Managing COVID-19 in adults

Introduction

Initial clinical assessment for potential COVID-19 in all patients should be guided by the Screening tool. Further guidelines on infection control precautions, bed management etc. are also found at the same link.

This guideline has been adapted from the Australian National COVID-19 Clinical Evidence Taskforce and Counties Manukau District Health Board management guideline and has been revised by Infectious Diseases, for use at the Auckland District Health Board. It refers to ongoing clinical management **FOR ADULTS ONLY** in the following patient groups:

Confirmed COVID-19 *(SARS-CoV-2 test positive during current illness)*	**Probable COVID-19** *(tested negative, but ID decision to treat as COVID)*

i.e. does not apply to those with 'Suspected', 'High risk criteria', 'Acute respiratory infections' or 'contact' groups.

Initial Management

	MILD	MODERATE	SEVERE / CRITICAL
DEFINITION	No symptoms **OR** URTI symptoms only **OR** cough, new myalgia or asthenia without new shortness of breath or reduction in oxygen saturation	Stable adult patient presenting with shortness of breath and/or systemic symptoms or signs. Able to maintain oxygen saturation ≥92% (or ≥90% for patients with chronic lung disease) with up to 4 L/min oxygen via nasal prongs.	Adult patients meeting any of the following criteria: • Respiratory rate ≥30/min • Oxygen saturation <92% on 4L/min oxygen via nasal prongs • Clinically deteriorating
BASELINE TESTING & WORK-UP	• Only as clinically indicated. • Low value testing is discouraged.	• FBC, Creat, electrolytes, LFTs, CRP • ECG only if specific indication • Chest x-ray • ABG if saturations <92% • Investigations for CAP (urinary antigen for *S. pneumoniae*, sputum culture and PCR panel) if CXR shows focal consolidation. • Blood cultures if febrile or shocked • d-dimer & ferritin • HIV test	• FBC, Creat, electrolytes, LFTs, CRP • ECG • Chest x-ray • ABG • Investigations for CAP (urinary antigen for *S. pneumoniae*, sputum culture and PCR panel) if CXR shows focal consolidation. • Blood cultures if febrile or shocked • Coag screen, d-dimer, LDH, ferritin, BNP, troponin, consider echocardiogram • HIV test
TREATMENT ESCALATION PLANNING	• Assess ability to manage in a quarantine (hotel) setting. • Consider & document risk factors for severe COVID.	• Early decision & documentation of ceiling of therapy (including respiratory support modalities). Involve ICU and Respiratory early. • Consider & document risk factors for poor COVID outcome. • Complete the ADHB Goals of Care form for all patients	
	• NOTE – any new deterioration >7 days post onset of illness requires careful assessment, observation & judgement. Severe COVID-19 frequently develops with a rapid deterioration.		
DISPOSITION DECISION	• Encourage discharge (discuss with JetPark via ID). • Liaise with Public Health.	• Admit to Ward 7A under the COVID CBU. • Liaise with Respiratory if requiring oxygen >2L/min and/or comorbid respiratory disease e.g., NIV for OSA	• Admit to Ward 7A or ICU. • Discuss with ICU and/or Respiratory regarding destination.
PROBABLE ONLY	Collect serum sample in acute phase, repeat ≥2 weeks later, for 'COVID serology'		
MONITORING & MARKERS OF CLINICAL DETERIORATION	• Monitor for progressive respiratory failure and sepsis, especially on days 5 to 10 after onset of symptoms. • Only repeat CXR in people with suspected or confirmed COVID-19 if clinically indicated (e.g. in cases of clinical deterioration or recent intubation). • Do not routinely perform CT scanning - only if clinically indicated. • Anticipate complications such as pulmonary embolism, other thromboembolism, arrhythmias, cardiac impairment, acute kidney injury, sepsis, shock and multi-organ dysfunction, and address using existing standards of care. Also be aware of potential complications from trial drugs, if applicable. • Repeat baseline investigations (see above) periodically in patients who are not clearly improving, in order to detect & manage the above complications.		
NOTIFICATION	• Discuss all cases with the COVID SMO or on call ID physician at the earliest opportunity • If not already notified, send e-ref to Auckland Regional Public Health AND notify by telephone (09 623 4600)		

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CLINICAL TRIALS	• All patients should be screened for eligibility for one of two clinical trials currently recruiting at ADHB • 'REMAP-CAP' is recruiting patients admitted to ICU, and 'ASCOT-ADAPT' is recruiting hospitalised patients outside of ICU. Discuss with ID in the first instance.

Treatment

NOTE:- the standard-of-care for patients with COVID-19 is to be offered enrolment in one of our clinical trials. This table indicates which treatment modalities are affected if the patient is enrolled in a trial:

MODALITY	PATIENT SUB-GROUPS	RECOMMENDATION
RESPIRATORY SUPPORT	All patients	Switch nebulisers to metered dose inhalers via spacer if possible. Encourage self-proning in patients who are able to follow verbal instructions if safe and feasible
	SpO_2 <92% or significantly below baseline	• Administer dry oxygen (0.5-3 L/min) via standard nasal prongs • Aim for SpO_2 90-92% (>86% for those at risk of hypercapnic respiratory failure or known COPD) • Use Hudson mask (5-10 L/min) if higher flow rates required
	Unable to maintain SpO2 ≥92% on conventional oxygen at 6 L/min	• Consider High Flow Nasal Oxygen (HFNO, eg 'Airvo") or NIV • Discussion with ICU and Respiratory SMO • *Note that these are potential aerosol-generating procedures*
	Hypercapnic patients with underlying COPD or OHS	• Discuss with Resp regarding Non-Invasive Ventilation (NIV) *Note that this is a potential aerosol-generating procedure*
FLUID MANAGEMENT	• Use IV fluids as you would in any unwell patient • Avoid: 'maintenance' IV fluids, high volume enteral nutrition, and repeated fluid boluses for hypotension. • Involve ICU for consideration of vasopressor therapy if not responding after 2-3 boluses	
ICU CARE	Patients with any of the following signs of deterioration should be discussed with ICU: • Increasing oxygen requirement (requiring FiO2 of 0.4 to maintain SpO_2 >92% on HFNO, or 10-15L/min conventional O_2 therapy) • Increased work of breathing with impending respiratory failure • Haemodynamically unstable and non-responsive to fluid bolus therapy • Rapidly worsening tachypnoea or hypoxaemia • Detailed clinical guidelines for ICU care of COVID-19 is beyond the scope of this guideline.	
STEROIDS	Adults who do not require oxygen	Do not use oral steroids to treat mild COVID-19. Consider inhaled budesonide (800 micrograms bd for 14 days) in patients over 65 years or those over 50 years with comorbidities.
	Adults requiring oxygen and/or ventilatory support to maintain oxygen saturation ≥92%	Dexamethasone 6mg daily IV/PO until discharge OR up to 10 days (whichever sooner).
	Adults with another evidence-based indication for steroids (e.g. asthma/COPD exacerbations)	Steroids as per usual practise.
THROMBOSIS MANAGEMENT	Adults with mild or moderate COVID-19 <u>AND</u> no contra-indication to anticoagulation e.g. risk for major bleeding	Enoxaparin 1mg/kg SC bd if eGFR >30 mL/min/1.73m^2 • Reduce to 1mg/kg daily if eGFR <30mL/min/1.73m^2 • *Liaise with Haematology if low platelet count (<50 x10^9), or low fibrinogen level (<1.0g/L)*
	Adults with severe COVID-19 (ICU required)	Heparin 5000U SC 8 or 12 hourly or enoxaparin 40mg SC daily • Patients on the ward on therapeutic-dose enoxaparin who deteriorate and require ICU care need discussion with Haematology and COVID team • Consider enrolment in REMAP-CAP for dosing options

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	Pregnant or postpartum women with any severity of COVID-19	Enoxaparin as above *NOTE:- Discuss dosing & duration with Obstetrics*
IMMUNE MODULATION THERAPY	*There are no trials of immune modulation therapies currently recruiting at ADHB*	
	Adults with COVID-19: • AND receiving oxygen + steroids • AND evidence of severe systemic inflammation (raised CRP, ferritin or procalcitonin) • AND there is not another active, severe secondary infection	Give tocilizumab: • Apply to PHARMAC (NPPA) or local HMC for rapid access • 8mg/kg (actual body weight) rounded to nearest 200mg (max dose 800mg), as a single dose
	COVID-19 not meeting the criteria above	Do not use immune modulation therapy
ANTI-VIRAL THERAPY	***All patients enrolled in ASCOT-ADAPT trial (anti-viral domain)***	***As per trial protocol & randomisation (in addition to remdesivir, if indicated below)***
	Adults with mild COVID-19	Do not use remdesivir or any other anti-viral outside of a clinical trial
	Adults with moderate to severe COVID-19 who do not require ventilation with oxygen saturations of <92% on room air and do not fulfil criteria for immune modulation therapy • *Note – must have ALT <5 x ULN and/or ALT <3 x ULN and bilirubin <2 x ULN*	• Consider Remdesivir to reduce time to recovery, see the eligibility criteria for access to remdesivir • 200mg IV on day 1, then 100mg q24h for a further 4 days. Dose made up in 250mL 0.9% NaCl, infuse over 30-120min • Monitor LFTs daily; discuss with ID if eGFR <30 or AKI
	Adults with critical COVID-19 who require ventilation (invasive or non-invasive)	Do not use remdesivir or any other anti-viral outside of a clinical trial
ANTIBIOTIC THERAPY *(not routinely indicated to treat COVID-19)*	Mild or moderate COVID-19 without specific evidence of concurrent bacterial infection (which is rare in the first 7 days of illness)	Do not use antibiotics
	Any severity of COVID-19 AND specific evidence of concurrent bacterial infection (e.g. positive culture/antigen, purulent sputum, focal/unilateral consolidation, unilateral pleural effusion, neutrophilia)	Calculate CURB-65 score Treat as per SCRIPT guidelines
	Severe/critical COVID-19, especially with any deterioration occurring >7 days post onset	Discuss with ID (in hospitalised COVID-19 it is common to develop late, severe, secondary bacterial sepsis)
THERAPIES FOR EXISTING INDICATIONS	• ACE-inhibitors / ARBs • Oral contraceptive pill (with or without oestrogen) • Antenatal steroids for high risk of preterm birth	• Usual care (i.e. may be continued in COVID-19 unless otherwise contra-indicated)
	• Corticosteroids for asthma/COPD (inhaled or oral, with or without bronchodilators)	• Usual care • Do not use a nebuliser
	• Oral menopausal hormone therapy / HRT	• Consider stopping until after recovery
SURGERY	• Do not routinely perform elective surgery within eight weeks of recovery from COVID-19 infection, unless outweighed by the risk of deferring surgery, such as disease progression or clinical priority.	
PREGNANCY & PERINATAL CARE	• Out of scope for this local guideline; detailed guidance is included in the Australian COVID-19 guidelines • Input from Obstetrics, in discussion with ID and/or other relevant specialties, is essential.	

Discharge Planning:

Patients with Suspected, Probable or Confirmed COVID-19 who are being considered for discharge need to have specific decisions made about the following aspects of post-discharge care:

1. Further investigations (for Suspected)

2. Discharge destination:
    - Suspected cases being discharged before results are available should be notified to the Medical Officer of Health, who may request discharge to a quarantine facility.
    - Ensure an e-referral to ARPHS has been made, with correct mobile phone numbers to ensure patient notification of result
    - Most Probable/Confirmed cases who remain in isolation will be discharged to Jet Park.

3. Clearance from isolation:
    - Mild cases can be released from isolation after ≥10 days have passed since the onset of symptoms AND there has been resolution of the acute symptoms for ≥72 hours.
    - Most hospitalised moderate & severe cases will require a further 10 days of isolation after discharge.
    - Patients with prolonged illness, long hospital stay, or major immunosuppression will require case-by-case review by ID.
    - Note – repeat swabs are generally discouraged (but may be requested by ID on a case-by-case basis).

4. Appropriate follow-up:
    - Patients who have had significant respiratory failure and/or persistent dyspnoea or hypoxia may require respiratory follow up and support on discharge e.g. pulmonary rehabilitation, short-term oxygen.
    - All confirmed COVID-19 cases with pneumonitis requiring treatment with oxygen and/or corticosteroids should be referred to the Infectious Diseases Clinic on discharge so a follow-up appointment can be arranged approximately 8/52 post-discharge. Please send an electronic referral and request:
    - Pulmonary function tests with DLCO ~6/52 post-discharge
    - A CXR, which could be done on the day of the PFTs (please indicate in the CXR ROERS request that the patient will have an appointment for PFTs and the CXR could occur on the same day)
    - Please consider referring other confirmed COVID-19 patients who would benefit from ID follow-up.

5. All cases should be discussed with ID in advance to individualise the plan.

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