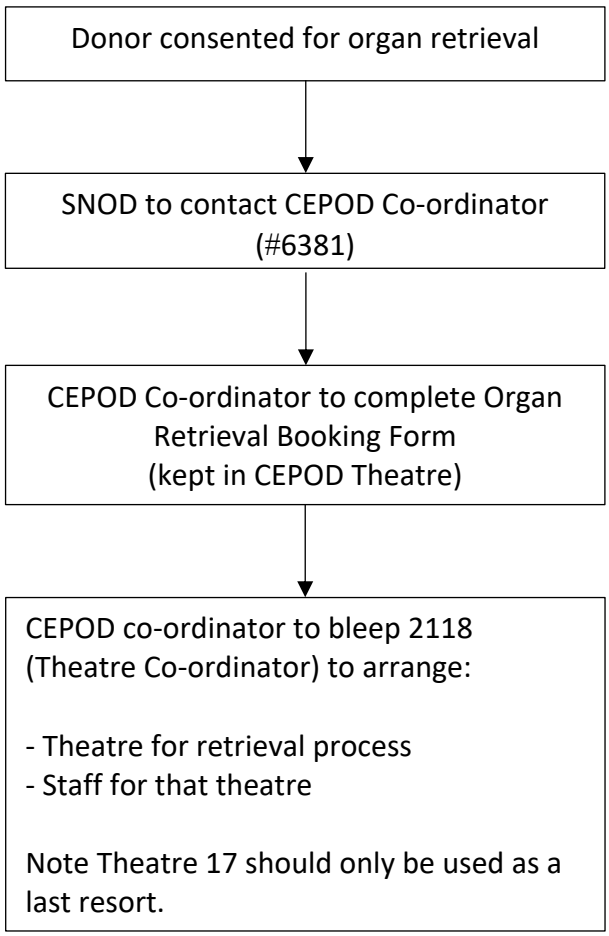
Retrieval of Organs in RIE Theatres: Standard Operating Procedure (SOP)

The aim of the following SOP is to optimise theatre usage, foster good communication between theatre and National Organ Retrieval teams (be they local or from another location), and ensure appropriate and fair staff allocation.

Booking Process



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Logistics and Timing

1. All communication relating to the case should be directly with the SNOD.

2. Theatre allocation should be based on workload and staffing levels. Any theatre and associated staff can be utilised if available. This includes DCN theatres, although the time to theatre is very important in DCD cases and therefore DCN theatres should not be used for these patients if at all possible.

3. In the case of DBD donation, If Theatre 17 is to be used, all pre-existing booked cases categorised Priority C (within 6 hours), or more urgent, should take priority over the retrieval. Priority C patients are awaiting laparotomy for bowel perforation or intra-abdominal sepsis, for example.

    - On rare occasions, the donor's physiological condition may necessitate a more expedited process in order to preserve organ function.
    - Similarly, on rare occasions the recipient's condition may require a change in urgency. This would include a heart transplant recipient who is already under anaesthetic in another location.

4. In DCD donation, the wait for asystole may be up to 3 hours and the donor may be moved to theatre at any point within this time frame. After arrival in theatre, the donor will likely be placed on NRP for 2 hours before retrieval begins. The allocated theatre must be able to accommodate this.

5. If retrieval is out of normal working hours and CEPOD theatre is already in use as per point 3, then a second theatre team may be required to attend.

    - If organs from retrieval are to be transplanted locally, then the RIE Transplant Theatre Team would not normally be asked to assist in the retrieval process. The second on-call CEPOD team may therefore need to be contacted.

    - If organs from the retrieval are to be transplanted elsewhere, then the Transplant Theatre Team can contribute to staffing either the retrieval theatre or the CEPOD theatre, guided by clinical need.

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6. Efforts to keep extraneous noise in theatre are appreciated. Necessary activities such as telephone calls to facilitate organ placement should be done in the scrub area or if possible, outside the operating theatre.

7. Last offices should be carried out by the SNOD and host theatre team once the time-critical step of organs being dispatched to the receiving centres has been completed.

Notes

Definitions

DBD: Donation after Brainstem Death. Previously referred to as "heart beating" donation. Retrieval of organs from patients whose death is confirmed by neurological criteria, in cases of severe brain injury. This can only be applied to patients who are on mechanical ventilation, usually in ICU.

DCD: Donation after Circulatory Death. Previously referred to as "non-heart beating" donation. Retrieval of organs from patients whose death is confirmed by cardiorespiratory criteria after planned withdrawal of treatment (eg mechanical ventilation or inotropes).

NRP: Normothermic regional perfusion. A technique similar to ECMO (though slightly less complex) to oxygenate donor organs in situ following DCD death. NRP helps to preserve organ function by restoring a circulation to the abdominal organs . Almost all donors undergoing DCD retrieval in Lothian will be placed on NRP for up to 2 hours.

Timing

One of the aims of organ retrieval is to minimise *warm ischaemic time,* i.e. the time between onset of inadequate organ perfusion and the start of protective cold perfusion *in situ*. After withdrawal of treatment, sustained systolic blood pressure <50mmHg is deemed to be the onset of warm ischaemic time.

Warm ischaemia is minimised in DBD retrieval, however, in DCD retrieval, organs will be subjected to warm ischaemia for a period of time before asystole and the subsequent transfer to theatre. The retrieval process is therefore time sensitive in nature. Some organs are more time-critical than others. The table below illustrates these in the context of a standard DCD retrieval. Note that when using NRP, these times are largely irrelevant as organ viability tests will guide utilisation.

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Organ	Warm Ischaemic Time
Liver	<30 minutes
Pancreas	<30 minutes
Lungs	<1 hour
Kidneys	<2 hours

The progress to asystole after withdrawal of treatment is inherently unpredictable. There may be significant time between treatment withdrawal and onset of warm ischaemic time. The organ-specific limits of this time period, after which retrieval may not be beneficial, are shown below. Again, when using NRP, these times are less largely irrelevant and organ viability tests will guide utilisation.

Organ	Threshold time for warm ischaemia onset
Liver	1 hour
Pancreas	1 hour
Kidneys	Retrieval re-evaluated at 2 hours

References

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NHS Blood and Transplant [Internet]. [date unknown]. Donation after brainstem death; [cited 28/01/21]. Available from: https://www.odt.nhs.uk/deceased-donation/best-practice-guidance/donation-after-brainstem-death/

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