Clinical Guideline

Health
Hunter New England
Local Health District

# Inpatient Clinical Management of COVID-19 in Adults

**Due to the continuously emerging situation, this Clinical Guideline will be regularly updated**

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| **This clinical guideline applies to:** | Hospitalised patients with:<br>• **confirmed diagnosis of COVID-19** (i.e. with positive respiratory sample PCR for SARS-CoV-2), OR<br>• **provisional diagnosis of COVID-19** (i.e. a senior clinician considers it a likely diagnosis, not only that the patient meets testing criteria) |
| **Sites where clinical guideline applies:** | All acute facilities |
| **This Clinical Guideline applies to:**<br>• **Adults**<br>• **Children up to 16 years**<br>• **Neonates – less than 29 days** | <br>Yes<br>No<br>No |
| **Target Audience** | All clinicians |
| **This document contains advice on therapeutics** | Yes<br>Approval gained from District Quality Use of Medications Council (DQUMC) on 24 August 2021 |
| **Position responsible for clinical guideline:** | Joshua Davis, Infectious Diseases Staff Specialist<br>Joshua.Davis@health.nsw.gov.au |
| **Clinical guideline contact officer:** | Bianca Gray, Clinical Editor, Clinical Governance<br>Bianca.Gray@health.nsw.gov.au |
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| **Previous versions** | HNELHD CG 21_35 Version 1 from 19 July 2021; HNELHD CG 20_14 Versions 1 to 10 from 19 March 2020 |

**FURTHER RESOURCES:**

- COVID-19 Infection Prevention and Control Manual (see also HNE COVID19 Intranet IPC page)
- Federal CDNA Public Health guidelines
- NSW Guidance on Laboratory Testing for SARS-CoV-2
- Latest COVID-19 case locations and alerts in NSW
- Australian Society of Anaesthetists - Principles of Airway management in COVID-19
- National living COVID-19 evidence-based guidelines

## 1. Current Testing Criteria

*Note Enhanced testing criteria (beyond the suspect case definition) continue to be recommended, as below:*

- Anyone with unexplained fever (temperature ≥ 37.5°C) **OR** history of fever (e.g. night sweats, chills) **OR** acute respiratory symptoms (e.g. cough, shortness of breath, sore throat) **OR** loss of smell or taste is to be tested for SARS-CoV-2.
- Note a patient with a likely alternative explanation for fever or respiratory symptoms does not need to be tested unless there is a strong epidemiological reason (as per CDNA criteria – e.g. close contact with a confirmed or suspected case, travel to areas with recent or current community transmission in the past 14 days). All patients with pneumonia without a proven aetiology (e.g. RSV, pneumococcal bacteraemia) should be tested for SARS-CoV-2, especially those with bilateral pneumonia.
- For advice about the current local approach to respiratory virus testing and the availability/indications for rapid SARS-CoV-2 tests, refer to Limited respiratory virus PCR multiplex and Rapid testing Brief. Rapid testing capacity is now available at JHH, Taree, Tamworth, and Armidale laboratories.

## 2. Assessment for Hospital Admission

- Where possible patients with a provisional or confirmed COVID-19 diagnosis should be managed in the COVID-19 positive hotel, or if they are able to effectively isolate away from other members of their household, at home with monitoring by COVID Care in the Home.
- Consider admission if haemodynamically unstable, hypoxaemia ($SpO_2$ <94% on room air), comorbidities or unable/unlikely to effectively isolate at home or in the COVID-19 positive hotel.
- Discuss all provisional or confirmed COVID-19 cases potentially requiring admission or transfer:
    - John Hunter Hospital:
        - Contact the COVID-19 consultant on-call
    - Tamworth Rural Referral Hospital:
        - Emergency department – contact emergency physician on-call
        - Ward inpatients – contact physician on-call
        - ICU and Operating Theatres – contact intensivist on-call
    - Belmont Hospital, Maitland Hospital and Manning Hospital:
        - Contact the JHH COVID-19 consultant on-call (via JHH switchboard 4921 3000)
    - Calvary Mater Newcastle:
        - During business hours - contact the Infectious Diseases consultant on-call
        - After hours – contact the JHH COVID-19 consultant on-call
    - Armidale Rural Referral Hospital
        - Contact emergency physician / physician on-call
    - All other facilities:
        - Contact the consultant/physician on-call as above according to your facilities usual escalation process

  Please note the term 'COVID-19 Consultant' used in this guideline refers to the above positions.
- Discuss and complete a resuscitation plan for all patients admitted with provisional or confirmed diagnosis of COVID-19, as soon as practicable.

## 3. Patient Placement and Infection Control

- Manage all patients with confirmed COVID-19 under **standard, airborne, contact and droplet additional precautions** (P2/N95 respirator, eye protection, fluid resistant gown or apron, gloves) in a locally designated COVID-19 (red) area.
- Manage all suspect COVID-19 cases (awaiting test result) under **standard, airborne, contact and droplet** additional precautions in a designated separate area (orange) to confirmed cases.

  - "Suspect case" means there are clinical AND epidemiological criteria for COVID-19, as per Federal CDNA Public Health guidelines. Epidemiological criteria are currently: "Close contact" with a confirmed case • International travel • Workers supporting designated COVID-19 quarantine and isolation services • International border staff • Air and maritime crew • Health, aged or residential care workers with potential COVID-19 patient contact • People who have been in a setting where there is a COVID-19 case • People who have been in areas with recent local transmission of COVID-19

- Confirmed and suspect cases should not be allowed visitors, unless they are on an end of life care pathway as below.
- Confirmed and suspect cases must wear a surgical mask as source control when transported by ambulance or through areas of the hospital. Surgical mask to be placed over oxygen administration devices (e.g. nasal prongs, SFM, NRB).
- Avoid nebulising medications[1]
- If initial SARS-CoV-2 PCR returns negative, proceed according to the pre-test probability:
  - Low to moderate pre-test probability (e.g. Didn't meet testing criteria, firm alternate diagnosis, clinical or epidemiological issues not suggestive – discuss with COVID-19 consultant on call if unsure)
    - Remove from isolation after clearance from medical team and continue to manage as clinically indicated. If the patient has a clinically suspected viral URTI, await further PCR results and determine duration of contact and droplet precautions based on the Acute Respiratory Infection Management Factsheet
  - High pre-test probability (determined by COVID-19 consultant on call)
    - Continue isolation
    - Repeat SARS-CoV-2 swab as soon as possible, use a lower respiratory tract specimen if available (sputum or ET aspirate)
- For patients with confirmed COVID-19:
  - Consider need to transfer early to a higher-level facility (see appendix 1).
  - If transfer required, discuss with the COVID consultant on-call for that facility.

## 4. Diagnostic work up

- Consider differential diagnoses and assess as per usual practice.
- If patient meets criteria for severe CAP and COVID-19 test pending, investigate as for severe CAP – ensure R14 swab (nose/throat sample) is attended (includes SARS-CoV-2 test). If critically unwell, include rapid Flu/RSV PCR request. Take baseline serum for storage in case paired SARS-CoV-2 serology needed later on.

## 5. Monitoring of provisional or confirmed COVID-19

- Monitor CRP, FBC, EUC, LFTs, procalcitonin, D-Dimer and LDH every 1-3 days, depending on severity
- Perform baseline 12-lead ECG
- Repeat CXR only if clinically indicated (e.g. if patient is deteriorating or has been recently intubated)
- There is no need for routine CT scanning, only CT scan if clinically indicated
- If patient is critically unwell, monitor coagulation profile and troponin I

[1] Metered dose inhalers and spacers are the most effective way to deliver bronchodilators in asthma and COPD. There are limited circumstances where nebulisers are the only way to deliver medications, life threatening asthma, nebulised adrenaline for severe croup and the delivery antibiotics in cystic fibrosis and bronchiectasis.

## 6. General management

- Give supplemental oxygen if $SpO_2$ <92% or significantly below baseline, starting with nasal prongs (0.5-3 L/min).
- Use restrictive fluid strategies, 1-2 litres of IV fluid per day, only if no oral intake or clinically dehydrated.
- If hypotensive, administer 250 ml fluid boluses and refer to ICU for vasopressor therapy if patient remains hypotensive after 2-3 boluses.
- Consider antibiotics for bacterial pneumonia if hypoxaemic ($SpO_2$ <92%), rising procalcitonin, pleural effusion or purulent sputum (treat for CAP or HAP as per HNE local guidelines).
- If awaiting influenza PCR result AND chronic comorbidities or critically ill: Prescribe oseltamivir if symptom onset <72h ago and not critically ill, or <7 days ago if critically ill. Cease if influenza PCR returns negative.
- Commence venous thromboembolism (VTE) prophylaxis as per standard protocol.
- Avoid use of nebulisers - use metered dose inhalers with spacers where possible. Check patient is using inhaler correctly. If a nebuliser must be used, airborne infection control precautions are required.

## 7. Adjunctive and antiviral drugs

- Patients requiring supplemental oxygen or ventilatory support should be prescribed dexamethasone **6 mg daily** orally or intravenously (if patient is unconscious or not tolerating oral intake) for up to 10 days.
    - Corticosteroids should be avoided in patients not requiring supplemental oxygen unless there is an evidence-based indication for them e.g. severe acute exacerbation of COPD or asthma.
- Remdesivir is recommended in hospitalised patients with moderate to severe COVID-19 who **DO NOT** require invasive or non-invasive mechanical ventilation**.**
    - Use remdesivir **200 mg intravenously on day 1, then 100 mg intravenously daily for a further 4 days (total 5 days treatment)** in patients who have $O_2$ saturations ≤ 92% on room air and require supplemental oxygen, but who are not intubated.
    - Remdesivir is contraindicated in patients with:
        - Known hypersensitivity to any ingredient of remdesivir
        - Renal impairment (eGFR < 30mL/min/1.73m²), on dialysis or continuous veno-venous hemofiltration
        - Hepatic impairment (ALT >5 x upper limit of normal (ULN), or AST > 3x ULN and Bilirubin >2x ULN)
        - Evidence of multi-organ failure including, but not limited to, coagulopathy (significant thrombocytopenia), hepatic failure, renal failure or significant cardiomyopathy
- In addition to dexamethasone +/- remdesivir, add a second immunomodulatory agent in those requiring supplemental oxygen **IF** there is evidence of systemic inflammation, escalating need for respiratory support (HFNO, BiPAP or IMV) or severe pneumonitis.

  Use **ONE** of the following depending on availability and clinician preference:
    - Baricitinib 4 mg daily orally for up to 14 days or until hospital discharge, whichever occurs first

    **OR**

    - Tocilizumab as a single dose IV infusion over 60 minutes
        - Patients > 90 kg: 800 mg tocilizumab
        - Patients 66–90 kg: 600 mg tocilizumab
        - Patients 41–65 kg: 400 mg tocilizumab
        - Patients ≤ 40 kg: 8 mg/kg tocilizumab

- Note additional restrictions on use of tocilizumab due to current critical supply disruption. Tocilizumab should only be used in:
  - patients where baricitinib is not suitable (e.g. can't absorb oral medications)
  - critically ill patients requiring direct admission to ICU for mechanical ventilation
  - pregnant or breastfeeding women, children and adolescents requiring supplemental oxygen
  - patients in whom administration of medications via oral/nasogastric route is not possible

**OR**

- Sarilumab as a single IV infusion of 400 mg over 60 minutes

- **Do not use other antivirals, antibodies or immunomodulatory agents outside the context of a randomised controlled trial**.
- See COVID-19 Resources - NSW Therapeutic Advisory Group (nswtag.org.au) for Drug Guidelines approved for local use (Dexamethasone, Baricitinib, Remdesivir, Tocilizumab), patient information and regulatory forms.
- Refer to Pharmacy department for further advice about stock availability and access

## 8. Escalation of Care

**HNELHD facilities with ICU services**

- Do not refer to ICU if the patient has an advanced care directive or resuscitation plan precluding ICU care.
- Discuss with ICU if:
  - Requiring ≥ 4 L/min oxygen to maintain oxygen saturations ≥ 92% (or acceptable $O_2$ saturations in patients with lower baselines), or rapidly worsening tachypnoea or hypoxaemia
  - Haemodynamic instability or decreasing level of consciousness

**HNELHD facilities without ICU services**

- Do not transfer to higher level facility with intensive care services if the patient has an advanced care directive or resuscitation plan precluding ICU care.
- Consider need to transfer patient early to a higher-level facility with an ICU if:
  - Requiring ≥ 4 L/min oxygen to maintain oxygen saturations ≥ 94% (or acceptable $O_2$ saturations in patients with lower baselines), or rapidly worsening tachypnoea or hypoxaemia
  - Haemodynamic instability or decreasing level of consciousness
- Consider infection control implications of transfer and discuss with the retrieval service and accepting ICU regarding the safest transfer plan for both the patient and staff.

## 9. Management of respiratory failure and critical illness

- If HFNO or NIV are used, place patient in negative pressure isolation room where available. If a negative pressure room is not available, use a single room with negative flow to outside (i.e. out of the hospital building) or a single room with the door closed. Minimise the number of staff present in the room. All persons in the room must wear contact, droplet and airborne precautions.
  - High flow humidified nasal oxygen (HFNO) should be considered if unable to maintain $SpO_2$ ≥ 92% with $O_2$ flow rates ≥ 6 L/min or $FiO_2$ of 0.4. If HFNO is used, apply lowest flow rate necessary to maintain $SpO_2$ ≥ 92%.

  - Non-invasive ventilation (NIV) may be effective in some patients with hypoxaemia and low work of breathing (WOB) and to potentially avoid intubation.

- Aim for early intubation and positive pressure ventilation in those who are deteriorating despite non-invasive respiratory support. For further information on airway management, ventilator strategies and other management see:
  - ANZICS COVID-19 Guideline
  - CEC – Airway Management: Respiratory Precautions
- If a suspected or confirmed COVID patient experiences cardiac or respiratory arrest, see revised, COVID-19 specific Basic Life Support (BLS) and Advanced Life Support (ALS) algorithms.

## 10. Palliative and end of life care

- If intensive medical intervention fails or is unable to be provided, ensure symptom control and end of life care is provided in line with the End of Life Toolkit.
- COVID-19 patients who are receiving end of life care should be moved to a single room if available, and be allowed to have a single visitor at a time. Visitation is contingent upon an exemption, further information available in the Compassionate visit during COVID-19 procedure. Where possible, a single nominated family member/loved one/guardian should represent the family. Staff should support virtual visiting for other family members (e.g. using Facetime or Skype). Visitors must use appropriate PPE and should be regarded as "close contacts" and thus will require home isolation for 14 days after the last visit.
- If a patient dies from COVID-19, please see Care of the Deceased – Coroners and Care of the Deceased – Non Coroners

## 11. Discharge planning and release from isolation

*The requirement for 2 negative PCRs prior to release from isolation has been removed for most patients, including those going into high-risk settings (e.g. health care workers). It only remains for those who are still symptomatic but 15-20 days from symptom onset, or for immunosuppressed patients.*

**1)** If a patient hospitalised with COVID-19 is clinically ready for hospital discharge, they can be discharged to isolation at home or in another facility, and isolation should continue until:

  - at least 14 days have passed since the onset of symptoms;
  - AND resolution of all symptoms of the acute illness for the previous 72 hours;

Discuss with the COVID Care Home team on 0428112384 or HNELHD-GreaterNewcastleHITHCOVID@health.nsw.gov.au

**2)** If a patient hospitalized with COVID-19 has not had complete resolution of respiratory symptoms, isolation should continue until:

  - at least 20 days after the onset of symptoms
  - AND the patient is not significantly immunocompromised

OR

  - at least 14 days have passed since the onset of symptoms
  - there has been substantial improvement in respiratory symptoms of the acute illness (including resolution of fever for the previous 72 hours), AND
  - the case has had two consecutive respiratory specimens negative for SARS-CoV-2 by PCR taken at least 24 hours apart and at least 10 days from symptom onset.

**3)** If a patient is significantly immunocompromised they must have 2 negative PCRs collected at least 24 hours apart, at least 7 days from symptom onset, prior to release from isolation.

**NOTES**

- If a patient who has been cleared as above requires re-admission to hospital, they do NOT need to be retested and isolated UNLESS they have developed NEW unexplained fever or acute unexplained respiratory symptoms
- If a patient has an ongoing post-viral cough OR ongoing chronic pre-existing cough/SOB, they can be cleared from isolation if they meet all of the above criteria (i.e. these patients can still be considered to have resolution of the acute illness). If this chronic cough is productive, the sputum should be shown to be SARS-CoV-2 PCR negative prior to release from isolation.
- Ensure discharge summary is completed with clear information to the general practitioner including episode of care and required follow up arrangements.

## Appendix 1:

### Level of Care that could be provided (if required) for adult patients with suspected (orange) or confirmed (red) COVID-19

This table represents the maximum level of care that could be provided at each facility. This does not allow for variations such as staffing and resources, and periodic policy changes.

| **All Patients** | **Only COVID-19 orange and red patients who are able to maintain Sp02 > 92% on 4L oxygen or less** | **No COVID orange or red** |
|---|---|---|
| John Hunter (ICU Hub/ ECMO)<br>Calvary Mater Hospital<br>Tamworth (ICU hub)<br>Manning<br>Maitland | Belmont<br>Tomaree<br>Kurri Kurri<br>Merriwa<br>Murrurundi<br>Muswellbrook<br>Scone<br>Singleton<br>Cessnock<br>Dungog<br>Gloucester<br>Bingara<br>Boggabri<br>Moree<br>Narrabri<br>Warialda<br>Wee Waa<br>Barraba<br>Gunnedah<br>Manilla<br>Quirindi<br>Walcha<br>Armidale<br>Glen Innes<br>Guyra<br>Inverell<br>Tenterfield | Denman<br>Bulahdelah<br>Werris Creek<br>Emmaville<br>Tingha |
| **Escalation** | **Transfer as per usual escalation process (Patient Flow Unit, Retrieval services)** | |