



Date: 07 July 2020
Document Code: 23-01
Version: 01

Guidelines

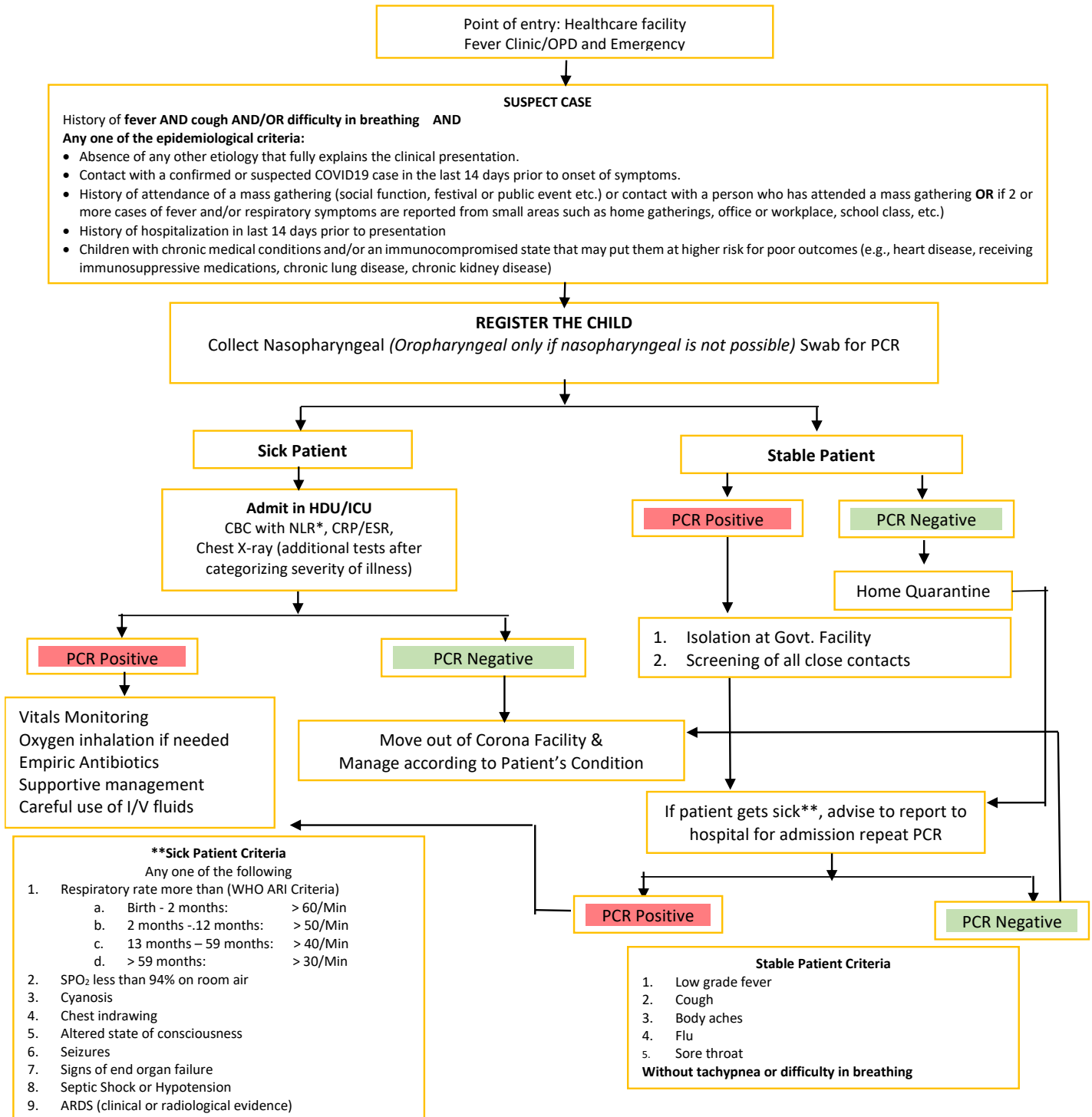
Management of COVID19 in Children

1. Background

Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2). The outbreak started in December 2019 from Wuhan, China, and declared a global health emergency by World Health Organization (WHO) on 30th January 2020¹. Coronaviruses are enveloped, positive single-stranded large RNA viruses that infect humans, but also a wide range of animals. Due to the presence of projections on their surface, which resembles solar corona, the virus was named as Coronavirus (Latin corona=crown). COVID-19 spreads through droplets or contact with an infected person and indirectly by touching contaminated surfaces (fomites). At the time of formulation of this document, there is no evidence of intrauterine transmission². Reported symptoms in children include cold-like symptoms, such as fever, runny nose, and cough. Vomiting and diarrhoea have been reported in 10% of cases³. The understanding of the spectrum of disease is limited in children due to less number of cases and milder nature of the disease as compared to adults⁴. Adults with age of ≥ 60 years having an underlying co-morbid (heart disease, chronic obstructive pulmonary disease, diabetes etc.) are at risk of acquiring the severe disease^{5,6}. According to current estimates, the mean incubation period is 5 days, ranging from 0-24 days with potential of asymptomatic transmission⁷. At this time, there are no specific vaccines or evidence-based treatment for COVID-19, particularly in children. Data has been extrapolated from adults, for use in children in need of treatment. The guidelines have been developed based on what is known about COVID-19 and are subject to change as additional information becomes available.



2. Triage Algorithm for screening children for COVID-19



Go home therapy: Self-isolation, rest and monitor temperature, antipyretics, oral fluids, hand washing, no Steroids and no Ibuprofen

*NLR (Increased Neutrophil: Lymphocytic count ratio, 3.13 cutoff values)

** (Cyanotic congenital heart disease, chronic lung disease, Chronic kidney disease, Chronic liver disease, on immunosuppressive treatment or an immunocompromised state e.g., post-transplant)



Clinical Criteria	Epidemiological Criteria (presence of any one is necessary)
#Fever AND Cough AND/ OR difficulty in breathing	Absence of any other etiology that fully explains the clinical presentation OR
	*Contact with a confirmed or suspected COVID19 case in the last 14 days prior to onset of symptoms OR
	History of attendance of a mass gathering (social function, festival or public event etc.) or contact* with a person who has attended a mass gathering OR if 2 or more cases of fever and/or respiratory symptoms are reported from small areas such as home gatherings, office or workplace, school class, etc.) OR
	History of hospitalization in last 14 days prior to presentation OR
	Children with chronic medical conditions and/or an immunocompromised state that may put them at higher risk for poor outcomes (e.g., heart disease, receiving immunosuppressive medications, chronic lung disease, chronic kidney disease)

**documented or undocumented*

***Contact:** A person living in the same household as a suspected or confirmed COVID-19 case **OR** had direct physical contact with a suspected or confirmed COVID-19 case (e.g. shaking hands) **OR** having unprotected direct contact with infectious secretions of a suspected or confirmed COVID-19 case (e.g. being coughed on, touching used paper tissues with a bare hand) **OR** had face-to-face contact with a suspected or confirmed COVID-19 case within 1 meter and > 15 minutes **OR** who was in a closed environment (e.g. classroom, meeting room, hospital waiting room, etc.) with a suspected or confirmed COVID-19 case for 15 minutes or more and at a distance of less than 1 meter.

3. Case Definitions

Suspect Case	Meets the clinical and any one of the epidemiological criteria but testing unavailable or results awaited
Confirmed case	Laboratory confirmation of COVID-19 infection by RT-PCR, irrespective of clinical signs and symptoms

4. Laboratory Investigations

(Follow strict isolation precautions while taking samples)

- RT-PCR for COVID-19 on a nasopharyngeal specimen (*oropharyngeal only if nasopharyngeal is not possible*) specimen. In ventilated patients, bronchoalveolar lavage or tracheal aspirates are preferred.
- CBC
- ESR/CRP
- Chest X-ray (CT-chest may be considered in ventilated patients depending on clinical condition and availability)
- Electrolytes, BUN, serum creatinine, Liver function tests
- LDH, Lactate, Ferritin in severe illness
- ECG, Cardiac enzymes if clinically indicated
- Blood cultures and any other relevant cultures to rule out secondary bacterial infection

4.1 Prognostic Markers:

Test	Result	Comments
Lymphocytes	Low	Low in 80% of cases
Platelets	Mildly Low	<100 poor prognosis
CRP	High	>125 poor prognosis
Urea/Creatinine	Mildly High	AKI usually mild
CPK	High	Rhabdomyolysis may contribute to renal failure late in disease
AST/ALT	High	5 times normal, transient, no fulminant hepatitis, rise day 14
Ferritin	High	Not always

4.2.1 Procedure for collection of nasopharyngeal swabs:

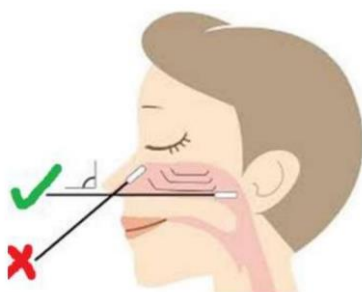
- Can be collected through one or both nares
- A swab is inserted into the nostril and back to the nasopharynx and left in place for a few seconds. It is then slowly withdrawn with a rotating motion. A second swab should be used (where available) for the second nostril. The tip of the swab is put into a vial containing 2–3 ml of virus transport medium and the shaft cut.
- All airborne isolation precautions should be followed while collecting the sample.

4.2.2 Procedure for collection of oropharyngeal swabs:

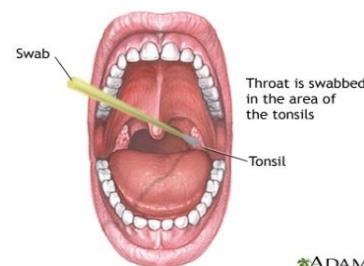
- Only done if unable to perform nasopharyngeal swabbing
- Collect from back of throat and both tonsillar pillars
- Both tonsils and the posterior pharynx are swabbed vigorously, and the swab is placed in transport medium as described above
- All airborne isolation precautions should be followed while collecting the sample

4.2.3 Transport and storage of Specimen:

- Collected specimen should be transported to the dedicated laboratory as soon as possible.
- Until sample processing, the sample should be refrigerated at -200C.
- In case a sample needs to be stored for more than 3 days before processing then archive it at less than -700C.



Nasopharyngeal swab collection



Oropharyngeal swab collection

5. Admission Criteria of suspected or confirmed cases of COVID-19

COVID-19 is suspected or confirmed AND any of the following criteria present?	
Symptoms and signs of pneumonia (fast breathing and/or chest-indrawing)	YES /NO
Any general danger signs (grunting, persistent vomiting, and convulsions/CNS signs)	YES /NO
Need of supplementary oxygen or oxygen saturation <95% on room air?	YES /NO
Radiological confirmed pneumonia	YES /NO
If YES to any of the above, admission is advised	
On chemotherapy	YES /NO
Known secondary immunodeficiency (HIV, grade 3 malnutrition)	YES /NO
Diagnosed primary immunodeficiency	YES /NO
Underlying co-morbid condition (Cystic fibrosis, Congenital Heart Disease, Diabetes, CKD)	YES /NO
If YES to any of the above in a suspected or confirmed case of COVID-19, decision to admit is based on severity of the underlying disorder	
In NO to ALL the above in a suspected or confirmed case of COVID-19 admission is NOT advised *	

**In all suspected cases where testing is not possible and above criteria are absent, we do NOT recommend admission, given that isolation procedures at home or isolation facility are available*

6. Categorization and Management of Confirmed COVID-19 Cases

Case	Definition
Asymptomatic	A confirmed case (Nasopharyngeal RT- PCR is positive for SARS CoV2) having no clinical signs and symptoms.
Mild	A confirmed case with non-specific upper respiratory tract infections (low-grade fever, runny nose, cough) with no radiological signs of pneumonia and oxygen support. (Oxygen saturation $\geq 94\%$)
Moderate	A confirmed case with fever and cough/difficulty in breathing without any danger signs; having the radiological evidence of pneumonia requiring hospitalization with or without the need of oxygen support. (Oxygen saturation <94% but >90%)
Severe	A confirmed case with fever and cough/difficulty in breathing having at least one *danger sign together with radiological evidence of pneumonia AND/OR sepsis/septic shock, respiratory failure/ARDS, multiple organ dysfunction (MOD)

** Danger signs: (severe dehydration, lethargy/dullness, decrease in conscious level/unconsciousness, irritability/excessive/inconsolable cry, central cyanosis, grunting or nasal flaring, chest in drawing, fast breathing according to age, convulsions, SpO₂ <92% on room air, signs of heart failure/myocarditis or signs of shock).*

6.1 Asymptomatic COVID-19 Case (Annexure 'A'):

Home isolation for 14 days after assessing the residential setting OR isolation in dedicated government centres as appropriate.

Educate the caregiver/patient about symptoms and encourage reporting if any new symptoms develop or worsening of symptoms is noticed (report on dedicated health helpline 1166).

Difference between isolation and quarantine:

***Isolation** is used to separate ill persons who have a communicable disease from those who are healthy.
Quarantine is used to separate and restrict the movement of well person, who may have been exposed to a confirmed or suspected case of COVID 19, to see if they become ill.*

6.2 Mild-Moderate COVID-19 case (Annexure ‘B’):

Description	Mild case (suspected or confirmed)	Moderate Case
Placement	<ul style="list-style-type: none"> • Prefer home isolation after assessing home situation (separate room + attached bathroom) • Admit in hospital or refer to a dedicated government isolation centre (depending upon the bed availability) only when home isolation is not possible. • If admitting, follow isolation procedures as for moderate cases. 	<p>Refer/admit in single room isolation or confirmed cases of COVID 19 can be cohorted together, keep a distance of 2 meters between beds.</p> <p>Contact and Droplet precautions</p>
*Investigation	<ul style="list-style-type: none"> • CBC, Blood culture and Chest X-ray (Testing depends on availability) 	<p>CBC, Blood culture, CRP, Chest X-Ray, SGPT are recommended</p> <p>Where available, BUN, Cr, electrolytes should also be done</p> <p>Other investigations based on requirement (Repeat tests if clinically indicated or any worsening of symptoms.) Rule out co-infections, if fever persists) Rule out H1N1 if available</p>
*Additional tests as per physician’s discretion in immunocompromised and children with chronic co-morbidities		
Treatment	<ul style="list-style-type: none"> • Hydration (preferably orally) • Paracetamol for fever (avoid NSAIDS) • Antihistamines 	<ul style="list-style-type: none"> • Intravenous hydration until stable to tolerate orally • Paracetamol for fever (avoid NSAIDS) • Normal saline nasal drops ± nebulization (if needed under strict airborne precautions) • Antihistamines • Antibiotics (ampicillin or ceftriaxone) for secondary bacterial infections (escalate on clinical worsening if needed). • - Oseltamivir if H1N1 is positive

Points to remember

1. Can consider broader spectrum antibiotics in immunocompromised and children with chronic co-morbidities at physician's discretion
2. Caregiver/Health care provider should wear PPE as suggested by the institution while taking care of COVID-19 patients or performing aerosol generating procedures like nebulization, steam inhalation, suctioning etc.

Discharge criteria

Patient is clinically well and suitable for discharge from hospital as follows:

- Appropriate clinical assessment shows resolution of symptoms and
- Risk assessment of home environment indicates ability to isolate and there is acceptance of advice about staying at home for 2 weeks of illness or resolution of symptoms whichever comes later

If no arrangements at home, then keep the child for 14 days in isolation in hospital or refer to a dedicated government isolation centre.

(Discharge for immunocompromised children and with chronic co-morbidities depend upon the severity of underlying illness and at the physician's discretion.)

6.3 Severe COVID-19 cases or with Acute Respiratory Distress Syndrome (Annexure 'C'):

Placement	Investigations	Treatment	Discharge Criteria
Admit the patient to airborne isolation with strict PPE in high dependency unit/intensive care units.	CBC, blood culture & other relevant cultures, CRP, lactate, renal function, liver functions, electrolytes, ABGs, coagulation profile, ECG and Chest X-ray and CT –chest. Rule out H1N1	Airway management and *oxygen therapy (HIGH FLOW BY FACE MASK) ± mechanical ventilation (CONSIDER EARLY) during resuscitation to target SpO ₂ ≥ 92% Strict Vitals and I/O monitoring Use IV hydration conservatively until no evidence of shock. Paracetamol for fever (avoid NSAIDS) Give empiric antimicrobials to treat suspected bacterial infections (based on local epidemiology and susceptibility patterns) Oseltamivir (when there is ongoing local circulation of seasonal influenza or H1N1 is positive) * <i>For complicated cases (children with septic shock, renal failure, liver failure, cardiac failure or Multi-organ failure etc. follow the standard WHO guidelines available at http://www.ptpol.pl/images/koronawirus/WHO-2019-nCoV-clinical-2020-eng.pdf)</i>	1. Retesting after resolution of symptoms or after 7 days of hospitalization whichever comes later (2 samples should be negative 24 hours apart) 2. If the patient is clinically well and suitable for discharge from hospital, they can be discharged after: • Appropriate clinical assessment for resolution of symptoms. • Risk assessment of their home environment and provision of advice about staying at home (Discharge for immunocompromised children and with chronic co-morbidities depend upon the severity of underlying illness and at the physician's discretion)

**There is limited evidence on use of Lopinavir/ritonavir (LPV/r), chloroquine phosphate, hydroxychloroquine, interferon therapy, remdisivir and other investigational drug for the treatment of COVID-19. They are under consideration and their use varies from region to region.*

Avoid the use of systemic corticosteroids for treatment of COVID-19 pneumonia outside of clinical trials unless they are indicated for another reason like septic shock (not responding to fluid therapy and vasopressors) or asthma. It may delay the viral shedding or may result in complications (9).

Due to uncertainty around the potential for aerosolization, nebulization, HFO, NIV, including bubble CPAP, can be used with strict airborne precautions.

Avoid the use of azithromycin for the treatment of COVID-19.

7. New-borns with COVID-19

The consequences of a COVID-19 infection during pregnancy are uncertain; to date there is no evidence of vertical transmission (2). There is no information to date to suggest COVID-19 is teratogenic or has long-term implication for foetal/neonatal health.

7.1 Feeding Infants born to Mother with Confirmed or Suspected COVID-19 Infection:

Breast milk is the best source of nutrition for infants. There remain however many unknowns about COVID-19. For that reason, families should participate in the decision to use breast milk for infant feeding with the support of the healthcare providers. Whenever infants must be separated from their mother due to infection control restrictions, hospitals should make every effort to provide expressed breast milk to new-borns.

If well infants are rooming with a COVID-19 confirmed or suspected mother, take all possible precautions to avoid transmission of virus from mother to the infant, like washing of hands before touching the infant and before each feeding. Ensure the mother wears a face mask while breast feeding. Similar precautions need to be taken for skin-to-skin contact and kangaroo mother care.

During temporary separation, mothers who intend to breastfeed should be encouraged to express their breast milk to establish and maintain milk supply. Prior to expressing breast milk, mothers should practice hand hygiene. After each pumping session, the entire pump should be appropriately disinfected (14).

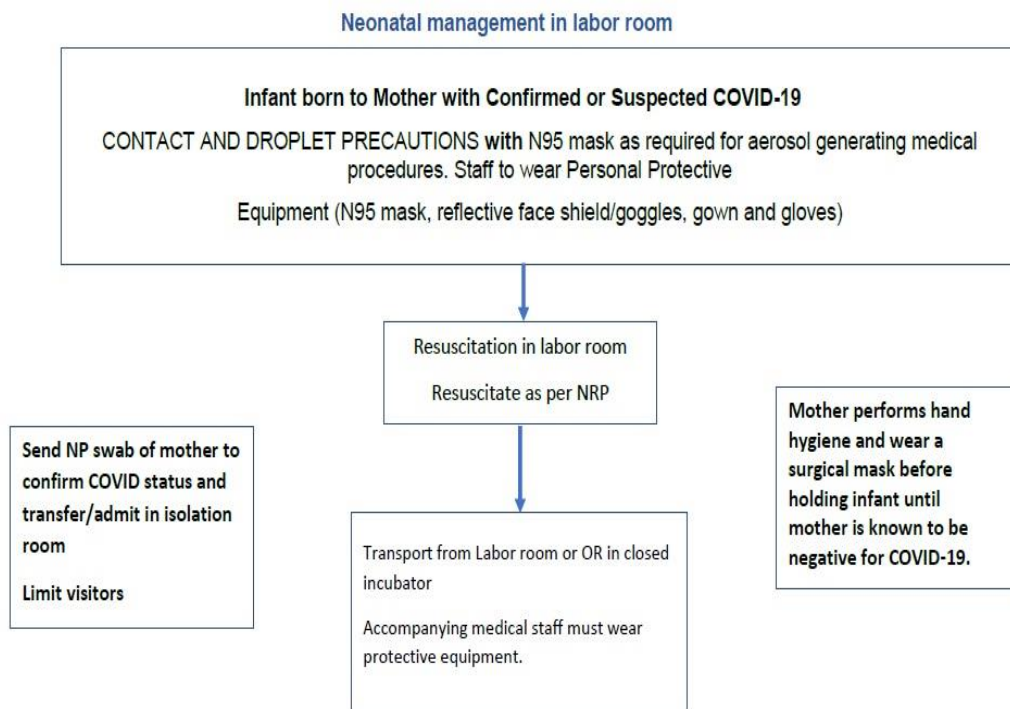
7.2 Definition of suspected 2019-nCoV infection

The new-borns suspected of 2019-nCoV infection are those born to the mothers with a history of COVID 2019 infection between 14 days before delivery and 28 days after delivery, or the new-borns directly exposed to those infected with 2019-nCoV (including family members, caregivers, medical staff, and visitors). Suspected infants are under consideration regardless of whether they are symptomatic or asymptomatic.

7.3 Neonatal clinical manifestations associated with COVID 19 infection

Clinical findings especially for premature infants are not specific therefore, it is necessary to closely monitor vital signs, respiratory symptoms, and gastrointestinal symptoms. Temperature instability, respiratory and cardiovascular symptoms including tachypnoea, grunting, nasal flaring, apnoea, cough, or tachycardia may be present. Other findings may include poor feeding, lethargy, vomiting, diarrhoea, and abdominal distension.

Laboratory examinations may be non-specific.



References: (1) Wang L et al. Chinese expert consensus on the perinatal and neonatal management for the prevention and control of the 2019 novel coronavirus infection (First edition). Ann Transl Med 2020 | <http://dx.doi.org/10.21037/atm.2020.02.20> (2) <https://www.rcog.org.uk/en/guidelines-research-services/guidelines/coronavirus-pregnancy/>

Complete blood count (CBC): An early exam may show normal or decreased leukocyte counts, or decreased lymphocyte counts.

Other findings: May include mild thrombocytopenia, and elevated levels of creatinine kinase, alkaline phosphatase, alanine aminotransferase, aspartate aminotransferase, and lactate dehydrogenase. Chest X-ray is likely to show signs of pneumonia.



ASYMPTOMATIC NEWBORN

Infant born to Mother
with Confirmed or Suspected COVID-19
CONTACT DROPLET PRECAUTIONS with surgical mask
Staff to wear Personal Protective Equipment
(Surgical mask, reflective face shield, gown, gloves)
Use N95 for aerosol generating procedures

Infant ASYMPTOMATIC
Rooming-in with Well Mother

Infant ASYMPTOMATIC
Separated from Unwell Mother

Keep in isolation room
DROPLET/ CONTACT PRECAUTIONS
Monitoring for symptoms - Vital Signs
every 4 hours
CAN breastfeed after mother does
hand hygiene and wears a surgical
mask during breast feeding

Keep in isolation room
DROPLET/ CONTACT PRECAUTIONS
Monitoring for symptoms - Vital
Signs every 4 hours
Discuss feeding options with
parents
Supportive Care as needed

Infant SYMPTOMATIC
See next page

Mother COVID-19
negative

Mother COVID-19
positive

Mother COVID-19
positive

Mother COVID-19
negative

-Discontinue Droplets/
Contact Precautions
-Contact Infection
control for plan
-Routine Newborn

Send infant NP
or OP swab for
PCR testing

Send infant NP
and/or OP swab
for PCR testing

-Discontinue
Airborne/ Droplets/
Contact Precautions
- Routine Newborn
care

Infant COVID-19
negative

Infant COVID-19
positive

Infant COVID-19
negative

Infant COVID-19
positive

**Well Mother and Well Infant Rooming-
in together**

Well Infant and Un Well Mother

** Infant of a COVID-19 positive mother may not be routinely tested if there is no clinical indication.*

**Well Mother and Well Infant Rooming-
in together**

If baby tested positive for COVID-19, maintain
Droplet/Contact Precautions while in hospital until mother's
and baby's COVID-19 infection status has cleared

If baby tested negative for COVID-19, maintain
Droplet/Contact Precautions while in hospital until mother's
COVID-19 infection status has cleared and baby has tested
negative at the end of 14-day incubation or at resolution of
mother's infection, whichever is longer

Can be discharged home if well – suggest self-isolation till
mother's COVID-19 infection has cleared and baby status is
cleared

Contact Paeds ID as appropriate (if possible)

Emotional support for family

Well Infant and Un Well Mother

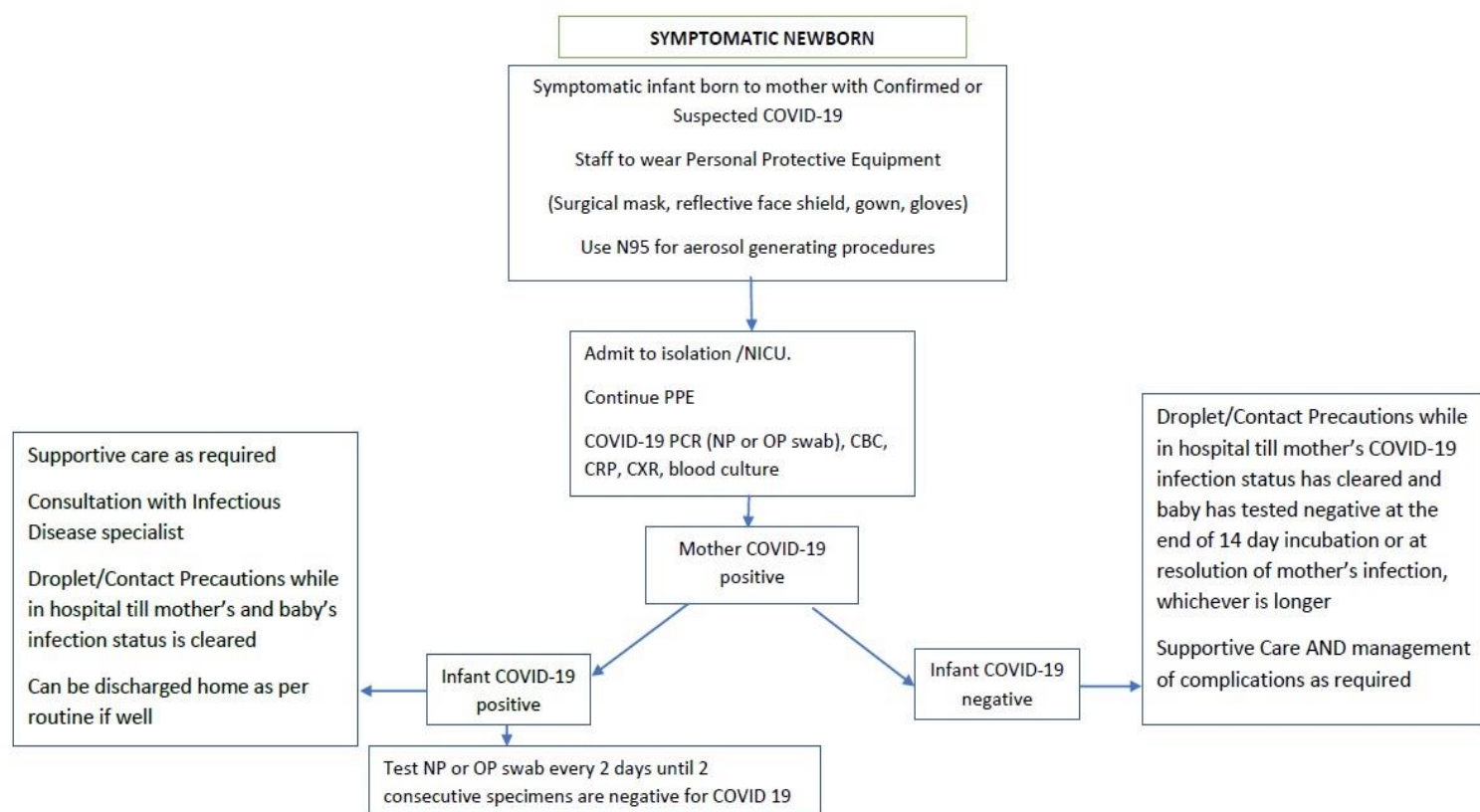
Droplet/Contact Precautions while in hospital until
mother's and baby's COVID-19 infection status has cleared

Can be discharged home as per routine if well

Contact infection control for advice regarding need for
self- isolation post discharge

Contact Paeds ID as appropriate (if possible)

Emotional support for family



References: (1) Wang L et al. Chinese expert consensus on the perinatal and neonatal management for the prevention and control of the 2019 novel coronavirus infection (First edition). Ann Transl Med 2020 | <http://dx.doi.org/10.21037/atm.2020.02.20> (2) <https://www.rcog.org.uk/en/guidelines-research-services/guidelines/coronavirus-pregnancy/>

8. Prevention of COVID 19

Currently there is no vaccine available to prevent COVID-19. The best way to prevent COVID-19 is to avoid being exposed to this virus (11, 12). We can limit the transmission of virus by taking everyday preventive measures such as:

1.	Staying at home when sick. Do not send the sick child to school.
2.	Caregiver and a child should wear a facemask, particularly when you/your child are around other people (e.g., sharing a room or vehicle) and before you/your child enter a healthcare provider's office or health facility
3.	Covering mouth and nose with flexed elbow or tissue when coughing or sneezing. Dispose of used tissue instantly.
4.	Washing hands often with soap and water or use a sanitizer with 60-80% alcohol, whichever is available
5.	Avoid touching your eyes, nose, and mouth with unwashed hands.
6.	Cleaning frequently high-touched surfaces (tables, doorknobs, light switches, countertops, handles, desks, phones, keyboards, toilets, faucets, sinks etc.) by detergents and disinfectants formulations such as sodium hypochlorite with concentration of 5000-6150 ppm to 500-615 ppm free chlorine are used for environmental surface cleaning.
7.	Avoid going to crowded places like shopping malls, restaurants, public parks etc.

*Little is known about the COVID-19 being the novel disease. As we learn, more about COVID-19 public health officials may recommend additional actions.

8.1 Steps of hand washing

If you are using soap and water, follow following steps:

- Wet hands with safe running water
- Apply enough soap to cover wet hands
- Scrub all surfaces of the hands – including backs of hands, between fingers and under nails – for at least 20 seconds. This is similar to singing the ABC song at a normal tempo or the happy birthday song twice.
- Rinse thoroughly with running water
- Dry hands with a clean, dry cloth, single-use towel or hand drier as available
- If you are using a hand sanitizer, ensure that it contains at least 60-80% alcohol, use enough to cover all surfaces of your hands and rub them together until they feel dry.



It is better to clean hands more often. Additional key time points to clean hands include

- After blowing one's nose, coughing, or sneezing
- After using the restroom/toilet
- Before eating or preparing food
- After contact with animals or pets
- Before and after providing routine care for another person who needs assistance (e.g. a child)

8.2 Clean and Disinfect household high-touched surfaces

Suggestion for a home-based preparation for cleaning and disinfection

Prepare a bleach solution by mixing: 5 tablespoons (1/3rd cup) bleach per gallon of water or 4 teaspoons bleach per quart of water

Daily Preventive measures

کورونا وائرس

خود اور دوسروں کو کیسے بچائیں۔

 <p>گندے ہاتھوں سے آنکھ ناک اور منہ کو مت چھوئیں۔</p>	 <p>ہاتھوں کو باقاعدگی سے صابن اور پانی سے صاف کریں۔</p>
 <p>استعمال کے بعد لٹھو کو مناسب طریقے سے ضائع کریں۔</p>	 <p>کھانسی یا چھینک آنے پر منہ اور ناک کو ہاتھوں کی بجائے لٹھو یا کپڑے سے ڈھانپیں۔</p>
 <p>اگر آپ کو نزلہ، زکام ہے تو اپنے آنکس، سکول یا بھیڑ میں جانے کی بجائے گھر پر رہیں۔</p>	 <p>نزلہ، زکام ہونے کی صورت میں دوسرے افراد سے ایکٹ میٹر کی دوری اختیار کریں۔</p>
 <p>بخار، کھانسی اور سانس لینے میں دشواری کی صورت میں ڈاکٹر سے رجوع کریں۔</p>	 <p>اگر آپ کو نزلہ، زکام ہے تو گلے ملنے یا ہاتھ ملانے سے پرہیز کریں</p>

Levels of Protection for Health Care Workers

- This is a generic guidance
- Where available please adhere to your institution's rules

Protection Level	Protective Equipment	Scope of Application
Level I protection	<ul style="list-style-type: none"> ▪ Disposable surgical cap ▪ Disposable surgical mask ▪ Work uniform ▪ Disposable latex gloves or/and disposable isolation clothing if necessary 	<ul style="list-style-type: none"> ▪ Pre-examination triage, general outpatient department
Level II protection	<ul style="list-style-type: none"> ▪ Disposable surgical cap ▪ Medical protective mask (N95) ▪ Work uniform ▪ Disposable medical protective uniform ▪ Disposable latex gloves ▪ Goggles 	<ul style="list-style-type: none"> ▪ Fever outpatient department ▪ Isolation ward area (including isolated intensive ICU) ▪ Non-respiratory specimen examination of suspected/confirmed patients ▪ Imaging examination of suspected/confirmed patients ▪ Cleaning of surgical instruments used with suspected/confirmed patients
Level III protection	<ul style="list-style-type: none"> ▪ Disposable surgical cap ▪ Medical protective mask (N95) ▪ Work uniform ▪ Disposable medical protective uniform ▪ Disposable latex gloves ▪ Full-face respiratory protective devices or powered air-purifying respirator 	<ul style="list-style-type: none"> ▪ When the staff performs operations such as tracheal intubation, tracheotomy, bronchofibroscope, gastroenterological endoscope, etc., during which, the suspected/confirmed patients may spray or splash respiratory secretions or body fluids/blood ▪ When the staff performs surgery and autopsy for confirmed/suspected patients ▪ When the staff carries out NAT for COVID-19

Guidance on Personal Protective Equipment (PPE)

STANDARD PPE

All contact with suspected or confirmed COVID-19 patients



- Apron
- Gloves
- Surgical mask

FULL PPE

Aerosol Generating Procedures ONLY
Oropharyngeal/nasopharyngeal swabbing,
nebulization, intubation, resuscitation



- Full length gown
- Gloves
- Visor
- FFP₃ respirator

Types of Personal Protective Equipment



Gown



Full Body Suit / Tyvek Suit

5



3 Layered Medical/Surgical Mask



N95 Mask



N95 Respirator



Goggles



Gloves

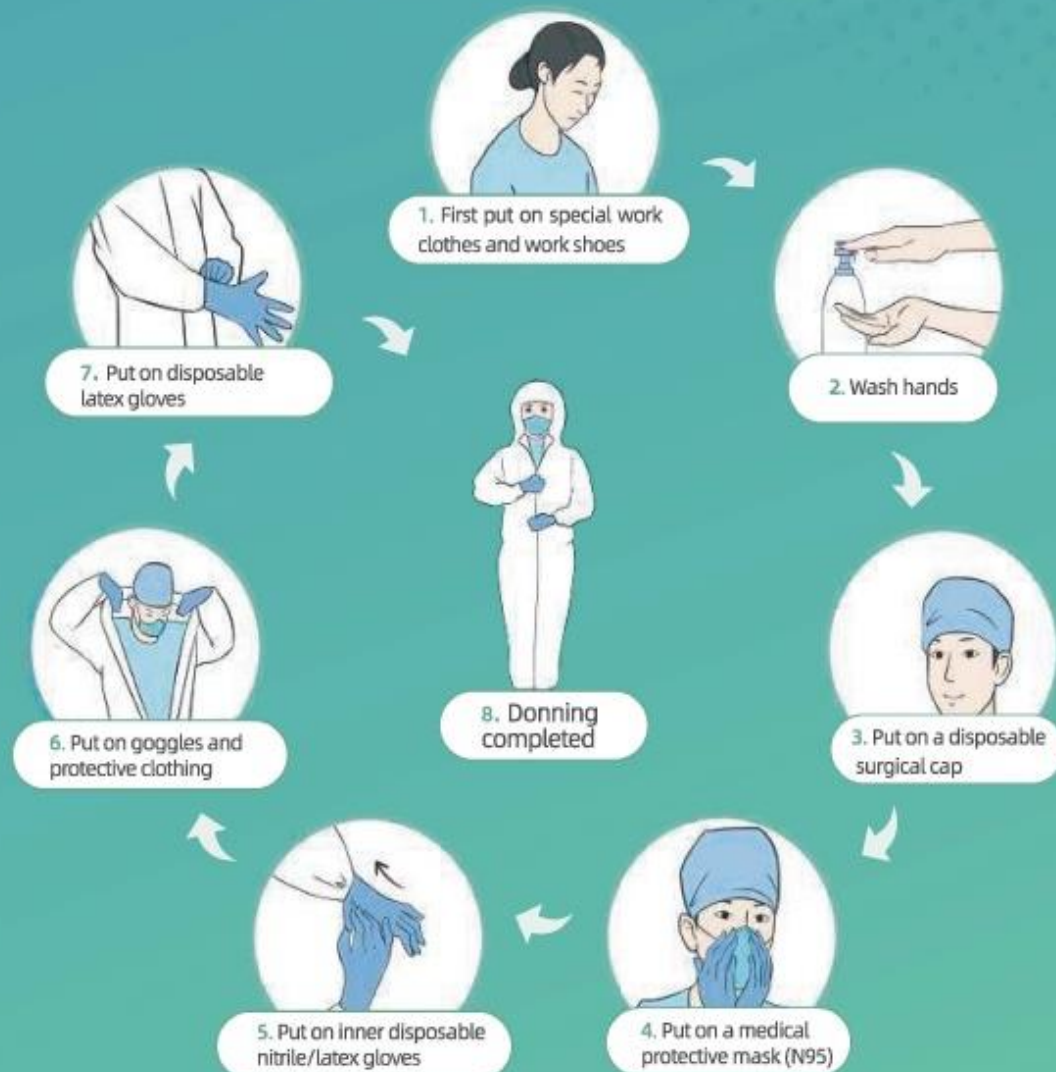


Shoe Covers

Guidance on Donning and Doffing

Method of Donning

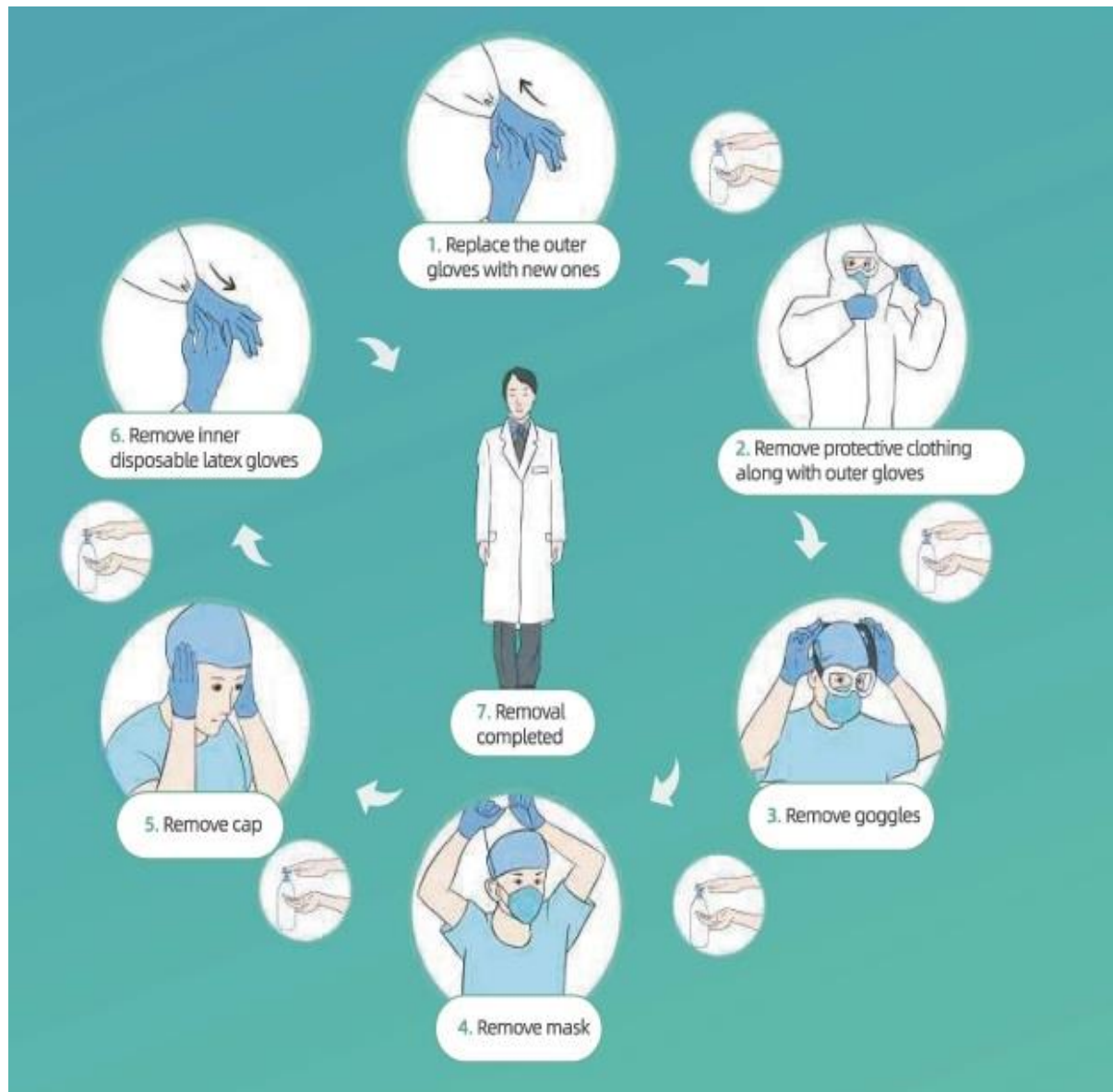
1 Guidance on Donning and Removing Personal Protective Equipment (PPE) to manage COVID-19 Patients



Protocol for Donning PPE:

Put on special work clothes and work shoes → Wash hands → Put on disposable surgical cap → Put on medical protective mask (N95) → Put on inner disposable nitrile/latex gloves → Put on goggles and protective clothing (note: if wearing protective clothing without foot covers, please also put on separate waterproof boot covers), put on a disposable isolation gown (if required in the specific work zone) and face shield/powered air-purifying respirator(if required in the specific work zone) → Put on outer disposable latex gloves

Method of Doffing



Protocol for Removing PPE:

Wash hands and remove visible bodily fluids/blood contaminants on the outer surfaces of both hands → Wash hands replace outer gloves with new gloves → Remove powered air-purifying respirator or self-priming filter-type full-face mask/mask (if used) → Wash hands → Remove disposable gowns along with outer gloves (if used) → Wash hands and put on outer gloves → Enter Removal Area No. ① → Wash hands and remove protective clothing along with outer gloves (for gloves and protective clothing, turn inside out, while rolling them down) (note: if used, remove the waterproof boot covers with clothing) → Wash hands → Enter Removal Area No. ② → Wash hands and remove goggles → Wash hands and remove mask → Wash hands and remove cap → Wash hands and remove inner disposable latex gloves → Wash hands and leave Removal Area No. ② → Wash hands, take a shower, put on clean clothes and enter the clean area



Essential Precautions for Frontline Healthcare Staff

- Do not wear watches, rings, or bracelets.
- Do not bring personal computers, handbags, and wallet to hospital. Just a credit card and some notes should be enough.
- Leave the driving license in the car.
- After arriving home, leave mobile phone case in car and just take naked phone inside your house.
- Do not take phones, remotes, iPads to the duty rooms in hospital
- Cleaning spectacles, business card, pen, mobile phones, and car keys with antiseptic solution on arriving at hospital and just before leaving.
- Disinfect/ clean the frequently used surfaces such as steering wheel, door handle of car and bike etc.
- If possible, use the spare rooms in the hospital to change into scrubs after arriving at work and replace it with your clothes before leaving.
- If work clothes are not available from the hospital, bring the work clothes with you in a clean bag.
- Wash your hands to the elbows before leaving the hospital.
- Leave work shoes in the car or outside the home.
- Wash your work clothes (with hot water if possible) and do not mix it with the other clothes
- Take shower as soon as you arrive home.
- Nutrition: Take high protein diet, citreous fruits, dry fruits, and multivitamins to increase immunity.

Protocols for Protection at Returning Home



PROTOCOLS FOR ENTERING YOUR HOME

ACTIONS AGAINST COVID-19



1



When you come home, try not to touch anything.

2



Take off your shoes.

3



Disinfect your pet's paws if you were walking it.

4



Take off your outer clothing and put it in a laundry bag. With bleach, recommend at more than 140f.

5



Leave bag, purse, keys, etc. in a box at the entrance.

6



Shower or, if you are not able, wash all exposed areas well Hands, wrists, face, neck, etc.

7



Clean your phone and glasses with soap and water, or alcohol.

8



Clean the surfaces of what you have brought outside with bleach before storing. Prepare a mixture of bleach 20 ml per liter of water. 5 tbsp (1/3 cup) of bleach in one gallon of water or 4 tsp of bleach in one quart of water. Don't forget to wear gloves.

9



Remove your gloves carefully, throw them away and wash your hands

10



Remember that it is not possible to do a total disinfection, the objective is to reduce the risk

Additional information:

Radiological findings in COVID-19 disease

Chest X-ray:

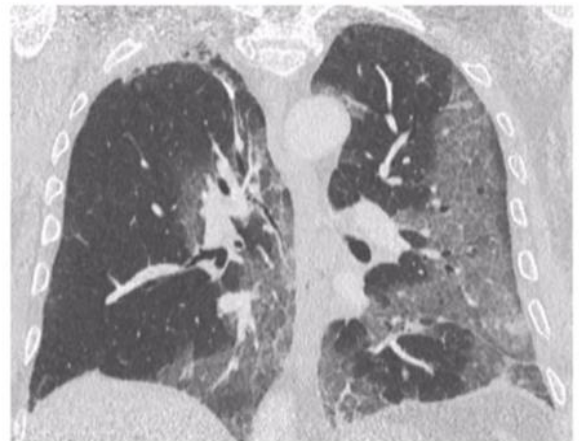
- Typically, patchy ground glass opacities peripheral and basal (may be unilateral)
- Number of lung segments increases with more severe disease
- Over time, patches coalesce into more dense consolidation
- May be subtle/appear normal
- Uncommon: effusions, cavitation, mass, lymphadenopathy (think of alternate/ other concomitant diagnosis)

CT-Chest findings:

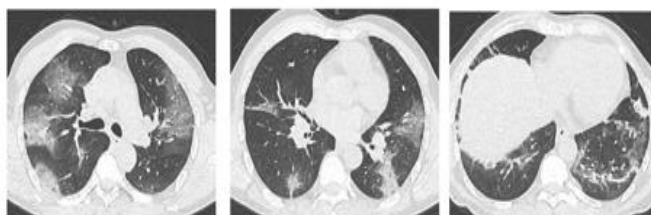
- Unlike adults no data in children to support use
- Need should be balanced with risk of ionizing radiation contamination of radiology room
- Does not change management
- Considered ONLY in sick children or where suspected alternate diagnosis
- May be normal in early stages
- Possible findings: peripheral ground-glass opacities, ‘crazy paving’, diffuse alveolar damage, organizing pneumonia.
- Uncommon: Non-peripheral, effusions, lymph nodes, lobar pneumonia, and cavitation (think of alternate/ other concomitant diagnosis)



CXR



CT-Chest





Note: The above recommendations are being regularly reviewed by the Ministry of National Health Services, Regulations & Coordination and will be updated based on the international & national recommendations and best practices.

The Ministry acknowledges the contribution of Section of Paediatric Infectious Diseases, Department of Paediatrics and Child Health, Aga Khan University, The Children's Hospital & Institute of Child Health Lahore, King Edward Medical University, Infectious Disease Group, PPA, Pakistan Paediatric Association, UNICEF Pakistan, World Health Organization and HSA/ HPSIU/ NIH team to compile these guidelines.

References:

1. Zhou P, Yang XL, Wang XG, Hu B, Zhang L, Zhang W, et al. A pneumonia outbreak associated with a new coronavirus of probable bat origin. *Nature*. 2020;579(7798):270-3.
2. Chen H, Guo J, Wang C, Luo F, Yu X, Zhang W, et al. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. *Lancet*. 2020;395(10226):809-15.
3. Children and Coronavirus Disease 2019 (COVID-19)-Centres for Disease Control and Prevention 2020. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/prepare/children.html>.
4. Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, et al. A Novel Coronavirus from Patients with Pneumonia in China, 2019. *N Engl J Med*. 2020;382(8):727-33.
5. Liu W, Zhang Q, Chen J, Xiang R, Song H, Shu S, et al. Detection of Covid-19 in Children in Early January 2020 in Wuhan, China. *N Engl J Med*. 2020.
6. Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, et al. Clinical Characteristics of Coronavirus Disease 2019 in China. *N Engl J Med*. 2020.
7. Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y, et al. Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus-Infected Pneumonia. *New England Journal of Medicine*. 2020.
8. Evaluating and Testing Persons for Coronavirus Disease 2019 (COVID-19)-Centres for Disease Control and Prevention 2020. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-criteria.html>.
9. Delaney JW, Pinto R, Long J, Lamontagne F, Adhikari NK, Kumar A, et al. The influence of corticosteroid treatment on the outcome of influenza A(H1N1pdm09)-related critical illness. *Crit Care*. 2016; 20:75.
10. Post-exposure Prophylaxis for SARS-Coronavirus-2: A Pragmatic Randomized Clinical Trial. Available from: <https://clinicaltrials.gov/ct2/show/NCT04308668>.
11. How to Protect Yourself- Centres for Disease Control and Prevention 2020. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/prepare/prevention.html>.
12. Key Messages and Actions for COVID-19 Prevention and Control in Schools- World Health Organization 2020. Available from: https://www.who.int/docs/default-source/coronaviruse/key-messages-and-actions-for-covid-19-prevention-and-control-in-schools-march-2020.pdf?sfvrsn=baf81d52_4.
13. Clean & Disinfect- Centres for Disease Control and Prevention 2020. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/prepare/cleaning-disinfection.html>.
14. Interim Considerations for Infection Prevention and Control of Coronavirus Disease 2019 (COVID-19) in Inpatient Obstetric Healthcare Settings- CDC 2020. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/inpatient-obstetric-healthcare-guidance.html>.
15. Wang L, Shi Y, Xiao T, Fu J, Feng X, Mu D, et al. Chinese expert consensus on the perinatal and neonatal management for the prevention and control of the 2019 novel coronavirus infection (First edition). *Ann Transl Med*. 2020;8(3):47-.

For more information, please contact:

HSA/ HPSIU/ NIH, PM National Health Complex, Islamabad

<http://covid.gov.pk/>

<http://nhsrco.gov.pk/>

<https://www.facebook.com/NHSRCOOfficial>

<http://www.hsa.edu.pk/>

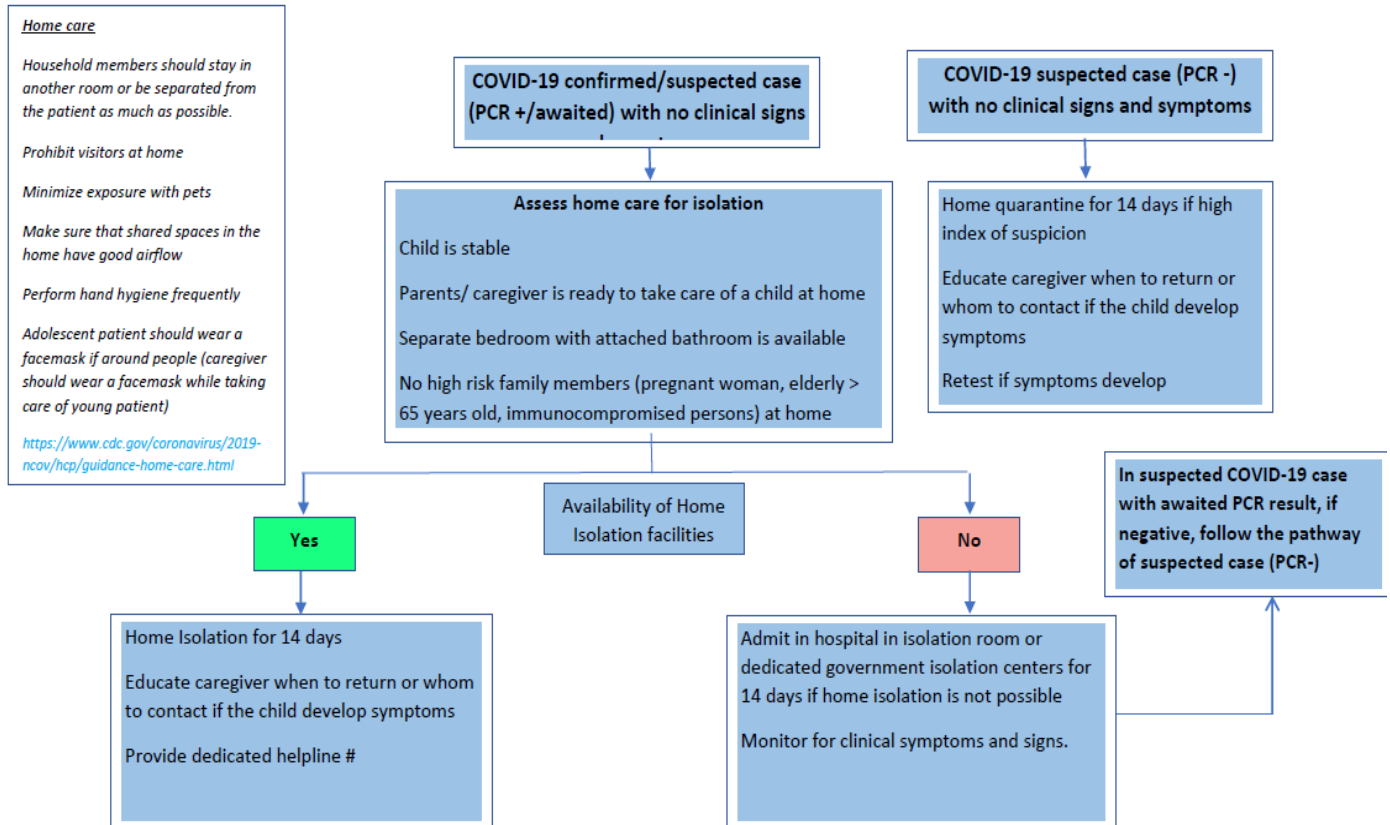
<https://twitter.com/nhsrcoofficial>

<https://www.nih.org.pk/>

https://www.youtube.com/channel/UCdYuzeSP4Ug1f_ZZ

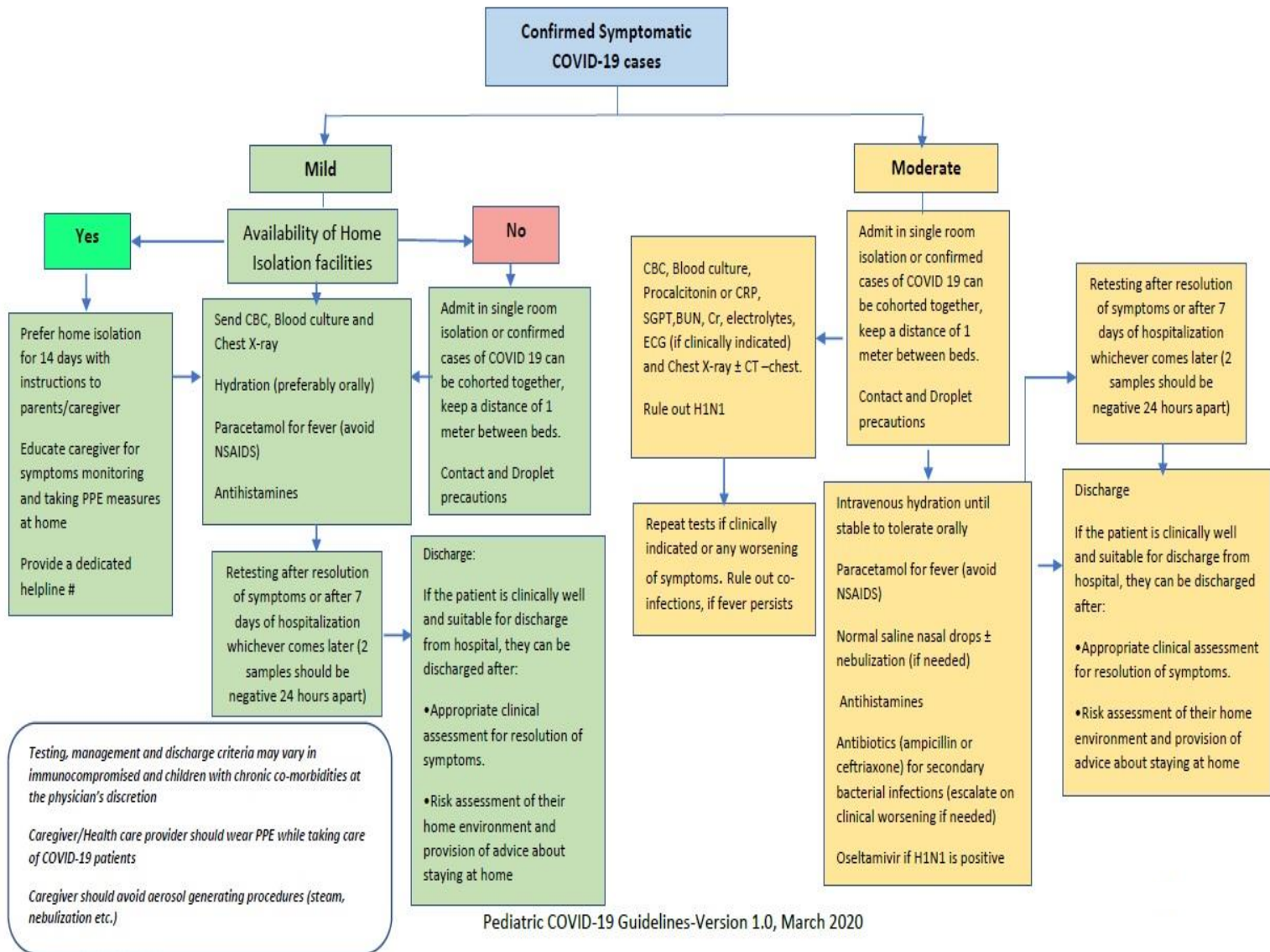
Annex 'A'

Annexure 1A: Algorithm for Management of Asymptomatic Case:



Annex 'B'

Annexure 1B: Algorithm for Management of Symptomatic Mild-Moderate COVID-19 Cases



Annex 'C'

Annexure 1C: Algorithm for Management of Symptomatic Severe COVID-19 Cases

Points to remember

There is limited evidence on use of Lopinavir/ritonavir (LPV/r), chloroquine phosphate, hydroxychloroquine, interferon therapy, remdisivir and other investigational drug for the treatment of COVID-19s. They are under consideration and their use varies from region to region.

Avoid the use of systemic corticosteroids for treatment of COVID-19 pneumonia outside of clinical trials unless they are indicated for another reason like septic shock (not responding to fluid therapy and vasopressors) or asthma. It may delay the viral shedding or may result in complications.

Due to uncertainty around the potential for aerosolization, nebulization, HFO, NIV, including bubble CPAP, can be used with strict airborne precautions.

Avoid the use of azithromycin for the treatment of COVID-19.

