

## Special populations: children, newborns, pregnant and breastfeeding women, and people living with HIV

### Children

- Childhood is a period of innate physical, social and psychological vulnerability which are likely to be aggravated by the COVID-19 pandemic as children become infected or affected.
- Children may be infected by SARS-COV 2 virus, albeit with lower subsequent morbidity and mortality than adults. In the early Chinese experience, children under 10 years of age<sup>1</sup>:
  - Accounted for fewer than 1% of all cases;
  - Acquired their infection at home (82 - 90%);
  - Were asymptomatic (4%) or had mild (51%) or moderate (39%) disease;
  - Had very few reported deaths.
- The clinical picture and treatment of children is similar to that of adults. The case definition for adults and children is the same. However, our understanding of the entire spectrum of COVID-19-related symptoms continues to evolve and may be different at different ages. If in doubt, healthcare workers should seek additional advice and if still unsure err on the side of testing.

The focus of any response for children to the COVID-19 pandemic should include:

1. *Protection and prevention of primary infection:*

- Provide routine childcare, focusing on nutritional support, stimulation and love.
- Ensure environmental hygiene.
- Promote appropriate infection prevention and control (IPC) practices including hand hygiene; masks for children over 2 years of age; respiratory etiquette and social distancing.
- Self-isolation and quarantine together with the primary caregiver, as appropriate.

2. *Early detection, isolation and treatment if infected:*

- Suspect COVID-19 infection in every child with an acute respiratory infection. Isolate and test each such child.
- Assess the severity of their clinical condition:

<b>Mild</b>	Active child with no respiratory distress; SpO <sub>2</sub> >95% in room air
<b>Moderate</b>	Restless; tachypnoeic, chest indrawing; SpO <sub>2</sub> < 92% in room air
<b>Severe</b>	Tachypnoeic; chest indrawing; SpO <sub>2</sub> < 92% in room air; cyanosis

- Explore differential diagnosis and risk factors, e.g. chronic disease; address holistic needs in terms of HIV status, TB risk, nutritional assessment, etc.
- Manage according to this assessment - the focus of treatment is supportive, including nutritional support, oxygen and paracetamol (as required for pain or fever), avoid NSAIDs unless indicated for other conditions.
  - Mild: isolate at home; paracetamol; alert to danger signs (severe diarrhoea, shaking, not moving/waking or swelling of body/legs) or worsening respiratory distress.
  - Moderate: cohort/isolate in hospital; oxygen to keep SpO<sub>2</sub> >92% (see below); monitor 3-4 hourly, paracetamol, empiric antibiotics according to [paediatric](#) standard treatment guidelines.
  - Severe: discuss with local HCU/ICU for possible admission and transport using PPE; general respiratory supportive measures (oxygen, stopping feeds, nursing prone);

manage for severe pneumonia (according to [paediatric](#) standard treatment guidelines).

**Guidance on oxygen therapy:**

- If unable to maintain SpO<sub>2</sub> > 92% in room air add nasal prong oxygen (NPO) at 2l/min
- If unable to maintain SpO<sub>2</sub> > 92% in NPO at 2l/min then change to 40% face mask (pink) oxygen at 8 l/min
- If unable to maintain SpO<sub>2</sub> > 92% in 40% face mask (pink) oxygen at 8 l/min then change to 60% face mask (orange) at 10l/min
- If unable to maintain SpO<sub>2</sub> > 92% in 60% face mask oxygen at 10l/min change to face mask oxygen with reservoir bag (non-rebreather face mask) at 15l/min and contact nearest PICU
- If unable to maintain SpO<sub>2</sub> > 92% in face mask oxygen with reservoir bag (non-rebreather face mask) at 15l/min consider transfer to nearest PICU if bed available
- PICU would consider the use of HFNC and NIV
- Use a surgical mask over the child's face with the use of any forms of oxygen therapy especially high flow oxygen whether with or without the machine and NIV to help protect the HCW

- nCPAP/BiPAP are beneficial to individual children. However, the risk to staff and caregivers from aerosolisation is uncertain, may be high and persists for as long as the modality of care is being used. These modalities should therefore only be considered in the following circumstances:
  - The child must be nursed in an isolation room. Ideally this room should have negative pressure. If negative pressure is not available then the child should be in a Perspex intubation box or other form of barrier if this is available.
  - Staff must wear PPE that includes a visor and N95 mask continuously whilst in the same room as the child.
  - Filters must be applied to the nCPAP/BiPAP exit limb tubing.

**Precautionary measures during resuscitation and stabilization of a child**

Personal protective equipment must be utilised by all HCW at any health care level in caring for all cases where resuscitation is required. These include use of N95 mask, visor, hair cover and Perspex intubation box if available. Oral intubation with a cuffed tube is preferred.

3. *Psychosocial support and child-caring arrangements for both infected and affected children:*
  - Balance the need for isolation to prevent spread to other people, with the basic needs of every child for love, care and support.
  - Do not separate children from their primary caregiver and support access to their mothers/primary caregivers where this is feasible.
  - Advise families on child-caring practices that avoid contact of children with at-risk populations (elderly, co-morbidities), as far as practically possible.
  - Ensure access to stimulation activities and play.
  - Provide basic information to mother and older children on their condition and treatment.

4. *Preservation of and access to routine health services:*

- Ensure ongoing provision of routine paediatric and child health services including access to immunisations; acute and emergency care; nutritional support and care of long-term health conditions (including HIV, TB, asthma, epilepsy, and others).

## Newborns

- Whilst there is a risk of horizontal transmission of infection from a COVID-19 positive mother to her newborn baby these infections appear to be mild. There is no evidence to date that vertical transmission occurs. Babies are currently considered potentially infectious for 14 days after birth and staff should use hand hygiene and standard PPE in caring for them (gloves, surgical mask, apron, eye protection if risk of mucosal splash).
- As far as possible do NOT separate a COVID-19 positive mother from her baby.
  - Well mothers should participate in the care of their babies but IPC (including hand and breast hygiene, face mask, respiratory hygiene) is essential.
  - Unwell mothers should not participate in the care of their babies and the family should identify an alternative, COVID-19-uninfected caregiver into whose care the baby should be discharged. If this is not possible, the neonate needs to be admitted.
- Promote breastfeeding by well mothers. Unwell mothers should be encouraged to express their breastmilk if they can.
- The case definition is the same as for children or adults, although it is expected that neonatal presentations may sometimes be atypical, without a typical influenza-like illness or fever. A high index of suspicion should be maintained. Neonates from home may also present for medical care after initial discharge from the birthing facility. COVID-19 infection should be included in the differential diagnosis of any neonate presenting with acute respiratory disease, pneumonia or sepsis, and such neonates should be tested for COVID-19 on presentation.
- Well babies should:
  - Remain with mother in isolation;
  - Not be admitted to the neonatal ward/ nursery, unless absolutely necessary. Any required treatment (like phototherapy, glucose monitoring, etc.) should be administered in the postnatal ward if possible (staff to use standard PPE)
  - Receive the usual postnatal care (staff to use standard PPE);
  - Not have a COVID-19 test;
  - Be discharged as soon as possible with advice to the mother regarding danger signs (respiratory distress/ fever, etc.);
  - Be considered potentially infectious for 14 days and must self-isolate with the mother at home.
- Well babies whose mother is unable to care for them and who are awaiting a caregiver should:
  - Be isolated in a closed incubator.
  - Be cohorted or isolated if possible, and receive no visitors;
  - Receive the usual postnatal care and expressed breastmilk if possible;
  - Be discharged as soon as possible with advice to the caregiver regarding feeding and danger signs (respiratory distress/ fever, etc.);
  - Be considered potentially infectious for 14 days and must self-isolate with the caregiver at home.
- Unwell/symptomatic babies should:
  - Be isolated in a closed incubator (cohorted or in an isolation room if available)
  - Have a COVID-19 test on day 3 of life if he/she meets the case definition, or at another time if clinically indicated (tests done before 72 hours of age may give a false negative result). This must be repeated on day 5 of life if the first test is negative.

- Receive no visitors, including their mother, for 14 days;
  - Receive expressed breast milk if possible. Mixed feeding should be avoided if possible, especially if HIV-exposed.
  - Be considered potentially infectious for 14 days;
  - Be discharged according to neonatal condition and, if needs be, complete self-isolation at home.
- Aerosol precautions should be taken for any aerosol-generating procedure (intubation, extubation, bag mask ventilation and open suctioning of the respiratory tract, surfactant administration, obtaining nasopharyngeal/oropharyngeal swabs, all forms of ventilation (non-invasive and invasive) which includes CPAP and high flow nasal cannulae).
  - On discharge, the follow-up of baby needs to be planned. This includes preventative advice regarding infection (hand hygiene, cough etiquette, mask use) and importance of immunizations and routine care.

## Pregnant and breastfeeding women

- Although evidence is limited, there is currently no indication that pregnant women are at higher risk of either contracting COVID-19 or of worse maternal outcomes with COVID-19.<sup>2,3</sup>
- Similarly, definitive *in utero* transmission of COVID-19 has not been established, although possible cases have been described.<sup>4-8</sup> In one study of six mothers with COVID-19, SARS-CoV-2 was not detected in any of the amniotic fluid, cord blood, neonatal throat swab, or breastmilk samples.<sup>5</sup>
- All antenatal care must continue during the COVID pandemic to avoid preventable pregnancy complications. Pregnant women with mild COVID-19 with no current obstetric complications can delay their antenatal visits until they are noninfectious.
- Outpatient examination and all inpatient management of pregnant women with COVID-19 should be carried out in an appropriate isolation area. For intrapartum care, delivery and immediate postnatal care, dedicated midwives should be allocated to care for the woman and her newborn. These midwives should preferably not be involved with managing other women in labour on the same shift.
- COVID-19 is not in itself an indication for caesarean delivery. Women with COVID-19 infection should be allowed to deliver vaginally, unless there are clear obstetric indications for caesarean section.
  - Shortening the second stage of labour by assisted vaginal delivery can be considered if the woman is exhausted or has respiratory distress.
- Women with COVID-19 may breastfeed. However, they should practice excellent hand and respiratory hygiene, and should wear a surgical or cloth mask while breastfeeding. They should wash hands before and after touching the baby, and clean and disinfect surfaces they have touched. For women expressing breastmilk, dedicated breast pumps and feeding cups should be used. Feeding cups must be cleaned and heat disinfected between use.

## People living with HIV

- Although the risk of COVID-19 in those living with HIV is yet to be fully determined, observational data from South Africa suggests that HIV is associated with a doubling of the COVID-19 mortality risk.<sup>9</sup>

- As untreated (and even treated) HIV is a risk factor for many respiratory infections, we anticipate that COVID-19 will impact on this population. This risk may be exacerbated with age and other comorbidities such as tuberculosis, post-TB bronchiectasis, diabetes and COPD.
- For patients already on antiretroviral therapy (ART), ensure that the patient obtains an adequate supply of all drugs, including prophylaxis as required. Supplies of up to 6 months are appropriate if adherence is good. Emphasise the importance of maintaining an undetectable viral load, and ensure that a contact point exists with a health care worker.
- For patients newly diagnosed with HIV, ART should be started as soon as the patient is ready.
- Ensure patients have been adequately vaccinated (e.g. against influenza).
- Distinguishing COVID-19 from PJP may be extremely difficult. In the appropriate context (e.g. CD4 <200, not on cotrimoxazole prophylaxis for >1 month, chest infiltrates compatible with PJP on X-ray, and hypoxaemia) we suggest empiric coverage for PJP with cotrimoxazole (or alternatives if cotrimoxazole is contraindicated) while COVID-19 is ruled out.
  - In this scenario, we suggest testing for serum beta-D-glucan (BDG) levels, and sending sputum (if productive) for PJP (by PCR or special staining as per local lab protocol – do not induce sputum however). Although both tests have significant limitations (BDG is insufficiently specific, and routine sputum testing for PJP has a very poor sensitivity), they may be justified in the context of the COVID-19 pandemic to assist with differentiating these two aetiologies.

## References

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