



Clinical care guidelines for paediatric patients with suspected or confirmed COVID-19

Disclaimer

These guidelines are based on the current available knowledge of the transmission of coronaviruses and will change as more evidence becomes available specifically regarding COVID-19

This document has been developed primarily for use by staff within the Child and Adolescent Health Service (CAHS). For non-CAHS practitioners these should be used in combination with their own health service guidance advice

Key points

- The majority of children with COVID-19 have a mild illness which is indistinguishable from other common endemic viral illnesses e.g. rhinovirus, respiratory syncytial virus (RSV), influenza
- Currently (and for the near future), the vast majority of presentations with acute respiratory tract infections in children will not be related to SARS-CoV-2
- Pre-existing treatment protocols and guidelines for common paediatric conditions such as bronchiolitis, viral wheeze/asthma and lobar pneumonia should be followed, with modifications to reduce the use of aerosol generating procedures (AGPs) such as nebuliser therapy and high flow nasal oxygen
- If AGPs are required, standard, contact and airborne precautions are indicated, including the use of a N95 mask

Case definitions

Patients who meet the following case definitions should be managed as a confirmed or suspect case:

Confirmed case

- A person who tests positive to a validated specific SARS-CoV-2 nucleic acid test or has the virus isolated in cell culture.
OR
- Undergoes a seroconversion or has a significant rise in SARS-CoV2 neutralising or IgG antibody level (retrospective diagnosis).

Suspect case:

- Any person who meets both the following clinical and epidemiological criteria.

Clinical criteria:

- **Acute respiratory symptoms** (cough and/or sore throat and/or shortness of breath.
OR
- **Fever $\geq 37.5^{\circ}\text{C}$** or history of fever where no other cause suspected/identified.**
OR
- **Loss of taste or smell.**

Epidemiological criteria:

In the 14 days prior to onset of illness, any one of the following:

- contact with a confirmed COVID-19 case without appropriate PPE use
- return from international travel
- return from interstate travel
- have been asked by public health authorities to self-isolate.

**Patients who have an alternate cause for their fever identified (e.g. urinary tract infection, appendicitis) do not meet this diagnostic criterion:

- these patients do not require testing for COVID-19, particularly in the absence of co-existing acute respiratory symptoms
- the decision to progress or not to COVID-19 testing should ideally be discussed at the time of admission by ED and the treating team
- all patients who meet the criteria for a suspect case should be notified to the Department of Health using the [online notification form](#) . A COVID-19 flag should also be placed in webPAS.

Who to test

In the emergency department setting, test all patients who meet the suspect case definition by having both clinical and epidemiological criteria (refer to page 2)

For *admitted* patients at CAHS, COVID-19 testing should be conducted on the following groups:

- patients being admitted to hospital with an acute respiratory illness (cough &/or sore throat and/or shortness of breath)
- patients being admitted who require emergency surgery who have a concomitant acute respiratory illness (cough &/or sore throat and/or shortness of breath).**

** Testing in this instance should occur following discussion between ED and the admitting surgical team. Refer to the [Investigations](#) section below for information regarding COVID-19 testing. Prioritisation of sample processing or requests for rapid testing need to be discussed with the PathWest Microbiology team.

WA Department of Health policy states that testing of *asymptomatic* patients in the current setting of no community transmission is only supported in the following circumstances:

- prior to surgery for organ donation or transplantation
- for returned international travellers in mandatory quarantine (discuss with the on-call Microbiologist regarding timing)
- for interstate travellers (discuss with the on-call Microbiologist regarding timing)
- where a negative COVID-19 test is required to meet entry requirements of overseas governments.

Note that approval for testing of asymptomatic patients prior to surgical procedures involving the upper aerodigestive tract has been revoked by the WA Chief Health Officer.

Refer to the WA Department of Health [COVID-19 testing directions](#) for further details.

Epidemiology

There is minimal epidemiological data on children with COVID-19, however early data out of China¹ and USA² suggests:

- less than 2% of known cases are in children
- the majority of children have mild disease
 - 5% develop an oxygen requirement
 - 0.5% have critical disease.
- commonly described symptoms (>25% of cases)
 - fever, myalgia
 - cough, sore throat
 - headache.
- less common symptoms (<25% of cases)
 - shortness of breath
 - nausea, vomiting, diarrhoea, abdominal pain
- the presentation may differ from adults:
 - only 73% of paediatric cases have one of fever, cough or shortness of breath
 - fever present in only 50%
 - cough only seen in 50%
 - gastrointestinal symptoms less commonly seen.
- there is not yet clear evidence of paediatric subgroups that are at increased risk of severe disease although a cautious clinical approach when managing the following patients may be advisable:
 - children less than 1 year old
 - those with co-morbidities including pre-existing respiratory or cardiac disease, oncological condition or who are otherwise immunosuppressed children.

Assessment

The goals of assessment are to:

- determine the likelihood of COVID-19
- define the clinical syndrome e.g. URTI, wheezing illness, pneumonia
- determine the severity of illness
- determine the need for admission e.g. oxygen requirement, likelihood of deterioration, dehydration
- determine the likelihood of needing an AGP either immediately or in the near future.

¹ Dong Y, Mo X, Hu Y, et al. Epidemiology of COVID-19 Among Children in China. *Pediatrics*. 2020;145(6):e20200702

² CDC COVID-19 Response Team. Coronavirus Disease 2019 in Children – United States February 12 – April 02, 2020. *Morbidity and Mortality Weekly Report*. April 06 2020.

History

History should focus on:

- respiratory symptoms
- fever or history of fever
- hydration and gastrointestinal symptoms
- similar illness in contacts and family members
- exposure to confirmed cases of COVID-19
- travel history: interstate and international
- comorbidities including respiratory or cardiac disease, immunosuppression, prematurity.

Examination

Examination should be focused and modified to reduce the exposure of staff to potential infection:

- minimise examination of the nose and oral cavity - only perform if a positive finding will alter management
- examine from the side or back to minimise exposure to direct coughing/sneezing.

Examination should focus on:

- respiratory: respiratory distress, wheeze, stridor
- circulation
- hydration assessment
- gastrointestinal signs
- determining a source of fever.

Severity of illness

Suspect Case

The majority of suspect cases will have an illness unrelated to COVID-19.

Severity of illness is best assessed by:

- first principles
 - end of bed assessment
 - observations/EDOES/Paediatric Early Warning Tool
 - respiratory exam
 - hydration
- standard assessment of the clinical syndrome e.g. bronchiolitis, asthma, pneumonia.

Suspect cases with hypoxia unrelated to wheeze, upper airway obstruction, lobar pneumonia or cyanotic congenital heart disease – assess severity as per the confirmed case criteria

Confirmed case

The severity of disease in confirmed COVID-19 cases can be classified according to need for oxygen therapy and respiratory support.

Mild

- No supplemental oxygen requirement to maintain saturation > 92%, no or mildly increased work of breathing.

Moderate

- Oxygen requirement of < 8L/min via Hudson mask, < 4L via nasal prongs or head box < 50% oxygen to maintain target saturations of > 92%.

Severe

- Oxygen requirement exceeding above, or requiring high flow nasal oxygen to maintain target saturation of > 92%.

Critical

- Hypoxia despite the above measures. Potentially requiring intubation and ventilation to maintain oxygen saturations > 92%
- Additional features may include circulatory shock, acute renal injury, encephalitis, myocarditis and secondary bacterial infection.

Investigations

A: Nasopharyngeal specimen collection and transport:

Clinicians must complete the pathology request form to include patient symptoms & presence of COVID-19 epidemiological risk factors to assist with prioritisation of testing

For admitted patients, additional respiratory virus testing (“Respiratory Virus NAT”) is recommended and should be requested on the same sample

Nasopharyngeal swab collection is NOT considered an aerosol generating procedure (AGP) and collection should occur under droplet, contact and standard precautions

- An apron instead of a long-sleeved gown is appropriate for specimen collection given minimal physical contact with the patient and minimal risk of body fluid splash³
- For a small number of patients sample collection will be associated with an AGP (e.g.: mechanical ventilation, tracheostomy) and for these patients airborne, contact and standard precautions should apply.

For further information see Figure 3 - ‘Transmission-based Precautions’ flowchart below

Use a single flocked swab for PCR testing:

- the swab should be inserted once into the nasopharynx. This is a specific CAHS recommendation as multiple site sampling is potentially distressing for children without clear evidence of increased viral detection
- place swab in transport medium and then into a single plastic specimen bag for transport to PathWest at QEII
- urgent samples should be walked to PathWest Central Specimen Reception, Ground floor PP Block. No additional PPE is required for those delivering the swabs.

For further details, refer to the [Nasopharyngeal & Throat Swab Collection procedure](#) document in the CAHS Clinical Practice Manual (available on Healthpoint)

³ AHPPC. Guidance on the use of personal protective equipment (PPE) in hospitals during the COVID-19 outbreak. Updated 26 May 2020.

Figure 1:

Flocked swab

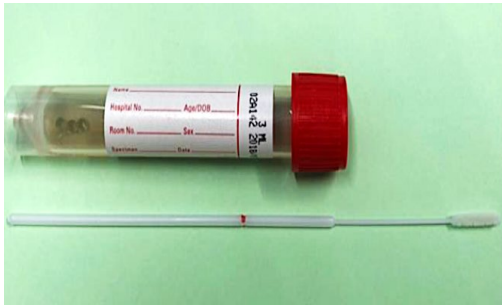
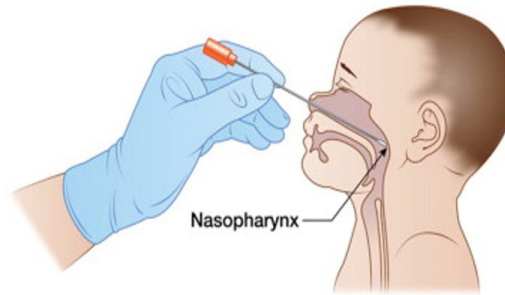


Figure 2:

Collection technique



To prioritise testing of admitted patients it is recommended that the clinician:

- documents that the child is being admitted to hospital on the pathology request form together with the clinical details and risk factors
- calls the Clinical Microbiology Registrar (in-hours) or Consultant (after hours) to ensure test prioritisation for urgent cases (e.g. severely unwell) or where surgical intervention is required
- in limited circumstances, use of the rapid Xpert® SARS-CoV2 PCR by the PathWest molecular laboratory may be appropriate (e.g. in the setting of critical illness or where a rapid result would significantly alter management or PPE use)
 - all requests for rapid testing must be discussed with the on-call Clinical Microbiologist or Microbiology registrar for availability and appropriateness
 - rapid testing is available within laboratory hours only (prior to 10pm on weekdays and 8pm on weekdays).

B: COVID-19 serological testing

Serology does not currently have a role for diagnosis of acute illness but may have a role in retrospective confirmation of past SARS-CoV2 infection.

At present it is only being used to assist with Public Health lead retrospective contact tracing exercises.

Serological testing can only be arranged by Public Health or upon approval by a Clinical Microbiologist or Infectious Diseases specialist.

C: Other laboratory and medical imaging investigations

Laboratory (e.g. CRP, WCC, procalcitonin) and radiological findings (e.g. chest x ray, CT) are not specific nor sensitive enough to be of routine use. The role of these investigations is for detection of complications or excluding alternative diagnosis.

Investigations suggested for suspected or confirmed COVID-19 cases:

- mild:
 - nil
- moderate:
 - consider chest x-ray to rule out lobar pneumonia, effusion, cavitation
- severe:
 - chest x-ray to rule out lobar pneumonia, effusion, cavitation

- consider blood gas, full blood picture (FBP), electrolytes/urea/creatinine (EUC) and liver function tests (LFTS)
- critical
 - chest x-ray
 - assessments of end organ function including blood gas/lactate, FBP, EUC, LFTs, coagulation profile.

Management of confirmed OR suspected COVID-19 patient

There are no proven treatments for COVID-19.

Management is supportive (adequate oxygenation and hydration) whilst maintaining staff safety through appropriate use of transmission-based principles and rational use of AGPs.

Infection control principles

In order to minimise transmission between patients, visitors and environmental surfaces and fellow Healthcare workers (HCWs) relevant Infection Prevention & Control (IP&C) precautions must be followed from the point of entry to the healthcare setting.

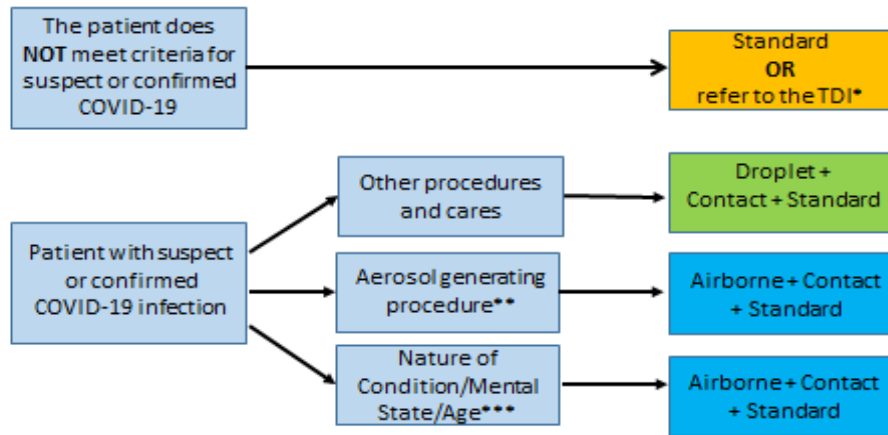
The current recommendations for PPE as per the WA Department of Health COVID-19 Pandemic IP&C Advisory Committee in the setting of no or limited community transmission are as follows:

- standard, contact and droplet precautions are required as a minimum for routine care of all patients who fulfil the definitions of suspect or confirmed COVID-19 cases
- standard, contact and airborne precautions are required for patients who are confirmed or suspected cases of COVID-19 if they:
 - are undergoing an aerosol generating procedure (AGP)
 - have severe disease (e.g. those admitted to the intensive care unit)
 - require prolonged episodes of care and adequate physical distancing during clinical encounters cannot be maintained
 - who by nature of their condition, mental state or age exhibit challenging behaviours (e.g. shouting, aggression) and adequate physical distancing during clinical encounters cannot be maintained.

For detailed IP&C advice please refer to the following reference documents:

- [CAHS COVID 19 – Infection Control, Staff Health and Patient Flow guidelines](#)
- WA Department of Health Policy: [Coronavirus Disease – 2019 \(COVID-19\): Infection Prevention and Control in Western Australian Healthcare Facilities](#) (V7, 14 May 2020)
- WA Department of Health Policy Framework: [Identification and Use of Personal Protective Equipment in the Clinical Setting during the Coronavirus \(COVID-19\) Pandemic Policy](#) (V5, 24 August 2020).

Figure 3: Transmission Based Precautions flowchart



Note: In WA in the setting of no or low community transmission, *asymptomatic* individuals presenting to CAHS services from quarantine (following international or interstate travel or contact with a confirmed COVID-19 case) should be managed in the same way as a suspect or confirmed COVID-19 patient

* Refer to the [Transmissible Diseases Index](#) (TDI) for required precautions if the patient has been diagnosed with an alternate infection or infectious clinical syndrome

** As per list of aerosol generating procedures below.

*** By nature of their condition, mental state or age exhibit challenging behaviours (e.g. aggression, screaming, shouting) and adequate physical distancing during clinical encounters cannot be maintained.

Aerosol generating procedures (AGPs)

Prior to performing an AGP consider the need and optimal timing of the procedure.

AGPs procedures promote the generation of fine airborne particles and include:

- tracheal intubation and extubation
- intentional or inadvertent disconnection / reconnection of closed ventilator circuit
- Manual bag-valve mask (BVM) ventilation
- non-invasive ventilation including CPAP and 'Neopuff'
- tracheotomy, tracheostomy change
- bronchoscopy / bronchoalveolar lavage
- sputum induction & chest physiotherapy
- open suctioning of airways
- high flow nasal oxygen (HFNO)
- cardiopulmonary resuscitation
- aerodigestive surgical procedures
- nebuliser use.

Note: the following are not considered AGPs: NGT insertion, nasopharyngeal swab collection, low flow oxygen therapy and Nitrous Oxide administration for procedural sedation.

Senior medical input should determine if the AGP is warranted based on clinical need. Decision making should be based on likely clinical benefit and whether an alternative exists (e.g. MDIs via dedicated single patient use spacer rather than nebuliser, IV therapy for asthma).

If an AGP is deemed essential in a child with an acute respiratory tract infection with a positive or unknown COVID-19 status.

- The procedure should be carried out in a negative pressure isolation room (NPIR) or single room with the door closed if NPIR not available
- Attending staff must wear airborne PPE
- Limit the number of healthcare workers who enter the room
- PPE precautions should be retained for 30 minutes following the procedure (same duration for NPIR or single room).

Management based on clinical manifestation

Thresholds for admission/transfer of patients with acute respiratory illness currently should not change. These decisions should be based on the clinical severity of disease, not the presumed underlying viral aetiology.

The management of suspected COVID-19 cases should follow existing PCH management guidelines including:

- [intravenous fluid therapy](#)
- [pneumonia](#)
- [viral Wheeze and Asthma](#)
- [bronchiolitis](#)
- [croup](#) (note there is no evidence to recommend IM rather than nebulised adrenaline for severe croup)
- [sepsis management](#)
- [ChAMP antimicrobial guidelines](#)

Management based on severity of illness

1. Mild

- Children with mild disease may not require admission to hospital if respiratory and hydration status are stable and social circumstances permit discharge home
- Manage children as per their clinical symptoms
- Families of children with suspected COVID who are discharged from hospital must be provided with both verbal and written information advising the need to remain in isolation pending the result of their COVID swab and [WA Health guidelines](#) including when and how to seek medical care in care in the event of deterioration.

2. Moderate

- Children with moderate disease should be admitted to hospital.

Respiratory support

- The following methods of oxygen delivery should target SpO₂ of ≥ 92%
 - Low flow nasal prong oxygen, maximums:
 - 2.5L/min infant
 - 3L/min child

- 4L/min adolescent
- Hudson mask to maximum 8L/min
- Head box oxygen, if FiO₂ > 0.5 is required consider patient as severe.

3. Severe

- Children with severe disease should be admitted to hospital and discussed with both the admitting consultant and PCC.

Respiratory Support

- The following methods of oxygen delivery should target SpO₂ of ≥ 92%
- Non-rebreather mask 10-15L/min
- Humidified high flow nasal oxygen (HHFNO) is an AGP. The decision to commence a child on HHFNO must be made in conjunction with a Consultant (ED, general paediatrics, respiratory medicine, intensive care). Use of HHFNO use should be limited to the management of hypoxic respiratory disease that is not manageable with standard intranasal or mask oxygen. Work of breathing alone is not an indication for its use.

4. Critical illness

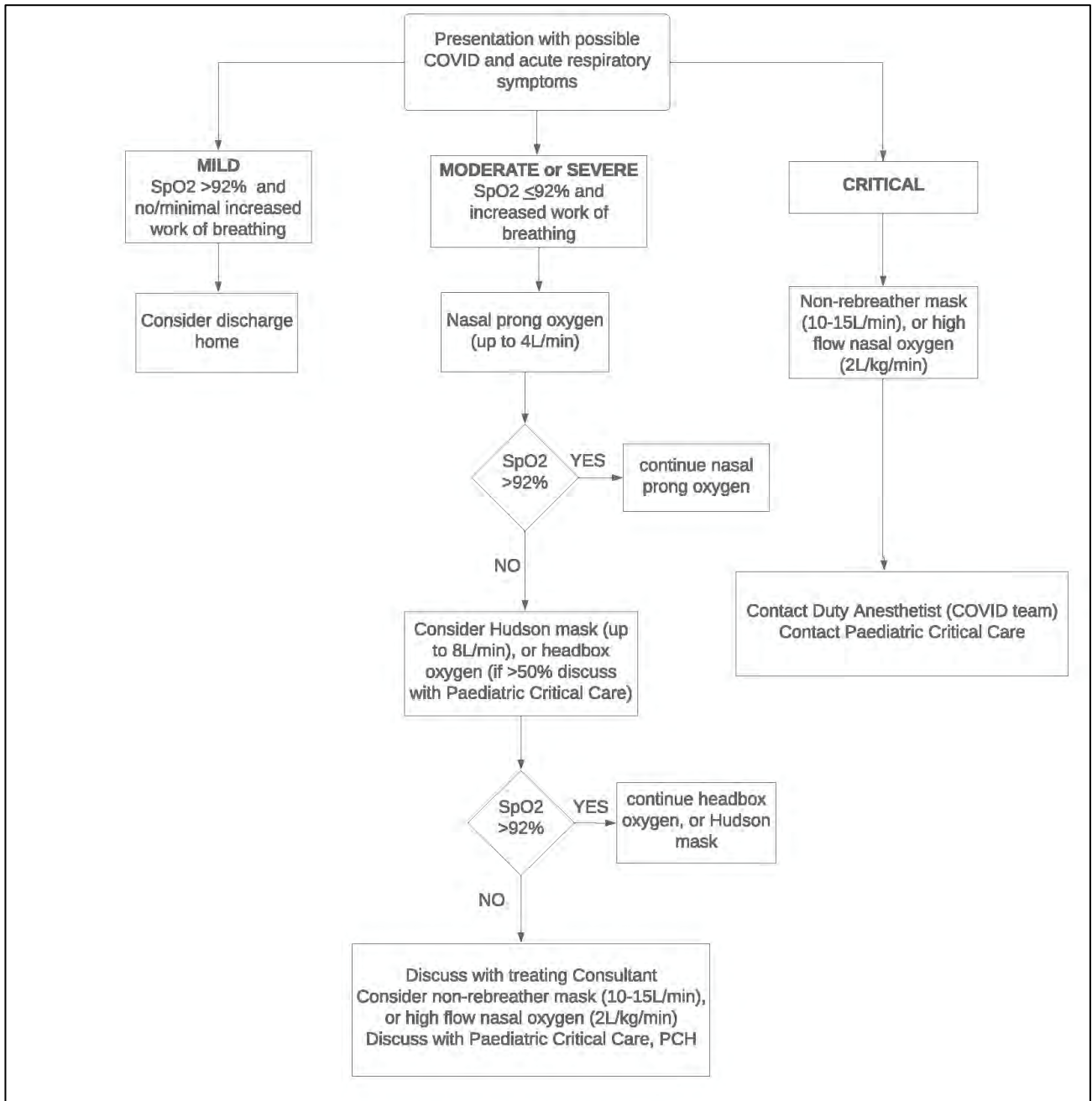
- Increase inspired oxygen concentration as required by headbox, HHFNO
- Manage primary pathophysiology i.e. upper airway obstruction, asthma whilst minimising AGPs
- If satisfactory oxygenation (SpO₂>92%) cannot be maintained consider risk/benefit of intubation and ventilation. This should be discussed with a PCH PCC consultant and/or a PCH anaesthetist
- Refer to [Consensus statement Safe Airway Society – Principles of airway management and tracheal intubation](#)
 - These principles apply to the paediatric population
- Intubation is an AGP and should be undertaken by a team that includes the most skilled intubater available. The anaesthetic technique should minimise risk to patient and staff including, pre-oxygenation, turning off oxygen flow prior to mask removal, rapid sequence induction, two handed approach to BVM ventilation to minimise droplet dispersal, use of videolaryngoscopy (e.g. C-Mac), cuffed ETT and placing of viral filter between the mask/ETT and self-inflating bag
- ETT suction should be minimised but may be essential. It should be performed with in-line suction apparatus incorporated into the airway circuit at the time of intubation.

Cardiopulmonary resuscitation

- Clinical staff should don appropriate airborne PPE prior to commencing resuscitation efforts, irrespective of the patient's condition
- Additional precautions should include:
 - two hand mask technique when using BVM
 - a viral filter used in the circuit between mask or ETT and self-inflating bag

- cessation of CPR during intubation to minimise delays
- For further guidance recommend referring to the [APLS guideline for Paediatric Advanced Life Support \(with COVID-19 considerations\)](#).

Figure 4: Flowchart of management by illness severity



Other treatment

- Currently there are no evidence based recommended treatments for COVID-19 illness that can be recommended. Trials are under way to assess effectiveness and safety of numerous therapies
- Novel therapies (such as remdesivir, anti-HIV therapies) should only be used in consultation with an Infectious Diseases Physician
- Hydration should be maintained by oral, NG or IV routes using standard guidelines
- Routine nasal suctioning is not recommended
- Ibuprofen
 - Some case reports have suggested that patients with COVID-19 administered ibuprofen have had more severe outcomes.
 - Due to the paucity of evidence in this area, major guidelines (WHO, NICE) have taken different positions on recommending ibuprofen in patients with COVID-19. As this medication is only for symptomatic management and a safe alternative exists, paracetamol should be used preferentially.

Special Groups

Patients with a chronic disease who present with an acute respiratory tract infection should be discussed with their primary paediatric consultant.

Oncology

There is a dedicated Oncology and Haematology COVID-19 advice line phone for families and carers with questions and concerns about their child and Coronavirus. Call [0436 595 810](tel:0436595810) between the hours of 8.00am – 6pm, Monday to Friday. After these hours call Ward 1A on (08) 6456 3517.

Health professionals should continue to contact the on-call Oncologist or Haematologist for all clinical advice.

Palliative care

Resources are available on the [Paediatric Goals of Patient Care](#) page on PCH Healthpoint for clinicians including guidance on 'Goals of Care Planning' pre-transfer to PCH as well as planning discussions with families.

Transfer of children to and from PCH

Thresholds for the transfer of patients with acute respiratory illness to PCH should not change. Decisions will continue to be based on the clinical severity of disease. Clinical advice relating to patient management should be sought as usual from the PCH Paediatric Critical Care consultant or paediatric specialist.

In general, children being managed at PCH who are confirmed to have COVID-19 (or who are still awaiting their result) will not be transferred back to their local hospital. Transfer back to the local hospital may be appropriate in some situations, but this must be agreed at a consultant to consultant level.

Test Resulting

Families of all children with suspected COVID-19 who are discharged from hospital must be advised to remain in isolation pending the result of their COVID-19 swab. Families should be given an [information sheet](#) on the need to self-isolate.

Confirmed COVID-19 positive cases

If a child tests positive it is the responsibility of the treating team to contact the family to inform them of the positive result. Parents should be advised to seek further medical attention if their child's symptoms worsen. Consider scheduling a telephone or telehealth review.

The treating team do not need to notify the Public Health Emergency Operations Centre (PHEOC) as long as the initial notification was made at the time of testing. PathWest will take responsibility for contacting PHEOC who will contact the family to arrange contact tracing and provide further guidance on length of social isolation.

Confirmed COVID-19 negative cases

If a child tests negative, families will receive an automated text message informing them of the result. This usually occurs on the day the negative result is released by the laboratory but is often delayed by a period of hours.

The treating team do not need to contact the family.

Caregiver information

Allowed carers of inpatients should have a mask supplied appropriate to the transmission-based precautions of the room and be educated on [hand hygiene](#), respiratory hygiene and cough etiquette.

Carers are to remain in patient room except when coming and leaving the premises. Any other movement around the hospital should be discouraged and any requests must be discussed with the clinical nurse unit manager (in hours) or hospital nurse manager (out of hours).

Carers who are in areas with limited in-room facilities (e.g. PCC) may leave the room for specific purposes such as toileting although the carer must wear a surgical mask, engage in appropriate hand hygiene practices and not walk around other parts of the hospital. [A carer information sheet](#) is available and should be given to families with suspected or confirmed COVID-19

Discharge of confirmed or suspect COVID-19 patients from PCH

Refer to the [Department of Health hospital discharge guidelines](#) for suspect and confirmed COVID-19 patients for comprehensive advice on this subject.

Discharge planning should focus on ensuring that patients are discharged to an appropriate setting with the necessary information and follow-up plans in place.

The treating team must assess the patient's need for post-hospital services and the availability of such services prior to discharge.

As a requirement for contact tracing, Public Health **MUST** be notified when a confirmed COVID-19 patient is discharged from hospital:

- call 1300 316 555 (8AM – 5PM, 7days) OR
- email: ncovcontact@health.wa.gov.au
- the following information is required:
- name and DOB
- COVID status (e.g. already cleared during admission)
- issues during admission including need for ICU admission
- projected discharge destination (home or hotel quarantine or residential facility)
- next of kin (NOK) contact details
- support status on discharge (e.g. can their NOK reply to SMS or phone call or is there a family member better placed to reply to correspondence)
- symptomatic or asymptomatic on day of discharge.

If a patient is unable to be discharged back to their place of residence, hotel or private accommodation should be arranged with the assistance of the State Welfare Incident Control Centre on COVIDSupport@communities.wa.gov.au or by calling 13 COVID.

Patients remaining under a direction to quarantine (e.g. returned international traveller) **MUST** have their discharge co-ordinated with the State Health Incident Co-ordination Centre:

- contact 9222 2017 (24 hours per day, 7 days per week) OR
- email: SHICC.covidoperations@health.wa.gov.au
- patients should only be discharged if they are well enough to return to hotel room quarantine where limited face-to-face interaction is expected.

The following principles apply for transport of patients following discharge:

- a private vehicle should be the first choice of transport for discharging a patient (family's car or a lift from a family member or close friend)
- the patient should wear a mask provided by the hospital, where possible, unless the patient has already been cleared by time of discharge.
- if general transport cannot be organised, a transport request should be made through the SHICC COVID operations:
 - call 9222 2017 (24 hours per day, 7 days per week) OR
 - email: SHICC.covidoperations@health.wa.gov.au
- if a taxi or ride share is used, the driver and patient / family must adhere to [Department of Health guidelines for public and private transport](#).

Other resources

ANZICS – COVID-19 Guidelines

[APLS Australia Statement on Paediatric Resuscitation during the COVID-19 Pandemic](#)

[ASID-ANZPID Interim guidelines for the clinical management of COVID-19 in children and adolescents](#)

[CAHS COVID 19 – Infection Control, Staff Health and Patient Flow guidelines](#)

Don't Forget the Bubbles – An Evidence Summary of Paediatric COVID-19 Literature

Govt of WA Dept. of Health Policy: [Coronavirus Disease -19 \(COVID-19\) Infection Prevention and Control in the Hospital Setting](#)

National Public Health Policy: [CDNA National Guidelines for Public health Units \(SoNG\)](#)

[PathWest Test Directory](#)

[WHO - Clinical management of severe acute respiratory infection when novel coronavirus infection is suspected](#)

Last updated 7 September 2020

This document can be made available in alternative formats on request for a person with disability.

© Department of Health 2020