

Respiratory therapies in ED during the COVID-19 pandemic

Queensland Paediatric Consensus Statement

Recommendations are provided by senior Paediatric Critical Care, Paediatric and Emergency clinicians across Queensland to guide initial Emergency Department (ED) management and reduce the risk of COVID-19 transmission for children with an unknown or confirmed positive COVID-19 status. This document is current as of time of publishing and it is recognised that advice and evidence evolve rapidly. These recommendations are intended to guide EDs in formulating their approach, recognising that each department may have limitations in terms of space and resources, and that clinical care should not be compromised.

The following recommendations apply to all children irrespective of clinical or close contact risk factors during times of high community transmission as defined by SHECC or Public Health Directive. During low or moderate periods of community transmission, clinical and close contact risk factors apply for patients where their COVID status is unknown.

Nebulisers

Salbutamol, Ipratropium and Adrenaline administration recommendations

Salbutamol Ipratropium	<ul style="list-style-type: none"> MDI and spacer routinely recommended with/without low flow nasal oxygen. Only use nebulised Salbutamol and Ipratropium in child in extremis on senior advice.
Adrenaline	<ul style="list-style-type: none"> Only use nebulised Adrenaline in croup cases if significant stridor at rest and significant work of breathing or hypoxia on senior advice



Seek urgent senior emergency/paediatric approval to administer nebulised Salbutamol, Ipratropium or Adrenaline. **In life-threatening cases DO NOT delay for approval.** Notify in parallel with treatment.

ALERT – Requirements for the administration of nebulised medications



- Attending staff in airborne plus PPE (N95/goggles or face shield/gown/gloves)
- Child in negative pressure room where possible, else in single occupant room with door closed

Nasal High Flow (NHF) Therapy

Low flow nasal prongs (LFNP) are the recommended first-line therapy for all hypoxic children requiring respiratory support. The principles below should be followed for all patients during times of high community transmission of COVID.



Current recommendations for children failing low flow nasal prongs

- Implement NHF only after discussion with treating and accepting SMOs (Emergency/Gen Paeds/Resp/Paediatric Critical Care).
- Airborne plus PPE
- Ideally negative pressure room, or single room with HEPA filter, or single room with door closed
- Urgent SMO to SMO discussion between Emergency/Paeds critical care/General Paeds to determine next step of respiratory support



ALERT - Transporting child at risk of COVID-19 infection or with confirmed COVID-19 infection on NHF: Where possible do not transport on high flow and expedite transfer to definitive location where NHF can be initiated. If this is not possible, transfer must be done with staff in airborne plus PPE, with contact precautions, and an extra staff member to clear the transit route. Placing a surgical or N95 mask on the patient is not recommended

Failing is defined as per the PARIS protocol definitions

- a) Heart rate remains unchanged or increased after 1 hour compared to observations at commencement of LFNP
- b) Respiratory rate remains unchanged or increased after 1 hour compared to commencement of LFNP
- c) Oxygen requirement exceeds 2L/min via nasal prongs (or 6L/min via Hudson mask where nasal prongs are not tolerated by the patient) to maintain $SpO_2 \geq 92\%$
- d) Hospital internal Early Warning Tool calls for medical review and escalation of care.

Aerosol Generating Procedures

Procedures associated with risk of aerosolization requiring airborne plus PPE:

- Collection of swabs for COVID-19 testing
- Administration of nebulised medication
- Nasal high flow oxygen
- NIV
- Intubation



Clinical scenario 1

Bronchiolitis in child less than 12 months of age

COVID-19 testing (rapid antigen test or PCR) depending on local practice

If SARS-CoV-2 positive needs respiratory viral PCR performed (*co-infection informs subsequent management*)

Clinical presentation	Management
<ul style="list-style-type: none"> Mild to moderate increased work of breathing SpO₂ 92% or greater in room air Deemed to require admission 	<ul style="list-style-type: none"> No NHF and no oxygen required Airborne plus PPE and contact precautions, manage in single room if possible or cohorted as per local COVID-19 policy until status known
<ul style="list-style-type: none"> Mild to moderate increased work of breathing Oxygen requirement (SpO₂ <92% in room air) 	<ul style="list-style-type: none"> Use low flow oxygen to support SpO₂ of 92% or above If failing (see box above), consider NHF, discuss with senior clinician including where to start NHF (ward vs ED) Airborne plus PPE and contact precautions for low flow, manage in single room if possible or cohorted as per local COVID-19 policy until status known Airborne plus PPE for aerosol generating procedures and treatments and if escalation to NHF, if available move to negative pressure area if NHF required in ED
<ul style="list-style-type: none"> Moderate to severe increased work of breathing Oxygen requirement (SpO₂ <92% in room air) 	<ul style="list-style-type: none"> Consider NHF, discuss with senior clinician – ED/Crit Care/PaedS - if possible, commence NHF on ward setting not ED Airborne plus PPE, contact precautions and isolation in negative pressure room where possible, or cohorted as per local COVID-19 policy until status known

Clinical scenario 2

Respiratory disease excluding bronchiolitis in child 0-16 years of age

COVID-19 testing (rapid antigen test or PCR) depending on local practice

If SARS-CoV-2 positive needs respiratory virus PCR performed (*co-infection informs subsequent management*)

Clinical presentation	Management
<ul style="list-style-type: none"> Mild to moderate increased work of breathing SpO₂ 92% or greater in room air 	<ul style="list-style-type: none"> No NHF or oxygen required Airborne plus PPE, contact precautions and isolation in negative pressure room where possible, or cohorted as per local COVID-19 policy until status known



<ul style="list-style-type: none"> • Mild to moderate to severe increased work of breathing • Oxygen requirement (SpO2 <92% in room air) • History of any of: <ul style="list-style-type: none"> - prematurity - hospitalisation for respiratory disease - requirement for respiratory support 	<ul style="list-style-type: none"> • Use low flow oxygen to support SpO2 of 92% or above • Escalation of therapy is dependent on underlying clinical condition and should be discussed early with General Paediatrics/Paediatric Critical Care/senior ED clinician depending on local practice. • NHF and Non-invasive ventilation (NIV) can be used providing staff have airborne plus PPE, maintain contact precautions and child is contained in negative pressure or single occupancy room with door closed. • If possible initiate NHF or NIV in definitive inpatient setting to avoid transfer of patient on NHF or NIV • Consider intubation where appropriate, in consultation with local ICU or Retrieval Services Queensland
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Related resources

- [Optimus BONUS simulation packages - Use of nebulisers for children during a Covid-19 outbreak](#)
- [CHQ-GDL- 63327 Management and treatment of children with acute SARS-CoV-2 infection \(COVID-19\)](#)
- [CHQ COVID-19 PPE requirements – high community transmission](#)

Guideline approval

Document ID	CHQ-GDL-60033	Version no.	1.0	Approval date	13/01/2022
Executive sponsor	Executive Director Medical Services			Effective date	13/01/2022
Author/custodian	Emergency Department			Review date	13/01/2025
Supersedes	Nil				
Applicable to	Queensland Health medical and nursing staff				
Document source	Internal (QHEPS) + External				
Authorisation	Executive Director Clinical Services				

Keywords	Paediatric, emergency, guideline, respiratory therapies, ED, COVID, covid-19, high flow, NHF, aerosol generating, 60033
Accreditation references	NSQHS Standards (1-8): 1 Clinical Governance, 3 Preventing and controlling healthcare associated infections, 8 Recognising and Responding to Acute Deterioration

