

Organ Donation

Final FRCA Teaching UHCW
November 2021

Rob Green, UHCW Clinical Lead for Organ Donation

RCoA Stage 3 (2021)

- ICM key capability J:

Explains the physiological and pharmacological requirements for the clinical management of the patient for organ donation

UK Organ Donation

- 1,180 Deceased Organ Donors 2020/21
 - 25% decrease
 - 73% of total organ donors
- 3,391 Patients with lives saved or improved by being a recipient 2020/21
 - 30% decrease
- 474 Patients died whilst awaiting transplant
 - Uncaptured are those “taken off” lists

Duty of Care

- “Helping others after my own death” is an altruistic and compassionate wish.
- Making efforts to fulfill that wish (declared or deemed) is an important and expected part of End of Life care.

Our role

NHS
Blood and Transplant

Organ and Tissue Donation and Transplantation

Activity Report 2020/21



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Perioperative management of the organ donor after diagnosis of death using neurological criteria

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Keywords: anaesthesia; brain death; tissue and organ procurement

Learning objectives

By reading this article you should be able to:

- Specify the adverse effects on organs after the diagnosis of death using neurological criteria.
- Describe the management of the donor's physiology to optimise the quality of organs donated.
- Outline the retrieval process and procedure, and the associated anaesthesia interventions required at each stage.

Key points

- Communication between the anaesthetist and the retrieval team is key to a successful retrieval operation.
- The medical management of the deceased organ donor that began in ICU should continue through the retrieval process.
- The aim of medical management is to optimise the quality of transplantable organs.
- The donor is dead and so drugs are given to attenuate physiological responses, not to provide 'anaesthesia'.

Diagnosis of death using neurological criteria (DNC), previously termed brain death or brainstem death, is a clinical diagnosis. A diagnosis of DNC is made when severe, irreversible, structural brain injury leads to irreversible loss of both the capacity to breathe and the capacity for consciousness.¹ Each year, organs are retrieved for transplantation from approximately 1000 deceased organ donors in the UK and 80 deceased organ donors in the Republic of Ireland (ROI).^{1,2} Sixty percent of deceased organ donations in the UK take place after death has been diagnosed by neurological criteria and 40% after death has been diagnosed by circulatory criteria.³ In this article, we describe the perioperative management of the organ donor following DNC in the UK and ROI.

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Personnel and their roles

Intensive care

The anaesthetist is one member of a large team of professionals that facilitates the donation, retrieval and transplantation of organs. Patients are admitted to the ICU, often for a number of days before the diagnosis of death. Intensivists, intensive care nurses, physicians, surgeons and support staff care for the patient and ensure that the family is informed and supported at all stages. The intensive care team is responsible for the medical management of the patient up until the point at which death is declared. Once death has been declared the intensive care team turns their focus to the medical management of the potential organ donor.

Specialist nurse-organ donation

The specialist nurse-organ donation (SNOD) is the local coordinator of the donation and retrieval process in the UK. The National Institute for Health and Care Excellence describes the criteria for referral of patients who have suffered a

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Potential for Donation

- Donation following Cardiac Death (DCD)
- Donation following confirmation of death by neurological criteria (DNC)
(aka Donation after Brain Death, DBD)

<https://www.odt.nhs.uk/deceased-donation/best-practice-guidance/consent-and-authorisation/>

<https://youtu.be/O7pmaj4q1h8> (2min)

<https://youtu.be/QswDUp75M7I> (5min)

Multi-Disciplinary Management

- Specialist Nurse in Organ Donation
- Intensive Care Nurses
- Intensive Care Doctors
- Anaesthetic Doctors/Associates
- Theatre Staff
- Retrieval Team

Drugs for Physiology

Brain ischaemia causes dysregulation

- Hypertension
 - Usually transient, ?brainstem testing
- Hypotension
 - Euvolaemia, prefer vasopressin
- Spinal reflexes
 - NMB/volatile
- Diabetes insipidus
 - Correct deficit, monitor electrolytes

Table 1 Summary of the management of the potential organ donor.²¹

Management of the potential organ donor

Success rates of organ transplantation can be improved with optimal management of the potential organ donor.

Haemodynamics	Respiratory	Metabolic	General
<p>Monitoring</p> <ul style="list-style-type: none"> Place an arterial line and a central venous catheter (jugular or subclavian veins) <p>Blood pressure</p> <ul style="list-style-type: none"> Reduce vasoconstrictors as far as possible Use vasopressin as first-line vasopressor (if required) <p>Volume replacement</p> <ul style="list-style-type: none"> Use isotonic crystalloids for volume replacement if required e.g. Hartmann's solution <p>Cardiac output</p> <ul style="list-style-type: none"> Optimise cardiac output with inotropes if required (when euvoelaemic) Echocardiography may be useful to guide fluid therapy/vasoactive medications <p>Myocardial dysfunction</p> <ul style="list-style-type: none"> Consider allowing up to 72 hr for potentially reversible myocardial dysfunction to improve 	<p>Lung-protective ventilation</p> <ul style="list-style-type: none"> Deliver tidal volumes of 6-8 ml/kg ideal body weight Keep plateau inspiratory pressures < 30 cmH₂O PEEP (Positive End Expiratory Pressure) 5-10 cmH₂O as a routine Lung recruitment should be performed cautiously if necessary <p>Lung water/pulmonary oedema</p> <ul style="list-style-type: none"> Diurese to euvoelaemia where volume overload exists 	<p>Diabetes insipidus</p> <ul style="list-style-type: none"> Diabetes insipidus results in large volumes of dilute urine with increase serum Na⁺ Anticipate and treat with desmopressin (DDAVP) +/- vasopressin Replace volume deficit and ongoing fluid losses with, in the first instance, 0.45% saline replacing the previous hour's urine output ml for ml <p>Hyperglycaemia</p> <ul style="list-style-type: none"> Intravenous insulin infusion as needed <p>Hypothermia</p> <ul style="list-style-type: none"> Anticipate and prevent heat loss Actively warm if necessary <p>Combined hormone therapy</p> <ul style="list-style-type: none"> Some low level evidence that hormone therapy improves the number of successfully retrieved organs or outcome after organ transplantation However hormone therapy is likely to be safe Consider giving vasopressin; glucocorticoids; thyroid hormone; and insulin 	<p>Suspected infection</p> <ul style="list-style-type: none"> Treat suspected infection Sampling of blood, urine, sputum etc (for culture & sensitivity) should be performed and treatment started as per local guidelines



Immediately peri-procedure

- DNC - move to theatre after goodbyes
- DCD - ideally withdrawal in theatre, otherwise move from place of WLST (*rapidly*)
 - AoMRC confirmation of death by “appropriately trained and qualified individual” monitoring patient for 5 minutes: absence of central pulse and heart sounds.
 - Confirm absent: 1. Pupil response light; 2. Corneal response touch; 3. Motor response to supraorbital pressure

During retrieval

- Sternotomy/Laparotomy
- Be prepared for speedy retrieval team
- Spinal reflexes
 - Don't underestimate them!
- May be asked to re-inflate lungs
 - AoMRC: *"It is obviously inappropriate to initiate any intervention that has the potential to restore cerebral perfusion after death has been confirmed."*
 - Cautious recruitment after DCD if needed, but slow and gentle

After retrieval

- (Hopefully!) you will be thanked for your time
 - The team will make it clear when no further anaesthetic assistance is required
- The retrieval team may be too busy to answer specific questions, but *do* please ask SNOD
- Take a moment to reflect/debrief
 - Formally/informally
 - You've helped a number of patients/families
 - Please don't rush onto your next case (if possible)

Thanks



Questions?



Organ Donation

- An example of good coming from tragedy
- Physiological changes from brain/spinal ischaemia/dysregulation may need pharmacological management
- Specific theatre challenges

(SNODs are awesome - if in doubt just ask, they will guide you!)