NORTHLAND DISTRICT HEALTH BOARD
Te Poari Hauora Ā Rohe O Te Tai Tokerau

Adult Admission and Care Pathway during COVID-19

Purpose and scope

This pathway aims to guide staff working primarily in the Respiratory Red Zone (ED, Medicine COVID-19 team, Paediatrics +/- ICU) at Whangarei Hospital regarding the identification, assessment, management and disposition of patients presenting to our facility who may have COVID-19 infection as a presenting issue or comorbidity.

This pathway will necessarily be flexible and needs to be adapted in response to the demands we face in terms of patient numbers and acuity, community prevalence of COVID-19, staff availability and competencies, departmental layouts, and the availability of beds and other resources. It should not be a static document, but rather refined as together we work out what works.

Method

Is the patient **COVID-19-PCR positive** or **at high risk** for COVID-19?

- Close contact of **known case**
- Attendance at **location of interest**
- Classical COVID-19 **symptoms/signs/investigations**
- Resident in **area with uncontrolled community spread**

Does the patient require hospitalisation?

- Severe **dyspnoea** at rest, or **sustained SaO2 <92%** on room air despite self-proning (see below)
- Signs of other **end-organ compromise** (including renal impairment, acute cognitive changes, falls)
- Social issues, lack of home support or access to help
- Inability to access satisfactory follow-up

Northland District Health Board	
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What is the severity of disease?

Severity	Symptoms	Admission and Medication	Notes and Cares
Mild	**No evidence of lower airway disease**; may have troubling benign symptoms, e.g., sore throat, anosmia, fever, cough	□ No medical indication for admission □ **Paracetamol** PO PRN □ Consider **inhaled budesonide** (800 mcg BD for 14 days)*	□ Give (**self-)proning** instructions □ Self-monitoring with **pulse oxymetry** and virtual support if possible
Moderate - Red ward	Evidence of lower respiratory tract infection and dyspnoea or other compromise. **No oxygen requirement.**	□ Consider medical admission □ **Enoxaparin** 40 mg SC OD □ **Paracetamol** PO PRN □ Consider **inhaled budesonide** (800 mcg BD for 14 days)*	□ Goal-directed **fluids.** Aim for neutral (or negative) fluid balance. □ Give (**self-)proning** instructions or careful proning cares □ Continuous **monitoring** if non-rebreathing mask or HFNC used □ Consider **social/spiritual/cultural** input
Moderately severe - Red ward	Evidence of lower respiratory infection and **new oxygen requirement**: SaO2 <92% or RR >22/min	□ Medical admission □ **Enoxaparin** 40 mg SC OD □ **Paracetamol** PO PRN □ **Dexamethasone** (see below) □ No **antibiotics** unless bacterial infection likely (see below) □ Consider **remdesivir** (see below)	
Severe - ICU (or ILC)	Evidence of **severe respiratory compromise** requiring invasive ventilation or high-flow nasal cannulae, or **severe inflammatory response** requiring invasive monitoring	□ ICU/ILC admission □ **Enoxaparin** 40 mg SC BD □ **Paracetamol** PRN □ **Dexamethasone** (see below) □ No **antibiotics** unless bacterial infection likely (see below) □ Consider **tocilizumab** (see below)	

***If >65 or >50 years with co morbidities**

Investigations on admission
Blood tests: □ standard: FBC, U&E, LFT, CRP □ in (moderately) severe disease add: • Markers for disease severity: ferritin, coagulation studies incl. D-dimer, LDH   ○ Note: Do not use D-dimer to rule in/out PE • Gas exchange: ABG • Procalcitonin and TnT □ Two sets of blood cultures if febrile OR sepsis OR CRP >100 mg/dL □ bHCG in women of childbearing age □ Portable CXR □ ECG (document QTc on admission) □ Nasopharyngeal COVID-19 PCR-swab if not done prior
Monday-Wednesday-Friday investigations (until stable)
□ FBC, U&E, LFT, CRP □ ABG, procalcitonin and other markers as clinically indicated
Nasopharyngeal swabs
□ Retain in isolation i**f clinical suspicion remains high** despite a negative first COVID-19 PCR, and repeat swab the following day. If still negative, discuss with microbiology/infectious diseases SMO.
Imaging
□ **Portable CXR** on admission - Repeated imaging is not indicated unless significant deterioration. - Further imaging (CXR or CTPA) may be helpful if clinical suspicion of bacterial superinfection or pulmonary embolism.

Antibiotics			
- **Do not routinely prescribe antibiotics** as secondary bacterial infection is rare (around 5% on admission, around 20% on day 7 of admission). - If **high clinical suspicion** for bacterial superinfection AND serum procalcitonin >0.25 ng/ml OR CRP >50 mg/dL, OR new-onset sepsis (defined as **qSOFA score 2 or higher**): □ consider **ceftriaxone 2g** IV OD for maximum 5 days, adding **azithromycin 500mg** PO/NG OD if in ICU, maximum 3 days. □ only consider replacing ceftriaxone with **piperacillin-tazobactam 4.5g** IV q8h if high suspicion of hospital-acquired pneumonia AND hospital admission for at least 72h. - **Note: fever is not an indication to start or switch antibiotics.**			
□ RR 22 or above	□ Altered mental status	□ SBP <100mmHg	qSOFA score: _____
Oxygen			
□ Aim to **establish SaO2 at 92%**, and maintain at **>90% or higher**, unless known CO2 retainer (aim 86%) - Use **nasal cannulae** in the first instance (1-3l/min), graduating to **Hudson mask** (max 4-8L/min) or **non-rebreather masks** (6-15L/min) if required. - If unable to maintain SaO2 >92% or discomfort with dry oxygen; consider **High Flow Nasal Oxygen (HFNO "Airvo")** or **CPAP with supplemental oxygen**. Discuss with Respiratory or ICU SMO at this point. - **Non-Invasive Ventilation (NIV)** remains appropriate in hypercapnic patients e.g., those relating to COPD exacerbation, heart failure, and OSA/OHS.			
Fluids			
□ IV bolus as required. Aim for neutral (or negative) fluid balance.			

Antipyretics

□ Paracetamol PRN, preferably PO

□ Consider NSAIDs if still distressed with fever and no contraindications

Anticoagulation

□ Commence **enoxaparin 40mg** SC OD (if eGFR > 15ml/min) for all patients admitted to hospital in the absence of contraindications. Give BD prophylaxis in ICU/ILC patients.

- In women >20 weeks pregnant, consider prophylactic **heparin** after discussing with obstetrician.

□ Consider **omeprazole 40mg** PO/IV OD for critically unwell patients or those with high risk of GI bleed, carefully balancing with the increased risk of a bacterial respiratory superinfection.

Steroids

□ Commence **dexamethasone 6mg** IV/PO OD for ten days in all admitted patients if all of the following apply:

- □ **oxygen requirement**
- □ disease duration **five days** or longer

□ Assess response after two to five days, reconsidering concurrent pathology if no improvement.

□ Steroids can be discontinued on discharge.

- In **pregnant patients**, reassess after four days and discuss with an obstetrician whether a switch to **prednisone** thereafter is appropriate.

- For **patients taking long-term steroids** who do not require dexamethasone, consider stress-dose prednisone (double the normal dose) for two days, then return to normal dose if clinically improving.

□ Do not use oral steroids to treat mild COVID-19. Consider inhaled budesonide in patients over 50 or with comorbidities.

Remdesivir

- The benefits and risks of this drug are not yet fully clarified by empirical evidence. It is not yet registered in New Zealand, requiring section 29 approval and postage from Auckland.

□ In consultation with the admitting consultant, consider **remdesivir** (200mg IV, then 100mg IV for four days) for adults with moderate-severe disease who satisfy **all** of the following criteria:

- □ new SaO2 <92% on air
- □ do **not** require ventilation
- □ **either** ALT <3x ULN with bilirubin <2x ULN **and/or** ALT <5x ULN
- □ do **not** have multiorgan failure - eGFR <30, cardiomyopathy, coagulopathy, significant impairment to ADLs, or significant life-limiting intercurrent illness

Tocilizumab
□ Consider **single dose 8 mg/kg** (max. 800 mg) IV in deteriorating ward or ICU patients, in discussion with respiratory/microbiology/infectious diseases SMO. Do not start if neutropenic, thrombocytopenic, hepatitis, or at high risk of TB. Funding for this indication currently requires a rapid NPPA (ward pharmacist can help with this).
Regular Medications
□ **Continue** ACE inhibitors or ARBs except in case of AKI. □ **Continue** statins, metformin, and aspirin if normally taking these. □ **Discuss** immunosuppressants and immunomodulators with prescribing doctor at the earliest opportunity.
Inhaled Medications
□ All inhaled medications should be given **via MDI** and nebulizer use kept to a minimum to reduce aerosolisation risks. □ Continue patients' normal inhaled medications as possible.
Self-proning
□ Advise patients on **self-proning**, a non-pharmacological therapy to delay to time to respiratory deterioration. See https://onlinelibrary.wiley.com/doi/10.1111/acem.14067 for instructions.

Ceiling of care
□ Discuss and **clearly document ceiling of care** with patient and their whānau **at admission**, including candidacy for CPR, ICU, and intubation, while carefully considering resource allocation, likelihood of satisfactory clinical outcome, and cultural appropriateness. □ Seek **palliative advice early** in case of uncontrolled symptoms in a deteriorating patient.
Skin cares
□ Regular **pressure point checks** and consider pressure mattresses.
Social/psychological cares
□ Enable **virtual communication** with family and friends. □ Attend to needs for **in-person social interaction** as much as possible within distancing constraints. □ Facilitate liaison with **spiritual/cultural leaders** if appropriate. □ All Māori patients must be offered virtual consultation with **cultural support worker**.