NHS
North West
Boroughs Healthcare
NHS Foundation Trust

Trust procedures

Standard Operating Procedure (SOP) for the Resuscitation of Adults and Children in Cardiac Arrest during time of Pandemic Novel Coronavirus (COVID-19).

This SOP provides specific guidance for healthcare workers (HCWs) on CPR in Inpatient and Community settings for patients with suspected or confirmed COVID-19.

This SOP must be read in conjunction with the Trust Resuscitation Policy and Procedure

Version No: 1

Document control page

Name of linked Policy/Guidance	Resuscitation Policy and Resuscitation Procedure
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Author with contact details	Maresa Johnson Maresa.johnson@nwbh.nhs.uk
Status	Ratified
Ratifying Committee date	CERG 29/06/2020
Issue date	July 2020
Review date	July 2021
Brief description of changes following review	New SOP that provides specific guidance for NWBH healthcare workers (HCWs) on CPR in Inpatient and Community settings for patients with suspected or confirmed COVID-19. This SOP must be read in conjunction with the Trust Resuscitation Policy and Procedure

Version control

Version number	Development Timeline	Date
V1	New SOP	June 2020

Contents

1. Quick Reference Guide

Standard Operating Procedure (SOP) Aim

The aim of this SOP is to support best practice in the event of any person requiring cardiopulmonary resuscitation during the COVID-19 pandemic by a member of staff with direct patient/client contact employed by North West Boroughs Healthcare NHS Foundation Trust (NWBH).

This SOP provides specific guidance for healthcare workers (HCWs) on CPR in Inpatient/Walk in Centres and Community settings for patients with suspected or confirmed COVID-19. All Guidance provided within the SOP follows the Resuscitation Council (UK) guidelines Resuscitation Council UK for patients with suspected or confirmed COVID-19.

SOP Description

The Resuscitation Steering Group is responsible for the compliance of the Cardiopulmonary Resuscitation Policy, Procedure and SOP for the Resuscitation of Adults and Children in Cardiac Arrest during time of Pandemic Novel Coronavirus (COVID-19) within the Trust.

Knowsley Resource and Recovery Centre is situated on St Helens and Knowsley (Whiston) Acute Trust site. In respect of this NWBH has a Service Level agreement with St Helens and Knowsley to provide;-

- An Adult Medical Emergency/Resuscitation Team and
- The Knowsley Young Person Team

The above teams will attend an adult or child who is deteriorating (and where NWBH staff require assistance to manage the patient's condition until transfer to an acute trust) or those in cardiopulmonary arrests. The teams are available 24/7. To activate the appropriate medical/cardiac arrest team staff will dial 2222, state the team required and their location. The caller will then be required to dial 999 for an ambulance response if the patient requires transfer.

For all other inpatient and community sites emergency assistance will be provided by the ambulance service. See section 4.2

A specific level 3 PPE bag is situated with the resuscitation equipment on each inpatient unit and Walk in Centre.

Each bag of level 3 PPE contains

- 3 x FFP3 mask (3 of each type of FFP3 mask)
- 3 x Gowns
- 3 x visors
- Gloves (1 x box of each small, medium and large)
- Orange contaminated waste bag

Cardiopulmonary Resuscitation (CPR) episodes will be documented and audited to assess standards of care.

All clinical staff throughout the NWBH NHS Trust will be provided with regular resuscitation training appropriate to their expected abilities and roles.

2. Introduction

The Standard Operating Procedure describes the modified processes and treatments, from the standard Resuscitation Council UK pathways and guidance, pertinent to the resuscitation of all adults and children during the COVID-19 pandemic.

These pathways have been introduced during the COVID-19 pandemic and are for;

- All patients who are currently within the inpatient units or arrive into the trust.
- NWBH Walk in Centres.
- Community settings.

This SOP is a point of reference for medical, nursing staff and other members of the multi-disciplinary team during the COVID-19 pandemic.

The aim of the modified resuscitation guidance is to ensure that patients receive the most appropriate treatment in a timely manner whilst ensuring the safety of staff providing the treatment.

COVID-19 is thought to spread in a way similar to seasonal influenza; from person-to-person through close contact and droplets. Standard principles of infection control and droplet precautions are the main control strategies and should be followed rigorously. Aerosol transmission can also occur. Attention to hand hygiene and containment of respiratory secretions produced by coughing and sneezing are the cornerstones of effective infection control.

All HCWs managing those with suspected or confirmed COVID-19 must follow trust guidance for infection control and the use of PPE.

During CPR, there is always the potential for rescuers to be exposed to bodily fluids, and for procedures (e.g. chest compressions, tracheal intubation or ventilation) to generate an infectious aerosol or droplets.

3 Definition

Definition	Meaning
AGP	Aerosol Generating Procedure
ALS	Advanced Life Support
BVM	Bag Valve Mask
CPR	Cardiopulmonary Resuscitation
DNACPR	Do No Attempt CPR
HCW	Healthcare Worker
IPC	Infection Prevention Control
PPE	Personal Protective Equipment
RCUK	Resuscitation Council of the United Kingdom and Ireland

4 Procedure details

The procedure guidance has been split into two sections in-patient units/Walk in Centres and Community settings.

4.1 Guidance on CPR in patients with a COVID-19 like illness (suspected) or a confirmed case of COVID-19 for in-patient units/Walk in Centre settings.

In a situation when a patient is unresponsive, to minimise the risk of droplet transmission.

4.2 Recognition of cardiac arrest and initial response

- Look for the absence of signs of life and normal breathing. **(Do not listen or feel for breathing by placing your ear and cheek close to the patient's mouth).**
- Simultaneously feel for a carotid pulse if trained to do so.
- Shout for help early so helpers can start to don level 3 PPE if needed.
- If a patient is unresponsive and not breathing normally, ensure help is summoned by dialling the appropriate emergency number for the area. Alert Switchboard to the risk of COVID-19.

  999 – Atherleigh, Peasley cross and Halton
  2222 (for the arrest team) then 999 (for the ambulance service) – Knowsley Resource and Recovery Centre
  3333 – Hollins Park

- Request the ward/unit resuscitation equipment to be brought to the scene.

4.3 During Cardiac Arrest

- **NO MORE THAN 3 TEAM MEMBERS to enter a room/area whilst a cardiac arrest is in progress.**

- The Cardiac Arrest Bag/Trolley **MUST** stay outside the room/area.

- Whilst awaiting helpers to don level 3 PPE (see appendix 9 for donning instruction), the rescuer (wearing level 2 PPE) should attach the defibrillator to assess the initial rhythm. **If using an Automated External Defibrillator (AED), administer shocks as guided by the AED.** If using a manual defibrillator, deliver up to 3 shocks rapidly, as indicated. Early defibrillation for a shockable cardiac arrest gives the best chance of survival.

- Do not deliver chest compressions or ventilations unless wearing level 3 PPE (FFP3 mask, eye /face protection, fluid-resistant long-sleeved gown, gloves). As these are considered an aerosol generating procedure (RC (UK)) which requires level 3 PPE for all those in the immediate vicinity of the resuscitation attempt.

  ****Do not perform mouth to mouth or pocket mask ventilation****

- If the patient is already receiving supplemental oxygen therapy using a face mask, leave the mask on the patient's face as this may limit aerosol spread. If not in situ, but one is readily available, put a simple oxygen mask on the patient's face. **The oxygen mask MUST be removed during rhythm analysis/shock delivery.**

- As soon as helpers in level 3 PPE arrive, the first rescuer must withdraw to a safe distance of over 2 metres.

- For cardiac arrest due to ligature, it is imperative that the ligature is removed as soon as safely possible.

- One person to stay with the bag/trolley outside the room/area as "Gatekeeper" wearing a surgical mask, plastic apron, gloves and eye protection. They must ensure **only 3 team members** maximum enter the room/area.

- The Gatekeeper **must ensure staff don** long sleeved surgical gown, gloves, FFP3 mask and visor or goggles before to entering the room/area and starting resuscitation. Visors **MUST** be used when available, if none available and the PPE mask has a valve, then a surgical mask must be put on over the FFP3 valve mask and googles worn. A specific level 3 PPE bag is situated with the resuscitation equipment. **The level 3 PPE bag should be locally replenished after use, however the Resuscitation Training Department has an 'emergency' supply if required.**

- Once full level 3 PPE has been donned, chest compressions and face-mask ventilation using a BVM device (with a HME filter connected between the bag and mask), can be commenced. A two person bag-mask technique **MUST** be used. All BVM's have the HME filter pre-fitted. (see appendix 11).

- Tracheal intubation or IGel insertion MUST only be attempted by individuals who are experienced and competent in this procedure.

- The Gatekeeper is responsible for passing items from the bag/trolley into a room/area as required by **finger-tips.** Replacement equipment will be obtained from the local resuscitation store room.

- Identify and treat any reversible causes (e.g. severe hypoxaemia). Transfer to a higher level will be via the ambulance service. For full in hospital Resuscitation guidance, please refer to appendix 1,2,3 and 3A) (or appendix 4 for Paediatrics).

- Disposable equipment must not leave the room/area until bagged for disposal.

- It is important to inform the patient's family of the event and subsequent outcome.

4.4 Post Cardiac Arrest

- Non-disposable equipment – defibrillator etc **must be cleaned as per IPC** instructions immediately to ensure equipment is available ASAP. Any work surfaces used for airway/resuscitation equipment will also need to be cleaned according to local guidelines.

- Specifically, ensure equipment used in airway interventions (e.g. laryngoscopes, face masks, bag valve mask and suction equipment) are disposed of appropriately and safely.

- Remove PPE safely to avoid self-contamination and dispose of clinical waste bags as per local guidelines. Hand hygiene has an important role in decreasing transmission. Thoroughly wash hands with soap and water; alternatively, alcohol hand rub is also effective. See appendix 10 for Doffing instructions.

- An initial Post resuscitation debrief following the incident must be undertaken followed by a focused planned debrief.

For further information see

https://www.resus.org.uk/media/statements/resuscitation-council-uk-statements-on-covid-19-coronavirus-cpr-and-resuscitation/in-hospital-settings/covid-19-cpr-and-resuscitation-in-non-acute-hospital-settings/

5 Paediatric Advice

Paediatric cardiac arrest is unlikely to be caused by a cardiac problem and is more likely to be a respiratory one, making ventilations crucial to the child's chances of survival. However, for those not trained in paediatric resuscitation, the most important thing is to act quickly to ensure the child gets the treatment they need in the critical situation.

The Resuscitation Council UK Statement on COVID-19 in relation to CPR and resuscitation in healthcare settings advice for in-hospital cardiac arrest is relevant to all ages. Mouth-to-mouth ventilations should not be necessary as equipment is available for bag-mask ventilation and must be immediately available for any child/infant at risk of deterioration/cardiac arrest in the hospital/Walk-in-Centre setting.

6 Unified Do Not Attempt Cardio-Pulmonary Resuscitation (uDNACPR) Decisions

- Resuscitation is an invasive medical procedure and should only be provided after careful consideration with the patient of the benefits and burdens provided by resuscitation. These discussions should be compliant with mental capacity act and may require the involvement of a Lasting Power of Attorney. Conversations and treatment escalation planning must be a priority. Where appropriate patients should have an individual emergency care treatment plan which includes recommendations for the appropriateness of cardiopulmonary resuscitation. If appropriate, ensure "do not attempt cardiopulmonary resuscitation" (DNACPR) decisions are well documented and communicated. For full details regarding completion of a uDNACPR form see Resuscitation Procedure

- This decision must be reviewed when clinical circumstances change and prior to any transfer of care (specifically when COVID-19 was a criterion for the decision).

- Most uDNACPR decisions will remain in place appropriately, but some will warrant reversal. This could be the case for some patients with COVID19.

- The uDNACPR review MUST be completed by the patients Consultant and team caring for the patent and discussed with the patient and communicated to outside agencies upon discharge.

7 Guidance on CPR in patients with a COVID-19 like illness (suspected) or a confirmed case of COVID-19 in community healthcare setting.

- Identify as early as possible any person who is at risk of acute deterioration or cardiac arrest. Take appropriate steps to prevent cardiac arrest. Activate the ambulance service as soon as possible, state suspected or confirmed COVID-19 if known.

- It is recognised that a sudden collapse may happen in many different situations in the community and this precludes provision of specific guidance for every eventuality.

- A HCW may encounter a patient who has had a cardiac arrest in a public place (i.e without the benefit of resuscitative equipment or PPE). Under such circumstances they should follow guidance for members of the public, being aware of their professional obligations. Please refer to https://www.resus.org.uk/media/statements/resuscitation-council-uk-statements-on-covid-19-coronavirus-cpr-and-resuscitation/covid-community/ for more information.

- AGP PPE is the safest option for HCWs when undertaking chest compressions and other resuscitation procedures on patients with suspected or confirmed COVID. However, it is recognised that this may not be achievable out of hospital or in community settings. If the rescuer has access to level 2 or 3 PPE this should be worn prior to commencing resuscitation.

- When it is difficult to ascertain whether a person may or may not have COVID-19, the HCW must decide how to act in the circumstance in which they find themselves.

- In any situation when a person with suspected or confirmed COVID is/becomes unresponsive, it is important to minimise the risk of droplet transmission.

7.1 Recognition of cardiac arrest and initial response:

- Recognise cardiac arrest by looking for the absence of signs of life and the absence of normal breathing. **Do not listen or feel for breathing by placing your ear and cheek close to the patient's mouth.**

- Simultaneously feel for a carotid pulse if trained to do so.

- Shout for help early so potential helpers are aware of the situation. They should remain at a distance of >2 metres from the unresponsive person.

- Request, if available a defibrillator to be brought to the scene.

- If the HCW has access to PPE, this should also be requested and worn as soon as possible and prior to commencing **chest compression only** cardiopulmonary resuscitation (CPR).

- Make sure an ambulance is on its way. If appropriate state the risk of COVID 19 to the call handler.

- If available the HCW should attach a defibrillator (AED) and administer shocks as guided by the AED. Early defibrillation for a shockable cardiac arrest gives the best chance of success.

- If a defibrillator is not available, the HCW must decide what to do next having taken into account the person's history, the setting, the availability and proximity of help and/or equipment, and the skills they themselves have. Each HCW should be aware of the ethical issues involved in deciding the course of action and the potential outcomes.

- If willing and able, and depending on the situation, the HCW could decide to **commence chest compression-only CPR ensuring the person's mouth and nose are covered, either by a cloth or a mask.**

- If unable, or the situation is such that to undertake CPR would lead to a high level of risk to the HCW (e.g. from the patient's history, or the HCW's own medical history), then further resuscitation procedures may have to be delayed until responders wearing PPE arrive.

- As soon as HCWs/Ambulance service arrives in AGP (Level 3) PPE, the first HCW must withdraw to a safe distance of over 2 metres if not wearing AGP PPE. A brief handover must be given to the HCW taking over the resuscitation, including a history of the immediate event and relevant medical conditions.

- In most instances, the Advanced Life Support (ALS) response will be provided by the ambulance service.

For further information see

Resuscitation Council UK statement on covid 19 for healthcare workers (HCW) in Primary and community healthcare settings Version 1. Published 11 May 2020.

7.2 Post Cardiac Arrest

- Safely remove PPE used to avoid self-contamination and dispose of it in clinical waste bags as per ICP guidance.

- Thoroughly wash hands with soap and water: alternatively, alcohol hand rub is also effective.

- Dispose of, or clean Non-disposable equipment i.e defibrillator as per IPC instructions immediately to ensure equipment is available ASAP. Any work surface used for resuscitation equipment will also need to be cleaned according to IPC guidance. Ensure all used equipment is replaced.

- Debrief at the end of the resuscitation attempt with any staff present

- Ensure that a DATIX is completed and submitted.

8 Paediatric Advice

A paediatric cardiac arrest is likely to be caused by a respiratory problem, making ventilations crucial to the child's chances of survival. For an out-of-hospital cardiac arrest, calling an ambulance and taking immediate action is vitally important. If a child is not breathing normally and no actions are taken, cardiac arrest will follow soon.

It is possible that the child/infant having an out-of-hospital cardiac arrest may be known to the rescuer. It is possible that doing rescue breaths will increase the risk of transmitting the COVID-19 virus, either to the rescuer or the child/infant. This may be mitigated by the use of airway adjuncts such as a face shield, pocket mask or bag-mask device. However, this risk is small compared to the risk of taking no action as this will result in certain cardiac arrest and the death of the child.

9 Monitoring of compliance with this procedure

Minimum requirements to be monitored	Process for monitoring e.g. audit	Responsible individual, group or committee	Frequency of monitoring	Responsible individual, group or committee for review of results	Responsible individual, group or committee for development of action plan	Responsible individual, group or committee for monitoring of action plan
SOP to be followed during pandemic	Data collection via Datix	Resuscitation Officer	On going	Resuscitation Steering Group	Resuscitation Steering Group	QSSGG

10 References

No	Reference
1	Resuscitation Council: https://www.resus.org.uk/media/statements/resuscitation-council-uk-statements-on-covid-19-coronavirus-cpr-and-resuscitation/covid-healthcare-resources/
2	Intensive Care Management: https://icmanaesthesiacovid-19.org/critical-care-preparation-and-management-in-the-covid-19-pandemic
3	Coronavirus Infection Prevention and Control: https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control

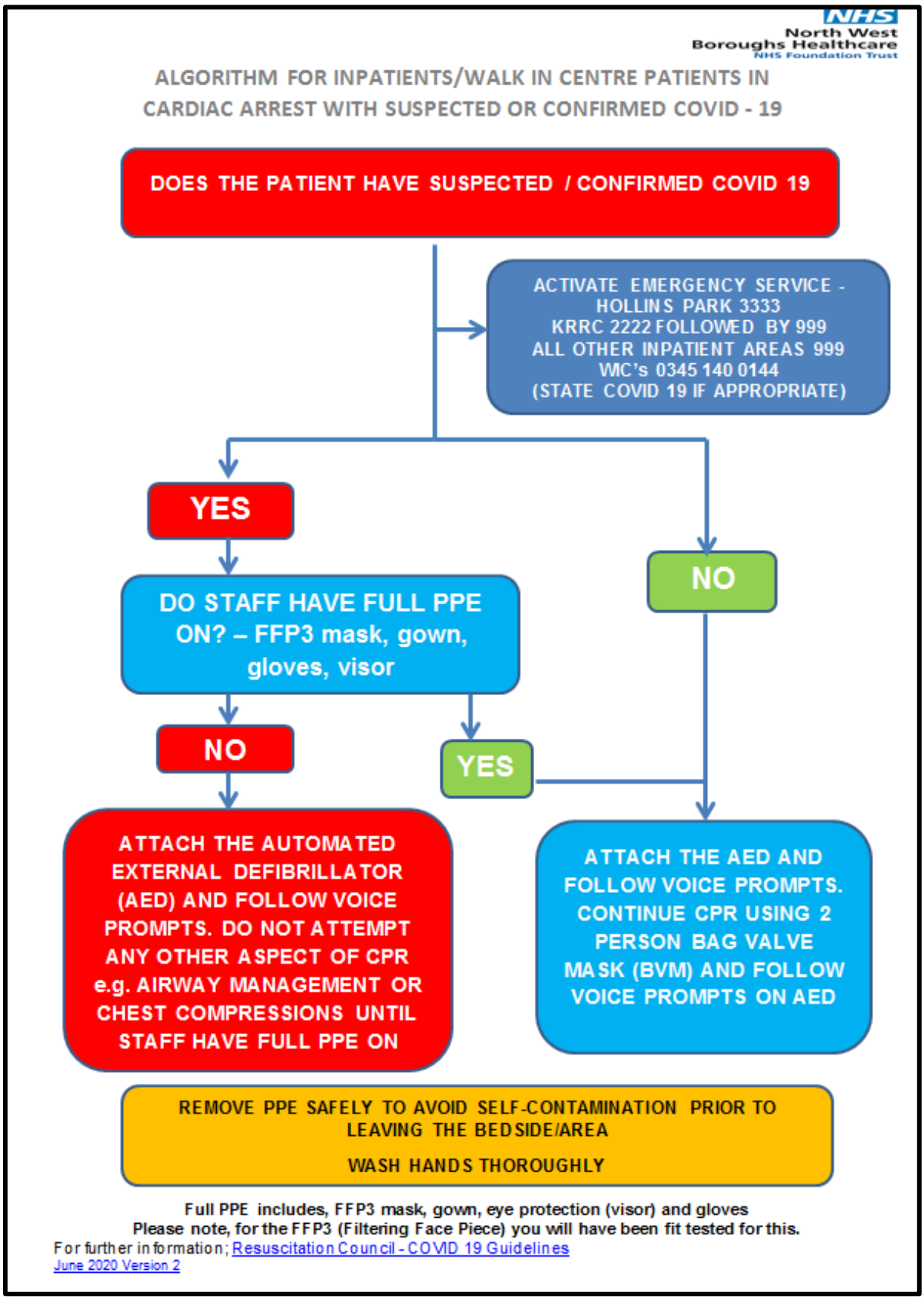
11 Associated documents

Infection Control Policy

Resuscitation Policy and Procedure

12 Appendices

Appendix 1


NHS
North West
Boroughs Healthcare
NHS Foundation Trust
ALGORITHM FOR INPATIENTS/WALK IN CENTRE PATIENTS IN CARDIAC ARREST WITH SUSPECTED OR CONFIRMED COVID - 19
DOES THE PATIENT HAVE SUSPECTED / CONFIRMED COVID 19
ACTIVATE EMERGENCY SERVICE - HOLLINS PARK 3333 KRRC 2222 FOLLOWED BY 999 ALL OTHER INPATIENT AREAS 999 WIC's 0345 140 0144 (STATE COVID 19 IF APPROPRIATE)
YES
NO
DO STAFF HAVE FULL PPE ON? – FFP3 mask, gown, gloves, visor
NO
YES
ATTACH THE AUTOMATED EXTERNAL DEFIBRILLATOR (AED) AND FOLLOW VOICE PROMPTS. DO NOT ATTEMPT ANY OTHER ASPECT OF CPR e.g. AIRWAY MANAGEMENT OR CHEST COMPRESSIONS UNTIL STAFF HAVE FULL PPE ON
ATTACH THE AED AND FOLLOW VOICE PROMPTS. CONTINUE CPR USING 2 PERSON BAG VALVE MASK (BVM) AND FOLLOW VOICE PROMPTS ON AED
REMOVE PPE SAFELY TO AVOID SELF-CONTAMINATION PRIOR TO LEAVING THE BEDSIDE/AREA
WASH HANDS THOROUGHLY
Full PPE includes, FFP3 mask, gown, eye protection (visor) and gloves
Please note, for the FFP3 (Filtering Face Piece) you will have been fit tested for this.
For further information; Resuscitation Council - COVID 19 Guidelines
June 2020 Version 2

Appendix 2

Resuscitation Council UK

Guidance for the resuscitation of COVID-19 patients in non-acute hospital settings.

Guidance

Decision making

The conversations and decision-making processes around resuscitation must continue and must be individualised unless directives state otherwise. Conversations, and treatment escalation planning must be a priority. Ensure "do not attempt cardiopulmonary resuscitation" (DNACPR) decisions are well documented and communicated.

Medical and nursing care for those who are at the end of life must follow local/ national policy.

Resuscitation of COVID-19 patients in non-acute hospital settings

Identify as early as possible any patients with a COVID-19 like illness, who are at risk of acute deterioration or cardiac arrest. Take appropriate steps to prevent cardiac arrest and avoid unprotected CPR.

Use of physiological track-and-trigger systems (e.g. NEWS2) will enable early detection of acutely ill patients. For those for whom resuscitation would be inappropriate, decisions must be made and communicated. Equipment must be made readily available to protect staff during resuscitation attempts. It is acknowledged that this may cause a brief delay to starting chest compressions, but the safety of staff is paramount.

All health care workers managing those with suspected or confirmed COVID-19 must follow local and national guidance for infection control and the use of PPE. The following flowchart includes the guidance current as of 18 March 2020 from PHE, DHSC, PHW, PHA(NI), HPS and RCUK.

Version 1. Published 15 April 2020.

Appendix 2A

Resuscitation Council UK

Resuscitation of COVID-19 patients in non- acute hospitalsettings

1. Recognise cardiac arrest. Look for the absence of signs of life and normal breathing. Feel for a carotid pulse if trained to do so. Do not listen or feel for breathing by placing your ear and cheek close to the patient's mouth. When calling 999/2222, state the risk of COVID 19.

2. If a defibrillator is readily available defibrillate shockable rhythms rapidly prior to starting chest compressions. The early restoration of circulation may prevent the need for further resuscitation measures. Local guidance must be followed about equipment entering the area.

3. Level 3 Personal Protective Equipment (PPE) must be worn by all members of the resuscitation/emergency team before entering the room. Sets of Level 3 PPE must be readily available where resuscitation equipment is being locally stored. No chest compressions or airway procedures such as those detailed below should be undertaken without Level 3 PPE. Once suitably clothed, start compression-only CPR and monitor the patient's cardiac arrest rhythm as soon as possible. Do not do mouth-to-mouth ventilation or use a pocket mask. If the patient is already receiving supplemental oxygen therapy using a face mask, leave the mask on the patient's face during chest compressions as this may limit aerosol spread. If not in situ, but one is readily available, put a simple oxygen mask on the patient's face. Restrict the number of staff in the room (if a single room). Allocate a gatekeeper to do this.

4. Airway interventions (e.g. supraglottic airway (SGA) insertion or tracheal intubation) must be carried out by experienced individuals. Individuals should use only the airway skills (e.g. bag-mask ventilation) for which they have received training. For many HCWs this will mean two-person bag-mask techniques with the use of an oropharyngeal airway. Tracheal intubation or SGA insertion must only be attempted by individuals who are experienced and competent in this procedure.

5. Identify and treat any reversible causes (e.g. severe hypoxaemia) before considering stopping CPR. Discussion should be maintained throughout the resuscitation event and early planning of the post resuscitation phase undertaken. Contact senior help and gain advice from critical care partners as part of the planning.

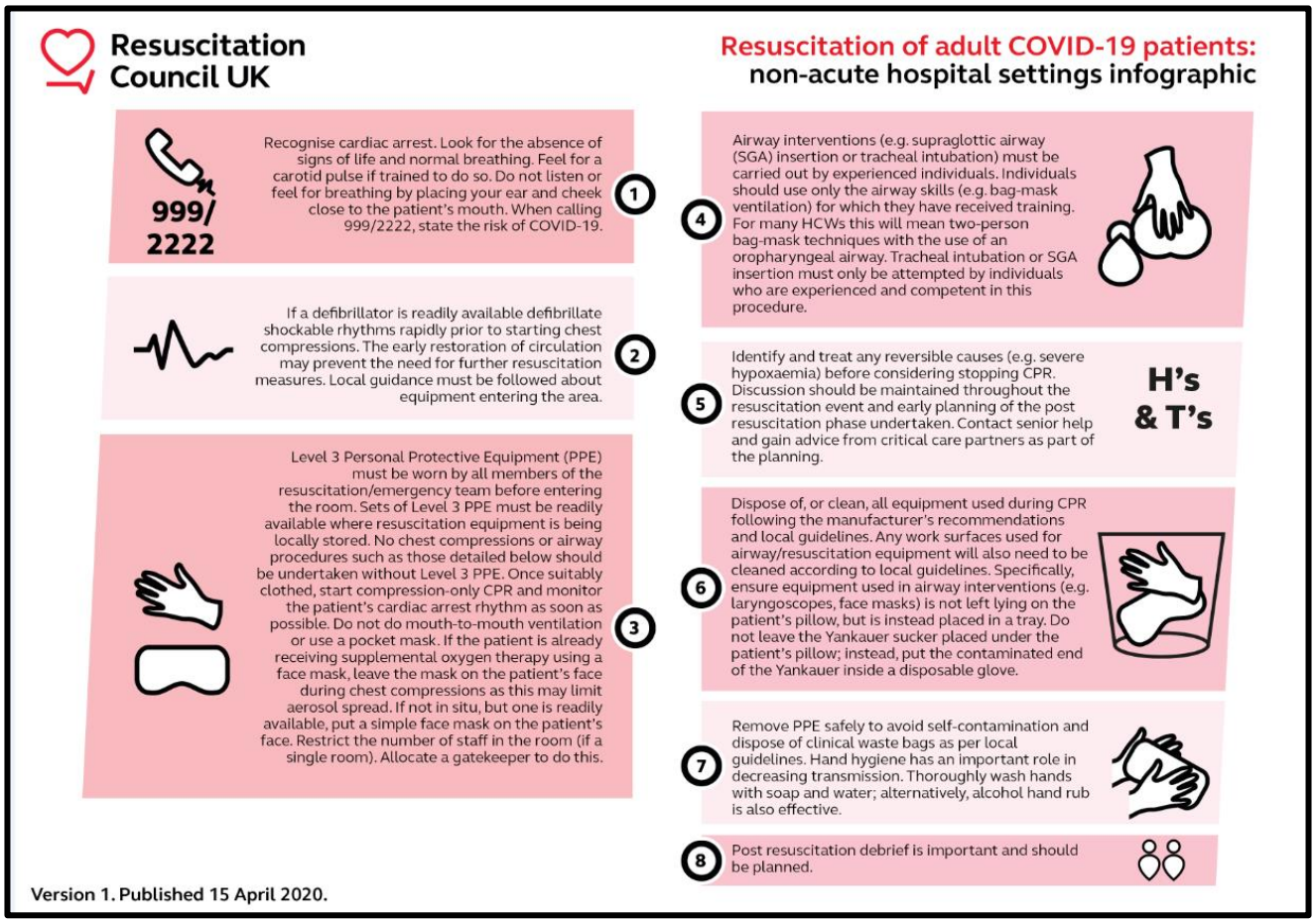
6. Dispose of, or clean, all equipment used during CPR following the manufacturer's recommendations and local guidelines. Any work surfaces used for airway/resuscitation equipment will also need to be cleaned according to local guidelines. Specifically, ensure equipment used in airway interventions (e.g. laryngoscopes, face masks) is not left lying on the patient's pillow, but is instead placed in a tray. Do not leave the Yankauer sucker placed under the patient's pillow; instead, put the contaminated end of the Yankauer inside a disposable glove.

7. Remove PPE safely to avoid self-contamination and dispose of clinical waste bags as per local guidelines. Hand hygiene has an important role in decreasing transmission. Thoroughly wash hands with soap and water; alternatively, alcohol hand rub is also effective.

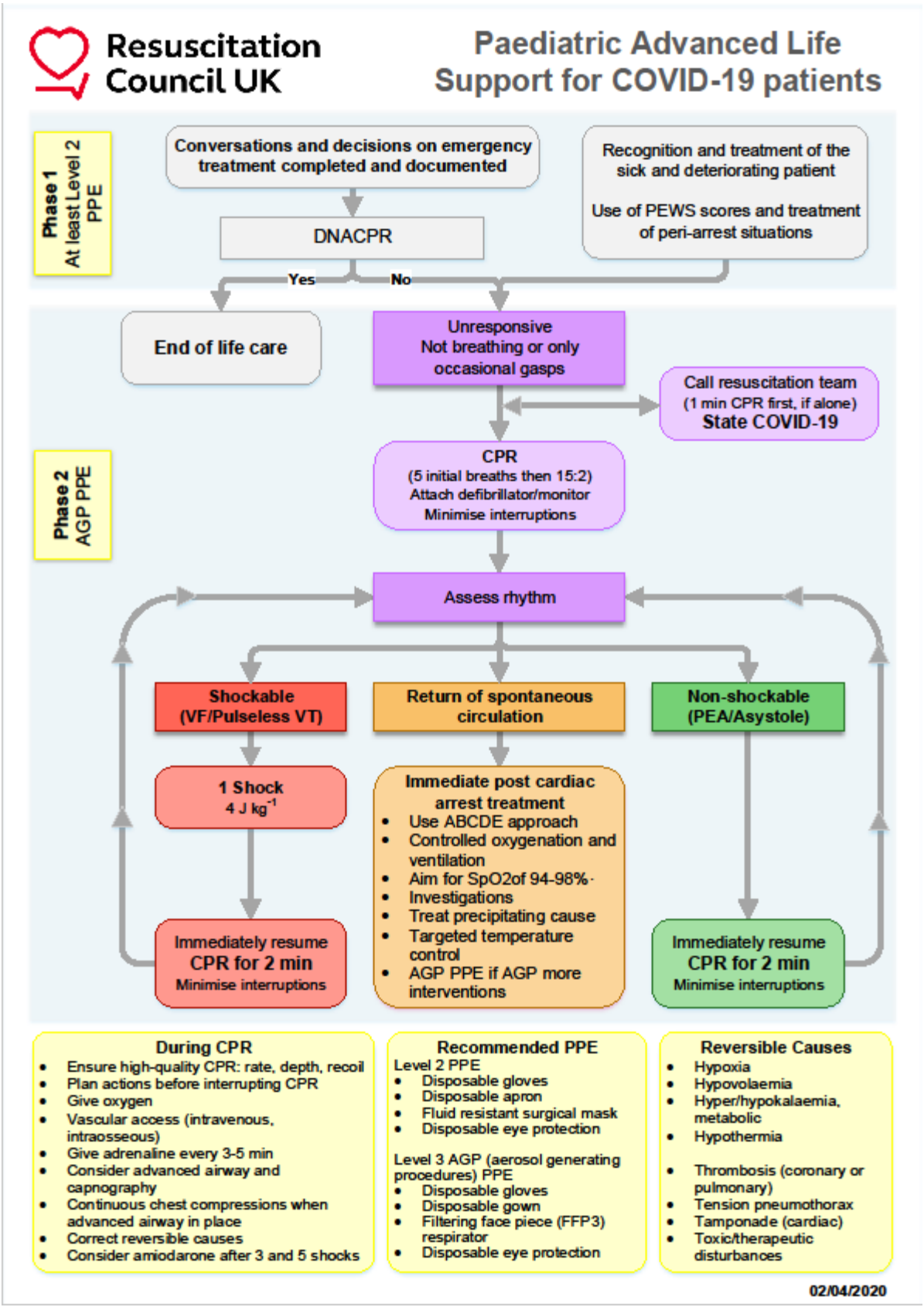
8. Post resuscitation debrief is important and should be planned.

Version 1. Published 15 April 2020.

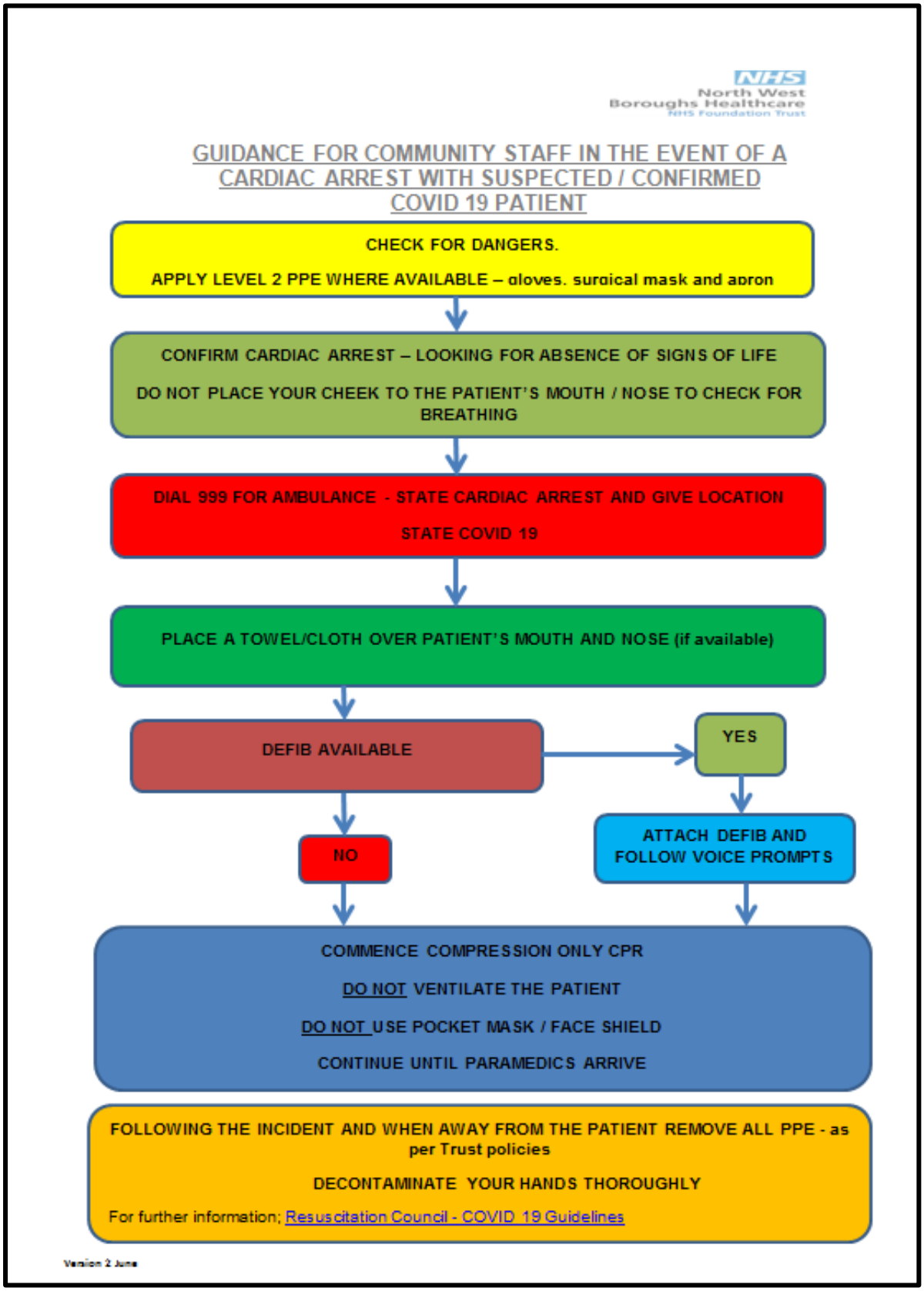
Appendix 2B


Resuscitation Council UK
Resuscitation of adult COVID-19 patients: non-acute hospital settings infographic
999/ 2222
Recognise cardiac arrest. Look for the absence of signs of life and normal breathing. Feel for a carotid pulse if trained to do so. Do not listen or feel for breathing by placing your ear and cheek close to the patient's mouth. When calling 999/2222, state the risk of COVID-19.
1
If a defibrillator is readily available defibrillate shockable rhythms rapidly prior to starting chest compressions. The early restoration of circulation may prevent the need for further resuscitation measures. Local guidance must be followed about equipment entering the area.
2
Level 3 Personal Protective Equipment (PPE) must be worn by all members of the resuscitation/emergency team before entering the room. Sets of Level 3 PPE must be readily available where resuscitation equipment is being locally stored. No chest compressions or airway procedures such as those detailed below should be undertaken without Level 3 PPE. Once suitably clothed, start compression-only CPR and monitor the patient's cardiac arrest rhythm as soon as possible. Do not do mouth-to-mouth ventilation or use a pocket mask. If the patient is already receiving supplemental oxygen therapy using a face mask, leave the mask on the patient's face during chest compressions as this may limit aerosol spread. If not in situ, but one is readily available, put a simple face mask on the patient's face. Restrict the number of staff in the room (if a single room). Allocate a gatekeeper to do this.
3
4
Airway interventions (e.g. supraglottic airway (SGA) insertion or tracheal intubation) must be carried out by experienced individuals. Individuals should use only the airway skills (e.g. bag-mask ventilation) for which they have received training. For many HCWs this will mean two-person bag-mask techniques with the use of an oropharyngeal airway. Tracheal intubation or SGA insertion must only be attempted by individuals who are experienced and competent in this procedure.
5
Identify and treat any reversible causes (e.g. severe hypoxaemia) before considering stopping CPR. Discussion should be maintained throughout the resuscitation event and early planning of the post resuscitation phase undertaken. Contact senior help and gain advice from critical care partners as part of the planning.
H's & T's
6
Dispose of, or clean, all equipment used during CPR following the manufacturer's recommendations and local guidelines. Any work surfaces used for airway/resuscitation equipment will also need to be cleaned according to local guidelines. Specifically, ensure equipment used in airway interventions (e.g. laryngoscopes, face masks) is not left lying on the patient's pillow, but is instead placed in a tray. Do not leave the Yankauer sucker placed under the patient's pillow; instead, put the contaminated end of the Yankauer inside a disposable glove.
7
Remove PPE safely to avoid self-contamination and dispose of clinical waste bags as per local guidelines. Hand hygiene has an important role in decreasing transmission. Thoroughly wash hands with soap and water; alternatively, alcohol hand rub is also effective.
8
Post resuscitation debrief is important and should be planned.
Version 1. Published 15 April 2020.

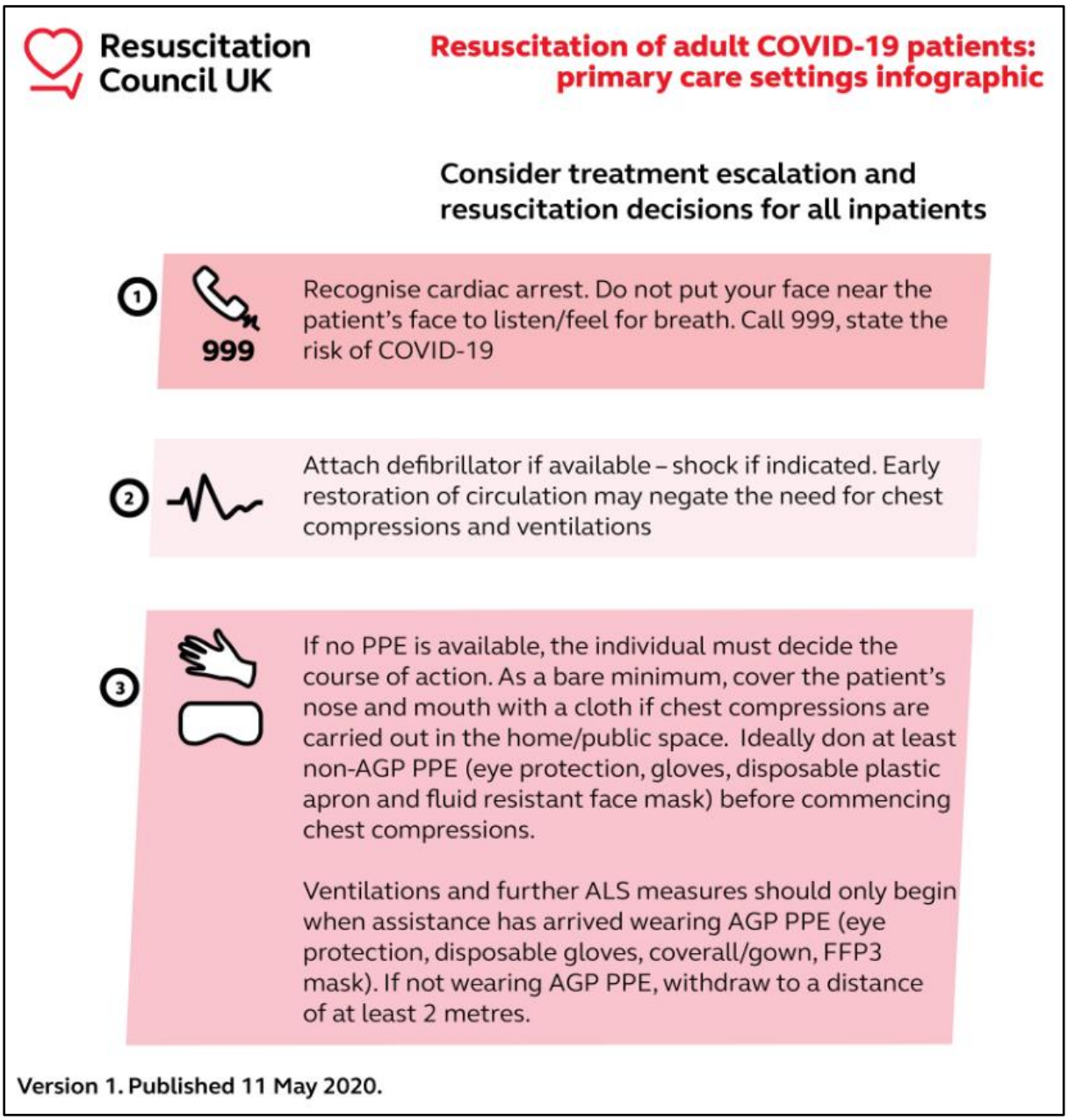
Appendix 3


Resuscitation Council UK
Paediatric Advanced Life Support for COVID-19 patients
Phase 1
At least Level 2 PPE
Conversations and decisions on emergency treatment completed and documented
DNACPR
Yes
No
Recognition and treatment of the sick and deteriorating patient
Use of PEWS scores and treatment of peri-arrest situations
End of life care
Unresponsive
Not breathing or only occasional gasps
Call resuscitation team
(1 min CPR first, if alone)
State COVID-19
Phase 2
AGP PPE
CPR
(5 initial breaths then 15:2)
Attach defibrillator/monitor
Minimise interruptions
Assess rhythm
Shockable
(VF/Pulseless VT)
Return of spontaneous circulation
Non-shockable
(PEA/Asystole)
1 Shock
4 J kg-1
Immediate post cardiac arrest treatment
Use ABCDE approach
Controlled oxygenation and ventilation
Aim for SpO2of 94-98%
Investigations
Treat precipitating cause
Targeted temperature control
AGP PPE if AGP more interventions
Immediately resume
CPR for 2 min
Minimise interruptions
Immediately resume
CPR for 2 min
Minimise interruptions
During CPR
Ensure high-quality CPR: rate, depth, recoil
Plan actions before interrupting CPR
Give oxygen
Vascular access (intravenous, intraosseous)
Give adrenaline every 3-5 min
Consider advanced airway and capnography
Continuous chest compressions when advanced airway in place
Correct reversible causes
Consider amiodarone after 3 and 5 shocks
Recommended PPE
Level 2 PPE
Disposable gloves
Disposable apron
Fluid resistant surgical mask
Disposable eye protection
Level 3 AGP (aerosol generating procedures) PPE
Disposable gloves
Disposable gown
Filtering face piece (FFP3) respirator
Disposable eye protection
Reversible Causes
Hypoxia
Hypovolaemia
Hyper/hypokalaemia, metabolic
Hypothermia
Thrombosis (coronary or pulmonary)
Tension pneumothorax
Tamponade (cardiac)
Toxic/therapeutic disturbances
02/04/2020

Appendix 4


NHS
North West
Boroughs Healthcare
NHS Foundation Trust
GUIDANCE FOR COMMUNITY STAFF IN THE EVENT OF A CARDIAC ARREST WITH SUSPECTED / CONFIRMED COVID 19 PATIENT
CHECK FOR DANGERS.
APPLY LEVEL 2 PPE WHERE AVAILABLE – gloves, surgical mask and apron
CONFIRM CARDIAC ARREST – LOOKING FOR ABSENCE OF SIGNS OF LIFE
DO NOT PLACE YOUR CHEEK TO THE PATIENT'S MOUTH / NOSE TO CHECK FOR BREATHING
DIAL 999 FOR AMBULANCE - STATE CARDIAC ARREST AND GIVE LOCATION
STATE COVID 19
PLACE A TOWEL/CLOTH OVER PATIENT'S MOUTH AND NOSE (if available)
DEFIB AVAILABLE
YES
NO
ATTACH DEFIB AND FOLLOW VOICE PROMPTS
COMMENCE COMPRESSION ONLY CPR
DO NOT VENTILATE THE PATIENT
DO NOT USE POCKET MASK / FACE SHIELD
CONTINUE UNTIL PARAMEDICS ARRIVE
FOLLOWING THE INCIDENT AND WHEN AWAY FROM THE PATIENT REMOVE ALL PPE - as per Trust policies
DECONTAMINATE YOUR HANDS THOROUGHLY
For further information; Resuscitation Council - COVID 19 Guidelines
Version 2 June

`Appendix 5


Resuscitation Council UK
Resuscitation of adult COVID-19 patients: primary care settings infographic
Consider treatment escalation and resuscitation decisions for all inpatients
1
999
Recognise cardiac arrest. Do not put your face near the patient's face to listen/feel for breath. Call 999, state the risk of COVID-19
2
Attach defibrillator if available – shock if indicated. Early restoration of circulation may negate the need for chest compressions and ventilations
3
If no PPE is available, the individual must decide the course of action. As a bare minimum, cover the patient's nose and mouth with a cloth if chest compressions are carried out in the home/public space. Ideally don at least non-AGP PPE (eye protection, gloves, disposable plastic apron and fluid resistant face mask) before commencing chest compressions.
Ventilations and further ALS measures should only begin when assistance has arrived wearing AGP PPE (eye protection, disposable gloves, coverall/gown, FFP3 mask). If not wearing AGP PPE, withdraw to a distance of at least 2 metres.
Version 1. Published 11 May 2020.

Appendix 6; Do not Attempt Resuscitation Guidance

Resuscitation Council UK

Guidance

Decision making

The conversations and decision-making processes around resuscitation must continue and must be individualised unless directives state otherwise. Conversations, and treatment escalation planning must be a priority. Ensure "do not attempt cardiopulmonary resuscitation" (DNACPR) decisions are well documented and communicated.

Medical and nursing care for those who are at the end of life must follow local/ national policy.

Resuscitation of adult COVID-19 patients in acute hospital settings

Identify as early as possible any patients with a COVID-19 like illness, who are at risk of acute deterioration or cardiac arrest. Take appropriate steps to prevent cardiac arrest and avoid unprotected CPR.

Use of physiological track-and-trigger systems (e.g. NEWS2) will enable early detection of acutely ill patients. The NEWS2 scoring system for oxygen supplementation is binary. In patients with COVID-19 infection, once hospitalised and treated with oxygen, their oxygen requirement might increase rapidly if their respiratory function deteriorates but this may not result in any additional significant increase in the NEWS2 score. Therefore, in patients with COVID 19, all staff should be aware that ANY increase in oxygen requirements should trigger an escalation call to a competent clinical decision maker. This should be accompanied by an initial increase in observations to at least hourly until a clinical review happens, if this has not already happened as a result of NEWS2.
https://www.rcplondon.ac.uk/news/news2-and-deterioration-covid-19

For those for whom resuscitation would be inappropriate, decisions must be made and communicated. Equipment must be made readily available to protect staff during resuscitation attempts. It is acknowledged that this may cause a brief delay to starting chest compressions, but the safety of staff is paramount.

Version 5. Published 1 May 2020.

Appendix 7: Resuscitation Council (UK) Statement on PHE PPE Guidance

Resuscitation Council UK

Updated RCUK Statement on PHE PPE Guidance:
28 April 2020

RCUK recognises the statements made by Public Health England (PHE) on 24 and 27 April on the issue of NERVTAG's consideration of chest compressions as potential AGPs and the associated guidance to NHS Trusts. NERVTAG's appraisal focuses purely on the theoretical science of AGPs, without appropriate consideration of the clinical realities of conducting repeated chest compressions as part of a resuscitation attempt.

RCUK's principal focus throughout the Covid-19 pandemic has been to balance the potential for positive outcomes for patients with safety for Health Care Professionals (HCPs). RCUK guidance is in accordance with international best practice issued by organisations such as WHO, ILCOR, European CDC and ERC. In the absence of high-quality evidence to state that anything less than AGP PPE is sufficient for healthcare professional safety, Resuscitation Council UK maintains its belief that AGP PPE provides the safest level of protection when administering chest compressions, CPR, and advanced airway procedures in known or suspected COVID-19 patients. For this reason, we welcome the fact that PHE's guidance of 24 April now aligns with that of RCUK, inasmuch as it allows Trusts to opt for AGP levels of PPE if they consider this appropriate to best ensure HCP safety.

We recommend that Trusts adopt this approach, thereby seeking to ensure appropriate protection for their staff. We would also urge HCPs engaged in resuscitation in Covid-19 circumstances to highlight this aspect of the amended PHE guidance to their Trusts, to best ensure their safety and that of their colleagues and families.

resus.org.uk
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Appendix 8; Putting on (donning) personal protective equipment (PPE)

COVID-19

Public Health England

Putting on (donning) personal protective equipment (PPE)

Use safe work practices to protect yourself and limit the spread of infection

- keep hands away from face and PPE being worn
- change gloves when torn or heavily contaminated
- limit surfaces touched in the patient environment
- regularly perform hand hygiene
- always clean hands after removing gloves

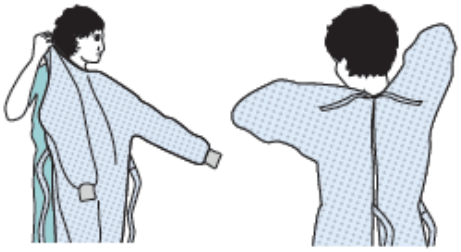
Pre-donning instructions

- ensure healthcare worker hydrated
- tie hair back
- remove jewellery
- check PPE in the correct size is available

Putting on personal protective equipment (PPE). The order for putting on is gown, respirator, eye protection and gloves. This is undertaken outside the patient's room.

Perform hand hygiene before putting on PPE

1 **Put on the long-sleeved fluid repellent disposable gown** - fasten neck ties and waist ties.



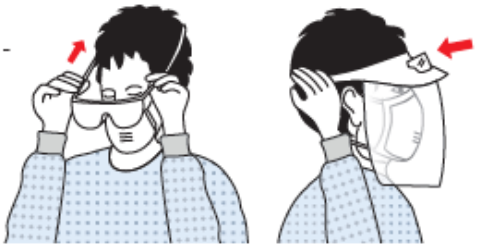
2 **Respirator.**

Note: this must be the respirator that you have been fit tested to use. Where goggles or safety spectacles are to be worn with the respirator, these must be worn during the fit test to ensure compatibility

Position the upper straps on the crown of your head, above the ears and the lower strap at the nape of the neck. Ensure that the respirator is flat against your cheeks. With both hands mould the nose piece from the bridge of the nose firmly pressing down both sides of the nose with your fingers until you have a good facial fit. If a good fit cannot be achieved **DO NOT PROCEED**

Perform a fit check. The technique for this will differ between different makes of respirator. Instructions for the correct technique are provided by manufacturers and should be followed for fit checking

3 **Eye protection** - Place over face and eyes and adjust the headband to fit



4 **Gloves** - select according to hand size. Ensure cuff of gown covered is covered by the cuff of the glove.

Appendix 9; Removal of (doffing) personal protective equipment (PPE)

COVID-19

Public Health England

Removal of (doffing) personal protective equipment (PPE)

PPE should be removed in an order that minimises the potential for cross contamination. Unless there is a dedicated isolation room with ante room, PPE is to be removed in as systematic way before leaving the patient's room i.e. gloves, then gown and then eye protection.

The FFP3 respirator must always be removed outside the patient's room.

Where possible (dedicated isolation room with ante room) the process should be supervised by a buddy at a distance of 2 metres to reduce the risk of the healthcare worker removing PPE and inadvertently contaminating themselves while doffing.

The FFP3 respirator should be removed in the anteroom/lobby. In the absence of an anteroom/lobby, remove FFP3 respirator in a safe area (e.g., outside the isolation room).

All PPE must be disposed of as healthcare (including clinical) waste.

The order of removal of PPE is as follows:

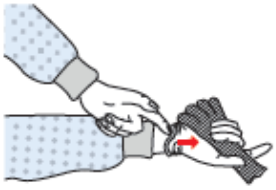
1 Gloves – the outsides of the gloves are contaminated

Firstly:

- grasp the outside of the glove with the opposite gloved hand; peel off
- hold the removed glove in gloved hand

Then:

- slide the fingers of the un-gloved hand under the remaining glove at the wrist
- peel the remaining glove off over the first glove and discard



Clean hands with alcohol gel

2 Gown – the front of the gown and sleeves will be contaminated

Unfasten neck then waist ties

Pull gown away from the neck and shoulders, touching the inside of the gown only using a peeling motion as the outside of the gown will be contaminated

Turn the gown inside out, fold or roll into a bundle and discard into a lined waste bin

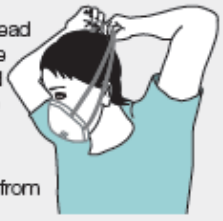
3 Eye protection (preferably a full-face visor) - the outside will be contaminated

To remove, use both hands to handle the retraining straps by pulling away from behind and discard.

4 Respirator – In the absence of an anteroom/lobby remove FFP3 respirators in a safe area (e.g., outside the isolation room). Clean hands with alcohol hand rub.

Do not touch the front of the respirator as it will be contaminated

- lean forward slightly
- reach to the back of the head with both hands to find the bottom retaining strap and bring it up to the top strap
- lift straps over the top of the head
- let the respirator fall away from your face and place in bin



5 Wash hands with soap and water

Appendix: 10

NHS
North West
Boroughs Healthcare
NHS Foundation Trust

Heat Exchange Filter (HME) - Now attached to the Bag-Valve-Mask (BVM).

A Single-use Heat Moisture Exchange Filter is now attached to the Adult Bag-Valve-Mask within each emergency red bag/resuscitation trolley.

The filter is to reduce the risk of COVID-19 transmission when ventilating a patient who has suspected or confirmed COVID -19.

The BVM (Including the HME Filter) **MUST** be safely disposed of following use.

Replacement BVM (with HME Filters attached) are available from the Resuscitation store rooms on each site.

Version 1 June 2020