DCD Heart Donation Guide to Donor Selection and Assessment Criteria

Contents

Donor Inclusion Criteria

- Controlled DCD (Maastricht Category 3 and 4)
- Age ≤ 50 years
- Weight ≥ 50 kg
- Weight ≥30 kg – if suitable paediatric recipient at GOSH or Newcastle, discuss directly with Papworth on call retrieval consultant. Refer to DCD paediatric protocol. Protocol will be updated in future once perfusion technology available for < 30kg donors.
- Consent/authorisation obtained from next of kin/ organ donor register
- If no FCU or TTE is available, the DCD heart should not be offered for transplantation

Donor Exclusion Criteria

- Previous cardiac surgery
- Previous midline sternotomy
- Valvular heart disease
- Congenital heart disease
- Significant coronary artery disease
- Chronic atrial fibrillation
- Insulin dependent diabetes
- Virology: HIV+
- Current IV drug abuse
- Tumour with high risk of transmission according to SABTO guidelines

NORS team Mobilisation

- Cardiac NORS team to arrive 2 hours before the planned withdrawal of treatment time
- Abdominal team to arrive 1 hour before withdrawal of treatment time
- If NRP being used, both teams must arrive at the same time, namely 2 hours before planned withdrawal time

Composition of the DCD CT Retrieval Team

- Theatre practitioner scrubbing for organ retrieval
- Organ preservation practitioner (OPP)
- Ex situ Perfusion Specialist
- Two surgeons, at least one has been accredited as competent DCD cardiothoracic organ retrieval

DCD Heart Assessment

- A transthoracic Echocardiogram (TTE) or a Focused Cardiac Ultrasound (FCU – previously known as FICE) as per proforma (appendix 1) will be performed for all donors and be available at the time of the offer. All efforts should be made to transfer the images for review by the implanting team prior to mobilization of the NORS DCD Heart team. If that is not possible, the retrieval team will review the images (only if they are available on arrival at the donor hospital) and communicate with the implanting team prior to withdrawal of life sustaining treatment (WLST).
- If there are no images available but a full detailed TTE report is available, the retrieval should proceed if the recipient centre is happy with the findings. **This agreement must be in place prior to DCD heart team being booked by Hub.**
- as per proforma (appendix 1)
- NO TOE (transoesophageal) echocardiography will be performed at any stage!
- Echo main criteria: EF > 50%, no valvular pathology, PW and/ or IVS < 15mm

DCD HEART Withdrawal of life sustaining treatments

- Withdrawal of life sustaining treatments should ideally be undertaken in the anaesthetic room / theatre complex by the local hospital intensive care team.
- If it is not local practice to withdraw in the anaesthetic room / theatre complex then it may need further discussion between retrieval and donor hospital

teams, aiming to withdraw support as close to theatre as possible, in order to minimize the ischaemic time during transfer to theatre. **The place of withdrawal should be agreed before the NORS team is mobilised to avoid disagreement at retrieval.**

- Height of donor table should be as the same as theatre table. This is done simply by marking the height of the donor bed by tape of the SNOD trousers and match this with the theatre table height.

- SNOD – If Heart is not suitable for transplantation, please explore pathway for research approved project or valves.
- **It is recommended that the donor is transfused to Hb of > 100 g/L.** This is to ensure that oxygenation of the heart is not limited by anaemia during machine perfusion. Timing of transfusion - once CT NORS team is mobile.

Heparin in the donor before circulatory arrest

Maastricht 3 donors: No pre-mortem interventions are currently allowed in the UK.

Maastricht 4 donors (donor is already certified dead by brain stem criteria): heparin can be given. A suggested dose is 300units/kg (around 25000 units for an 80kg person) given just prior to withdrawal of treatment.

- **SNOD – prepare units of packed red blood cells (cross matched to donor):**
    - **4 units – no NRP**
    - **8 units - abdominal NRP (NRP with DCD heart protocol)**

DCD HEART Functional Warm ischaemia and Stand Down Criteria

- After withdrawal of treatment, regular contact will be maintained with the SNOD regarding blood pressure and arterial saturations on the donor.
    - Functional warm ischaemia begins when systolic blood pressure falls below 50mmHg.
    - 30 minutes from beginning of functional warm ischaemia until cold cardioplegia is delivered will be tolerated before standing down.
    - Essential for the team diagnosing death to be familiar with the Academy of Medical Royal Colleges' Code of Practice for the Diagnosis and Confirmation of Death. View the Code of Practice.
    - If cardiac arrest does not occur within 120 minutes from withdrawal of treatment, consider standing down DCD heart retrieval at this stage, unless death is likely to be imminent.
    - We recommend having a discussion between retrieval and recipient centres after 60 min from withdrawal.

For all heart retrievals:

Initially perform the heart assessment for:

- **coronary disease**
- **visible anomalies**
- **trauma**
- **left ventricular hypertrophy**
- **congenital disease**
- **other causes preventing transplantation**

If none of the above give clear instruction to open and prime the OCS.

The heart assessment can take place while draining blood to prime the OCS.

Links to all DCD Heart and Lung Surgical Protocols

https://www.odt.nhs.uk/retrieval/policies-and-nors-reports/

DCD Heart retrieval

DCD Heart and Lung retrieval

DCD Heart retrieval with ANRP

DCD Lung retrieval with ANRP

DCD Heart and Lung retrieval with ANRP

Appendix 1: Donor Heart Transthoracic Echo Assessment Guide

Approved v2.0 Oct 23

Donor Heart Transthoracic Echo Assessment

If you are fully accredited please scan & report the echo as per BSE standards.

If you are focused echo accredited (i.e. Fusic Heart or Level I BSE), please scan and report as per your accreditation standards, consider recording the following 18 views is possible and transfer images to transplant centre.

Remote Image review is essential in all cases.

Parasternal long axis

1) 2D
2) Colour over aortic valve*
3) Colour over mitral valve*
4) Measure*: Intraventricular septum thickness
Posterior wall thickness,
End diastolic LV diameter

Parasternal short axis

5) 2D Aortic level
6) Colour over tricuspid*
7) Colour over pulmonary valve*
8) 2D Mitral level
9) 2D Papillary muscle level
10) 2D Apical level

Apical 4 Chamber

11) 2D
12) Colour over mitral valve*
13) Colour over tricuspid valve*
14) Measure*: RV basal diameter

Apical 5 Chamber

15) 2D
16) Colour over aortic valve*

Subcostal

17) 2D
18) Colour over inter-atrial septum*

Reporting

If you feel able please comment on following:

Inotrope/vasopressor level:
PEEP on ventilator:

LV function: normal/impaired/severely impaired/NA
RV function: normal/impaired/severely impaired/NA
Aortic valve: normal/stenotic/regurgitant/NA
Mitral valve: normal/stenotic/regurgitant/NA
Tricuspid valve: normal/stenotic/regurgitant/NA
Pulmonary valve: normal/stenotic/regurgitant/NA
Other (eg VSD/effusions):

LV diameter (cm):
LV septal wall thickness (cm):
LV posterior wall thickness (cm):
RV basal diameter (cm):

Please transfer images to transplant center

Advanced

If you are able to perform a complete BSE Level 2 Echo this would be ideal.

Please record LVEF, regional wall abormalities, RV function and any valvular abnormalities with quantification.

Many changes occur at end of life and do not necessarily preclude transplantation e.g RWMA

* See overleaf for how to make measurements

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Parasternal long axis measurements

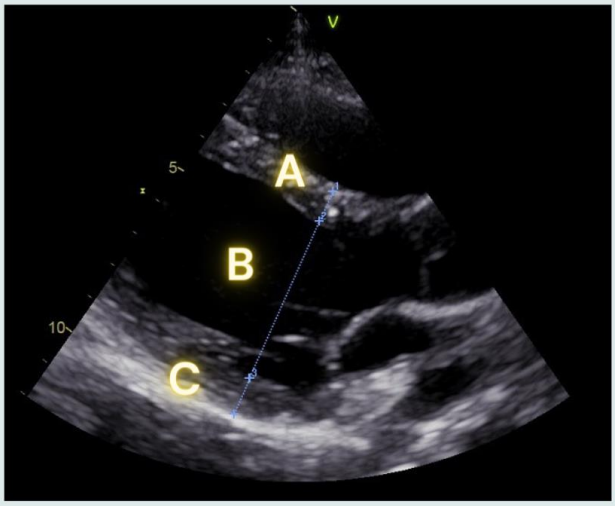
Measure these parameters in diastole (when the LV is the biggest)

A Intraventricular septum thickness

B End diastolic LV diameter

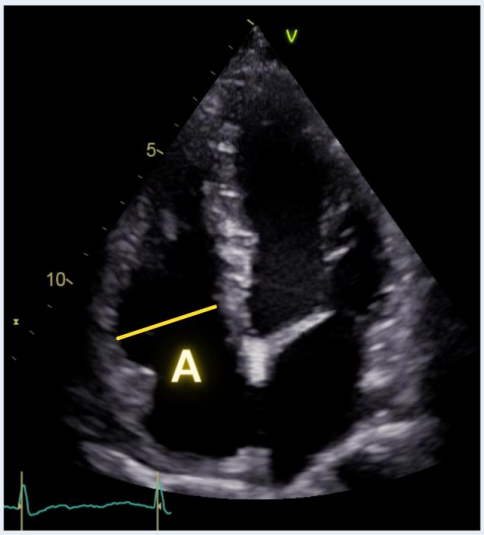
C Posterior wall thickness

(*Consider end systolic LV diameter*)



Apical 4 Chamber measurement

A RV basal diamater in diastole (when RV is biggest)



Colour Nyquist Limit

When taking colour images ensure the colour scale Nyquist limit is set between 50-60cm/s.

A wide box to capture any valvular lesion is useful but too wide & the image frame rate will reduce

NHS Blood and Transplant

NHSBT National Focused Echocardiography for Donor Hearts Working Group
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