Objective

To describe the process to enable facilitation of abdominal ANRP (Abdominal Normothermic regional perfusion) in DCD organ donation

Changes in this version

Reference to 'SNOD' replaced with 'SN'.
Addition of restriction of Abdominal NRP in pregnant donors (page 1).
Clarification of 'donor Hospital checklist' being INF1424 (page 2).
Addition of Birmingham, Newcastle and Kings NORS Team sample requirements (page 3).
Update to SN process of uploading NRP Passport to DonorPath and removal of email requirement (page 5).
Clarification of 'follow process' language to reference SOP's (SOP5499 Page 3 & SOP5930 / SOP5931 Page 4)
Removal of requirement to add ANRP sticker to HTA Forms.

Roles

- **SN** – Specialist Nurse – Organ Donation / Specialist Requester: Facilitate organ donation process and liaise with ODT Hub Operations, NORS team and local hospital team for ANRP organ retrieval
- **NORS -** Facilitate organ retrieval with ANRP
- **Hub Operations -** to contact the accepting centres to inform them of ANRP retrieval. To co-ordinate mobilisation of the ANRP and NORS team
- **Recipient Centres -** To inform SN and ODT Hub Operations of request for ANRP retrieval.
- **APOPS -** To monitor ANRP circuit, test samples/liaise with host hospital for sample testing.

Restrictions

- This SOP is restricted to abdominal NRP only. This SOP is to be followed by a trained SN. In the event of a SN who is in training, this SOP is to be utilised under supervision.
- This SOP is to be used for Maastricht category III or IV donation after circulatory death organ donors.
- Abdominal NRP must not be utilised in any potential donors with confirmed pregnancy.

Instructions

Organ allocation, acceptance and pre-mobilisation of NORS

RPoC informs Hub Operations of intention for ANRP to be used.

Hub Operations to advise SN, abdominal and cardiothoracic organ RC that ANRP is being used. It may be necessary to add an extra 30-minute prep/ theatre setup time to muster time. However, for established ANRP retrieval teams the standard 90 minute set up time is usually sufficient.

Hub Operations notify ANRP group by daily email of all ANRP retrievals - noveltechnologynotification@nhsbt.nhs.uk

ANRP NORS team will arrive 1-2 hours before the proposed withdrawal time. For combined procedures with cardiothoracic teams, the scheduled arrival should be 2 hours ahead of proposed withdrawal time to enable full communication of the steps involved in retrieval to ensure a successful outcome for both teams.
SN to put lead ANRP surgeon in contact with cardiothoracic surgeon to discuss ANRP protocol if cardiothoracic organs are also being retrieved.

SN will discuss "timings" for organ stand down with lead surgeon and implanting centre. **NB. This can be different to normal DCD protocol.**

SN to establish with ANRP team if they have equipment to process blood samples during retrieval (i.e. Piccolo machine), if no machine is available, SN to ensure donor hospital labs are aware that blood samples will be taken during procedure and will need to be processed as urgent samples
SN to advise local ITU and theatre teams of the potential longer set up time and that the case itself will take 2 hours longer than the standard DCD procedure. SN to ensure that the theatre floor space is large enough for DCD/ANRP, and that withdrawal is as close to the theatre as possible.

All ANRP donors will require Diathermy machine and the patch attached as with a standard DBD retrieval.

SN to review **INF1424** with theatre coordinator, to ensure availability of any additional equipment required by the retrieval team specifically for NRP.

Ensure that 4 units of blood is cross matched to the donor and will be available for theatre. Ideally these units of blood will be released from the lab and stored within the theatre complex prior to the start of surgery.

SN to identify if any logistical challenges in donor hospital to obtaining and storing blood prior to retrieval and establish alternative plan

SN and APOPS to liaise with local theatre team to ensure any unused blood is returned to the blood bank within the specified time frame and return blood traceability forms for any blood used as per local hospital guidance.

For abdominal ANRP where cardiothoracic organs will be retrieved under direct procurement, 8 units of blood will be required.

Theatre preparation

APOPS to inform SN if blood sampling for LFTs during retrieval will take place at donor hospital lab or by POCT (portable blood analyser) 'Piccolo'. If required at donor hospital:

- SN to advise labs that bloods will be sent
- LFTs X 5, will be sent together to the labs at the end of the 2-hour ANRP procedure
- To be tested as urgent samples.

In the event of a device failure of POCT, 2 LFT samples will be taken (as back-up) at 0hrs and 2hrs to be sent to the donor hospital lab and processed urgently. SN to follow up with labs and liaise with NORS team.

Blood cultures may be taken at 0 and 2 hours and processed as per table below.

Centre	Sample Collection	Sample Processing	Sample Result
Edinburgh	Sample obtained by NORS team	Sample processed @ donating hospital.	Sample results obtained by NORS identified individual.
Cardiff	Sample obtained by NORS team	Sample transported with NORS to base hospital and processed at NORS base hospital.	Sample results obtained by NORS identified individual.
Royal Free	Sample obtained by NORS team	Sample transported with NORS to base hospital and processed at NORS base hospital.	Sample results obtained by NORS identified individual.
Addenbrookes	Sample obtained by NORS team	Sample transported with NORS to base hospital and processed at NORS base hospital.	Sample results obtained by NORS identified individual.
Birmingham	Sample obtained by NORS team	Sample transported with NORS to base hospital and processed at NORS base hospital.	Sample results obtained by NORS identified individual.
Newcastle	Sample obtained by NORS team	Sample transported with NORS to base hospital and processed at NORS base hospital.	Sample results obtained by NORS identified individual.
Kings	Sample obtained by NORS team	Sample transported with NORS to base hospital and processed at NORS base hospital.	Sample results obtained by NORS identified individual.

The NORS centre will be responsible for notifying NHSBT if there are any positive results and all results will be passed to other accepting centres as per **SOP4938** - Sharing Clinical Information and **MPD867** - Findings Requiring Additional Action.

Normal documentation handover and pre-theatre checks will be carried out including handover of agreed stand-down time. Hand over QUOD box (if consent/authorisation) as per **SOP5930 / SOP5931**, ensuring completion/scanning of QUOD sheet.

Handover and plan for surgical procedure to be discussed and agreed with abdominal and cardiothoracic team together (if applicable) prior to proceeding with withdrawal of life sustaining treatment.

Check that cross matched units of blood are available and agree a plan with APOP and local staff on how and when to collect units from blood bank. Ideally, they need to be in the theatre complex prior to WLST.

One safety brief for all attending teams both abdominal and CT (if applicable).

↻ DCD treatment withdrawal & Retrieval

Withdrawal of life sustaining treatment as per local hospital protocol. Timings communicated to theatre, RPoC and Hub Operations as per **SOP5499**.

Death is confirmed and certified by the hospital doctor as per agreed protocol. The donor is then transferred to the operating theatre as per DCD protocol.

ID checks by NORS team/s.

Ensure that a member of the surgical team is allocated to attach Diathermy machine to the donor.

Laparotomy, cannulation and connection to the ANRP circuit. ANRP will run for up to 2 hours.

If ANRP is unable to be established, the normal DCD process will be followed with an immediate conversion to standard cold perfusion. SN to inform accepting centre (Liver and CT) and Hub Operations that ANRP has been stood down. Hub Operations to inform any other accepting centres. If accepting centre decline, Hub Operations to fast track the liver as per standard practice.

If the NORS team establish NRP and the function of an organ (liver or kidneys) improves and is felt to be transplantable, but has not been accepted, the SN should have a conversation with Hub Operations to agree a plan for possible re offer of Liver/Kidney.

QUOD samples (if consent/authorisation) taken and processed as normal, except for liver and kidney biopsies. These are placed in the ANRP box with variances documented in the associated box paperwork. All other biopsies taken (spleen and left ureter) remain stored in QUOD box. This process is carried out by the retrieval team.

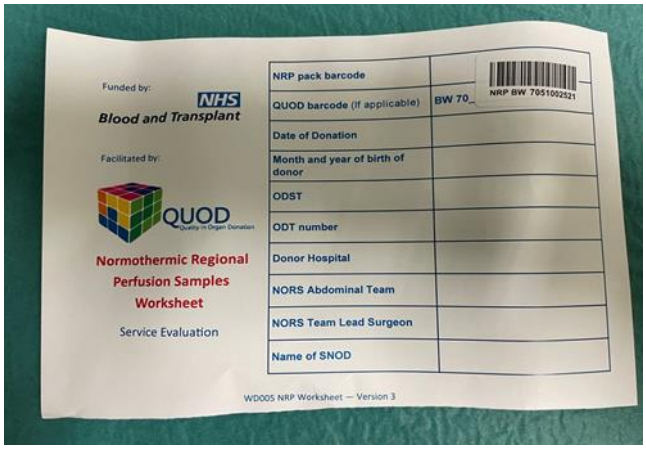
Service Evaluation for NRP – samples taken

For each NRP case the following biopsies and blood samples may be taken by the retrieval team:

- Blood samples at time 0hrs, 1hr and 2hrs
- Liver biopsy at 0hrs and 2hrs
- Kidney biopsy at 2hrs
- Urine at 2hrs

These samples are taken for the purpose of service evaluation to revisit if there are any clinical impacts on recipients. As such, consent/authorisation is implicit in the consent/authorisation for transplantation. These samples are stored in the NRP sampling box and documented on the NRP samples worksheet (sent inside the NRP box).

***NB**. The NRP sampling box and paperwork is provided by the biobank QUOD and is clearly marked NRP Service Evaluation, this is completely separate to the QUOD boxes for research. See Images below.*



After 2hrs, the ANRP process will convert to standard cold perfusion and organ retrieval proceeds in a similar manner to DBD donation. Heparin will be administered via the ANRP pump and the organ preservation practitioner will also add heparin to the perfusion fluid as per standard DCD process.

Please note, for the purposes of Hub ops offering on organs the start of standard cold perfusion is the start of cold ischemic time and this time should be communicated to Hub Ops.

Responsibility remains with retrieval surgeon to document biopsies on HTA A form and surgical team to complete QUOD worksheet.

↻ NRP Passport – ANRP retrieval team will complete FRM6725 – NRP Passport

A copy of the completed form **(FRM6725)** will be made available for each retrieved abdominal organ (not required for cardiothoracic organs due to retrieval process and cardiothoracic HTA-A form informing recipient centres of NRP being performed)

The retrieval team will provide and retain the original hardcopy of the completed form. The SN will upload to DonorPath under the 'NRP passport' category. The completed paper NRP record will stay with the NORS teams.

⛔ End of Procedure

Definitions

- SN - Specialist Nurse Organ Donation
- DCD - Donation after Circulatory Death
- HTA - Human Tissue Authority
- NORS - National Organ Retrieval Service
- RC - Recipient Centre
- RPoC - Recipient centre point of contact
- APOPS - Advanced perfusion and Organ Preservation Specialist)
- QUOD - Quality in Organ Donation Research

Related Documents/References

- **FRM6725** - NRP Passport
- **INF1424** - Basic Guidelines for Theatre Staff at Donor Hospital
- **MPD867** – Fin dings Requiring Additional Action
- **SOP4938** - Sharing Clinical information
- **SOP5499** - Theatre Manual for Deceased Organ Donors
- **SOP5930** – (QUOD) Donor Family Conversation and Collection of Samples for Quality in Organ Donation Research in England/Wales/Northern Ireland – Specialist Nurse Role
- **SOP5931** – Donor Family Conversation and Collection of Samples for Quality in Organ Donation Research in Scotland – Specialist Nurse Role

Document Details:

Document Title	Abdominal NRP	
Document Number & Revision Number	SOP5917 version 3	
Type of Change	Change to Existing Process	
Stakeholders who require training	**Trainee new to the process**	**Trainee trained to the previous revision.**
	Specialist Nurses in Organ donation in all ODST Regions	Specialist Nurses in Organ donation in all ODST Regions
Knowledge required prior to training	Full training through of MPD with PDS and Quality Lead	Trained to previous version 13.
Critical aspects of process		

Objective: To describe the process to enable facilitation of abdominal ANRP (Abdominal Normothermic regional perfusion) in DCD organ donation.

Training Plan:

	Trainee new to the process	**Trainee trained to the previous revision.**
Recommended Training Method	Practical demonstration and read through the document with Regional ODST Quality Lead. Training material for this version will not cover the whole SOP content.	Train out via standardised video from SOP Author to ODST Regional Quality Leads train to TBTR. The same video can be disseminated via QLs and record TBTRs
Assessment	TBTR recording. •	TBTR recording. •
Cascade Plan	Practical demonstration and read through the document with Regional ODST Quality Lead. Training material for this version will not cover the whole SOP content. •	Train out via standardised video from SOP Author to ODST Regional Quality Leads train to TBTR. The same video can be disseminated via QLs and record TBTRs •

Training Score – Training Plan Risk Matrix (Collapsible – Click ▸ icon to open/close)