NHS
National Blood Transfusion Committee

GUIDANCE AND TRIAGE TOOL FOR THE RATIONING OF BLOOD FOR MASSIVELY BLEEDING PATIENTS DURING A SEVERE NATIONAL BLOOD SHORTAGE

Executive summary

The purpose of this document is to guide healthcare professionals in triaging patients in need of massive transfusion during a severe blood shortage (red phase of blood shortage plan). It will become operational where demand for blood greatly exceeds supply, and where all measures to manage supply and demand have been exhausted.

The document provides an emergency framework and triage tool to guide the allocation of blood components for patients with massive haemorrhage during significant shortage of blood stocks. It is based on the evidence- and ethics-based Canadian framework.[1]

The guidance complements existing national shortage plans for red cells[2,3] and platelets[4]. In the event of shortages of all blood components this document should be used and supersedes other component specific documents [2,3,4]. Its aim is to support clinical decision-making by detailing an approach for rationing resources that protects the community by maximising benefits and sharing resources fairly.

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Background

Major haemorrhage is a clinical emergency associated with most specialities, but particularly cardiothoracic and vascular surgery, obstetrics, trauma, and gastroenterology.[5] The care of the patients requires haemorrhage control and prevention of the shock induced coagulopathy. Early haemostatic resuscitation with blood transfusion support saves lives but is resource intensive.

In circumstances of potential or impending significant blood shortage, all organisational efforts should be made to reduce the impact. The use of blood components may need to be

temporarily rationed including for patients with major haemorrhage. During this period, there should be fair, equitable and transparent distribution of blood components to individual patients.

The National Blood Transfusion Committee (NBTC) has supplied organisational guidance to address blood shortages. National plans for red cell and platelet shortages describe three phases: **green** (supply generally meets demand), **amber** (blood inventory is insufficient to continue usual transfusion practice) and **red** (severe, prolonged shortage).[2,4] In addition, the NBTC have supplied guidance for the specification of emergency red cells.

The national guidance recognises that clinical judgement and the specific context of the blood shortage are both essential to inform blood allocation. This emergency framework for clinical transfusion triage for massively bleeding patients is based on an evidence-based Canadian framework.[1] The focus of the plan is red cell shortage, although it recognises that some patients with massive haemorrhage may also require haemostatic components.

Traditional definitions of massive haemorrhage may be inappropriate in acute clinical situations. Individual hospitals may wish to develop more dynamic definitions. Examples include an expected blood loss of one blood volume in less than 24 hours: 0.5 x blood volume loss in 3 hours, or transfusion of four or more units of red blood cells in one hour.

Methods

This guidance was prepared by a working group on behalf of the NBTC in England whose overall aim is to promote good transfusion practice by providing a framework to channel information and advice to hospitals and Blood Services in England on best practice; the NBTC is accountable to NHS England. Its content is based on existing guidelines for the management of blood shortages[2-4], and the Canadian emergency framework for clinical transfusion triage for massively bleeding patients.[1] It was reviewed by members of the NBTC, which is accountable to the National Medical Director of NHS England through the Chief Scientific Officer. Its membership includes representatives of the medical Royal Colleges, specialist societies and other professional organisations with an interest in blood transfusion, the Chairs of the Regional Transfusion Committees in England, and patient representatives. The first edition of this document was prepared as part of the emergency response to the coronavirus pandemic. Comments and suggestions were sought and received both verbally

and in writing from the members of the NBTC at and after its March 30th, 2020 meeting. The 2021 review recognises the lessons found during this period [6] and reflects further feedback.

Operation of the plan

Should a national red cell shortage occur, NHS Blood & Transplant (NHSBT) will activate its emergency plan with the support of NHS England if necessary. It will notify Transfusion Laboratory Managers, Transfusion Practitioners & Consultant leads for Transfusion and in extreme national shortages, the CEO and Medical Directors to implement their Emergency Blood Management Arrangements (EBMA). Those arrangements include setting up an Emergency Blood Management Group (EBMG) or equivalent.[2,4]

A 'Red Phase' shortage will be declared if there is a severe shortage of red cells, or if there is an imminent severe threat to the supply of red cells. It is essential that senior hospital managers (i.e. Chief Executive and Medical Director) and clinicians support the EBMA and the arrangements for transfusion triage. NHS Trusts should ensure that local policies detailing transfusion triage procedures are easily accessible to all laboratory and clinical staff to aide co-operation and understanding.

Hospitals may already have established an independent multidisciplinary clinical triage team for resource allocation in advance of a shortage. This team should receive comprehensive information on the triage framework before a blood shortage is declared and have adequate background knowledge in terms of triaging critically ill patients, have broad based knowledge of resources and capabilities of the organisation. Transfusion could be included in these local arrangements during a 'Red phase' of blood shortage. If not, we recommend that senior managers and experienced physicians in roles outside the direct care of potentially affected patients are employed to help with rationing decisions related to transfusion, so that front-line clinicians are relieved of this burden. The triage team leader should have final responsibility, authority, and accountability over clinical decisions. It is important that all decisions are documented accurately and in real time in patient's medical records. Teams should ensure adequate clinical handover between teams and between shifts.

The emergency framework for rationing blood for patients predicted to need massive transfusion

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Goal: To provide blood transfusions in an ethical, fair, and transparent way. All efforts should be made to minimise suffering and maximise the use of blood alternatives, as appropriate, for those who are triaged to 'no transfusion' due to insufficient resources. Use the Clinical Frailty Scale (CFS) when appropriate, available from the NHS Specialised Clinical Frailty Network, to assess baseline health and inform discussions on treatment expectations. [7]

Inclusion Criteria: All patients needing, or predicted to need, massive transfusion due to massive haemorrhage (as defined above) during a 'Red Phase' blood shortage.

All such patients should have access to all available blood conservation strategies. These include (but are not limited to) intravenous/oral iron, haemostatic agents (Prothrombin Complex Concentrate (PCC) Fibrinogen Concentrate, LyoPlas), anti-fibrinolytics, erythropoiesis-stimulating agents, intraoperative cell salvage, interventional radiological procedures, rapid access to endoscopy, and non-invasive surgery. Early surgical intervention, attention to the management of coagulopathy and where appropriate intra-operative cell salvage may be of value in patients with massive haemorrhage.

The **first aim should be the early identification of those patients who might need massive transfusion**, and to triage patients to optimise for transfusion support. Guidance and tools such as those developed by NICE and the Royal College of Physicians may be helpful for triaging patients.[8,9] Triage is a dynamic process and patients should be actively re-assessed based on the following general and condition specific exclusion criteria.

Any decisions made to begin, withdraw, or withhold care should follow the shared decision-making policies of the NHS. This means that these decisions should include the patient and their wishes (as much as is possible for the given situation) and, if appropriate, the patient's carers.

General Exclusion Criteria

The general exclusion criteria should be considered for all patients needing massive transfusion support (see Appendix A). An algorithm for triage is shown in Appendix A.

Reassessment for Triaged Patients-should be led by relevant clinical lead with the aid of a member of the EBMG

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1) **Patients triaged to no blood components:**

   Patients triaged to no transfusion care should be re-assessed at a minimum of every 24 hours. A system should be in place to support physicians caring for the patient if an improvement in a patient's status would now qualify them to be re-triaged to active transfusion management or if the blood shortage is resolved.

2) **Patients triaged to blood components:**

   Patients triaged to active transfusion care should be assessed at start of massive haemorrhage resuscitation, and after a minimum of every 8 units of red blood cells (adjusted for patient size, for example for children) or every 24 hours for patients receiving less than 8 units of blood or until cessation of haemorrhage (or more often – e.g., every 4 units if deemed necessary). If there is persistent bleeding following surgical intervention, there should be close attention to the correction of coagulopathy and consideration of return to theatre.

   At each assessment, the triage team should assess and document the patient's status and overall futility for continuation of active treatment, using the following variables to guide their decisions on the value of continued transfusions:

   i) sequential organ failure assessment (SOFA) score.
   ii) total blood components used.
   iii) the predicted need for ongoing transfusion support.
   iv) ability to control bleeding with either surgery or other procedure (e.g., interventional radiology, endoscopy).

Patients with a SOFA score >11, who have a continued need for large amounts of blood components, and where there is no foreseeable ability to control blood loss should be triaged to palliative care.

The ReSPECT document (Appendix B) from the resuscitation council [10] can be used to document this as all multidisciplinary teams use it and it can be placed into patient notes.

Ethical framework for triaging patients to active transfusion care

There is existing guidance to aid decision making where two or more patients, who equally qualify for active transfusion management, require blood components at the same time. The British Medical Association has drawn attention to a Government ethical framework[11] designed

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to support thinking through strategic aspects of decision-making during a pandemic.[12] It provides several guiding principles which equally apply to a blood shortage scenario' or where a pandemic may result in a severe blood shortage:

Equal respect: everyone matters, and everyone matters equally, but this does not mean that everyone will be treated the same.

Respect: keep people as informed as possible; give people the chance to express their views on matters that affect them; respect people's personal choices about care and treatment.

Fairness: everyone matters equally. People with an equal chance of benefiting from a resource should have an equal chance of receiving it – although it is fair to ask people to wait if they could get the same benefit later.

Working together: we need to support each other, take responsibility for our own behaviour, and share information appropriately.

Reciprocity: those who take on increased burdens should be supported in doing so

Keeping things in proportion: information communicated must be proportionate to the risks; restrictions on rights must be proportionate to the goals.

Flexibility: plans must be adaptable to changing circumstances.

Open and transparent decision-making: good decisions will be as inclusive, transparent, and reasonable as possible. They should be rational, evidence-based, the result of a reasonable process and practical in the circumstances.

Triage working group on behalf of the National Blood Transfusion Committee
Revised 27 07 2021

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References

1. National Advisory Committee on Blood and Blood products, Canada. Working group on emergency disposition of blood during a red phase blood shortage. Emergency framework for rationing of blood for massively bleeding patients during a red phase of a blood shortage. 2012. https://nacblood.ca/resources/shortages-plan/emergency-framework-final.pdf

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3. National Blood Transfusion Committee. Appropriate Specification for Emergency Red Cells. 20 October 2020. https://www.transfusionguidelines.org/uk-transfusion-committees/national-blood-transfusion-committee/responses-and-recommendations

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11. Department of Health and Social Care. Pandemic flu. Pandemic flu planning information for England and the devolved administrations, including guidance for organisations and businesses. Ethical framework. https://www.gov.uk/guidance/pandemic-flu#ethical-framework

12. British Medical Association. COVID-19. Ethical issues – a guidance note. https://www.bma.org.uk/media/2360/bma-covid-19-ethics-guidance-april-2020.pdf

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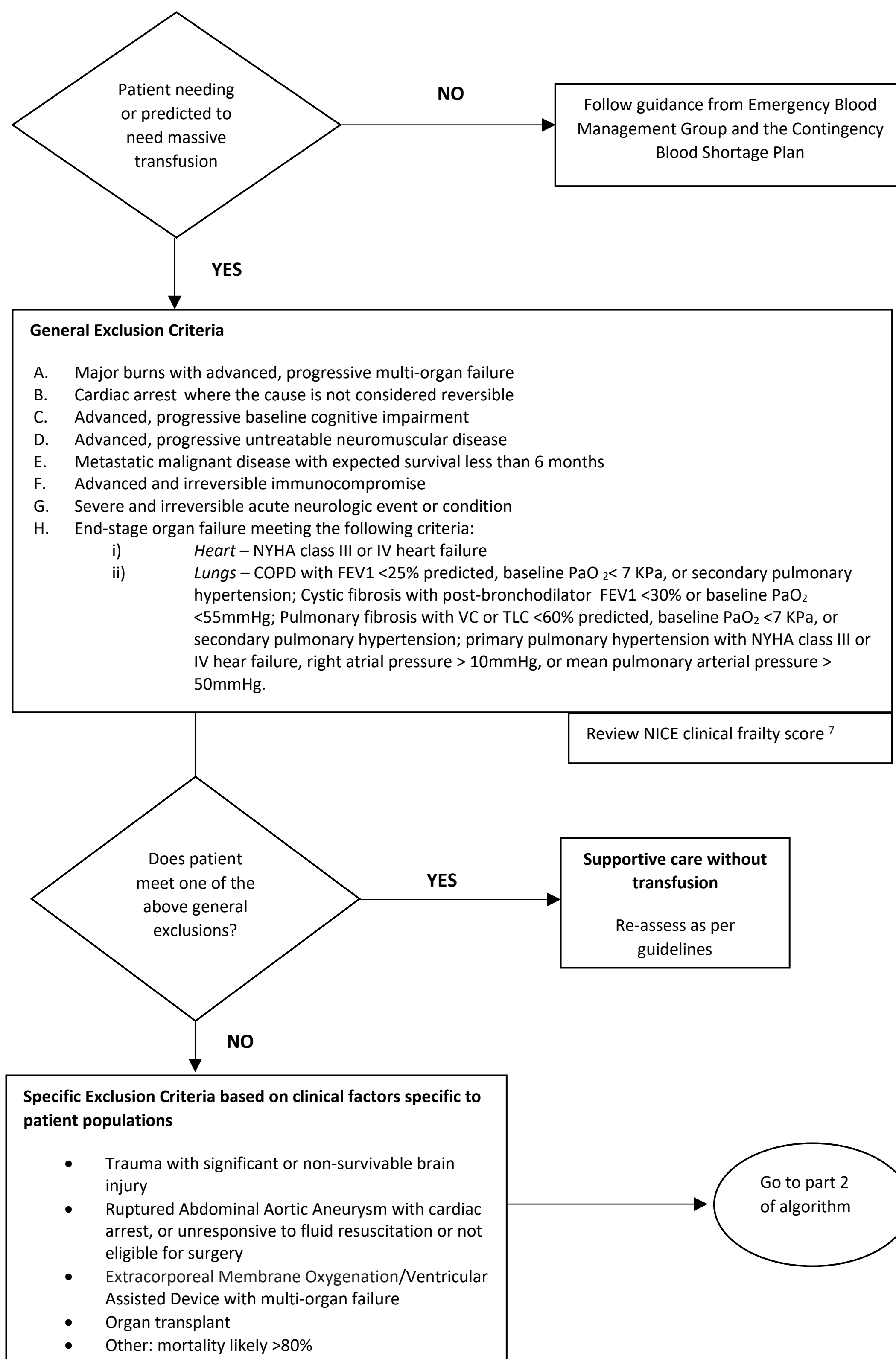
Appendix A

Emergency Framework for Blood Rationing in the context of severe national shortage-Algorithm for Triage Team (Part 1)



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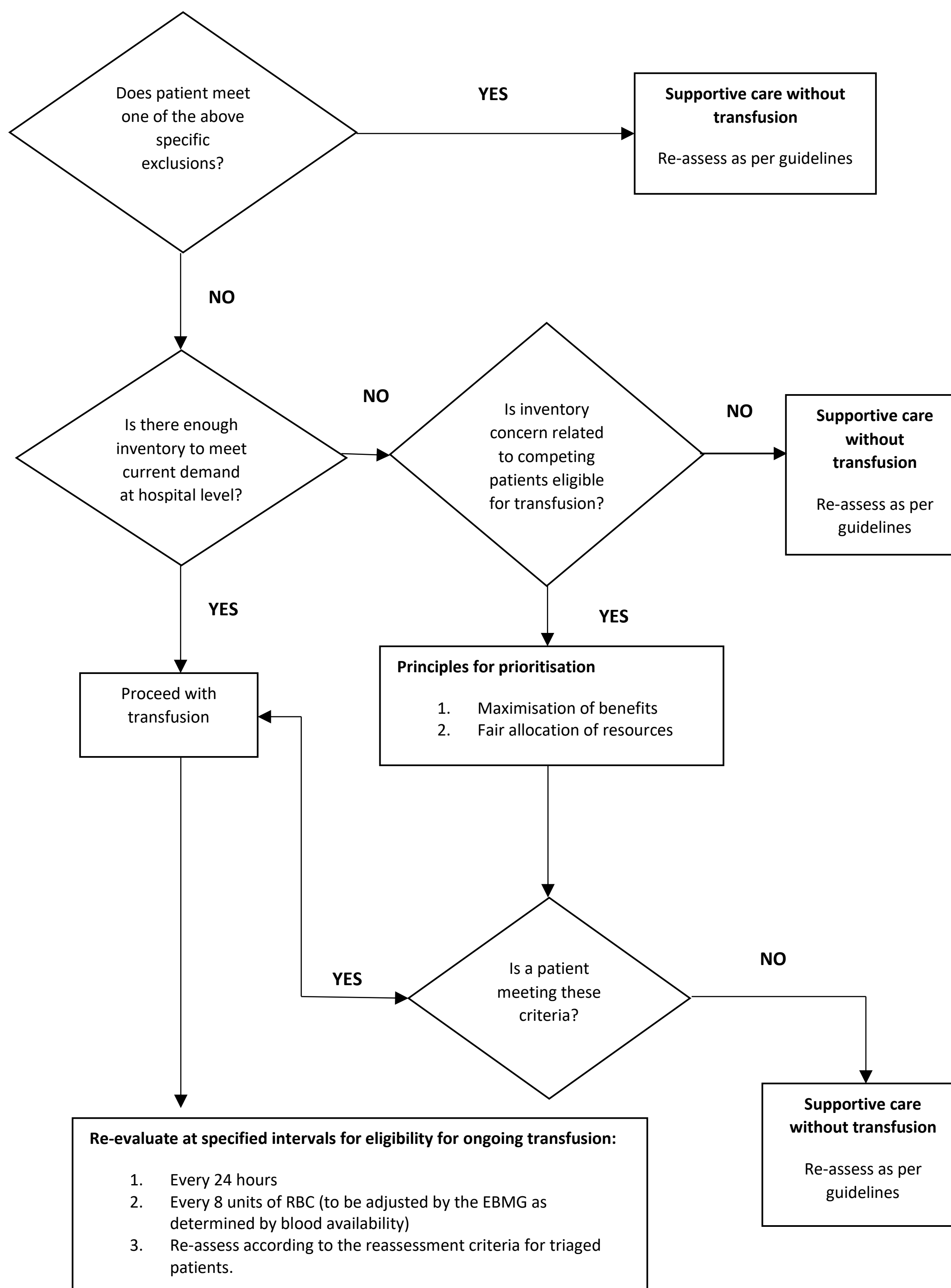
Emergency Framework for Blood Rationing - Algorithm for Triage Team (Part 2)



Figures for Appendix A have been adapted from *Emergency framework for rationing of blood for massively bleeding patients during a red phase of a blood shortage.*[1]

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Appendix B

ReSPECT Recommended Summary Plan for Emergency Care and Treatment for:

Preferred name

1. Personal details

Full name

NHS/CHI/Health and care number

Date of birth

Address

Date completed

2. Summary of relevant information for this plan (see also section 6)

Including diagnosis, communication needs (e.g. interpreter, communication aids) and reasons for the preferences and recommendations recorded.

Details of other relevant planning documents and where to find them (e.g. Advance Decision to Refuse Treatment, Advance Care Plan). Also include known wishes about organ donation.

3. Personal preferences to guide this plan (when the person has capacity)

How would you balance the priorities for your care (you may mark along the scale, if you wish):

Prioritise sustaining life, even at the expense of some comfort

Prioritise comfort, even at the expense of sustaining life

Considering the above priorities, what is most important to you is (optional):

4. Clinical recommendations for emergency care and treatment

Focus on life-sustaining treatment as per guidance below

Focus on symptom control as per guidance below

Now provide clinical guidance on specific interventions that may or may not be wanted or clinically appropriate, including being taken or admitted to hospital +/- receiving life support:

CPR attempts recommended Adult or child

For modified CPR **Child only, as detailed above**

CPR attempts **NOT** recommended Adult or child

5. Capacity and representation at time of completion

Does the person have sufficient capacity to participate in making the recommendations on this plan? **Yes / No**

Do they have a legal proxy (e.g. welfare attorney, person with parental responsibility) who can participate on their behalf in making the recommendations? **Yes / No / Unknown**
If so, document details in emergency contact section below

6. Involvement in making this plan

The clinician(s) signing this plan is/are confirming that (select A,B or C, OR complete section D below):

A This person has the mental capacity to participate in making these recommendations. They have been fully involved in making this plan.

B This person does not have the mental capacity to participate in making these recommendations. This plan has been made in accordance with capacity law, including, where applicable, in consultation with their legal proxy, or where no proxy, with relevant family members/friends.

C This person is less than 18 (UK except Scotland) / 16 (Scotland) years old and (please select 1 or 2, and also 3 as applicable or explain in section D below):

1 They have sufficient maturity and understanding to participate in making this plan

2 They do not have sufficient maturity and understanding to participate in this plan. Their views, when known, have been taken into account.

3 Those holding parental responsibility have been fully involved in discussing and making this plan.

D If no other option has been selected, valid reasons must be stated here. Document full explanation in the clinical record.

Record date, names and roles of those involved in decision making, and where records of discussions can be found:

7. Clinicians' signatures

Designation (grade/speciality)	Clinician name	GMC/NMC/ HCPC Number	Signature	Date & time

Senior responsible clinician

8. Emergency contacts

Role	Name	Telephone	Other details
Legal proxy/parent			
Family/friend/other			
GP			
Lead Consultant			

9. Confirmation of validity (e.g. for change of condition)

Review date	Designation (grade/speciality)	Clinician name	GMC/NMC/ HCPC number	Signature

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Appendix B – taken from ReSPECT. COVID-19 Resources. https://www.resus.org.uk/respect

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