pneumonitis.

   Use of removable casts or splints should be m^2aximised to reduce follow-up requirements

7. **Routine follow ups must be avoided as far as possible and the existitng appointments should be cancelled, postponed or conducted remotely, telephonically or by an email.**
8. **Follow-up imaging should only be performed when there is likely to be a significant change in management. There is no role for imaging to check for fracture union in most injuries.**
9. **Rehabilitation services are likely to be very limited. Alternative resources such as written and web-based information should be used maximally.**

Management of specific injuries

1. **Dislocations of the joints should be done in the emergency department wherever possible. If the joint is stable after reduction, the patient should be discharged with appropriate follow- up.**
2. **Most upper limb fractures, including clavicle, humeral and wrist fractures, have high rates of union and may be managed non-operatively, recognising that some patients may require**

Late reconstruction.

1. **Ligamentous injuries of the knee may be managed with bracing in preference to early ligament reconstruction.**
2. **Penetrating injuries (stab wounds) to the limbs that are not contaminated and have no neurological or vascular deficit may be sutured in the emergency department.**
3. **Abscesses in patients without systemic sepsis may be incised and drained under local anaesthetic in the emergency department.**

Inpatient management:

During the coronavirus pandemic, there will be increased emphasis on reducing hospital admission and minimising length of stay. Patients should only be admitted to hospital if there is no alternative.

1. **Major Trauma and other networks should develop solutions for communication and distribution of workload, amongst the nearby hospitals.**
2. **Patients with multiple injuries, pelvic & acetabular fractures with major haemorrhage, open fractures, compartment syndrome and exsanguinating injury all require emergent resuscitation and management.**
3. **Consider alternative techniques for patients who require soft tissue reconstruction to avoid multiple operations or the need for critical care input (local flaps, intentional deformity, skin grafting for fasciotomy wounds).**
4. **Consider early amputation in patients for whom limb salvage has an uncertain outcome and is likely to require multiple operations and a prolonged inpatient stay.**
5. **Surgeons may need to base decisions about vascular injuries on clinical assessment alone if imaging is not readily available.**

6. **The care of patients with hip and femoral fractures remains urgent and a surgical priority. It is reasonable to offer hemiarthroplasty rather than total hip replacement, in order to facilitate early surgery.**
7. **Patients with complex fractures should have surgery planned to minimise length of stay. If a staged approach is used, aim to discharge and readmit the patient if possible.**
8. **Consider day-case treatment of simple peri-articular fractures and foot & ankle injuries.**
9. **Patients with upper limb fractures that require surgery (e.g. forearm fractures) should be managed as day cases.**
10. **Wrist fractures may be treated with removable casts or splints to reduce unnecessary follow-up.**
11. **Use absorbable sutures and warn patients of the small risk of a mild inflammatory reaction to the sutures.**
12. **Consider non-operative management and bracing of patients with spinal fractures**
13. **Non-union of upper limb fractures may be managed in a delayed fashion. Non-union of lower limb fractures with failed implants or increasing deformity and a significant impact on daily function may require relatively urgent treatment.**
14. **Patients with cauda equina syndrome require emergency treatment.**
15. **Patients with septic arthritis, prosthetic joint infection or infected fractures and features of systemic sepsis require emergency treatment. Those who are not septic may be managed as out-patients in appropriate clinics. Suppression therapy should be considered.**
16. **Most paediatric fractures can be managed conservatively orbyy minimum interventions.**
17. **All the major elective Orthopaedic and Spinal surgery should be deferred.**

Reference sources:

- **Guidance for surgeons working during the COVID-19 pandemic. The Surgical Royal Colleges of the United Kingdom and Ireland. 20th March 2020. https://www.rcseng.ac.uk/coronavirus/joint-guidance-for-surgeons/**
- **Management of patients with urgent orthopaedic conditions and trauma during the coronavirus pandemic. British Orthopaedic Association. 24 March 2020. https://www.boa.ac.uk/resources/covid-19-boasts-combined.html**

Sop for suspected covid / covid patients undergoing surgery

Operation theatres earmarked

- **Ortho OT3**
- **Ortho OT2 if cases have to be taken simultaneously**
- **(Only if emergency) Time gap in between two cases in the same theatre–2Hours**

Operation theatre staff (One each)

- **Anesthesiologist (Can take a call on Junior)**
- **Surgeon(Can take a call on Junior)**
- **Scrub Nurse**
- **Floor Nurse**
- **OT Technician**
- **Anesthesia Technician**
- **House- keeping staff (After the case)**

All the staff in the Operation Theatre will wear Personal Protective Equipment

DONNING

Donning area:
Inside the Operation Theatre

In the operation theatre

- **No accessories (Mobiles/keys etc.) inside the Operation Theatre**

- **Operation trolley/Laparoscopic trolley and anesthesia trolley should be prepared and checked before the patient is shifted to Operation Theatre**
- **Adequate amount of gas in cylinder should be confirmed to avoid running out of gas mid-surgery**
- **Additional suction bottle to be kept so that it can be used in case the first suction bottle gets filled**
- **Sufficient quantities of all types of suture materials, drugs etc. And any other operative requirement should be the ready within the OT**
- **OT personnel should not be moving out of Operation Theatre. Make use of inter come case of emergency**
- **Hood over patient head can be placed while doing air way procedure**

Support staff

1. **Floor Nurse - Connects with Helper via Intercom inside Theatre for any requirement**
2. **Helper**
   - **Stationed at Ortho Post-op**
   - **To coordinate with Runner and handover the material to Floor Nurse without entering the OT at the OT door itself**
3. **Runner**
   - **Stationed at Ortho Pre-op**
   - **To obtain emergency equipment or material not there in OT in case it is required**
   - **Handover to Helper**
4. **Attire:**
   - **Helper Nurse –Head Cap, Gown, Surgical Mask, Gloves, Shoe cover**
   - **Running Nurse –Head cap, Surgical mask**
5. **Back up staff**
   - **One Junior Anesthesiologist**
   - **One Junior Surgeon**
   - **One OT Technician**
   - **One Anesthesia Technician**
   - **One House-keeping staff**

(To wait in General OT Complex. If required, has to don Personal Protective Equipment and enter Theatre.)

Shifting of the patient to operation theatre

- **Patient to be shifted inside the theatre only after OT preparation and donning**
- **Floor Nurse and Anesthesia Technician to shift the patient to Operation Theatre from ward/ICU (No patient hoarding in Pre-op)**
- **Patient case file to be kept in the Post-operative area**

Post-op monitoring and shifting of the patient from operation theatre

- **Patient to be monitored inside Operation Theatre (Not in Postoperative area)**
- **To be shifted to isolation ward/isolation Zone clinical ICU by Anesthesia technician and Floor Nurse (Any Doctor if required**
- **Outer gown (Green color cloth gown) can be worn by the staff who shift out the patient from the Operation Theatre**

Code green announcement

STEP-I: Nurse from the transferring location (Floor Nurse from the OT) to call the receiving area staff and inform patient details and confirm if the patient can be shifted out

STEP-II: Once confirmation is received, activate CODE GREEN by dialing 4010 and provide below mentioned details:

Shifting patient

- **from which Floor**
- **from which OT**
- **to which floor**
- **to which side (AB or CD)**

STEP-III: Telephone Exchange Operator announces CODE GREEN.
Announcement will be as follows: "ATTENTION CODE GREEN OT 2nd FLOOR TO 'X' FLOOR" (Three times)

PATIENT HAS TO BE SHIFTED OUT ONLY AFTER COMPLETION OF CODE GREEN ANNOUNCEMENT

Doffing - PPE has to be doffed at the: o Wash area outside OT3 o In Induction room

(Ortho OT 2 case)

Cleaning and disinfection of operation theatre

- **Dedicated medical equipment should be used when caring for patients with known or suspected COVID–19**
- **All non-dedicated, non-disposable medical equipment used for patient cares should be cleaned and disinfected with 1% Sodium Hypochlorite**
- **Hand hygiene to be strictly followed after removal of Personal Protective Equipment**

CLEANING AND DISINFECTION OF OPERATION THEATRE

Cleaning and disinfection of operation theatre method	
Instrument cleaning & sterilization	As per the existing protocol
Equipment cleaning	All surfaces should be wiped with 1% Sodium Hypochlorite solution; allow a contact time of 30 minutes, and then allowed to air dry
OT surface cleaning – Walls, Floor and Door	All surfaces should be wiped with 1% Sodium Hypochlorite solution; allow a contact time of 30 minutes, and then allowed to air dry
Furniture & Electronic equipment	All surfaces should be wiped with 1% Sodium Hypochlorite solution; allow a contact time of 30 minutes, and then allowed to air dry
Waste segregation – Drapes and Linen	Double layered yellow bag (Two covers) to be used to discard drapes, linen; tie it securely and label –SUSPECTED COVID –19 or COVID –19 and send to linen department in a separate trolley
Other biomedical waste segregation	As per the existing protocol
Discard of suction contents (Blood etc.)	To be disinfected with 1 tbs of bleaching powder/ litre of body fluids; allow a contact time of 30 minutes and then discard
Biopsy specimen container	Outer side of the container to be wiped with 1% Sodium Hypochlorite solution; allow a contact time of 30 minutes, and then allowed to air dry. Label –SUSPECTED COVID –19 or COVID -19
Doffing Area& OT Corridor	All surfaces should be wiped with 1% Sodium Hypochlorite solution; allow a contact time of 30 minutes, and then allowed to air dry
Patient shifting trolley	Should be wiped with 1% Sodium Hypochlorite solution; allow a contact time of 30 minutes, and then allowed to air dry
OT Slippers	To be washed in soap and water immediately after surgery/procedure
Patient hood for airway procedure	Should be wiped with 1% Sodium Hypochlorite solution; allow a contact time of 30 minutes, and then allowed to air dry
Induction Room	To be fumigated if utilized for doffing (Ortho OT 2 case) after cleaning the surface with 1% Sodium Hypochlorite

Department of Radiodiagnosis

1) **Those patient coming to respiratory or COVID OPD, if require X-ray- will be sent to COVID special X-ray room no 46 C assigned for these patient in radiology department via short passage next to shilpa canteen behind casualty. X-ray technician will be informed and he will take X-RAY after wearing N95 MASK with PPE Kit.**

2) **Those patients coming to SMIMER hospital in ambulance if require X-ray examination, will be done in ambulance only with Technician wearing N95 MASK & PPE Kit.**

3) **One technician is assigned for these X-rays during allotted duty hours in each Schedule.**

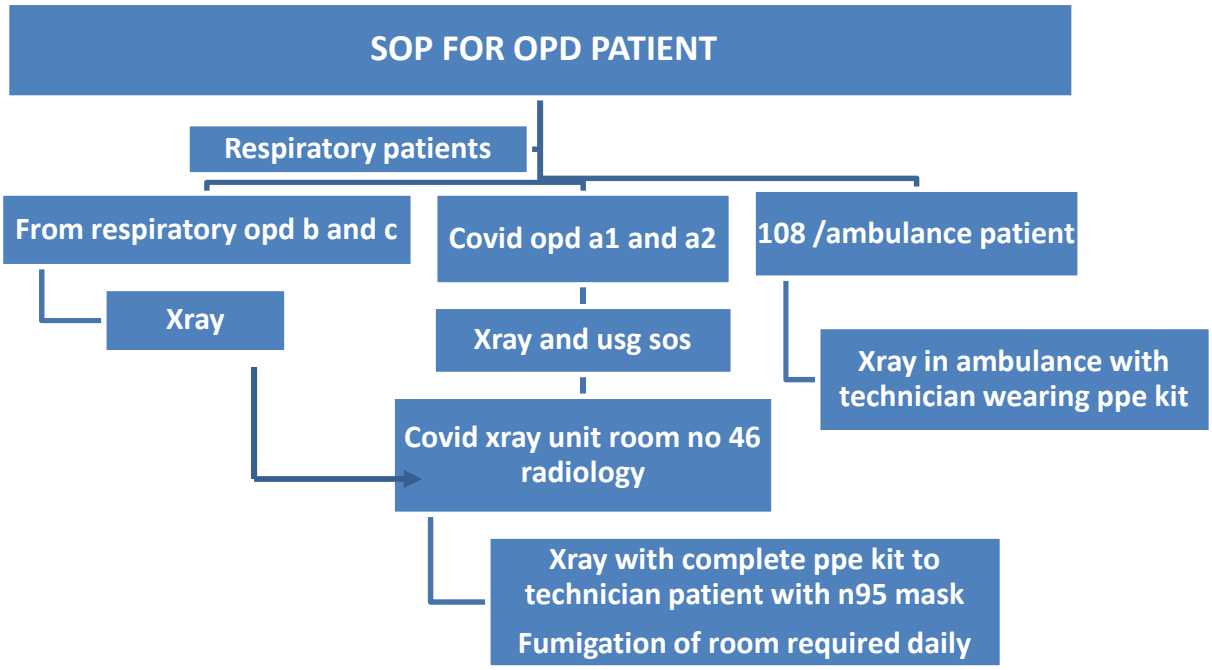
4) **Indoor COVID patient if needed X-ray or sonography will be attended in ward only by Technician/Radiologist wearing PPE Kit. Patient should not be sent to radiology department to avoid exposure to other patient and staff.**

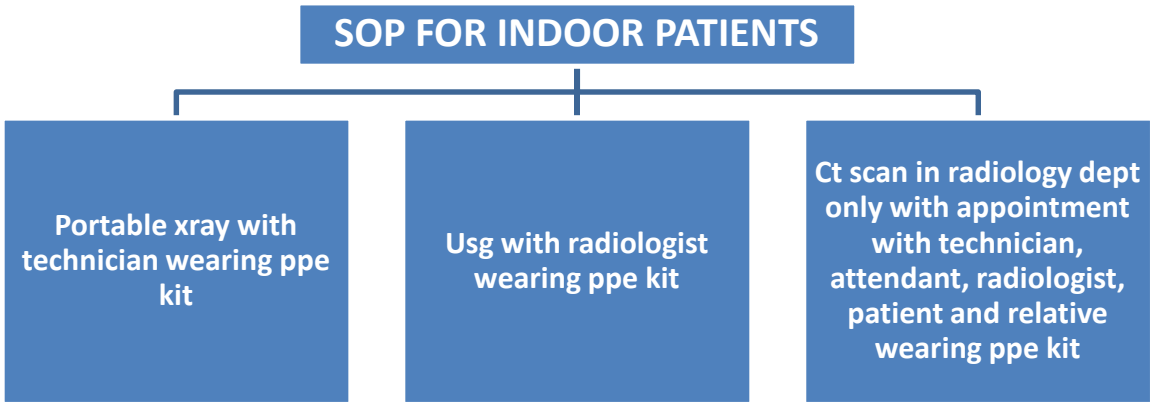
5) **All other patient coming to SMIMER hospital if require X-ray will be attended in "45 No" room.**

6) **X-rays will be given to attendant after reporting only.**

7) **Patients or their relative should not come directly to radiology department for reporting.**

8) **CT Scan study will be done in CT SCAN CENTRE (Apollo) only if indicated to see complications or to rule out other pathologies with Patient, Radiologist, Technician, Attendant, servant and patients relative wearing PPE KIT. CT Machine will have to undergo disinfectant procedure immediately after patient came out and will be fumigated atleast for 3 hours**.


SOP FOR OPD PATIENT
Respiratory patients
From respiratory opd b and c
Covid opd a1 and a2
108 /ambulance patient
Xray
Xray and usg sos
Xray in ambulance with technician wearing ppe kit
Covid xray unit room no 46 radiology
Xray with complete ppe kit to technician patient with n95 mask
Fumigation of room required daily


SOP FOR INDOOR PATIENTS
Portable xray with technician wearing ppe kit
Usg with radiologist wearing ppe kit
Ct scan in radiology dept only with appointment with technician, attendant, radiologist, patient and relative wearing ppe kit

Department of Dermatology Venereology & Leprosy

OPD

- **All staff members including faculty, residents, paramedical staff and interns must put on face mask (Triple layer surgical mask; preferably N95 mask).**
- **Registration counter make sure:-**
  - **All OPD patients should wear mask or cover their mouth and nose with cloth.**
  - **Maintain a distance of at least 1 meter (3 feet) while standing in a queue for registration and sitting in the waiting area.**
  - **Maintain a distance of > 1 meter between nursing staff at registration table and the patient.**
  - **Keep hand sanitizer at the registration table & ask patient to sanitize hands before entering in the OPD room.**
  - **Instruct the patient not to touch any surfaces like door knobs, table tops, walls etc. in the OPD room.**
  - **Allow only 1 patient (preferably without attendant, if not required) to enter the OPD room.**
- **All patients having complaint of cough, fever and difficulty in breathing and history of contact with suspected COVID or COVID positive must be referred to COVID OPD.**
- **Nasal, oral, oro-pharyngeal, examination should be avoided as far as possible. If required, take all precautions to protect one self and to minimize aerosol generation.**
- **Wash hand with soap and water/sanitizer after examination of each patient.**
- **Sterilize instruments adequately before examining the next patient.**
- **For chronic skin disorder patients, prescribe 1-2 month treatment and encourage to contact nearby health center to continue required treatment.**
- **Routine SKIN-OPD procedures where immediate procedural treatment is not absolutely necessary should be avoided.**
- **Do not use mobile/laptop in OPD. If used then sanitize mobiles during & after OPD hours. Clean surfaces like table tops, door knobs frequently with alcohol based solution or sodium hypochlorite.**

INDOOR:

- **Admit only patients who need indoor treatment (e.g. severe cutaneous drug reactions, erythroderma, severe vesiculobullous cases etc. where skin function is severely compromised).**
- **All medical and paramedical staff should wear triple layer surgical mask (or preferably N95 / FFP2).**
- **Hand hygiene must be performed by all staff members frequently.**
- **Use all disposable items for patient if possible.**
- **Keep distance of 1.5 meters between 2 cots.**
- **Clean and sterilize suction bottles and tubings adequately.**
- **Clean surfaces like table tops, door knobs frequently with alcohol based solution or sodium hypochlorite.**
- **Not more than 1 attendant with patient should be allowed in ward.**
- **Discharge patients as soon as possible after completion of treatment.**
- **If any indoor patient developed respiratory symptoms, appropriate referral to be done and isolate patient to designated area if suspect COVID-19 infection.**
- **On exposure to Suspected or Confirm COVID-19 case, staff must report to screening OPD to assess the risk of exposure and follow the instructions accordingly.**

Department of Microbiology

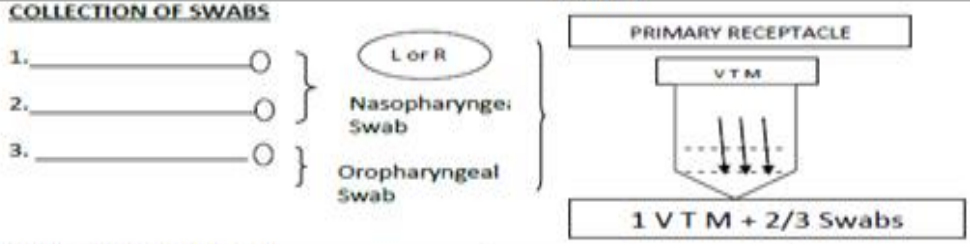
SURAT MUNICIPAL INSTITUTE OF MEDICAL EDUCATION & RESEARCH (SMIMER) - SURAT

"COVID-19" SAMPLE COLLECTION & TRANSPORTATION

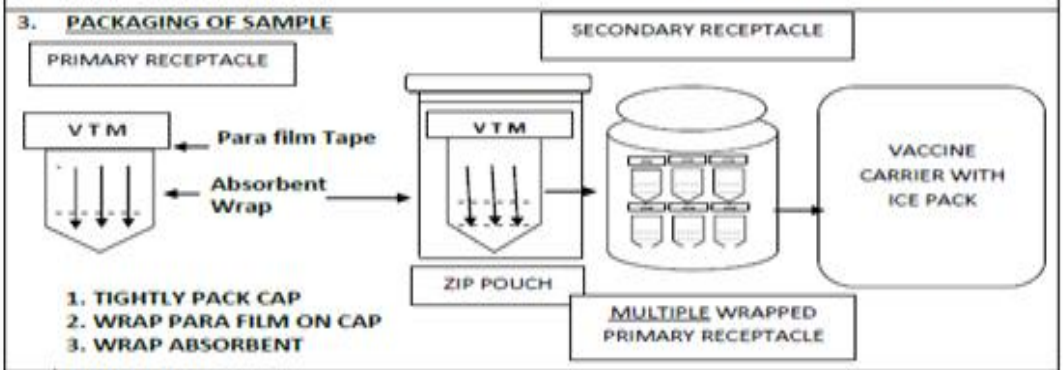
UNIVERSAL PRECAUTIONS (COLLECTION & TRANSPORTATION)	1	WEAR OT DRESS
	2	WEAR COMPLETE COVID-PPE WITH N-95 MASK

1. **FILLING REQUISITION FORMS**	1.	FILL REQUISITION FORMS COMPLETELY (FRONT & BACK)
	2.	LEGIBLE HAND WRITING WITH ALL DETAILS (PREFER CAPITAL LETTERS)
	3.	A. DOCTORS FULL NAME (PREFER CAPITAL LETTERS) B. DOCTORS MOBILE NUMBER C. DOCTORS E.MAIL ID (PREFER CAPITAL LETTER) [REPORTS WILL BE COMMUNICATED THROUGH E.MAIL]

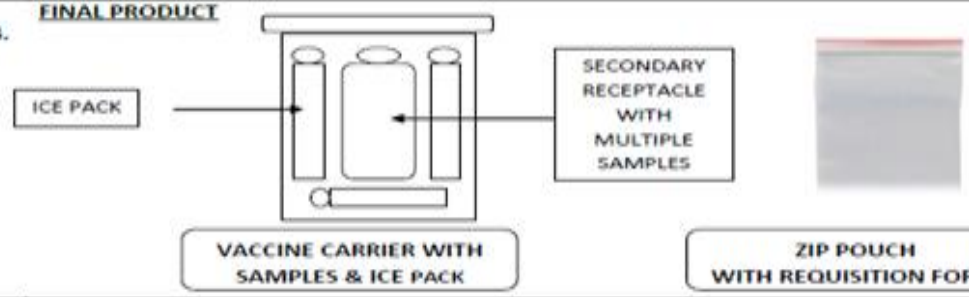
2. COLLECTION OF SWABS



3. PACKAGING OF SAMPLE



4. FINAL PRODUCT



ADAPTED BY DEPARTMENT OF MICROBIOLOGY FOR RT-PCR SAMPLES - COVID 19 FROM:

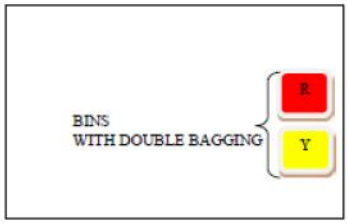
1. ICMR, NIV, Specimen Collection, Packaging and Transport Guidelines, 2019 novel Corona Virus (2019-nCoV)
2. Specimen Collection, Packaging & Transport Guidelines for 2019 nCoV Acute Respiratory Specimen by MOHFW.

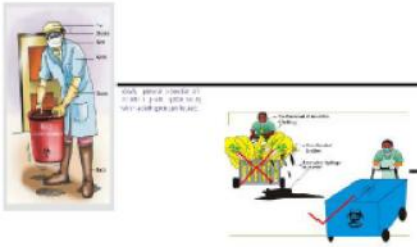
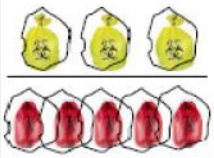
SURAT MUNICIPAL INSTITUTE OF MEDICAL EDUCATION & RESEARCH (SMIMER)-SURAT.

STANDARD OPERATIVE PROCEDURE (OPD & OPD SAMPLE COLLECTION AREA – "COVID-19)

(Adapted from Ref:- Central Pollution Control Board (CPCB) New guideline dated 25-03-2020)

BIO MEDICAL WASTE MANAGEMENT

OPD ROOM AND SAMPLE COLLECTION AREA		
		**RED: -** INFECTIOUS PLASTIC **YELLOW:-** INFECTIOUS NON-PLASTIC 1. **DOUBLE BAG** IN RESPECTIVE BINS (YELLOW & RED) (BINS – TOP COVER & FOOT OPERATED) 2. **STAMP** ON BAGS : - **"COVID-19"** 3. **SPRAY 1% Na-HYPOCHLORITE ON OUT SIDE OF BAGS** 4. ONCE THE BAGS ARE 3/4TH FULL **HAND KNOT** AND **SEND THEM TO BMW DISPOSAL AREA**
PPE REMOVAL ROOM		
		**DOUBLE BAGGING PROCESS (IN PPE REMOVAL ROOM)** 1. **DOUBLE BAG** IN RESPECTIVE BINS (YELLOW & RED) (BINS – TOP COVER & FOOT OPERATED) 2. **STAMP** ON BAGS : - **"COVID-19"** 3. **SPRAY 1% Na-HYPOCHLORITE ON OUT SIDE OF BAGS** 4. ONCE THE BAGS ARE 3/4TH FULL **HAND KNOT** AND **SEND THEM TO BMW DISPOSAL AREA**

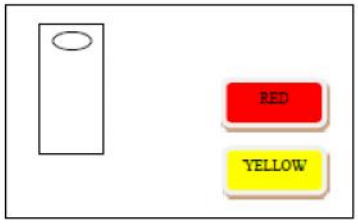
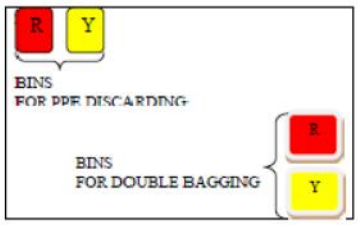
		**NOTE:- SEPARATE REGISTER "COVID-19" WASTE – SIGNATURE OF I/c SISTER** DEDICATED PERSON TO HANDLE "COVID-19" WASTE (**MUST WEAR**:- COMPLETE PPE WITH N-95 IS MUST) **DEDICATED TROLLEY** TO HANDLE "COVID-19" WASTE KEEP 5% Na-HYPOCHLORITE SOLUTION (TO COVER ACCIDENTAL LEAKAGE IF ANY)
 LIFT No 3		**USE DEDICATED LIFT (LIFT NO 3) FOR TRANSFER OF BMW TRANSFER** **KEEP 5% HYPOCHLORITE SPRAY (TO COVER UNWANTED / ACCIDENTAL LEAKAGES)**
		**USE DEDICATED SPACE IN STORAGE AREA FOR "COVID-19" WASTE** (TRY TO SEND WASTE IMMEDIATELY OR MINIMUM STORAGE TIME) **ONCE TROLLEY IS EMPTY THEN DISINFECT WITH 5% Na HYPOCHLORIDE**

SURAT MUNICIPAL INSTITUTE OF MEDICAL EDUCATION & RESEARCH (SMIMER)-SURAT.

STANDARD OPERATIVE PROCEDURE (ISOLATION WARD – "COVID-19)

(Ref:- Central Pollution Control Board (CPCB) New guideline dated 25-03-2020)

BIO MEDICAL WASTE MANAGEMENT

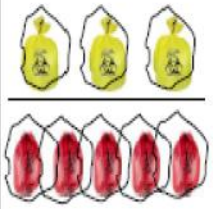
ISOLATION CUBICLE OF PATIENT		
		**NOTE:- WEAR PPE WITH N-95 MASK FOR HANDLING BMW** **RED: - INFECTIOUS PLASTIC** **YELLOW:- INFECTIOUS NON-PLASTIC** 1. **SINGLE BAG** IN RESPECTIVE BINS (YELLOW & RED) (BINS TOP COVER & FOOT OPERATED) 2. **STAMP** ON BAGS : - **"COVID-19"** 3. ONCE THE BAGS ARE 3/4TH FULL **SEND THEM TO PPE REMOVAL ROOM FOR DOUBLE BAGGING**
PPE REMOVAL ROOM		
		**DOUBLE BAGGING PROCESS (IN PPE REMOVAL ROOM)** 1. KEEP **TWO BINS** WITH **EMPTY RED AND YELLOW** BAGS EACH (IN PPE REMOVAL ROOM) 2. BRING **RED & YELLOW** BAGS WITH BMW **FROM PATIENTS CUBICLE** 3. **PUT BMW BAGS IN** RESPECTIVE COLOUR **EMPTY BAGS** (IN PPE REMOVAL ROOM) – TIED WITH HAND KNOT. 4. SO DOUBLE BAGGING IS DONE **[OUTER BAG IS NON CONTAMINATED & INNER BAG BROUGHT FROM PATIENT CUBICLE IS CONTAMINATED]**

 **RED BAG**		OUTER BAG (EMPTY BAG - IN PPE REMOVAL ROOM) INNER BAG (FROM PATIENTS ISOLATION CUBICLE) [3/4TH FULL WITH BM WASTE]
 **YELLOW BAG**		OUTER BAG (EMPTY BAG - IN PPE REMOVAL ROOM) INNER BAG (FROM PATIENTS ISOLATION CUBICLE) [3/4TH FULL WITH BM WASTE]

SURAT MUNICIPAL INSTITUTE OF MEDICAL EDUCATION & RESEARCH (SMIMER)-SURAT.

STANDARD OPERATIVE PROCEDURE (ISOLATION WARD – "COVID-19)

(Ref: Central Pollution Control Board (CPCB) New guideline dated 25 03 2020)

 		NOTE:- SEPARATE REGISTER "COVID-19" WASTE – SIGNATURE OF I/c SISTER DEDICATED PERSON TO HANDLE "COVID-19" WASTE (MUST WEAR:- COMPLETE PPE WITH N-95 IS MUST) DEDICATED TROLLEY TO HANDLE "COVID-19" WASTE KEEP 5% Na-HYPOCHLORITE SOLUTION (TO COVER ACCIDENTAL LEAKAGE IF ANY)
 LIFT No 3		USE DEDICATED LIFT (LIFT NO – 3) FOR TRANSFER OF BMW TRANSFER KEEP 5% HYPOCHLORITE SPRAY (TO COVER UNWANTED / ACCIDENTAL LEAKAGES)
		USE DEDICATED SPACE IN STORAGE AREA FOR "COVID-19" WASTE (TRY TO SEND WASTE IMMEDIATELY OR MINIMUM STORAGE TIME) ONCE TROLLEY IS EMPTY THEN DISINFECT WITH 5% Na HYPOCHLORITE

Page 3 of 3

Department of Microbiology, SMIMER, Surat.

Standard operating procedure for CRP

PROCEDURE

QUALITATIVE TEST:

1. **Bring reagents and specimens to room temperature before use.**
2. **Place one drop(50 ul)of the CRP Positive Control on field#1 of the reaction slide. Place one drop(50 ul) of the CRP Negative Control on field#2.The remaining fields are used for test specimens. Using dropper provided, place one drop of the undiluted specimens on successive fields.**
3. **Gently re-suspend the CRP Latex Reagent and add one drop to each test field. Use stir stick/mixing stick to spread reaction mixture over the entire test field.**
4. **Rotate the slide for two(2)minutes and read immediately under direct light.**
5. **Visible clumps indicate positive test.**

A. Available investigations

Routine Investigations-Bacteriology		Serology Investigations		Emergency Investigations (24 x 7)	
1	Gram stain	8	HIV	1	Diphtheria
2	Z N Stain	9	HbsAg	2	Gas gangrene
3	Albert Stain	10	HCV	3	Cholera
4	CBNAAT for tuberculosis	11	Typhi dot	4	CRP
5	KOH (Mycology)	12	VDRL		
6	Fungal culture	13	WIDAL		
7	stool examination for parasitology	14	Dengue		
		15	Chikunguniya		
		16	RA		
		17	ASO		
		18	HAV		
		19	HEV		
		20	Hbc IgM		

B. Preparedness for new investigations

Name of Department/Laboratory	Name of Investigation/Test	Status	Remarks
Microbiology	RT-PCR	Facility Started	

Standard Operating Procedure No: MPX 6.7

Components of SOP: Molecular Biology: Mol Diagnostic RT.-PCR

(As per ICMR guidelines)

Title	**Multiplex Real-Time PCR for detection of SARS-CoV-2 using TaqPath COVID-19 Combo Kit (Applied Biosystems).**
Document code	**SARS-CoV-2 -mol-multiplex RT PCR –diagnostic-MPX 6.7**
Implementation Date	**07.04.2020**

1. **Introduction:**

- **The purpose of this document is to provide interim guidance to laboratories involved in laboratory testing of patients who meet the definition of suspected case of pneumonia associated with a novel coronavirus identified in Wuhan, China.**
- **TaqPath™ COVID-19 Combo Kit contains the assays and controls for a real-time reverse transcription polymerase chain reaction (RT-PCR) test intended for the qualitative detection of nucleic acid from SARS- CoV-2 in nasopharyngeal swab, nasopharyngeal aspirate, and bronchoalveolar lavage (BAL) specimens from individuals suspected of COVID-19 by their healthcare provider. TaqPath™ COVID-19 Combo Kit is for use only under Emergency Use Authorization (EUA).**

2. **Source reference:**

https://assets.thermofisher.com/TFS-Assets/LSG/manuals/MAN0019181_TaqPath_COVID-19_IFU_EUA.pdf

3. **Testing criteria/Objective:**

Detection of SARS-CoV-2 in human clinical specimens using TaqPath COVID-19 Combo Kit (Applied Biosystems)

4. **Principle:**

The real time assay uses the TaqMan fluorogenic probe based chemistry that uses the 5´ nuclease activity of Taq DNA polymerase and enables the detection of a specific PCR product as it accumulates during PCR cycles.
COVID-19 Real Time PCR Assay Multiplex-Multiplexed assays that contain three primer/probe sets specific to different SARS-CoV-2 genomic regions and primers/probes for phage MS2 (Internal process control for nucleic acid extraction).

5. **Safety procedures: According to Laboratory Safety Manual. (WHO,2011)**
6. **Sample requirements: 250µl of specimen or as per recommended kit.**

7. **Standard and controls:**
   (1) **Positive control (Supplied with Kit)**
   (2) **Water is used as no template control(NTC).**

8. **Scope and definition:**

Highly specific and efficient detection of SARS-CoV-2 by Multiplex Real Time PCR.

9. **Requirements:**

Equipment	Consumables	Reagents and samples
Water bath, Bio Safety Cabinet clean laminar flow hood with micro-centrifuge with plate rotor and vortex, MiniSpin. Pipette set, Real Time PCR machine.	Mask, gloves, Lab Coats sterile filter tips, tissue paper, 0.2 ml, 0.5 ml and 1.5 ml micro centrifuge tubes, micro tips, 0.5-10 µl, 20-200 µl and 1000 µl tips. Real Time PCR Plates and sealers or tubes and strips	TaqPath COVID-19 Combo Kit (Applied Biosystems), Milli Q Water, Extracted viral Nucleic samples,

10. **Test Procedure:**

1. **Add 10 µL MS2 Phage Control to each sample well and to the Negative Control well during extraction and perform RNA extraction of clinical samples using your laboratory protocol. Extracted RNA will be the starting point for the reaction.**
2. **Prepare real time PCR worksheets (KGMU- VIRO-RTM-MPX-PCR-PP-6.7-copy attached at the end)**
3. **Perform multiplex real time PCR reaction as shown in table1 for corona ORF1ab gene, N gene, S gene and MS2 (Internal process control for nucleic acid extraction) in a single tube (as per manufacturers instruction).**
4. **Determine the number of reactions (N) to set up per assay. In addition, include Negative control & Positive control in the test.**
5. **Prepare excess reaction cocktail to account for pipetting error.**
   a. **If number of samples (n) including controls = 1 to 10, then N = n + 2**
6. **In the clean reagent preparation room prepare the Master Mix:**

Calculate the amount of each reagent to be added for each set reaction master mix.

Table 1: The calculations are as follows:

S.No.	Component	Volume for one reaction (N=1)	Volume for (N=)
1.	Taq Path™ 1-Step Multiplex Master Mix (No ROX™)(4X)	6.25 µL	
2.	COVID-19 Real Time PCR Assay Multiplex	1.25 µL	
3.	Nuclease-free Water	12.50 µL	
	Total Reaction Mix volume	20.0 µL	

1. Mix reaction mixtures by pipetting up and down.
2. Centrifuge for 5-10secto collect contents at bottom of the tube, and then place the tube in cold rack. Set up reaction strip tubes or plates in 96-well cooler rack.
3. Dispense 20µl of each master mix into each well as per the plate setup.
4. Before moving the plate to the nucleic acid handling area. Pipette 5ul of the nuclease free water into NTC wells.
5. In the nucleic acid extraction room, add 5ul of each sample and 5ul of extraction control into respective wells as per the setup.
6. Capthe column or cover the plate with tissue paper to which the samples and control has been added.
7. Finally, pipette 5 µl of positive viral template control (Positive Control) into wells in positive control addition area. Cap VTC wells/ or seal the plate with optical sealer. Centrifuge the plate for 10 seconds. Make sure that bubbles are eliminated from the bottom of the reaction tubes.
8. For real time PCR set up follow the instructions given by the Real-time PCR system manual for plate set up. Save your plate setup!
9. The reaction volume is 25µl.

Table 2: Program the run method as follows:

Step	Temperature	Time	Number of cycles
UNG incubation	25°C	2 minutes	1
Reverse transcription	53°C	10 minutes	1
Activation	95°C	2 minutes	1
Denaturation	95°C	3 seconds	45
Anneal/extension*	60°C	30 seconds	

*Fluorescence data should be collected during the 60^{O}C incubation step.

Table 3: Target Genes & Reporter dyes

Reporter dye	Detector
FAM	ORF1ab
VIC	N gene
ABY	S gene
JUN	MS2

10. After completion of the run, save the run and analyze the collected data.

11. Recording & reporting and Interpretation of the results:

Interpretation of the results is performed by the Applied Biosystems COVID-19 Interpretive Software (Optional).

One Negative Control and one Positive Control are processed with each run.

Table 4: Result interpretation for patient samples

ORF1ab	N gene	S gene	MS2	Status	Result	Action
NEG	NEG	NEG	NEG	Invalid	NA	Repeat test. If the repeat result remains invalid, consider collecting a new specimen.
NEG	NEG	NEG	POS	Valid	SARS-CoV-2 Not Detected	Report results to healthcare provider. Consider testing for other viruses.
Only one SARS-CoV-2 target = POS			POS or NEG	Valid	SARS-CoV-2 Inconclusive[#]	Repeat test. If the repeat result remains inconclusive, additional confirmation testing should be conducted if Clinically indicated.
Two or more SARS-CoV-2 targets			POS or NEG	Valid	Positive SARS- CoV-2	Report results to healthcare provider and appropriate public health authorities.

[#] Samples with a result of SARS-CoV-2 Inconclusive shall be retested one time.

12. Quality control procedures:

For the results to be valid positive control must be positive; NTC must be negative. Check MS2 (if added during RNA Extraction) for all the samples. All the sample should have MS2 Positive. Otherwise, laboratory in charge must be informed and repeat testing is performed. Another experienced staff must countercheck all results.

13. Limitations

1. Analysts should be trained and familiar with testing procedures and interpretation of results prior to performing the assay.
2. A false negative result may occur if inadequate numbers of organisms are present in the specimen due to improper collection, transport or handling.
3. This assay doesn't provide control over quality of sample collected.

Note:

MS2 (Internal process control for nucleic acid extraction) testing can be ignored as it will not reflect the quality of sample collected. Hence, laboratories which have machine with no calibrated JUN dye filter or without JUN filter should not add MS2 control during extraction. MS2 control is for only for extraction procedure and if your machine doesn't support the JUN dye you can omit this. It is recommended that separate R Nase P or any other human house-keeping gene for which primers & probe are available in your laboratory should be run parallel in a separate tube for RT PCR assay. This will check both the quality of sample collected and nucleic acid extraction procedure.

Report: Communicate the result on daily basis to ICMR - Report Format

Sample ID	Patient State & place	Category of Patient	Sample received Date & time testing lab	Severity/ condition of patient	Result for SARS-CoV-2 virus

Worksheet for Multiplex Real-Time PCR for detection of SARS-CoV-2 using TaqPath COVID-19 Combo Kit (Applied Biosystems).

(One Step Reaction)

Reaction mix Preparation: **Total Volume: 25µl**
(for one reaction) Corona ORF1ab Gene Probe: Reporter- FAM, Corona N Gene Probe: Reporter- VIC Corona S Gene Probe: Reporter- ABY MS2-IC Probe: Reporter-JUN

S.No.	Item	Quantity(N=1)	Quantity(N=	Done
1.	Taq Path™ 1-Step Multiplex Master Mix (No ROX™) (4X)	6.25 µL		
2.	COVID-19 Real Time PCR Assay Multiplex	1.25 µL		
3.	Nuclease-free Water	12.50 µL		
	Total Reaction Mix volume	20.0 µL		

Addition of Template

Template (TNA/RNA)	**5 µl**	

Sample details (sample ID):

	1	2	3	4	5	6	7	8	9	10	11	12
A												
B												
C												
D												
E												
F												
G												
H												

Results for SARS-CoV-2:

	1	2	3	4	5	6	7	8	9	10	11	12
A												
B												
C												
D												
E												
F												
G												
H												

Comments:

Done by: **Checked by:**

Department of Biochemistry

A. List of Available Laboratory Investigations (1-Biochemistry, 2-Pathology 3-Microbiology)

1. Biochemistry Department, Clinical Biochemistry laboratory, SMIMER.

Routine Investigations				Endocrine Investigations		Emergency Investigations (24 x 7)	
1	Glucose (FBS/RBS/PP_2BS)	17	Total Cholesterol	33	HbA1C	1	Glucose(FBS/RBS)
2	Urea	18	HDL-Cholesterol	34	Total T3	2	Urea
3	Creatinine	19	Triglycerides	35	Total T4	3	Total Bilirubin
4	AST/SGOT	20	LDL-cholesterol (Calculated)	36	TSH	4	Direct Bilirubin
5	ALT/SGPT	21	Uric Acid	37	LH	5	Indirect Bilirubin
6	Alkaline phosphatse	22	Calcium	38	FSH	6	Acetone
7	Total Protein	23	Phosphorous	39	Prolactin	7	Calcium
8	Albumin	24	Electrolytes (Na+, K+ and Cl-)	40	Vitamin B12	8	Electrolytes (Na+, K+ and Cl-)
9	Globulin	25	Arterial Blood gas analysis (ABG)	41	Vitamin D3	9	Arterial Blood gas analysis (ABG) with Lactate
10	A: G ratio	26	24 hours Urinary protein			10	Cholinesterase
11	Total Bilirubin	27	Lactate Dehydrogenase			11	Amylase
12	Direct Bilirubin	28	CPK-Total			12	CPK-Total
13	Indirect Bilirubin	29	CPK-MB			13	CPK-MB
14	Fluid/ CSF -Protein	30	Amylase			14	Fluid/ CSF –Glucose
15	Fluid/ CSF -Glucose	31	Acetone			15	Fluid/ CSF –Protein
16	Fluid/ CSF –LDH	32	Cholinesterase			16	Fluid/ CSF –LDH

B. Preparedness for new investigations .

Sr. No	Name of Department/Laboratory	Name of Investigation/Test	Status	Remarks
1.	Microbiology	RT-PCR	Facility Started	
2.	Biochemistry	1. Procalcitonin 2. Ferritin	Under purchase process	
3.	Pathology	D-dimer	Facility started	

C. SOP for sample receiving, testing and disposal

1. Clinical Biochemistry Laboratory.

General Precautions:

- **Consider all the samples as potential infectious so universal precautions are must**
- **Appropriate PPE must be used while handling the samples; gloves, mask, apron, cap etc.**
- **Technician posted at sample collection duty have to do collection duty only.**
- **Technicians working in analysis area will remain in analysis area only and will carry out all the work related to sample analysis.**
- **Technicians designated to do reporting work will remain in reporting area and carry out all the work related to reporting.**

Sample receiving in lab:

- **When sample is received from suspected/confirmed case of COVID-19, wipe the outer surface of sample with spirit swab.**
- **Samples received from suspected/confirmed case of COVID-19 should be kept in dedicated sample rack labeled as COVID-19.**
- **Dedicated lab attendant should receive & process (centrifugation) samples received from suspected/confirmed case of COVID-19.**
- **Requisition form received from suspected/confirmed case of COVID-19 should be kept in a separate box at dedicated area in the laboratory.**

Sample Testing:

- **Centrifugation has to be carried out in dedicated centrifuge labeled as Covid-19.**
- **After centrifugation, wait for at least 5 minutes before opening centrifuge cover.**
- **Put all suspected/confirmed COVID-19 samples in separate rack labeled as Covid-19**
- **Load sample into biochemistry fully automated analyzer as per test requested with due precaution.**

Sample Disposal:

- **Suspected/Confirmed COVID-19 samples and all other samples including ABG samples should be discarded in hypochlorite (10%) solution.**
- **Vacutainer/ABG syringe after chemical disinfection should be discarded in RED bag of Biomedical Waste.**
- **Blood stained lint material should be discarded in YELLOW bag for Biomedical Waste.**

SOP for disinfection and prevention of infection

- **One dedicated lab attendant will carry out all the disinfection related work. Other lab attendants have to look after other work of laboratory.**
- **Gloves have to be used all the time.**
- **Disinfection has to be carried out as per protocol mentioned below.**

Strength of Hypochlorite	How to make it	Use	Frequency
10% Hypochlorite	--	• In case of >10ml blood spillage on floor • Contact period: 15 minutes	As and when required
1% Hypochlorite	100 ml 10% Hypochlorite + 900 ml DI water	• Instrument cleanings • Contact period: 15 minutes	3 hourly
0.1% Hypochlorite	10 ml 10% Hypochlorite + 990 ml DI water	• Wiping of furniture, Door knobs etc • Contact period: 10 minutes	hourly

<u>Standard operating Procedure for Lactate estimation</u>

SR. NO.	Test parameter	Description
1	Sample required and collection	1. Arterial heparinised whole blood sample in a syringe with needle tightly capped with icepack should be sent immediately on collection for analysis. 2. Venous (central/ mixed/ peripheral) heparinised whole blood sample in a syringe with tightly capped needle with icepack should be sent immediately for analysis. 3. Venous specimen should be obtained without use of tourniquet or immediately after tourniquet has been applied
2	Background	• Lactate, the anion that results from dissociation of lactic acid, is an intracellular metabolite of glucose. It is produced by skeletal muscle cells, red blood cells (erythrocytes), the brain, and other tissues during anaerobic energy production (Glycolysis).

		• Normal daily lactate production from thesetwo sources is approximately 1300 – 1500 mmol (117 – 135 g) and so long as a normal rate of metabolic disposal by the liver and kidneys is maintained, blood lactate remains within normal limits. Blood lactate concentration thus reflects the balance between the rate of lactate released to blood from erythrocytes and other tissue cells (principally exercising muscle cells) and the rate of lactate clearance from blood. • Increase in lactate levels is an early sensitive indicator of imbalance between tissue oxygen demand and oxygen supply
3	Clinical indication	Lactate estimation is used as • A prognostic indicator for patient outcome • A marker of tissue hypo perfusion in patients with circulatory shock • An index of adequacy of resuscitation after shock • A marker for monitoring resuscitation therapies.
4	Sample: Storage and transport	Arterial or venous sample should only be transported to analysis area with icepack or at 2 – 8î C.
5	Sample volume	2 ml whole blood heparinised
6	Patient Information/ preparation	As per clinical condition
7	Turnaround time	Less than 1 hour
8	Reference range	1. Arterial whole blood: 0.36 – 1.25 mmol/L 2. Venous whole blood: 0.90 – 1.70 mmol/L

Department of Pathology

Pathology has subsections like routine Haematology, Clinical Pathology, Histopathology, Cytology& Autopsy.

Routine and Special Haematology and clinical pathology are done in the hospital whereas Histopathology , Cytology and Autopsy examination are done in Pathology Department (ground floor of the B-block) of the medical college.

A. Transfer of Histopathology specimen from suspicious / confirmed COVID-19 to the Pathology Laboratories

SOP - I

- **All pathology COVID -19 suspicious / confirmed specimens must be labeled clearly.**
- **Transferred into formalin – filled properly sealed designated pathology containers with adequate amount of formalin to be added to cover the tissue in container.**
- **All pathology specimens must be further placed in a secondary container to minimize the potential for breakage or a spill.**
  - **Small containers are placed in larger secondary containers.**
  - **All these containers then shall be put in a large plastic box with biohazard label (COVID-19).**
- **Frozen section procedures must not to be performed on any specimen from patient with suspected /confirmed COVID-19 infection.**
- **All fresh or partially fixed specimens must be handled under bio- safety cabinet level II.**
- **External surfaces of specimen containers must be decontaminated using a disinfectant (70% alcohol, 0.1 % hypochlorite).**
- **All fresh or partially fixed specimens must be handled , open if needed and transferred to another formalin filled container for further fixation in order to be grossed as formalin fixed routine cases.**

SOP -II

PPE instruction for Pathology lab personnel

- **Laboratory staff must wear Personal Protective Equipment (PPE) while conducting work in the laboratory.**
- **PPE must be removed when leaving the laboratory an hygiene practices including hand washing must be rigorously maintained.**
- **PPE must include disposable gloves and laboratory coat or gown as a minimum, and may also include eye protection and other equipment, as identified by risk assessment.**

SOP - III

Handling formalin fixed Pathology

Specimen of COVID- 19

- **Formalin fixation time :**
  - Change the formalin in the container
  - Let it fix for 24 hour
  - Then gross and process it
  - The corona virus gets fixed in 24 hrs with formaldehyde and 48 hours in glutaraldehyde.
- **Processing , cutting and staining as per routine protocol**
- **Follow standard precautions when handling clinical specimens**

- Standard precautions include hand hygiene and use of Personal

Protective Equipment (PPE) , such as disposable gowns , gloves

and eye protection.

- **Precautions and disinfection of external surface of specimens containers prior to touch and open them must be taken using the appropriate disinfecting reagents. (70% alcohol, 0.1 % hypochlorite).**
- **Pathologists/technicians must ensure proper fixation of specimens prior handling them.**

SOP –IV

Work area and equipment disinfection

- **Irrespective of containment level, work surfaces and equipment must be decontaminated after specimens have been processed.**
- **Pay attention to all surfaces that may have come into contact with specimens or specimen's containers.**
- **Use a disinfectant solution with proven activity against enveloped RNA viruses including sodium hypochlorite (bleach) (e.g. 1000 ppm (0.1%) for general surface disinfection and 10,000 ppm (1%) for disinfection of blood spills.**
- **Contact time : 30 minutes**

SOP -V

Waste management

- **Infectious material to be disposed in a separate yellow bag labeled COVID.**

B. Handling of HEMATOLOGY specimens of COVID 19 suspected/ positive case

- **Transfer of HEMATOLOGY Specimen from suspicious/ confirmed COVID-19 to the pathology laboratories**
  1. **All pathology COVID-19 suspicious/confirmed specimens must be labeled clearly.**
  2. **Use secondary plastic container where all Corona positive/ suspected samples shall be sent in Pathology Dept.**
  3. **Do not send HEMATOLOGY samples rolled up in the forms.**
  4. **Requisition slip should be sent separately in zip lock pouch to laboratory. All samples should be sent within 30 min of collection.**

- **Handling of HEMATOLOGY specimen of COVID-19 in pathology laboratories**
  - **Precautions and disinfection of the external surface of the specimens' containers prior to touch and open them must be taken using the appropriate disinfecting reagents (70% alcohol, 1% hypochlorite).**
  - **Standard Precautions when handling clinical specimens – Standard Precautions include hand hygiene and the use of personal protective equipment (PPE), such as disposable gowns, gloves, and eye protection.**
  - **Technicians processing fresh samples must wear appropriate personal protective equipment (PPE) (i.e., eye protection, N95 mask, a long-sleeved gown, gloves).**
  - **CENTRIFUGING OF SPECIMEN SHALL NOT BE DONE.**
  - **If centrifugation required then it should be performed using separate sealed centrifuged rotors.**
  - **PPE instruction**
    1. **Laboratory staff must wear personal protective equipment (PPE) when conducting work in the laboratory. PPE must be removed on leaving the laboratory and hygiene practices including hand washing must be rigorously maintained.**
    2. **PPE must include disposable gloves and a laboratory coat or gown as a minimum, and may also include eye protection and other equipment, as identified by risk assessment.**
- **Work area and equipment disinfection**
  - **Irrespective of the containment level, work surfaces and equipment must be decontaminated after specimens have been processed.**
  - **Pay attention to all surfaces that may have come into contact with specimens or specimen containers.**
  - **Use a disinfectant solution- sodium hypochlorite (bleach) (e.g. 1,000 ppm (0.1%) for general surface disinfection and 10,000 ppm (1%)for disinfection of blood spills).Contact time -30 minutes**
  - **After performing test, all the materials should be soaked in sodium hypochlorite container for 24 hours.**
- **Waste management**
  - **Infectious material to be disposed in a separate yellow bag labeled COVID.**

C. Handling of cytolopathology specimens of COVID 19 suspected/ positive case

- **Transfer of Cytopathology samples from suspicious/ confirmed COVID-19 to the pathology laboratories**

  - **All pathology COVID-19 suspicious/confirmed specimens must be labeled clearly.**
  - **Do not send cytology samples rolled up in the forms.**
  - **Use secondary plastic container where all Corona positive / suspected samples shall be sent in Pathology Dept.**

- **Handling of Cytopathology samples of COVID-19 in pathology laboratories**

  - **Precautions and disinfection of the external surface of the specimens' containers prior to touch and open them must be taken using the appropriate disinfecting reagents (70% alcohol, 1% hypochlorite).**
  - **Standard Precautions when handling clinical specimens – Standard Precautions include hand hygiene and the use of personal protective equipment (PPE), such as disposable gowns, gloves, and eye protection.**
  - **Cytopathology technicians processing fresh cytology samples must wear appropriate personal protective equipment (PPE) (i.e., eye protection, N95 mask, a long-sleeved gown, gloves).**
  - **All manipulations of potentially infectious materials, including those that may cause splashes, droplets, or aerosols of infectious materials. However, should be performed by trained personnel with demonstrated capability.**
  - **CENTRIFUGING OF CYTOLOGY SAMPLES SHALL NOT BE DONE.**

  - **PPE instruction**
    1. **Laboratory staff must wear personal protective equipment (PPE) when conducting work in the laboratory. PPE must be removed on leaving the laboratory and hygiene practices including hand washing must be rigorously maintained.**
    2. **PPE must include disposable gloves and a laboratory coat or gown as a minimum, and may also include eye protection and other equipment, as identified by risk assessment.**
- **Work area and equipment disinfection**

  - **Irrespective of the containment level, work surfaces and equipment must be decontaminated after specimens have been processed.**
  - **Pay attention to all surfaces that may have come into contact with specimens or specimen containers.**
  - **Use a disinfectant solution with proven activity against enveloped RNA viruses including sodium hypochlorite (bleach) (e.g. 1,000 ppm (0.1%) for general surface disinfection and 10,000 ppm (1%)for disinfection of blood spills)**
  - **Contact time -30 minutes**

❖ **Waste management**

- **Infectious material to be disposed in a separate yellow bag labeled COVID.**

D. SOP FOR LABORATORY COLLECTION AREA

PRECAUTIONS TO BE TAKEN BY TECHNICIAN FOR PERSONAL CARE

- **Remove bangles / wrist watch, Tie Long hair at to be tied back**
- **Wash hands with soap & Water as per protocol /Clean with sanitizer (Sterilium) frequently.**
- **Keep hands away from mouth, nose & eyes.**
- **Do not keep objects like pen in mouth.**
- **Remove Gloves before handling phones, computers etc.**
- **Technician while on duty in the collection area should not leave the room until the duty is over.**
- **Wear PPE (Apron /Gown, cap, N95 mask, hand gloves, goggles) as per guidelines.**
- **If any accidental exposure to blood or infective material, then immediately wash affected area with soap & water.**
- **Technician should remove the PPE kit before leaving the collection room and discard gloves, mask, disposable cap in yellow bag.**

PRECAUTIONS DURING COLLECTION PROCEDURE

- **Requisition slips should be kept separate in a box labelled as Covid 19**
- **For samples collected from suspected / Covid Patients: - Outer surface of vacuette should be wiped with spirit / 70 % Alcohol with due care of label.**
- **Samples should be kept in a dedicated labelled rack/ container.**
  All suspected or positive samples should be kept in secondary container& labelled as COVID 19.
- **Used plastic syringe should be disposed off in Red bag.**
- **Used Needle should be destroyed with needle cutter and disposed in puncture proof container having Hypochlorite solution.**
- **Used cotton swabs should be discarded in Yellow bag.**

PRECAUTIONS TO BE TAKEN BY LAB ATTENDANTS

- **Person involved in cleaning the collection room (Laboratory attendant) should wear PPE (Work Uniform /gown, cap, N95 mask, hand gloves).**
- **Dedicated Lab attendants should transport the samples to respective lab after following all precautions.**
- **Surface must be first cleaned with detergents, then with disinfectant at regular intervals.**

- **Every hourly wiping of furniture, door handles with disinfectant (0.1% Hypochlorite) solution for 15 min**
- **If spillage of blood on surface, then use disinfectant (1% Hypochlorite) for 30 min.**

PRECAUTIONS TO BE TAKEN FOR PATIENTS

- **Any patient who has complaint of fever should wear mask before coming for collection. Minimise accompanying relatives with patient.**
- **The queue outside the collection room for patients should be arranged keeping ONE metre distance from each other.**

List of investigations

	Routine Investigations	Special tests	Emergency Investigations (24 x 7)
Haematology	CBC (24 parameters), MP, ESR, Reticulocyte count, G-6 PD, Sickling test, Coagulation profile (PT, APTT, FDP, Fibrinogen, D dimer) Blood grouping	Hb electrophoresis, Bone-marrow aspiration.	CBC, MP, Reticulocyte count Blood grouping Coagulation profile (PT, APTT,F DP, Fibrinogen D dimer).,
Clinical Pathology	Body fluids, urine, stool & semen: Routine examination & microscopy, Urine pregnancy test	----------	Fluid (CSF)-routine microscopic examination Urine- albumin and sugar
Histo-pathology	Histopathological examination of surgical specimens , Immunohisto-chemistry,	---	------
Cytology	FNAC, PAP smear, fluid cytology & exfoliative cytology	---	----
Autopsy	Histopathological examination of Post-mortem specimens.	---	---

Department of Forensic Medicine & Toxicology

Preparation and packing of dead body of positive / suspected COVID-19 case for transfer or disposable

SOPs are prepared as per the guidelines issued by Ministry of Health and Family Welfare, Government of India[1] and guideline on clinical management of covid 19 issued by Health & Family Welfare Department, Government of Gujarat Gandhinagar[2] to handle the dead bodies of suspected or positive COVID-19 case. These guidelines are to be followed by all the personnel (in wards as well in mortuary) who are dealing with suspect or positive COVID-19 deceased.

1. **Death due to COVID-19 is NOT a medicolegal case.**
2. **Number of personnel to handle should be restricted.**
3. **Standard infection prevention and control practices should be followed at all times.**

   These include:

   - **Hand hygiene.**
   - **Use of personal protective equipment (e.g., water resistant apron, gloves, masks eyewear).**
   - **Safe handling of sharps.**
   - **Disinfect bag housing dead body; instruments and devices used on the patient.**
   - **Disinfect linen. Clean and disinfect environmental surfaces.**

4. **Training in infection and prevention control practices**

   All staff identified to handle dead bodies in the isolation area, mortuary, ambulance and those workers in the crematorium / burial ground should be trained in the infection prevention control practices.

5. **Removal of the body from the isolation room or area**
   - **The health worker attending to the dead body should perform hand hygiene; ensure proper use of PPE (water resistant apron, goggles, N95 mask, gloves).**
   - **All tubes, drains and catheters on the dead body should be removed.**
   - **Any puncture holes or wounds (resulting from removal of catheter, drains, tubes, or otherwise) should be disinfected with 1% hypochlorite and dressed with impermeable material.**
   - **Apply caution while handling sharps such as intravenous catheters and other sharp devices. They should be disposed into a sharps container.**
   - **Plug Oral, nasal orifices of the dead body to prevent leakage of body fluids.**
   - **If the family of the patient wishes to view the body at the time of removal from the isolation room or area, they may be allowed to do so with the application of Standard Precautions.**
   - **Place the dead body in leak-proof plastic body bag. The body bag prepared by putting plastic sheath and cotton cloth.[3]**
   - **Wrap the body first with cotton cloth, tie the head region, in middle and feet**

region and decontaminate with 1% hypochlorite. Then wrap the body with plastic sheath and tie the head region, in middle part and feet region and decontaminate with 1% hypochlorite then close the bag zip and again decontaminate with 1% hypochlorite. Put proper identification mark and **Grade II Biohazard** on plastic bag

6. The body will be either handed over to the relatives or taken to mortuary.
7. All used/ soiled linen should be handled with standard precautions, put in bio- hazard bag and the outer surface of the bag disinfected with hypochlorite solution.
8. Used equipment should be autoclaved or decontaminated with disinfectant solutions in accordance with established infection prevention control practices.
9. All medical waste must be handled and disposed of in accordance with Bio- medical waste management rules.
10. The health staff who handled the body will remove personal protective equipment and will perform hand hygiene.
11. Provide counselling to the family members and respect their sentiments.

12. **Environmental cleaning and disinfection**

All surfaces of the isolation area (floors, bed, railings, side tables, IV stand, etc.) should be wiped with 1% Sodium Hypochlorite solution; allow a contact time of 30 minutes, and then allowed to air dry.

13. **Handling of dead body in Mortuary**

- Mortuary staff handling COVID dead body should observe standard precautions.
- Dead bodies should be stored in cold chambers maintained at approximately 4°C.
- The mortuary must be kept clean. Environmental surfaces, instruments and transport trolleys should be properly disinfected with 1% Hypochlorite solution.
- After removing the body, the chamber door, handles and floor should be cleaned with sodium hypochlorite 1% solution.

14. **Embalming** - Embalming of dead body should not be allowed.

15. **Autopsies**

- Autopsies should be avoided. If autopsy is to be performed for special reasons, the following infection prevention control practices should be adopted:
- The Team should be well trained in infection prevention control practices.
- The number of forensic experts and support staff in the autopsy room should be limited.
- The Team should use full complement of PPE (coveralls, head cover, shoe cover, N 95 mask, goggles / face shield).
- Round ended scissors should be used
- PM40 or any other heavy duty blades with blunted points to be used to reduce prick injuries
- Only one body cavity at a time should be dissected
- Unfixed organs must be held firm on the table and sliced with a sponge – care should be taken to protect the hand

- **Negative pressure to be maintained in mortuary. An oscillator saw with suction extraction of the bone aerosol into a removable chamber should be used for sawing skull, otherwise a hand saw with a chain-mail glove may be used**
- **Needles should not be re-sheathed after fluid sampling – needles and syringes should be placed in a sharps bucket.**
- **Reduce aerosol generation during autopsy using appropriate techniques especially while handling lung tissue.**
- **After the procedure, body should be disinfected with 1% Sodium Hypochlorite and placed in a body bag, the exterior of which will again be decontaminated with 1% Sodium Hypochlorite solution.**
- **Place the dead body in leak-proof plastic body bag and put Identification Tag and label "Bio-Hazard: COVID -19".**
- **The body thereafter can be handed over to the relatives.**
- **Autopsy table to be disinfected as per standard protocol.**

16. **Handling of the Treatment files and other hospital records:-**

- **All hospital records (treatment file, progress charts, test reports, etc.) of suspected or Confirmed Covid-19 patients are to be handled, following standard infection prevention control practices.**
- **After discharge, all the hospital documents / records are to be preserved, taking care that they do not become a source of infection. Death certificate, death report and all such related documents should be prepared and complete the document with due signatures at a time and the files / documents are to be put in separate file rack for at least one week till it is considered safe from virus. (The virus is active for up to a maximum of 96 hours on paper.)**

17. **Transportation**
18. **The body, secured in a body bag, exterior of which is decontaminated poses no additional risk to the staff transporting the dead body.**
19. **The personnel handling the body may follow standard precautions (surgical mask, gloves).**
20. **The vehicle, after the transfer of the body to cremation/ burial staff, will be decontaminated with 1% Sodium Hypochlorite.**
21. **At the crematorium/ Burial Ground**
22. **The Crematorium/ burial Ground staff should be sensitized that COVID 19 does not pose additional risk.**
23. **The staff will practice standard precautions of hand hygiene, use of masks and gloves.**
24. **Viewing of the dead body by unzipping the face end of the body bag (by the staff using standard precautions) may be allowed, for the relatives to see the body for one last time.**
25. **Religious rituals such as reading from religious scripts, sprinkling holy water and any other last rites that does not require touching of the body can be allowed.**
26. **Bathing, kissing, hugging, etc. of the dead body should not be allowed.**
27. **The funeral/ burial staff and family members should perform hand hygiene after cremation/ burial.**
28. **The ash does not pose any risk and can be collected to perform the last rites.**
29. **Large gathering at the crematorium/ burial ground should be avoided as a social distancing measure as it is possible that close family contacts may be symptomatic and/ or shedding the virus.**

References

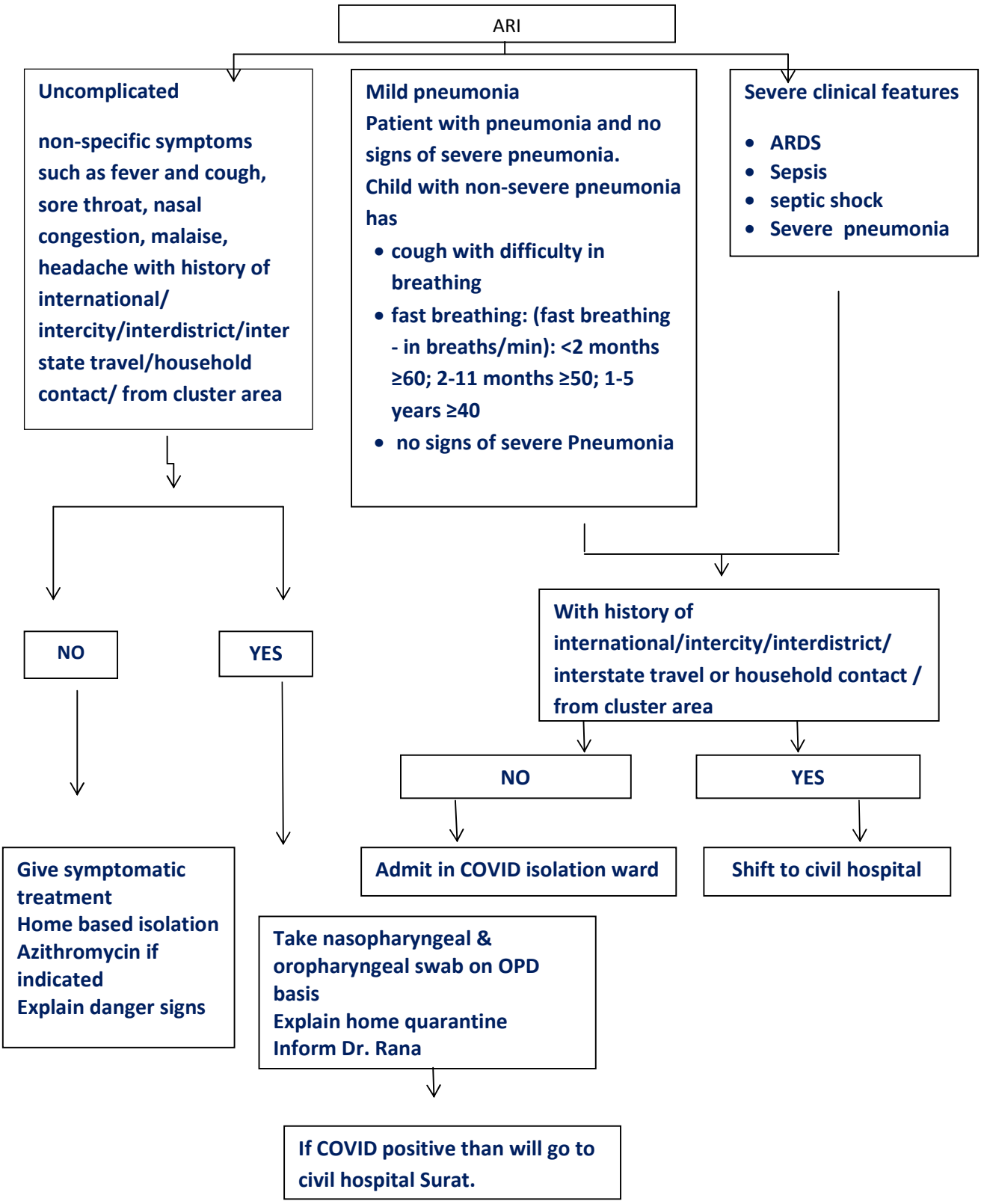
1. **Handling of Dead Bodies. Available at**
2. **https://www.mohfw.gov.in/1584423700568_COVID19 Guidelines on Dead body management.pdf**
3. **Guideline on clinical Management of covid 19 - Health & Family Welfare Department, Government of Gujarat Gandhinagar**
4. **Protocol of dignified management of covid-19 dead bodies. Available at https://www.aiims.edu/images/pdf/notice/CoVID%2019.pdf**

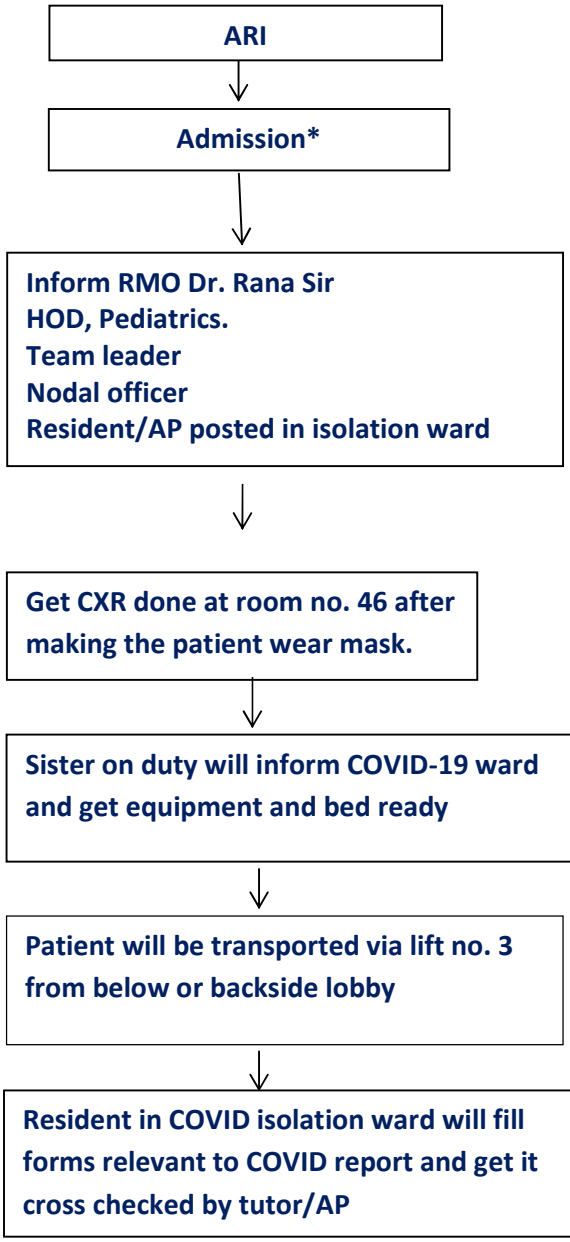
Order no. MGC/A/2942 dated 30.03.2020 regarding disposal of dead body of COVID 19 by Municipal Corporation, Mumbai.

5. **Handbook of COVID-19 Prevention and Treatment *Compiled According to Clinical Experience - The First Affiliated Hospital, Zhejiang University School of Medicine)***

Department of pediatrics

Standard Operative procedure for COVID-19 admission





Baseline investigations: CBC, LFT, S.LDH, CRP, RFT, CXR, Nasal swabs and Nasopharyngeal swab.

Other Inx: as per Physician's discretion

CLINICAL CATEGORIZATION of H1N1 Infection:

- **CATEGORY-A: Low grade fever mild sore throat/cough/rhinitis/diarrhoea.**
- **CATEGORY-B: High grade fever and/or severe sore throat/cough**

OR

Category-A plus one or more of the following:

- **Lung/heart/liver/kidney/neurological disease, blood disorders/uncontrolled diabetes/cancer/HIV-AIDS**
- **On long term steroids**

Category-C:

- **Breathlessness, Chest pain, drowsiness, fall in blood pressure, haemoptysis, cyanosis (red flag sign)**
- **Children with ILI (Influenza like illness with red flag signs i.e. Somnolence, high/persistent fever, inability to feed well, convulsions, dyspnoea, respiratory, distress, etc.)**
- **Worsening of underlying chronic conditions.**
- **Categorization should be reassessed every 28-48 hours for warning signals in case of Category A& B.**

Warning signals: Dyspnoea, fast breathing, haemoptysis, altered sensorium, excessive fatigability.

SOP for management of admitted patients

Start immediately O2 therapy to patient with SARI, respiratory distress, hypoxemia or shock

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Maintain SpO2 >94%

↓

Conservative fluid management in patient with SARI without shock

↓

Avoid over hydration

↓

Give empirical antibiotics in suspected cases of sepsis

(Community acquired pneumonia/healthcare associated pneumonia/sepsis)

(modify antibiotics according to microbiological results)

Oral antibiotics in case of uncomplicated illness

{ 1st line drugs: Augmentin, amikacin, oseltamivir, azithromycin }

{ 2nd line drugs: Piperacillin-tazobactum, vancomycin }

Oseltamivir dosage (for 5 days)	
By weight:	***For infants:***
<15 kg: 30 mg BD	**<3 months: 12 mg BD**
15-23 kg: 45 mg BD	**3-5 months: 20 mg BD**
24-<40 kg: 60 mg BD	**6-11 months: 25 mg BD**
>40 kg: 75 mg BD	

↓

Communicate about the diagnostic and prognostic information

Specific COVID 19 treatment

NO SPECIFIC ANTIVIRALS have been proven to be effective as per currently available data.

However, based on the available information (uncontrolled clinical trials), the following drugs may be considered as an off – label indication in patients with severe disease and requiring ICU management:

- **Hydroxychloroquine (Dose 400mg BD – for 1 day followed by 200mg BD for 4 days) In combination with**
- **Azithromycin (500 mg OD for 5 days) under close monitoring including QTc interval.**

The above medication is presently not recommended for children less than 12 years, pregnant and lactating women.
These guidelines are based on currently available information and would be reviewed from time to time as new evidence emerges.

- **Hydroxychloroquine dosing for peadiatric patient :**

13 mg/kg/dose Q 12 hours * 2 for loading dose (400 mg/dose or 800 mg/day) followed by 6.5 mg/kg/dose Q 12 hours (max. 200 mg/dose or 400 mg/day) for 4 days (total of 5 days including loading dose).

Suspension 25 mg/ml and 200 mg tablet

- **Azithromycin dosing**

10 mg/kg/day for 1 day then 5 mg/kg/day for 4 days. max. dose 1.5 gm total dose

Sample Collection and Transport Guidelines for laboratory diagnosis of novel Coronavirus infection 2020

- **When to collect swab:**
  1. **When there is uncomplicated ARI with history of international travel/ intercity/ inter district/ interstate travel /house hold contact/ came from cluster area.**
  2. **All cases of mild pneumonia and severe pneumonia.**
  3. **Asymptomatic direct and high risk contacts of a confirmed case (should be tested once between day 5 and day 14 after contact. They will be tested on OPD basis)**

- **Sample collection:**

The sample should be collected as early as possible with all biosafety precautions and accompanied with detailed history of patients on the performa which can be obtained from the testing laboratory

- **The samples may be as follows**

  Nasopharyngeal and Oropharyngeal

- **For transport of samples for viral detection, use VTM (viral transport medium) containing antifungal and antibiotic supplements. Avoid repeated freezing and thawing of specimens.**

Collection of Nasopharyngeal Swab:

This can be collected by two methods: (Through the nasal route or through oral route)

- **Nasopharyngeal swab through Nasal route:**

Insert a thin flexible swab into nostril and right upto nasopharynx. Leave the swab in place for a few seconds
Slowly remove swab while slightly rotating it. Use a different swab for the other nostril.
Put swab with tip downwards into vial containing VTM, breaking applicator's stick. Both the swabs can be put in same VTM vial

- **Nasopharyngeal swab through Oral route:**

Insert a thin flexible swab through mouth over the tongue and turn the swab upwards behind the soft palate to reach the nasopharynx.
Leave the swab in place for a few seconds.
Slowly remove swab and put the swab with tip downwards into vial containing VTM, breaking the extra portion of the swab stick.

Transportation and Storage of samples:

Personal protective equipment (apron, hand gloves, face shield, N95 Masks etc) need to be used and all biosafety precautions should be followed so as to protect individuals and the environment.

Samples should be safely packed in triple container packing and should be transported under cold chain (4°C) to the testing laboratory with prior intimation. Before dispatching the sample, disinfect the outer surface of container using 1: 100 dilution of bleach or 5% Lysol solution.

Sample containing vials should be kept in good quality plastic bags tied with rubber bands so that inside material if leaks should not come out of bag. The plastic bag should be kept in another container which should be sealed with adhesive tape. This carrier should be placed in another plastic bag sealed with rubber bands and placed in thermocol / vaccine carrier containing ice. The case sheets with complete information should be placed in plastic bag and should be pasted outside the container.

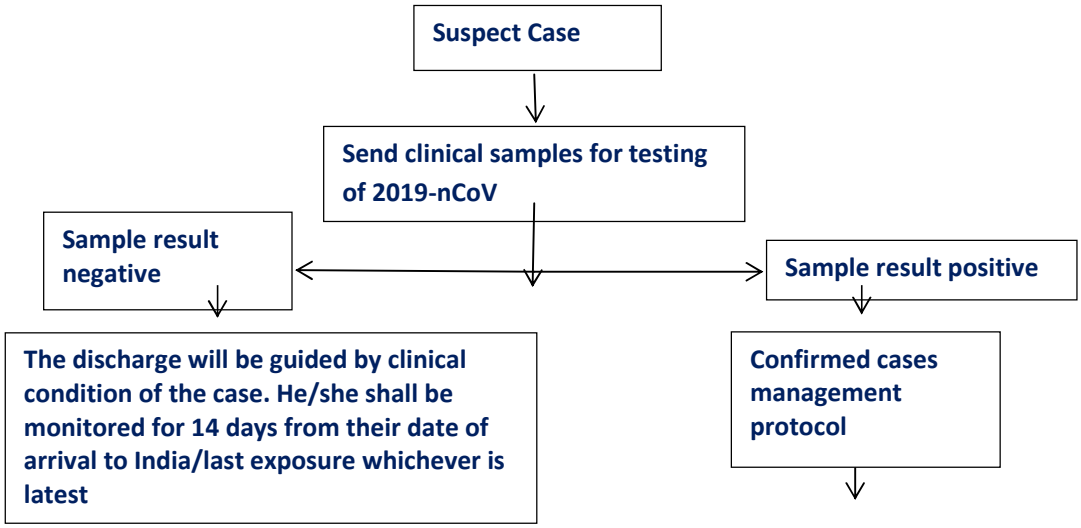
Samples should be transported at 4°C if they arrive at the laboratory with 48 hours; The sample must be stored at – 70°C if storage is required for longer periods.

Proper labelling (name/age/gender/specimen ID) need to be done on specimen container and other details of sender (name/address/phone number) on the outer container by mentioning "To be tested for 2019-nCoV"

Samples from the hospitals to be send to the concerned DSOs of the district, which will be send further to the Referral Lab

Discharge Policy of 2019-nCoV case

Clinical samples of any suspect case* of 2019-nCoV will be sent for laboratory confirmation to designated laboratories. The case will be kept in isolation at health facility till the time of receipt of laboratory results and given symptomatic treatment as per the guidelines. If the laboratory results for 2019-nCoV are negative, the discharge of such patients will be governed by his provisional/ confirmed diagnosis and it is upto the treating physician to take a decision guided by clinical condition of the case. The case shall be monitored for 14 days from their date of arrival to India/last exposure whichever is latest. In case the laboratory results are positive for 2019-nCoV, the case shall be managed as per the confirmed case management protocol. The case shall be discharged only after evidence of chest radiographic clearance and viral clearance in respiratory samples after two specimens test negative for 2019-nCoV within a period of 24 hours.



Case Classification*

Suspect Case:

- **A patient with acute respiratory illness {fever and at least one sign/symptom of respiratory disease (e.g., cough, shortness of breath)}, AND 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 {fever and at least one sign/symptom of respiratory disease (e.g., cough, shortness breath)} AND requiring hospitalization AND with no other etiology that fully explains the clinical presentation;**

OR

- **A case for whom testing for COVID-19 is inconclusive.**

Laboratory Confirmed case:

A person with laboratory confirmation of COVID-19 infection, irrespective of clinical signs and symptoms.

Updated definition of contact: A contact is a person that is involved in any of the following:

- **Providing direct care without proper personal protective equipment (PPE) for COVID-19 patients**
- **Staying in the same close environment of a COVID-19 patient (including workplace, classroom, household, gatherings).**
- **Traveling together in close proximity (1 m) with a symptomatic person who later tested positive for COVID-19. o**

High Risk Contact:

Touched body fluids of the patient (Respiratory tract secretions, blood, vomit, saliva, urine, faeces)

- **Had direct physical contact with the body of the patient including physical examination without PPE.**
- **Touched or cleaned the linens, clothes, or dishes of the patient.**
- **Lives in the same household as the patient.**
- **Anyone in close proximity (within 3 ft) of the confirmed case without precautions.**
- **Passenger in close proximity (within 3 ft) of a conveyance with a symptomatic person who later tested positive for COVID-19 for more than 6 hours.**

Low Risk Contact:

Shared the same space (Same class for school/worked in same room/similar and not having a high risk exposure to confirmed or suspect case of COVID-19).

- **Travelled in same environment (bus/train/flight/any mode of transit) but not having a high-risk exposure.**

Clinical syndromes associated with COVID - 19 infection:

- **Uncomplicated illness:**
- **Patients with uncomplicated upper respiratory tract viral infection, may have non-specific symptoms such as fever, cough, sore throat, nasal congestion, malaise, headache. The elderly and immunosuppressed may present with atypical symptoms. These patients do not have any signs of dehydration, sepsis or shortness of breath.**
- **Mild pneumonia:**

- **Patient with pneumonia and no signs of severe pneumonia.**
- **Child with non-severe pneumonia has cough or difficulty in breathing/ fast breathing: (fast breathing - in breaths/min):<2 months ≥60; 2-11 months ≥50; 1-5 years ≥40 and no signs of severe pneumonia**
- **Severe pneumonia:**
- **Adolescent or adult: fever or suspected respiratory infection, plus one of the following; respiratory rate >30 breaths/min, severe respiratory distress, SpO2 <90% on room air; severe respiratory distress (e.g. grunting, chest indrawing); signs of pneumonia with any of the following danger signs: inability to breastfeed or drink, lethargy or unconsciousness, or convulsions.**
- **Other signs of pneumonia may be present: chest indrawing, fast breathing (in breaths/min):<2 months ≥60; 2-11 months ≥50; 1-5 years ≥40 and no signs of severe pneumonia**
- **The diagnosis is clinical; chest imaging can exclude complications**
- **Acute respiratory distress syndrome (ARDS):**

Onset: new or worsening respiratory symptoms within one week of known clinical insult.

Chest imaging (radiograph, CT scan, or lung ultrasound): bilateral opacities, not fully explained by effusions, lobar or lung collapse, or nodules.

Origin of oedema: respiratory failure not fully explained by cardiac failure or fluid overload. Need objective assessment (e.g. echocardiography) to exclude hydrostatic cause of oedema if no risk factor present.

Oxygenation (adults):

- **Mild ARDS: 200 mmHg < PaO2/FiO2 ≤ 300 mmHg (with PEEP or CPAP ≥5 cm H2O, or non-ventilated)**
- **Moderate ARDS: 100 mmHg < PaO2/FiO2 ≤200 mmHg with PEEP ≥5 cm H2O, or non-ventilated)**
- **Severe ARDS: PaO2/FiO2 ≤ 100 mmHg with PEEP ≥5 cm H2O, or nonventilated)**
- **When PaO2 is not available, SpO2/FiO2 ≤315 suggests ARDS (including in non-ventilated patients)**

Oxygenation (children):

(note OI = Oxygenation Index and OSI = Oxygenation Index using SpO2)

- **Bilevel NIV or or CPAP ≥5 cm H2O via full face mask: PaO2/FiO2 ≤ 300 mmHg or SpO2/FiO2 ≤264**
- **Mild ARDS (invasively ventilated): 4 ≤ OI < 8 or 5 ≤ OSI < 7.5**
- **Moderate ARDS (invasively ventilated): 8 ≤ OI < 16 or 7.5 ≤ OSI < 12.3**
- **Severe ARDS (invasively ventilated): OI ≥ 16 or OSI ≥ 12.3**

- ***Sepsis*:**

Adults: life-threatening organ dysfunction caused by a dysregulated host response to suspected or proven infection, with organ dysfunction.

Signs of organ dysfunction include: altered mental status, difficult or fast breathing, low oxygen saturation, reduced urine output, fast heart rate, weak pulse, cold extremities or

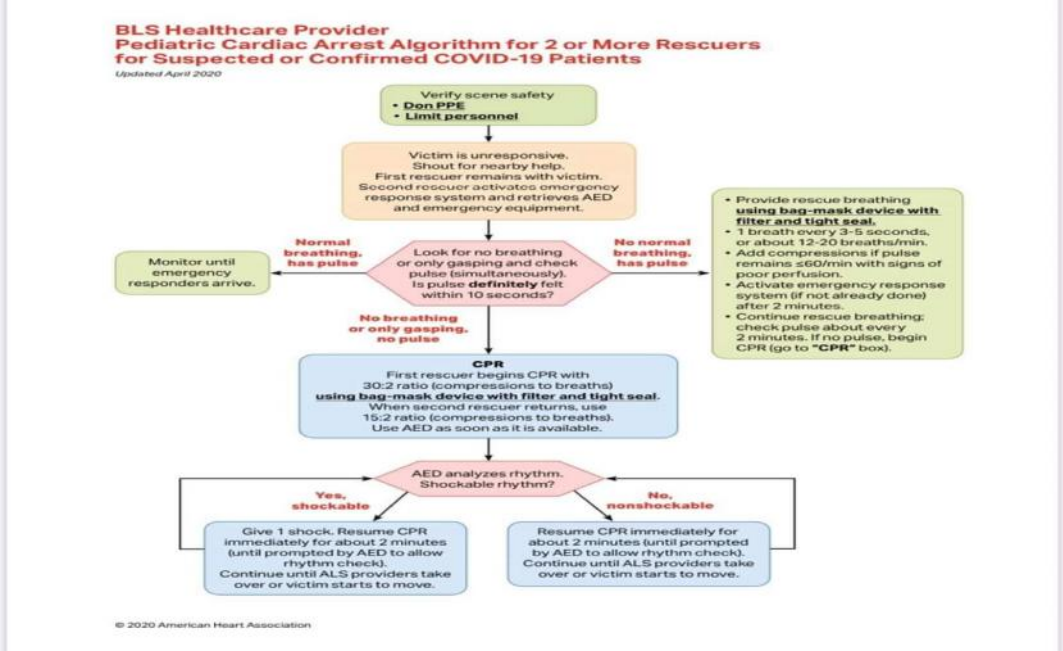
low blood pressure, skin mottling, or laboratory evidence of coagulopathy, thrombocytopenia, acidosis, high lactate or hyperbilirubinemia.

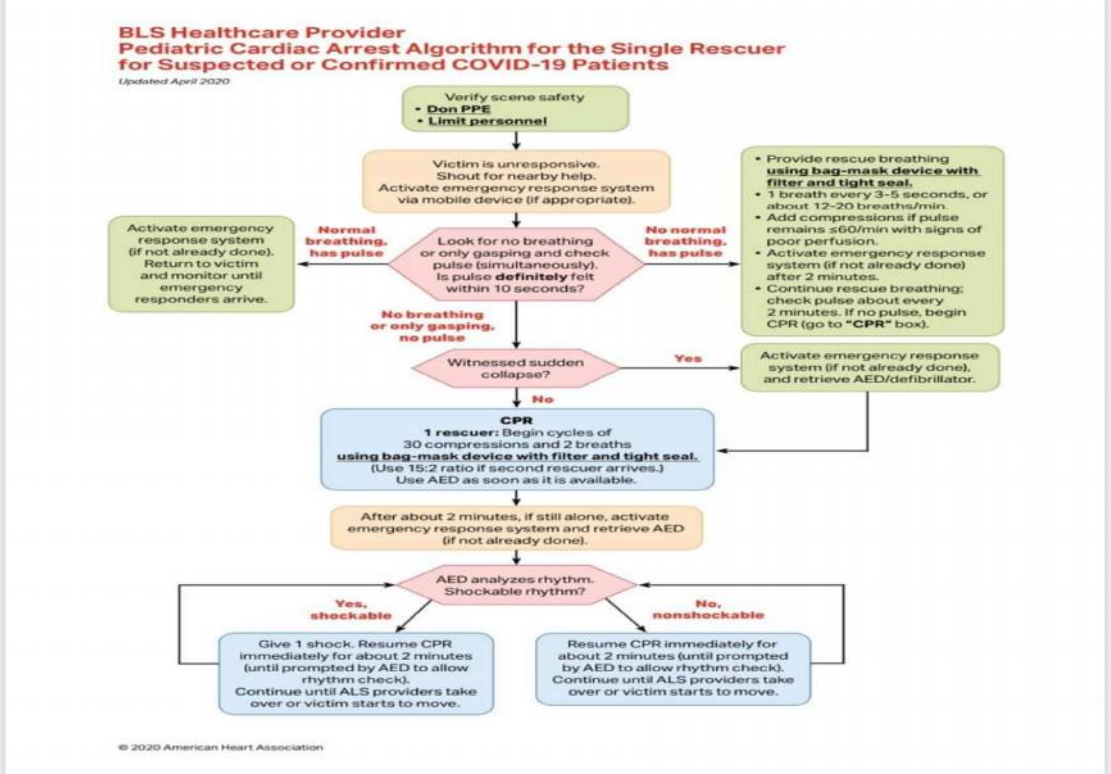
Children: suspected or proven infection and ≥2 SIRS criteria, of which one must be abnormal temperature or white blood cell count

- ***Septic shock*:**

Adults: persisting hypotension despite volume resuscitation, requiring vasopressors to maintain MAP ≥65 mmHg and serum lactate level < 2 mmol/L

Children: any hypotension (SBP 2 SD below normal for age) or 2-3 of the following: altered mental state; bradycardia or tachycardia (HR 160 bpm in infants and HR 150 bpm in children); prolonged capillary refill (>2 sec) or warm vasodilation with bounding pulses; tachypnea; mottled skin or petechial or purpuric rash; increased lactate; oliguria; hyperthermia or hypothermia.




BLS Healthcare Provider
Pediatric Cardiac Arrest Algorithm for the Single Rescuer
for Suspected or Confirmed COVID-19 Patients
Updated April 2020
Verify scene safety
• Don PPE
• Limit personnel
Victim is unresponsive.
Shout for nearby help.
Activate emergency response system via mobile device (if appropriate).
Look for no breathing or only gasping and check pulse (simultaneously). Is pulse definitely felt within 10 seconds?
Normal breathing, has pulse
Activate emergency response system (if not already done). Return to victim and monitor until emergency responders arrive.
No normal breathing, has pulse
• Provide rescue breathing using bag-mask device with filter and tight seal.
• 1 breath every 3-5 seconds, or about 12-20 breaths/min.
• Add compressions if pulse remains ≤60/min with signs of poor perfusion.
• Activate emergency response system (if not already done) after 2 minutes.
• Continue rescue breathing; check pulse about every 2 minutes. If no pulse, begin CPR (go to "CPR" box).
No breathing or only gasping, no pulse
Witnessed sudden collapse?
Yes
Activate emergency response system (if not already done), and retrieve AED/defibrillator.
No
CPR
1 rescuer: Begin cycles of 30 compressions and 2 breaths using bag-mask device with filter and tight seal. (Use 15:2 ratio if second rescuer arrives.) Use AED as soon as it is available.
After about 2 minutes, if still alone, activate emergency response system and retrieve AED (if not already done).
AED analyzes rhythm. Shockable rhythm?
Yes, shockable
Give 1 shock. Resume CPR immediately for about 2 minutes (until prompted by AED to allow rhythm check). Continue until ALS providers take over or victim starts to move.
No, nonshockable
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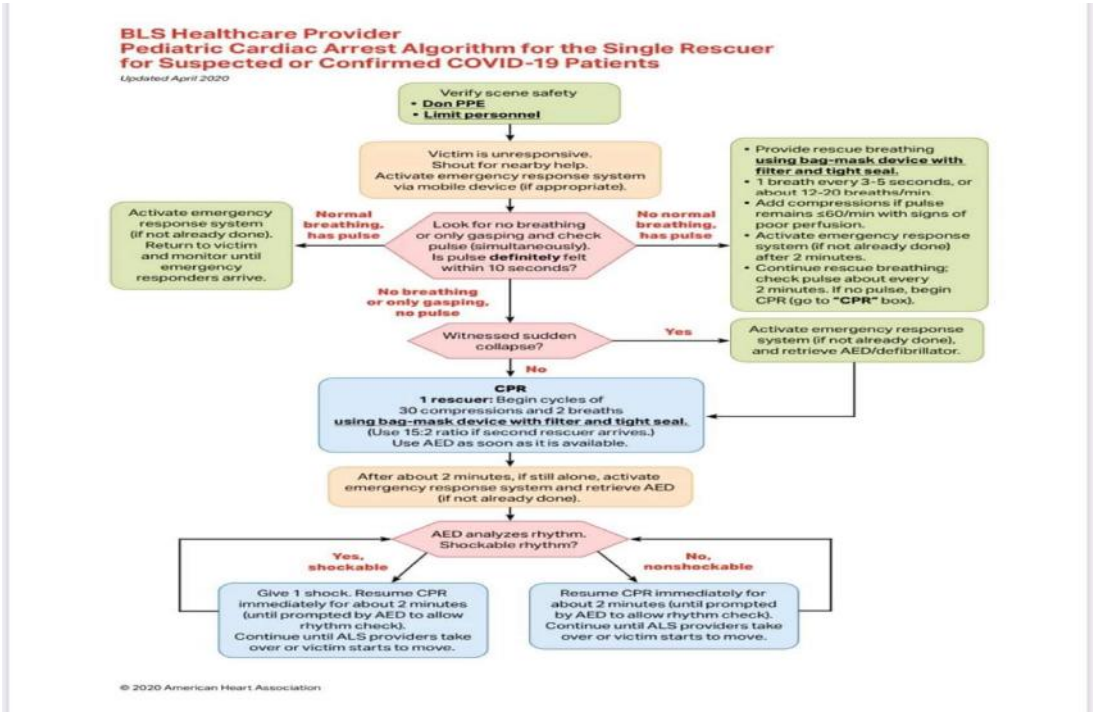
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Nebulization protocols

- **Preferably use MDI instead of nebulizer machine.**
- **Allot a separate nebulization corner within an enclosed space in each pediatric ward.**
- **Older children who can be trained should be made to use MDI equipment to prevent aerosol generation.**
- **Smaller children who require nebulization should be nebulized in the designated corner. Parents who accompany the patients should be provided with N95 masks and helmet with face shield.**
- **Healthcare workers should be properly equipped with PPE including hair cap, googles, face shield, N95 mask and gloves along with water-resistant gown which assisting for nebulization.**
- **For smaller children MDI should be given with MDI with spacer.**
- **Preferably separate mask and nebulization kit is used for individual patients.**
- **Interval of 30 minutes to be kept between nebulization of two patients.**
- **Flooring of nebulization room should be cleaned with sodium hypochloride.**
- **Nebulization machine and nebulization kit should be cleaned with soap and detergent.**

Perinatal – neonatal management of covid-19 infection

Isolation of Pregnant women with a history of overseas travel or with exposure to a confirmed/suspected case of COVID-19

Isolation in designated facility **Home quarantine**

The criteria for offering a laboratory test are the same for pregnant women and the non-pregnant population.
Delayed cord clamping is not recommended in covid suspected or positive mothers.
Pregnant women with active COVID-19 infection should be managed with supportive and specific therapy
When providing healthcare to woman in labour with confirmed or suspected COVID-19 infection, follow standard universal precautions to prevent contact with body fluids. In addition, use personal protective equipment (PPE) to prevent acquiring infection through respiratory droplets. The PPE should include masks such as the N95 masks and face protection by a face shield or at least goggles.
Separate delivery room and operation theatres are required for management of suspected or confirmed COVID-19 mothers. Both should have neonatal resuscitation corners located at least 2 m away from the delivery table.

Mode of delivery in a pregnant woman infected with COVID-19 should be guided by her obstetric assessment and her physiological stability (cardiorespiratory status and oxygenation).COVID-19 infection itself is not an indication for induction of labor or operative delivery.

<u>Neonatal resuscitation</u>

If possible, resuscitation of neonate can be done in a physically separate adjacent room marked for this purpose. If not feasible, the resuscitation warmer should be physically separated from the mother's delivery area by a distance of at least 2 meters.

- **Minimum number of personnel should attend (one in low-risk cases and two in high-risk cases where extensive resuscitation may be anticipated)and wear a full set of personal protective equipment including N95 mask.**
- **Mother should perform hand hygiene and wear triple layer mask.**
- **The umbilical cord should be clamped promptly and skin-to-skin contact avoided.**

Stable neonates exposed to COVID-19 infection from mothers or other relatives should be roomed-in with their mothers and be exclusively breastfed.

If rooming-in is not possible because of the sickness in the neonate or the mother, the neonate should be fed expressed breast milk of the mother by a nurse or family member who has not been in contact with the mother or other suspected/proven case.

If resources for isolation of normal, suspected to be infected and infected mothers can be made available AND

Evidence of community spread present

Direct breastfeeding can be given. Mother should wash hands frequently including before breastfeeding and wear mask. If not feasible due to maternal or neonatal condition, expressed breast milk can be fed.

If safe, early discharge to home followed by telephonic follow-up or home visit by a designated nurse may be considered.

<u>No evidence of community spread</u>

After immediate cord clamping, the neonate should be isolated from the mother.

During isolation, healthy neonates should preferably be cared for by family member not in contact with mother or other suspected/proven case.

Mother can express milk after washing hands and breasts and while wearing mask. This expressed milk can be fed to her own baby without pasteurization.

Mother and baby can be roomed-in once mother has been tested and declared to be clear of infection.

If symptomatic,neonates born to a mother with suspected or proven COVID-19 infection should be managed in separate isolation facility.

Nasopharyngeal / throat and rectal (optional) swabs for RT-PCR at 24 hours and repeat once after 48 hours.

Respiratory support for neonates with suspected/proven COVID-19 infection is guided by principles of lung protective strategy including use of non-invasive ventilation.

NIPPV and High Flow Nasal cannulas should preferably be avoided.

Antivirals or chloroquine/hydroxychloroquine –are NOT recommended in symptomatic neonates with confirmed or suspected COVID-19.

Use of adjunctive therapy such as systemic corticosteroids and intravenous gamma globulin is NOT recommended in symptomatic neonates with confirmed or suspected COVID-19

References

1. **COVID-19 guidelines, Ministry of Health and Family Welfare, Government of Gujarat (14 March 2020)**
2. **2019 novel coronavirus prevention and management preparedness document, AIIMS, New Delhi (5 Feb 2020)**
3. **COVID-19 for medical practitioners, IMA headquarters**
4. **Guidelines on clinical management of COVID-19, Government of India, Ministry of Health and Family Welfare (17 March 2020)**
5. **Revised strategy of COVID-19 testing in India, ICMR, Department of Health and Research (20 March 2020)**

Recommended PPE for Health Care Worker, Support Staff & others in SMIMER hospital setting

	Sr.	Area	Type of worker	PPE Required
COVID AREA	1	Patient	Screening area /Isolation ward /ICU/visitors with young children & elderly	Triple layer medical mask
	2	Screening OPD (Registration counter)	Paramedics/ clerk/nurse	N 95 Mask, Gloves, Surgical cap, Goggles/Face shield
	3	Screening OPD	Doctors/Nurses	N 95 Mask Goggles/Face shield Gloves (Double), surgical cap Gown (Water- resistant)
	4	Screening OPD	• Nasopharyngeal swab in suspected cases • Blood sample	Full PPE with N95 mask N95 mask, goggles/ face shield, gloves (double), surgical cap, water resistant gown
	5	Screening OPD	Cleaner/Sweeper/HA	N 95 Mask Goggles/Face shield Gloves , surgical cap Gown (Water- resistant) Heavy Duty Gloves & Boots
	6	COVID ICU/ward	Doctors/Nurses/ Technician / Radiology	Full PPE with N95 mask
	7	COVID ICU/Ward / Operating room	Cleaner/Sweeper/HA	Full PPE with N95 mask Heavy Duty Gloves & Boots
	8	COVID operating room	Doctors/Health care worker/support staff of surgery & Anaesthesia	Full PPE with N95 mask
NON	9	Collection Area	Technician /Lab Attendant	N 95 Mask /FFP 2 Gloves , surgical cap, Goggles/Face shield Gown (Water- resistant)
	10	Laboratory	Technician /Lab Attendant handling respiratory sample of known /suspected cases	Full PPE with N95 mask
			Technician /Lab Attendant handling other respiratory sample	N 95 Mask Goggles Gloves , surgical cap Gown (Water - resistant Goggles/Face Shield)

C			Technician /Lab Attendant handling Non respiratory sample	Triple layer medical mask Goggles,Gloves , surgical cap Gown (Water- resistant)
O	11	Radiology Department	Radiographer/ other staff dealing with suspected /covid Patients	N95 mask Goggles/ Face Shield Gloves , surgical cap Gown (Water- resistant)
V			Doctor /staff involved in USG /Procedure	N95/FFP 2 , Goggles/Face Shield Gloves, surgical cap Linen gown
I			Radiographer/ other staff	Triple Layer medical mask
D	12	Hospital Ward /Facility (Non Covid)	Doctors/Health care worker performing high risk aerosol generating procedure (Intubation, resuscitation , NG tube insertion, endoscopy, laparoscopy, Delivery room) in Non Covid areas	N 95 Mask /FFP 2 Goggles/Face Shield Gloves , surgical cap Gown (Water- resistant)
A	13	Operating room for Non covid Patient	Doctors/Health care worker/support staff of surgery & Anaesthesia	N 95 Mask /FFP 2 Goggles/Face Shield Gloves , surgical cap Gown (Water- resistant)
R	14	Emergency Room (Casualty) (Non Covid)	Doctors/ Health care worker / Support staff	As for screening OPD
E	15	All ICUs (Non Covid)	Doctors/ Health care worker/Supports staff	N 95 Mask /FFP 2 , Gloves, surgical cap, Linen Gown
A	16	Medicine, Paediatrics, Pulmonary Medicine, ENT Ward /ICUs (Non Covid)	Doctors/ Health care worker/ Support staff	N 95 Mask /FFP 2 , Gloves, Cap. Linen gown
	17	All Other in patient Areas (Non Covid Wards	Doctors/ Health care worker/ Supports staff	N 95 Mask /FFP 2 , Gloves
	18	OPD 's	Doctors/ Health care worker attending all other patients (non covid	N 95 Mask /FFP 2 , Gloves
	19	IHBT	Doctors/Technicians/Attendant for Blood Donation in camps/ Plasmapheresis	N 95 Mask /FFP 2 Gloves , cap Linen Gown
	20	College side (A,B,C Block)& Health workers not involved	Doctors/ Health care worker/ Support staff	Triple Layer medical mask

		in direct patient contact		
	21	Mortuary	Performing Autopsy (No post mortem of COVID until unless specified)	N 95 Mask /FFP 2 Goggles/Face Shield Gloves , surgical cap ,Gown (Water- resistant)Heavy duty gloves & boot (For Attendant)
			Handling dead body	N 95 Mask /FFP 2 , Gloves
	22	CSSD / Laundry	Handling laundry /equipment from covid 19 areas/ emergency /Pulmonary medicine/ENT	N 95 Mask Goggles or Face shield Gown (Water- resistant), surgical cap ,Heavy duty Gloves ,Boot
			Handling laundry /equipment from all other areas	Triple Layer medical mask
	23	Ambulance	Doctors/Nurse/HA	Full PPE with N95
			Driver	Triple Layer Mask
	24	Administrative areas offices & other areas	All staff	Triple Layer Mask/ Linen Mask
	25	Any	Patient & their attendant without respiratory symptoms	Linen Mask

: PPE Includes - Coverall, Goggles/face shield,2 pairs of Gloves, Shoe Cover, N 95 mask

: If Gown (WR-water resistant) not available then surgical (Linen) gown with disposable / water resistant Apron can be used in NON COVID Areas.

: N 95/FFP2 /Triple layer /Linen Mask should be used properly.

:Hand hygiene , social distancing are essential

:In NON COVID areas N95/ FFP2 mask will be provided for extended areas per guidelines.

Guidelines on Extended/Reuse of N 95 Masks to Health Care Workers In Non Covid Patient Care Areas

As per WHO / MOHFW guidelines all health care worker & support staff should wear triple layer Medical Mask for their own safety & should apply these general measures.

- **Perform hand hygiene before donning mask.**
- **Ensure proper fitting of mask and minimal gaps between mask and face on all sides.**
- **Do not eat / drink while wearing mask.**
- **If the mask is damaged or significantly soiled, discard it.**
- **Do not touch outer surface of mask. If inadvertently touched, perform hand hygiene immediately.**
- **When discarding mask only handle the straps /ties do not touch the mask or your face.**

Linen masks- Wash with soap and water at the end of each day and dry in sunlight

It has been also decided to issue five (05) N -95 masks to all health care workers involved in patient care services in all NON COVID patient care areas for their personal use for their own safety. Reuse of these N- 95 masks has been recommended for N-95 mask meeting as per MOHFW specification in accordance with scientific literature as per prescribed guidelines (AIIMS)

1. **You will be provided with five N-95 masks with 5 small paper bag.Place each N-95 masks in separate small paper bags and mark both the mask and the bag as 1,2, 3 and 4. Fifth mark is being issued as a reserve**
2. **On day-1, wear the mask no-1 when you step out of duty. LEARN TO WEAR THE MASK CORRECTLY. THIS IS VERY IMPORTANT.**
3. **After completing the duty, place the used N-95in paper bag no-1 and let it dry out for 4 days. Sunlight is not necessary. DO NOT THROW AWAY THE MASK**
4. **On day 2, use mask number No-2 when you go for duty. After your duty, place the used N-95 in paper bag no. 2 and let it dry out for the next four days.**
5. **Do the same for day 3 and day 4.**
6. **Use the N-95 mask no-1 on day 5 again. For eg. If you start using mask no.1 on Tuesday 21st April, it is available for reuse on Saturday 25th April 2020.**
7. **Repeat the exercise until all 4 masks have been used 5 times**
8. **All four will be used up in 20 days**
9. **These "personal use" N-95 masks will not be treated and reused.**
10. **Bring all masks in the Paper bags. Throw them in the recommended (yellow)waste bin in your ward/area &report to the indenting nurse.**
11. **YOU WILL BE ISSUED 5 NEW N-95 MASKS, AFTER 20 DAYS. Every health care worker should learn & watch the AIIMS video on link to know the extended use of N-95 mask in NON COVID AREAS**

Note – Specific type of PPE will be provided in designated COVID patient care areas (Fever OPD, Isolation ward, ICU)as per guidelines

REUSE OF FACE SHIELDS/ GOGGLES

Face shield /Goggles should be made of polycarbonate or similar reusable material (propionate, acetate, PVC, PETG) with good optical quality & scratch resistant for reuse

Segregation : Used face shields/ goggles each be deposited into separate clearly labelled RED bins/ bags.

Equipment and materials required: 0.5 % sodium hypochlorite- freshly prepared, 70 % alcohol, buckets , flat surface for drying, clean pads/wipes.

Procedure

- **Immerse face shields and goggles in buckets of freshly prepared (not more than 4 hrs old) 0.5 % sodium hypochlorite solution for 10 minutes.**

- **Take out the face shields/ goggles from the bucket**
- **Dry on a flat surface**
- **Only after the surface is completely dry, wipe all surfaces with 70 % alcohol using a clean pad/ wipes.**
- **Face shields/goggles can be used once dry.**
- **Place these in a new clean container.**

PPE for reprocessing staff (Gown - Water resistant), N95 mask, nitrile gloves, , goggles, face shield or PPE, heavy duty long gloves long boots, alcohol based hand rub). The staff involved in this should be on hydroxychloroquine prophylaxis.

SOP to make 0.5% hypochlorite

II Procedure when 4 % Sod. Hypochlorite solution is in hospital supply:

A: - One part (1) of sodium hypochlorite solution in seven (7) part of water

Change solution after every four hours. Emptying of bin containing sodium hypochlorite to be done in the sluice room.

SMIMER POLICY FOR USE OF PERSONAL PROTECTIVE EQUIPMENTS

	Area	Personnel	Mask			Gloves	Cap	Goggles /Face Sh	WR Gown	PPE - A	Heavy D Glov /Gum Boots
			N95/ FFP2	3-L	Linen	or PPE - B/C					
COVID BLOCK	Triage Area (Security Counter)		√			S					
	Case Counter	Nurse, computer operator	√			S	√	√			
	Covid-19 / Fever-Flu OPD Covid Radiology services	Healthcare workers (Doctors/Nurses/Lab Technician/Radiographer)	√			D	√	√	√		
		Support staff (Ward Boy, Safai kamdar)	√			S	√	√	√		√
		Patients		√							
	Sampling Counter	Lab Technician								√	
	Ambulance Team	Healthcare workers (Doctors/Nurses/Technician)								√	
		Helper (Transportation of pt, Helping doctor with patient)								√	
		Driver		√							
	Casualty	Healthcare workers	√			D	√	√	√		
		Support staff	√				√	√	√		√
		Patients		√							
	Covid-19 isolation ward & ICU	Healthcare workers(Doctors/Nurses/Radiographer)								√	
		Support staff								√	√
		Patients		√							
	Covid-19 OT (Casualty OT)	Healthcare workers in anaesthesia, surgical team								√ √	√

*NON-COVID BLOCK	Medicine, Pediatrics, Pulm Med, ENT **Wards/ICUs**	Healthcare workers	√			D	√	+Surgical Gown			
		Support staff	√			D	√				√
	Med, Paed, Pulm Med, ENT **OPDs**	Healthcare workers	√			D	√				
		Support staff	√			D	√				√
	High risk aerosol - ward/facility	Healthcare workers performing high risk aerosol generating procedures **(intubation, resuscitation, NG tube insertion, endoscopy, laparoscopy, Delivery room, etc)**	√			D	√	√	√		
	OTs for non-COVID patients	Healthcare workers in anaesthesia, surgical team	√			D	√	√	√		
		Support staff	√			D	√	√	√		√
	All other **Wards/OPDs**	Healthcare workers	√			S					
		Support staff	√			S					√
	Radiology Department	Doctor /staff involved in USG /Procedure	√			S	√	+Surgical Gown			
		Radiographer/ other staff		√							
	Laboratory	Technician/Lab attendant handling respiratory samples from known/suspected **Covid-19** patients								√	√
		Technician/Lab attendant handling respiratory samples from Non-Covid-19 patients	√			S	√	√	√		
		Technician/Lab attendant handling all other samples		√		S	√	√	√		
	IHBT dept	Doctors/Technicians/Attendant for Blood Donation in camps/ Plasmapheresis	√			D	√	+Surgical Gown			
	Pharmacy, billing,help desk, cafeteria	All Staff			√						
	CSSD/Laundry	Handling laundry/equipment from Covid-19 areas/Emergency/Pulm Medi /ENT	√			D	√	√	√		√

		Handling laundry/equipment from all other areas		√							
	Mortuary	Performing autopsy (Doctor, Attendant)	√			D	√	√	√		√
		Handling dead body	√			D					
	Patients	Patients with respiratory symptoms and their attendants		√							
		Patients without respiratory symptoms and their attendants			√						
	Non-patient care areas (administrative, maintenance etc)	All staff		√	√						
	College side (A,B,C Block)& other HCW not involved in direct patient contact	Doctors/ Health care worker/ Support staff		√							

Note : If Gown (WR-water resistant) not available then surgical (Linen) gown with disposable/water resistant Apron can be used in NON COVID Areas.

S -Single pair , D - Double pair (Gloves); 3-L = 3 layer mask; WR Gow = Water-resistant Gown

N 95/FFP2 / Triple layer / Linen Mask should be use properly

Hand hygiene , social distancing are essential

PPE includes - Coverall, Goggles/face shield /2 pairs of gloves

In NONCOVID areas N 95 masks will be provided for extended use as per guidelines

PPE-A includes - Coverall, Goggles/face shield /2 pairs of gloves, shoe cover & N95 mask

PPE/B/C Comprises- Gown (Water resistant), surgical cap, Goggles/face shield, gloves. (N-95 / FFP2 mask to be additionally added)

Standard operating procedure in emergency

Patient should be approached in following ways:

- **Senior faculty OR Senior resident (third year) should approach to casualty for patient examination and for quick treatment related decisions.**
- **Health care personal should maintain distancing while taking history with patient about 1 metre.**
- **History regarding respiratory symptom of fever, covid positive patient contact, Travel history and positive patient in neighborhood must be noted.**
- **Let the relatives to stay away from the area**
- **Before examination of patient N95 mask should be worn.**
- **Ask the patient also to wear the mask.**
- **Head cover should be done.**
- **Wear the face shield to cover the face, if performing any emergency procedure over face, forehead, scalp etc...**
- **Wear the plastic gown available in casualty.**
- **Double gloves should be worn while performing any procedure or examination.**
- **Minor injuries like CLW, dislocations of bone, abcess drainage without sepsis ,sharp cut wounds on limbs without vascular and neurological injuries should be sutured under sedation or local anaesthesia in emergency department.**
- **Impact on radiology should be minimised and should be done after concerned department has advised and use of mini C arm facility in emergency department can be done .CT scanning should be minimised as this is the investigation of choice for corona virus pneumonitis**
- **Doffing of all the personal protective equipments should be done as per IPC guidelines.**
- **After the procedure if the patients are stable can be discharged with proper follow up instructions.**