NHS Lothian
COVID Zone

Doctors in Training
Welcome + Induction Pack

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Consultants in Respiratory Medicine
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Lots of excellent resources and useful information on the NHS Lothian Medical Education site: www.med.scot.nhs.uk

**Online learning sessions “Re-skilling for COVID”** are happening frequently, via Zoom. Links to the sessions are via the Medical Education website.

https://www.med.scot.nhs.uk/resources/covid-19

Also, **COVID speed read**: Daily updates via NHS Lothian intranet

In addition, **NES** have produced resources to support your learning + practice:

Team and Ward Orientation

There will be senior clinicians present on the wards every day, until H@N handover.

The senior team will be a combination of consultants + registrars, from Respiratory, Acute/General Medicine and other specialties.

Their role is to lead the team and make important decisions about treatment and escalation of therapy.

In addition, they are there to support you and clarify any uncertainties you might have.

You are an important part of the team + your contribution is welcome and valued.

COVID Zone is a dynamic environment; the exact wards serving as COVID Assessment and COVID positive wards are changing in response to clinical requirement.

All members of the COVID team, on each site, at every grade, must be flexible and prepared to move wards, as required. This might be on a daily basis.

Morning and night handovers remain essential to safe practice.
## COVID Zone Details (by 2/4/20)

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<tbody>
<tr>
<td><strong>RIE</strong></td>
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<tr>
<td>• Wards 207/208 alternating daily as COVID Assessment Unit</td>
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<td>• Wards 209 / 220 COVID positive wards</td>
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<td>• <strong>RIE COVID Zone Cons Phone: 07814117548</strong></td>
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<td><strong>WGH</strong></td>
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<td>• W74/75 (top floor) ID</td>
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<td>• W72/73 (middle floor) Resp with GM contribution to receiving</td>
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<td>• W70/71 (ground floor) Haem/Onc</td>
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<td>• Acute receiving will return to MAU (trolleys) as a ‘red/COVID’ zone and SAU ‘green /non COVID’ zone. Surgical assessment (non COVID) will go through DOSA in AFB.</td>
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<td><strong>SJH</strong></td>
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<td>• Wards in SJH are designated red (COVID+/ suspected COVID+) and blue (non-COVID).</td>
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<td>• Medical HDU is located within the Medical Admissions unit and is the area in SJH where non-invasive ventilation (NIV) is delivered.</td>
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<td>• You will be assigned a base ward and will be part of a team consisting of a lead consultant and other medical trainees, who will be responsible for all patients on that ward.</td>
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Please ring the Reg / Consultant in charge if they are not present on the ward when you first arrive. It is likely that they will start the day in COVID unit meetings before they come to the wards. These are essential to update on staffing / patient numbers / policy updates etc. That means that WRs might not start as early as they would normally do.

The charge nurse + other team members will be delighted to welcome you in the meantime.

There will be daily ward rounds (mixture of cons-led and junior-led with cons back-up).

- Please remember that we are here to look after people with acute illnesses, many of which will be due to COVID-19.
- A standardised, structured approach to their assessment and management is the key to patient and clinician safety.

New Trak WR templates have been created to enhance documentation + prompt good decision-making e.g. \daily covidwr \respriewr \resprev
Update on PPE advice from Health Protection Scotland/England

The following link takes you to the full pdf file on what type of PPE to use and when:


In short, for the vast majority of ward-based patient interactions, standard PPE is required (basic mask, apron, gloves).

| Table 1: Transmission based precautions (TBPs): Personal protective equipment (PPE) for care of patients with pandemic COVID-19 |
|---|---|---|---|---|
| **Entry to cohort area (only if necessary) no patient contact**<sup>+</sup> | Within 1 metre of a patient with possible/confirmed COVID-19<sup>+</sup> | High risk units where AGPs are being conducted eg: ICU/ITU/HDU | Aerosol generating procedures (any setting) |

| **Disposale Gloves** | No | Yes | Yes | Yes |
| **Disposale Plastic Apron** | No | Yes | Yes | No |
| **Disposale Gown** | No | No | No | Yes |
| **Fluid-resistant (Type IIR) surgical mask (FRSM)** | Yes | Yes | No | No |

Filtering face piece (class 3) (FFP3) respirator

| **Disposale Eye protection** | No | Risk assessment | Yes | Yes |

<sup>+</sup>Personal protective equipment (PPE) for close patient contact (within 1 metre) also applies to the collection of nasal or nasopharyngeal swabs.
List of Aerosol-Generating Procedures (AGPs)

From this list, you are most likely to encounter patients on NIV – full FFP3 required
Escalation Decisions

- Escalation decisions should always be made by a **senior clinician**.
- These will be based upon the person’s functional status, co-morbidities and severity of current illness.
- This should happen on admission using the new Hospital Anticipatory Care Plan (ACP), pictured below:

![Hospital Anticipatory Care Plan](image)

- **Your role is to prompt the senior decision maker, while on WRs**.
- Decisions should be clearly documented on TRAK also.
- DNAR status documented - form kept at front of patient’s folder.
- Ensure DNAR forms are countersigned by senior doctor as soon as possible.
- Death certification – cause of death must be discussed with consultant prior to completion (**COVID-19 Deaths do NOT need to be discussed with PF**).
Recognising the Deteriorating Patient

- A-E Approach (see below)
- NHSL uses the NEWS 2 observation form
- There is a protocol on the form for escalation of patients with high NEWS
- The nursing staff will inform you if a patient’s NEWS score has significantly changed or is causing concern
- There will be a Board in the ward doctors’ room with patient details

Systematic Assessment

**Airway + Oxygen**

CALL FOR HELP
SIMPLE AIRWAY MANOEUVRES— head tilt and chin lift
→ GIVE HIGH FLOW OXYGEN

**Breathing**

RESPIRATORY RATE
OXYGEN SATURATIONS (SP02)
LISTEN TO THE CHEST— is there air entry throughout, added noises?
→ TAKE AN ABG

**Circulation**

PERFUSION— Warm peripheries? What is the capillary refill time? (normal<2 seconds)
PULSE— Weak or bounding? What is the rate?
BLOOD PRESSURE
→ OBTAIN IV ACCESS + SEND BLOODS
→ CONSIDER FLUID BOLUS
Initial Investigations for Deteriorating Patient

1. FBC, U+E’s, LFT’s, CRP (+/- Blood Cultures)

2. ABG - document FiO₂ at time this is taken

3. CXR – for suspected/confirmed patients with Covid-19, please highlight this on the request and bleep 2155 for a portable film. There is a delay of around 20 minutes before this is visible on PACS

4. ECG

Caution with fluids in COVID-19.

- Only use fluid challenges if hypotensive e.g. 250/500mls

Aim for euvolaemia
Oxygen therapy

There are many ways to deliver oxygen. Some of which are discussed below. You will use oxygen on a daily basis. Become familiar with oxygen administration. It is dangerous if too much or too little is given. If unsure ALWAYS ASK!!!

(Additional notes are below this image)
Nasal Cannulae: Using standard nasal cannula NOT High Flow Nasal Oxygen

- Used for patients requiring low flow oxygen
- Between 0 and 4 litres can be delivered using this method
- Most patients prefer this type of administration as they can eat and drink whilst it is in place

Face mask with venturi:

- Used for patients who are oxygen sensitive (retaining CO₂) and therefore require accurate administration of oxygen
- Oxygen can be titrated in this group of patients by changing the mask and oxygen flow settings
- Coloured adapters are used to filter oxygen, using the appropriate flow rate for that colour:
  - Blue 2 litre = 24%
  - White 4 litre = 28%
  - Yellow 8 litre = 35%
  - Red 10 litre = 40%
  - Green 15 litre = 60%

Humidified oxygen:

- Used for flow rates of above 28% for long periods of time
- 98% oxygen can be delivered using this method
- Used to moisten the airways = loosens secretions

Non-rebreathe mask:

- Used in emergency situations to deliver high flow oxygen
- This mask has a large reservoir that fills while the patient is exhaling.
- Patient breathes in pure oxygen
Arterial Blood Gases

Who needs blood gases?

- Consider performing ABGs for All Sick Patients
- Hypoxia (based on cyanosis and/or oxygen saturations)
- Metabolic disturbance
  - Lactic acidosis
  - Diabetic Ketoacidosis
  - Sepsis
  - Acidosis in renal failure
  - Major electrolyte disturbance
  - Drug overdose

- Type 2 Respiratory Failure, of which hypoventilation is the main cause, due to:
  - Airways obstruction (common; COPD)
  - Respiratory muscle fatigue (common; pneumonia, asthma)
  - Respiratory depression (common; opiates)
  - Inadequate chest expansion (uncommon; neuromuscular disease)
  - Decreased lung compliance (uncommon; pulmonary oedema)

Lungs cannot “blow off” CO\textsubscript{2} so retain and convert to H\textsuperscript{+}
Normal blood gas values (Room Air)

- $H^+$ 36-44 nmol/l
- $PO_2$ 12-15 kPa
- $PCO_2$ 4.4-6.1 kPa
- $HCO_3$ 21-27.5 mmol/l
- BE +2 to -2 mmol/l

Respiratory Failure
(Room Air - FiO2 0.21)

**Type 1**
- $pO_2 < 8$
- $pCO_2 < 6$

**Type 2**
- $pO_2 < 8$
- $pCO_2 > 6$

ABG interpretation
Respiratory Drugs

Listed below are some of the commonly used respiratory drugs. You may wish to look them up, as well as the names, side effects and how they can be administered.

Nebulised Bronchodilators

- These are usually needed initially for exacerbation of asthma requiring hospital admission and are sometimes needed in exacerbation of COPD (patients with COPD may take regular nebulisers at home)
- Please try using **Salbutamol MDI inhaler (100mcg) 4 puffs via spacer QDS** when appropriate, as this may be sufficient
- If the patient still requires nebulisers, they can be given Salbutamol 2.5mg-5mg qds plus prn +/- Ipratropium bromide 0.5mg qds
- Please note that patients on certain combination inhalers that contain LAMA (Anoro Ellipta, Trelegy Ellipta, Spiolto Respimat or Trimbow) should not be given Ipratropium nebuliser as well due to the risk of anti-cholinergic side effects (unless their inhaler is temporarily with-held)
- If a patient is at risk of worsening type 2 respiratory failure (e.g. COPD) nebulised drugs should be driven by air at 6L/minute. Otherwise nebulisers can be driven by 6L/min of oxygen
- Please do not use saline nebulisers routinely

Steroids

- Prednisolone 30-40mg day for 5-7 days. If a patient is on maintenance steroid, make sure this is clearly documented on their kardex
Antibiotics - see local guidance on intranet/Microguide App

- Please note that most patients with Covid-19 do not require antibiotics (unless there is concern about superimposed bacterial infection e.g. lobar pneumonia/neutrophilia)

- Likewise, antibiotics are not given in asthma unless there is good reason to suspect bacterial infection

- COPD – oral doxycycline 200mg day 1 then 100mg od for 4 days

- Mild CAP – oral amoxicillin 500mg tds 5 days (or Doxycycline 200mg day 1 then 100mg od for 4 days if penicillin allergic)

- Moderate CAP – as for mild CAP but consider cover for atypical pneumonia

- Severe CAP - IV co-amoxiclav 1.2g tds plus oral clarithromycin, then stepping down to oral amoxicillin 500mg tds or co-amoxiclav 625mg tds (total duration 5 days). Use IV vancomycin plus either oral/IV ciprofloxacin in penicillin allergy (switching to either oral Doxycycline 200mg day 1 then 100mg od or oral Clarithromycin 500mg bd)

- If penicillin allergic - check local guidelines
Non Invasive Ventilation

Your role is to recognise when a person is unwell, perform the ABG, recognise decompensated Type 2 Resp Failure + escalate to the Resp Reg.

NB discussion with the Respiratory Registrar or Consultant on-call is required when making a decision to commence NIV

The Respiratory Senior Nursing Team will set it all up, once the decision is made to commence NIV.

Which Patients

- COPD with exacerbation
- Cardiogenic pulmonary oedema, unresponsive to CPAP
- Chest wall deformity, neuromuscular disorders
- Obesity hypoventilation/obstructive sleep apnoea
- NOT pneumonia

When to do it

- Respiratory acidosis (PaCO$_2$ >6.0 kPa, pH <7.35 or H$^+$ >45 nmol/l) despite maximal medical treatment and appropriate controlled oxygen therapy
- Sick but not moribund
- Able to protect airway
- Conscious and cooperative
- Haemodynamically stable
How to do it

NIV is an Aerosol Generating Procedure and FFP3 PPE should be used. Depending on patient numbers at any one time, these cases may be cohoorted into one room.

- Mode Spontaneous/timed
  - EPAP 4–5 cm H$_2$O
  - IPAP 12–15 cm H$_2$O (to be increased as tolerated to 20 cm H$_2$O)
  - Back up rate 15 breaths/min Back up I:E ratio 1:3

- Clinical evaluation
  - patient comfort, conscious level, chest wall motion, accessory muscle recruitment, coordination of respiratory effort with the ventilator, respiratory rate, and heart rate.

- Arterial blood gas analysis
  - after 1–2 hours of NIV and after 4–6 hours if the earlier sample showed little improvement.

- Oxygen saturation
  - monitored continuously for at least 24 hours after commencing NIV and supplementary oxygen administered to maintain saturations between 85% and 90%
NIV- treatment failure – Trouble shooting

- Is the treatment of the underlying condition optimal?
- Have any complications developed?
  - Consider a pneumothorax, aspiration pneumonia, etc
  - Is the patient on too much oxygen? (common cause of elevated Paco₂ in COPD)
- Is there excessive leakage?
- Is ventilation inadequate?
- If Paco₂ improves but Pao₂ remains low, try increasing FiO₂ cautiously
- Consider increasing EPAP (with bi-level pressure support)
COVID-19 FAQs

*When should we give Antibiotics?*
- Purulent sputum / Unilateral changes / Longer illness / CRP > 100

*Should we give steroids if they have COPD/Asthma?*
- Give steroids if you would have done so normally for their airways

*Should we use NIV (BiPAP) for COVID?*
- Not if it is pure COVID
- Consider NIV if they are known to have severe COPD (D/W Resp)

*Should we use CPAP for COVID?*
- For a selected few (pre-ITU)

*Should we stop their ACE-I?*
- Only if you would have normally e.g. AKI / Hypotension

All of above should be discussed with your seniors

**If in doubt, ask!**

We look forward to working with you in COVID Zone