The Royal Wolverhampton NHS Trust

CP62
Organ Donation (Solid Organs)

Contents

Appendices:

1.0 Policy Statement (Purpose / Objectives of the policy)

1.1 Background

Organ transplantation is often the treatment of choice for end stage organ failure. Organs including kidneys, liver, heart, lungs and pancreas can all be transplanted. There has been an increase in demand for organs suitable for transplantation whilst the supply of transplantable organs is diminishing. This is due to improvements in paramedic care and neurosurgical practice and a simultaneous decrease in the number of deaths from road traffic collision. The number of patients awaiting transplantation greatly exceeds the number of organs available. It is therefore essential to maximise the potential number of organs available from the existing potential donor pool.

Due to the reduced number of Donation after Brain Death donors, the transplant community, in conjunction with intensive care units, has implemented a Donation after Circulatory Death Programme (formally Non-Heart Beating Donation). The Royal Wolverhampton NHS Trust (RWT) is committed to the Donation after Circulatory Death Programme.

A potential donor is any patient who meets the criteria for Diagnosis of Death using Neurological Criteria, or one where there has been a decision that further intensive care intervention is not beneficial and in whom ventilatory support is to be withdrawn (Donor after Circulatory Death) leading to the expectation of imminent circulatory death (NHS Blood and Transplant Definitions 2010). The diagnosis of death in these circumstances is explained in A Code of Practice for the Diagnosis of Death (2008) and Legal Issues Relevant to Non-heart beating organ donation (2009).

This policy aims to maximise organ donation potential within RWT.

It is possible for children to become organ donors. However, the Trust does not provide Paediatric Intensive Care Services. This is provided by Paediatric Intensive Care Units regionally, namely Birmingham Children's Hospital and The University Hospital North Midlands. All critically ill children (under 16 years) are stabilised and transferred by the Paediatric Retrieval Team (Kids Intensive Care Decision and Support). As these critically ill patients are always transferred to Paediatric Intensive Care Units outside the Trust, it is not deemed likely that the Trust will participate in organ retrieval and donation in children. However, in the exceptional circumstance that a young person (over 16) is admitted on the adult Integrated Critical Care Unit, organ donation will be considered, and referral will be made where the decision has already been made that withdrawal of life sustaining treatment is in the best interest of the patient.

However, the Trust is a level 3 Neonatal Unit, and as per the NHS Blood and Transplant Paediatric and Neonatal Strategy (2019), Specialist Nurse-Organ Donation will be auditing level 3 Neonatal Units, to identify what the potential is and to educate and support the unit nursing and medical staff to refer potential donors. This work will include the promotion, education and facilitation of donation from the Neonatal Unit.

The Policy provides the framework to ensure that potential and actual organ donors are referred and managed in accordance with current legislation and best practice guidance.

1.2 National Guidance

The Policy supports the flowing advice and recommendations from several authorities.

NHS Blood and Transplant Organ Donation and the Emergency Department: A Strategy for Implementation of Best Practice (2016)

NHS Blood and Transplant Organ Donation and Transplantation 2030: Meeting the Need

NHS Blood and Transplant Paediatric and Neonatal Strategy (2019)

NHS Blood and Transplant (2017) Consent and Authorisation: Clinical Guidance around gaining consent and authorization from a donor family.

NICE clinical guideline 135 – Organ donation (2011). This covers donor identification and referral and the family approach.

UK Donation Ethics Committee – guidance on controlled Donor after Circulatory Death (2011).

GMC – Treatment and care towards the end of life (2010).

Report of the Organ Donation Taskforce (2008).

Human Tissue Act (2004)

Human Tissues Regulations (2020)

The Deemed Consent Act (2019)

In 2003, the United Kingdom hospital Policy for “Organ and Tissue Donation” was produced by UK Transplant. This provided a sound basis for donation practice and amalgamated current legislation and guidance into one document. Many of the documents have now been superseded; however, the best practice policy advocated remains relevant.

1.3 Aims

To identify all potential donors, both donation following diagnosis of death using neurological criteria: Donor after Brain Death and Donation after Circulation Death.

To refer all potential donors to the embedded Specialist Nurse-Organ Donation or, out of hours, the Regional on call Specialist Nurse-Organ Donation (03000 20 30 40).

To ensure that the NHS Organ Donor Register is accessed by the Specialist

Nurse-Organ Donation for all potential donors.

To ensure that the families of all suitable patients are approached by the Specialist Nurse-Organ Donation and the clinical team to offer the option of organ and, or tissue donation. Collaborative requesting is the gold standard approach with the clinician introducing the Specialist Nurse-Organ Donation to the potential donor family.

If the patient is not on the Organ Donation Register, to determine from the next of kin whether the potential donor had, during their lifetime, expressed a wish to donate. To gain informed consent from the appropriate next of kin within the legislation of the Human Tissue Act (2004).

If no wish known, then to support the Specialist Nurse-Organ Donation, in assessing if the patient meets the Deemed Criteria

To ensure that clear and accurate information is given to the potential donor's next of kin, with regard to organ and tissue donation.

To provide clear and open communication about the process of organ donation in a sensitive manner.

To ensure that all communications are accurately documented in the patient's notes.

To ensure that reasons for not proceeding with organ donation are recorded, including the reasons for family refusal.

To provide optimal donor management prior to organ retrieval and therefore to optimise the transplanted organ outcome.

To ensure the Trust, with delegation via the Organ Donation Group, participates in audit and research regarding compliance to above standards and performance.

1.4 Scope

This policy relates to all patients who fit the current criteria for Organ Donation and applies to all inpatient areas of the Trust and all staff employed by the Trust including students, locum and agency staff.

2.0 Definitions

Suspected Neurological Death - A patient who meets all the following criteria: apnoeic; unresponsive coma of known aetiology; ventilated; fixed pupils.

Diagnosis of death using Neurological Criteria (DDNC) - Tests for diagnosing death by neurological criteria as defined in the Guidelines for the Diagnosis of Death (2009). These tests lead to the legal definition of death by neurological criteria or Brain Stem Death.

Specialist Nurse Organ Donation (SN-OD). Specialist Nurse who is specially trained in all aspects of organ donation, employed by NHS Blood and Transplant.

Specialist Requester Nurse Organ Donation (SR-OD). A Specialist Nurse-Organ Donation, employed by NHS Blood and Transplant, who has undertaken further advanced training in approaching families for consent for organ donation.

Contraindications - The only absolute contraindication to organ donation is vCJD (or the likely diagnosis). All other pathologies must prompt referral. HIV and malignancy are not absolute contraindications, and a referral must be made.

Donor after Brain Death (DBD) - A patient whose death has been or is likely to be confirmed dead using neurological criteria, with no absolute contraindication to solid organ donation. For the purpose of this policy, this group will be referred as Donor after Brain Death.

Non-eligible Potential Donor after Brain Death - A patient, whose death has been confirmed using neurological criteria, who has an absolute contraindication to organ donation.

Donor after Circulatory Death (DCD) – Patient who is having planned withdrawal of ventilatory support and is expected to have death diagnosed using circulatory death criteria with no absolute contraindication to solid organ donation. For the purpose of this policy, this group will be referred as Donor after Circulatory Death.

Non-eligible Donor after Circulatory Death – Patient who is an expected circulatory death, who has an absolute contraindication to organ donation.

Referral - A patient in whom neurological death is suspected or withdrawal of treatment is planned who was discussed with the Specialist Nurse-Organ Donation prior to End of Life family discussions.

Timely Referral - Referral to the Specialist Nurse-Organ Donation, allowing adequate time for the Specialist Nurse-Organ Donation to attend the patient prior to any donation conversation with the next of kin and before the confirmation of neurological death or withdrawal of ventilation.

Planned Approach - A conversation between the Specialist Nurse-Organ Donation and clinician and named nurse to discuss how the formal approach to the family will be made.

Formal Approach

Collaborative approach - A formal approach to the family for consent to organ donation, at which the clinician and Specialist Nurse-Organ Donation were jointly involved.

Patient Consent - A potential donor, for whom consent has been given in life by the patient, by any of the following methods: registering their wishes on the Organ Donor Register; carrying a donor card; verbally expressing their wish to become an organ donor after their death; in writing to the family expressing their wishes or in their will.

Deemed Consent: The patient has not registered a decision on the Organ Donation Register, or verbalized or documented a decision with family and, or friends, and meets the criteria for Deemed Consent, as set out by Organ Donation Act 2019.

Family Consent - A potential donor, for whom consent has been given, by the family member in the highest-ranking relationship, where first person or deemed consent does not apply.

Family Declined Donation - Families of potential donors who were formally approached who declined solid organ donation.

Potential Donor Audit (PDA) - Commenced in 2003 by UK Transplant. Principal aim is to determine the potential for Organ donation in the UK, maintained by the Specialist Nurse-Organ Donation and fed back to relevant groups (i.e. Organ Donation Committee, NHS Blood and Transplant).

Organ Donor Register (ODR) - The Organ Donor Register records people's agreement to use their organs for transplant in the event of their death.

Family - The Family may be the next of kin, relatives or nominated representatives as defined by the Human Tissue Act 2004.

Highest Ranking Relative – Person nearest the top of the hierarchy as described in the Human Tissue Act 2004.

3.0 Accountabilities

Healthcare organisations have an obligation to provide safe and effective care to their patients and appropriate training to their staff. A suitable infrastructure is required to establish and support these activities. The following individuals will be responsible for implementing this policy throughout the organisation:

Chief Medical Officer

The Chief Medical Officer will, along with the Chief Executive, ensure that an appropriate Organ Donation policy which respects patients' rights is in place, understood and accessible by all relevant staff and that such policy complies with national / international guidelines and reflects best evidence based practice.

Organ Donation Group

The Organ Donation Group, including the Chairperson, Specialist Nurses-Organ Donation and Clinical Lead for Organ Donation, must ensure a proactive approach to the facilitation of organ donation adhering to the Organ Donation Policy. Adherence to Policy, Potential Donor Audit and identification and

referral and consent rates must be discussed at each Organ Donation Group meeting and must be included in feedback reports to the Trust Board.

Specialist Nurse-Organ Donation, Clinical Lead for Organ Donation and Organ Donation Link Nurses are responsible for ensuring that this policy is disseminated to all appropriate staff and that staff education and regular updates are provided.

Critical Care and Emergency Department Medical and Nursing Staff are responsible for ensuring that all patients meeting the agreed trigger criteria are notified to the Specialist Nurse-Organ Donation in a timely manner.

Midlands Organ Donation Services Team is responsible for ensuring that potential donor referrals are taken according to the NHS Blood and Transplant Referral Standard. It is also responsible for ascertaining if patients referred are suitable for organ donation. Midlands Organ Donation Services Team are also responsible for accessing the Organ Donor Register to ascertain if patients have registered an agreement to use their organs for transplantation in the event of their death.

Medical and Nursing Staff in the relevant department and Midlands Organ Donation Services Team are responsible for planning the formal approach to a patient's family.

Midlands Specialist Nurses-Organ Donation are responsible for gaining consent from the appropriate next of kin within the legislation of the Human Tissue Action 2004 and ensuring that clear and accurate information is given regarding organ donation.

Midlands Specialist Nurses-Organ Donation and appropriate Medical Staff are responsible for ensuring coronial consent is gained where necessary for donation to proceed and that any specific requests from the coroner are honoured.

Midlands Specialist Nurses-Organ Donation must ensure accurate documentation in patient's medical notes.

Relevant Medical and Nursing Staff and Midlands Specialist Nurses-Organ Donation are responsible for ensuring that all aspects of donor management are implemented according to NHS Blood and Transplant guidelines, Intensive Care Society guidelines and local donor management guidelines.

4.0 Policy Detail

4.1 Organ Donor Register and Human Tissue Act

To ensure adherence to the Human Tissue Act guidelines, the Organ Donation Register must be consulted to ascertain whether the potential donor is registered before approaching families. The Human Tissue Act allows known wishes, whether it is via Organ Donation Register, Donor Card or a Will, to be considered as valid consent for donation for transplantation only.

The Specialist Nurse-Organ Donation must ensure that all reasonable attempts are made to contact the highest ranking relative.

Families still have the right to decline donation if someone is on the Organ Donation Register however the knowledge of the potential donor's wishes can be key in the decision-making process.

In accordance with the Human Tissue Act guidance, if there is no valid consent then donation cannot proceed. If there is no next of kin then the Organ Donation Register may be considered valid consent, with some exclusions regarding storage of organs. The Chief Executive can no longer give consent.

The Human Tissue Act gives clear guidance regarding the hierarchy of next of kin and all reasonable attempts must be made to ensure that the appropriate relative is contacted for consent purposes.

4.2 Coroner

The need for an inquest and even the requirement for postmortem examination does not preclude donation and must not prevent referral of all suitable patients.

The coroner must be informed of potential donors where it is considered necessary for a referral to H.M. Coroner as per the guidance given in the Coroners Act 2009, or in unexplained circumstances. It is the consultant's decision as to whether a referral needs to be made to the coroner and the Specialist Nurse-Organ Donation must discuss this prior to donation.

Coroners are generally supportive of organ donation and will work with the police and pathologists to support the process. They may make specific requests and restrictions to facilitate all parties' needs.

The Specialist Nurse-Organ Donation may make these initial contacts, however, if required, a formal referral must be made by the senior clinician or the team caring for the patient, as per hospital policy.

Certification of death where applicable must adhere to RWT Policy on the Completion of a Medical Certificate of Cause of Death.

4.3 Organ Donation Pathway

The Midlands Integrated Care Pathway must be used once a potential organ donor has been identified (Appendix 1). This provides detailed guidance for the identification, referral and management of the potential organ donor.

4.4 Early Referral

Early referral is required to the Specialist Nurse-Organ Donation (embedded or on call) as soon as the patient is either first considered to be potentially Brain Stem Dead, (prior to performing Diagnosis of Death using Neurological Criteria), or as soon as the decision has been made that further treatment is not beneficial and there is a plan to withdraw ventilatory support but before discussions with the family occur.

Early referral criteria and possible clinical indicators are shown in Appendix 1. These minimum notification criteria are agreed by the Organ Donation Group and must constitute the trigger for referral to the Specialist Nurse-Organ Donation (embedded or on-call).

Early referral to the team allows for the Specialist Nurse-Organ Donation to assess screen to a local and national transplanting centre, and a collaborative approach to be made when discussing organ donation with the family. Requesting a GP summary allows further assessment of the feasibility of organ donation.

If available, the Specialist Nurse-Organ Donation for RWT will attend prior to the arrival of the regional on-call Specialist Nurse-Organ Donation to start the assessment and consent process. The embedded Specialist Nurse-Organ Donation may be available to attend promptly if the regional Specialist Nurse-Organ Donation or Specialist Requester-Organ Donation is some distance away from the hospital.

Early referral ensures that families are not kept waiting unnecessarily.

Suitability for organ donation can be ascertained and families can be given all the relevant facts relating to the process.

It also should prevent families being approached inappropriately.

4.5 Setting of the Donor

Most solid organ donors, both Donor after Brain Death and Donor after Circulatory Death, will be patients who are ventilated on the ICCU

Referrals can also be taken from the Emergency Department. In keeping with the recent NHS Blood and Transplant Strategy for Implementing Best Practice in the Emergency Department (2016), referrals will be encouraged from Emergency Department.

Emergency Department staff, both doctors and nurses, are encouraged to refer ventilated patients to the Specialist Nurse-Organ Donation where the decision has already been made that withdrawal of life sustaining treatment is in the best interest of the patient.

If donors are referred from Emergency Department, the Specialist Nurse-Organ Donation will liaise with the ICCU and on occasions with Nucleus Theatres, to provide a more appropriate setting for management of the potential donor.

Donors from Emergency Department or ICCU will preferentially have treatment withdrawn on the ICCU, unless a special arrangement has been made for the family for this to occur elsewhere.

The potential donor must not be transferred to the operating theatre prior to declaration of death.

The potential donor will be cared for by appropriately skilled nursing staff with support from the Specialist Nurse-Organ Donation, if required.

Tissue donation referrals may be taken from any department in the hospital up to 24 hours following death. Referrals must be made to the National Referral Centre (0800 432 0559) as soon after death has occurred, as appropriate.

4.6 Diagnosing Death using Neurological Criteria

Diagnosing Death using Neurological Criteria must be undertaken in all cases where brain stem death is likely, as recommended by the Organ Donation Taskforce (DH 2008). This must be the method for the diagnosis of death in such situations regardless of whether donation is possible or not.

Guidance and information in relation to the undertaking of Diagnosing Death using Neurological Criteria and an updated form are available in **Appendix 2** and on the Faculty Intensive Care Medicine website.

Medical staff performing Diagnosing Death using Neurological Criteria are responsible for completing the Diagnosing Death using Neurological Criteria and for recording the time of death in the medical notes.

4.7 Donation after Circulatory Death

The decision to withdraw treatment is a completely separate process from the decision to refer for potential organ donation even if the family has expressed a wish to offer organs for donation.

If the patient has expressed a wish to donate or once consent has been confirmed, then continued care and intervention can be deemed as in their best interests in a broader sense, including insertion of appropriate vascular access and the commencement of medical interventions.

No procedures must be undertaken to facilitate donation that may be deemed as harmful or distressing to any of those involved.

The guidance also recommends that preparation for donation, e.g., heparinisation or cannulation before declaration of death, is permitted.

The doctor certifying death is responsible for documenting the declaration of death in the medical notes; utilising the form on page 35 of the Midlands Integrated Care pathway. This must be done before the patient is transferred to the operating theatre.

The Specialist Nurse-Organ Donation is responsible for completing relevant paperwork to ensure that correct timings are adhered to, as per NHS Blood and Transplant policy.

4.8 Approach and Gaining Consent

A collaborative approach to requesting must be made among the clinician, Specialist Nurse-Organ Donation or Specialist Requester Nurse-Organ Donation and nursing staff caring for the patient.

Members of staff (medical and nursing) accompanying a family must be suitably experienced, having undergone specialist training where possible.

The request for donation must not be made until the family is aware and understand that the patient's prognosis is very poor, and that death is imminent. Ideally, the approach for Donor after Brain Death must be made after the first set of Diagnosis of Death using Neurological Criteria so the family is clear about the prognosis. This is in line with the recommendations of the Organ Donation Taskforce that Diagnosis of Death using Neurological Criteria must be undertaken regardless of the decision to donate.

The consent documentation will be undertaken by the Specialist Nurse-Organ Donation in the presence of a member of the clinical team in accordance with UK Standards for Donor Coordinators and Management Process Description Document.

Families will be offered a copy of the NHS Blood and Transplant Consent Form.

For organ donation, this is usually a face-to-face interview with family members however this may be undertaken over the telephone if they are not able to attend the department.

All communications regarding the donation conversation must be documented in the patient's notes and in the Specialist Nurse-Organ Donation referral paperwork.

Tissue donation only consent will usually be conducted via telephone interviews (that are recorded) with the National Tissue Coordinators or by the Specialist Nurse-Organ Donation who may take face to face consent if they are present within the Trust.

4.9 Conditional Offers

Requests for directed donation in the absence of other conditions may be dealt with on a case-by-case basis by the senior staff at NHS Blood and Transplant and the DH.

4.10 Donor Family

The potential donor family will be offered recipient information and keepsakes in accordance with the UKT Donor Family Care Policy (2004).

Information and follow up will be offered by the unit in line with RWT End of Life Policy and individual unit bereavement practices.

The Specialist Nurse-Organ Donation will offer keepsakes regardless of whether a family consents to donation or not.

The Specialist Nurse-Organ Donation will ensure that the family has contact information for both the Specialist Nurse-Organ Donation and the unit.

The Specialist Nurse-Organ Donation or named nurse will ensure that the family has contact information for collection of the death certificate or is aware that they will be contacted by the coroner's office.

4.11 Donor Assessment - Recipient safety is of the utmost importance

The referring unit must give a comprehensive history so patients may be excluded as unsuitable donors at an early stage; requesting a GP summary (if relevant) supports this greatly.

The ICCU will give the Specialist Nurse-Organ Donation full access to medical notes, charts, blood results and any other relevant history.

The Specialist Nurse-Organ Donation assessment is on-going from referral until the patient is transferred to the operating theatre.

The Specialist Nurse-Organ Donation will complete a full external assessment to detect scars, tattoos, piercings and previous surgery to document on the NHS Blood and Transplant body map.

Information will be communicated to the recipient teams for them to assess the suitability of organs.

The Specialist Nurse-Organ Donation will complete the NHS Blood and Transplant Patient Assessment form with family members to ascertain medical and social history.

The Specialist Nurse-Organ Donation, after gaining consent from the family, will obtain blood samples for serological screening.

The potential donor's GP must be contacted by telephone and be sent a follow up email, for a complete assessment of their past medical history.

Any relevant information gained from the GP not given by the family will be communicated to the recipient teams even if the transplant has occurred.

Intravenous drug use, hepatitis, meningitis and malignancy may not be exclusions, and the decision to proceed with donation rests with transplant centres.

The guidance for the safety of organs can be found in *Standards for solid organs transplantation in the United Kingdom* (BTS 2003) with more specific and detailed guidance about infection being found in *Guidance on the Microbial Safety of Human Organs, Tissues and Cells used in Transplantation* (DH advisory committee on the microbial safety of blood and tissues for transplantation 2000).

The assessment continues throughout the retrieval process, and ongoing communication is vital. Any damage or problems with organs are reported in accordance with British Transplant Society recommendations.

4.12 Theatre Staff

The Specialist Nurse-Organ Donation is responsible for ensuring that relevant operating theatre staff are informed at the earliest opportunity of a potential donor and given an estimated time for retrieval.

Theatres must be kept informed of any changes and the requirements of the retrieval team.

The on-call anaesthetist must be made aware of the potential organ retrieval, what their role is, and approximately how long they will be needed for.

For Donor after Circulatory Death, there is no requirement for an anaesthetist in theatres, with the exception of lung donation, but the ICCU SPR must be available for transfer, withdrawal of treatment, and completion of the declaration of death.

Ordinarily, the Cardiothoracic Theatre Suite (area B10) adjacent to ICCU will be the preferred suite for the process of organ retrieval. However, this will be reviewed on a case-by-case need and escalation to the on-call theatre team must be made to support requirement.

4.13 Prohibition on payment of organs

The Human Tissue Act bans payment for organs. It is a criminal offence to make or receive payment in return for supplying organs from persons living or dead. It is also an offence to broker such arrangements.

Not covered by this document

- **Live Donation** - This is managed by the local transplant centres and altruistic donation via ODT.

5.0 Financial Risk Assessment

1	Does the implementation of this policy require any additional Capital resources	No
2	Does t h e implementation of this policy require additional revenue resources	No
3	Does t h e implementation of this policy require additional manpower	No
4	Does the implementation of this policy release any manpower costs through a change in practice	No
5	Are there additional staff training costs associated with implementing this policy which cannot be delivered through current training programmes or allocated training times for staff.	No
	Other comments	N/A

6.0 Equality Impact Assessment – Completed

7.0 Maintenance

7.1 The Organ Donation Group will be responsible for reviewing this policy every 3 years, or with changes in national guidance, to ensure that it reflects best evidence-based practice and also meets the needs of patients and the Trust.

8.0 Communication and Training

8.1 This policy will be communicated at Trust Induction. Approved Trust policies will be made available to staff via the Trusts Intranet page.

9.0 Audit Process

Criterion	Lead	Monitoring method	Frequency	Committee
Duties	Organ Donation Group	Policy Review	3 Yearly	Policy Group
National Potential Donor Audit	Specialist Nurse Organ Donation	Audit		NHSBT

10.0 References

NHSBT Organ Donation and the Emergency Department: A Strategy for Implementation of Best Practice (2016)

NHSBT (2017) Consent and Authorisation: Clinical Guidance around gaining consent and authorization from a donor family.

NHSBT Organ Donation and Transplantation 2030: Meeting the Need

NHSBT Paediatric and Neonatal Strategy (2019)

Human Tissue Act (2004)

Human Tissues Regulations (2020)

The Deemed Consent Act (2019)

National Institute for Health and Clinical Excellence (2011). Organ donation for transplantation: improving donor identification and consent rates for deceased organ donation.

UK Donation Ethics Committee, Academy of Medical Royal Colleges (2011). An ethical framework for controlled donation after circulatory death.

The General Medical Council (2010). Treatment and care towards the end-of-life: good practice in decision making.

Department of Health London (2009) Legal Issues Relevant to Non- heart beating Organ Donation

Academy of Medical Royal Colleges (2008) A Code of Practice for The Diagnosis and Confirmation of Death.

Department of Health London. (2008) Organs for Transplant 'A report from the Organ Donation Taskforce'

British Transplant Society (2003) Standards for solid organs transplantation in the United Kingdom.

GMC (2006) Withholding and withdrawing treatment – guidance for doctors

Mental capacity act (2005)

UK Transplant (2004). 'Donor Family Care Policy'UK Transplant. (2003) 'United Kingdom Policy for Organ and Tissue Donation'

Part A - Document Control

To be completed when submitted to the appropriate committee for consideration/approval

Policy number and Policy version: CP62 V3.0	**Policy Title** Organ Donation (Adult Solid Organs)	**Status:** Final		**Author:** Dr Shameer Gopal **Chief Officer Sponsor:** Chief Medical Officer - BM
Version / Amendment History	Version	Date	Author	Reason
	V1.0	Nov 2013	Dr J Odum Dr A Miller	Creation of new policy
	V2.0	May 2018	Dr J Odum Dr S Gopal	Three year review
	V2.1	February 2021	Dr S Gopal	Extension to policy
	V2.2	July 2021	Dr S Gopal	Updated Appendix 1
	V2.3	December 2021	Dr S Gopal	Extension to policy
	V2.4	May 2022	Dr S Gopal	Extension to policy
	V2.5	October 2022	Dr S Gopal	Extension to policy
	V3.0	December 2022	Dr J Odum Dr S Gopal	Three year review

Intended Recipients:
All relevant medical and nursing staff who will be caring for and/or referring patients for possible Donation following Brain Stem Death (DBD) and Donation following Circulatory Death (DCD).

Consultation Group / Role Titles and Date: Organ Donation Group – March 2018

Name and date of Trust level group where reviewed	Trust Policy Group – December 2022
Name and date of final approval committee	Trust Management Committee – January 2023
Date of Policy issue	January 2023
Review Date and Frequency	Review date December 2025 Frequency of review every 3 years

Training and Dissemination: Training needs detailed in section. This policy will be communicated at Trust Induction and will be available on the Trust Intranet

Publishing Requirements: Can this document be published on the Trust's public page:

Yes

If yes you must ensure that you have read and have fully considered it meets the requirements outlined in sections 1.9, 3.7 and 3.9 of OP01, Governance of Trust-wide Strategy/Policy/Procedure/Guidelines and Local Procedure and Guidelines, as well as considering any redactions that will be required prior to publication.	
To be read in conjunction with: N/A	
Initial Equality Impact Assessment (all policies): Completed Yes **Impact assessment (as required): Completed No** If you require this document in an alternative format e.g., larger print please contact Policy Administrator 8904	
Monitoring arrangements and Committee	Organ Donation Group
Document summary/key issues covered. Guidance is provided for facilitating organ donation within The Royal Wolverhampton NHS Trust (RWT). Key Issues: How to identify a potential organ donor, how to refer to NHS Blood and Transplant (NHSBT), the process of a consented organ donor and roles and responsibilities of those involved.	
Key words for intranet searching purposes	Organ Donation
High Risk Policy? **Definition:** • Contains information in the public domain that may present additional risk to the public e.g. contains detailed images of means of strangulation. • References to individually identifiable cases. • References to commercially sensitive or confidential systems. If a policy is considered to be high risk it will be the responsibility of the author and chief officer sponsor to ensure it is redacted to the requestee.	**No** If Yes include the following sentence and relevant information in the Intended Recipients section above – In the event that this is policy is made available to the public the following information should be redacted:

Part B **Ratification Assurance Statement**

Name of document: Organ Donation (Adult Solid Organs)

Name of author: Dr Shameer Gopal Job Title: Consultant Intensivist and Anaesthetist

I, Dr Shamer Gopal, the above named author confirm that:

- The Policy presented for ratification meet all legislative, best practice and other guidance issued and known to me at the time of development of the said document.
- I am not aware of any omissions to the said document, and I will bring to the attention of the Executive Director any information which may affect the validity of the document presented as soon as this becomes known.
- The document meets the requirements as outlined in the document entitled Governance of Trust- wide Strategy/Policy/Procedure/Guidelines and Local Procedure and Guidelines(OP01).
- The document meets the requirements of the NHSLA Risk Management Standards to achieve as a minimum level 2 compliance, where applicable.
- I have undertaken appropriate and thorough consultation on this document and I have detailed the names of those individuals who responded as part of the consultation within the document. I have also fed back to responders to the consultation on the changes made to the document following consultation.
- I will send the document and signed ratification checklist to the Policy Administrator for publication at my earliest opportunity following ratification.
- I will keep this document under review and ensure that it is reviewed prior to the review date.

Signature of Author:

Date:

Name of Person Ratifying this document (Chief Officer or Nominee):
Job Title:
Signature:

- I, the named Chief Officer (or their nominee) am responsible for the overall good governance and management of this document including its timely review and updates and confirming a new author should the current post-holder/author change.

To the person approving this document:

Please ensure this page has been completed correctly, then print, sign and email this page only to: The Policy Administrator

IMPLEMENTATION PLAN

To be completed when submitted to the appropriate committee for consideration/approval

Policy number and policy version	**Policy Title**	
Reviewing Group		**Date reviewed:**
Implementation lead: Print name and contact details		

Implementation Issue to be considered (add additional issues where necessary)	**Action Summary**	**Action lead / s (Timescale for completion)**
Strategy; **Consider** (if appropriate) 1. Development of a pocket guide of strategy aims for staff 2. Include responsibilities of staff in relation to strategy in pocket guide.		
Training; Consider 1. Mandatory training approval process 2. Completion of mandatory training form		
Development of Forms, leaflets etc; Consider 1. Any forms developed for use and retention within the clinical record **MUST** be approved by Health Records Group prior to roll out. 2. Type, quantity required, where they will be kept / accessed/stored when completed		
Strategy / Policy / Procedure communication; Consider 1. Key communication messages from the policy / procedure, who to and how?		
Financial cost implementation Consider Business case development		
Other specific Policy issues / actions as required e.g. Risks of failure to implement, gaps or barriers to implementation		

NHS
Blood and Transplant

Hospital: .....

Midlands Integrated Care Guide for the Referral and Consideration of Adult Deceased Organ and Tissue Donation

24 hour referral service
03000 20 30 40

HOSPITAL ADDRESSOGRAPH or

Surname .....

First Name .....

Date of Birth .....

NHS/Hospital Number .....

Objective of Care:

- To ensure all families are given the opportunity to consider organ and/or tissue donation where appropriate, in line with GMC (2011) guidance.[1]
- To provide clinical guidelines for the management of the potential deceased organ and/or tissue donor.

Early identification of potential donors.

Identify potential organ donors as **early** as possible.

↓

Base identification on **either** of the following criteria, while recognising that clinical situations vary.

↓

The **intention to withdraw life-sustaining treatment** in mechanically ventilated patients with a life-threatening or life-limiting condition, which will, or is expected to, result in circulatory death.

A **decision is made to perform neurological death tests (brainstem death tests).**

↓

Initiate discussions with the Specialist Nurse for Organ Donation at the time the above criteria are met. **24 hour referral service 03000 20 30 40**
Ensure this is discussed with the consultant in charge.

↓

Clinically stabilise the patient in an appropriate critical care setting while the assessment for donation is performed.

↓

Provided that delay is in the patient's overall best interests, life-sustaining treatments should not be withdrawn or limited until the patient's wishes around organ donation have been explored and the clinical potential for the patient to donate has been assessed in accordance with legal[2] and professional[1, 3-7] guidance.

The above referral criteria are in accordance with NICE (2011)[3] and NHSBT best practice guidance (2012).[8]
The NICE criteria also recommend the use of clinical trigger factors, to prompt *Early Identification and Referral*, in patients who have had a catastrophic brain injury, defined as: the absence of one or more cranial nerve reflexes (e.g. one fixed pupil) *and* a Glasgow Coma Scale score of 4 or less that is not explained by sedation unless there is a clear reason why the above clinical triggers are not met. NICE recognises that a proportion of the patients who are identified by these clinical triggers will survive. Contact between the clinical team treating the potential donor and the SNOD before the decision has been made to withdraw life-sustaining treatment is ethically acceptable.[4]

Guidance and Accountability Notes for Using this Care Guide:

- This Care Guide must be read in association with any local guidelines or policies. All drugs are the responsibility of the prescribing physician and must be checked against any local pharmacy guidance.
- This Care Guide forms part of the patient's record of care and is completed in addition to all other nursing and medical documentation. This Care Guide should be stored within the patient's medical notes.
- Care Guides are heavily informed by clinical knowledge and expertise. They are designed to assist clinical judgement, not replace it.
- If a care activity is not fully completed please give rationale in the relevant Notes/Variance section of the document.
- This Care Guide may be audited by the Specialist Nurse for Organ Donation (SNOD) within the Trust.

Supporting Documentation and Evidence Based Best Practice used within this Care Guide:

1. General Medical Council (2010) *Treatment and care towards the end of life*.
2. Department of Health (2009) *Legal Issues Relevant to Non-heartbeating Organ Donation*.
3. National Institute for Health and Clinical Excellence (2011) *Organ Donation for Transplantation*.
4. UK Donation Ethics Committee (2011) *An Ethical Framework for Controlled Donation after Circulatory Death*.
5. Intensive Care Society and British Transplantation Society (2010) *Report of a Donation after Circulatory Death Consensus meeting*.
6. College of Emergency Medicine and British Transplantation Society (2011) *Report of a Workshop on The Role of Emergency Medicine in Organ*.
7. www.odt.nhs.uk
8. NHS Blood and Transplant (2012) *Timely Identification and Referral of Potential Organ Donors: A Strategy for Implementation of Best Practice*.
9. Academy of Medical Royal Colleges (2008) *A Code of Practice for the Diagnosis and Confirmation of Death*.
10. NHS Blood and Transplant (2013) *Approaching the Families of Potential Organ Donors: Best Practice Guidance*.
11. NHS Blood and Transplant (2013) *Donor Optimisation Guideline for the Management of the Brainstem Dead Donor (Adult)*.

- Human Tissue Authority (2014) *Code of Practice 2: Donation of Solid Organs for Transplantation*.

All staff recording in this document must complete the signature box below so that initials or signature only are needed throughout the Plan.

Print First Name and Surname	Role	Signature	Initial	Pager/Bleep, Location/Extension

Patient Name:	NHS/Hospital Number:

Date: Time:	**Activity Number**	**Activity**
Persons Responsible Dr / Nurse **Achieved** ☐ **Initial the Box**	**1**	**Potential Donor Identification.** Patient meets 'Early identification of potential donors' referral criteria (Page 1). • Inform Consultant of planned referral to SNOD • Discuss with SNOD via 24 hour National Referral Number 03000 20 30 40 SNOD spoken to: ..... – Ensure you have the patient's notes, including: NHS/Hospital Number, date of birth, postcode, blood results and latest observations. – The SNOD will check the Organ Donation Register and advise on the patient's status (or call 01179757580) – Member of SNOD team will attend if agreed.

NOTES/VARIANCE

Patient Name:	NHS/Hospital number:

Date: Time:	**Activity Number**	**Please follow the appropriate Potential Donor Care Guide below, as identified by the 'Early identification of potential donors' referral criteria (Page 1) and as agreed by the SNOD and Consultant (or most senior doctor if delegated).**	
Persons Responsible Dr / Nurse / SNOD **Achieved** ☐ **Initial the Box**	**2**	**A decision is made to perform neurological death tests (brainstem death tests).** ☐ **Donation after Brainstem Death (DBD)** may be possible. **Go to page 5**	**The intention to withdraw life-sustaining treatment in patients with a life-threatening or life-limiting condition which will, or is expected to, result in circulatory death.** ☐ **Donation after Circulatory Death (DCD)** may be possible. **Go to page 16**
		Tissue Donation may be possible. ☐ **Go to page 22**	**No Donation possible.** ☐ **Go to page 23**
		Early Notification of Potential Donor, as per NICE clinical triggers, please re-refer when… **(Please detail plan for re-referral below)** ☐	**Other** **Please document below.** ☐

NOTES/VARIANCE

Patient Name:	NHS/Hospital number:

Donation after Brainstem Death (DBD)

Date: Time:	**Activity Number**	**Activity**
Persons Responsible Dr / Nurse **Achieved** ☐ **Initial the Box**	**DBD 1**	**Referral Check.** • A decision is made to perform neurological death tests (brainstem death tests). • Check SNOD has been notified (SNOD may attend). – The SNOD will begin assessing the patient's suitability for donation prior to discussion with the family. • Ensure the patient's parent team have been informed.

Date: Time:	**DBD 2**	**Normal homeostasis is maintained until neurological death testing is appropriate.** • Maintain protective ventilation strategies (Tidal Volume (VT) 6-8mls/kg), aiming for relatively normal cardiovascular and respiratory physiological parameters: $PaCO_2$ < 6.0 kPa, pH 7.35 –7.45 or $[H^+]$ 45-35 nmols/l, and PaO_2 >10 kPa or SaO_2 >95% on minimal FiO_2. • Maintain Mean Arterial Pressure (MAP) 60-80mmHg. Insert central line if not already insitu and prescribe inotropes. If central access is deemed inappropriate, start peripheral inotrope infusion. • Aim Na 130-155mmol/l and monitor for signs of Diabetes Insipidus (DI). If DI administer DDAVP (1-4 micrograms) and consider IV fluids (e.g. Compound Sodium Lactate (Hartmann's) solution, 5% glucose, balanced crystalloid solution). – If there are any plans to carry out ancillary investigations or drug levels,[9] explore early.
Persons Responsible Dr / Nurse **Achieved** ☐ **Initial the Box**		

NOTES/VARIANCE

Patient Name:	NHS/Hospital number:

Date: Time:	**Activity Number**	**Activity**
Persons Responsible Dr / Nurse / SNOD **Achieved** ☐ **Initial the Box**	**DBD 3**	**Discussion with family regarding plan for neurological death testing.** (See **Appendix 1**). – Doctor, Nurse and SNOD plan the discussion with the family in advance and prepare for neurological death tests. – SNOD (if present) is introduced to the family where appropriate and agreed with clinician. Example: "[SNOD Name] is a specialist nurse who supports families in this situation." – Discussion of donation is **not initiated** at this time unless initiated by the family. See **Appendix 1**. – Neurological death testing is explained to the family by the Doctor and SNOD. It is important the family understand that the neurological death tests may confirm that their loved one has died. – Family offered the option to witness neurological death testing if appropriate.

NOTES/VARIANCE

Date: Time:	**DBD 4**	**Preparation for neurological death testing. Refer to Diagnosis of Death using Neurological Criteria testing form.** (See **Appendix 2**). • **Prepare Equipment** – Pen torch – Gauze/cotton wool – 50ml bladder syringe – Ice cold water (100mls) – Otoscope with ear pieces – Yankauer sucker – Suction catheter + oxygen tubing/appropriate anaesthetic hand ventilation circuit (if PEEP required) – Blood gas syringes (pre and post apnoea test x2)
Persons Responsible Nurse **Achieved** ☐ **Initial the Box**		

Date: Time:	**DBD 5**	**1st and 2nd neurological death test undertaken.** See **Appendix 2** for an abbreviated testing form, which has been endorsed for use by the National Organ Donation Committee, FICM and the ICS. This is designed for use by clinicians experienced in confirming death using neurological criteria. This version and a longer, fuller version can also be downloaded from www.ics.ac.uk or www.odt.nhs.uk • **Please carry out a recruitment manoeuvre after each apnoea test.**
Persons Responsible Dr / Nurse / SNOD **Achieved** ☐ **Initial the Box**		

Patient Name:	NHS/Hospital number:

Date: Time:	**Activity Number**	**Activity**	
Persons Responsible Dr **Achieved** ☐ **Initial the Box**	**DBD 6**	**1st and 2nd Tests Diagnose and Confirm Death?** **Yes** • Nurse, Doctor and SNOD inform family the outcome of the neurological death tests, as per plan. • Family given time to accept the result. – Organ donation may be discussed at this stage if deemed appropriate (see below). **No** – Retesting may be appropriate at a later time. – If retesting not planned, but withdrawal of life-sustaining treatment is, consider Donation after Circulatory Death (DCD) (page 16).	☐ **YES** ☐ **NO**

Contraindications to Deceased Organ Donation (tick if yes) – if yes go to DBD 9 ☐
Reasons for contraindication (decided through consultation with the SNOD)

Date: Time:	**DBD 7**	**Approach regarding organ donation.** (See **Appendix 1**). **Planning** The SNOD will have checked the Organ Donation Register and advise on the patient's status. • A multi-disciplinary team should plan the approach. This may include local faith representative(s) where relevant. • Clarify any coronial/legal or safeguarding issues. • Identify key family members. • Identify a setting suitable for private and compassionate discussion. **The approach** • Doctor, Nurse and SNOD approach the family. • **Confirm understanding of the results of the neurological death tests and that death has occurred, before discussing donation.** • Family given information on donation and allowed the opportunity to ask questions. • SNOD answers these and may leave the family to discuss donation privately. • SNOD remains available to provide support to the staff.
Persons Responsible Dr / Nurse / SNOD **Achieved** ☐ **Initial the Box**		

NOTES/VARIANCE

Patient Name:	NHS/Hospital number:

Date: Time:	**Activity Number**	**Activity**
Persons Responsible Dr / Nurse / SNOD **Achieved** ☐ **Initial the Box**	**DBD 8**	**Outcome of family decision.** • SNOD and Nurse return to family (as agreed) to answer further questions and hear outcome of family decision. • Document outcome. • If patient's next of kin (person ranking highest in the qualifying relationship as given by the HTA 2004) agree to proceed with organ donation, SNOD will take consent and undertake patient assessment with patient's family answering any outstanding questions.

NOTES/VARIANCE

PLEASE CONTINUE BASED ON OUTCOME OF FAMILY DECISION

Date: Time: **Persons Responsible** SNOD **Achieved** ☐ **Initial the Box**	**DBD 9**	**Proceeding with DBD** ☐ **Continue**	**Tissue Only Donation Care Guide** ☐ **Go to page 22**	**No Donation Care Guide** ☐ **Go to page 23**

In rare circumstances the family may request a DCD donation at this point. This is best dealt with on a case-by-case basis using this Care Guide as a general guide only.

Date: Time: **Persons Responsible** Dr / Nurse / SNOD **Achieved** ☐ **Initial the Box**	**DBD 10**	**Consent and formal clarification of any outstanding coronial/legal or safeguarding issues.** • Further discussion with family, Nurse and SNOD. • Consent and patient assessment paperwork completed. • Consultant and/or SNOD will seek approval from H.M. Coroner, if required and not previously clarified, and document any discussion in the medical notes.

NOTES/VARIANCE

Patient Name:	NHS/Hospital number:

Date: Time:	**Activity Number**	**Activity**
Persons Responsible Nurse / SNOD **Achieved** ☐ **Initial the Box**	**DBD 11**	**Initial investigations.** Laboratory samples – SNOD will advise on the quantity and blood bottles required. *To assess organ function* • Send bloods for biochemistry (add amylase, lipase, magnesium, Gamma GT, AST and glucose), FBC, clotting, CRP and lactate (if not available on ABG). • Perform arterial blood gas (ABG). Firstly on current FiO_2, then pre-oxygenate on 100% O_2 for 20 minutes and repeat ABG. Repeat 2 hourly and give results to SNOD. ABG should be performed with 5cm H_2O PEEP (if tolerated). • Perform urinalysis. *To identify suitable recipients* • Request a Group and Save (if not already available). Ask SNOD if cross match is required. ***(Hard copy will be required)*** – Additional blood samples will be required as advised by SNOD. SNOD will advise on quantity and will request and arrange transport to send to tissue typing and virology, (if not already taken).

Date: Time: **Persons Responsible** Dr / Nurse / SNOD **Achieved** ☐ **Initial the Box**	**DBD 12**	**To assess cardiac and/or respiratory function (SNOD will advise if not required).** • Request CXR and the doctor must document findings in the medical notes. • ECG performed post death confirmation and reported by the doctor. • ECHO performed post death confirmation and findings documented. Cardiologist or Echo technician to clarify with SNOD which measurements are required. • SNOD may mobilise SCOUT team if appropriate.

Date: Time: **Persons Responsible** SNOD **Achieved** ☐ **Initial the Box**	**DBD 13**	**SNOD Activities.** • Detailed physical examination completed by SNOD with the support of the bedside nurse. • Patient registered with ODT duty office as a donor. • Organ/tissue matching commenced (can be a prolonged process (>6 hours) and SNOD will advise on progress). – Positive virology may limit or exclude donation, SNOD to advise. • External Organ Retrieval Teams organised plus Local Theatres and Anaesthetist. – SNOD to keep family informed and supported.

Proceed to Donor Optimisation

Patient Name:	NHS/Hospital number:

DBD Donor Optimisation Extended Care Bundle[11]

Priorities to address are:
1. Assess fluid status and correct hypovolaemia with fluid boluses.
2. Introduce vasopressin infusion; where required introduce flow monitoring.
3. Perform lung recruitment manoeuvres (e.g. following apnoea tests, disconnections, deterioration in oxygenation or suctioning).
4. Identify, arrest and reverse effects of *diabetes insipidus.*
5. Administer methylprednisolone 15mg/kg (all donors).
Contact SNOD if you need any advice or support

	Y	N/A
Cardiovascular (primary target MAP 60-80 mmHg).		
1. **Review intravascular fluid status and correct hypovolaemia with fluid boluses**	☐	☐
2. Commence cardiac output/flow monitoring	☐	☐
3. **Commence vasopressin (0.5 – 4 units/hour) where vasopressor required, wean or stop catecholamine pressors as able**	☐	☐
4. Introduce dopamine (preferred inotrope) or dobutamine if required	☐	☐
5. Commence Liothyronine at 3 mcg/hour (+/- 4 mcg bolus) (in cases of high vaso-active drug requirements or as directed by the cardiothoracic retrieval team)	☐	☐
Respiratory (primary target $PaO_2 \geq 10$ kPa, pH > 7.25).		
1. Perform lung recruitment manoeuvres	☐	☐
2. Review ventilation, ensure lung protective strategy (Tidal volumes 4 – 8ml/kg ideal body weight and optimum PEEP (5 – 10 cm H_2O)	☐	☐
3. Maintain regular chest physio including suctioning as per unit protocol	☐	☐
4. Maintain 30 – 45 degrees head of bed elevation	☐	☐
5. Ensure cuff of endotracheal tube is appropriately inflated	☐	☐
6. Patient positioning (side, back, side) as per unit protocol	☐	☐
7. Where available, and in the context of lung donation, perform bronchoscopy, bronchial lavage and – toilet for therapeutic purposes	☐	☐

Signature..... **Print Name**.....

Patient Name:	NHS/Hospital number:

DBD Donor Optimisation Extended Care Bundle

Summary of donor optimisation targets

- **PaO_2 ≥ 10 kPa (FiO_2 < 0.4 as able)**
- **$PaCO_2$ 5.0-6.5 kPa (or higher as long as pH > 7.25)**
- **MAP 60-80 mmHg**
- **CVP 4-10 mmHg**
- **Urine output 0.5-2.0 mls/kg/hr**
- **BM 4-10 mmols/l**
- **Temperature 36-37.5°C**

Contact SNOD if you need any advice or support

	Y	N/A
Fluids and metabolic management.		
1. **Administer methylprednisolone (dose 15mg/kg, max 1g).**	☐	☐
2. Review fluid administration. IV crystalloid maintenance fluid (or NG water where appropriate) to maintain Na^+ < 150mmol/l.	☐	☐
3. **Maintain urine output between 0.5 – 2.0 ml/kg/hour** (If > 4ml/kg/hr, consider *Diabetes insipidus* and treat promptly with vasopressin and/or DDAVP. Dose of DDAVP 1-4 micrograms, ivi titrated to effect).	☐	☐
4. Start insulin infusion to keep blood sugar at 4-10mmol/l (minimum 1 unit/hr; add a glucose containing fluid if required to maintain blood sugar).	☐	☐
5. Continue NG feeding (unless SNOD advises otherwise)**.**	☐	☐
Thrombo-embolic prevention (as per usual age appropriate standard).		
1. Ensure anti-embolic stockings are in place (as applicable).	☐	☐
2. Ensure sequential compression devices are in place (as applicable).	☐	☐
3. Continue, or prescribe low molecular weight heparin (as applicable).	☐	☐
Lines, Monitoring and Investigations (if not already done).		
1. Insert arterial line: left side preferable (radial or brachial).	☐	☐
2. Insert CVC: right side preferable (int jugular or subclavian).	☐	☐
3. Continue hourly observations as per critical care policy.	☐	☐
4. Maintain normothermia using active warming where required.	☐	☐
5. Perform a 12-lead ECG (to exclude Q-waves).	☐	☐
6. Perform CXR (post recruitment procedure where possible).	☐	☐
7. Send Troponin level in all cardiac arrest cases (and follow-up sample where patient in ICU > 24 hours).	☐	☐
8. Where available, perform an Echocardiogram.	☐	☐
9. Review and stop all unnecessary medications.	☐	☐

Date..... **Time**.....

Patient Name:	NHS/Hospital number:

Physiological Parameters/Goals

	0 hr	+1 hr	+2 hrs	+3 hrs	+4 hrs	+6 hrs
PaO_2 ≥ 10.0 kPa (FiO_2 < 0.4 as able)	☐	☐	☐	☐	☐	☐
$PaCO_2$ 5 – 6.5 kPa (or higher as long as pH > 7.25)	☐	☐	☐	☐	☐	☐
MAP 60 – 80 mmHg	☐	☐	☐	☐	☐	☐
CVP 4 – 10 mmHg (secondary goal)	☐	☐	☐	☐	☐	☐
Cardiac index > 2.1 l/min/m^2	☐	☐	☐	☐	☐	☐
$ScvO_2$ > 60%	☐	☐	☐	☐	☐	☐
SVRI (secondary goal) 1800 – 2400 dynes*sec/cm^5/m^2	☐	☐	☐	☐	☐	☐
Temperature 36 – 37.5°C	☐	☐	☐	☐	☐	☐
Blood glucose 4.0 – 10.0 mmol/l	☐	☐	☐	☐	☐	☐
Urine output 0.5 – 2.0 ml/kg/hour	☐	☐	☐	☐	☐	☐
Initial						
Date						
Time						

Tick ✓ = achieved, ✗ = not achieved

Patient Name:	NHS/Hospital number:

Physiological Parameters/Goals

	+8 hrs	+10 hrs	+12 hrs	+14 hrs	+16 hrs	+18 hrs
PaO_2 ≥ 10.0 kPa (FiO_2 < 0.4 as able)	☐	☐	☐	☐	☐	☐
$PaCO_2$ 5 – 6.5 kPa (or higher as long as pH > 7.25)	☐	☐	☐	☐	☐	☐
MAP 60 – 80 mmHg	☐	☐	☐	☐	☐	☐
CVP 4 – 10 mmHg (secondary goal)	☐	☐	☐	☐	☐	☐
Cardiac index > 2.1 l/min/m^2	☐	☐	☐	☐	☐	☐
$ScvO_2$ > 60%	☐	☐	☐	☐	☐	☐
SVRI (secondary goal) 1800 – 2400 dynes*sec/cm^5/m^2	☐	☐	☐	☐	☐	☐
Temperature 36 – 37.5°C	☐	☐	☐	☐	☐	☐
Blood glucose 4.0 – 10.0 mmol/l	☐	☐	☐	☐	☐	☐
Urine output 0.5 – 2.0 ml/kg/hour	☐	☐	☐	☐	☐	☐
Initial						
Date						
Time						

Tick ✓ = achieved, *✗* = not achieved

Patient Name:	NHS/Hospital number:

Additional Donor Optimisation Notes[11]

Cardiovascular: The focus of these therapies is to maintain general organ perfusion, rather than a high MAP and cerebral perfusion pressure required for the treatment of brain injury. This change of goal often results in a rapid reduction in cardiovascular support.

- High dose catecholamine infusions (particularly noradrenaline) are associated with poor organ function post transplant. Wean noradrenaline/other inotropes to achieve MAP 60-80mmHg. If unable to reduce, commence vasopressin. If no response on vasopressin at 4 units/hour speak to SNOD.
- If MAP > 90 mmHg prescribe and titrate Glyceryl Trinitrate infusion.
- Swan-Ganz (Pulmonary Artery Flotation) catheter and cardiac output measurements only if monitoring already *in situ* or unless instituted by SCOUT team.
- *If cardiothoracic organs are being donated, to improve cardiac stability* commence T3 (L-Tri-iodothyronine) at 3 mcg/hour as directed by the cardiothoracic transplant team.

Respiratory: The focus of these therapies is to prevent aspiration and maintain respiratory function.

- Nurse in semi-recumbent position with regular turning (minimum 4 hourly).
- Continue with chest physiotherapy and regular suction (if purulent secretions send sample).
- Protective lung ventilation (VT 6-8mls/kg).
- Continue DVT prophylaxis, if appropriate.

Renal, Fluid, Endocrine and Electrolytes:

- Diabetes Insipidus (DI) occurs commonly resulting in polyuria, electrolyte disturbances and hypovolemia. If showing signs of DI (polyuria) treat with DDAVP 1-4 microgram bolus (repeated as required). Monitor and correct Na, consider 5% glucose.
- Fluid overload makes lung transplantation unlikely – careful fluid balance is required.
- *Electrolyte goals*
  - Na 135-150mmols/l (*Na >150mmols/l can cause hepatic graft dysfunction*).
  - K 4.0-5.0mmols/l.
  - Other electrolytes.
    - Mg > 0.8 mmols/l.
    - Ionised Ca^{2+} on ABG 0.9-1.1mmol/l or corrected Ca^{2+} 2.0-2.6 mmol/l.
    - Phosphate >0.8mmol/l.
- *Temperature goal* 36-37.5°C (actively cool or warm as appropriate).

Prescribing guidelines

- **DDAVP 1-4 microgram bolus**
  4 micrograms desmopressin (1-desamino-8-D-arginine vasopressin) made up to 4 mls with saline 0.9%. Administer intravenously as push 1-4 mls.
- **Liothyronine at 3 micrograms/hour**
  T3 (L-Tri-iodothyronine) 20 micrograms made up to 20 mls with water for injection = 1 microgram/ml. Run 3 mls/hour.
- **Methylprednisolone 15 mg/kg, max 1g**
  Add to 100 mls of saline 0.9% and infuse over 1 hour.
- **Vasopressin (0.5 – 4 units/hour)**
  20 units vasopressin (pitipressin) made up to 40 mls with 5% glucose = 0.5 units/ml. Run 1-8 mls/hour.

All drugs are the responsibility of the prescribing physician
and must be checked against any local pharmacy guidance.

Patient Name:	NHS/Hospital number:

Date: Time:	**Activity Number**	**Activity**
Persons Responsible Nurse / SNOD **Achieved** ☐ **Initial the Box**	**DBD 14**	**Family Care.** • Mementos (handprints, and locks of hair offered). If requested these are facilitated by the Nurse and SNOD at an appropriate time. • Offer spiritual or religious support.

Date: Time: **Persons Responsible** Nurse / SNOD **Achieved** ☐ **Initial the Box**	**DBD 15**	**Organ Retrieval in Theatre.** See **Appendix 3** for Notes to assist Anaesthetic Care during Organ Recovery in Theatre for Donation after Brainstem Death. • Organ retrieval operation.

Date: Time: **Persons Responsible** Nurse / SNOD **Achieved** ☐ **Initial the Box**	**DBD 16**	**Final Activities.** • Last offices performed as per local policy. • Family are given the option to return to see their loved one following the retrieval and participate in last offices. • Patient transferred to the mortuary. • If tissues to be donated this will be facilitated in the mortuary as agreed. See page 22. • SNOD will provide donation outcome information to family as agreed.

Patient Name:	NHS/Hospital number:

Donation after Circulatory Death (DCD)

Date: Time:	**Activity Number**	**Activity**
Persons Responsible Dr **Achieved** ☐ **Initial the Box**	**DCD 1**	**The Withdrawal Decision.** • The intention is to withdraw life-sustaining treatment in a patient with a life-threatening or life-limiting condition, which will, or is expected to, result in *imminent* circulatory death. • Two senior doctors, who should both have been registered for at least five years, and at least one of whom should be a consultant, should verify that further active treatment is no longer of overall benefit to the patient.[4] • Ensure parent team consultant informed of planned withdrawal of life sustaining treatment decision and referral for potential DCD.

NOTES/VARIANCE

Date: Time:	**Activity Number**	**Activity**
Persons Responsible Dr / Nurse / SNOD **Achieved** ☐ **Initial the Box**	**DCD 2**	**Referral Check.** • Check SNOD has been notified. • SNOD will assess and advise on medical suitability for DCD. • The SNOD will check the Organ Donation Register and advise on the patient's status. • Clarify any coronial/legal issues. Document outcome in medical notes. • If suitable, SNOD will attend. • If medically unsuitable for DCD, tissue donation may still be possible. Tissue services can be contacted on **0800 432 0559** or via the SNOD **07623 512 256**. See Tissue Only Donation Care Guide (page 20).

Contraindications to Deceased Organ Donation (tick if yes) – if yes go to DCD 6 ☐
Reasons for contraindication (decided through consultation with the SNOD)

Patient Name:	NHS/Hospital number:

Date: Time:	**Activity Number**	**Activity**
Persons Responsible Dr / Nurse / SNOD **Achieved** ☐ **Initial the Box**	**DCD 3**	**Family discussion regarding withdrawal decision.** (See **Appendix 1**). **These activities are best explored in conjunction with DCD 4.** – SNOD (if present) is introduced to the family where appropriate and agreed with clinician. Example: "[SNOD Name] is a specialist nurse who supports families in this situation." • Consultant undertakes full explanation to the family of why the multidisciplinary team believe the withdrawal of life sustaining treatment is in the overall benefit of the patient. • Consultant undertakes explanation of the withdrawal process. • If family is accepting and in agreement with the withdrawal of life sustaining treatment this must be documented clearly in the patient's medical notes, including the planned method of withdrawal. • Do not resuscitate order in place.

NOTES/VARIANCE

Date: Time:	**DCD 4**	**Approach regarding organ donation.** (See **Appendix 1**). **Planning** The SNOD will check the Organ Donation Register and advise on the patient's status, if not done so already. • A multi-disciplinary team should plan the approach. This may include local faith representative(s) where relevant. • Clarify any coronial/legal issues (if not done so earlier). • Identify key family members. • Identify a setting suitable for private and compassionate discussion. **The approach** • Doctor, Nurse and SNOD approach the family (this may form part of the initial conversation as per DCD 3 or may be decoupled from that conversation according to families acceptance and understanding). • **Confirm understanding and acceptance of the plan to withdraw life-sustaining treatment, before discussing donation.** • Family given information on donation and allowed the opportunity to ask questions. • SNOD answers these and may leave the family to discuss donation privately. • SNOD remains available to provide support to the staff.
Persons Responsible Dr / Nurse / SNOD **Achieved** ☐ **Initial the Box**		

NOTES/VARIANCE

Patient Name:	NHS/Hospital number:

Date: Time:	**Activity Number**	**Activity**
Persons Responsible Nurse / SNOD **Achieved** ☐ **Initial the Box**	**DCD 5**	**Outcome of family decision.** • SNOD and Nurse return to family (as agreed) to answer further questions and hear outcome of family decision. • Document outcome. • If patient's next of kin (person ranking highest in the qualifying relationship as given by the HTA 2004) agree to proceed with organ donation, SNOD will take consent and undertake patient assessment with patient's family answering any outstanding questions.

NOTES/VARIANCE

PLEASE CONTINUE BASED ON OUTCOME OF FAMILY DECISION

Date: Time: **Persons Responsible** SNOD **Achieved** ☐ **Initial the Box**	**DCD 6**	**Proceeding with DCD** ☐ **Continue**	**Tissue Only Donation Care Guide** ☐ **Go to page 22**	**No Donation Care Guide** ☐ **Go to page 24**

Date: Time: **Persons Responsible** Dr / Nurse / SNOD **Achieved** ☐ **Initial the Box**	**DCD 7**	**Consent and formal clarification of any outstanding coronial/ legal issues.** • Further discussion with family, Nurse and SNOD. • Consent and patient assessment paperwork completed. • Consultant and/or SNOD will seek approval from H.M. Coroner, if required and not previously clarified, and document any discussion in the medical notes.

NOTES/VARIANCE

Patient Name:	NHS/Hospital number:

Date: Time:	**Activity Number**	**Activity**
Persons Responsible Dr / Nurse / SNOD **Achieved** ☐ **Initial the Box**	**DCD 8**	**New Care Guide and treatment goals.** • The patient will continue to be cared for as per local end of life guidance and in accordance with GMC guidance.[1] **Treatment decisions must continue to be in the patient's best interests.** In someone who wanted to be a donor actions to facilitate donation will usually be in the patient's best interests provided the actions do not cause harm or distress, or place them at significant risk of experiencing harm or distress.[2] • Decide on place of continued care/place of withdrawal of life-sustaining treatment as per local agreement. • The end of life Care Guide for a patient on the DCD Care Guide should include a plan for how to proceed if the time to death following treatment withdrawal is incompatible with successful transplantation, and families and all staff (donor and retrieval teams) should be fully informed. • SNOD and Consultant agree physiologic goals and limits of premorbid interventions (e.g. inotropes & fluid for BP management, FiO_2). Goals and Limits agreed: .... **A useful guide to timelines and responsibilities of the team can be seen in Appendix 4.** • Request for further investigations on behalf of the retrieval team (e.g. ABG on 100% O_2, CXR) is likely and this may require further discussion with the family.

Date: Time:	**Activity Number**	**Activity**
Persons Responsible Nurse / SNOD **Achieved** ☐ **Initial the Box**	**DCD 9**	**Initial investigations.** Laboratory samples – SNOD will advise on the quantity and blood bottles required. *To assess organ function* • Send bloods for biochemistry (add amylase, lipase, magnesium, Gamma GT, AST and glucose), FBC, clotting, CRP and lactate (if not available on ABG). • Perform urinalysis. • If lung DCD is being considered perform arterial blood gas (ABG) and check that a recent CXR is available with findings documented in the medical notes. *To identify suitable recipients* • Request a Group and Save (if not already available). Ask SNOD if cross match is required. ***(Hard copy will be required)*** – Additional blood samples will be required as advised by SNOD. SNOD will advise on quantity and will request and arrange transport to send to tissue typing and virology, (if not already taken).

Patient Name:	NHS/Hospital number:

Date: Time:	**Activity Number**	**Activity**
Persons Responsible SNOD **Achieved** ☐ **Initial the Box**	**DCD 10**	**SNOD Activities.** • Detailed physical examination completed by SNOD with the support of the bedside nurse. • Patient registered with ODT duty office as a donor. • Organ/tissue matching commenced (can be a prolonged process (>6 hours) and SNOD will advise on progress). • Positive virology may limit or exclude donation, SNOD to advise. • External Organ Retrieval Teams organised plus Local Theatres and Anaesthetist. (No anaesthetist required unless lung donation). • If consent has been given for lung donation, discuss process of retrieval with Consultant and Anaesthetist. Process to be followed according to guideline – **Appendix 5**. • SNOD to keep family informed of provisional timings to enable them to prepare for treatment withdrawal.

Date: Time:	**DCD 11**	**Family Care.** • Mementos (handprints, and locks of hair offered). If requested these are facilitated by the Nurse and SNOD at an appropriate time. • Offer spiritual or religious support.
Persons Responsible Nurse / SNOD **Achieved** ☐ **Initial the Box**		

Date: Time:	**DCD 12**	**Withdrawal.** • When retrieval team have set up in theatre, the nominated medical personnel will prepare the family for treatment withdrawal. • **The process of organ donation must not compromise the patient's comfort and dignity at the end of life.** • Comfort measures should be administered or continued as per usual practice, local end of life guidelines and in accordance with GMC guidance.[1] • Treatment withdrawn as per agreed plan. Any concerns from the team should be elevated to the consultant in charge. • The bed and bed area prepared for transfer to theatre. • Family who wish to be present are in attendance. • Clinician is available to diagnose and confirm death. **Time of Withdrawal of Life-Sustaining Treatment:** Date ..... Time ..... • SNOD will notify retrieval team of exact time of withdrawal. • Family kept updated and supported throughout by the bedside nurse and SNOD. • SNOD will make discrete observations of patient monitors. • Family will be informed when asystole occurs.
Persons Responsible Dr / Nurse / SNOD **Achieved** ☐ **Initial the Box**		

Patient Name:	NHS/Hospital number:

Date: Time:	**Activity Number**	**Activity**
Persons Responsible Dr / Nurse / SNOD **Achieved** ☐ **Initial the Box**	**DCD 13**	**Confirmation of Death.** • Death will be diagnosed following 5 minutes of monitored asystole and in accordance to the AoMRC Code of Practice[5] (see **Appendix 6** for confirmation form). **Time of Death:** Date ..... Time ..... – Prolonged time from withdrawal to asystole may preclude solid organ donation. SNOD will advise on this. • Following confirmation of death, the patient will immediately be transferred to theatre, as agreed with the family.

Date: Time: **Persons Responsible** Dr / Nurse / SNOD **Achieved** ☐ **Initial the Box**	**DCD 14**	**Organ Retrieval.** • If lung DCD is intended see **Appendix 5**. • Organ retrieval operation

Date: Time: **Persons Responsible** Dr / Nurse / SNOD **Achieved** ☐ **Initial the Box**	**DCD 15**	**If the time to death following treatment withdrawal is incompatible with successful transplantation.** • As per DCD 8, the end of life Care Guide should include how to proceed if the time to death following treatment withdrawal is incompatible with successful transplantation. • Tissue donation may still be possible. See Tissue Only Donation Care Guide (page 22).

Date: Time: **Persons Responsible** Nurse / SNOD **Achieved** ☐ **Initial the Box**	**DCD 16**	**Final Activities.** • Last offices performed as per local policy. • Family are given the option to return to see their loved one following the retrieval and participate in last offices. • Patient transferred to the mortuary. • If tissues to be donated this will be facilitated in the mortuary as agreed. See Page 22. • SNOD will provide donation outcome information to family as agreed.

Patient Name:	NHS/Hospital number:

Tissue Only Donation Care Guide

Date: Time:	**Activity Number**	**Activity**
Persons Responsible Dr / Nurse / SNOD **Achieved** ☐ **Initial the Box**	**TD 1**	**All deceased patients can be referred/considered for Tissue Donation.** National Referral Centre (NRC) for Tissue Donation is available on (24 hours) **0800 432 0559**. A comprehensive assessment will need to be made to ensure Tissue Donation is possible, so please have the notes, and patient charts with you including: • GP information. • Past medical history. • Next of Kin Contact Details. • Medication & Fluids administered in the last few days on ICU. – The NRC will advise if the patient can be considered for potential tissue donation and advise on the subsequent sequence of events – **NRC will not contact the family without their knowledge, so a discussion regarding the option for tissue donation will need to occur.** This discussion can be held with the family by a member of the nursing or medical team as deemed appropriate. – Document the outcome of discussion with the family & inform NRC of the outcome as agreed **In the case of non-proceeding DCD** if the SNOD has taken consent for tissue donation from family then copies of consent, and Patient Assessment document to stay with the patient if transferred to the ward, and ward staff at handover to be made aware that the National Referral Centre (NRC) must be contacted when the patient dies. Paperwork to accompany the patient to the mortuary. **Time of Death:** Date ..... Time ..... – Last offices performed. – Mementos (handprints, and locks of hair offered). If requested these are facilitated by the Nurse and/or SNOD at an appropriate time. **If tissue donation is to proceed, the patient must be transferred to the mortuary within 6 hours of death.** **Time of Transfer to Mortuary:** Date ..... Time .....

Patient Name:	NHS/Hospital number:

No Donation Care Guide

Date: Time:	**Activity Number**	**Activity**
Persons Responsible Dr / Nurse / SNOD **Achieved** ☐ **Initial the Box**	**ND 1**	**Family Care.** • Document outcome of any discussion with family. • Family thanked for considering donation, if appropriate. • Mementos (handprints, and locks of hair offered). If requested these are facilitated by the Nurse and/or SNOD at an appropriate time. • Offer spiritual or religious support. • If appropriate, inform local Eye Retrieval Nurse of family decision not to donate to prevent second contact.

Date: Time:	**ND 2**	• Life-sustaining treatment withdrawn. SNOD may remain present to support family and staff.
Persons Responsible Dr / Nurse / SNOD **Achieved** ☐ **Initial the Box**		

Date: Time:	**ND 3**	Last Offices performed as per local policy. • Patient transferred to the mortuary.
Persons Responsible Dr / Nurse / SNOD **Achieved** ☐ **Initial the Box**		

Patient Name:	NHS/Hospital number:

Date and Time	Activity Number	MDT Notes	Signature/ Initial

GLOSSARY

ABG	Arterial Blood Gas
AoMRC	Academy of Medical Royal Colleges
AST	Aspartate aminotransferase
BM	Boehringer Mannheim test
BSD	Brainstem Death
BP	Blood Pressure
Ca	Calcium
CJD	Creutzfeldt–Jakob Disease
CVC	Central Venous Catheter
CVP	Central Venous Pressure
CPP	Cerebral Perfusion Pressure
CXR	Chest X-Ray
DDAVP	Desmopressin
DCD	Donation after Circulatory Death
DI	Diabetes Insipidus
DVT	Deep Vein Thrombosis
ECG	Electrocardiogram
ECHO	Echocardiography
FBC	Full Blood Count
FiO_2	Fraction of Inspired Oxygen
GMC	General Medicine Council
GTN	Glyceryl Trinitrate
HTA	Human Tissue Authority
HTA (2004)	Human Tissue Act (2004)
HIV	Human Immunodeficiency Virus
K	Potassium
kPa	Kilopascal
PaO_2	Partial Pressure of Oxygen
$PaCO_2$	Partial Pressure of Carbon Dioxide
PEEP	Positive End Expiratory Pressure
RIJ	Right Internal Jugular
MAP	Mean Arterial Pressure
MC&S	Microscopy, Culture and Sensitivity
MDT	Multi-disciplinary Team
Mg	Magnesium
mmHg	Millimetres of Mercury
Na	Sodium
NHSBT	NHS Blood and Transplant
NICE	National Institute for Health and Clinical Excellence
O_2	Oxygen
ODT	Organ Donation & Transplantation
$ScvO_2$	Central Venous Oxygen Saturation
SNOD	Specialist Nurse – Organ Donation
SpO_2	Pulse Oximeter Oxygen Saturation
T3	Tri-iodothyronine
VT	Tidal Volume

Appendix 1:
Approaching the families of potential donors

Planning

Who: Consultant, SNOD and nurse.

Why:

- Clarify clinical situation.
- Seek evidence of prior consent (e.g. ODR or other).
- Identify key family members by name.
- Define key family issues.
- Agree a process of approach and who will be involved.
- Agree timing and setting, ensuring these are appropriate to family needs.
- Involve others as required, e.g. faith leaders.

When and where: in private and before meeting the family to confirm understanding and acceptance of loss.

Confirming understanding and acceptance of loss

Potential DBD donor: ensure the family understand that death has occurred. Spend time with the concept, using diagrams or scans if necessary.

Potential DCD donor: ensure the family understand and accept the reasons for treatment withdrawal and the inevitability of death thereafter. Donation should only be raised at this point if it is clear that a family has understood and accepted their loss. If this is not the case, suggest a break.

Discussing donation

Only consider the transition to organ donation when it is clear that a family have accepted their loss and are ready to consider the next steps.

- Provide specific information on process before expecting a response.
- Avoid negative, apologetic, manipulative or coercive language.
- Emphasise the benefits of transplantation – the ability to save lives.
- Sensitively explore an initial 'No', some of which are a result of misconceptions.
- **For patients on the ODR, or who have given their legal consent in other ways, e.g. donor card:** sensitively explain that consent for donation has already been given; do not mislead the family into believing that their consent is also required.
- **For patients whose wishes are not known in advance:** use open questions to ascertain patient's and family's wishes; avoid styles that focus exclusively upon the wishes of the patient (because the law passes responsibility for decision making to the family when the patient's wishes are not known).

Appendix 2:
Form for the Diagnosis of Death using Neurological Criteria (abbreviated guidance version)

This form is consistent with and should be used in conjunction with, the AoMRC (2008) *A Code of Practice for the Diagnosis and Confirmation of Death* and has been endorsed for use by the Faculty of Intensive Care Medicine and Intensive Care Society.

HOSPITAL ADDRESSOGRAPH or

Surname .....

First Name .....

Date of Birth .....

NHS Number .....

Evidence for Irreversible Brain Damage of known Aetiology

Primary Diagnosis:

Evidence for Irreversible Brain Damage of known Aetiology:

Diagnostic caution is advised in certain **'Red Flag'** patient groups.

Exclusion of Reversible Causes of Coma and Apnoea

	1st Test Dr One	1st Test Dr Two	2nd Test Dr One	2nd Test Dr Two
Is the coma due to depressant drugs? Drug Levels (if taken):	Yes / No	Yes / No	Yes / No	Yes / No
Is the patient's body temperature ≤ 34°C?	Yes / No	Yes / No	Yes / No	Yes / No
Is the coma due to a circulatory, metabolic or endocrine disorder?	Yes / No	Yes / No	Yes / No	Yes / No
Is the apnoea due to neuromuscular blocking agents, other drugs or a non brainstem cause (e.g. cervical injury, any neuromuscular weakness)?	Yes / No	Yes / No	Yes / No	Yes / No

Tests for Absence of Brainstem Reflexes

Brainstem Reflexes		1st Test Dr One	1st Test Dr Two	2nd Test Dr One	2nd Test Dr Two
	Do the pupils react to light?	Yes / No	Yes / No	Yes / No	Yes / No
	Is there any eyelid movement when each cornea is touched in turn?	Yes / No	Yes / No	Yes / No	Yes / No
	Is there any motor response when supraorbital pressure is applied?	Yes / No	Yes / No	Yes / No	Yes / No
	Is the gag reflex present?	Yes / No	Yes / No	Yes / No	Yes / No
	Is the cough reflex present?	Yes / No	Yes / No	Yes / No	Yes / No
	Is there any eye movement during or following caloric testing in each ear?	Yes / No	Yes / No	Yes / No	Yes / No

If detached; file with patient notes after use.

Patient Name:	NHS/Hospital number:

Apnoea Test

		1st Test Dr One	1st Test Dr Two	2nd Test Dr One	2nd Test Dr Two
Apnoea Test	Arterial Blood Gas pre apnoea test check: (Starting $PaCO_2$ ≥ 6.0 kPa and starting pH < 7.4 or $[H^+]$ > 40 nmol/l)	1st Test Starting $PaCO_2$: Starting pH/$[H^+]$:		2nd Test Starting $PaCO_2$: Starting pH/$[H^+]$:	
	Is there any spontaneous respiration within 5 (five) minutes following disconnection from the ventilator?	Yes / No	Yes / No	Yes / No	Yes / No
	Arterial Blood Gas Result post apnoea test: ($PaCO_2$ should rise > 0.5 kPa)	1st Test Final $PaCO_2$: *Perform lung recruitment*		2nd Test Final $PaCO_2$: *Perform lung recruitment*	

Document any Ancillary Investigations Used to Confirm the Diagnosis or any required Clinical Variance from AoMRC (2008) Guidance

Completion of Diagnosis

Are you satisfied that death has been confirmed following the irreversible cessation of brainstem function?	**Yes / No**	**Yes / No**
Legal time of death is when the 1st Test indicates death due to the irreversible loss of brainstem function. Death is confirmed following the 2nd Test.	**Date:** **Time:** **Dr One** Name Grade GMC Number Signature **Dr Two** Name Grade GMC Number Signature	**Date:** **Time:** **Dr One** Name Grade GMC Number Signature **Dr Two** Name Grade GMC Number Signature

It remains the duty of the two doctors carrying out the testing to be satisfied with the aetiology, the exclusion of all potentially reversible causes, the clinical tests of brainstem function and of any ancillary investigations so that each doctor may independently confirm death following irreversible cessation of brainstem function.

Guidance Summary of the AoMRC Code of Practice.

The diagnosis of death by neurological criteria should be made by at least two medical practitioners who have been registered for more than five years and are competent in the conduct and interpretation of brainstem testing. At least one of the doctors must be a consultant. Testing should be performed completely and successfully on two occasions with both doctors present. It is recommended that one doctor perform the test while the other doctor observe; roles may be reversed for the second test.

Diagnostic caution is advised in the following 'Red Flag' patient groups.
(Based on the literature and unpublished case reports.)

1. Testing < **6 hours** of the loss of the last brainstem reflex.
2. Testing < **24 hours** where aetiology primarily anoxic damage.
3. **Hypothermia** (24 hour observation period following re-warming to normothermia recommended).
4. Patients with **any neuromuscular disorders**.
5. **Steroids** given in space occupying lesions such as abscesses.
6. Prolonged **fentanyl** infusions.
7. Aetiology **primarily** located to the **brainstem or posterior fossa**.

Evidence for Irreversible Brain Damage of Known Aetiology.

- There should be no doubt that the patient's condition is due to **irreversible brain damage of known aetiology**. Occasionally it may take a period of continued clinical observation and investigation to be confident of the irreversible nature of the prognosis. The timing of the first test and the timing between the two tests should be adequate for the reassurance of all those directly concerned. **If in doubt wait and seek advice**.

Children (one examining doctor should normally be a paediatrician or should have experience with children and one of the doctors should not be primarily involved in the child's care).

- **Older than 2 months post term:** This guideline can be used in these children.
- **Between thirty seven weeks corrected gestation (post menstrual) age to 2 months of age post term:** use the RCPCH Guidance available at www.rcpch.ac.uk.
- **Infants less than 37 weeks corrected gestation (post menstrual):** the concept of brainstem death is inappropriate for infants in this age group.

Drugs

- The patient should not have received any drugs that might be contributing to the unconsciousness, apnoea and loss of brainstem reflexes (narcotics, hypnotics, sedatives or tranquillisers). Where there is any doubt specific drug levels should be carried out (midazolam less than < 10mcg/l, thiopentone <5mg/l). Alternatively consider ancillary investigations.
- There should be no residual effect from any neuromuscular blocking agents (atracurium, vecuronium or suxamethonium), consider the use of peripheral nerve stimulation.
- Renal or hepatic failure may prolong metabolism/excretion of these drugs.

Temperature, Circulatory, Metabolic or Endocrine Disorders

- Prior to testing aim for: temperature >34°C, mean arterial pressure consistently >60mmHg (or age appropriate parameters for children), maintenance of normocarbia and avoidance of hypoxia, acidaemia or alkalaemia ($PaCO_2$ <6.0 kPa, PaO_2 >10 kPa and pH 7.35-7.45/[H^+] 45-35 nmol/l).
- Serum Na^+ should be between 115-160mmol/l; Serum K^+ should be >2mmol/l; Serum PO_4^{3-} and Mg^{2+} should not be profoundly elevated (>3.0mmol/l) or lowered (<0.5mmol/l) from normal.
- Blood glucose should be between 3.0-20mmol/l before each brainstem test.
- If there is any clinical reason to expect endocrine disturbances then it is obligatory to ensure appropriate hormonal assays are undertaken.

Brainstem Reflexes

- Pupils should be fixed in diameter and unresponsive to light.
- There should be no corneal (blink) reflex (care should be taken to avoid damage to cornea).

- Eye movement should not occur when each ear is instilled, over one minute, with 50mls of ice cold water, head 30°. Each ear drum should be clearly visualised before the test.
- There should be no motor response within the cranial nerve or somatic distribution in response to supraorbital pressure. Reflex limb and trunk movements (spinal reflexes) may still be present.
- There should be no gag reflex following stimulation to the posterior pharynx or cough reflex following suction catheter placed down the trachea to the carina.

Apnoea Test

- End tidal carbon dioxide can be used to guide the starting of each apnoea test but should not replace the pre and post arterial $PaCO_2$.
- Oxygenation and cardiovascular stability should be maintained through each apnoea test.
- **Confirm $PaCO_2$ ≥6.0 kPa and pH <7.4/[H^+] >40 nmol/l.** In patients with chronic CO_2 retention, or those who have received intravenous bicarbonate, confirm $PaCO_2$ >6.5 kPa and the pH <7.4/[H^+] >40 nmols/l.
- Either use a CPAP circuit (e.g. Mapleson B) or disconnect the patient from the ventilator and administer oxygen via a catheter in the trachea at a rate of >6L/minute.
- There should be no spontaneous respiration within a minimum of 5 (five) minutes following disconnection from the ventilator.
- **Confirm that the $PaCO_2$ has increased from the starting level by more than 0.5 kPa.**
- At the conclusion of the apnoea test, manual recruitment manoeuvres should be carried out before resuming mechanical ventilation and ventilation parameters normalised.

Ancillary Investigations

- Ancillary investigations are **NOT** required for the diagnosis and confirmation of death using neurological criteria. Any ancillary or confirmatory investigation should be considered **ADDITIONAL** to the fullest clinical testing and examination carried out to the best of the two doctors capabilities in the given circumstances.

Organ Donation

- National professional guidance advocates the confirmation of death by neurological criteria wherever this seems a likely diagnosis and regardless of the likelihood of organ donation.
- NICE guidance recommends that the Specialist Nurse for Organ Donation (SNOD) should be notified at the point when the clinical team declare the intention to perform brainstem death tests and this is supported by GMC guidance.

References

Academy of Medical Royal Colleges (2008) "A Code of Practice for the Diagnosis and Confirmation of Death" http://www.aomrc.org.uk

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Form authorship and feedback

This form was written by Dr Dale Gardiner, Nottingham and Dr Alex Manara, Bristol. Comments should be directed to dalegardiner@doctors.net.uk

Appendix 3:
Notes to assist Anaesthetic Care during Organ Recovery in Theatre for Donation after Brainstem Death

The primary challenges for the anaesthetist are the following:

1. Unstable haemodynamics, hypothermia, diabetes insipidus.
2. Persisting spinal reflexes, both neuromuscular and autonomic.
3. ECG changes, arrhythmias and decreased myocardial compliance.

Equipment, Lines and Positioning.

- Standard monitoring including invasive pressures (arterial and central venous pressure) and temperature should be used. Arterial line: left side preferable (radial or brachial); CVC: right side preferable (int jugular or subclavian).
- At least one large bore intravenous cannula should be placed before theatre for rapid volume replacement. Ensure that the patient is 'grouped and saved' in case blood products are needed during organ recovery. Local transfusion triggers apply.
- Ideally, a means of temperature management placed underneath the patient before transfer to limit surgical interference.
- Check body positioning with transplant teams – the possible positions they may choose are: arms by the side, arms outstretched to 90 degrees or arms hyperextended and taped above the head. Usual concerns about the brachial plexus injury do not apply.

Ventilatory and Circulatory Goals.

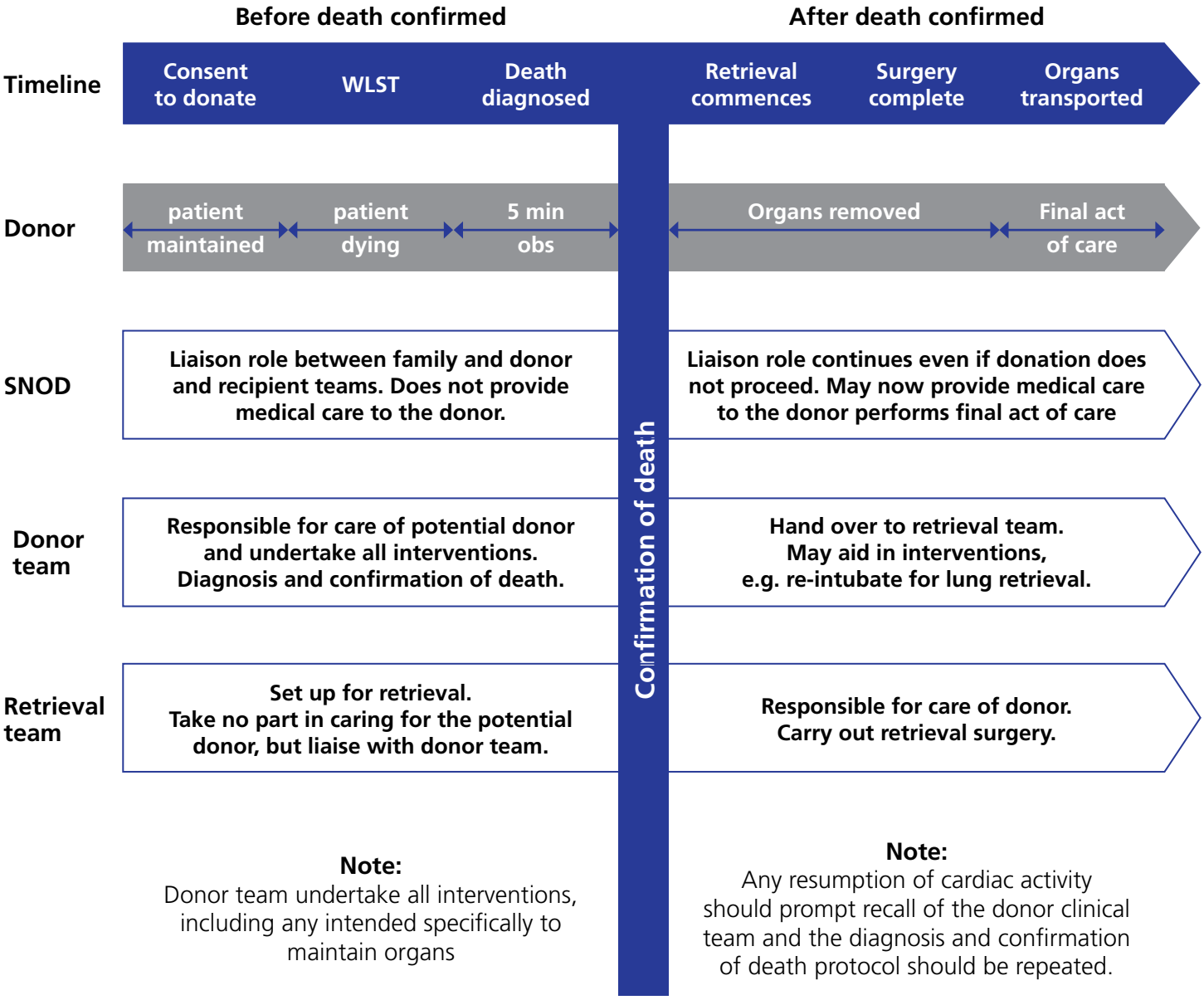
- Are the same as during the pre-operative period on the ICU.

Summary of intra-operative donor targets
• **PaO_2 ≥ 10 kPa (FiO_2 <0.4 as able)**
• **$PaCO_2$ 5.0-6.5 kPa (or higher as long as pH >7.25)**
• **MAP 60-80 mmHg**
• **CVP 4-10 mmHg**
• **Urine output 0.5-2.0 mls/kg/hr**
• **BM 4-10 mmols/l**
• **Temperature 36-37.5°C**
Retrieval team will guide physiological targets

Medication administration

- *A non-depolarising neuromuscular blocking drug* of the anaesthetist's choice should be given before the surgical procedure commences.
- *Treatment of hypertension:* preserved spinally mediated autonomic function will result in variations in blood pressure during organ recovery. Consider the use of high dose opiates such as fentanyl (200-500 mcg) and volatile anaesthetics.
- *Treatment of hypotension:* hypotension is usual following loss of brainstem function and will require careful attention to fluid balance and restoration of vascular tone with vasopressin, which will ordinarily have been started in ICU. Often, inotropic support is required; the choice of catecholamine will be dictated by retrieval team preferences and invasive monitoring, including cardiac output; dopamine is a common choice.
- When dissection is complete, heparin 300 units.kg^{-1} (20,000-25,000 units) is usually given. The retrieval team will advise on when to give heparin.
- Other medications that may be requested: methylprednisolone (15 mg.kg^{-1} up to 1 g), DDAVP 1-4 microgram to treat diabetes insipidus, a broad-spectrum antibiotic, thyroid hormone supplementation in the form of a tri-iodothyronine (T3) bolus and/or infusion 3 micrograms per hour.

Appendix 4:
Timelines and Responsibilities in Donation after Circulatory Death as per the UK Donation Ethics Committee[4]



Appendix 5:
Checklist for LUNG DCD in Theatre

Lung Donation after Circulatory Death
Checklist for Lung Optimisation in Theatre

For completion in the operating theatre by the anaesthetist/thoracic surgeon/donor care physiologist.

HOSPITAL ADDRESSOGRAPH or

Surname .....

First Name .....

Date of Birth .....

Hospital Identifier/
ODT Donor Number .....

Time of onset of circulatory arrest .....

Diagnosis of death has been confirmed and recorded in the patients notes (tick box if yes). ☐

Secure the patient's airway with a cuffed endotracheal tube (if the patient has been extubated).

Intubation time .....

Ensure TEN MINUTES from circulatory arrest has occurred before optimising lungs.

Set the flowmetre to 15L/min, FiO_2 1.0 (100% 0_2)

↓

Using the anaesthetic circuit, manually carry out a **single recruitment manoeuvre** to reinflate the lungs – *suggested manoeuvre: maintain 30cm H_2O for 30 seconds using APL valve.*

Reinflation time .....

Must be a minimum of TEN MINUTES since time of onset of circulatory arrest.

↓

Set the APL valve to **CPAP 5cm H_20** and maintain flow at 15L/min.

↓

At a later time further lung recruitment manoeuvres are often necessary. These will be guided by the thoracic team.

↓

Hand over care of the airway to the thoracic team.

Anaesthetist/Thoracic Surgeon/Donor Care Physiologist

Name: ..... Signature: .....

Grade: ..... Date and Time: .....

If detached; file with patient notes after use.

Rationale for Lung Optimisation

1. Lung Donation after Circulatory Death (DCD) is vital to increasing the number of lungs available for transplantation and there is evidence to suggest that lungs from DCD donors are as successful for transplantation as those retrieved from a donor following brain stem death.

2. After circulatory arrest and following the diagnosis of death it is vital to secure the patient's airway with a cuffed endotracheal tube as aspiration during abdominal retrieval procedures will prevent lung donation. This procedure can be performed **any time** after the diagnosis of death. Some patients may already have a cuffed airway (either endotracheal tube or tracheostomy) in situ.

3. There is a potential risk that lung ventilation, following circulatory arrest, may restore cardiac activity and therefore cerebral circulation. However, without reinflation and oxygenation, lung donation cannot successfully occur.

No lung recruitment manoeuvres should be carried out within the first 10 minutes following circulatory arrest.

4. The Department of Health organised consensus meeting agreed to a single recruitment manoeuvre with oxygen, after a minimum of 10 minutes circulatory arrest, followed by the application of CPAP; in accordance to the method outlined on this flow chart.

5. Further recruitment manoeuvres are often necessary, at a later time, during the lung retrieval process, and are guided by the thoracic team. Under no circumstances should the patient be mechanically ventilated, until there has been satisfactory exclusion of the cerebral circulation (recommended method is cross clamp across the arch of the aorta), as there is a theoretical risk that rhythmic movements of the lungs could restore cardiac activity.

This checklist was adapted for use, referencing the Consensus Statement on Donation after Circulatory Death from the British Transplantation Society and Intensive Care Society (organised by the Department of Health (in association with the Devolved Administrations) and NHSBT); 2010.

http://www.odt.nhs.uk/deceased-donation/best-practice-guidance/donation-after-circulatory-death/

For further information please also refer to:

National Standards for Organ Retrieval from Deceased Donors (please ask the SNOD).

https://www.aomrc.org.uk/wp-content/uploads/2016/05/Controlled_donation_circulatory_death_consultation_0111.pdf

Appendix 6:
Diagnosis of Death Using Circulatory Criteria (DCD form)

The Diagnosis of Death Following Cardiorespiratory Arrest

For Use in Adults and Children

Date and time.....

Doctor Name and Designation

Name:.....

Signature:.....

Grade:.....

HOSPITAL ADDRESSOGRAPH or

Surname.....

First Name.....

Date of Birth.....

NHS Number.....

Pre-Conditions to Diagnosis

1. Are you satisfied there is simultaneous apnoea and unconsciousness in the absence of circulation?	Yes / No
2. Are you satisfied there is no indication to commence/continue resuscitation?[1]	Yes / No

Diagnosis

3. Have you observed for a minimum of 5 (five) minutes to establish that irreversible cardiorespiratory arrest has occurred?[2]	Yes / No
4. Is there absence of central pulse on palpation and absence of heart sounds on auscultation?	Yes / No
5. In the setting of organ donation after circulatory death one of these modalities **MUST** be used in addition to the actions in 4: • Asystole on continuous ECG display • Absence of pulsatile flow using direct intra-arterial pressure monitoring • Absence of contractile activity using echocardiography **Do these modalities confirm an absence of the circulation?**	Yes / No / Not used
6. Is there absence of the pupillary response to light?	Yes / No
7. Is there an absent corneal reflex?	Yes / No
8. Is there an absent motor response when supraorbital pressure is applied?	Yes / No

Completion of Diagnosis

Are you satisfied that death has been confirmed following cardiorespiratory arrest?	**Yes / No**
The time of death is recorded at the time at which these criteria are fulfilled.	**Date:** **Time:**
Doctor's Initials:	
Please give the full name of the nurse present at the moment of death: ..... Please give the full name of any other person present at the moment of death:	
Did any other person present at the time of death express any concern regarding the cause of death?	**Yes / No / Don't know**

Notes

1. Contributory causes to the cardiorespiratory arrest (e.g. hypothermia ≤34°C, endocrine, metabolic or biochemical abnormality) should be considered and treated, if appropriate, prior to diagnosing death.
2. Any spontaneous return of cardiac or respiratory activity during this period of observation should prompt a further five minutes observation from the next point of cardiorespiratory arrest.

Reference

Academy of Medical Royal Colleges (2008) "A Code of Practice for the Diagnosis and Confirmation of Death" http://aomrc.org.uk/wp-content/uploads/2016/04/Code_Practice_Confirmation_Diagnosis_Death_1008-4.pdf