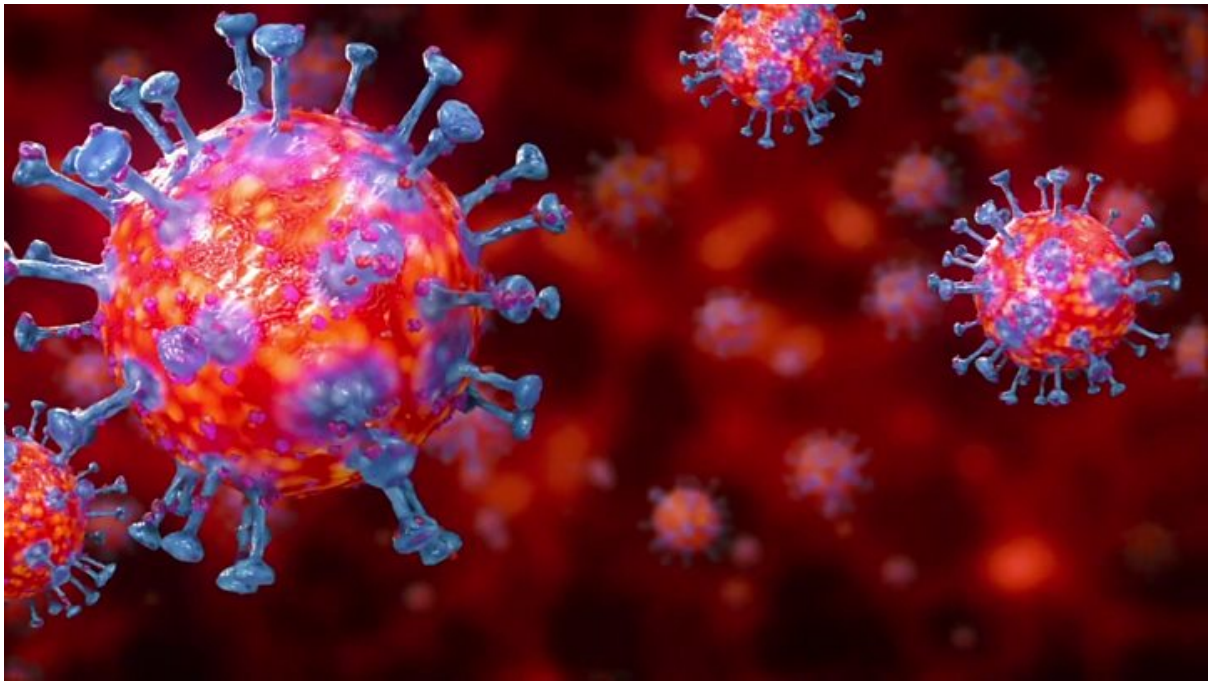
Singleton Delivery Unit (SDU)

Medicine & USC

SINGLETON CORONAVIRUS (COVID-19) WARDS OPERATIONAL POLICY



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Singleton Coronavirus (COVID-19) Wards

Operational Policy

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Singleton Coronavirus (COVID-19) Wards Operational Policy

1. Introduction

This document outlines the Operational Policy for Singleton's COVID-19 Wards.

Ward 16 at Singleton Hospital has been reconfigured to create a COVID-19 admission Ward. As the number of patients with COVID-19 infection increase further expansion will occur into Wards 3 and 4.

The policy describes the processes for the efficient and effective management of patients admitted to Singleton Hospital with COVID-19 and how this relates to other units within Swansea Bay Health Board.

2. Purpose of the Standard Operating Policy

The purpose of the standard operating policy is:

1. To deliver efficient and high quality care for adult patients presenting with suspected/ confirmed COVID-19 to Singleton Hospital.
2. Describe Infection Control procedures to minimise infection risk to patients and staff.
3. Describe arrangements for the rehabilitation of patients following a diagnosis of COVID-19.
4. Describe arrangements for patients approaching end of life to ensure they receive appropriate palliative care.

3. Admission Criteria

1. Singleton Hospital will admit patients who require **medical** management of their COVID-19 illness. This cohort of patients would be **unlikely** to benefit from escalation of their care to critical care (see patient source below).
2. Patients in this category who meet the Department of Health case definition for COVID-19 should be admitted to Ward 16. This will include patients with the following clinical features:
    - require admission to hospital (a hospital practitioner has decided that admission to hospital is required with an expectation that the patient will need to stay at least one night)
    - clinical or radiological evidence of pneumonia or
    - acute respiratory distress or

- influenza like illness (fever >37.8 (and at least one of the following respiratory symptoms, which must be of acute onset: persistent cough (with or without sputum), hoarseness, nasal discharge or congestion, shortness of breath, sore throat, wheezing, sneezing)

- a loss of, or change in, normal sense of taste or smell (anosmia) in isolation or in combination with any other symptoms

3. See note below for the pathway for oncology and haematology patients which differs from this general pathway.

4. Patients with mild respiratory illness (including continuous cough or high temperature or anosmia) but who are well enough to remain in the community should follow the **stay at home guidance** and get **a COVID-19 test**. Patients with symptoms of COVID-19 however mild should self isolate for at least 10 days from when symptoms started. (See Public Health England guidance *Stay at home: guidance for households with possible or confirmed coronavirus (COVID-19) infection).*

4. Patient Source & Referrals

1. Adult patients aged >18 year old

2. Singleton Hospital will generally admit patients who are deemed **unlikely** to benefit from escalation of their care to critical care.

3. The SBU Potential COVID-19 Pre-hospital triage pathway sets out **screening** criteria to identify patients who are unlikely to benefit from ICU care. These include:

    - home oxygen
    - incurable/metastatic cancer
    - severe co-morbidities of concern
    - frailty score of greater or equal to 5 and
    - chronic severe cardiovascular disease or respiratory symptoms (e.g. cannot walk >20 yards or climb a flight of stairs without stopping)

4. Haematological or oncological condition that means the patient will benefit from admission to Singleton, with the patient for escalation to ICU should their clinical condition deteriorate. **See Appendix A.**

5. Patients will be referred from the community via

    - General Practitioner's (GPs)
    - Welsh Ambulance Service Trust (WAST)
    - AGPU (Acute General Practitioner Unit).
    - Acute Clinical Teams
    - Oncology (via the on call registrar or consultant)

- Haematology (via the on call registrar or consultant)
- All referrals for admission in suspected COVID-19 patients should be made to **the COVID-19 consultant on CISCO phone number** [redacted] between 9 am and 9.30 pm and **the medical registrar out of hours on CISCO phone number** [redacted]

6. Patients initially assessed in SAU, who will have been accepted for admission to Singleton Hospital on the basis that they are not suspected COVID-19 but who become suspected after arrival in SAU, should follow the pathway in **Appendix B.**

7. Patients may be treated and transferred from Morriston Hospital. These referral should be made to **the COVID-19 consultant on CISCO phone number** [redacted] between 9 am and 9.30 pm and the medical registrar can be contacted out of hours on CISCO phone number [redacted]

8. Pregnant women with suspected COVID-19 may be admitted to Singleton and potentially Ward 16 as per the pathway described in **Appendix C**.

9. Oncology patients with suspected COVID-19 should be discussed with the Oncology Consultant on-call where the decision regarding the benefit of escalation is not clear. On CISCO phone number between 9am and 5pm and through switchboard out of hours.

10. **Patients who are felt likely to benefit from escalation of care to critical care should be admitted to Morriston Hospital.**

11. Patients who have been intubated or suffered a cardio respiratory arrest pre hospital should be admitted to ED at Morriston Hospital.

5. Oncology and Haematology Admissions

1. Oncology and Haematology patients can be admitted to Singleton if they are COVID-19 suspected **and for** escalation to ITU if necessary. This is to allow them to access the expertise of the relevant departments. Criteria when admission of oncology and haematology patients to Morriston instead are:

    - Physiological instability e.g. hypotension and tachycardia suggesting a likely need for critical care support in COVID-19 suspected oncology/haematology patients
    - Requiring > 2L oxygen to maintain Sp02 ≥90-94% oxygen saturations

2. They should be considered for transfer to Morriston after initial admission to Singleton if confirmed COVID-19 positive and if they subsequently meet the criteria in the triage document (Appendix A) i.e. requiring >–2L oxygen to maintain Sp02 ≥90-94% oxygen saturations.

3. If in doubt discuss with the oncology or haematology consultant on call and the COVID-19 and general medical consultants.

4. Each morning the on call consultant oncologist and either registrar or consultant haematologist will phone the COVID-19 consultant to discuss the admitted cases. After this discussion it will be decided if management is primarily by the COVID-19 consultant with support for oncology/haematology or vice versa depending upon the clinical needs of the patient. Patients who are admitted primarily for management of their oncology or haematological condition should be under the care of that speciality with input as required from the COVID consultant.

6. Operating Hours

1. The COVID-19 Wards will be opened 24 hours a day 7 days per week including Bank Holidays.

7. Ward Location, Specification and Cohorting

1. Ward 16 will function as the initial acute assessment area. A number of single side rooms will facilitate the isolation of patients with confirmed or suspected COVID-19.

2. Patients with a suspected COVID-19 diagnosis will be placed in side rooms. Initially side rooms on Ward 16 should be used. When the capacity to do this is exceeded patients with a suspected COVID-19 diagnosis can be isolated in side rooms on other Wards.

3. Patients with a confirmed COVID-19 diagnosis should be managed in cohorted bays. Non-suspected COVD-19 patients are admitted via SAU.

4. Eventually it may become necessary to manage suspected yet unconfirmed cases in cohorted bays.

5. Two negative pressure side rooms on Ward 16 will be reserved for patients already using domiciliary NIV in the community. (**See section on Non Invasive Ventilation and Appendix D**)

6. After acute assessment on Ward 16 patients will be moved to a post-acute assessment area on Ward 3. Other COVID-19 ward(s) will be identified and opened depending upon the need for increased bed capacity.

7. Ward 3 will offer comprehensive geriatric assessment and multidisciplinary rehabilitation area for patients recovering from their COVID-19 diagnosis.

8. Patients are defined as COVID-19 recovered when:

    a. More than 14 days after positive swab

b. Some recovery of COVID-19 symptoms
c. Afebrile for > 48 hours
d. Not been admitted to ITU or be severely immunosuppressed.

Recovered patients are removed from COVID-19 IPC controls and may be admitted to any ward area from a COVID-19 perspective as a consequence. PPE procedures remain the same for these patients (as they do for all inpatients regardless of COVID-19 status) Appendix E.

Designated Ward Area	Beds Available	Staff Cover
Ward 16 Acute Assessment Area	18 beds	COVID-19 Consultant and two trainees managing admissions Working 9am to 9.30pm
Ward 3 - Phase 1 Post-acute assessment area Post COVID-19 rehabilitation	15 beds	One COVID-19 Consultant and two trainees per 15 beds. Dedicated MDT Therapy Team Consultant cover 9am – 5pm
Ward 3 – Phase 2 Post-acute assessment area Post COVID-19 rehabilitation	15 beds	

8. Infection Prevention and Control

1. The Swansea Bay Infection Prevention and Control (IPC) web page contains details of infection control procedures.

2. Hand washing is the single most effective step in preventing the spread of infection. Decontamination between different episodes of care reduces the risk of infection. The hand hygiene video is available on the infection prevention and control website.

3. Personal Protective Equipment (PPE) is detailed in section 8 below.

4. All clinical staff in the COVID-19 Ward areas should be FIT tested and have reviewed the donning and doffing videos (see section on personal protective equipment). These are all accessible for the PPE section of SBUHB COVID-19 web page.

5. Clean Scrubs should be worn by staff at the start of all shifts and placed for cleaning at the end of the shift. Scrubs should not be worn in non COVID-19 areas.

6. Ensure stethoscopes are cleaned after each use.

7. Portable phones are wiped down with alcoholic wipes.

8. No eating or drinking by staff outside designated rest areas. Health Board guidance states that for staff breaks and changing rooms: Staff are not required to wear a face covering provided that physical distancing is maintained. But this has implications for capacity of changing and rest areas

9. Personal Protective Equipment

1. ALL staff that wear scrubs are reminded that they MUST NOT be worn for the journey to work and return home. Staff must change into them on arrival at work and change out of them when leaving.

2. Staff working on the COVID-19 isolation Wards should follow guidelines for personal protective equipment as set out by Public Health England (**see Appendix F**). Department of Health Guidance is available

   - *COVID-19: personal protective equipment use for non aerosol generating procedures*
   - *COVID-19: personal protective equipment for aerosol generating procedures*

3. Staff working in COVID-19 isolation Wards should be trained in donning and doffing techniques. Video regrading use of Personal Protective Equipment (PPE) are available on Department of Health web site.

   Separate videos exist for:

   https://www.gov.uk/government/publications/covid-19-personal-protective-equipment-use-for-non-aerosol-generating-procedures

   https://www.gov.uk/government/publications/covid-19-personal-protective-equipment-use-for-aerosol-generating-procedures

   Patients will be encouraged to wear a surgical mask (unless oxygen or nebuliser being delivered).

4. Aerosol Generating Procedures (AGP) are defined as procedures that can generate aerosols and droplets. These include: induction of sputum including saline nebulisers, cardio pulmonary resuscitation, non-invasive ventilation, endotracheal intubation, airway suction, high flow oscillatory ventilation, tracheostomy, and bronchoscopy.

10. Medical Staffing

1. There will be onsite Consultant presence 9am – 9.30 pm to cover the COVID-19 admission Ward.

2. Overnight Consultant Cover will be provided via the on call Consultant Physician and the on call medical registrar.

3. Additional Consultant support will be deployed to manage each additional 15 patients in the COVID-19 Ward areas.

4. Each Consultant will be supported by two trainees on a shift system.

11. Admission Process

1. Patients with confirmed or suspected COVID-19 will access Ward 16 via a designated entrance adjacent to the maternity entrance of Singleton Hospital. A dedicated lift has been isolated to facilitate access to Ward 16.

2. Ward 16 to contact porter when patients are expected. Porter will be available via phone to initiate transfer of suspected patient **CISCO phone number no** [redacted]

3. All patients to be admitted to side room.

4. As much as possible of the immediate assessment should be completed by a single clinician.

5. Immediate Assessment should include:

Task	BY who	Timescale
Observations & NEWS score	HCSW/Registered Nurse /Doctor	On arrival to Ward
Oxygen therapy as indicated	Registered Nurse	On arrival to Ward
COVID-19 Swabbing (see pathology transport flow chart version 4) **Appendix G**	Registered Nurse/Doctor	Within 30 minutes of arrival
Phlebotomy FBC, U+E, Glucose, LFT, CRP +/- ABG and lactate	Registered Nurse/Doctor	Within 30 minutes of arrival
Cannulation (if required)	Registered Nurse/Doctor	Within 30 minutes of arrival
Medical history	Doctor	
Drug Chart	Doctor	
Initiation of treatment where appropriate e.g. antibiotics, intravenous fluids	Registered Nurse	Within 30 minutes of arrival
Radiology (portable)	Radiographer	
Continual Post Take Review & Treatment Escalation Plan	Consultant Physician	At time of first Consultant Review (must be completed within 12h of admission)

6. The following blood tests will be taken, FBC, U+E, Glucose, LFT, CRP +/- ABG and lactate. Any additional tests will be taken at the Clinician's discretion. If BG is above 12.0 mmol/l a blood ketone should also be checked.

7. One dry throat swab should be sent to virology for patients with suspected COVID-19. **Appendix G** contains details of collection and labelling of samples.

8. Other laboratory samples should be double bagged as per **Appendix G** and labelled as suspected or confirmed COVID-19.

9. Laboratory samples should be recognised as a biohazard.

10. Radiology will perform a portable CXR on Ward 16. A dedicated x-ray machine is available and needs to be wiped down after each use. Radiology staff need to have PPE as required.

11. Patients will be seen in order of clinical priority (with those with the highest NEWS first)

12. A treatment escalation plan is mandatory for all patients admitted with suspected or confirmed COVID-19.

13. Routine collection of clinical data from every patient. Headings for spreadsheet are attached as **Appendix H.**

12. Corticosteroids for COVID-19

WHO Recommendations regarding the use of corticosteroids in treatment of COVID-19 are:

1. A strong recommendation for systemic (i.e. intravenous or oral) corticosteroid therapy (e.g. 6 mg of dexamethasone orally or intravenously daily or 50 mg of hydrocortisone intravenously every 8 hours) for 7 to 10 days in patients with severe and critical COVID-19

2. A conditional recommendation not to use corticosteroid therapy in patients with non-severe COVID-19.

Further guidance is available at https://www.who.int/publications/i/item/WHO-2019-nCoV-Corticosteroids-2020.1

13. Thromboprophylaxis

1. The policy regarding thromboprophylaxis in Patients who are suspected or confirmed to have COVID-19 is attached as **Appendix I**.

14. Recruitment to Clinical Trials

1. Appropriate patients will be asked if they wish to participate in the RECOVERY trial. This National trial (based in Oxford University) aims to identify treatments that may be beneficial for adults hospitalised with confirmed COVID-19.

2. Staff wishing to recruit to the trial need to complete training on the trial website (www.recoverytrial.net).

3. All study documents (including the Participant Information Sheet and Consent Form) can be down loaded from the trial web site (www.recoverytrial.net).

4. The current patient information sheet (V7.0 08-Jul-2020) and consent form (is attached as **Appendix J**. Note: Item 6 Convalescent Plasma – consent boxes must have patient's initials and not tick box.

5. The Standard Operating Procedure for patients enrolled into the convalescent plasma arm of the recovery trial is attached in **Appendix K**. This SOP is frequently updated.

6. The research sample **does not** go to the lab, the Clinicians need to contact the Research Team on Ext [redacted] who will manage and send the sample once taken to a central trial lab. The research team also hold all the logs that are noted in the SOP.

15. Non Invasive Ventilation

1. Guidance on use of non-invasive ventilation and decision guide for NIV and CPAP is available in **Appendix D**.

2. This is an aerosol generating procedure and Full PPE with FFP3 masks will be worn.

16. Resuscitation

1. The SBUHB Recognition of Acute Deterioration and Resuscitation Group (RADAR) support the use of these RCUK Guidelines, and ask you to adhere to them in the event of a cardiac arrest in patients with COVID-19 see **Appendix L**.

2. Up to date guidance is available on the SBUHB website COVID-19 under Resuscitation (http://howis.wales.nhs.uk/sites3/page.cfm?orgid=743&pid=78026).

3. DNACPR on the usual documentation needs to be recorded in SIGNAL and communication to GP and patient.

17. Transfer to Morriston including deteriorating patients

1. Patients who after clinical review are considered candidates for potential escalation to invasive ventilation should be transferred to Morriston if their oxygen requirement increases to >2L O2 to maintain Sp02 >90-94%.

2. Patients on the Singleton site who are for escalation of care to critical care should be discussed with ICU even if well (**CISCO telephone** [redacted]

3. A separate Standard Operating Procedure describes Inter Hospital Transfer arrangements. SBUHB COVID-19 Patient Transfer Pathway – St Johns Transport – **Appendix M**

4. The Singleton Anaesthetic Cover Plan is attached in **Appendix N.**

18. Rehabilitation

1. All patients recovering from COVID-19 should have access to a multidisciplinary to plan their medical treatment and rehabilitation.

19. Palliative Care

1. Patients identified as approaching the end of life should be managed in line with **All Wales Guidance: Care Decisions for the Last Days of Life (Hospital Use).** This is available on the Palliative Care Section of the SBUHB COVID-19 web site.

2. All patients receiving palliative care should have a completed copy of this document placed in the medical notes to support decision making.

3. Next of kin should be informed of the decision to instigate symptomatic palliative care.

4. **The Patient Symptom Assessment Sheet** should be used. This is available on the Palliative Care Section of the SBUHB COVID-19 web site.

5. Swansea Bay Hospital Specialist Palliative Care Advice and Referral line is available **on Ext** [redacted] **(in hours) via switch OOH (Appendix O)**

6. Monday-Friday there will be a daily board round with the Palliative Care team on Wards 16, 3 and 4 as able. Should there be more than 4 patients having end of life care, a cohorted area would be created and scaled up to provide hospice care in the acute hospital setting.

7. All Wales Supplementary Symptom Control Guidance for palliative management of patients with COVID-19 infection is available on the Palliative Care Section of the SBUHB COVID-19 web site – see **Appendix P**.

20. Death Notification

1. All inpatient deaths due to COVID-19 should reported via the online eForm which is available on the Welsh Clinical Portal.

2. If the death is unusual or requires sensitive handling (e.g. children, adults <40 years with no comorbidities, health/social care worker, death in pregnancy, VIP) this should be communicated directly by telephone: After next of kin are notified, the treating NHS clinician reports the death to the Health Board Executive Medical Director and to the Public Health Clinician (Health Protection Team, on call)

    a. Dr Richard Evans, Swansea Bay Executive Medical Director: contactable via Morriston switchboard (use home phone number out of hours).

    b. For Health Protection consultant: call [redacted] and ask for the COVID-19 consultant of the day.

3. All deaths must be reported within 24 hours.

4. The details of how to do this are in **Appendix Q.**

5. A Bereavement leaflet should be provided for next of kin including contact details for the general office to obtain a death certificate **Appendix R**.

6. COVID-19 is an acceptable direct or underlying cause of death for the purposes of completing the medical certificate of cause of death.

7. COVID-19 is not a reason on its own to refer a death to the coroner under the Coroners Justice Act 2009.

8. COVID-19 is a notifiable disease under the Health Protection (Notification) Regulations 2010 but this does not mean referral to the coroner is required.

9. Chief Coroners Guidance on COVID-19 is documented in **Appendix S**.

21. Discharge

1. All patents discharged from the COVID-19 Wards should be provided with appropriate follow up advice regarding self isolation including not to leave their homes for 10 days from when your symptoms start. Discharge information for patients is attached as **Appendix T**.

2. If a patient lives with others all other household members who remain well must stay at home and not leave the house for **14 days**.

3. Further advice is available at Public Health England guidance *Stay at home: guidance for households with possible or confirmed coronavirus (COVID-19) infection).*

4. Patients not for escalation care to critical care can be transferred to Neath Port Talbot Hospital and Gorseinon Hospital. Protocol for NPT is attached as **Appendix U.**

22. Visitors

1. No routine visiting will be allowed on the COVID-19 Wards as per Health Board policy.

2. Patients approaching the end of life and receiving palliative care in the last days of life are permitted one visitor for 1 hour.

23. Social Distancing

1. All staff should practice social distancing in work, in all areas including clinical areas, non-clinical work areas and staff rest areas, as well as out of work.

2. Staff need to observe the 2 meters distance rule as is possible and compatible with delivery safe patient care.

3. Staff must not crowd into one room for board rounds and use Skype and Microsoft Teams for meetings where feasible.

4. Staff must also keep apart from colleagues when not delivering care (during breaks and meal times and when moving through the hospital).

5. Staff are reminded to wash hands for 20 seconds with soap and water, and particularly after blowing their nose, sneezing or coughing. Where facilities to wash hands are not available, hand sanitiser should be used. Staff should cover any coughs or sneezes with a tissue, then dispose of the tissue in a bin and immediately wash their hands.

24. Additional Information

1. Further Guidance on delivering clinical care to patients during the COVID-19 pandemic and using a SPACES approach is attached as **Appendix V**.

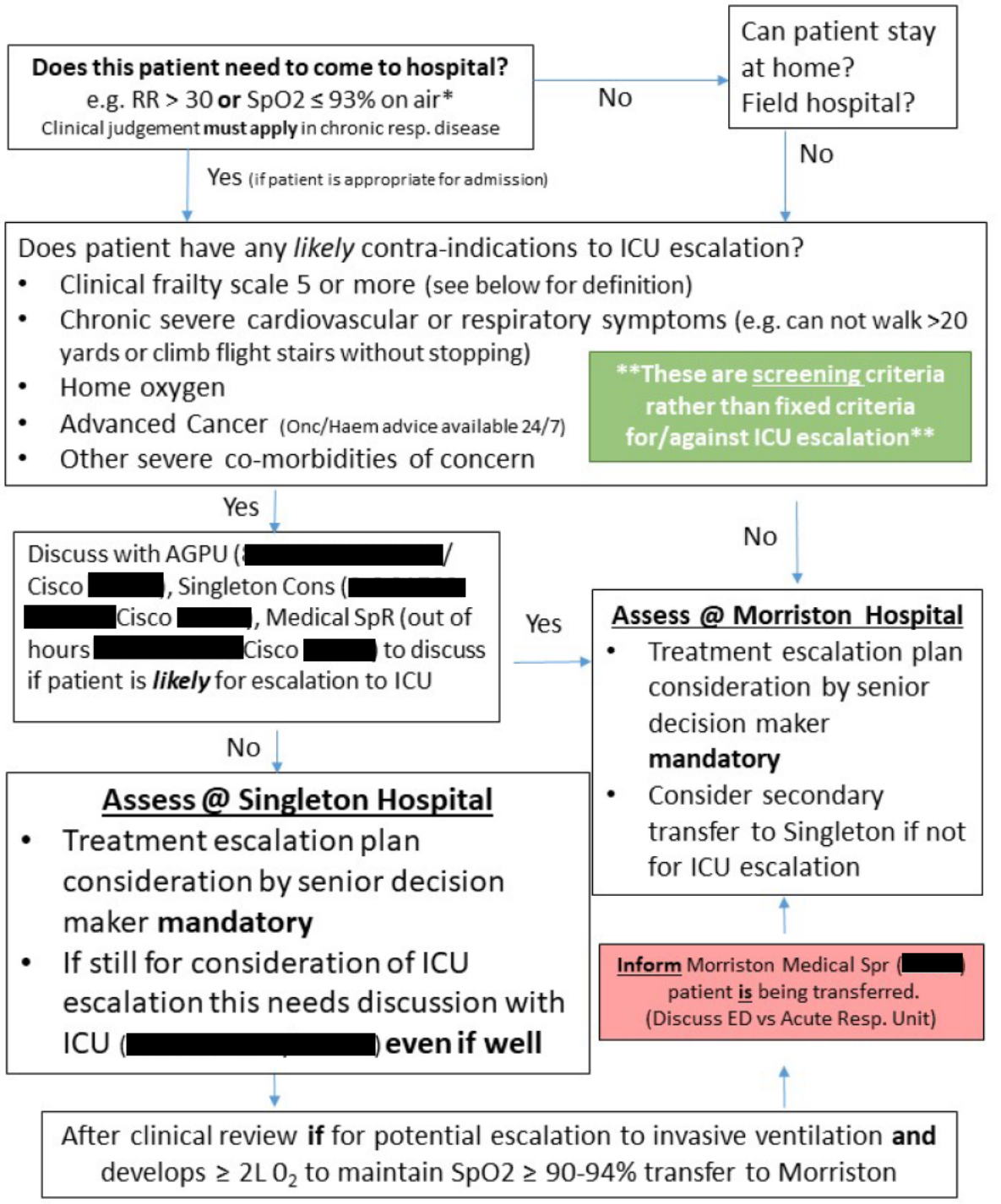
2. Updated guidance on diabetic management during the COVID-19 era including Front Door Guidance and Managing Inpatient Hyperglycaemia **Appendix W.**

Appendix A

SBU potential COVID-19 pre-hospital triage pathway

Exclusions:

- **non-COVID primary problem.**
- **children, pregnancy**
- **Haematological or oncological condition that means the patient will benefit from admission to Singleton (patient can be escalated to ICU should their clinical condition deteriorate)**



* taken from WHO - Clinical management of severe acute respiratory infection (SARI) when COVID-19 disease is suspected – 13/03/2030

19 November 2020

Clinical Frailty Scale*

1 **Very Fit** – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.

2 **Well** – People who have **no active disease symptoms** but are less fit than category 1. Often, they exercise or are very **active occasionally**, e.g. seasonally.

3 **Managing Well** – People whose **medical problems are well controlled,** but are **not regularly active** beyond routine walking.

4 **Vulnerable** – While **not dependent** on others for daily help, often **symptoms limit activities.** A common complaint is being "slowed up", and/or being tired during the day.

5 **Mildly Frail** – These people often have **more evident slowing,** and need help in **high order IADLs** (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.

6 **Moderately Frail** – People need help with **all outside activities** and with **keeping house**. Inside, they often have problems with stairs and need **help with bathing** and might need minimal assistance (cuing, standby) with dressing.

7 **Severely Frail** – **Completely dependent for personal care**, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~ 6 months).

8 **Very Severely Frail** – Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.

9. **Terminally Ill** - Approaching the end of life. This category applies to people with **a life expectancy <6 months**, who are **not otherwise evidently frail.**

Scoring frailty in people with dementia

The degree of frailty corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In **moderate dementia**, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

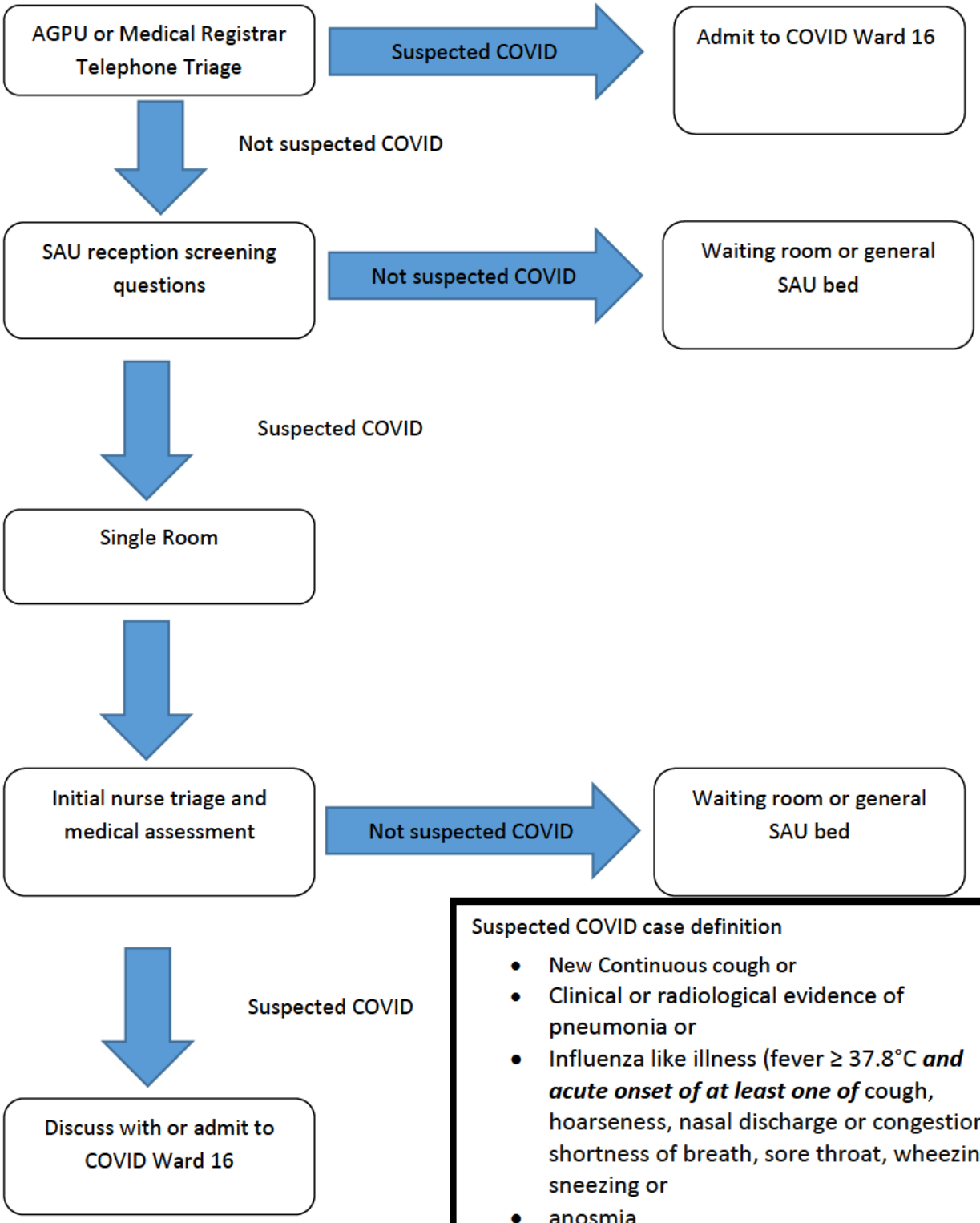
In **severe dementia**, they cannot do personal care without help.

* 1. Canadian Study on Health & Aging, Revised 2008.
2. K. Rockwood et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005;173:489-495.

DALHOUSIE UNIVERSITY *Inspiring Minds*

Appendix B

Singleton Hospital COVID-19 triage pathway

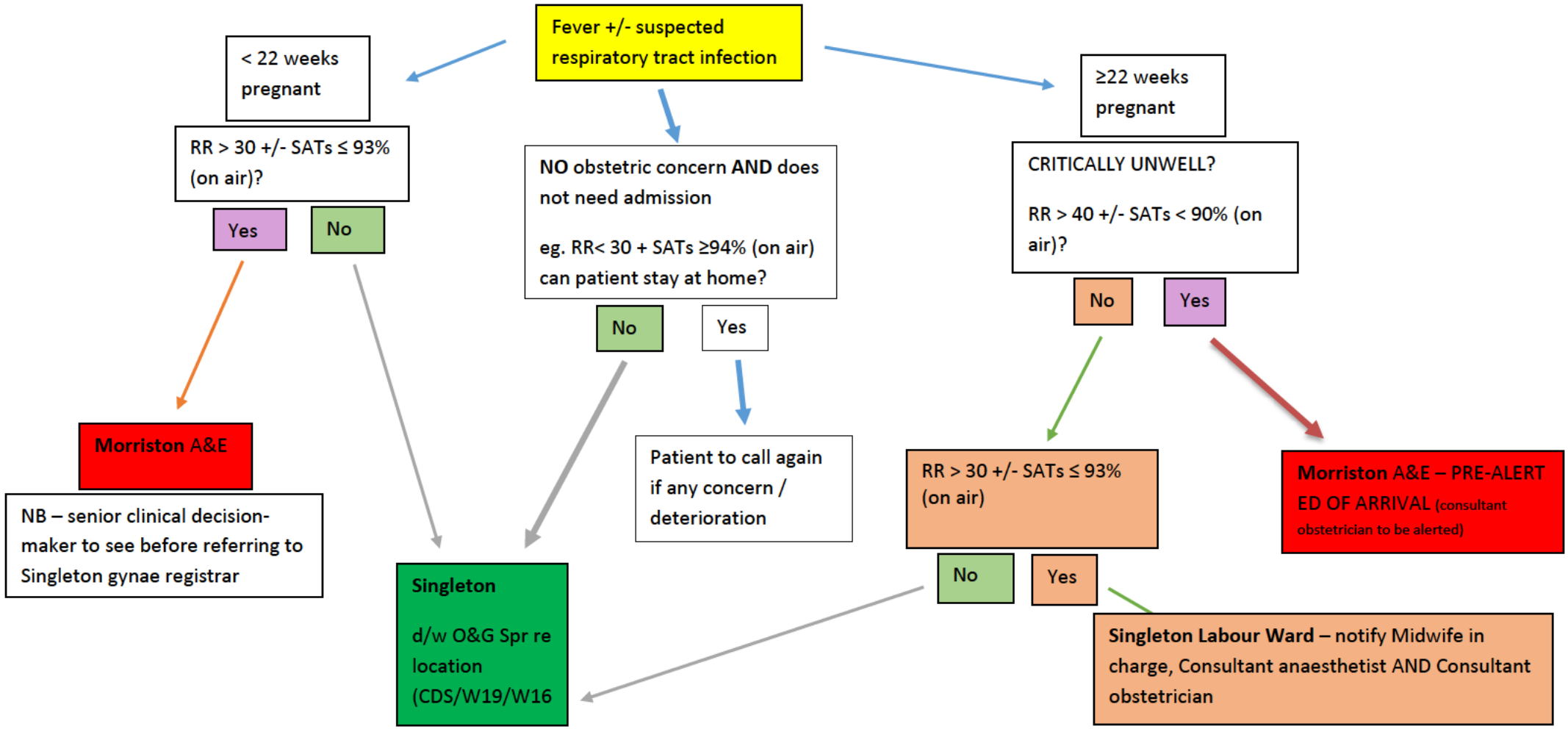


Suspected COVID case definition

- New Continuous cough or
- Clinical or radiological evidence of pneumonia or
- Influenza like illness (fever ≥ 37.8°C ***and acute onset of at least one of*** cough, hoarseness, nasal discharge or congestion, shortness of breath, sore throat, wheezing, sneezing or
- anosmia

Appendix C

SBU potential COVID-19 pre-hospital triage pathway for Pregnant Patients



10/11/2020

SBUHB - Drafted in consultation with O&G / Critical Care / Anaesthetics /Neonatology / WAST / ED / Primary care

Appendix D

Singleton Hospital Non-Invasive Ventilation Plan – 24/8/20

Please liaise with EMU nursing staff for non-vented mask and circuit regardless of patient's place of admission

Please refer all patients to the respiratory team (CNS and medical respiratory teams)

If any doubt / capacity issues, please contact a Respiratory Consultant eg Dr Finn

Patients with type 2 respiratory failure requiring acute non-invasive ventilation (NIV)

- **All patients** (current IP or new admission) requiring **acute** non-invasive ventilation for T2RF will be admitted to the EMU negative pressure cubicles (2) on Ward 16 (regardless of presenting complaint) – **please discuss all cases with a Respiratory Consultant (eg Dr Finn via switch)**
- Full airborne PPE with FFP3 masks will be worn within the room at all times until patient has two negative swabs and has been placed in the "low risk" category.
- Patient is swabbed for COVID 19 on arrival and the sample marked URGENT NON-INVASIVE VENTILATION. The sample must go urgently to the Singleton lab.
- The patient will be cared for by an NIV trained nurse from EMU (who will shut a bed in EMU to free staff)
- The patient will use a non-vented mask and circuit
- The mask will be fitted to the patient before the machine is switched on, and the machine switched off before the mask is removed
- Escalation decisions need to be documented – if the patient is for full escalation then early discussion with ITU is appropriate.
- If ongoing NIV is required, once there are 2 negative Covid 19 swabs and a low clinical suspicion of Covid 19 infection, the patient can be nursed in the open EMU area with appropriate PPE.

Patient with domiciliary non-invasive ventilation (NIV)

- All patients requiring admission to Singleton Hospital who have domiciliary non-invasive ventilation will be admitted to the negative pressure cubicles (2) on Ward 16 (regardless of presenting complaint) – **please discuss all cases with a Respiratory Consultant**
- **Follow instructions above regarding PPE / swab / equipment / staff / escalation**
- If the patient has a humidification unit attached to their domiciliary NIV machine it should be detatched

- If the patient requires ongoing EMU care, once there are 2 negative Covid 19 swabs and a low clinical suspicion of Covid 19 infection, the patient can be nursed in the open EMU area with appropriate PPE

- If the patient does not require ongoing EMU care, once there is 1 negative Covid 19 swab and a low clinical suspicion of Covid 19 infection, the patient can be moved to a cubicle on ward 8

Patient with domiciliary continuous positive airway pressure (CPAP) for complex obstructive sleep apnoea/obesity hypoventilation (OSA/OHS)

- All patients requiring admission to Singleton Hospital who have domiciliary CPAP for complex OSA/OHS **who cannot manage without their CPAP and are not self-sufficient** will be admitted to a cubicle on Ward 16 (regardless of presenting complaint) – **please discuss all cases with a Respiratory Consultant**

- **Follow instructions above regarding PPE / swab / equipment / escalation**

- If the patient requires ongoing EMU care, once there are 2 negative Covid 19 swabs and a low clinical suspicion of Covid 19 infection, the patient can be nursed in the open EMU area with appropriate PPE

- If the patient does not require ongoing EMU care, once there is 1 negative Covid 19 swab and a low clinical suspicion of Covid 19 infection, the patient can be moved to a cubicle on ward 8

- **If self-sufficient** – Consider cubicle in SAU or ward 8 for Covid swab / further assessment and non-vented mask and circuit regardless of presenting complaint (Contact EMU nurses)

Patient with domiciliary continuous positive airway pressure (CPAP) for simple obstructive sleep apnoea (OSA)

- Patients requiring admission to Singleton Hospital for **Covid symptoms** who have domiciliary CPAP for simple OSA **who can manage without their CPAP** will be admitted to a cubicle in SAU / Covid ward for assessment and Covid swab

- Patients requiring admission to Singleton Hospital for **non-Covid symptoms** who have domiciliary CPAP for simple OSA **who can manage without their CPAP** will be admitted to **SAU** for assessment

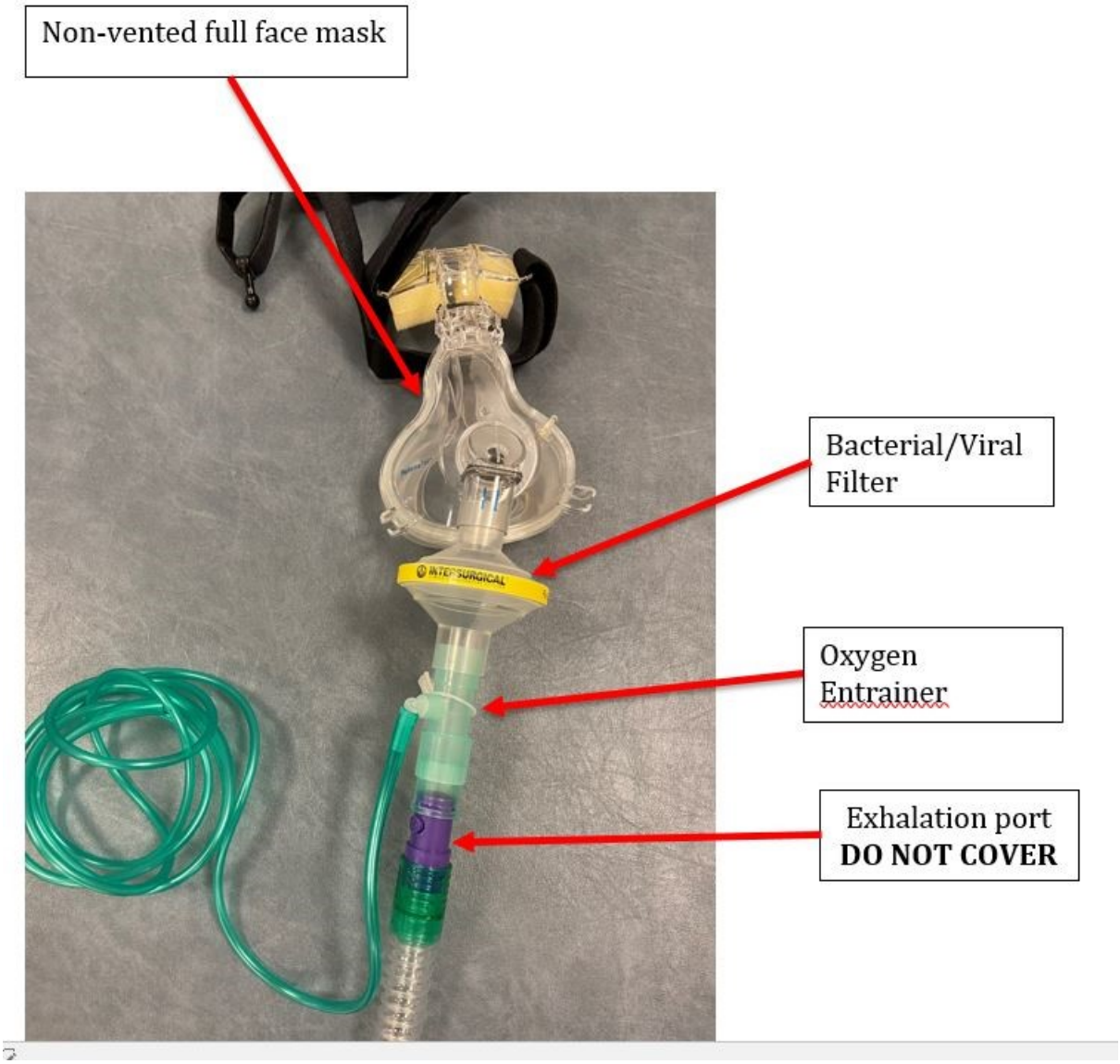
- If they are likely to require prolonged admission (ie more than 48 hours) please send Covid swab regardless of symptoms

- **Do not use CPAP until Covid status known**

- **Follow instructions above regarding PPE / swab / equipment / escalation**

- **Follow instruction above regarding swab result and location of CPAP use**

Figure: Example of acute NIV set-up with non-vented mask and viral filter



CPAP/NIV awareness

*NIV/CPAP are aerosol generating procedures

Patients are not able to use their home circuits in hospital during COVID-19

Patients require a non-ventilated mask and closed circuit

All patients admitted/transferred to Singleton who use NIV/CPAP at home require referral to the Respiratory Nurses

*Out of hours contact EMU for advice

Respiratory nurses Ext [redacted] EMU [redacted]

Any concerns contact respiratory consultant

For Further information please Refer to decision guide for NIV/CPAP

Decision guide for NIV and CPAP – 24/8/20
If in doubt – contact Respiratory Consultant

1. Does the patient have symptoms suggestive of COVID 19?	If Yes – Straight to cubicle in SAU or Covid Ward for assessment If No – Go to question 2
2. Does the patient have acute type 2 respiratory failure despite controlled oxygen and require bi-level non-invasive ventilation (NIV)?	If Yes – Straight to EMU negative pressure cubicle on Ward 16 for trial of NIV If No – Go to question 3
3. Does the patient have domiciliary bi-level non-invasive ventilation (NIV)?	If Yes – Straight to EMU negative pressure cubicle on Ward 16 for domiciliary NIV regardless of presenting complaint for Covid swab / further assessment and non-vented mask and circuit If No – Go to question 4
4. Does the patient have continuous positive airway pressure (CPAP) for complex obstructive sleep apnoea (OSA) / obesity hypoventilation syndrome (OHS) and heart failure? ie cannot manage without CPAP Or patient feels they cannot manage without CPAP	If Yes – Go to question 5 If No – Go to question 6
5. Is the patient completely self-sufficient and independent with their CPAP and is there a low clinical suspicion of Covid 19 infection?	If **not** self-sufficient – Straight to EMU negative pressure cubicle on Ward 16 for domicilary CPAP regardless of presenting complaint for Covid swab / further assessment and non-vented mask and circuit If self-sufficient – Consider cubicle in SAU or ward 8 for Covid swab / further assessment and non-vented mask and circuit (Contact EMU nurses). Elective surgical cases who are self sufficient with their CPAP should remain on the surgical ward using a non vented mask and closed circuit provided by respiratory CNS or EMU.
6. Does the patient have continuous positive airway pressure (CPAP) for simple obstructive sleep apnoea (OSA)? ie can manage a couple of nights without CPAP	If Yes – Go to question 7 If No – Can be admitted to SAU for assessment
7. Is the patient completely self-sufficient and independent with their CPAP and is there a low clinical suspicion of Covid 19 infection? • Can be assessed in SAU • If admission likely >48hrs swab for COVID 19 • Do not use CPAP until swab result available if patient can tolerate	If **not** self-sufficient – Consider cubicle on ward 8 for further assessment and non-vented mask and circuit (Contact EMU nurses) If self-sufficient – Consider cubicle on SAU or ward 8 for further assessment and non-vented mask and circuit (Contact EMU nurses). If clinical need requires non-respiratory specialist ward, then a discussion with the ward nursing staff and a cubicle is required (eg self-sufficient CPAP patient awaiting angiogram can go to cubicle on ward 9 if nursing team agree)

Appendix E

COVID Recovered Notice

Confirmed COVID-19 patients can be labelled as 'Recovered COVID-19' **14 days** after a positive test; ***if*** they meet certain clinical criteria. Labelling as 'Recovered' should take place in discussion with Senior Medical staff.

To be classed as 'Recovered COVID-19' **all four** of the following criteria must be met:

Yes	***Criteria***
✓	Patient must be 14 days after **sample date** of their first positive test (or hospital admission, if clinical diagnosis)
✓	Clinical improvement with at least some respiratory recovery
✓	Absence of fever (>37.8°C) for at least 48 hours; without use of medication
✓	No underlying severe immunosuppression or admission to ICU*
UPDATE	After discussion with Senior Doctors, label patient as '**Recovered COVID-19**' on SIGNAL and isolation precautions can be relaxed (so long as no other IP&C concerns e.g. *C.diff* etc)

Recovered COVID-19 patients, who remain as inpatients, may be accommodated in the following areas during their acute inpatient stay, whilst recovering from COVID:

- COVID bays
- Suspected COVID bays
- Non-COVID bays (**not** to be placed in screened elective wards)

Important –

- Staff PPE requirements do not change when isolation requirements are relaxed.
- Universal precautions must be taken for **all patients** regardless of COVID status.

*Severe immunosuppression ***may*** result in the patient being infectious for a longer period of time. Repeat swab PCR testing at 14 days; should be undertaken.

For further information, please click on the Public Health guidance link below:

Stepdown guidance from Public Health

Appendix F

Additional considerations, in addition to standard infection prevention and control precautions,

where there is sustained transmission of COVID-19, taking into account individual risk assessment for this new and emerging pathogen, NHS and independent sector

Setting	Context	Disposable Gloves	Disposable Plastic Apron	Disposable fluid-repellent coverall/ gown	Surgical mask	Fluid-resistant (Type IIR) surgical mask	Filtering face piece respirator	Eye/face protection[1]
Any setting	Direct patient/resident care assessing an individual that is not currently a possible or confirmed case[2] (within 2 metres)	✓ single use[3]	✓ single use[3]	✗	✗	✓ risk assess sessional use[4,5]	✗	✓ risk assess sessional use[4,5]
Any setting	Performing an aerosol generating procedure[6] on an individual that is not currently a possible or confirmed case[2,7]	✓ single use[3]	✗	✓ single use[3]	✗	✗	✓ single use[3]	✓ single use[3]
Any setting	Patient transport service driver conveying any individual to essential healthcare appointment, that is not currently a possible or confirmed case in vehicle without a bulkhead, no direct patient care and within 2 metres	✗	✗	✗	✓ single use[3]	✗	✗	✗

Table 4

1. This may be single or reusable face/eye protection/full face visor or goggles.
2. A case is any individual meeting case definition for a possible or confirmed case: https://www.gov.uk/government/publications/wuhan-novel-coronavirus-initial-investigation-of-possible-cases/investigation-and-initial-clinical-management-of-possible-cases-of-wuhan-novel-coronavirus-wn-cov-infection
3. Single use refers to disposal of PPE or decontamination of reusable items e.g. eye protection or respirator, after each patient and/or following completion of a procedure, task, or session; dispose or decontaminate reusable items after each patient contact as per Standard Infection Control Precautions (SICPs).
4. Risk assess refers to utilising PPE when there is an anticipated/likely risk of contamination with splashes, droplets of blood or body fluids. **Where staff consider there is a risk to themselves or the individuals they are caring for they should wear a fluid repellent surgical mask with or without eye protection as determined by the individual staff member for the care episode/single session.**
5. A single session refers to a period of time where a health care worker is undertaking duties in a specific care setting/exposure environment e.g. on a ward round; providing ongoing care for inpatients. A session ends when the health care worker leaves the care setting/exposure environment. Sessional use should always be risk assessed and consider the risk of infection to and from patients, residents and health and care workers where COVID-19 is circulating in the community and hospitals. PPE should be disposed of after each session or earlier if damaged, soiled, or uncomfortable.
6. The list of aerosol generating procedures (AGPs) is included in section 8.1 at: www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control/covid-19-personal-protective-equipment-ppe. (Note APGs are undergoing a further review at present)
7. Ambulance staff conveying patients are not required to change or upgrade PPE for the purposes of patient handover.

Recommended PPE for healthcare workers by secondary care inpatient clinical setting, NHS and independent sector

Setting	Context	Disposable Gloves	Disposable Plastic Apron	Disposable fluid-resistant gown	Surgical mask	Fluid-resistant (Type IIR) surgical mask	Filtering face piece respirator	Eye/face protection[1]
Acute hospital inpatient and emergency departments, dental and maternity settings	Performing a single aerosol generating procedure[2] on a possible or confirmedcase [3] in any setting outside a higher risk acute care area[4]	✓ single use[5]	✗	✓ single use[5]	✗	✗	✓ single use[5]	✓ single use[5]
	Working in a higher risk acute care area[4] with possible or confirmedcase(s) [3]	✓ single use[5]	✓ single use[5]	✓ sessional use[6]	✗	✗	✓ sessional use[6]	✓ sessional use[6]
	Working in an inpatient, maternity, radiology area with possible or confirmedcase(s) [3] – direct patient care (within 2 metres)	✓ single use[5]	✓ single use[5]	✗	✗	✓ sessional use[6]	✗	✓ sessional use[6]
	Working in an inpatient area with possible or confirmed case(s)[3] (not within 2 metres)	✗	✗	✗	✗	✓ sessional use[6]	✗	✓ risk assess sessional use[6,7]
	Working in an emergency department/acute assessment unit area with possible or confirmed case(s)[3] – direct patient care (within 2 metres)	✓ single use[5]	✓ single use[5]	✗	✗	✓ sessional use[6]	✗	✓ sessional use[6]
	All individuals transferring possible or confirmed case(s)[3] (within 2 metres)	✓ single use[5]	✓ single use[5]	✗	✗	✓ single or sessional use[5,6]	✗	✓ risk assess single or sessional use[5,6,7]
	Operating theatre with possible or confirmed case(s)[3] – no AGPs[2]	✓ single use[5]	✓ single use[5]	✓ risk assess single use[5,7]	✗	✓ single or sessional use[5,6]	✗	✓ single or sessional use[5,6]
	Labour ward/area – 2nd/3rd stage labour vaginal delivery (no AGPs[2]) – possible or confirmedcase(s) [3]	✓ single use[5]	✓ single use[5]	✓ single use[5]	✗	✓ single or sessional use[5,6]	✗	✓ single or sessional use[5,6]
	Inpatient care to any individuals in the extremely vulnerable group undergoing shielding[8]	✓ single use[5]	✓ single use[5]	✗	✓ single use[5]	✗	✗	✗

Table 1

1. This may be single or reusable face/eye protection/full face visor or goggles.
2. The full list of aerosol generating procedures (AGPs) is within the COVID-19 IPC guidance [note APGs are undergoing a further review at present].
3. A case is any individual meeting case definition for a possible or confirmed case: https://www.gov.uk/government/publications/wuhan-novel-coronavirus-initial-investigation-of-possible-cases/investigation-and-initial-clinical-management-of-possible-cases-of-wuhan-novel-coronavirus-wn-cov-infection
4. Higher risk acute areas include: ICU/HDUs; ED resuscitation areas; wards with non-invasive ventilation; operating theatres; endoscopy units for upper Respiratory, ENT or upper GI endoscopy; and other clinical areas where AGPs are regularly performed.
5. Single use refers to disposal of PPE or decontamination of reusable items e.g. eye protection or respirator, after each patient and/or following completion of a procedure, task, or session; dispose or decontaminate reusable items after each patient contact as per Standard Infection Control Precautions (SICPs).
6. A session refers to a period of time where a healthcare worker is undertaking duties in a specific care setting/exposure environment e.g. on a ward round; providing ongoing care for inpatients. A session ends when the healthcare worker leaves the care setting/exposure environment. Sessional use should always be risk assessed and considered where there are high rates of hospital cases. PPE should be disposed of after each session or earlier if damaged, soiled, or uncomfortable.
7. Risk assessed single use refers to utilising PPE when there is an anticipated/likely risk of contamination with splashes, droplets of blood or body fluids.
8. For explanation of shielding and definition of extremely vulnerable groups see guidance: https://www.gov.uk/government/publications/guidance-on-shielding-and-protecting-extremely-vulnerable-persons-from-covid-19/guidance-on-shielding-and-protecting-extremely-vulnerable-persons-from-covid-19

Patient use of PPE: In cohort wards, communal waiting areas and during transportation, it is recommended that suspected or confirmed cases wear a surgical face mask if this can be tolerated. The aim of this is to minimise the dispersal of respiratory secretions, reduce both direct transmission risk and environmental contamination. A surgical face mask should not be worn by patients if there is potential for their clinical care to be compromised (e.g. when receiving oxygen therapy).

Appendix G

Pathology transport flowchart - version 4

Suspected or confirmed COVID-19 case

VIROLOGY - COVID-19 testing

- Take **1 dry throat** swab (red topped)
- Double bagged the swab, as described below and send to pathology where samples will be forWarded to Virology in Singleton.
- Please use a Purple Virology bag, stock available from Pathology Reception.
- Complete either a COVID-19 request form (below) or preferably request electronically via ETR and the WCP.

Covid 19 req form April 2020.pdf

- Please provide detailed clinical information **and state if the patient requires admission,** to support triaging in the laboratory. Ensure correct Hospital and Ward is noted on the form.

Requesting essential laboratory tests

Appropriately packaged specimens (double bagged – see below) from suspected or confirmed COVID-19 patients can be sent directly to the laboratories along with properly completed request form indicating ?COVID19 or proven COVID19.

There is no need to contact the laboratory in advance.

VIROLOGY – Routine respiratory virus testing

- For **ITU, Haematology and SCBU** patients that meet the usual testing criteria for routine respiratory PCR testing.
- Complete a **'Rapid Flu Test' request form**

Rapid flu test request.pdf

- Send **a separate dry throat swab** (double bagged – see below) to pathology where samples will be forWarded to Virology in Singleton for testing.

Specimen packaging and transport

All suspected and proven COVID19 specimens should transported to the laboratories double bagged as described below:-

- 1st - wipe / disinfect the outside of any specimen containers
- 2nd - place in a plastic biohazard bag which in turn is also wiped / disinfected on the outside
- 3rd - using clean gloves place the first biohazard bag containing the specimen inside a second bag which could be the either the bag attached to the laboratory request form or a further biohazard bag.
- 4th – ensure the request form remains 'clean' and is NOT folded in the first bag with the specimen

Send the sample to laboratory as 'per normal' i.e. either via air tube / porters / clinical staff.

Pathology Contact information

MORRISTON	
Laboratory Medicine	
Blood Bank	[redacted]
Biochemistry	[redacted]
Haematology	[redacted]
Special Coagulation	[redacted]
Immunology	[redacted]
SINGLETON	
Laboratory Medicine	
Blood Bank	[redacted]
Biochemistry	[redacted]
Haematology	[redacted]
Virology	
Reception	[redacted]
Lab	[redacted]
Microbiology	
Microbiology	[redacted]
NEATH PORT TALBOT	
Laboratory Medicine	
Sample Reception	[redacted]
POW	
Laboratory Medicine	
Blood Bank	[redacted]
Biochemistry	[redacted]
Haematology	[redacted]

Appendix H

Data Collection Headings

COVID-19 Ward Patients																					
Patient Demographics									Presenting Symptoms											Function	
Initials	Gender	DoB	NHS	Post Code	Date of Admission	Days since initial onset	Care Home resident	Social Care Support	Fever	Cough	SOB	Other symptoms	Anosmia	Myalgia	Delirium/Altered Mental State	News	SATS on Air	SATS on Oxygen	AMT	WHO Fx Status	Frailty Score

Co-morbidities												
IHD	Diabetes	COPD	Malignancy	H. Malignancy	CKD	Stroke/CVD	HTN	Dementia	Obesity	Smoker?	other	Immunocompromised?

					Admission Bloods									Radiology	Management			Treatment Escalation			Palliative Care			Discharge	
WCC	Ddimer	Troponin	Hb	Neutrophil	lymphocytes	Plt	Albumin	Bili	ALP	ALT	CRP	Urea	Creatinine	CXR findings (estimate of lung infiltrates)	Antibiotics	NIV (specfy is previous dom NIV)	RECOVERY TRIAL	DNAR	Transferred to Morriston	Required Intubation	Care Decisions for Last Days of Life Used	Specialist Palliative Care Review	Syringe driver	Date of Discharge	Discharge DestinationLength of Stay Social care on discharge

Appendix I

Thromboprophylaxis in patients with confirmed or suspected COVID-19 infection

Patients admitted NOT already taking therapeutic anticoagulation

Step 1: Weigh patient (or estimate weight) & **document on inpatient chart** and in nursing notes

Step 2: Request U+E, FBC, Coagulation screen

Step 3: Confirm no contraindications to pharmacological thromboprophylaxis

- Known heparin allergy
- Previous heparin-induced thrombocytopenia
- Active bleeding or at risk of bleeding (including recent major trauma or known peptic ulcer)
- Uncontrolled hypertension: systolic ≥ 230mmHg or diastolic ≥ 120mmHg
- Untreated acquired or inherited bleeding disorder
- Lumbar puncture/epidural/spinal anaesthesia expected within the next 24 hours or undertaken in the previous 4 hours (consider risk for thrombosis and the risk for bleeding in the context of the procedure and patient risk factors).
- Acute stroke or risk of central nervous system bleed
- Acute bacterial endocarditis
- Chronic dialysis: Thromboprophylaxis likely still indicated, but clinicians will need to consider the possibility of inaccurate GFR and its impact on enoxaparin dosing

If any of the above apply, discuss with consultant responsible for patient

Step 4: Prescribe initial **ENOXAPARIN** dose based on weight on the regular side of the inpatient medication chart

Document "COVID-19" as the indication on chart

ADMINISTER PROMPTLY AT THE POINT OF ADMISSION

(DO NOT DELAY THROMBOPROPHYLAXIS FOR COAGULOPATHY UNLESS ACTIVELY BLEEDING)

Weight	Renal Function (CrCl) ≥30ml/min and PLTS>80 x10^9/L	Renal Function (CrCl) ≥30ml/min and PLTS 30-80 x10^9/L	Renal Function (CrCl) 15-29ml/min and PLTS >30 x10^9/L	Renal Function (CrCl) <15ml/min and PLTS >30 x10^9/L	Platelets < 30x10^9/L OR Active bleeding
≤ 49Kg	20mg BD	20mg OD	20mg OD	Discuss with renal team [See over]	Offer intermittent pneumatic compression (IPC) if no contraindication and discuss with haematology
50- 99Kg	40mg BD	20mg BD	20mg BD		
100 – 149Kg	80mg BD	40mg BD	40mg BD		
≥150Kg	120mg BD	60mg BD	60mg BD		

For those on dialysis, please seek specialist advice

20mg or 40mg doses: Prescribe Inhixa brand of enoxaparin.
60mg, 80mg or 120mg doses: Prescribe Clexane brand of enoxaparin.

Step 5: Check renal function using (eGFR) and platelets and adjust dose as necessary (using above table). For patients at extremes of body weight use creatinine clearance following guidance from renal/pharmacy:

Creatinine Clearance (CrCl) in ml/min = (140 – Age) x Factor (1.04 for females or 1.23 for males) x weight (Kg)
Serum creatinine (umol/L)

Step 6: Re-check coagulation screen three times a week and/or if clinical deterioration

Thromboprophylaxis should be reviewed regularly and adjusted according to clinical situation, balancing risk of bleeding against risk of thrombosis.

If COVID-19 excluded, use standard dose thromboprophylaxis

Step 7: Consider extended thromboprophylaxis if the patients hospital stay has been >7 days

On discharge, consider prescribing 14 days of either standard prophylactic dose enoxaparin or rivaroxaban 10mg OD. Do not use rivaroxaban if platelets less than $50x10^9$/L or enoxaparin if platelets less than $30x10^9$/L

Further Information

The decisions to support increased doses of thromboprophylaxis in patients with suspected or confirmed COVID-19 infection were taken following a meeting held between clinicians involved in the management of COVID-19, from various specialities and disciplines (e.g. haematology, critical care, renal, respiratory, general medicine and nursing). In light of emerging evidence showing the increased thrombogenicity associated with COVID-19 infection intermediate dose thromboprophylaxsis is considered appropriate supported by emerging evidence, ongoing randomised control trials and society guidelines

The guideline will be updated in response to emerging evidence

Thrombosis risk includes: Acute infection (including pneumonia), dehydration, heparin use in heparin induced thrombocytopenia, active cancer or cancer treatment, patient aged 60 or over, known thrombophilia, obesity (BMI >30kg/m^2), personal or family history of VTE, use of oestrogen-containing contraceptive therapy, varicose veins with active phlebitis, pregnancy or ≤ 6 weeks post-partum, use of hormone replacement therapy, significantly reduced mobility for 3 days or more, critical care admission, hip or knee replacement, hip fracture and acute exacerbation of heart failure

Bleeding risks/ contraindications to pharmacological thromboprophylaxis include: Active / risk of bleeding, previous heparin induced thrombocytopenia (use fondaparinux), concurrent use of anticoagulants, e.g. warfarin INR >2, bacterial endocarditis, pericarditis, thoracic aneurysm, acquired bleeding disorder, such as acute liver failure, uncontrolled systolic hypertension ≥ (230/120mmHg or higher), acute stroke or risk of central nervous system bleed, e.g SAH, untreated inherited bleeding disorder (such as haemophilia and von Willebrand's disease), known heparin allergy (use fondaparinux), neurosurgery, spinal surgery or eye surgery, lumbar puncture/epidural/spinal anaesthesia expected within the next 12 hours, Other procedure with high bleeding risk, lumbar puncture/epidural/spinal anaesthesia within the previous 4 hours

Lower end platelet cut off for LMWH: Whereas SBUHB policy usually contraindicates the use of prophylactic LMWH in patients with a platelet count of less than $75x10^9$/L, given the thrombogenicity of COVID-19 and in line with national and international guidance, the threshold has been lowered to 30 $x10^9$/L for this patient group

Coagulopathy: Although coagulopathy in the absence of bleeding is not a contraindication, the following abnormal coagulation parameters should be reviewed with patient's consultant before prescribing thromboprophylaxis

o PT (prothrombin time) > 6 seconds beyond upper limit of normal (ULN)

o APTT (activated partial thromboplastin time) > 6 seconds beyond ULN

o Fibrinogen < 1 g/L

Extended thromboprophylaxis: Patients who have required a hospital stay of more than 7 days should be considered for extended (14 days) thromboprophylaxis as part of their discharge plan. First line therapy should be with enoxaparin at a dose of 40mg once a day, with the dose reduced to 20mg OD in patients with a CrCl of <30ml/min. Enoxaparin should not be used in patients with a platelet count of $<30x10^9$/L. Patients requiring enoxaparin should be supplied with a sharps bin and shown how to self-administer. For patients with practical difficulties in administering enoxaparin, rivaroxaban at a dose of 10mg once a day should be considered following discussion with the patient's senior clinician. Rivaroxaban should not be used in patients with a platelet count of less than $50x10^9$/L or a CrCl of less than 15ml/min. It should be noted that there is currently no UK license for rivaroxaban use in medical prophylaxis. All patients should be given a Thrombosis UK Hospital Acquired thrombosis leaflet

CrCl<15 : Enoxaparin 20mg OD with anti-Xa monitoring or Heparin 5000 units TDS (BD if PLTS $30-80x10^9$/L) may be appropriate

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Appendix J

RECOVERY **RANDOMISED EVALUATION OF COVID-19 THERAPY (RECOVERY)**

Hospital Name: (use CAPITALS)	
Patient Name: (use CAPITALS)	
Study ID: (enter after randomisation)	

1. Information about the study has been provided to me: I confirm that I have read (or had read to me) and understood the Participant Information Leaflet (V7.0 08-Jul-2020) and I have had the opportunity to consider the information and ask questions. These have been answered satisfactorily.

2. Voluntary participation: I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without my medical care or legal rights being affected.

3. Access to study data about me: I give permission for relevant sections of my medical notes and information collected during the study to be looked at, in confidence, by authorised individuals from this hospital, the University of Oxford, and regulatory authorities to check that the study is being carried out correctly.

4. Access to my medical information: I agree that medical information collected by the doctors and hospitals which provide me with care and which may be located in local or national health and research organizations (including hospital admission, civil registration, audit and research data) may be provided to the study coordinating centre both during and for up to 10 years after the scheduled follow-up period. I understand that information that identifies me will be passed securely to such bodies to make this possible and that I can opt out of this at any time by writing to the coordinating centre team.

5. Data stored on computer: I understand that information about my progress in the study will be recorded on a computer database, and that this data will be stored on computers supervised by the University of Oxford. I understand that this information will be kept securely and confidentially.

6. OPTIONAL: Convalescent plasma: I am aware that I may be offered convalescent plasma as one of the treatments I may receive. I am aware that a blood sample will be sent to a central NHS laboratory for measurement of coronavirus and antibodies against it. I have indicated my agreement (or not) to receive this by initialing the appropriate box.

I agree	I do not agree

7. Agreement to take part: I have read the information (or had it read to me), had an opportunity to ask questions and agree to take part in the above study.

.....	.....	...../...../.....
PRINTED name of participant	Signature	Today's date
.....	.....	...../...../.....
PRINTED name of person taking consent	Signature	Today's date

**1 copy for participant; 1 copy for researcher site file; 1 (original) to be kept in medical notes*

RECOVERY trial ICF/PIL V7.0 08-Jul-2020 IRAS 281712 REC Ref 20/EE/0101
Page **1** of **4**

RECOVERY **RANDOMISED EVALUATION OF COVID-19 THERAPY (RECOVERY)**

Hospital Name:
(use CAPITALS)

Patient Name:
(use CAPITALS)

Study ID:
(enter after randomisation)

If participant is not able to read the text and/or sign for themselves but has capacity to give consent

I witnessed accurate reading of the consent form to the potential participant, who could ask any questions and got satisfactory replies.

I confirm that they gave their consent freely.

..... PRINTED name of witness	..... Signature	...../...../..... Today's date
..... PRINTED name of person taking consent	..... Signature	...../...../..... Today's date

If participant lacks capacity to give consent due to the severity of their medical condition (e.g. acute respiratory failure or need for immediate ventilation) or prior disease:

I have read the information (or had it read to me) and had an opportunity to ask questions.

I understand that the patient will be asked to confirm their consent as soon as they have the capacity to do so and that if they wish, they will be able to withdraw from the study without it affecting their medical care.

I believe that if they were able to, the patient would wish to take part in this study.

..... PRINTED name of Legal Representative	..... Signature	...../...../..... Today's date
..... Relationship to participant		
..... PRINTED name of person taking consent	..... Signature	...../...../..... Today's date

**1 copy for legal rep; 1 copy for researcher site file; 1 (original) to be kept in participant medical notes*

Invitation to participate

We are inviting people who have been admitted to hospital with (or suspected to have) COVID-19 to consent to join this research study comparing possible treatments. This form gives information about the study including the aims, risks and benefits of taking part. You may also be invited to participate in additional studies related to the RECOVERY trial (so-called "substudies").

WHAT YOU SHOULD KNOW ABOUT THIS RESEARCH STUDY:

1) Why is this research being done?

Your doctors have found, or suspect, that you have a lung disease called COVID-19. This condition is caused by a type of virus called SARS-CoV-2, or coronavirus for short.

About 19 out of 20 patients who get coronavirus get better without coming to hospital. Of those who are admitted to hospital, most also get better, but some may need oxygen or mechanical ventilation before they do so. However, a few percent do not get better.

This trial showed that dexamethasone (a type of steroid) reduces the risk of dying for some patients hospitalised with COVID-19. There are several others which may turn out to be helpful (or possibly harmful) when added to the usual standard of care. This study aims to find out whether any of these additional treatments are of any help.

2) What is the purpose of this study?

This study aims to compare several different treatments that may be useful for patients with COVID-19. These treatments have been recommended for testing by the expert panel that advises the Chief Medical Officer in England. Some are tablets and some are injections. Although these treatments show promise, nobody knows if any of them will turn out to be more effective in helping patients recover than the usual standard of care at your hospital (which all patients will receive).

The treatment, which may be given in addition to the usual care at your hospital, is: Azithromycin (a commonly-used antibiotic).

You may also receive convalescent plasma (the liquid part of blood which carries blood cells around the body) which has been collected from individuals who have recovered from COVID-19 infection and contains antibodies to the virus that may help you fight the virus. For patients whose condition is more severe, tocilizumab (a treatment for rheumatoid arthritis) is also an option. **At present, we don't know whether any of these are effective in treating** COVID-19. However, the side-effects are well-known from other uses and your doctor will be able to monitor you appropriately.

3) Who is doing the study?

The study is being conducted by researchers at the University of Oxford, which acts as the sponsor for the research, working with doctors at many hospitals across the UK.

4) Who is being included in the study?

Patients may be included in this study if they have COVID-19 confirmed by a laboratory test for coronavirus (or considered likely by their doctors), and are in hospital. Patients will not be included if the attending doctor thinks there is a particular reason why none of the study treatments are suitable.

5) What happens next if I agree to be included in this study?

If you decide to join, you will be asked to sign the consent form. Next, brief details identifying you and answering a few questions about your health and medical conditions will be entered into a computer. If you are willing to have convalescent plasma you may need 1 or 2 extra blood tests (to check your blood group), in line with standard NHS procedures. In addition, another sample will be sent to a central laboratory for measurement of coronavirus and antibodies against it. The results will not be available to your medical team and the sample will be destroyed once testing is complete. The computer will then allocate you at random (like rolling a dice) to one of the possible treatment options. In all cases this will include the usual standard of care for your hospital. It may also include an additional treatment, which might be given by mouth or injection. Neither you nor your doctors can choose which of these options you will be allocated. If your condition is severe or should deteriorate, then your doctors may choose

to enter you into a second phase in which the computer will allocate you at random again to one of the further possible treatment options (in addition to your previous study treatment and always including usual standard of care for your hospital).

Additional information about your health will be recorded and entered into the study computer but no additional visits will be required after you leave the hospital. In some instances, information about your health (both prior to, during, and after the study) may be obtained about you from medical records or databases (including NHS Digital, Public Health England, other equivalent bodies, and genetic or other research databases if you have provided samples to them) so that the study team can get more detailed or longer term information about the effects of the study treatments on your health for up to 10 years after the end of your participation.

6) What are the possible benefits of being in the study?

We do not know if any of the treatments being tested will have additional benefits. Your study treatment may or may not help you personally, but this study should help future patients.

7) What are the possible risks of being in the study?

Apart from the known side effects of these treatments (which may include tummy upset and blood test abnormalities), there is the unlikely possibility of a severe reaction to a study drug. Although Tocilizumab has been very rarely associated with liver damage in prolonged use this is not expected to be a problem with the short-term administration in this study. The potential side effects of plasma transfusions include allergic reactions (rash, fever, chills) and increased difficulty breathing and are easily treated. The plasma will undergo all the usual testing for the presence of other infections, but a very small risk of infection transmission does remain. Please ask your hospital doctor if you would like more information. Once you have been included in the study, you and your doctors will know which treatment the computer has allocated for you. Your doctors will be aware of whether there are any particular side effects that they should look out for.

Women who are pregnant may be included, however, the effect of some of the treatments on unborn babies is uncertain - although all the treatments have previously been used in pregnancy for other medical conditions without safety concerns being raised. If you do receive treatment and are not already pregnant, as a precaution, we advise that you should not get pregnant within 3 months of the completion of the trial treatment(s).

8) Can I stop the study treatment or my participation early?

If you or your doctor want to stop the study treatment before the course has been completed, then you are free to do so. If you decide that you do not wish any more information to be collected about you, you are free to say so (although de-identified information that has been collected up to that point will continue to be analysed by the research team).

9) If I have any questions or problems, who can I call?

If you have any questions please speak to your hospital medical team. Further information about the study will also be available on the study website (www.recoverytrial.net).

10) What information do you hold about me and how do you keep it private?

All information about you and your health will be kept private. The only people allowed to look at the information will be the doctors who are running the study, the staff at the study coordinating centre, and the regulatory authorities who check that the study is being carried out correctly. A privacy notice is on the study website (https://www.recoverytrial.net/study-faq/data-privacy).

11) Do I have to take part?

Joining the study is voluntary. Your decision whether to take part will not affect the care you receive at this hospital.

12) Are there any financial costs or payments?

All trial treatments will be free. Neither you nor your medical staff will be paid for your participation in this study.

13) What else can you tell me?

The study is funded by UK Research and Innovation and the National Institute for Health Research, not the makers of any of the study treatments. If we find out any new information that might affect your decision to stay in the study, we will give it to you. The University of Oxford, as Sponsor, has appropriate insurance in place in the unlikely event that you suffer any harm as a direct consequence of your participation in this study. NHS indemnity operates in respect of the clinical treatment that is provided.

Appendix K

RECOVERY
Randomised Evaluation of COVID-19 Therapy

NHS
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RECOVERY Trial: Convalescent Plasma Arm

Blood sampling and transportation

Standard Operating Procedure (SOP)

Content

1. Introduction

Patients who are eligible to be enrolled into the convalescent plasma arm of RECOVERY trial will be randomised to one of two groups on a 1:1 basis; no additional treatment (control) or convalescent plasma (CP). For all participants enrolled into this arm, both the control and those who receive CP, a baseline serum sample must be obtained. The sample must be obtained after the participant has provided consent and prior to randomisation. The sample is then sent to a central laboratory in Oxford. This serum sample will be analysed to measure the levels of antibodies against SARS-CoV-2. Additionally, the presence of SARS-CoV-2 might also be tested.

This laboratory SOP includes information on sample collection, handling, labelling, storage, and transportation.

2. Equipment

1- Locally provided yellow (gel SST tubes preferred) or red top or equivalent tube for serum (6mL). Age-appropriate tubes for paediatrics.

2- Packaging kit for transport (provided by NHSBT). Keep the packaging kits away from the clinical area. Make sure you have enough kits at site. Contact NHSBT CTU team to request further supply if required (see contact details below).

The packaging kit includes:

- Secondary container,
- Outer box,
- Absorbent sachet,
- A tamper-proof mailing envelope with pre-paid return address attached,
- Label sticker to complete and attach to the serum tube,
- Sample Tracking Form to complete and enclose in the envelope along with the serum sample.

3. Sample collection and preparation for local lab transfer

Follow your hospital COVID-19 infection control and health and safety policies when collecting, handling and transferring blood samples from COVID-19 patients.

The following procedures will be performed on the ward by the research or designated ward team:

- Obtain informed consent from patient as per RECOVERY trial protocol prior to taking blood.
- Collect one 6mL yellow or red top, or equivalent, tube for adults and older children; paediatric or neonatal counterparts for younger children and infants. Label the sample using your hospital's standard systems, including date and time, writing "RECOVERY" somewhere on the label or tube
- Place the sample in a clear plastic specimen bag and write on it RECOVERY – Transfusion Lab, using a black marker pen or sticky label according to availability, and send to the local transfusion laboratory as soon as possible. If your laboratory requires a form, complete this including clear reference to RECOVERY.

4. Sample labeling

Follow your hospital COVID-19 infection control and health and safety policies when collecting, handling and transferring of blood samples from COVID-19 patients.

The following procedures will be performed by the designated local team (research and/or transfusion laboratory staff depending on local arrangements):

- Log into RECOVERY web system at https://rct.npeu.ox.ac.uk/recovery/ (see Appendix 1)
- Using the label provided, label the tube clearly with the participant's study number, 7-digit ID number, and "RECOVERY" (details of the label – Appendix 2).
- Attach securely to the serum tube.
- Either remove the original sticker label from the sample tube that includes the participant's identifiable information, or obscure the details with a black marker pen.
- **Complete the Sample Tracking Form, provided in the packaging kit** (Appendix 3).
- **Complete the Local Sample Tracking Log - to be kept locally –** (Appendix 4).

5. Instructions for sample packaging and transportation to the central lab

The following procedures will be performed by the designated local team:

- Place the tubes in the absorbent white material, place in the secondary container, place in the outer box and then place in the tamper-proof mailing envelope.

- Insert the completed Sample Tracking Form into the tamper-proof mailing envelope.
- Seal the envelope.
- Please ensure the outside of the envelope is clearly labelled with the name and address of the person responsible at your site for sending the samples with a contact telephone number.
- The delivery address label is already attached to the envelope (as in Appendix 5).
- Take the Envelope to the Post Room

6. Timing of sample delivery

- Samples should ideally be posted the same day as collection to obtain the best quality of information.
- Samples that are not sent on the same day must be sent as soon as possible as the quality will deteriorate.
- Samples collected on Fridays and weekends should be stored in the fridge and sent to arrive at the central lab on Monday.

7. Contacts

Central Laboratory team [redacted]

NHSBT CTU Trial Managers

Samaher Sweity – [redacted]

Gillian Powter – [redacted]

RECOVERY Trial team

Lucy Fletcher (Senior Trial Manager) – [redacted]

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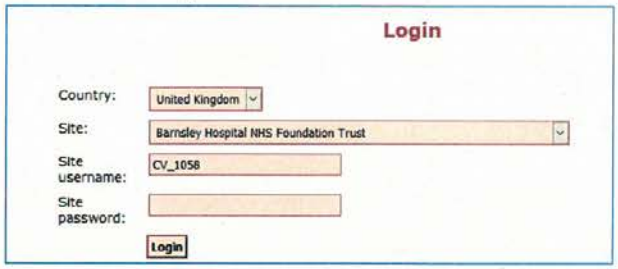
8. Appendices

Appendix 1: Accessing RECOVERY participant ID

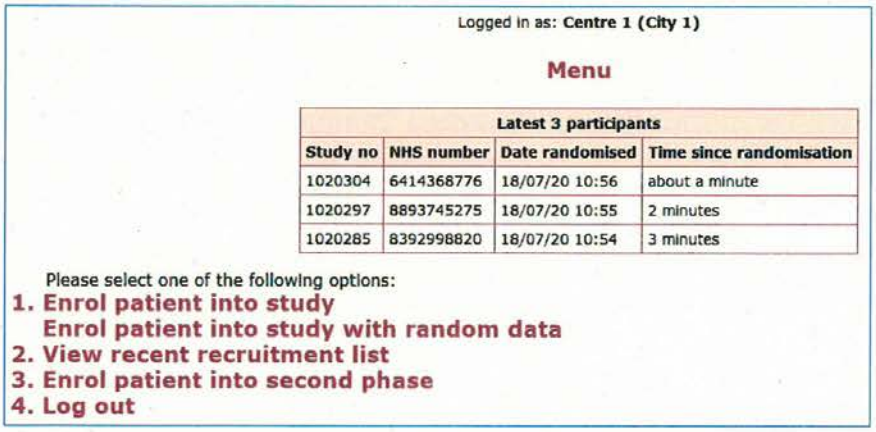
1. Visit https://rct.npeu.ox.ac.uk/recovery/

2. Select site name from drop-down list



3. This will automatically enter correct Site Username. Enter password (which has been sent to your laboratory manager).

4. You will see a menu screen like this:



If the sample belongs to one of the last three people to be randomised, their NHS number (or CHI number in Scotland) will be visible in the "Latest 3 participants" table and their study number displayed next to it.

5. If other people have been randomised since, click on **"2. View recent recruitment list"**.
IMPORTANT: DO NOT SELECT "1. Enrol patient into study".

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Centre 1

Study no	NHS number	Main randomisation			
		Time randomised	Allocation	Part B	Print
1020304	6414368776	18/07/20 10:56	Azithromycin	Usual standard management	Print
1020297	8893745275	18/07/20 10:55	Usual standard management	Convalescent plasma	Print
1020285	8392998820	18/07/20 10:54	Usual standard management	Convalescent plasma	Print

6. Find their NHS number (or CHI number in Scotland) and the study number is displayed next to it.

7. At the bottom of the page, click on "Home" and then "4. Log out"

If you cannot find the participant's NHS or CHI number on this list, please contact your local RECOVERY Principal Investigator. Their details have been sent to your laboratory manager. Please store the sample safely until this is resolved. Please contact the RECOVERY trial team if further assistance is needed.

If you are asked to provide convalescent plasma for a participant, *and you have not received this baseline serum sample,* please ask the requester to send a sample as soon as possible.

Appendix 2: Template Sample Tube Label

This label will be included in the packaging kit

Recovery Trial Serum Sample
Study number:
1 | | | | | | |
Date & Time collected:

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Appendix 3: Sample Tracking Form (this is provided in the packaging kit).

Sample Tracking Form

Please complete this form and send with samples.

Each sample should be labelled with the participant's RECOVERY study number. Please do not include participant identifiable information.

Hospital Site: _____		Recovery Study Number: _____
Sample type	**Date Posted**	**Comments**
Serum tube x 1		

Name		**LABORATORY USE ONLY**	
Signature		Date received/processed:	
Date			

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Appendix 4: Local Sample Tracking Log

Please keep this log on site

Hospital site.....

RECOVERY Study Number	Date and time Sample Received at local lab	Date Posted	Comments

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Appendix 5: Template Sample Postage Address Label

This pre-paid return address will be included, attached to the envelope included in the sample packaging kit.

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COVID Oxford BioArchive (COBA)

FAO: QUOD Team

NHS Blood and Transplant

John Radcliffe Hospital

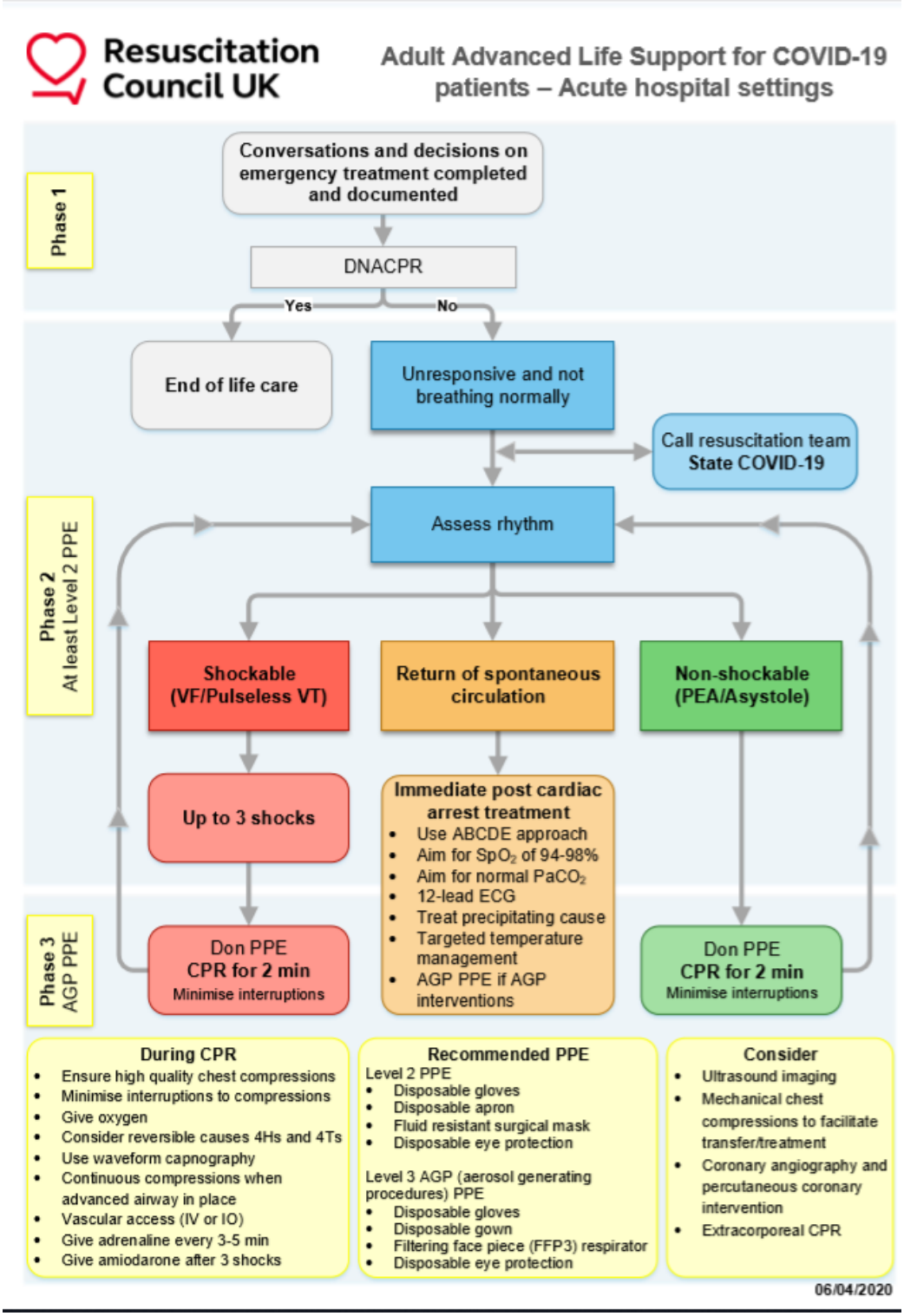
Oxford

OX3 9BQ

Immediate cold storage is required

Appendix L

Resuscitation Council UK Guidelines



Appendix M

GIG CYMRU NHS WALES Bwrdd Iechyd Prifysgol Bae Abertawe Swansea Bay University Health Board **PROCUDURE**	**STANDARD OPERATING**
Title	**SBUHB Covid-19 Patient Transfer Pathway – St Johns Transport**
Purpose	The purpose of this document is to describe the operating procedure for Health Board transfers of deteriorating Covid-19 patients to Morriston Hospital.
Scope	This applies to patients being transferred from hospitals within Swansea Bay Health Board. Agreement between clinicians for this cohort of patients to be brought to the Morriston site due to their deteriorating condition. This is to commence on Monday 6th April 2020.

Service Need	**Supporting Information**
A St John Ambulance has been redirected to become a dedicated USC vehicle with a two person crew (Urgent Care Crew) to support inter hospital transfers within the Health Board. This is based on the fact there is likely to be more transport requirements and less availability of WAST. **Vehicle specification** • Ferno Stretcher • Suction Unit • Piped O2 & Entonox • Inverter and 8 x3 pin sockets to run medical equipment We need rapid transfer for deteriorating patients before they require venting from Singleton to Morriston Hospital. This vehicle will support this transfer and if not available then WAST transfer will be requested - (30 minutes to 2 hour window for immediate transfer).	

	In the likely demand for Covid-19 admissions this will provide additional timely transfer for non-intubated patients (or intubated patients with a retrieval team), needing immediate access to critical care in Morriston. The default position for the transfer of vented patients would be via this dedicated vehicle and an ICU/Anaesthetic doctor and nurse/ODP will be with ***every*** intubated/ventilated patient. Out of Hours (between 19:30-07:30) and if the dedicated St John vehicle was not available then the request needs to go through to WAST. The process for WAST involves contacting the Clinical Control Centre and requesting a transfer, which can be listed for 'Immediate', 'Urgent' or 'Routine' response. (Those calls are listed along with 999 emergency responses and therefore may get overruled by calls within the community when there are insufficient resources available). The St John vehicle does have the capability to transfer vented patients, supported by a Health Board transfer / retrieval team if required. Communication between receiving hospital, transferring personnel and ambulance control is vital. This 12 hour transport provision is currently **07:30 – 19:30**	
Instruction		**Supporting Information**
	Singleton – Deteriorating Patients **Process to ITU** - Referring Singleton doctor to call ICU Consultant **EXT** [redacted] and confirm that patient has been accepted by critical care for intubation - Ring Singleton Site Manager – **EXT** [redacted] – is St John transfer ambulance available - St John Vehicle number – [redacted] **-** (Site Teams have individual crew members phone numbers as back up)	

	- If St John crew not available - Phone WAST Clinical Support Desk Duty Manager to request WAST immediate transfer – [redacted] - Referring doctor to confirm whether escorting staff come from Singleton or if Morriston will be able to provide retrieval team on ambulance - if so taxi to be arrange via Morriston Clinical Site Matron to take team to Singleton from Morriston **- Ext** [redacted] - On arrival of Transport referring Singleton doctor to ring Critical Care Nurse in Charge Morriston– **EXT** [redacted] to confirm departure, check exact destination and estimated time of arrival - Critical Care Nurse in Charge **EXT -** [redacted] or Site Matrons **EXT -** [redacted] to arrange porters and any assisting staff to Pharmacy entrance - To enter Morriston Hospital via Pharmacy corridor - Follow Portering / Hospital Operations SOP on movement of patients through Morriston –	
	Singleton – Intubated Patients **Process to ITU** - Referring Singleton doctor to call ICU Consultant **EXT** [redacted] and confirm that patient has been accepted by critical care - Ring Singleton Site Manager – **EXT** [redacted] – is St John transfer ambulance available - ST John Vehicle number – [redacted] - If St John crew not available then Phone WAST Clinical Support Desk Duty Manager to request WAST immediate transfer – **0300 123 9236 / 999** - Referring doctor to confirm whether escorting staff come from Singleton or if Morriston will be able to provide retrieval team on ambulance - if so taxi to be arrange via Morriston Clinical Site Matron to take team to Singleton from Morriston **- Ext** [redacted]	

	- On arrival of Transport referring Singleton doctor to ring Critical Care Nurse in Charge Morriston– **EXT** [redacted] to confirm departure, check exact destination and estimated time of arrival - Critical Care Nurse in Charge **EXT -** [redacted] or to delegate to Site Matrons **EXT -** [redacted] to arrange porters and any assisting staff to Pharmacy entrance - To enter Morriston Hospital via Pharmacy corridor - Follow Portering / Hospital Operations SOP on movement of patients through Morriston	
	SOP's for Inter-Hospital Transfers	
	Standard Operating Procedure for Inter-hospital Transfer of Level III Suspected or Positive COVID-19 case	SOP for COVID19 interhospital transfe
	Morriston internal transfer of patient with suspected / confirmed COVID-19 – Porters	Internal Transfer of patient with suspect

Appendix N

SWANSEA BAY UNIVERSITY HEALTH BOARD

Singleton Anaesthetic cover plan

Finalised - 20th March 2020

As from 20th March 2020

2 tier consultant model in Singleton Hospital 24/7
1 Consultant will be resident 24/7 (6 person rota)
1 Consultant non-resident 24/7 (4 person rota)

Supported by 2 Junior doctors resident 24/7 (number on rota TBC)

In the event of a need to intubate a COVID-19 patient, the non-resident consultant will be called in to cover Obstetrics, allowing for a two person intubation team, whilst retaining safe cover for obstetrics.

The transfer team will then have to be confirmed on a case by case basis, it may be provided by Morriston rotas, it may be one of the Singleton anaesthetists.

In the event that the transfer team is the Singleton team, it is recognised that this will significantly impair the ability to both intubate a further COVID-19 patient and safely cover obstetrics.

Every single transfer will be reviewed within 48 hours. The initial invitation will be to all those involved in the case and the current cross site planning team. It is not expected that all of these will attend however it should provide sufficient input to appropriately review the case.

This policy is directly linked to the **SBU potential COVID-19 pre-hospital triage pathway (adult and non-pregnant)**

Appendix O

Palliative Care Advice

CID: 2800 Published: May 2018 Last Review: March 2019 Next Review: March 2021

Tŷ Olwen

GIG CYMRU NHS WALES
Bwrdd Iechyd Prifysgol Abertawe Bro Morgannwg University Health Board

Swansea Specialist Palliative Care

Hospital Advice & Referral Line

How?	Ext: 39244
When?	Open 08:30-17:00 Mon-Fri excluding bank holidays. OOH advice available via switchboard (Morriston/Singleton)
Who?	Referrals from Doctors, CNS, ANP Advice for any healthcare professional
What's needed?	Patient demographics Medical history including current medication (May be useful to have notes & drug chart available)

Paper copies of this document should be kept to a minimum and checks made with the electronic version to ensure that the printed version is the most recent.

Appendix P

Care Decisions for the Last Days of Life

All Wales Supplementary Symptom Control Guidance for palliative management of patients with COVID-19 infection

Context and use of this document:

- **This guide supplements the Symptom Management Guidelines in the CARE DECISIONS document** to support the care of adult patients with Covid-19 infection who require palliative management of their condition.
- *NB These are All Wales pragmatic prescribing suggestion in response to the pandemic.*

Symptoms of Covid-19 infections

The symptoms most commonly experienced by patients as a result of Covid-19 infection are:

Breathlessness / Dyspnoea **Agitation** **Anxiety**

In addition, other pre-existing conditions may need to be considered when assessing patients' needs e.g. management of pain and nausea. Delirium has also been reported as a feature with Covid-19[1]. See Care Decisions Symptom Control guidance for management of other symptoms. Specific advice on possible Covid-19 conditions is shown below.

Breathlessness - Use of Opioids:

There is good evidence that opioids reduce breathlessness in cancer and non-cancer patients. Opioids should not cause CO_2 retention, if used appropriately (maximum dose orally 30mg/24hr[2]). However, morphine and midazolam should be avoided or used with caution in patients who have further options for treatment escalation, or in whom escalation decisions have not been clarified.

- If possible start with **Oral Morphine (Oramorph**) 2.5mg – 5mg prn 2 hourly initially and increase by 30-50% (daily) up to max of 30mg/24 hours
- If beneficial consider 4 hourly regular dosing
- If NBM start 1.25-2.5mg **Subcutaneous Morphine** injection prn 2 hourly and titrate as above.
- The lowest starting dose should be used in the **elderly**.
- In the presence of **moderate-severe renal impairment**, oxycodone should be used if possible starting oral oxycodone 1-2mg prn 4 hourly or use 1mg subcutaneous oxycodone injection (smaller doses are not safely measured).

[1] https://www.bgs.org.uk/resources/coronavirus-managing-delirium-in-confirmed-and-suspected-cases

[2] Ekström M P et al. BMJ 2014;348:bmj.g445

- When starting opioids monitor for signs of toxicity i.e. myoclonic jerks, new drowsiness, visual hallucinations or vivid dreams and at a later stage reduced respiratory rate below 8/min.
- If concerns re toxicity, IV/SC naloxone should be given in line with local health board guidance.

Anxiety & Dyspnoea - Use of Benzodiazepines:
There is no evidence that benzodiazepines directly relieve breathlessness but they are commonly used for anxiety that can accompany dyspnoea. Patients experiencing panic attacks may also benefit from explanation and reassurance.

- Lorazepam 0.5mg sublingual prn up to qds. Can be up-titrated
- Diazepam 2mg qds
- Midazolam 5 – 15 mg continuous subcutaneous infusion (CSCI) /24 hour in terminal phase, may need higher doses

Terminal breathlessness
Breathlessness in imminently dying patients can be distressing for both patients, their loved-ones and healthcare professionals. A calm, positive, logical approach can do much to alleviate the distress of the patient. Anxiolytics are often necessary to alleviate the associated distress of breathlessness.

Treatment of dyspnoea:

- Start Morphine Sulphate via CSCI. The dose will depend on whether the patient is already receiving an oral opioid:
  - **If already taking oral morphine** divide the total 24 hour dose by two for the appropriate 24 hour dose of SC morphine via CSCI.
  - If the patient is **opioid naïve**, consider starting morphine 10-15mg/24hours CSCI with 2.5mg SC prn and titrate as required.
- Alternatively CSCI with oxycodone 5-10mg/24 hours can be used for patient s with significant renal dysfunction.

To relieve the **anxiety/agitation of terminal breathlessness,** consider adding:

- Midazolam 5- 10mg/24hours CSCI with 2.5mg SC stat and titrate as required according to prn use. Start lower dose with renal dysfunction. If midazolam is not effective or available consider:
- Levomepromazine 12.5 mg - 25mg/24hours CSCI, with 6.25 mg SC stat and titrate as required. Or Haloperidol 2.5 mg - 5mg /24 hours via CSCI, with 0.5mg - 1.5mg SC stat. Both levomepromazine and haloperidol have anti-nausea effects.

Respiratory Secretions at the End of Life
There is no consistent evidence to show that noisy upper airway secretions cause breathlessness to the dying patient, but the sound can be difficult for family members and choking must be avoided at all cost. ***Ensure all patients receive regular oral care using a soft toothbrush and oral balance gel***.
Consider the following**:**

- Reposition the person on one side with the upper body elevated to aid postural drainage.
- Consider upper airway suctioning, if appropriate (with full PPE as aerosol generating procedure).
- Consider a trial of anticholinergics and /or diuretics to reduce noisy respiratory secretions if they are causing distress and conservative measures have not been successful.
- The anticholinergic drug of choice is Hyoscine hydrobromide 0.4mg subcut PRN 2 hourly up to 2.4mg over 24hours.
- Alternatives which are less sedating include: Glycopyrronium bromide - 0.2 mg PRN 2 hourly subcutaneous up to 1.2mg total over 24 hours and Hyoscine butylbromide (Buscopan) - 20mg subcutaneous PRN, up to 120mg over 24hours.
- Furosemide injection can be used subcutaneously if no IV access in similar doses if indicated and should be considered if not responsive to anticholinergics or history of cardiovascular disease.

Palliative Care Advice – general and stock control requirements

- All areas to ensure adequate stocks of anticipatory medication are available (eg morphine, midazolam, hyoscine hydrobromide, glycopyrronium, levomepromazine and haloperidol)
- Infusions can be administered in the acute setting with the use of an intravenous pump used subcutaneously to ensure availability of McKinley T34 pumps for community use
- All areas to ensure access to a stock of Vygon Administration set and Saf T Intima needle free access device.

For further information or advice, contact your local Specialist Palliative Care Team (SPCT)

Contact details for Swansea Bay SPCT are:

- Ext 39244 Monday to Friday 8.30am to 5.00pm (excluding bank holidays).
- Out of Hours advice available via Switchboard (Morriston/Singleton).

Appendix Q

Process for Reporting Deaths from COVID -19

Reporting inpatient deaths due to COVID-19 should be done via the online eForm which is available on the Welsh Clinical Portal.

All deaths must be reported within 24 hours.

The Executive Medical Director issued the following advice on 30th April 2020 regrading routine reporting and reporting of sensitive deaths.

1. Routine reporting

- You are asked to report any suspected COVID-19 death in a hospitalised patient who has been laboratory confirmed with COVID-19 within 28 days prior to death via the eForm on the WCP.

- There is no longer any need to email me the details separately or to contact the on-call Public Health consultant.

2. Sensitive deaths

- If the death is unusual or requires sensitive handling (e.g. children, adults <40 years with no comorbidities, health/social care worker, death in pregnancy, VIP) this should be communicated directly by telephone:

- After next of kin are notified, the treating NHS clinician reports the death to the Health Board Executive Medical Director and to the Public Health Clinician (Health Protection Team, on call)

    - Dr Richard Evans, Swansea Bay Executive Medical Director: contactable via Morriston switchboard (use home phone number out of hours).

    - For Health Protection consultant: call [redacted] and ask for the COVID-19 consultant of the day.

- After contacting by telephone, the electronic report can be completed via the WCP.

Appendix Q Continued.

Enhanced surveillance of COVID-19 – Rapid Mortality Monitoring

Guidance on COVID-19 Mortality Surveillance form in Welsh Clinical Portal

- On 6th March 2020 Coronavirus Infectious Disease 2019 (COVID-19) became a notifiable disease in Wales and SARS-CoV-2 became a notifiable causative agent [1]. As part of a range of enhanced surveillance measures for COVID-19 Public Health Wales are asking for deaths in patients who are confirmed with COVID-19 to be reported in a timely way. Mechanisms currently in place for this vary from area to area, with different data available depending on the reporting route.

- NHS Wales Informatics Service (NWIS) has developed an electronic reporting form within the Welsh Clinical Portal (WCP) digital patient record to help standardise the data provided within the rapid notification of deaths of hospitalised patients with COVID-19 infection and to facilitate basic data cleansing, deduplication and analysis by Public Health Wales.

- **Clinicians are asked to complete the WCP COVID-19 Mortality Surveillance e-form to report suspected COVID-19 deaths in hospitalised patients who have been confirmed with the virus within the 28 days prior to death.**

- In addition to basic demographic details which are automatically populated from the patient's digital record, reporting clinicians are asked to provide the primary cause of death (if Coroner's case, please just enter 'Coroner') and contributing factors, where available, and complete appropriate tick-boxes relating to underlying risks.

- The form can be accessed in the Welsh Clinical Portal (WCP) through the patient digital record. An e-learning video will be available for users to refer to, demonstrating the steps to complete the form. A quick reference user guide will also be shared with health boards. Once the e-form has been completed, it will be stored in the WCP patient digital record. Data will be extracted from these e-forms for use by PHW.

- Additional guidance in completing the form is included below.

- This system is being established as a time-limited emergency enhanced surveillance to directly inform response to the COVID-19 pandemic in Wales.

- **It should be stressed that this form does not replace any of the official processes on death certification and registration and for the death of any child (under 18 years of age) please also notify your Health Board's safeguarding lead as per usual child death protocols.**

[**1**] Welsh Government, 6th March 2020. The Health Protection (Notification) (Wales) (Amendment) Regulations 2020. Available from: https://gov.wales/health-protection-notification-wales-amendment-regulations-2020

GIG CYMRU NHS WALES
Bwrdd Iechyd Prifysgol Bae Abertawe
Swansea Bay University Health Board

COVID-19 Mortality Surveillance

PITS Testing via Hywel Dda WPA 8
NWIS, Ty Glan Yr Afon, 21 Cowbridge Road East, Cardiff, South Wales, CF11 9AD
01443 443443/01685 721721

Patient: REBECCA RIOMEDTEST5 (Mrs.)
DOB: 26-Oct-1985 (34y) Sex: F

Hospital Number: H0122619

GP details	
GP Name	Dr Jones
Organisation ID	
GP Address	RAVENSCOURT SURGERY 36-38 TYNEWYDD ROAD BARRY SOUTH GLAMORGAN CF62 8AZ
GP Telephone Number	01446733515

Patient details	
Patient Name	REBECCA RIOMEDTEST5 (Mrs.)
Known As	
Date of birth	26-Oct-1985 (34y)
Sex	Female
NHS Number	
Hospital Number	H0122619
Patient Address	113 Winchester Street London SW1V 4NX

Reporter Details

Name	Laurence James
Telephone Number	02920 123 123
Email Address	test.test.@wales.nhs.uk
Healthboard	Hywel Dda UHB

Deceased Details

Name of deceased	RIOMEDTEST5, REBECCA
Date Of Death	07/04/2020
Deceased Date Of Birth	26/10/1985(34y)
Deceased NHS Number	
Hospital where patient died	Bronglais General Hospital
Deceased's home address	113 Winchester Street, London, , SW1V 4NX

Cause of death (as per medical certificate of death)

1(a) Disease or condition directly leading to death	COVID-19
1(b) Other disease or condition, if any, leading to (1a)	bilateral pneumonia
1(c) Other disease or condition, if any, leading to (1b)	
2. Other significant conditions CONTRIBUTING TO THE DEATH but not related to disease or condition causing it	
Was the patient confirmed to have COVID-19 by lab testing	Yes
Date of laboratory test result, if known	06/04/2020
Date of COVID-19 symptom onset, if known	01/04/2020

Underlying Risks

Asthma
Chronic heart disease
Chronic kidney disease

Are there any other details specific to this death that you would like to provide

Document Author	Laurence James on 07-Apr-2020 at 16:23 / 1	Page 1 of 1
Printed By	Laurence James on 07-Apr-2020 at 17:03	

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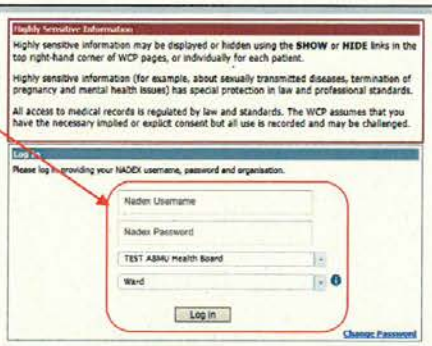
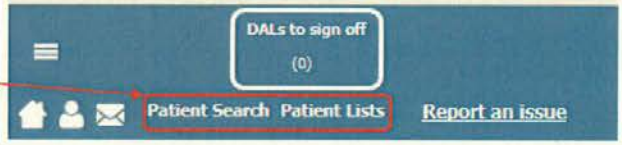
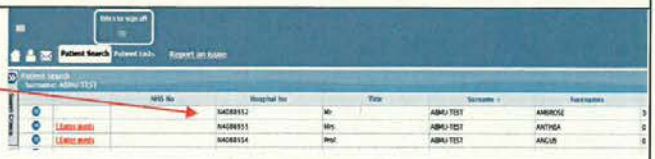
1

Quick Reference Guide

Completing the COVID-19 Mortality Surveillance electronic form in the Welsh Clinical Portal (WCP) digital patient record

This quick reference guide provides instruction on how to complete the Welsh Clinical Portal "**COVID-19 Mortality Surveillance**" electronic form. This form is limited to secondary care patients.

Launch the **Welsh Clinical Portal** and enter your **NADEX username** and **password** and **select your health board.**	
Search for your patient by using either **(i) "patient search"** feature and enter patient search details. Alternatively, select **(ii) "patient lists"** select inpatient or outpatient and complete the search criteria	
Open a patient's digital record by **double clicking** on the relevant patient	
The patient's **digital record** is displayed	

Project Name: WCP COVID-19 Mortality Surveillance e-form
Document Title: QRG_WCP Mortality Surveillance form

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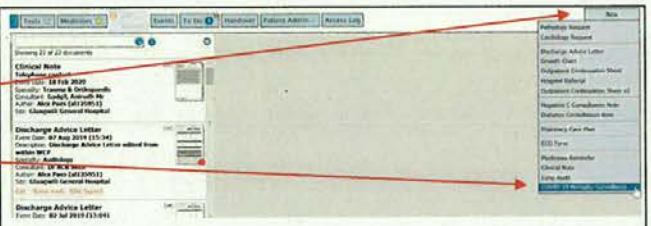
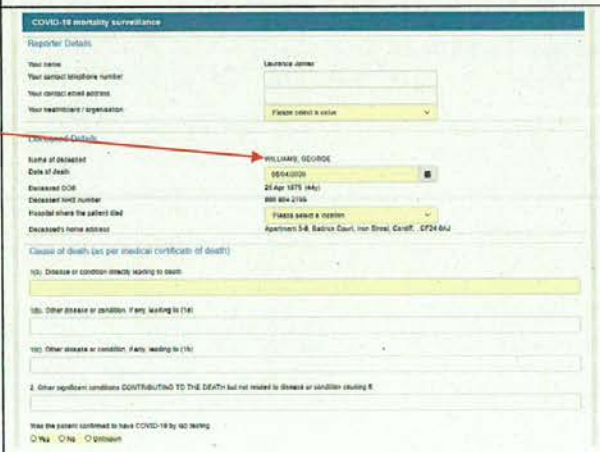
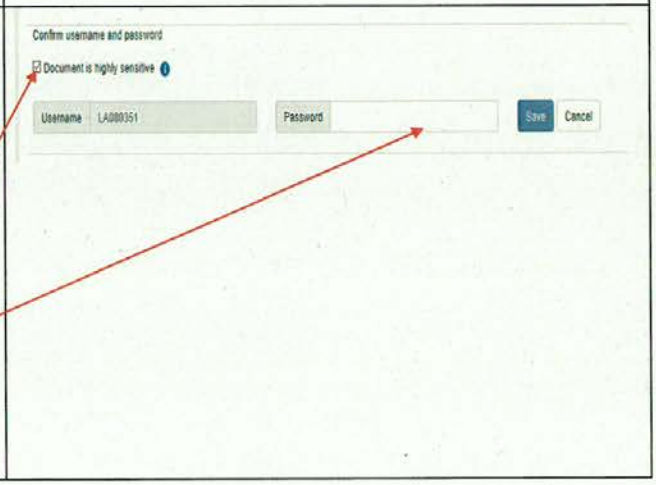
To start the WCP Mortality Surveillance form, select the **"New"** option in the digital patient record and select the **"COVID-19 Mortality Surveillance"** option. This will open the e-form and will be prepopulated with key patient demographics.	
The e-form is presented for you to complete. Fields highlighted in **yellow** are **mandatory items** which must be completed by the user.	
If the e-form includes information relating to *HIV/AIDS, sexually transmitted diseases, fertilisation and embryology, termination of pregnancy or gender reassignment*, please select the **"Document is highly sensitive"** checkbox at the bottom of the form. This will place the e-form behind a break glass feature. Access to this e-form will be audited. Enter your **NADEX password** to save and complete the e-form and to store it in the digital patient record	

Project Name: WCP COVID-19 Mortality Surveillance e-form
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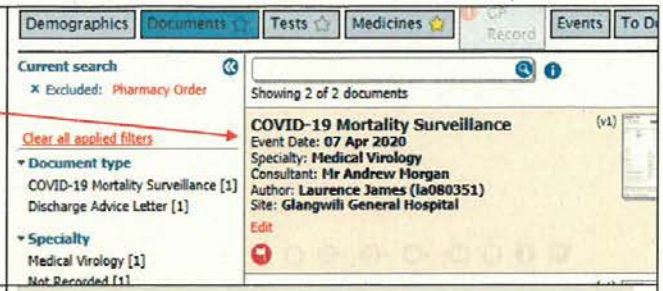
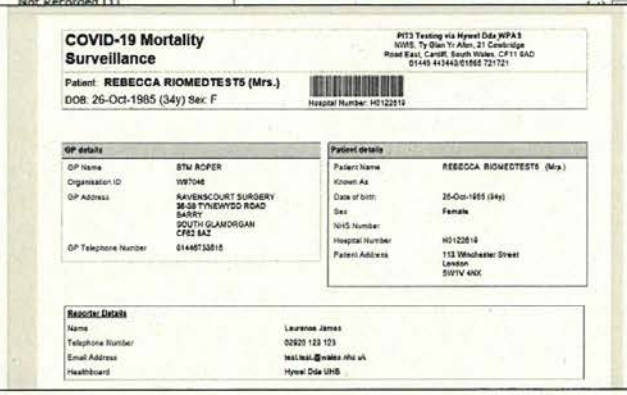
The form is then available in the patient record for viewing across Wales.

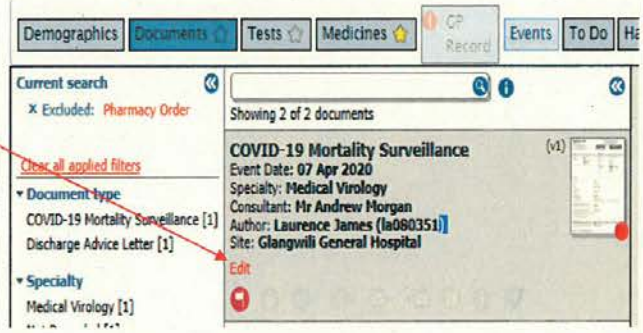
To view the form, double click



The **PDF output** is displayed *(picture is only showing a subsection of the form)*



To edit the form, select the **"Edit"** in the documents tab view in the patient record. This will re-open the form for you to edit information.



Any changes made, will create a new version of the form. An **audit history** can be viewed when viewing the document in full screen and by selecting the **"History"** option in the bottom left corner

Document history **audit trail** is displayed.

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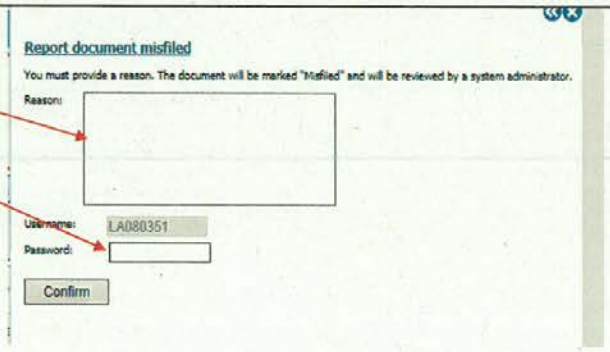
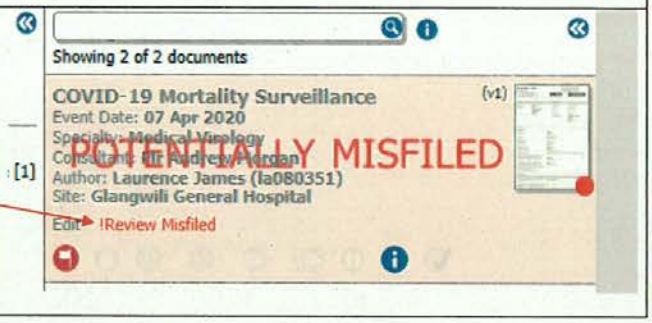
Users can *"misfile"* the form if it has been completed against a wrong patient in error. Open the PDF in full screen and select **"Mark as Misfiled"** presented in the bottom left corner of the PDF document **N.B.** Users will need to have "**Misfiled Document Administrator**" permissions allocated to their WCP user account to do this.	
The user will be asked to provide a reason for misfiling the document. Then enter your **NADEX** password.	
The document will be marked as **"potentially misfiled"** in the patient record. To review and confirm the misfile, select **"!Review Misfiled"**	

Project Name: WCP COVID-19 Mortality Surveillance e-form
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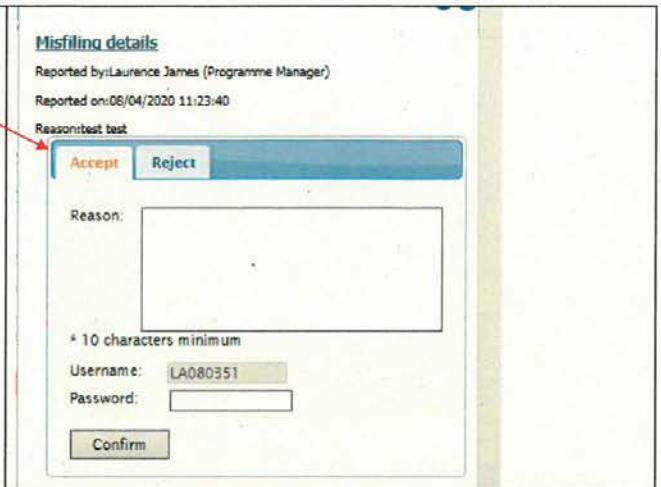
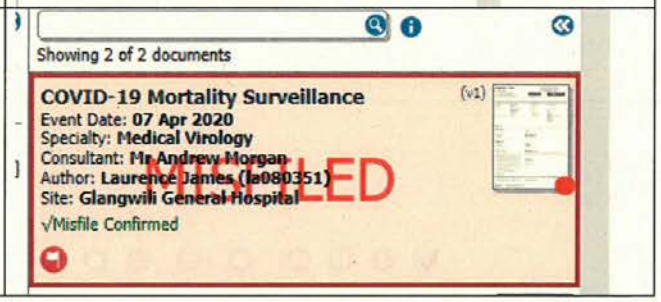
Select **"Accept"**, enter a reason for misfiling and enter your NADEX password to misfile the document". Alternatively, you can select **"Reject"** if necessary.	
The form is marked as **"Misfiled"** in the patient record. The user can search for the correct patient and repeat the steps above to complete a new e-form.	

Project Name: WCP COVID-19 Mortality Surveillance e-form
Document Title: QRG_WCP Mortality Surveillance form

8-Apr-2020

Appendix R

Bereavement Information

If you have been given this leaflet, you have experienced the death of someone close to you. We are very sorry for your loss, and we know that this can be very difficult and distressing time.

- This leaflet aims to explain what happens next.
- As you know, your relative was suffering from the Covid -19 virus, which is highly infectious. Because of this, we recommend that we destroy any clothing and disposable belonging, so you do not have to take contaminated items home. We will of course disinfect any jewellery such as wedding rings, and return them to you.
- Your relative will leave the Ward and stay in the Chapel of Rest here in Singleton, until you can make arrangements with a funeral director. They will need to be informed about the virus.
- In the next few days, you will need to register the death of your loved one at County Hall. To do this you will need a Death Certificate.
- This will be generated from the General Office in Singleton.
- Please contact them on **01792 285818** to arrange this. Certificates are not to be collected but will be emailed to the Registrar in County Hall directly.
- If you have any unanswered questions about the care or treatment received on our Wards, or just feel to want to talk, please contact the Ward Sister/ nurse in charge on 01792 517015 and we are more than happy to answer any quires that may help you through this difficult time.

Appendix S

Chief Coroners Guidance on COVID-19

OFFICIAL

Introduction

The Coronavirus Act 2020 contains a wide range of measures to assist the government in managing the current COVID-19 emergency situation and dealing with deaths which have occurred as a result of the virus.

Responsibility for different aspects of the process after someone dies is spread across a range of government departments. In order to manage deaths effectively, the registration of deaths needs to be considered within the framework of the entire "death to disposal" process. To ensure that deaths can be registered, transmit relevant documents to enable funerals to take place and, importantly, to keep the risk of infection to registration officers as low as possible, new legislation was required. These instructions explain what the provisions set out in the Coronavirus (Emergency) Act 2020 are and how they should be applied.

During the emergency, priority must be given to death certification, registration and disposal processes. Every effort should be made to ensure deaths are registered as soon as possible, ideally within the 5 day target. Issuing certificates to informants or further certificates subsequently is not considered to be priority. Where certificates have been issued please note they should not be sent electronically as this would be in breach of data sharing legislation.

The General Register Office will advise on commencement of these provisions. If you require any further clarity regarding this you should contact your Compliance Officer in the first instance.

Scope

These instructions only apply to the registration of deaths (and still-births) in England and Wales.

The Provisions and Impact On You

Provision - To allow registered medical practitioners to provide an MCCD without having attended the deceased prior to death.

- **If the doctor who attended the person before death is unavailable, another doctor can sign the MCCD for all natural deaths (including Covid-19, see Circular 2/2020).**
- This will only be when the certifying doctor is able to access the deceased's notes and the information supports a natural death.
- There is still a requirement for the deceased to be seen after death or within 28 days prior to death by a doctor.
- The same MCCD form will be used and amended as necessary.

Impact On You

- **There is no need for the certifying doctor to have attended the deceased during their last illness so unless there is some other reason you do not have to refer the death to the coroner.**
- Additional medical practitioners will be authorised to certify deaths during the emergency. You must ensure that the name of those certifying MCCDs appear on the list of additional doctors appointed.

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Appendix T

Important advice for patients discharged from hospital

following treatment for confirmed COVID-19

We are so pleased that our clinical staff have assessed that you are now well enough to leave hospital and to return either to your home or to another type of community care where you will be looked after.

It is really important that you are fully aware of the following advice:

- After discharge, you should remain in self-isolation for a further 7 days.
- You should inform your family, friends and any potential visitors to your home or care environment that you are in self-isolation for 7 days.
- Any regular health monitoring if required, will be arranged before you are discharged.

Your home should be prepared for self-isolation and you must take all necessary precautions in order to protect members of your family, friends and the wider community from infection and further spread of COVID-19. To do this you must:

- Try to stay in a single room with good ventilation, keeping the window slightly open if possible.
- Please ensure your belongings are thoroughly cleaned and hard surfaces such as spectacle cases, remote controls and telephones are wiped with a disinfectant wipe.
- Stop close contact with members of your family and pets where possible.
- Eat your meals away from your family.
- Wash your hands regularly, use your own toiletries and toothbrush. Use a separate towel.

If you remain well and do not have any further signs or symptoms such as a temperature 8 days after discharge you should then follow the government guidelines for social distancing.

If your condition worsens or your family begin to experience symptoms, then please contact the 111 coronavirus service for advice, informing the call handler that you are COVID-19 positive.

If you're given any medication to take home, you'll usually be given enough for the following 7 days. The letter to your GP will include information about your medication.

If you have any suggestions or concerns regarding your treatment and care, please talk to the Patient Advocacy Liaison Service available at:

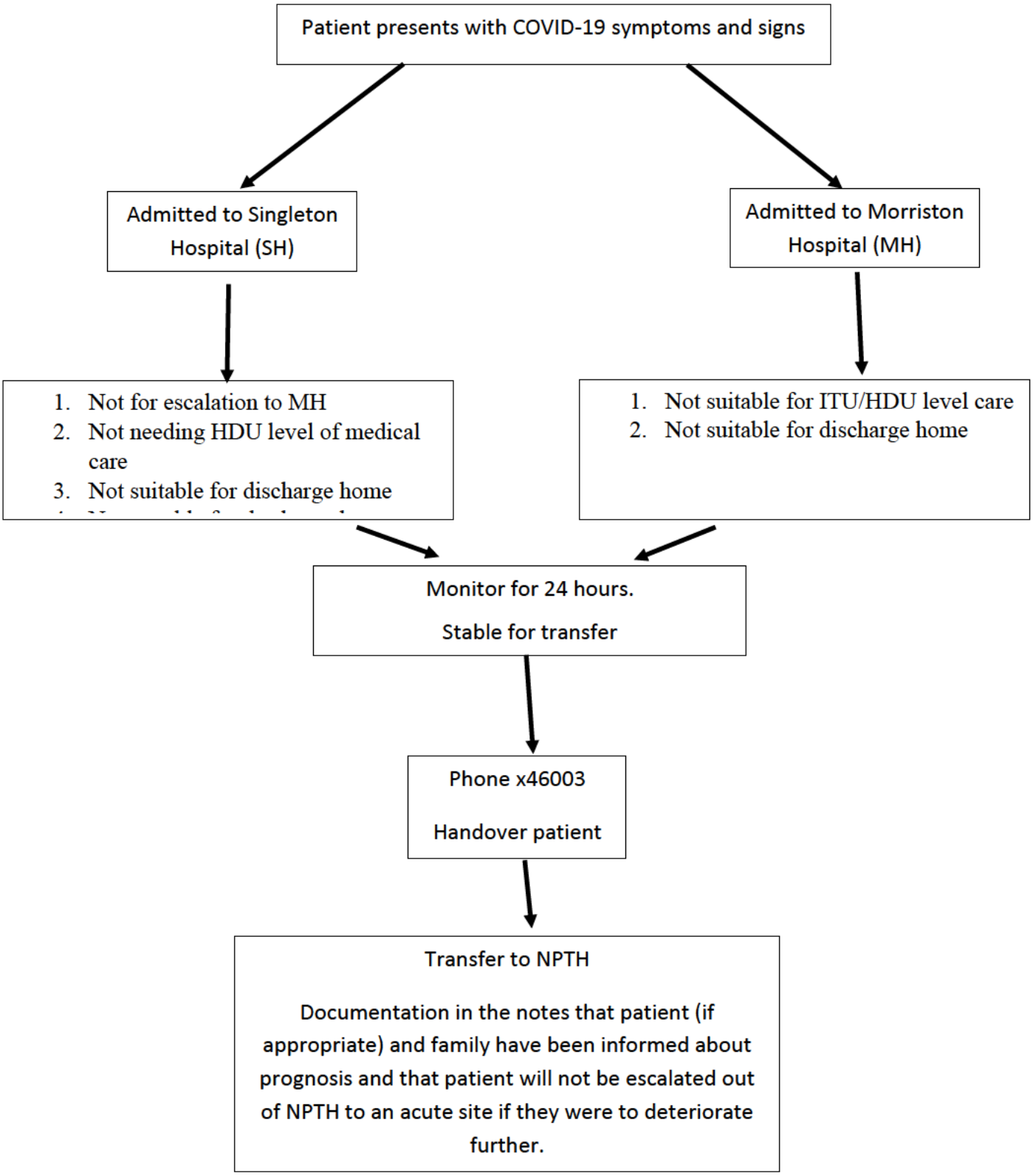
- Morriston Hospital – 01792 531275/517038 or ABM.MorristonPALS@wales.nhs.uk
- Singleton Hospital – 01792 205666 or ABM.PALSTeamSingleton@wales.nhs.uk
- Neath Port Talbot Hospital – 01639 684666 or ABM.PatientExperienceNPT@wales.nhs.uk

Alternatively please leave us your feedback or make a suggestion about how we could improve by following the link: **Hospitals:** https://abmunhs.snapsurveys.com/s.asp?k=141044531533

For further advice please dial 111

Appendix U

Pathway of Transfer of Patients with Suspected or Proven COVID-19 from Acute Hospitals (Morriston and Singleton) to Neath Port Talbot Hospital (NPTH)



Appendix V

Guidance on delivering clinical care to patients during the COVID-19 pandemic

This guidance is to make recommendations about how to approach patient care in general; we need to ensure we deliver good care as it is required, while minimising any infection risks.

All patients are potential sources of infection, how we practice can minimise transmission in both directions. Personal Protective Equipment (PPE) is only part of the strategy to reduce the risk to staff and patients.

All staff should practice social distancing in work, as well as out of work. Do no cluster around e.g. the notes trolley. Don't crowd into one room for board round.

Meticulous hand hygiene at every opportunity throughout the day.

- Maximise the distance between you and the patient and minimise close interactions.
    - Only approach a patient and examine them if you need to. If the patient says they are well, the observations (if being done) are satisfactory, there are no nursing concerns and you have no other reason to approach the patient, do not move to within 2 metres of the patient.
    - If contact is required, only one doctor should do so. Anyone else on the Ward round stay out of the clinical area
    - Wards rounds should be with the minimum number of doctors e.g.
        - A suggested model could be:
            - Consultant Ward rounds with 2 juniors, one to prepare notes for current patient while other prepares notes for next patient
            - Another doctor should be available as a runner to sort jobs e.g. arrange CT scans.
            - If all above are being fulfilled
                - Compete discharge summaries
                - Attend to your training. COVID and general
                - Support the Ward in general with whatever they can help with
- Review all patients' need for observations. If patients are medically fit for discharge consider reducing observations to once per day or stop them altogether. If no observations are being

done, use other ways to assess the patient. E.g. are they alert, eating and drinking are they mobile, are they talking etc.

- Review and minimise medication where it is safe to do so. Try and make all medication once or at most twice per day where possible.
- Patients in the last days of life should have their care guided by the All Wales Care Decision Tool. They should be nursed in an area where they can be seen (bay with a window, visible through window of a door) so that their comfort can be monitored frequently without having to go to the bedside.
- Nursing interventions should be batched. E.g. do personal care, feeding, observations, medication all in one go and for all patients in a bay in one go.
- Remind patients of hand washing and cough etiquette. Bear in mind the effects on your patient of isolation and think of ways to support them creatively.
- Doors to all rooms to be kept closed.
- Charts to be kept away from the bedside outside of rooms.

Make sure all your patients have an advance care plan. If they are DNACPR make sure the discussion with patients and family is well documented, the proper form is completed and the outcome recorded on SIGNAL. Ensure primary care are informed on discharge.

Where patients are for full escalation state this in the diagnosis section of SIGNAL to make it clear the issue has been considered.

PPE: use PPE in line with the most recent guidance for your clinical area.

British Thoracic Society | Royal College of Nursing | Royal College of Physicians

ADD SPACES

To your COVID ward care approach

TO MINIMISE TEAM MEMBER CONTACT WITH SUSPECTED OR PROVEN COVID-19 PATIENTS

SHARING

PATIENT

ASSESSMENTS

CUTS

EXPOSURE (FOR)

STAFF

ANY HEALTHCARE WORKER ATTENDING TO A SUSPECTED OR A PROVEN COVID-19 PATIENT SHOULD DO THE FOLLOWING IN ONE VISIT.

CHECK COMFORT/POSITION

TAKE IN NEW FOOD TRAY, REMOVE OLD FOOD TRAY

ASSESS AND REPORT:
PULSE AND BLOOD PRESSURE
SpO_2 WITH FiO_2 DOCUMENTED
RESPIRATORY RATE (RHYTHM, EFFORT)
TEMPERATURE

AND ASK HOW IS/ARE YOUR:
COUGH AND BREATHLESSNESS
APPETITE
FLUID INTAKE
PAIN
BOWELS AND PASSING URINE

RECORD ALL THE ABOVE OBSERVATIONS (including NEWS chart)

SWITCH TO REMOTE CONSULTATIONS
WHERE POSSIBLE, USE:

PHONES
2-WAY RADIOS
INTERCOMS

AND ANY OTHER SUITABLE WAY THAT REDUCES FACE TO FACE CONTACT

WHERE THIS IS FEASIBLE AND DOES NOT COMPROMISE:

PATIENT CARE/SAFETY/WELLBEING

PHE personal protective equipment guidance should be followed at all times

Version 3 - 3 April 2020

Appendix W

COncise adVice on Inpatient Diabetes (COVID:Diabetes): FRONT DOOR GUIDANCE

DIABETES UK
KNOW DIABETES. FIGHT DIABETES.

ABCD

NATIONAL INPATIENT DIABETES COVID-19 RESPONSE GROUP*

COVID-19 infection in people with or without previously recognised diabetes increases the risk of the EMERGENCY states of hyperglycaemia with ketones, Diabetic KetoAcidosis (DKA) and Hyperosmolar Hyperglycaemic State (HHS)

Being acutely unwell with suspected/confirmed COVID-19 requires adjustment to standard approaches to diabetes management (see table below).

The guidance in this document is based on experience from UK centres with the greatest experience of looking after patients with COVID-19 disease and will be updated as more evidence becomes available.

WHERE CHANGE SEEN	KEY DIFFERENCE WITH COVID-19	SUGGESTED ACTION
Early in admission	**People with COVID-19 infection** appear to have a **greater risk of hyperglycaemia with ketones** including: › People with type 2 diabetes (risk even greater if on a SGLT-2 inhibitor) › People with newly diagnosed diabetes **COVID-19 disease** precipitates **atypical presentations of diabetes emergencies (eg, mixed DKA and hyperosmolar states)**	› Check blood glucose in everybody on admission › Check ketones in: » everybody with diabetes being admitted » everybody with an admission glucose over 12 mmol/l › Stop SGLT-2 inhibitors in all people admitted to hospital › Stop Metformin in all people admitted to hospital **but** review when data on blood lactate, renal and hypoxic status are available. › Consider using 10-20% glucose where ketosis persists despite treatment in line with usual protocols
Severe illness on admission	**Fluid requirements may differ** in those with **DKA/HHS and evidence of "lung leak" or myocarditis**	› **After restoring the circulating volume the rate of fluid replacement** regimen may need to be adjusted where evidence of **"lung leak" or myocarditis** › **Contact the diabetes specialist team early** › Early involvement of the critical care team
All inpatient areas	**Infusion pumps may not be available to manage hyperglycaemia using intravenous insulin** as these are required elsewhere (eg for sedation in ICU)	› Use alternative **s/c regimens** to manage » **Hyperglycaemia** » **Mild DKA** › **Contact the diabetes specialist team** for support
ICU	**Significant insulin resistance** seen in people with **type 2 diabetes in ICU settings**	› **IV insulin protocols may need amending** (people seen requiring up to 20 units/hr) › Patients often nursed prone so feeding may be accidentally interrupted – **paradoxical risk of hypoglycaemia**

Bwrdd Iechyd Prifysgol Bae Abertawe
Swansea Bay University Health Board

CONCISE ADVICE ON INPATIENT DIABETES (COVID:Diabetes): GUIDANCE

COVID-19 infection in people with or without previously recognised diabetes increases the risk of the EMERGENCY states of hyperglycaemia with ketones, Diabetic KetoAcidosis (DKA) and Hyperosmolar Hyperglycaemic State (HHS)

Management of Acute Diabetes at the Front Door for Emergency Departments & Acute Medical Units

Patient Assessment: ABCDE

⚠ NOTE: Shortness of Breath can also be due to METABOLIC Acidosis (e.g DKA)

Ensure **ALL** newly admitted patients are **evaluated for diabetes**

GLUCOSE measurement in ALL patients and KETONE check if known diabetes or blood glucose level above 12mmol/L

⚠ STOP- SGLT-2 inhibitor (Cana-/Dapa-/Empa or Ertu-gliflozin)

⚠ STOP- Metformin in ALL patients **BUT review when data on blood lactate, renal and hypoxic status are available**

REVIEW safety of continuing ACE-inhibitors, ARBs, NSAIDs

Blood GLUCOSE Level Advice (Known OR Unknown diabetes)

Glucose < 4mmol/L = HYPOGLYCAEMIA FOLLOW LOCAL GUIDELINES

Glucose ≥ 12mmol/L or known diabetes

Primary diagnoses to **URGENTLY** consider:

- **DKA** (defined as glucose >11mmol/L or history of diabetes, blood ketones ≥ 3mmol/L or urine ketones ≥ +2 and pH <7.3 or bicarbonate <15). **Note: glucose can be normal in SGLT-2 inhibitor associated DKA & pregnancy associated DKA**
- **HHS** (defined as glucose ≥ 30mmol/L, Serum Osmolality ([(2 x Na) + glucose + urea] > 320mOsm/kg and pH > 7.3)

Follow local guidelines if either of above is confirmed and involve diabetes team as soon as possible, as changes to usual fluid replacement regimen may be necessary

⚠ NOTE: NEVER STOP BASAL INSULIN IN PERSON WITH KNOWN TYPE 1 DIABETES OR DKA MAY RESULT

Other **URGENT** causes of hyperglycaemia to consider:

- **New presentation of diabetes** (type 1 or 2 - age/weight irrelevant for either)
- **SEPSIS** (e.g. COVID-19 or foot infection)
- Missed/delayed usual diabetes treatment (e.g. insulin pen or personal insulin pump problem)
- Reflection of uncontrolled diabetes/inappropriate treatment regimen (recent HbA1c available?)
- Oral steroid use

Persistently high glucose levels may need treatment with subcutaneous or intravenous insulin

If an infusion pump is not available for IV **insulin** then seek advice regarding an alternative subcutaneous regimen.

In all cases, if unsure please seek diabetes team guidance as early as possible or follow local protocols

FURTHER ADVICE ON NEXT PAGE:

Version 2.0
20/4/2020

Page 2

FURTHER ADVICE ON INPATIENT DIABETES (COVID:Diabetes):

BLOOD KETONE LEVEL ADVICE:

Blood ketones less than 0.6 mmol/L = SAFE level

Blood ketones 1.5 – 2.9mmol/L = **INCREASED DKA RISK**

- PO or IV fluids
- Consider rapid acting insulin if glucose above 16mmol/L - 1 unit rapid acting insulin 'typically' expected to lower glucose by anywhere between 1-3mmol/L. Recheck in 2 hours.

Blood ketones 3mmol/L or greater then check pH and bicarbonate (venous blood gas). DKA confirmed if high ketones accompanied by:

- Blood glucose > 11 mmol/L (or history of diabetes) and
- pH < 7.3 or bicarbonate <15

⚠ **NOTE: Glucose can be <11mmol/L if patients are on SGLT-2 inhibitor treatment, pregnant AND/OR severe COVID-19 infection**

INSULIN ADVICE – ALWAYS ASK IF YOUR PATIENT IS ON INSULIN

- **ALWAYS CONTINUE USUAL LONG ACTING BASAL INSULIN**
- Patients who are very sick or not eating should have a Variable Rate Intravenous Insulin Infusion (VRIII/'sliding scale'), with usual basal subcutaneous (SC) insulin continued alongside
- If an infusion pump is not available for IV insulin, contact diabetes team or follow local protocols for an alternative subcutaneous regimen

PATIENTS USING WEARABLE DIABETES TECHNOLOGY

- If patients are unable to manage their personal insulin pump and no specialist advice is immediately available, start a VRIII or S/C basal-bolus insulin regimen then remove the pump and store it safely. If S/C regime required and not able to find out total daily insulin dose from pump then the following would be safe: calculate total daily insulin dose using 0.5 units/kg and give half the total dose as basal/background insulin and half as bolus/mealtime rapid acting insulin. Example, 0.5 units x 60 kg = total daily insulin dose of 30 units. Give half dose (15 units) as basal insulin and 15 units as bolus insulin (5 units at each meal-time). Ensure that pump is disconnected AFTER S/C basal insulin given.
- Continuous glucose monitors (CGM) and Freestyle Libre (FSL) devices can be left on the patient but conventional capillary glucose monitoring will still be necessary
- For imaging, insulin pumps, Continuous Glucose Monitors (CGM) and FreeStyle Libre (FSL) devices need to be removed for magnetic scans such as MRI

FOOTNOTES

- ALWAYS need to exclude acute foot infection (may be the source of sepsis) or critical limb ischaemia
- ALWAYS ensure foot intact and protected

⚠ **TAKE ACTION ON ACUTE FOOT DISEASE AS PER LOCAL DIABETIC FOOT PROTOCOLS**

***NATIONAL INPATIENT DIABETES COVID-19 RESPONSE GROUP:**

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Designed by: Leicester Diabetes Centre

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COncise adVice on Inpatient Diabetes (COVID:Diabetes):

GUIDANCE FOR MANAGING INPATIENT HYPERGLYCAEMIA

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NATIONAL INPATIENT DIABETES COVID-19 RESPONSE GROUP*

Use when:

- ✔ **Glucose above 12 mmol/l and a correction dose is appropriate for the individual patient**
- ✔ **DKA/HHS not present**

Can be used in place of variable rate intravenous insulin when infusion pumps not available

- ⚠ **DO NOT use for people with COVID-19 causing severe insulin resistance in the ICU. Contact your local diabetes team for advice in this circumstance.**
- ⚠ **After 9pm consider risk of hypoglycaemia overnight when thinking about the use of a corrective dose**

IF GLUCOSE > 12 MMOL/L AND NO INSULIN ADMINISTERED IN PREVIOUS 4 HRS CONSIDER A CORRECTIVE DOSE OF RAPID-ACTING ANALOGUE INSULIN (NOVORAPID®/HUMALOG®/APIDRA®)

- Re-check glucose after 4 hours OR before next meal - further action may be required
- Target glucose 6-10 mmol/l – aiming for higher end of range (up to 12 mmol/l acceptable)
- Dose decided using one of the following 3 factors and the table below. Factors are listed in order of importance:
  1. If person uses pre-existing correction ratio **(CR)** (e.g. 1 unit insulin lowers glucose by 3 mmol/l) this should be used
  2. If person using insulin but doesn't have correction ratio, use their usual total daily insulin dose **(TDD)**
  3. If person not previously using insulin, or dose is unknown, use their **weight**
- If the person has rapid-acting insulin with each meal the corrective dose can be added to their mealtime dose if appropriate.

GLUCOSE (MMOL/L)	CR* – 1UNIT ↓ 4 MMOL/L OR TDD** LESS THAN 50 UNITS OR WEIGHT LESS THAN 50KG	CR* – 1UNIT ↓ 3 MMOL/L OR TDD** – 50-100 UNITS OR WEIGHT BETWEEN 50-100 KG	CR* – 1UNIT ↓ 2 MMOL/L OR TDD** OVER 100 UNITS OR WEIGHT OVER 100 KG
12.0-14.9	1	1	2
15.0-16.9	2	2	3
17.0-18.9	2	3	4
19.0-20.9	3	3	5
21.0-22.9	3	4	6
23.0-24.9	4	5	7
25.0-27.0	4	5	8
Over 27	5	6	9

*CR – Correction ratio, **TDD – total daily insulin dose

⚠ **It is recommended that glucose is checked at least 4 times per day in people treated with insulin**

LONG-ACTING INSULIN (LEVEMIR®/ ABASAGLAR®/LANTUS®/SEMGLEE®/ HUMULIN I®/ INSULATARD®/INSUMAN BASAL®)

- **Already using long-acting insulin:** Continue and titrate dose (see tables below)
- **NOT already using long-acting insulin:** If 2 or more glucose readings in 24 hrs are > 12 mmol/l (eg. 2 or more corrective doses in previous 24 hrs)
  - ADD long-acting insulin - total dose 0.25 units/kg/day (eg. 0.25 x 80kg = 20 units OD **OR** 10 units BD depending on the choice of basal insulin - see below).
  - NOTE if:
    - Older (>70 yrs) or frail
    - Serum creatinine >175 umol/l

    Use a reduced long-acting insulin dose of 0.15 units/kg (eg 0.15 x 80kg = 12 units OD **OR** 6 units BD)

Recommended options (all acceptable – refer to local protocols):

Levemir® Insulin detemir 100 units/ml (U100)	› Two equal doses of 0.125 units/kg, 12 hrs apart › Not available in vials so insulin pen needles must be available to use with a pen device* › Can adjust either dose
Abasaglar®/Lantus®/Semglee® Insulin glargine 100 units/ml (U100)	› Single dose of 0.25 units/kg/24 hrs (minimises patient contact) or › Split above into 2 equal doses, 12 hrs apart › Abasaglar®/Semglee® not available in vials so insulin pen needles must be available to use with an insulin pen device**
Humulin I®/Insulatard®/Insuman Basal® Isophane insulin 100 units/ml (U100)	› Two equal doses of 0.125 units/kg/10-14 hrs apart › Particularly suited to steroid treatment – dose given as ⅔ total long-acting insulin dose am : ⅓ total long-acting insulin dose pm

* Only specific insulin syringes/needles should be used to administer insulin from vials

** DO NOT WITHDRAW INSULIN FROM A 3ML INSULIN PEN CARTRIDGE OR 3ML PREFILLED

DOSE ADJUSTMENT FOR LONG-ACTING INSULIN

Doses can be titrated daily, although longer-acting insulins may take 48-72 hours to reach steady state. Dose adjustments will affect blood glucose throughout the day.

ONCE daily long-acting insulin

GLUCOSE LEVEL JUST BEFORE INSULIN DOSE	
<4mmol/L	Reduce insulin by 20%
4.1-6mmol/L	Reduce insulin by 10%
6.1-12mmol/L	No change
12.1-18mmol/L	Increase insulin by 10%
>18mmol/L	Increase insulin by 20%

TWICE daily long-acting insulin

GLUCOSE LEVEL	JUST BEFORE MORNING INSULIN DOSE	JUST BEFORE EVENING INSULIN DOSE
<4mmol/L	Reduce **evening** insulin by 20%	Reduce **morning** insulin by 20%
4.1-6mmol/L	Reduce **evening** insulin by 10%	Reduce **morning** insulin by 10%
6.1-12mmol/L	No change	No change
12.1-18mmol/L	Increase **evening** insulin 10%	Increase **morning** insulin by 10%
>18mmol/L	Increase **evening** insulin by 20%	Increase **morning** insulin by 20%

Dose reduction should also be considered in the following circumstances:

- **Improving infection (as measured by falling CRP)**
- **Enteral feed reducing or stopping**
- **Corticosteroid treatment reducing or stopping**
- **End of life care**

⚠ **In people recovering from COVID-19-related insulin resistance, doses may need to be reduced RAPIDLY to avoid hypoglycaemia.**

As noted above, severe insulin resistance has been noted in some people with COVID-19 in the ICU. In this circumstance, suggested alternative treatment strategies include four times daily doses of Levemir ® or twice daily doses of Lantus ®.

Contact your local diabetes team for advice.

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Swansea Bay University Health Board

COncise adVice on Inpatient Diabetes (COVID:Diabetes):

DEXAMETHASONE THERAPY IN COVID-19 PATIENTS: IMPLICATIONS AND GUIDANCE FOR THE MANAGEMENT OF BLOOD GLUCOSE IN PEOPLE WITH AND WITHOUT DIABETES

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This guidance is for use in ALL patients with COVID-19 who are treated with dexamethasone in a ward setting
It is NOT intended for Critical Care Units but may be adapted for this use
It differs from the previous COVID: Diabetes GUIDANCE FOR MANAGING INPATIENT HYPERGLYCAEMIA as it targets the greater insulin resistance in dexamethasone treated patients and should ONLY be used in this context

Key Facts

- Dexamethasone reduces mortality in people with COVID-19 who require ventilation or oxygen therapy
- Corticosteroid therapy impairs glucose metabolism and is the commonest cause of life threatening inpatient Hyperglycaemic Hyperosmolar Syndrome (HHS)
- COVID-19 increases insulin resistance and impairs insulin production from the pancreatic beta cells; this can precipitate hyperglycaemia and life threating Diabetic Ketoacidosis (DKA) in people with diabetes and even in people not known to have diabetes
- Glucose levels above 10.0 mmol/L have been linked to increased mortality in people with COVID-19
- The recommended dexamethasone dose of 6mg/day (oral or IV) for 10 days, equivalent to 40mg of prednisolone/day, will undoubtedly affect glucose metabolism
- Thus, the **triple whammy** of dexamethasone induced impaired glucose metabolism, COVID-19 induced insulin resistance and COVID-19 related impaired insulin production could result in significant hyperglycaemia, HHS and DKA in people with and without diabetes, increasing both morbidity and mortality
- Sulphonylureas are NOT recommended in this context as beta cell function may be impaired and insulin resistance is likely to be severe. For this reason, these recommendations differ from those in the JBDS guideline on the Management of Hyperglycaemia and Steroid (Glucocorticoid) Therapy

AIMS

To ensure ALL patients on dexamethasone receive appropriate glucose surveillance and appropriate management of hyperglycaemia

GLUCOSE MONITORING

Target glucose 6.0 -10.0 mmol/L (up to 12.0 mmol/L is acceptable)

Frequency of monitoring

- **People not known to have diabetes**

  Check the glucose at least 6 hourly ideally at fasting periods (e.g. before meals and at bedtime). If after 48 hours all fasting glucose results are <10.0 mmol/L reduce frequency to once daily at 17.00-18.00 hrs. Continue until dexamethasone is stopped

  If any fasting glucose is above 10.0 mmol/L continue 6 hourly monitoring and follow the guidance below to correct hyperglycaemia i.e. glucose above 12.0 mmol/L

- **People with diabetes**

  Throughout the admission, check fasting glucose at least 6 hourly, or more frequently if the glucose is outside the 6.0 -10.0 mmol/L range

MANAGING DEXAMETHASONE RELATED HYPERGLYCAEMIA

First, exclude Diabetic Ketoacidosis and Hyperglycaemia Hyperosmolar Syndrome by checking blood glucose, ketones, venous pH, bicarbonate and U&Es and if DKA/HHS diagnosed follow specific guidelines for their management

⚠ **If DKA/HHS have been excluded, follow the guidance below but note, this advice is conservative. If after initial treatment hyperglycaemia persists, do not hesitate to escalate to the next treatment step and involve the diabetes team as early as possible**

ADVICE FOR CORRECTING INITIAL HYPERGLYCAEMIA - GLUCOSE ABOVE 12.0 MMOL/L

Use **subcutaneous** rapid acting insulin analogue (Novorapid®/Humalog®/Apridra®) as described below. Note these are conservative doses and depending on response in individual patients, as previously stated, may need to be increased rapidly (or where more insulin sensitive, decreased)

Recheck glucose at 4 hrs to determine response and whether a further correction dose is needed

› **Insulin naïve**

Follow the weight-based tables below in those people:

» not known to have diabetes
» with type 2 diabetes treated with diet alone or with oral hypoglycaemic agents

› **Insulin treated**

Where the total daily dose (TDD) of insulin is known follow the guidance in the table based on TDD. If the TDD is unknown, follow guidance according to the person's weight

CORRECTION DOSES OF RAPID ACTING INSULIN

GLUCOSE (MMOL/L)	• TDD = <50 UNITS PER DAY • OR WEIGHT < 50 KG	• TDD = 50 -100 UNITS PER DAY • OR WEIGHT 50 -100 KG	• TDD = >100 UNITS PER DAY • OR WEIGHT >100 KG	←
12.0-14.9	2 units	2 units	4 units	• Please check **KETONES** if glucose >12.0mmol/L
15.0-16.9	2 units	3 units	5 units	⚠ **If KETONE >1.5mmol/L, for doctor review**
17.0-18.9	3 units	4 units	5 units	
19.0-20.9	3 units	5 units	6 units	
21.0-22.9	4 units	6 units	7 units	⚠ **If KETONE >3.0mmol/L** Exclude DKA-Venous pH, bicarbonate, lab glucose, U&E. Refer to diabetes team
23.0-24.9	4 units	7 units	8 units	
25.0-27.0	5 units	8 units	9 units	
Over 27	6 units	9 units	10 units	

MAINTAINING GLYCAEMIC CONTROL

› **People NOT on an intermediate acting (NPH) or long acting insulin:**

Where glucose has risen above 12.0 mmol/l due to dexamethasone treatment, start NPH insulin which has an intermediate duration of action (e.g. Humulin I®, Insulatard®) - total dose 0.3 units/kg/day. Give 2/3 of the total daily dose in the morning (07.00 – 08.00) and the remaining 1/3 in the early evening (17.00-18.00). e.g. 0.3 x 80kg = 24 units/d i.e. 16 units a.m. and 8 units p.m.). NOTE- there should be a low threshold for dose escalation (see table below) and referral to the diabetes team

NPH insulin twice daily is recommended as this gives more flexibility with dose adjustment. However, the metabolic effects of dexamethasone can persist for up to 36 hours, thus a longer acting basal analogue insulin may also be considered. See tables below for.dose adjustment of long acting insulin and twice daily intermediate and long acting insulins

⚠ ALERT NOTE - if:

› Older (>70 yrs) or frail
› Serum creatinine >175 umol/l (eGFR <30 ml/min)

Use a reduced NPH insulin dose of 0.15 units/kg (e.g. 0.15 x 80kg = 12 units i.e. 8 units a.m. and 4 units p.m.) NOTE- there should be a low threshold for dose escalation and referral to the diabetes team

› **People already using once or twice daily long-acting insulin or twice daily NPH including those on basal-bolus regimens**

Increase the long acting basal or NPH insulin by 20% but this may need rapid escalation by as much as 40% depending on response. Titrate the dose using the tables below. Patients on basal-bolus regimens may not require 'mealtime' insulin boluses if not eating, however, if hyperglycaemia persists during adjustment of basal insulin then use corrective rapid acting insulin doses according to total daily insulin dose (TDD) or weight given in the table for correction doses of rapid acting insulin

› **People on twice-daily pre-mix insulin**

e.g. NovoMix 30®/Humulin M3®/Humalog Mix 25®/Humalog Mix 50®

Continue mixed insulin and adjust dose (follow dose adjustment for long-acting insulin table below). Consider increasing the morning dose by 20% but this may need rapid escalation by as much as 40% each day depending on the response. There should be a low threshold for referral to the diabetes team

DOSE ADJUSTMENT FOR LONG-ACTING INSULIN

Doses can be titrated daily, although longer-acting insulins may take 48-72 hours to reach steady state. Dose adjustments will affect blood glucose throughout the day

ONCE daily long-acting insulin

GLUCOSE LEVEL JUST BEFORE INSULIN DOSE	
<4mmol/L	Reduce insulin by 20%
4.1-6mmol/L	Reduce insulin by 10%
6.1-12mmol/L	No change
12.1-18mmol/L	Increase insulin by 10%
>18mmol/L	Increase insulin by 20%

TWICE daily NPH or long-acting insulin

GLUCOSE LEVEL	JUST BEFORE MORNING INSULIN DOSE	JUST BEFORE EVENING INSULIN DOSE
<4mmol/L	Reduce **evening** insulin by 20%	Reduce **morning** insulin by 20%
4.1-6mmol/L	Reduce **evening** insulin by 10%	Reduce **morning** insulin by 10%
6.1-12mmol/L	No change	No change
12.1-18mmol/L	Increase **evening** insulin 10%	Increase **morning** insulin by 10%
>18mmol/L	Increase **evening** insulin by 20%	Increase **morning** insulin by 20%

› **People using a personal insulin infusion pump**

If the person is too unwell to manage their pump, transfer to a Variable Rate Intravenous Insulin Infusion (VRIII) with a basal insulin given alongside - seek the advice of the diabetes team. If the pump is removed, give the pump to a relative for safekeeping or label with the patients details and safely store

Those people well enough to manage their subcutaneous insulin infusion pump should be recommended to initially increase the basal rates by 20% and be made aware that this may need to be increased further on a daily basis. Refer all people using a personal insulin pump to the diabetes team

END OF DEXAMETHASONE THERAPY- DAY 10

Insulin resistance will begin to fall when the dexamethasone has been stopped but may take a number of days. Continue to monitor glucose 6 hourly and down titrate using the guidance table above

DISCHARGE AND FOLLOW-UP

› **Diabetes precipitated by COVID-19 infection and dexamethasone treatment**

Normoglycaemia may be established after stopping dexamethasone without the need for ongoing diabetes therapy. However, up to a third of people may later develop diabetes therefore alert the GP that the patient will need a yearly HbA1c measurement

› **People with known diabetes**

These patients will require close support following discharge. The discharge guidelines and patient information leaflet produced by this group are available to facilitate this. The leaflet can be accessed here: https://www.diabetes.org.uk/professionals/resources/shared-practice/inpatient-and-hospital-care#patients

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Hyperglycaemia due to Dexamethasone during COVID-19

Dexamethasone is now recommended for many patients admitted with COVID 19. Both dexamethasone and COVID increases the risk of hyperglycaemia and steroid induced diabetes. Hyperglycaemia is recognised to cause adverse outcomes from COVID 19. Therefore, the following is recommended:

Monitoring

1. All patients started on Dexamethasone for COVID 19 should have blood glucose (BG) tested every 6 hours for the first 48hrs after starting treatment

- **Aim to keep Blood glucose <10.0 mmol/l**
  If after 48 hours all BG are below 10.0 mmol/l reduce monitoring to once daily at 5-6pm in patients without diabetes. Those with diabetes should continue with 6h monitoring
- **If Blood glucose > 10.0 mmol/l**
  Continue to monitor BG 6 hourly
- **If Blood Glucose > 12.0 mmol/l**
  Always consider the possibility of DKA or HHS

Treatment

1. **Correction dose**

- If BG increases above 12.0 mmol/l use a correction dose of insulin Novorapid. The dose depends on level of hyperglycaemia and weight typically 2-8 units depending on level of hyperglycaemia. ***(Note correction doses in patients treated with dexamethasone are larger)***

Blood glucose (mmol/l)	Insulin dose (units) according to weigh			Remember
	<50kg	50-100kg	>100kg	
12.0-14.9	2 units	2 units	**4 units**	**Check ketones if BG >12.0**
15-16.9	2 units	3 units	5 units	**If ketone > 1.5** mmol/l doctor review
17-18.9	3 units	4 units	5 units	
19-20.9	3 units	5 units	6 units	**If ketone >3.0** mmol/l exclude DKA pH, bicarb, lab glucose, U&E
21.0-24.9	4 units	6 units	7 units	
>25.0	5 units	8 units	9 units	

- Repeat BG after 4 hours if BG remains > 12.0 mmol/l give additional correction dose

2. **Commence regular basal insulin**
   Commence basal insulin **(Humulin I)** 2/3 with breakfast and 1/3 with evening meal

If > 70 years (or frail) dose 0.15 units/kg/24hrs	**If < 70 years 0.30 units/kg/24hrs**
eg 70 kg patient 0.15 x 70kg = 10.5	eg 70 kg patient 0.3 x 70kg = 21 units
Commence **Humulin I** 2/3 pre-breakfast and 1/3 pre-evening meal	Commence **Humulin I** 2/3 with breakfast and 1/3 evening meal
7 units breakfast and 3 units evening meal	14 units breakfast and 7 units evening meal

Patients on Insulin

In those already treated with insulin either basal, pre-mixed or basal bolus increase the basal or mixed insulin by 20% it may subsequently need a further increase and titration.

Stopping Dexamethasone

Insulin can be stopped but continue to monitor glucose it may take a few days to fully settle

This is concise advice to support initial management. Please contact the diabetes specialist team and refer to full guidance accessible below. Especially for those with more severe hyperglycaemia and needing ongoing dose titration.

Concise advice on inpatient Diabetes (COVID:Diabetes): Dexamethasone therapy in COVID-19: Implications and guidance for the management of blood glucose for people with and without Diabetes. Available at: https://abcd.care/sites/abcd.care/files/site_uploads/Resources/COVID-19/COvID_Dex_v1.4.pdf

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Adjusting insulin dose or using corrective insulin doses in hospital adapted for COVID-19

For patients with diabetes hyperglycaemia can occur whilst in hospital, especially during COVID 19 or if steroids are used. Hyperglycaemia is associated with adverse outcomes or emergencies e.g. DKA or HHS. Patients may need to either commence insulin or have their insulin dose adjusted.

1. Target Blood glucose 6.0-10.0 mmol/l
2. Ensure patients haven't decompensated into DKA or HHS
3. If BG > 12.0 mmol/l and no insulin has been administered in the previous 4 hours, consider administering a corrective dose of rapid acting insulin (e.g. Novorapid, Fiasp, Humalog, Apidra)
4. The scale to calculate corrective dose for any level of hyperglycaemia can be decided using one of 3 factors, in order of preference:
   a. If the patient has a personal correction ratio *e.g. 1 unit insulin lowers glucose by 3.0 mmol/l* this should be used
   b. If the person **doesn't have** a known personal corrective dose, use their total daily insulin dose (TDD) in units to calculate the corrective dose
   c. If not previously using insulin, use body weight to calculate a corrective dose

Scale	A	B	C
Blood Glucose (mmol/l)	**Corrective dose 1unit:4 mmol/l Total Daily dose < 50 units/24h Weight < 50kg**	**Corrective dose 1unit:3 mmol/l Total Daily Dose 50-100 units/24h Weight 50-100kg**	**Corrective dose 1unit:2 mmol/l Total Daily Dose >100 units/24 Weight > 100kg**
12.0-14.9	1	1	2
15.0-16.9	2	2	3
17.0-18.9	2	3	4
19.0-20.9	3	3	5
21.0-22.9	3	4	6
23.0-24.9	4	5	7
25.0-27.0	4	5	8
Over 27.0	5	6	9

Suggested corrective insulin dose in units according to the level of hyperglycaemia

5. Target blood glucose is 6.0-10.0 mmol/l aiming for the higher end of the range

If using rapid acting insulin with each meal, the corrective dose can be added to the meal time dose.

Subsequently:

I. In patients already taking insulin

If 2 or more corrective doses are used within 24-hours. Increase the rapid acting and basal insulin or the pre-mixed insulin (Novomix 30, Humulin M3). A typical increase in dose being 10-15% (usually 2-4 units).

II. For patients not already taking insulin add a basal insulin as outlined below.

If > 70 years (or frail) dose 0.15 units/kg/24hrs	If < 70 years dose 0.3 units/kg/24hrs
e.g. 70 kg patient 0.15 x 70kg = 10.5 units	e.g. 70 kg patient 0.3 x 70kg = 21 units
Commence **Humulin I**	Commence **Humulin I**
2/3 pre breakfast and 1/3 pre evening meal	2/3 pre breakfast and 1/3 pre evening meal
7 units breakfast 3 units evening meal	14 units breakfast 7 units evening meal

Ensure regular blood glucose monitoring is ongoing and liaise with the Diabetes Specialist team

To access full guidance. Concise Advice on Inpatient Diabetes during COVID 19-Guidance for managing inpatient hyperglycaemia. Available at:
https://abcd.care/resource/concise-advice-inpatient-diabetes-during-covid-19-guidance-managing-inpatient

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Authorisation Form for Publication onto COIN/COVID-19 Intranet Page

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