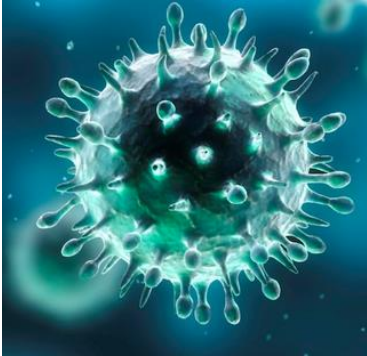


COVID- 19 Containment Standard Operating Procedures

Advanced Pediatrics Centre, PGIMER, Chandigarh, India



SOP's to guide patient flow and management at the Advanced Pediatrics Centre to help in the containment of the SARS-CoV2 related COVID-19 infection



Version 4.0

Users may kindly note that knowledge about SARS-Cov-2 is constantly changing. While every effort has been made to keep the Standard Operating Procedure up to date, the user must keep himself/herself abreast of changes in protocols as the situation evolves.

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CASE DEFINITIONS:

Suspected Case of COVID-19:1

All the following are considered suspect cases of Covid-19 and must be tested*:

1. All symptomatic individuals who have undertaken international travel in the last 14 days
2. All symptomatic contacts of laboratory confirmed cases
3. All symptomatic healthcare workers
4. All hospitalised patients with severe acute respiratory illness (fever AND cough and/or shortness of breath)
5. Asymptomatic direct and high-risk contacts of a confirmed case should be tested once between day 5 and day 14 of coming in his/her contact

****Please refer to latest testing guidelines from GOI***

as of 26th March 2020, only the following countries had not reported a single case of Covid-19: Burundi, Comoros, North Korea, Federated States of Micronesia, Kiribati, Malawi, Nauru, Republic of Yemen, St Kitts & Nevis, Samoa, Sierra Leone, Sao Tome & Principe, Tajikistan, Turkmenistan, Tuvalu, Vanuatu, Western Sahara.

Contact:

A person:

- 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.

<https://www.mohfw.gov.in/pdf/ICMRrevisedtestingstrategyforCOVID.pdf>

High-Risk Contact:

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

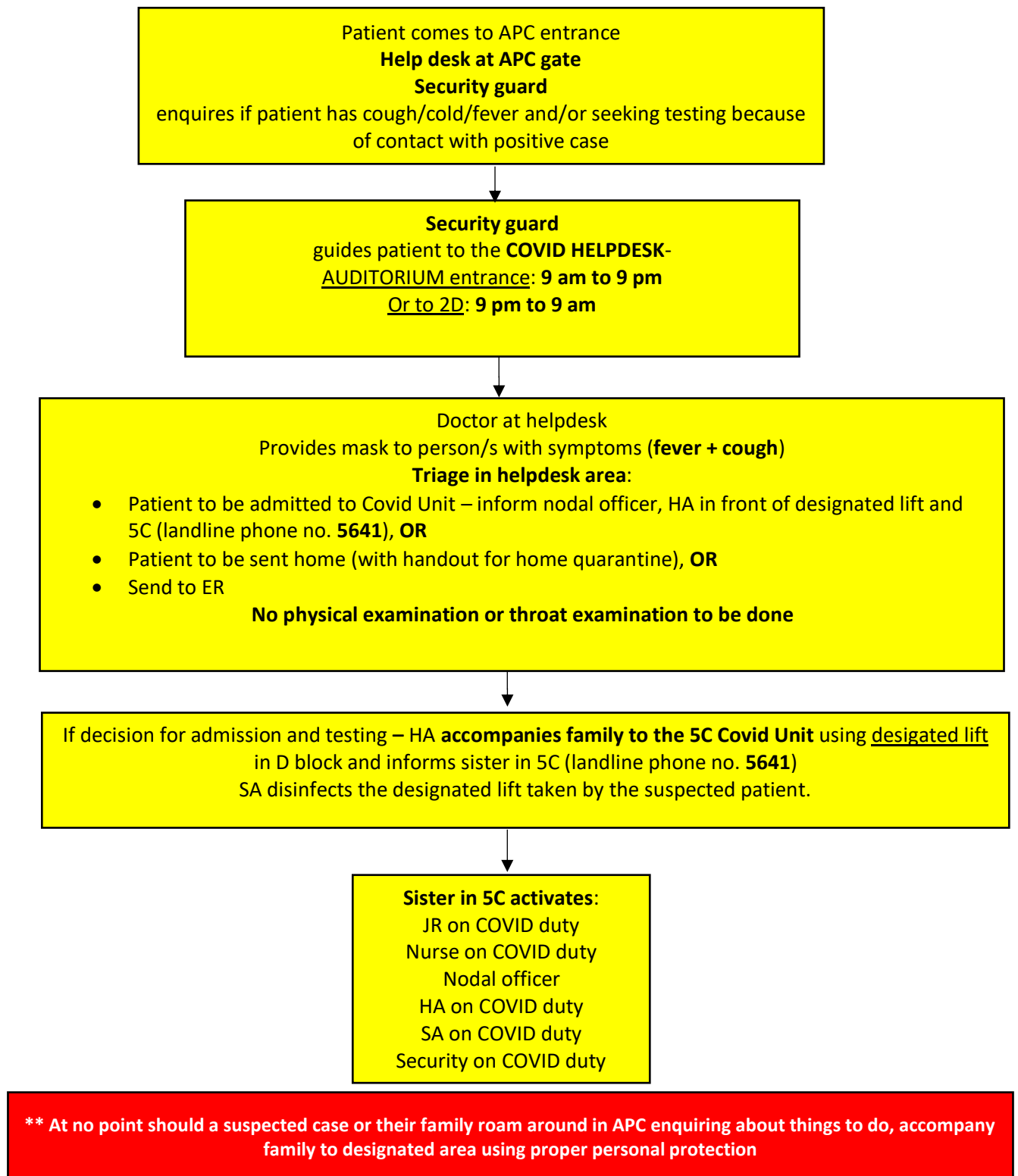
¹ <https://www.mohfw.gov.in/pdf/LabTestingAdvisory.pdf>
[ICMR revised guidelines](#)

- 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 the same room/similar and not having a high-risk exposure to a confirmed or suspect case of COVID-19).
- Traveled in the same environment (bus/train/flight/any mode of transit) but not having a high-risk exposure.

FLOW OF PATIENTS IN APC



PROTECTIVE MEASURES: (under revision)

General / Standard precautions for all:

1. Should always be routinely applied in all areas of health care facilities
2. Including:
 - frequent hand hygiene (including before putting on and after taking off PPE)
 - respiratory hygiene
 - use of PPE to avoid direct contact with patients' blood, body fluids, secretions (including respiratory secretions) and non-intact skin
 - prevention of needle-stick or sharps injury
 - safe waste management
 - cleaning and disinfection of equipment
 - cleaning of the environment

Personal protective equipment (PPE): (Based on NCDC and WHO guidelines)

Setting	Target personnel or patients	Activity	Type of PPE or procedure
<i>Healthcare facilities</i>			
Outpatient facilities			
Consultation room	Healthcare workers	Physical examination of the patient with respiratory symptoms	Medical mask Gown Gloves Eye protection
	Healthcare workers	Physical examination of patients without respiratory symptoms	PPE according to standard precautions and risk assessment
	Patients with respiratory symptoms	Any	Provide medical mask if tolerated

Setting	Target personnel or patients	Activity	Type of PPE or procedure
	Patients without respiratory symptoms	Any	No PPE required
	Cleaners	After and between consultations with patients with respiratory symptoms	Medical mask Gown Heavy-duty gloves Eye protection (if the risk of splash from organic material or chemicals) Boots or closed work shoes
Waiting room	Patients with respiratory symptoms	Any	Provide medical mask if tolerated Immediately move the patient to an isolation room or separate area away from others; if this is not feasible, ensure a spatial distance of at least 1 m from other patients
	Patients without respiratory symptoms	Any	No PPE required
Administrative areas	All staff, including healthcare workers	Administrative tasks	No PPE required
<i>Points of entry</i>			
Administrative areas	All staff	Any	No PPE required

Setting	Target personnel or patients	Activity	Type of PPE or procedure
Screening area	Staff	First screening (temperature measurement) not involving direct contact	Maintain a spatial distance of at least 1 m. No PPE required
	Staff	Second screening (i.e., interviewing passengers with fever for clinical symptoms suggestive of COVID-19 disease and travel history)	Medical mask Gloves
	Cleaners	Cleaning the area where passengers with fever are being screened	Medical mask Gown Heavy-duty gloves Eye protection (if the risk of splash from organic material or chemicals) Boots or closed work shoes
Temporary isolation area	Staff	Entering the isolation area, but not providing direct assistance	Maintain a spatial distance of at least 1 m Medical mask Gloves
	Staff, healthcare workers	Assisting passenger being transported to a healthcare facility	Medical mask Gown Gloves Eye protection
	Cleaners	Cleaning isolation area	Medical mask Gown Heavy-duty gloves Eye protection (if the risk of splash from organic material or chemicals) Boots or closed work shoes

Setting	Target personnel or patients	Activity	Type of PPE or procedure
Ambulance or transfer vehicle	Healthcare workers	Transporting suspected COVID-19 patients to the referral healthcare facility	Medical mask Gowns Gloves Eye protection
	Driver	Involved only in driving the patient with suspected COVID-19 disease and the driver's compartment is separated from the COVID-19 patient	Maintain a spatial distance of at least 1 m No PPE required
		Assisting with loading or unloading patient with suspected COVID-19 disease	Medical mask Gowns Gloves Eye protection
		No direct contact with a patient with suspected COVID-19, but no separation between driver's and patient's compartments	Medical mask
	Patient with suspected COVID-19 disease	Transport to the referral healthcare facility	Medical mask if tolerated
	Cleaners	Cleaning after and between transport of patients with suspected COVID-19 disease to the referral healthcare facility	Medical mask Gown Heavy-duty gloves Eye protection (if the risk of splash from organic material or chemicals) Boots or closed work shoes

Setting	Target personnel or patients	Activity	Type of PPE or procedure
<i>Inpatient facilities</i>			
Patient room	Healthcare workers	Providing direct care to COVID-19 patients	Medical mask Gown Gloves Eye protection (goggles or face shield)
		Aerosol-generating procedures performed on COVID-19 patients	Respirator (N95 or FFP2 standard, or equivalent) Gown Gloves Eye protection Apron
	Cleaners	Entering the room of COVID-19 patients	Medical mask Gown Heavy-duty gloves Eye protection (if the risk of splash from organic material or chemicals) Boots or closed work shoes
	Visitors	Entering the room of a COVID-19 patient	Medical mask Gown Gloves
Other areas of patient transit (e.g., wards, corridors).	All staff, including healthcare workers	Any activity that does not involve contact with COVID-19 patients	No PPE required
Triage	Healthcare workers	Preliminary screening not involving direct contact	Maintain a spatial distance of at least 1 m No PPE required

Setting	Target personnel or patients	Activity	Type of PPE or procedure
	Patients with respiratory symptoms	Any	Maintain a spatial distance of at least 1 m Provide medical mask if tolerated by the patient
	Patients without respiratory symptoms	Any	No PPE required
Laboratory	Lab technician	Manipulation of respiratory samples	Medical mask Gown Gloves Eye protection (if the risk of splash)
Administrative areas	All staff, including healthcare workers	Administrative tasks that do not involve contact with COVID-19 patients	No PPE required

When to use N95 mask:

- **NOT required for routine use**
- USE for aerosol-generating procedures
 - tracheal intubation
 - non-invasive ventilation
 - tracheostomy
 - cardiopulmonary/neonatal resuscitation
 - manual ventilation before intubation
 - bronchoscopy
 - oral or tracheal suction
- To be used by all HCW inside the Covid unit and respiratory isolation of APC Emergency

Precautions while performing aerosol generating procedures

- Should preferably be done by a HCW who has recovered from COVID-19
- Remove all HCW from the room, except those needed for the procedure
- Close the door of the room
- Ensure that the exhaust fan is ON
- Ensure AC if any in another room is switched off. (As it will draw the air in)
- Switch off all ceiling fans in the area
- Ensure full PPE are worn as per guidelines
- Preferable to have a large room with good airflow
- Use air purifiers with HEPA filter in the room, If possible
- Remove any high risk HCW from the room (e.g., Diabetic)

RESPONSIBILITIES OF APC PERSONNEL WHEN PATIENT FIRST ARRIVES TO PGI

Security personnel at APC main entrance

1. Anyone bringing a child with fever/cough/cold or enquiring about corona should be directed to the designated 'helpdesk area.'- APC auditorium side entrance from 9 AM to 9 PM or 2D from 9 PM to 9 AM.
2. Maintain general precautions & protective measures (as above).
3. For patients (eg an adult) needing transfer to another area, (CD ward or Nehru hospital extension block), help coordinate with ambulance driver and HA for a quick response.
4. **At no point should a suspected case or their family roam around in PGIMER enquiring about things and use proper personal protection**

Resident doctors at helpdesk:

1. A fever/cough helpdesk functions at the APC auditorium side entrance from 9 AM to 9 PM and in the 2-D area near the lift from 9 PM to 9 AM. It is manned by a Junior Resident. The junior resident is under the supervision of a senior resident who makes periodic visits, is available for consultation, troubleshoots,

substitutes the junior resident during breaks, and liaises with the faculty in charge. A junior resident from School of Public Health sits along with the Pediatric junior resident from 9 AM to 1 PM and liaises with faculty in School of Public Health for issues related to home quarantine and contact tracing.

2. The daytime as well as nighttime helpdesks are located behind a glass door/partition. These doors/partitions must not be opened when a patient is present on the other side of the partition.
3. The resident must wear a medical mask at all times.
4. At beginning of every shift, the helpdesk JR/SR must ensure that he/she has the phone number of the duty HA manning the Covid lift, phone number of security desk and phone number of 5C Covid Unit (5641). The helpdesk JR/SR must ensure that guidelines for isolation and testing, adequate number of forms and screening register are available at the helpdesk.
5. If a suspected case comes into the triage area, the child and symptomatic family members should immediately be given a medical mask.
6. At the helpdesk, note down the name, address, contact number, symptoms, travel history, examination, and stabilization. **(fill FORM)**
7. Discuss the case with nodal in-charge APC
8. DO NOT TOUCH OR EXAMINE THE PATIENT
9. If admission is planned, give information telephonically to the 5C Covid Unit (7087005641 OR 01722755641).
10. If admission is required, the JR must phone up the Covid lift HA to come to the patient side of the helpdesk area. The HA will accompany the child and one parent from the helpdesk area via the **designated lift** in block D to the 5C Covid Unit. HA should be wearing a medical mask.
11. All in-hospital transport of COVID-19 patients should be planned and if needed, done using the **designated trolley (painted yellow)** and using the lift and paths designated for COVID-19 patients. The designated trolleys are located at APC entrance and in 5C Covid Unit.

Hospital attendant (HA) and sanitary attendant (SA)

1. When informed by the helpdesk JR/SR, the Covid lift HA must go to the patient side of the helpdesk, and guide the patient to the designated Covid lift, accompany patient upstairs to isolation 5C and hand over to the nursing officer in 5C.
2. At all times, the HA must wear a triple layer medical mask and maintain at least 1-2 m distance from the patient and all family members.
3. The patient and only one family member must be taken to 5C. All other family members must wait outside the building.

4. After transfer of a suspected patient to 5C Covid Unit, HA must inform SA to sanitise the Covid lift.
5. The front door, inside door, walls, inside railings and outside and inside lift buttons must be wiped with 1% hypochlorite solution. SA must wear a medical mask during the procedure.

Nursing officer in 5C Covid Unit

1. The nursing officer in 5C Covid Unit should be fully donned in PPE while receiving and guiding the patient to the unit.
2. The nursing officer must inform the JR on Covid duty, the nodal officer, HA on Covid duty, SA on Covid duty and security guard on Covid duty.

DONNING AND DOFFING IN 5C COVID UNIT

Note: some steps in this protocol may differ slightly from the donning & doffing protocol in Neonatology. Either protocol may be followed.

Donning

Changing room in 5-D

Check-list

- There will be separate male and female changing rooms for each category of staff
- Each changing room will have
 - Clean surgical scrubs
 - Lockers with keys hanging
 - Disposable shoe covers

Procedure in changing room of 5-D

1. The HCW must reach the hospital in his/her personal clothes.
2. Change into surgical scrubs in the changing room (5-D) after eating/drinking/using washroom.
3. Keep personal belongings (phone, wallet, etc) in a locker.
4. Remove your personal spectacles and keep in locker in case you wish to don the goggles.
5. Continues to wear your own pair of shoes and cover with a disposable shoe cover.
6. Lock the locker and keep the key with you in the pocket of your scrubs.
7. Proceed to 5-C Covid unit and enter from the staff entry door.

5C Covid Unit

Checklist in the donning area of 5C Covid unit

- Trained observer / “Buddy”
- The first thing HCW is going to do: **inspect PPE** to make sure that all components (correct size) are present and laid out in proper order.
 - Trolley with all components of PPE
 - Disposable cap
 - Leg covers **OR** Gum boots that go to the mid-calf (steps for donning and doffing are slightly different for leg covers and gumboots, so please be careful)
 - Full body Hazmat suit that is large enough to allow free movement and is fluid resistant
 - Disposable long sleeve surgical gown
 - N95 respirator
 - Medical/Surgical mask
 - Surgical hood that covers all the hair, ears, and neck
 - Inner gloves (appropriate size surgical gloves) and Outer gloves that have an extended cuff
 - Goggles
 - A face shield that provides additional protection to the face, including skin and eyes
- Permanent marker pen for writing name on N95 respirator
- One Chair
- Hand sanitizer

PPE Donning steps:

1. The observer (buddy) will check that there are no holes in your surgical scrub, and you are not wearing any personal items: no rings/watches/jewellery/chain/necklace/wrist bands; and your nails are trimmed, no beard, head hair is tidy and not falling on face or neck.
2. Perform Hand Hygiene (Wash with soap and water)
3. Using the marker pen, write your **name, ward, APC, date of first use and number of times used on the N95 respirator**, as the respirator will be sterilized and reissued to you by name after doffing. The 1st time you use it, write “1”, the 2nd time it comes back to you for use, strike off “1” and write “2”. Your name, ward and APC will ensure that the mask comes back to the right person at the right location. The number

is for your own safety- so that you do not use the mask more than 3 times (once with the brand-new mask and twice thereafter following sterilisation cycles)

4. Put on the **first pair of gloves (inner gloves)** after ensuring that hands are dry.
5. The next step is different depending on whether you are wearing leg covers or gumboots:
 - a. If you will be wearing **leg-covers, proceed to the next step** because you will wear your personal shoes inside the full body Hazmat suit.
 - b. If you will be wearing **gumboots, remove your personal shoes** now and cover your personal socks with a disposable shoe cover, before you proceed to the next step. **YOUR PERSONAL SHOES WILL BE TAKEN BY AN SA/HA TO THE 5D CHANGING ROOM AND KEPT THERE, SINCE YOU CANT COME BACK TO DONNING AREA TO WEAR PERSONAL SHOES AFTER DOFFING.**
6. Put on the **full body Hazmat suit** and make sure that the inner gloves are tucked under the sleeves of the suit. While zipping, do not take zip all the way to the top- leave 1-2 inch unzipped, so that your hand does not touch your skin accidentally while unzipping during doffing. The observer can assist with wearing the suit. Place a strip of micro-pore circumferentially to tape the end of the Hazmat suit sleeve to the glove, taking care to fold the end of the micropore strip on itself, to make it easy to remove during doffing.
7. The next step is different depending on whether you are wearing leg-covers or gumboots.
 - a. If wearing **leg covers**: Sit on the chair and put on the **leg covers** and pull them up to your mid-calf. Tie the laces, ensuring they are easy to remove shoelace knots. Ensure your hand does not touch the floor accidentally while wearing the leg covers.
 - b. If wearing **gumboots**: Sit on the chair and put on the gumboots. Ensure your hand does not touch the floor accidentally while wearing the gumboots. Tuck the Hazmat suit into your gumboots.
8. Perform hand hygiene with alcohol-based hand rub, as there is a chance that your hands can touch the floor accidentally.
9. Next, put on **N95 respirator**: Hold the opened mask with straps facing towards face. The front portion of the mask should be in the cupped hand. Put the bottom strap first over head and keep it below ears at back of neck. Top strap goes along the back of the head towards the crown of the head and check to make sure that there's a seal (**Seal check**: Expiring and inspiring against firmly pressed mask over face to assess leak. While inhaling the mask should move with respiration, while exhaling there should not be any air leak).
10. The next step is different depending on whether you are wearing goggles or face shield. If you wear spectacles and wish to continue wearing them, skip wearing the goggles, instead use face shield. If you

wish to remove the spectacles, you can remove it and wear the goggles. Do not wear the goggles over your pair of spectacles.

- a. If you are wearing goggles: Put on the **goggles** over eyes and secure it to the head using headband. The goggles should cover the eyes and snugly fit over the face; the upper part of the N 95 respirator should be covered by the lower part of the goggles. The face shield should cover the front and sides of face, eyes, and should cross the chin.

- b. If you plan to use face shield: there is nothing you need to do now, just go to the next step.

11. Put on the **surgical hood** and pull it down to cover head, hair, neck, ears, forehead.

12. If you had planned to use the face shield, now put on the **face shield**. Adjust the strap to fit your head shape. The face shield should cover the front and sides of face, eyes, and should cross the chin.

If you had already worn your goggles, go to the next step. **Do not wear face shield on top of goggles.**

13. Put on the **disposable long sleeve sterile non permeable surgical gown** on top of the full body suit. Ensure the wrist band of the gown entirely covers and extends beyond the sleeves of the suit. The last item to be put on is the **second pair of gloves (outer gloves)** and make sure that the cuffs of the outer gloves are covering the sleeves of the second gown and staying tight.

14. Now HCW will turn around so that observer can inspect and go through range-of-motion assessment, to make sure that HCW can move freely and comfortably. The observer is also going to make sure that all areas of the body are covered and there are no holes or tears.

15. Now, before going to see a patient, HCW will disinfect his gloves with alcohol hand rub.

Note: One can put simple medical/surgical mask over and above N95 respirator.

Doffing

5-C Covid Unit

Doffing (Removing the PPE) area checklist:

- Trained observer/ Buddy
- Separate room (different from donning area)
- Full length mirror
- Wash basin (sensor tap or elbowaction tap with automatic soap dispenser)
- Two chairs (Dirty chair and clean chair)
- Elbow action hand sanitizer (Separate alcohol based hand rub in clean and contaminated area)
- OT slippers (meant only for those wearing gumboots)

- A red line separating contaminated and clean areas
- Yellow BMW bags
- Yellow containers with lids to hold BMW bags
- Autoclavable BMW bags to hold Hazmat suits, Hoods, leg covers, Tyvek suits
- Container, with lid, to hold the autoclavable bags
- Container with 1% sodium hypochlorite solution to hold perforated laundry bags
- Container with 1% sodium hypochlorite solution for gumboots
- Large plastic bags for the goggles and face shields
- Container with lid, to hold plastic bags for goggles and face shields
- Perforated plastic bags for laundry
- Intact plastic bags for laundry
- Plastic ties.
- Negative suction/ Exhaust Fan
- Table outside the doffing area with open paper bags standing on the table

Ceiling fan should be switched off

Outside doffing area checklist

Immediately outside the doffing area, the following items will be available:

- a table
- several open paper bags standing on the table
- a stapler tethered to the table
- alcohol swabs
- surgical masks

5-D shower area check-list

- Yellow BMW bags for the last surgical mask
- Yellow containers with lids to hold BMW bags
- Container with 1% sodium hypochlorite solution to hold perforated laundry bags
- Perforated plastic bags for laundry
- Intact plastic bags for laundry
- Plastic ties.
- Container with 1% sodium hypochlorite solution for OT slippers

PPE Doffing steps:

The PPE are potential source of infection to HCWs. Doffing is equally or more important than donning as **it is a high-risk activity** and to be done at the designated area with enough time (Don't rush for the doffing).

1. **Ensure presence of trainer/buddy.** The trained observer needs to wear full body gown, surgical mask, face shield, gloves, and shoe cover. The trained observer will help and guide HCW in safely doffing of the PPE step by step and discard it in appropriate biomedical waste bin. The trained observer will stand at a distance of 2 meters from the HCW.
2. **Switch on the exhaust fan and switch off ceiling fan/s** (including ceiling fans of adjacent rooms).
3. Before entering Doffing room from patient area, the HCW must be observed by the trained observer. HCW **first turns** around, and observer visually **inspects PPE** to see if it has visible contamination, cuts, or tears. And while doing this, observer should be in the doffing room at a safe distance (2 meters) from him/her. If alright, shouts "Everything looks fine". If there are any obvious signs of contamination, the HCW self disinfects with disinfectant.
4. HCW performs **hand hygiene for disinfecting using** alcohol-based hand rub.
5. Remove **outer glove using "Glove in Glove" technique**. Peel off the outer glove of one hand touching only outer surface by thumb and index finger and keep the removed glove in the other hand. Now remove the second outer glove inserting one or two fingers inside it (not touching outer part) and discard both outer gloves in the **designated yellow BMW bag that will go for microwave/incineration**.
6. **Inspect inner gloves for any tear. If no tear is present perform hand hygiene using** alcohol-based hand rub. If a tear is identified, remove the inner gloves following same steps as removing the outer gloves and wear a new pair of gloves before proceeding to next step. Notice that HCW must perform hand hygiene after each step of removing PPE)
7. **Remove and discard outer disposable surgical gown:** after untying the knot (observer can also untie if knot is on back), pull the gown forward and away from the body to remove it from the top and roll from inside out and put in **yellow BMW bag that will go for microwave/incineration**. HCW performs **hand hygiene using** alcohol-based hand rub.
8. This step differs between those who are wearing a face shield versus goggles.
 - a. If wearing face shield: Remove **face shield** by bending forward. Avoid touching front surface of the face shield while removing. Hold it at the interface between the visor and the rear strap from

both sides. pull it over your head taking care that it falls away from your face. Put it in the plain **plastic bag that will go for ETO sterilisation.**

- b. If wearing goggles: do not touch the goggles at this stage. They will be removed later. Proceed to next step.
9. Perform **hand hygiene** using alcohol-based hand rub.
10. Remove **surgical hood**: Lean forward and grab top of the hood using one hand only and pull it forward over your head gently and gently place it in **autoclavable BMW bags.**
11. Perform **hand hygiene** using alcohol-based hand rub.
12. **The protocol at this point differs** for HCWs wearing a **leg cover Vs those wearing a gum boot.** HCWs wearing the leg cover will remove it before removing the Hazmat suit. Those wearing gum boot will remove the Hazmat suit first, followed by the boot. (Reason: Since HCWs wearing the gum boot will have to stand nearly barefooted (with only their socks covering their feet) if they are removed in the dirty area, we suggest removing the gum boot at a later stage.)
 - a. **If you are wearing leg covers:** Now, sit down on the **Dirty chair** and carefully remove the **leg covers** touching only the inner aspect, and not touching its external surface or floor and fold or roll it in a bundle and put it in **autoclavable BMW bags.**
 - b. **If you are wearing a Gum boot: do not remove it at this point. It shall be removed after removing the Hazmat suit; Proceed with the next step.**
13. Perform **hand hygiene** using alcohol-based hand rub.
14. Remove **full body Hazmat suit**: Unlock the buttons if any. If you are wearing a gum boot, you will have to pull the leg sleeves out of the gum boot first. Now, trace the zipper from bottom up using one finger, hold and pull it down using two fingers only to unzip completely (Preferably using mirror so that you will not touch your skin in neck area). You can take help of an assistant to remove it off your shoulders. Pull gown away from the neck and shoulders taking care that you touch only the inside of the shoulders. Remove the gown from inside out in the order of top body → the sleeves → hips → legs. Once your shoulders are free, remove it yourself if an assistant was helping you earlier. Avoid sitting on the chair; do it only when you feel you cannot remove the Hazmat suit safely without risking a fall. Pick the suit from the floor and put it in the **autoclavable BMW bags.**
15. You will sit on the Clean chair now. Make sure both your feet still remain in the **Dirty area.** The next step differs for HCWs who were wearing a **leg cover Vs** those who are wearing a **gum boot.**
 - a. **If you were wearing leg covers:** With your feet still in the **Dirty area,** carefully remove the **shoe covers one at a time, taking care that one leg does not touches the another leg while removing**

the shoe cover. Remove it while touching **outer surface** only, while leaving the covers outside the RED line and placing your feet with personal shoes inside the RED line. Place the shoe covers in the **yellow BMW bag that will go for microwave/incineration.**

- b. **If you are wearing a Gum boot:** you will have to remove it now. **Sit on the Clean chair but ensure your feet (with the gum boot on them) are still in the Dirty area. Before removing the gum boot, disinfect it with the disinfectant solution and swabs provided and place them in the yellow BMW bag that will go for microwave/incineration.**

16. As you remove them (shoe cover/gum boot), make sure you place your feet in the clean area. For those who have just removed their gum boot, you will find that your shoe covers still remain over your socked feet. You will now remove them in the clean area and put them in the **yellow BMW bags that will go for microwave/incineration.** (It may happen that the shoe cover gets stuck inside the gum boot when you attempt to remove the boot. In that case, pull out the shoe covers and throw them in the **yellow BMW bags that will go for microwave/incineration**)
17. Those who removed their gum boots and shoe cover in the previous step, should immediately **wear a pair of OT slippers** kept in doffing area.
18. Perform **hand hygiene** using alcohol-based hand rub.
19. Remove the **surgical cap** and discard in the biomedical disposable waste container.
20. Perform **hand hygiene** using alcohol-based handrub.
21. Remove the goggles and place them in the **large plastic bag that will go for ETO sterilisation.**
22. Perform **hand hygiene** using alcohol-based hand rub.
23. Remove the **inner gloves** as before, using 'glove in glove' technique (**Beware! don't touch your face now**). Place the gloves in the **yellow BMW bags that will go for microwave/incineration.**
24. Perform **hand hygiene** on bare hands using alcohol-based hand rub.
25. Wear a **new pair of gloves** (surgical glove / non-sterile latex glove)
26. Walk to the outside of the doffing area. HCWs who had worn leg covers would be walking out with their personal shoes on.
27. Remove **N95 respirator** (**The N95 respirator** shall be removed just outside the doffing area to minimize exposure to aerosols inside the doffing area) – Ensure that you don't touch the front exposed surface of the mask. Remove it by leaning forward, keep face down, grasp first bottom strap and pull it off your head. Then grasp the top strap and pull it off your head in a slow and steady pace (to not generate aerosols) without touching the outer surface of mask. Ensure that mask stays away from your body at all times. Drop the N95 respirator carefully inside the **open paper bag** standing on the table.

28. Perform **hand hygiene** using alcohol-based hand rub. (alcohol hand rub from another bottle from uncontaminated area poured by the observer)
29. **Fold the opening of the paper bag** on itself and apply 3 staples to seal the paper bag. Use the stapler attached to the table.
30. Perform **hand hygiene and drop** the paper bag in a **designated bin for used N95 masks**
31. **Swab the stapler** with an alcohol swab.
32. **Disinfect your shoes or OT slippers**, taking care that you don't have contact with body parts. It is very important to disinfect the **soles** of the shoes/slippers as well. Use gauze soaked in 70% isopropyl alcohol.
- 33. Remove the final pair of gloves** as before using 'glove in glove' technique. Discard it in the **yellow BMW bag that will go for microwave/incineration**.
34. Perform **hand hygiene** using alcohol-based hand rub which is given by the observer
35. Final **inspection on surgical scrubs** (front and back) to see if there are any visible contamination, cuts, or tears is to be done by the observer.
36. Wear a surgical/medical mask.
37. Exit the doffing area after instructing the proper disposal of the biomedical waste generated.

Changing room/shower in 5-D

1. Go to 5D, collect your personal clothes and personal items from the locker.
2. Leave the key hanging on the locker as it will be required by the next person
3. Those who were wearing gumboots and have now walk to 5D in the OT slippers, can collect their personal shoes.
4. Discard surgical masks in a **yellow BMW bag that will go for microwave/incineration**
5. Enter the shower room in 5D, take a shower with soap and water and change into personal clothes.
6. Gently place the **used surgical scrubs** in a **perforated plastic bag held in a container with 1% sodium hypochlorite**.
7. Gently place the OT slippers in a **tub containing 1% hypochlorite**
8. Leave the premises of level V, APC

DISINFECTION OF CONTAMINATED ITEMS

Item-wise procedure for disinfection

Equipments	Sterilization methods	Procedure
“Disposable” bio-medical wastes (BMWs)		
Disposable inner/outer pair of gloves, outer disposable surgical gowns, surgical caps, shoe covers	Incineration	<ul style="list-style-type: none"> • Discard in a designated yellow colored BMWs collection bag kept in yellow containers. • Tie the bag • Put it inside another yellow colored bag to make it double-layered (labelled as “COVID-19 waste”). • Send for microwave disinfection (Optimaser, 65 L bin). Cycle time 50-60 min. • Send for incineration.
“Reusable” bio-medical wastes (BMWs)		
Surgical scrub/ reusable gowns, other linens	1% Na hypochlorite disinfection followed by laundry	<ul style="list-style-type: none"> • While doffing (or after use) place gently in perforated laundry bags that are held in designated BMWs containers containing 1% sodium hypochlorite solution • Tie the bag • Keep perforated bag in 1% hypochlorite for 10 min at least. • Lift perforated laundry bag, drain out hypochlorite and then transferred into non-perforated bag • Send for laundry
Hazmat suits including hoods and leg covers (light blue colored)	Autoclaving	<ul style="list-style-type: none"> • Place gently in autoclavable BMWs collection bag kept in closed container. These bags will be common for Tyvek suits. • Keep container shut.

		<ul style="list-style-type: none"> • Do not tie the bag • Put it inside another autoclavable bag to make it double-layered • Followed by wrapping with inner (white colored) and outer (yellow colored) draw sheets • Send to CSSD for autocalving
Tyvek suits including hoods (white colored)	Gas plasma sterilization	<ul style="list-style-type: none"> • Place gently in autoclavable BMWs collection bag kept in closed container. These are the same ones as for Hazmat suits. • Keep container shut • Do not tie the bag • Put it inside another autoclavable bag to make it double-layered • A fully donned SA/HA will segregate Tyvek suits and put into a separate self-seal TYVEK plastic pouches • Followed by wrapping with inner (white colored) and outer (yellow colored) draw sheets • Send for plasma sterilization in CSSD or any other designated plasma sterilizer
N95 face masks	Gas plasma sterilization	<ul style="list-style-type: none"> • While doffing or removal, gently drop into brown paper bag. • Fold top of paper bag on itself and seal either by stapling (in doffing area) or by cellotape or my medical sticky tape. • Place paper bags in lidded containers. Containers will have date labels. Each container will hold N95 masks of a 24-hr period only (8 am to next 8 am). • On Tuesdays and Thursdays, SA/HA will open the paper bags, transfer the N95 masks into self-seal TYVEK plastic pouches

		<ul style="list-style-type: none"> • Followed by wrapping with inner (white colored) and outer (yellow colored) draw sheets • Send for plasma sterilization in CSSD or any other designated plasma sterilizer
Goggles & Face shields	Ethylene oxide (ETO)	<ul style="list-style-type: none"> • Place gently in any large plastic bag kept in a lidded container. • SA/HA will transfer to an ETO compatible polythene sheet and wrap it. • Then will put in a polythene bag • Followed by wrapping with inner (white colored) and outer (yellow colored) draw sheets • Send for ETO sterilization
Gum boots	1% Na hypochlorite disinfection	<ul style="list-style-type: none"> • Place gently them in a tub containing 1% hypochlorite solution for 10 minutes • Later, SA/HA will wash with water and then air dry.
All other items		<ul style="list-style-type: none"> • Follow standard current protocols • Use any additional bag to make it two-layer

General points for safe handling of contaminated items

1. HCWs are instructed to take utmost care while loading and unloading the BMW to prevent breaks/leaks of containers, and aerosol generation.
2. Designated collection bins are transported in a dedicated trolley/ van with prior intimation to CSSD, Plasma sterilization, ETO facilities and common bio-medical waste treatment facility (CBWTF).
3. After BMWs disposal, disinfect the inner and outer surface of the designated collection bins/containers with 1% sodium hypochlorite solution.
4. In the laundry area, a hot water cycle (70°C for at least 25 minutes) should be done after disinfection.
5. Designated workers in CSSD and other areas should handle **“COVID 19 waste”** with appropriate PPEs.

SAMPLE COLLECTION AND HANDLING

Routine samples

- **The need for sample collection:** If there is an urgent requirement of specific laboratory investigations, then the Clinician should first discuss with designated Nodal officer (Faculty/ Senior Resident) telephonically or through the WhatsApp group.
- **Sample collection:** Sample should be collected in a proper container that should be leak-proof and must be appropriately labeled and secured in a Ziplock pouch with absorbent material such as tissue paper. This secondary container should be handed over to trained Hospital Attendant (HA) who shall be disinfecting the zip lock pouch by wiping with surface disinfectant and shall be carrying the sample in vaccine carrier/ Plastic container to the designated laboratory. (The Secondary zip-lock packs of different sizes would be made available by the Hospital Administration Department). The zip lock should be then kept in a special “Bio Hazard labeled thermacol box” provided in the isolation facility.
- **Test Requisition form:** Test Requisition Form should be sent by WhatsApp group or scanned copy through e-mail so as to minimize the risk of transmission through fomites.
- **Storage of samples:** Designated space should be made available in the respective departments for the storage of samples and inventory to be maintained. Leakage of sample to be informed immediately and the sample should be discarded as Biomedical Waste Management Policy of the Department.
- **Processing of samples:** If the sample is required to be opened then the same should be done in a Certified Biosafety Cabinet by a designated trained laboratory staff member after taking all biosafety precautions i.e. Mask, Gloves, Gowns, Lab coats, Eye protection etc. **N 95 is only recommended in high aerosol generation procedures/ handling with respiratory samples.**
- **Donning and doffing using area:** Should be demarcated in the vicinity of the laboratory along with documentation of training. Big autoclavable bag in dustbin should be there along with thread to tie. This should be sent for autoclaving near to the lab and then for incineration in a yellow bag.
- Designated time and machine and workforce should be identified.
- **Processing of sample(Exclusive Hematology & Biochemistry Lab, APC):** Since Hematology samples do not require any vigorous sample separation or aerosol generation for processing CBC hence the sample will be processed taking Universal precautions as to any other sample. The lab staff shall not Panic if such samples are sent but process them wearing normal gloves and normal surgical mask and the report shall be validated by us through LIS.

- In the case of Biochemistry samples, since serum separation involves aerosol generation during centrifugation, it is recommended that the samples for routine biochemical investigations may be sent in **heparin vacutainers to avoid centrifugation step.**
- The HA carrying the sample will accompany the designated person to Room No. 3322 and will place the sample in a box designated for Coronavirus samples and will leave.
- The lab staff who shall be opening the vacutainer and processing the sample shall wear gloves, N95 mask, gown and eye protection equipment.
- **Reporting of results:** Validated in the HIS system and reports to be routed through nodal officers.

Clustering of tasks:

- All the procedures to be done on a suspected patient need to be planned by the resident prior to entering the isolation area. All those procedures (respiratory sample collection, examination, and blood sampling) will be done bundled together to prevent repeated use of masks and PPE. The time fixed for sample collection is between 9:30 to 10:00 AM.
- The blood samples collected should be placed in Yellow thermocol box and transported to biochemistry and hematology labs and transferred to other Yellow thermocol box stationed in respective lab till analysis.
- The collection, disinfection and transport will be according to SOP laid down for lab samples.

Sending Covid-19 test

- First inform Dr Mini P Singh (7087008173, 9357784144) or Dr Kapil Goyal (8872288864) or Dr Ishani (9435147632), Department of Virology, that you wish to do the test. Earlier there were specific time slots, but with the increase in demand for tests, they can be contacted at any time of the day.
- An HA will be sent by Virology with a Vaccine Transport Medium container. HA will hand over VTM container to the 5C Covid Unit staff and wait outside.
- The resident doctor will obtain the swab sample. Only synthetic fibre swabs with plastic shafts will be used.
- What sample?
 1. Not mechanically ventilated. **Preferred:** combined throat (ie OP swab) and nasal swab, alternate: NP
 2. Mechanically Ventilated: lower respiratory tract aspirate, BAL
- How to collect sample?

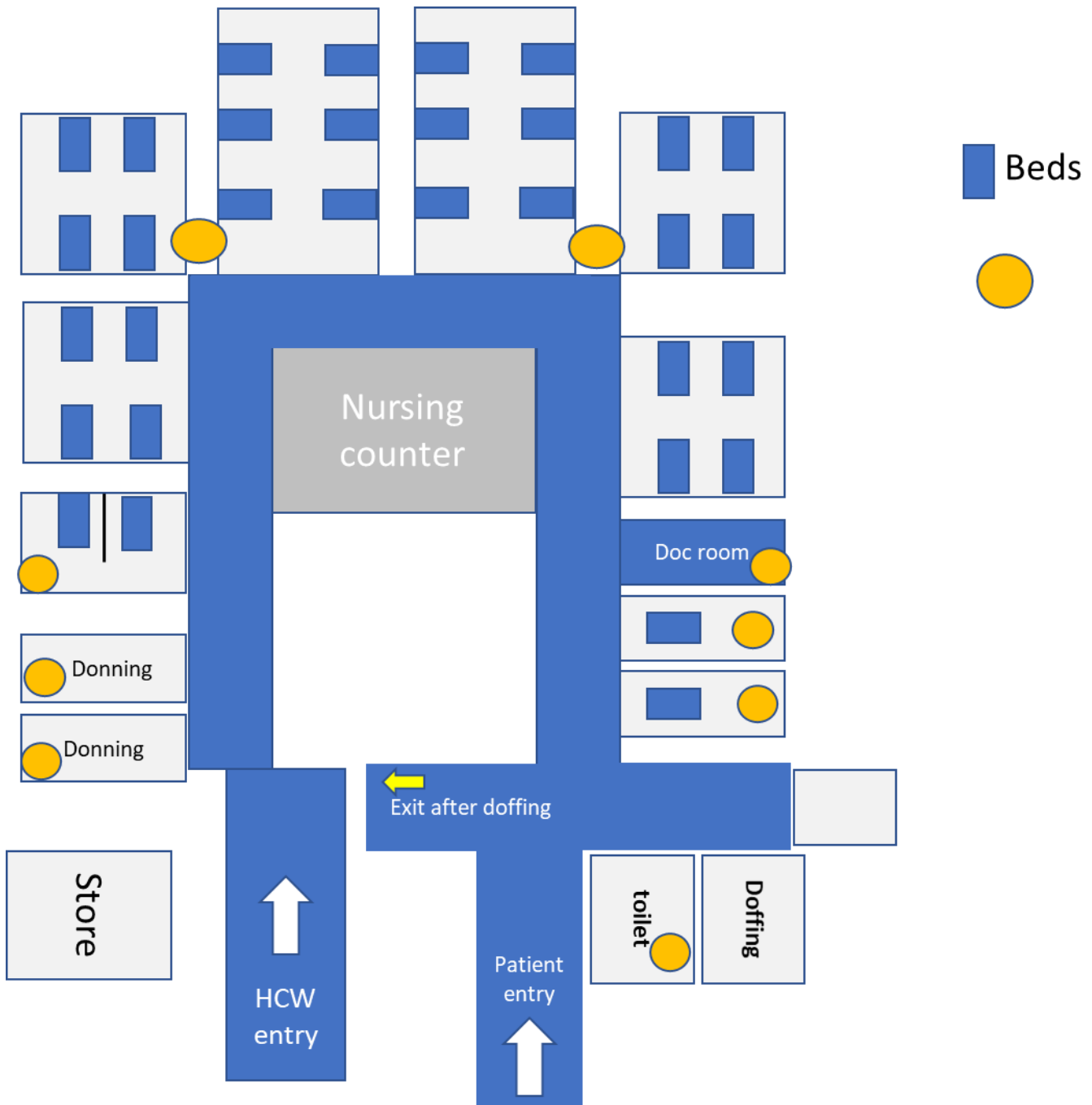
1. Combined throat (ie oropharyngeal) & nasal: Use only synthetic fibre swabs with plastic shafts. **Separate swabs for throat and nose, but same viral transport medium tube.** *For throat:* Tilt head back 70°. Swab both tonsillar pillars & posterior oropharynx. Avoid tongue, and gums. *For nose:* insert swab less than 1 inch until resistance met at turbinates. Rotate several times against nasal wall. Repeat in other nostril. Cut-off applicator tip after inserting in VTM tube.
 2. Nasopharyngeal: Insert swab into nostril parallel to the palate. Swab should reach depth equal to distance from nostril to outer opening of ear. Leave swab in place for several seconds to absorb secretions. Slowly remove swab while rotating it.
- How to store and send?
 1. Place swab immediately in sterile tube containing 2-3 ML viral transport medium.
 2. Transport to virology lab immediately. If transport delayed up to 72 h, store at 2-8°C. Beyond 72 h, store at -80°C.
 3. Screw cap the VTM vial; swab the external surface with alcohol swab; place it in a Ziploc pouch. Swab external surface of Ziploc pouch with alcohol swab.
 - Always keep 1-2 VTM vials in the 5C Covid Unit refrigerator at 4 to 8°C. These may be used beyond office hours, in case it is feared that the patient may not survive the night.

BIOMEDICAL WASTE MANAGEMENT:

- Any discard generated while processing the sample should be autoclaved in the autoclavable bag and then should be discarded as per BMW guidelines of the Institute.
- Liquid waste generated through autoanalyzer's (both Hematology & Biochemistry) is usually automatically subjected to disinfection by appropriate hypochlorite solution/ detergent solution that is run for a specific period after each sample is analysed. However, if this is not the case, the lab shall ensure appropriate disinfection of waste using 1% Sodium hypochlorite for spill management, 0.1% for surface disinfection and any other disinfectant may be used approved for enveloped viruses.
- Also, read section on disinfection of contaminated items

COVID UNIT ORGANIZATION & CONTINGENCY PLAN

Map of Covid Units



Entry and exit

- The 5C Ward has been converted into a dedicated Covid unit with a separate entrance and exit for healthcare workers; and a separate entrance and exit for patients (from the designated lift)
- The entry for healthcare workers leads to two rooms earmarked for donning
- The room earmarked for doffing is located just prior to the exit
- Healthcare workers are expected to have a meal, hydrate themselves and visit the washroom before they enter the Covid Unit, as they will not be allowed to go out of the unit for the next 4-6 hours, once they have donned the PPE suit

Staffing

- There are 2 Covid units
 1. **COVID unit 1: (Suspected)**
Houses all suspected patients including SARI
 2. **COVID unit 2: (proven)**
All positive cases will be managed by this unit.

Functions of each Covid unit

COVID Unit 1

- 15 beds
- Each bed as separate cubicle
- Will function as SCREENING UNIT
- Inflow:
 - Admission from COVID screening OPD
 - Admission from ED respiratory room / isolation
- Objective:
 - To provide isolated beds for suspected COVID patients
 - To ensure all HCW are using appropriate PPE
 - To expedite COVID testing and collection of reports

First line management plan (Room air or Nasal O2, enteral feeding (oral, if needed NG), oral antimicrobials if indicated)

To plan and perform other tests (H1N1, blood tests) as necessary

- Outflow:

- **COVID test positive:**

- Transfer to COVID ICU 2

- **COVID test negative:**

- Mild illness / No O2 requirement / good oral intake:

- 1. Discharge and Home isolation for >72 hours afebrile or 7 days after symptom onset. Report if new increase symptoms / danger signs
 - 2. If high risk (Comorbidities – congenital heart disease, chronic lung disease, severe malnutrition, immunocompromised)* - consider transfer to ICU/ER

- Moderate illness: (Stable on supplemental O2)

- Transfer to 'Respiratory Ward' (Area still not identified, hence area within 5C needs to be used)

- Severe illness: Tachypnoea/moderate retractions / but SpO2 >94% on O2, no worsening

- Transfer to 'Respiratory ward'. Give a PICU call requesting PICU bed

- Need for positive pressure support: Transfer to PICU isolation

COVID Unit 2

- 15 beds
- Only for positive cases
- Will cater to non-sick Covid test positive children
- Inflow:
 - Admission from COVID unit 1 (Positive cases only)
 - Admission from COVID OPD screening / ED respiratory room – not advocated. Only if strong suspicion due to epidemiology and bed not available in COVID unit 1 (must be discussed with consultant)
- Objective:
 - To provide isolated (cohorting) beds for confirmed COVID patients
 - To ensure all HCW are using appropriate PPE
 - First line management plan (Room air or Nasal O2, enteral feeding (oral, if needed NG), oral antimicrobials if indicated)
 - To plan and perform other tests (H1N1, blood tests) as necessary

- Outflow:

Mild illness: Stable on room air → Discharge and Home isolation for >72 hours afebrile or 7 days after symptom onset. Report if worsening symptoms / danger signs

Moderate illness: Tachypnoea/Retractions / but SpO2 >94% on O2 → Transfer to COVID ICU 1

Imminent need for endotracheal intubation → Transfer to COVID ICU 2

Recovered patients: Stable on room air → Discharge and Home isolation for >72 hours afebrile or 7 days after symptom onset. Report if worsening symptoms / danger signs

Record maintenance

Patient files, investigation reports and investigation forms will not be kept inside the Covid Unit area. Provision has been made in one of the private wards rooms in 5C to serve as a record maintenance room. Residents who are on duty, but who are not scheduled to be donned and inside the Covid Units, will maintain the patient's files, write notes, organise investigations, follow up investigation reports, fill forms, and seek consultations. They will be in regular telephonic contact with the resident/nurse working inside the Covid Unit and will maintain records and fill forms accordingly.

Patient's attendants

- A maximum of one parent will be allowed per patient. The parent will be made to sit 2 m away from the child unless direct care from the parent is required.
- The parent will wear a triple layer mask, sterile gown, cap and shoe cover. The parent will be instructed to perform hand hygiene at all the 5 moments of hand hygiene and every two hourly.
- Parents should be allowed inside after they sign an informed consent form (shown after the section on APC emergency):

APC EMERGENCY

- Residents managing the triage of emergency must ask questions related to fever, cough, breathlessness, history of international travel, history of exposure to contact with suspected or proven Covid 19 **IRRESPECTIVE** of the underlying illness or comorbidity with which the patient may have presented. This is

to ensure that any suspect patient who may have been missed by the security guard or the helpdesks will be identified in time.

- One room in APC emergency has been converted into respiratory isolation. Apart from this there is an ED isolation. These are manned by one resident and one nursing officer donned in full PPE.
- All patients who meet the ICM definition of suspected Covid 19 must be shifted to the isolation facilities and emergency care must be provided there. Covid 19 swabs must be sent.
- Patients must be shifted from the emergency to the Covid unit as soon as possible after informing the Covid unit
- A resident doctor/nursing officer from the respiratory isolation must accompany the patient up to the designated Covid lift in 2D. The doctor/nurse must remain in full PPE. Before transport, the path from APC emergency to the designated Covid lift must be completely cleared of people for at least 10 m on either side.
- A resident doctor/nursing officer donned in full PPE must come down from the 5C Covid Unit by the designated Covid lift to 2-D and receive the patient. He/she must accompany the patient upstairs to the Covid unit.

PARENT CONSENT FORM²

Advanced Pediatric Centre

Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh

PARENT CONSENT FORM

During the lockdown in the wake of the current Corona outbreak, I have come to the hospital for the treatment of my child.

I know that my child could be suspected/suffering from COVID19 and it may endanger doctors and hospital staff. It is my responsibility to take appropriate precautions and to follow the Protocols prescribed by them.

I know that I may be suffering/suspected from COVID 19, and I shall take all the precautions and Personal Protective measures as prescribed by the health care team.

I know that by bringing my child to the hospital I may get myself/my family or my child exposed to COVID19 and I shall take all the responsibility for this. I shall not blame the doctors or the hospital if I or my child develops COVID 19 as a result of exposure due to coming to hospital.

I also know that I may get an infection from the hospital or from a doctor, and I will take every precaution to prevent this from happening, but I will Not at all hold doctors and hospital staff accountable if such infection occurs to me or my accompanying persons.

I know that my child needs to be kept in quarantine and I shall minimize all my contact with the child. I shall follow all the hospital rules for isolation. If I cannot follow isolation for my child and inadvertently or knowingly come in contact with him/her, I shall follow quarantine for myself, I shall declare development of any signs or symptoms related to COVID19 to nearest health facility and shall not blame the doctors or the hospital for developing the disease.

Name and Signature of the Patient's Legally Acceptable Representative

Relationship with the patient

Phone No

Address

Name and Signature of the Doctor Administering Consent

Date

Time

² Sent for administrative approval

सहमति फार्म

वर्तमान कोरोना प्रकोप के मद्देनजर लॉकडाउन के दौरान, मैं अपने बच्चे के इलाज के लिए अस्पताल आया हूँ।

मुझे पता है कि मेरे बच्चे को COVID19 से संदेह / रोग हो सकता है और यह डॉक्टरों और अस्पताल के कर्मचारियों को खतरे में डाल सकता है। उचित सावधानी बरतने और उनके द्वारा निर्धारित प्रोटोकॉल का पालन करना मेरी जिम्मेदारी है।

मुझे पता है कि मुझे COVID 19 रोग / संदिग्ध हो सकता है, और मैं स्वास्थ्य देखभाल टीम द्वारा निर्धारित सभी सावधानियों और व्यक्तिगत सुरक्षा उपायों को पालन करूँगा।

मुझे पता है कि अपने बच्चे को अस्पताल लाकर मैं खुद को / अपने परिवार को या मेरे बच्चे को COVID19 के संपर्क में ला सकता हूँ और इसके लिए मैं सारी जिम्मेदारी लूँगा। यदि मैं या मेरा बच्चा अस्पताल में आने के कारण एक्सपोजर के परिणामस्वरूप COVID 19 रोग विकसित करता है, तो मैं डॉक्टरों या अस्पताल को दोष नहीं दूँगा।

मुझे यह भी पता है कि मुझे अस्पताल से या डॉक्टर से संक्रमण हो सकता है, और मैं ऐसा होने से रोकने के लिए हर सावधानी बरतूँगा, लेकिन मैं डॉक्टरों और अस्पताल के कर्मचारियों को जिम्मेदार नहीं ठहराऊँगा।

रोगी की कानूनी रूप से स्वीकार्य प्रतिनिधि का नाम और हस्ताक्षर

रोगी के साथ संबंध

फोन नंबर:

पता

सहमति लेने वाले डॉक्टर का नाम और हस्ताक्षर

दिनांक :

समय

CLINICAL MANAGEMENT OF SEVERE COVID-19 PNEUMONIA

Recognition of Severe Covid-19:

Use standard definition for severe pneumonia – Fever, cough and fast breathing plus at least one of the following: 1. SpO₂ <90%, 2. severe chest indrawing / grunting, 3. altered mental status.

Note that this definition is for the purpose of *managing* severe pneumonia. It is more restrictive than the ICMR definition for *testing* for Covid-19 (fever/cough/breathlessness hospitalized).

Immediate management:

Step 1: Give supplemental oxygen using nasal prongs/face mask targeting SpO₂ ≥ 94%. Attach disposable pulse-oximetry probe. Keep non-rebreathing mask ready. **Don't use nebulizers.** Use MDI if really needed.

Step 2: In case of non-improvement in hypoxia and mental status or worsening respiratory distress, switch oxygen delivery by non-rebreathing mask at 10-15 litres/min (60-95% FiO₂) and promptly call ICU team

Step 3: Give empirical antibiotics for severe pneumonia (Ceftriaxone + Cloxacillin ± Oseltamavir) if not already given. **Azithromycin** is considered in case to case basis (Discuss with ICU consultant).

ICU team: action plan:

Step 1: Take airborne precautions (Complete PPE) – Hazmat suit, Hood, leg covers, Fit tested N95 respirator, full sleeve gown, face shield/goggles, double gloves

Step 2: Assessment for intubation: Clinical + Pulse oximetry + Radiograph

Note: Early intubation is preferred; NIV is discouraged due to high failure rate, risk of aerosol generation and ineffective interface in young children. HFNC / NIV – considered case to case basis with complete airborne precautions (Discuss with ICU consultant)

Step 3: Prepare for intubation and mechanical ventilation – limit to 3 health care providers in the room [1. Airway operator (SR/Consultant), 2. Airway assist (Consultant/SR), 3. Medication nurse] – avoid members >60 yrs or with comorbidities in the team

Endotracheal intubation:

- Experienced person to handle the airway
- Quick visual assessment of airway for any anatomical difficulty

- Preoxygenation with **Non-rebreathing mask (NRM)**
- If NRM is not achieving pre-oxygenation, **use tight fitting face mask attached to Bain's circuit** with 100% oxygen for 5 minutes. Use **hydrophobic viral/bacterial filter** between Bain's circuit and mask. One provider ensures adequate seal of the mask with two hands and second person holds Bain's circuit bag maintaining pressure.
- Avoid manual ventilation. If manual ventilation is required, use gentle assistance with small tidal volume bagging.
- Prepare for rapid sequence intubation. **2nd generation supraglottic airway** as rescue
- Drugs: Fentanyl 3mcg/kg + Midazolam 0.2mg/kg + Vecuronium 0.2 mg/kg
- **Cuffed tubes** must be used to minimize the risk of aerosolization.
- Attach viral filter at the end of ETT and secured it with secure tape (Dynaplast)

Mechanical ventilation:

- Use **disposable ventilator circuit and HME** for humidification
- Keep ventilator circuit attached to the machine and ready. Put the ventilator in stand-by mode. Do not turn on the ventilator until the circuit is connected to the ETT after endotracheal intubation.
- Use bacterial/**viral filter** at the expiratory limb end, **HME filter** at the Y connector and **inline closed suction** with the circuit. If open suction is done, use vecuronium 0.1mg/kg or higher to achieve short neuromuscular paralysis before the procedure.
- Avoid circuit disconnection, attach the filter to endotracheal tube and clamp the ETT if brief disconnection is necessary

Follow ARDS protocol:

- Classify severity (Oxygen saturation index /Oxygenation index)
- Lung protective ventilation – initial settings:
 - Limit tidal volumes to 6-8 ml/kg for good compliance lungs
4-6 ml/kg for poor compliance lungs
 - Limit plateau pressure <30cmH₂O
 - PEEP 7-10 cmH₂O
 - FiO₂ ≤ 60%

If severe ARDS and Refractory hypoxemia:

- PEEP titration 10-15cmH₂O or higher
- Neuromuscular blockade (vecuronium 0.1mg/kg/h infusion if required)

- Proning (AVOIDED unless absolutely necessary – as labour-intensive and risk of disconnection – discuss with ICU consultant and team)

Septic shock:

- Normal saline bolus 10-20ml/kg upto 40ml/Kg. Adrenaline infusion 0.1-0.3mcg/kg/min. Follow unit's standard septic shock management protocol.

Ancillary therapies:

- Conservative fluid therapy (60-70%), avoid FO >5%. Frusemide infusion if needed
- Sedoanalgesia: Midazolam (1-4mcg/kg/min) + Fentanyl (1-4 mcg/kg/hr) ± Vecuronium (0.1mg/kg/h) if significant asynchrony or refractory hypoxoemia.
- Enteral nutrition within 24 hours, achieve full feeds by 48 hours
- Transfusion trigger Hb < 7g/dL if stable oxygenation and hemodynamics. If refractory hypoxemia or unstable shock, target Hb 10g/dL
- **NO STEROIDS** – may prolong viral shedding (except, known asthma or refractory septic shock)
- Avoid nebulization. Use Vibrating mesh nebulizer (VMN) attached inline only if it really offers therapeutic benefit.

Weaning and extubation: Consider if ready for extubating to nasal O2 (avoid post extubation NIV). Extubate to O2 filled plastic head cover/hood. Minimize coughing.

Specific therapy (also see section on Pharmacotherapy in Covid 19 patients):

- Offer parents/caregivers the following options,
- After explaining that these treatments are not of proven benefit and have associated risks. The decision to choose an option may be based on age, assessment of risk and possible drug interactions.
 1. Hydroxychloroquine – 6 mg/kg q 12h on day1 followed by 3 mg/kg q 12h for 4days
 2. Chloroquine (10mg/kg of chloroquine phosphate (base) first dose, 5mg/kg 12 hours later, followed by 5mg/kg q 12h for 5 days)
 3. Lopinavir / Ritonavir in the following doses for upto a duration of 10 days

5-10kg: 15mg/kg/dose (of LPV) OD

10-15 kg: 12 mg/kg/dose OD

15-40 kg: 10 mg/kg/dose OD

>40 kg: 2x 200/50 mg tablet OD

Continuous monitoring and standard care will be provided irrespective of consent.

PHARMACOTHERAPY IN COVID-19 PATIENTS (OPTIONS AVAILABLE)

Must have concurrence of at least 2 consultants

Antimicrobials

Drug class	Drug name	Mechanism	Dose	Stage	Additional points	Evidence
Nucleoside analogue	Ribavirin	Inhibits RNA synthesis & viral replication	IV 8 mg/kg 8 hourly x 14 days	Pneumonia	Side effects Hemolytic anemia, Hypocalcemia, Hypomagnesemia May increase viral load in combination with steroid	In vitro studies SARS data Not recommended
Neuraminidase inhibitor	Oseltamivir	Reduces viral replication	Age based	Pneumonia	If co-infection with influenza suspected	MERS-CoV data
Protease inhibitor	Lopinavir/ Ritonavir	Inhibit CoV main protease required in replication	Low dose:200/100 mg BD High dose: 400/100 mg BD for 6-15 days	Early ARDS		In-vitro studies SARS data (1) Weak recommendation (2)
Adenosine analogue	Remdesivir	Incorporates into viral RNA & leads to premature chain termination	200mg IV on day 1 followed by 100 mg daily x 5-10 days	Pneumonia	Avoid in children, pregnant, renal & hepatic impairment	In vitro studies (3) Case report in US (4) On-going trials
Aminoquinoline	Chloroquine Hydroxychloroquine	Increases endosomal pH & hinder virus cell fusion Inhibits viral binding to ACE-2 Immunomodulatory effect	Adult: CQ 500 mg BD x 10 days HCQ 400 mg BD x 5 days	Pneumonia	Inhibits pneumonia exacerbation Negative conversion Shortens disease	Unpublished data (5) Ongoing phase III trial for prophylaxis & reducing transmission

Immunomodulators

Drug class	Drug name	Mechanism	Dose	Stage	Additional points	Evidence
Immunoglobulin Convalescent plasma	IVIG	Immunomodulator	1-2 g/kg over 2-5 days	Critical stage	After all therapies failed	Critically ill SARS (8)
Immunomodulator & antiviral	Interferon- α	Reduces viral load	Nebulization of 200,000 – 400,000 IU/kg (2–4 μ g/kg) in 2mL sterile water BD for 5–7 days	Early phase of URTI Pneumonia		Weak recommendation (9)
	Interferon- α 2b spray	Reduces viral load	1–2 sprays (8000 IU/spray) on each side of the nasal cavity, 8–10 sprays on the oropharynx, once every 1–2 hours for 5– 7 days	Close contacts URTI		

HOSPITALIZED PATIENTS IN SPECIALITY UNITS, BARRING NEONATOLOGY

Case definition:

Suspected Case of COVID-19 in a speciality unit:

The treating physician should use his/her discretion to suspect COVID 19 in their follow up cohort or admitted patients and test accordingly but should be guided by the

- Standard ICMR definition of a suspect case of Covid 19
- Specific condition that the particular patient has

Handling suspect Covid patient

Isolation and PPE for HCW

- If a patient is already admitted in the ward, isolate these patients in either Isolation rooms/Private rooms in the respective floors. If the isolation room is occupied by another patient, the administration may be requested for permission to utilize the private rooms as general isolation rooms in the extraordinary circumstances.
- Mask must be provided to the patient and accompanying parent/guardian(s).
- The primary speciality unit team (JR, SR, and faculty) will take care. The team to use mask, gloves and gown. Bundling of care and judicious use of investigations is recommended to optimise the use of PPE.

Testing and shifting

- COVID Unit I (Consultant/SR) should be informed, when the speciality unit consultant decides to send any COVID19 sample for testing. This will ensure that the COVID unit team is aware and informed.
- See method for testing in section on Testing for Covid 19.
- **If the patient turns out to be COVID 19 positive:** Shift to appropriate COVID Unit.
- **If the patient turns out to be COVID 19 negative:** Shift back to respiratory isolation.

PRACTICES FOR ENVIRONMENTAL CLEANING IN HEALTHCARE FACILITIES³

Environmental cleaning is part of Standard Precautions, which should be applied to all patients in all healthcare facilities. Ensure that cleaning and disinfection procedures are followed consistently and correctly.

Cleaning environmental surfaces with water and detergent and applying commonly used hospital disinfectants (such as sodium hypochlorite) is an effective and sufficient procedure. (Reference: Health Organization. (2019). Infection Prevention and Control during Health Care when Novel Coronavirus (nCoV) Infection is Suspected. WHO/2019-nCoV/IPC/v2020.1)

Cleaning agents and disinfectants

1. 1% sodium hypochlorite can be used as a disinfectant for cleaning and disinfection
2. The solution should be prepared fresh.
3. Leaving the solution for a contact time of at least 10 minutes is recommended.
4. Alcohol (e.g. isopropyl 70% or ethyl alcohol 70%) can be used to wipe down surfaces where the use of bleach is not suitable, e.g. metals.

Personal Protective Equipment

PPE to wear while carrying out cleaning and disinfection works

1. Wear heavy duty/disposable gloves, disposable long-sleeved gowns, eye goggles or a face shield, and a medical mask (please see the PPE document for details)
2. Avoid touching the nose and mouth (goggles may help as they will prevent hands from touching eyes)
3. Disposable gloves should be removed and discarded if they become soiled or damaged, and a new pair worn
4. All other disposable PPE should be removed and discarded after cleaning activities are completed. Eye goggles, if used, should be disinfected after each use, according to the manufacturer's instructions.

1. ³ Best Practices for Environmental Cleaning in Healthcare Facilities in Resource-Limited Settings. CDC. November, 2019

5. Hands should be washed with soap and water/alcohol-based hand rub immediately after each piece of PPE is removed, following completion of cleaning.

Cleaning guidelines

1. Where possible, seal off areas where the confirmed case has visited, before carrying out cleaning and disinfection of the contaminated environmental surfaces. This is to prevent unsuspecting persons from being exposed to those surfaces
2. When cleaning areas where a confirmed case has been, cleaning staff should be attired in suitable PPE. Disposable gloves should be removed and discarded if they become soiled or damaged, and a new pair worn. All other disposable PPE should be removed and discarded, after cleaning activities are completed. Goggles, if used, should be disinfected after each use, according to manufacturer's instructions. Hands should be washed with soap and water immediately after the PPE is removed.
3. Mop floor with routinely available disinfectant.
4. Wipe all frequently touched areas (e.g. lift buttons, hand rails, doorknobs, arm rests, tables, air/ light controls, keyboards, switches, etc.) and toilet surfaces with chemical disinfectants and allow to air dry. 1% sodium hypochlorite solution can be used. Alcohol can be used for surfaces, where the use of bleach is not suitable.
5. Clean toilets, including the toilet bowl and accessible surfaces in the toilet with disinfectant or 1% sodium hypochlorite solution.
6. Wipe down all accessible surfaces of walls as well as blinds with disinfectant or bleach solution.
7. Remove curtains/ fabrics/ quilts for washing, preferably using the hot water cycle. For hot-water laundry cycles, wash with detergent or disinfectant in water at 70°C for at least 25 minutes.
8. Discard cleaning items made of cloth and absorbent materials, e.g. mop head and wiping cloths, into biohazard bags after cleaning and disinfecting each area. Wear a new pair of gloves and fasten the double-bagged biohazard bag with a cable tie.
9. Disinfect buckets by soaking in disinfectant or bleach solution, or rinse in hot water before filling.
10. Disinfectant or 1% sodium hypochlorite solution should be applied to surfaces using a damp cloth. They should not be applied to surfaces using a spray pack, as coverage is uncertain and spraying may promote the production of aerosols. The creation of aerosols caused by splashing liquid during cleaning should be avoided. A steady sweeping motion should be used when cleaning either floors or horizontal surfaces, to prevent the creation of aerosols or splashing. Cleaning methods that might aerosolize infectious material, such as the use of compressed air, must not be used.

11. Biohazard bags should be properly disposed-off, upon completion of the disinfection work.

Frequency of cleaning of surfaces:

1. **High touch surfaces:** Disinfection of high touch surfaces like (door handles and knobs, telephone, bedrails, ventilator knobs, drip stands, nursing counters, medicine trolleys, stair rails, light switches, wall areas around the toilet) should be done every 3-4 hours.
2. **Low-touch surfaces:** For low-touch surfaces (walls, mirrors, etc.) mopping should be done at least once daily.

Precautions to take after completing the clean-up and disinfection

1. Staff should wash their hands with soap and water immediately after removing the PPE, and when cleaning and disinfection work is completed.
2. Discard all used PPE in a double-bagged biohazard bag, which should then be securely sealed and labelled.
3. The staff should be aware of the symptoms and should report to APC-nodal officer if they develop symptoms.

Mobile phone use and disinfection

- Do not take phone inside the isolation rooms.
- Operate mobile phone only in duty room.
- While working, use mobile phones only when required.
- Avoid repeated use of mobile phone.
- Avoid using other person's mobile phone especially if he/she is having URI like symptoms.
- Perform hand hygiene frequently (as indicated) and follow respiratory hygiene and etiquettes.
- Perform hand hygiene before and after using mobile phone.
- Do not bring mobile phones in contact with mask and PPEs.
- Sanitize the mobile phone if the mobile phone is taken inside isolation and contact occurred, before entering the ward, and before leaving the ward.
- Clean mobile phones within one minute of suspected contact.
- Clean mobile phone with 60-70% isopropyl alcohol wipes.
- Use the hand sanitizer (alcohol-based hand rubs) available in ward as it contains 70% alcohol.
- Use a wipe or sterile gauze piece smeared with hand sanitizer.
- Clean the surfaces of mobile phone and crevices for 1 minute.

- If mobile phone is in case/mobile cover, clean cover with mobile phone.
- Make sure to perform hand hygiene before and after sanitization of mobile phone.
- Do not dip mobile phone in steriliser or soap solution or spray hand sanitizer over it.

DEATH

- Exercise all universal precautions while handling a dead body
- Inform nodal officer
- Outer surface of the body bag and trolley carrying the body will be decontaminated before leaving the isolation ward
- Do not wash the body
- Minimal manipulation of the body
- All the orifices should be plugged to prevent leakage
- Any cut or wound marks if any should be washed with 1% hypochlorite and firmly covered with gauze, cotton or leucoplast.
- **Body bag will be used for transferring body**, packing should be done using full PPE and N-95 Masks. Plastic bag carrying the body should not be less than 150 micron
- **Do not open or unzip the body bag**
- Do not embalm the body
- Opening bag and touching of body is not allowed
- **Wash hands immediately with liquid soap and water if accidentally have contact with blood or body fluids from the dead body**

Cremation

- Body must be cremated at Sec 25 Crematorium irrespective of religious affiliation
- Time to be fixed after informing Medical Officer Health of MC Chandigarh Dr Amrit Pal Singh: 8712900002
- Body to be sent along with patient's attendant/s (Limit the number to 1 or 2)
- Body will be handed over to Police at Crematorium
- Cremation will be done by MC staff

HEALTH CARE WORKERS

Symptomatic HCW

- As per the ICMR guidelines, all symptomatic healthcare workers must be tested for Covid. However, in PGIMER, the advice by PGI Covid Team has been for HCW is to self quarantine at home for 48-72 hours and get the Covid test done only if symptoms, including fever more than 38.5°C, persists beyond 72 hours

Asymptomatic exposed HCW

- HCWs who come in contact with a Covid positive case without donning PPE must be quarantined for a period of 14 days. During this period, the HCW must monitor his/her own temperature keep a watch on symptoms suggestive of a viral infection.
- HCWs who come into contact with another asymptomatic HCW who has been in contact with a Covid positive patient, does not need to do anything.

Hydroxy chloroquine prophylaxis for APC HCW

Offered to Frontline workers at risk of contact with COVID suspected / confirmed patients

Procedure:

1. Get an ECG at Room No.1003, Advanced Cardiac Centre [Designated technician with precautions]
2. Meet Dr Praveen [8728831787] at Nehru Hospital Extension, Ground Floor Reception area [first room at the right side once you enter the building]
3. Sign in an informed consent
4. Get the first dose – directly observed therapy
5. Subsequent weekly doses and further procedure will be advised

Contact Dr Karthi N, Pediatrics (9814376716) / Dr Ritin, Internal Medicine (9818700713) for any queries.

HOME QUARANTINE GUIDELINES FOR PATIENTS (ENGLISH AND HINDI)

कोरोना वायरस की घर आधारित देखभाल के लिए

दिशानिर्देश

14 दिनों की अवधि के लिए घर पर सीमित होना चाहिए और परिवार में सार्वजनिक और अन्य सदस्यों के साथ निकट संपर्क से बचना चाहिए।

घर की देखभाल के लिए मार्गदर्शक सिद्धांत:

1. बीमारी के बारे में सूचित किया।
2. घर पर रहें, खुद को एक अलग और अच्छी तरह हवादार कमरे में अलग करें परिवार के अन्य सदस्यों से।
3. दूसरों के साथ घनिष्ठ संपर्क से बचें। अपरिहार्य, हमेशा कम से कम दो मीटर की दूरी बनाए रखें।
4. आने जाने वालों से बचें।
5. चेहरा छूने से बचें।
6. हाथ मिलाने से बचें और साबुन और पानी से बार-बार हाथ धोएं। साबुन और पानी की अनुपलब्धता के मामले में, Hand Rub हाथ के घिसने का उपयोग किया जा सकता है।
7. बहुत सारे तरल पदार्थ लें।
8. खांसी शिष्टाचार का पालन करें।

*खांसी या छींकने पर मुंह और नाक को Tissue से ढंकना; यदि आपके ऊपरी बांह या कंधे पर टिश्यू / हैंडशेक उपलब्ध नहीं है, तो खाँसी / छींक नहीं आती है, सीधे हाथों पर खाँसना / छींकना नहीं चाहिए।

* खांसी या छींक आने पर दूसरों से दूर हो जाएं।

*इधर-उधर नाक न ना छींके।

सांस लेने में कठिनाई जैसे लक्षण हैं तो कृपया निकटतम सरकारी स्वास्थ्य सुविधा से संपर्क करें। किसी भी अन्य जानकारी के लिए जिला निगरानी कार्यालय से संपर्क करें। कोरोनावायरस हेल्पडेस्क नंबर -9779558282.

(APC, PGIMER, CHANDIGARH)

Guidelines for Home based care of 2019-nCoV

Novel Corona Virus (2019-nCoV)

Any person(s) suggestive of 2019-nCoV, should be confined at home for a period of 14 days and avoid close contact with public and other members in the family.

Guiding Principles for home care :

1. Be informed about the illness.
2. Stay home, preferably isolate himself / herself in a separate & well-ventilated room. Avoid common areas frequented by other members of the family.
3. Avoid close contact with others. If inevitable, always maintain at-least two metres distance.
4. Avoid having visitors.
5. Avoid frequent touching of face
6. Avoid hand shaking and wash hands frequently with soap and water. In case of non-availability of soap and water, commercially available hand rubs can be used
7. Take plenty of fluids.
8. Follow cough etiquettes -
 - * Cover mouth and nose with a tissue/ handkerchief when coughing or sneezing; In case tissue/handkerchief is not available cough/ sneeze onto your upper arm or shoulder; coughing/ sneezing directly onto hands should not be done.
 - * Turn away from others when coughing or sneezing
 - * Do not spit/blow nose here and there, use a water filled receptacle for collecting sputum, thereby minimizing aerosol generation.

Monitor your health for appearance of symptoms like fever, cough and/or breathing difficulty. If you develop any of these symptoms Please do contact the nearest Government Health Facility.

For any further information Please contact District Surveillance Office.

(Coronavirus- Helpdesk no-9779558282)

(APC, PGIMER, CHANDIGARH)

CHECKLIST FOR COVID-19, HELP DESK AREA, APC

Date	___/___/2020	Time	___ AM/PM
Name		Age/Sex	___ years (Male/Female)
Father's name			
Address	House number: Street/Sector: Tehsil:	District: State: PIN:	

Mobile No (enter at least 2):

Mobile No :

Clinical features:			
Does the child have any of the following symptoms?	Yes	No	Date of onset
Fever			
Cough			
Running nose			
Sore throat			
Shortness of breath			
Diarrhea			
Vomiting			
Pre-existing cardiac, renal, lung disease, diabetes mellitus, immunosuppression			-
Epidemiological features:			
Has the child been in contact with a person suspected/confirmed COVID19 during 14 days prior to onset of symptoms?			
Does the patient have history of foreign travel during 14 days prior to onset of symptoms?			

If history of travel:

History of travel to which nation?	
Dates of travel (from/to)	___/___/2020 to ___/___/2020

Disposal: (Tick appropriate)	Suspected COVID19	Sent home
	Sent for testing	

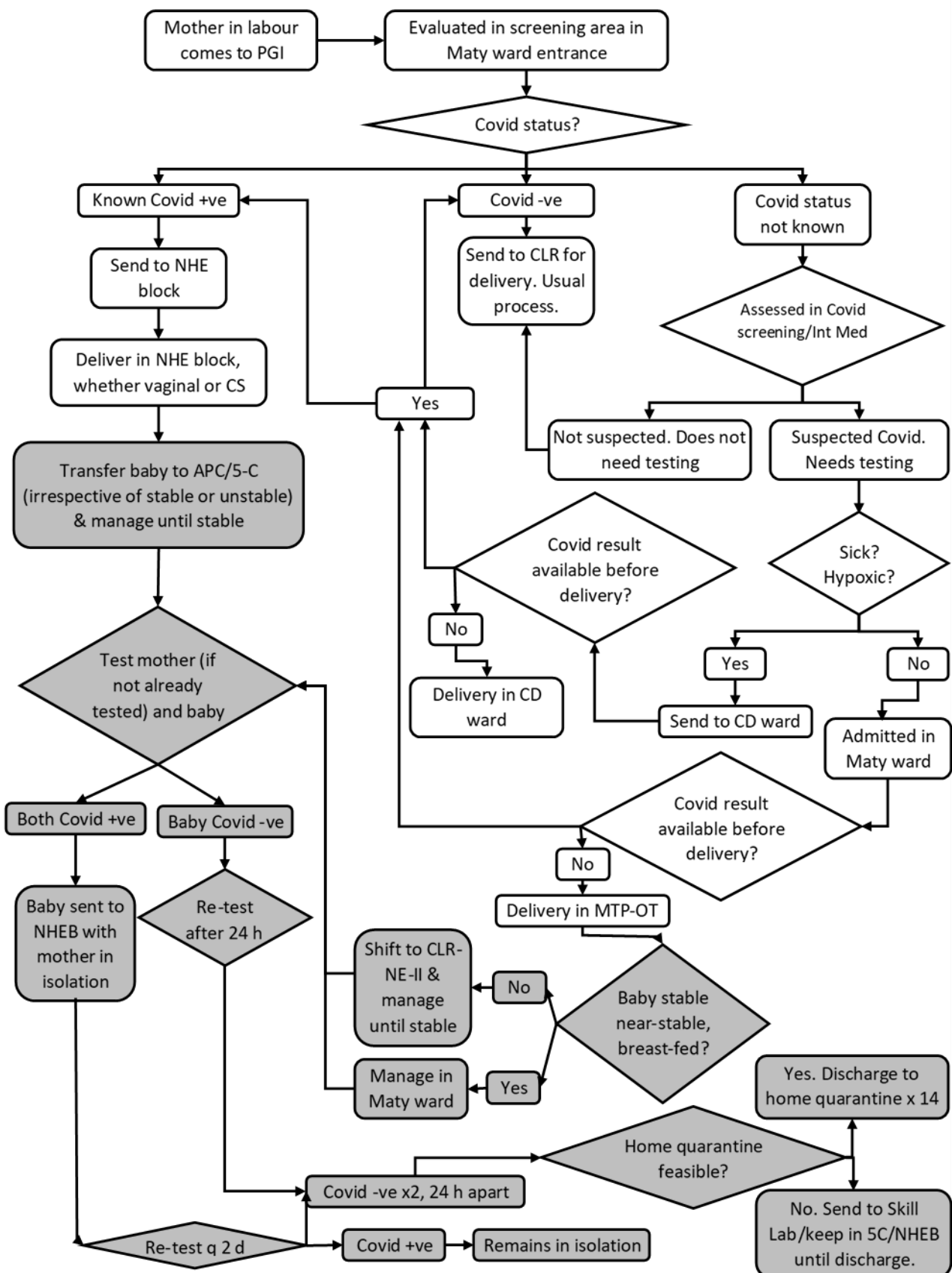
Resident Name: _____

Signature: _____

Nodal Officer: _____

NEWBORN CARE

Overall flow



Delivery room management

Pregnant women with Confirmed or Suspected COVID-19
Case review among care providers (nursing officers, obstetrics, neonatology) to decide on site of delivery as per existing site guideline.
Confirmed/suspected Covid +ve to be delivered in NHEB or MTP-OT

Activities to be done by mother before delivery

1. nurse to ensure mother has performed hand hygiene
2. nurse to ensure that mother wears a triple layer mask

Activities to be done by the neonatology team before delivery

1. Assemble the neonatal Covid team (Covid SR+JR+ PPE-trained nurse from CLR).
2. Inform Covid on-call consultant
3. Must ensure resuscitation trolley at least 2 m away from delivery table
4. Minimum number of personnel to attend delivery as required
5. All must wear PPE (n95 mask, face shield/goggles, gown, gloves, cap, shoe cover)

Resuscitation

1. Delivery nurse should bring the baby to resuscitation trolley
2. Resuscitation as per nrp
3. Keep in mind that aerosol generating medical procedures (agmp) include intubation and extubation, suctioning, cardiopulmonary resuscitation, application of any respiratory supportive therapy
4. Avoid delayed cord clamping
5. Avoid skin to skin contact with the mother

Transport of neonate from place of delivery to destination

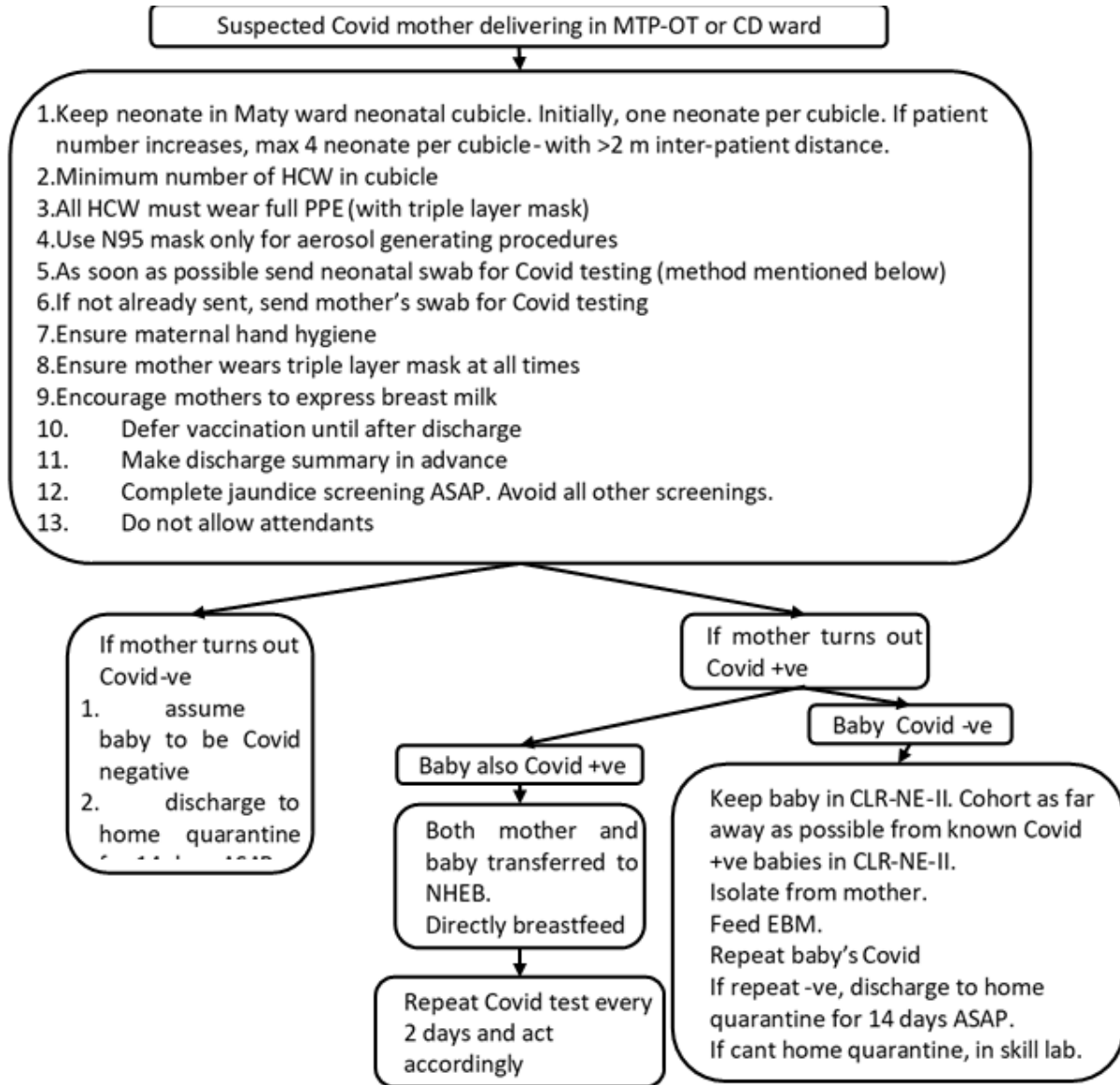
1. Transport incubator must be thoroughly decontaminated before transport
2. Neonates must be transported in closed transport incubator only
3. Sick neonates delivering in CD ward or MTP-OT must be transported through level 3 corridor to CLR-NE-II. Resuscitation residents (not nurse) must doff only outer gown and outer glove and transport neonate to destination. Must clear corridor of people completely before transport. Team must don fresh outer gloves and outer gown when entering CLR-NE-II
4. Non-sick neonates must be transported in closed transport incubator to Maty ward neonatal cubicle. If transported from CD ward, must doff outer gown and glove and follow procedure under #3 above. If transported from MTP-OT to Maty ward neonatal cubicle, no need to doff outer gown and glove.
5. Any relative accompanying the neonate must wear triple layer mask

The same resuscitation team will look after the baby in CLR-NE-II

How to transport neonates born to mothers in CLR, who are Covid -ve or not suspected Covid

1. take the right-hand side lift located just outside CLR entry from F-block
2. if this lift is not working, take the baby through the C block lift
3. go to level I or level II and take the baby across to the lift in front of gastro F-block
4. transport to NICU or NNN as required

Suspected Covid mother, stable baby



Covid testing of neonate

Which neonates:

1. born to mothers with proven/ suspected Covid 19 infection within 14 days prior to delivery or 28 days after delivery
2. symptomatic neonates exposed to close contacts with Covid 19 infection

When? As soon as possible

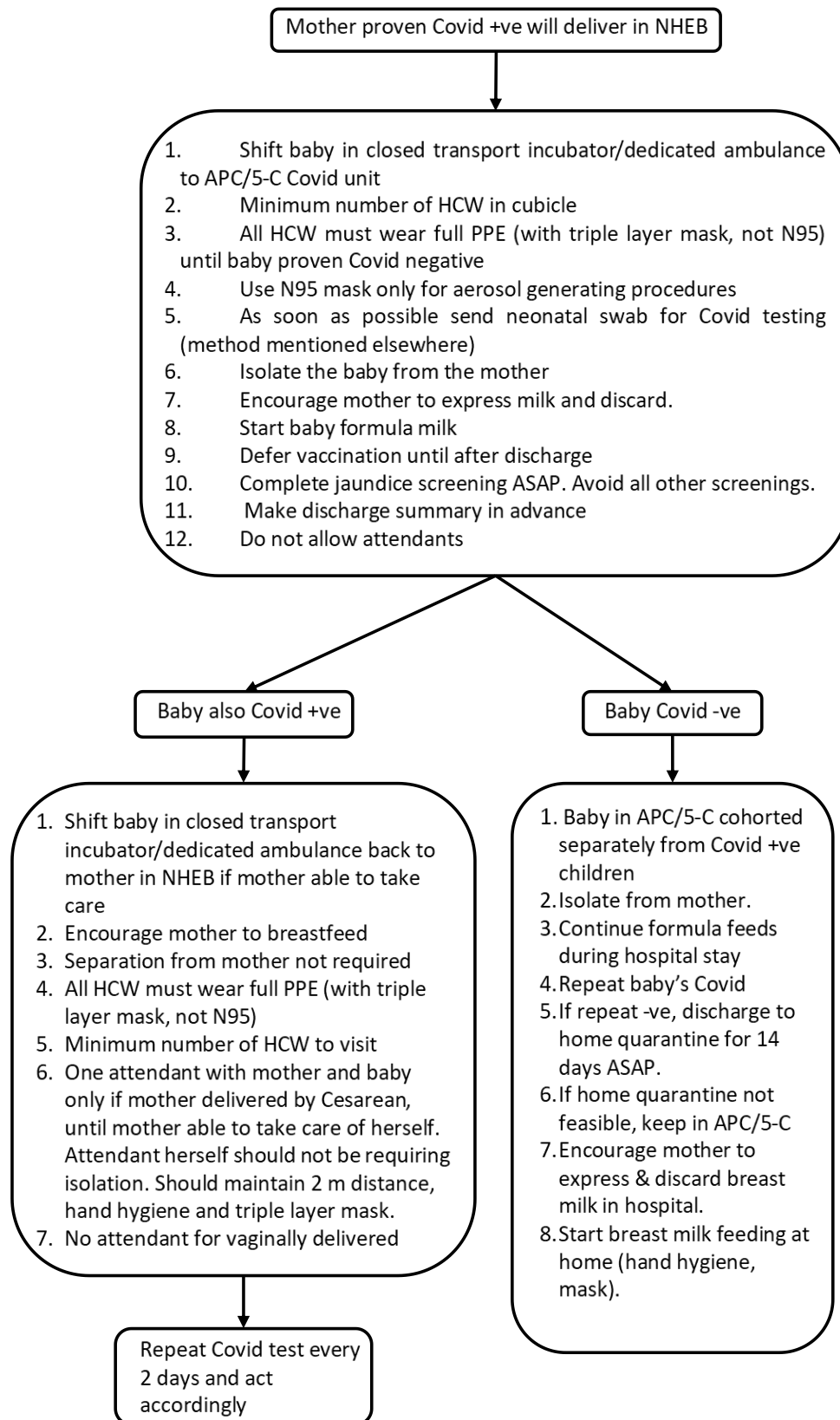
What sample?

1. Not mechanically ventilated. **Preferred:** combined throat (ie OP swab) and nasal swab, alternate: NP
2. Mechanically Ventilated: lower respiratory tract aspirate, BAL

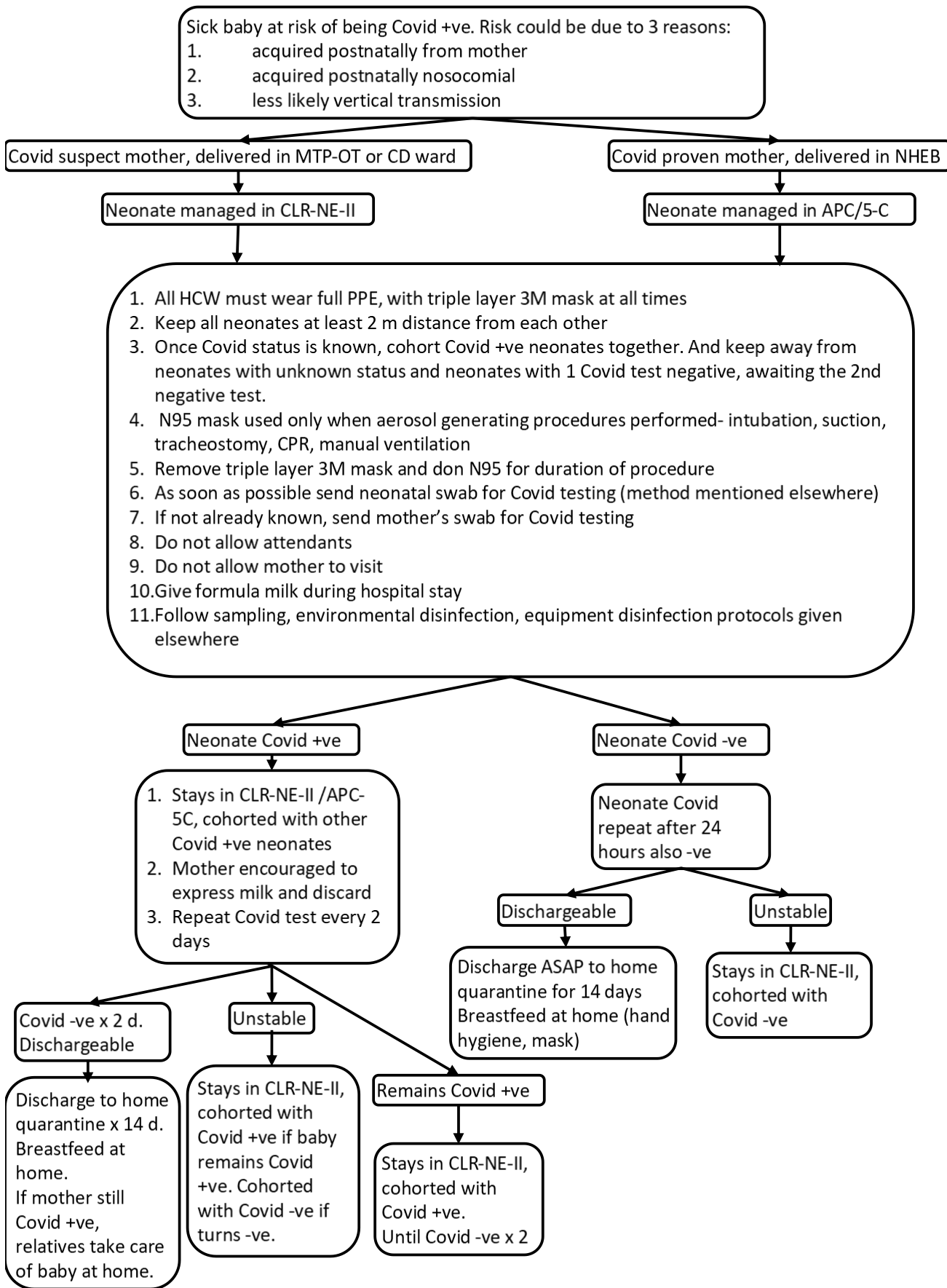
How to collect sample?

1. Combined throat (ie oropharyngeal) & nasal: Use only synthetic fibre swabs with plastic shafts. **Separate swabs for throat and nose, but same viral transport medium tube.** For throat: Tilt head back 70°. Swab both tonsillar pillars & posterior oropharynx. Avoid tongue, and gums. For nose: insert swab less than 1 inch until resistance met at turbinates. Rotate several times against nasal wall. Repeat in other nostril. Cut-off applicator tip after inserting in VTM tube.
2. Nasopharyngeal: Insert swab into nostril parallel to the palate. Swab should reach depth equal to distance from nostril to outer opening of ear. Leave swab in place for several seconds to absorb secretions. Slowly remove swab while rotating it.

Proven Covid +ve mother, stable baby



Proven or suspect mother, sick baby



Neonate presenting to Pediatric Emergency (NUPE)

There are 2 sets of possibilities:

1. Neonate admitted for any condition in NUPE. On history, turns out mother is already Covid +ve.
2. Neonate in NUPE exposed to Covid +ve in hospital environment

1. HCWs immediately don triple layer mask, full sleeve gown, gloves, cap and shoe cover
2. Place neonate inside closed transport incubator or equivalent
3. Inform Covid19 response team/5C Covid Unit/ED isolation/respiratory room for transfer and testing
4. Transfer to ED isolation/respiratory room as soon as possible in closed transport incubator or equivalent
5. Managed by Pediatric team
6. The remaining procedure as per APC emergency guidelines

1. Neonate presents to APC with
 - a. History of exposure (irrespective of symptoms)
Mother had Covid19 infection within 14 d before birth OR
History of contact in postnatal period with persons (mother, family members in same household or direct health care provider) with Covid19 infection
 - b. Irrespective of history of exposure
Presenting to emergency or OPD with pneumonia or severe acute respiratory illness with onset >24 h age that requires hospitalization, provided there is no other underlying illness that explains the respiratory signs and symptoms
2. Neonate tested positive outside and referred to PGI

1. Directly shift from Triage to ED isolation/respiratory room without admitting in NUPE
2. If missed in Triage, shift as soon as detected to ED isolation/respiratory room. Follow guidelines mentioned in the box on left hand side.
3. Managed by Pediatric team
4. The remaining procedure as per APC emergency guidelines

1. Once bed in 5-C arranged, inform the resident in 5C that patient will be shifted soon
2. The resident from 5C will come down to ground floor in the designated lift and stay inside the lift
3. ER respiratory room resident will transport neonate enclosed transport incubator or equivalent up to the designated Covid lift
4. Baby will be taken up by lift to 5C by the 5C resident
5. Neonate will be taken care of in 5C
6. Rest similar to neonatology SOP on "Proven or suspect mother, sick baby"

Management of suspected/ proven Covid pneumonia in the neonate

Apart from the routine management of any pneumonia, kindly take care of the following:

1. If bronchodilators required
 - a. Do not use nebulisers.
 - b. If no alternative available, use MDI through spacer and face mask for spontaneously breathing infants.
 - c. Prefer giving intravenous bronchodilators.
2. Other viral pneumonias
 - a. Simultaneously investigate for H1N1 and other viral markers as they can be close mimics.
 - b. Empirically add oseltamivir to the antimicrobial regimen in all cases of suspected Covid
3. Intubation, mode of ventilation
 - a. NIMV & HFNC must be avoided at all costs
 - b. CPAP is permissible only if it is unavoidable. Try to use as low flow as possible.
 - c. Prefer early intubation
 - d. Use fentanyl 3 micg/kg and midazolam 0.1 mg/kg before all intubations, unless neonate is encephalopathic
 - e. While intubating, have only 3 HCW in the room (person intubating, person assisting, medication nurse). Most experienced person should handle the airway.
 - f. Pre-oxygenate with tightly fitting facemask attached to self-inflating bag with 100% oxygen for 5 minutes
 - g. Use hydrophobic viral/bacterial filter between self-inflating bag and mask.
 - h. Connect to ventilator as soon as possible. Minimise the duration of manual ventilation.
 - i. If manual ventilation required- use minimal tidal volumes
4. Mechanical ventilation
 - a. Use only disposable ventilator circuit and HME for humidification
 - b. Use only inline closed suction with the circuit
 - c. Use bacterial/viral filter with the circuit
 - d. Avoid disconnecting the circuit as far as possible
 - e. If disconnection unavoidable for some reason, attach the bacterial/viral filter to the endotracheal tube
5. Medications: Do not use steroids

PEDIATRIC SURGERY: GUIDING PRINCIPLES

- The goal is to provide timely surgical care to children with emergent and urgent pediatric surgical issues while optimizing patient care resources (e.g. hospital and intensive care unit beds, personal protective equipment, ventilators) and preserving the health of caregivers.
- There is no substitute for sound surgical judgement.
- Surgery should be performed only if delaying the procedure is likely to prolong hospital stay, increase the likelihood of later hospital admission or cause harm to the patient.
- Children who have failed attempts at medical management of a surgical condition should be considered for surgery to decrease the future use of resources (e.g. Feeding jejunostomy).
- Multidisciplinary shared decisions regarding surgical scheduling should be made in the context of available institutional resources that will be variable and rapidly evolving.

Emergency cases - Delay is life threatening

Acute intestinal obstruction

- i. Abnormalities of intestinal rotation
- ii. Incarcerated inguinal hernia
- iii. Pyloromyotomy for hypertrophic pyloric stenosis
- iv. Intussusception reduction not amenable to radiographic reduction
- v. Intestinal perforation
- vi. Intestinal obstruction (Band/Meckel's/others)
- vii. Necrotizing enterocolitis with perforation

Trauma with uncontrolled hemorrhage or penetration

Ischemia

- i. Testicular torsion
- ii. Ovarian torsion
- iii. Limb ischemia from trauma or iatrogenic

Congenital anomalies

- i. Esophageal atresia with tracheoesophageal fistula

- ii. Symptomatic congenital diaphragmatic hernia
 - iii. Intestinal atresia
 - iv. Intestinal diversion for anorectal anomalies
 - v. Intestinal diversion for Hirschsprung disease not improved with irrigations
- A) Appendectomy for acute appendicitis (depending on institutional resources outpatient or short stay should be considered for uncomplicated appendicitis in order to maintain hospital beds; depending on available resources patients with complicated appendicitis should receive parenteral antibiotics and percutaneous drainage if an abscess is present)
 - B) Esophageal or tracheal foreign body ingestion (special note should be made of higher risk of COVID-19 for endoscopic procedures)

Urgent cases - Delays of days to weeks may be detrimental

- A. Most Pediatric cancer surgery
- B. Solid tumors (initial biopsy, resection following neoadjuvant therapy; consideration should be given for continuing chemotherapy in patients who will require postoperative intensive care or ventilation especially with curative intent)
- C. Portoenterostomy for biliary atresia with jaundice
- D. Pyeloplasty/Ureterostomy for solitary kidney
- E. Posterior Urethral valves in solitary kidney
- F. PD Catheter insertion
- G. Abscess incision and drainage
- H. Vascular access device insertion (Consideration should be given to peripherally inserted central catheters)
- I. Repair of symptomatic inguinal hernia
- J. Tracheostomy/Gastrostomy/Feeding Jejunostomy if required for discharge

Elective cases - Delay results in minimal patient risk

- 1. Asymptomatic inguinal hernia
- 2. Anorectal malformation reconstruction following diversion
- 3. Hirschsprung disease reconstruction following diversion

4. Enterostomy closure
5. Branchial cleft cyst/sinus excision/Thyroglossal duct cyst excision
6. Orchiopexy
7. Splenectomy for hematologic disease
8. Cholecystectomy for biliary colic
9. Repair of asymptomatic choledochal cyst

This list is not exhaustive and there may be other rare conditions which need individualized approach

RADIODIAGNOSIS AND IMAGING SOPs

- X-ray of all the suspected/ positive cases of COVID cases of children will be done using a dedicated portable X-ray machine housed in the isolation area near the nursing counter.
- All the requisition forms for the X-ray are to be sent to the technologist in charge (Mr. ML Gupta (9416007966) and Mr. Sushil Battan (9914208419) through WhatsApp only. They will liaison with on call technologist posted for portable X ray. This will ensure that all the requisitions are clustered at one place only. This will be required later for records and audit purpose.
- The duty roster of the technologists-on-call will be regularly sent to the isolation area.
- In order to judiciously use PPEs, try clubbing up of the X-rays of multiple children in one particular call only.
- The technologist will change from personal clothes to surgical scrubs in the 5D area and will proceed to donning room for wearing complete PPE in the APC-5C. In case the technologist is already wearing the surgical scrubs, he/ she will directly proceed to the donning room for wearing complete PPE.
- The technologist will proceed to the isolation ward from the staff entrance and will fill in the entries first in the X-ray machine from the list provided by the resident/ nursing officer on duty in the isolation area.
- After doing the all the X-rays, all the cases will be transferred by the technologist to the workstation which is installed in the isolation area in the nursing counter.
- ***The X-ray machine has been kept plugged adjacent to the nursing counter. It must never be switched off.*** Switching off will delay the recharging of the machine and thereby increase the time spent by the technologist in the isolation area.

- No films will be printed considering the exposure issues.
- X-rays will be stored in the workstation by names of the patients and can be reviewed anytime later by the treating unit.
- The technologist will then proceed to doffing area and doff as per the standard protocols and discard the materials as per the instructions.
- The technologist will then move to 5D area to change back into his/ her personal clothes.
- In case of any issues, please contact Mr. ML Gupta (9416007966)/ Mr. Sushil Battan (9914208419)/ Dr. Anmol Bhatia (9914201986).

TRANSFUSION MEDICINE SOPs

- The communication regarding the blood requisitions for patients with suspected or confirmed COVID-19 to be done by the clinical resident at 7087009480 (Crossmatch section JR/SR on duty). For any concerns/issue the faculty incharge may be contacted: Dr. Lakhvinder Singh (7087003372) and Dr. Sheetal Malhotra (7087008220).
- Crossmatch section JR/SR will ask the clinical resident to email the image/picture of the appropriately filled and signed requisition form at bloodbankpgi@gmail.com to prevent fomite transmission.
- The blood sample should be in an EDTA evacuated tube (3 ml) which is to be sent to the department from the ward in a leak proof zip lock pouch only from the ward by a hospital attendant in a small box or container.
- The blood components would be issued from the Blood Bank only at the time of transfusion requirement.

IMPORTANT WEB LINKS

1. Masks for protection:
https://www.youtube.com/watch?v=Ded_AxFfJoQ
https://www.youtube.com/watch?v=M4olt47pr_o
2. How to protect yourself against COVID-19
<https://www.youtube.com/watch?v=1APwq1df6Mw>
3. How to handwash? With soap and water
<https://www.youtube.com/watch?v=3PmVJQUCm4E>

4. Coronavirus - seven steps to prevent the spread of the virus
https://www.youtube.com/watch?v=8c_UJwLq8PI
5. WHO guide on COVID-19: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>
6. Donning and doffing of PPE as a part of preparedness against SARS CoV-2 in PGIMER, Chandigarh, India:
<https://www.youtube.com/watch?v=QZenRtFqdH4&feature=youtu.be>
<https://youtu.be/oUo5O1JmLH0>
https://youtu.be/kKz_vNGsNhc
7. **National centre for disease control – India (Access the latest government notifications and advisories and readymade signages):** <https://ncdc.gov.in/index4.php?lang=1&level=0&linkid=127&lid=432>
8. **WHO: Coronavirus disease (COVID-19) technical guidance**
<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance>