

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

Safety Checklist for Lung Donation after Circulatory Death

HOSPITAL ADDRESSOGRAPH or
Surname.....
First Name
Date of Birth
Hospital Identifier/
ODT Donor Number

Date and Time of onset of circulatory arrest.....

Date and Time of confirmation of death.....

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

Secure the patient's airway with a cuffed endotracheal tube, (can be done at any time after certification of death)

Do NOT inflate lungs at this stage. Intubation date and time

Ensure TEN MINUTES from circulatory arrest has occurred before optimising [(re-inflating) the lungs.

Set the flow-metre to 15L/min of oxygen enriched air, or FiO₂ 0.5

Using the anaesthetic circuit, manually carry out a **single recruitment manoeuvre** to re-inflate the lungs – *suggested manoeuvre: maintain 30cm H₂O for 30 seconds using APL valve.*

Re-inflation date and time
.....
Allow a minimum of TEN MINUTES since time of onset of circulatory arrest (confirm who will be timing this, and confirm with certifying doctor when to start timing)

Set the APL valve to **CPAP 5cm H₂O** and maintain flow at 15L/min.

<p>Cyclical mechanical ventilation must not be started until a minimum of 15 minutes after loss of circulation and only after the thoracic team have vented the left atrium and begun to flush the lungs</p>	<p>Anaesthetist/Thoracic Surgeon/Donor Care Physiologist</p> <p>Name:</p> <p>Signature:</p> <p>Grade:.....</p> <p>Date and Time:</p>
<p>Hand over care of the airway to the thoracic team.</p>	

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 if extubation was not part of the WLST plan.
3. There is a potential risk that lung ventilation, following circulatory arrest, may restore cardiac activity and potentially cerebral circulation. However, without re-inflation and oxygenation, lung donation cannot successfully occur.

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

4. The Department of Health organised consensus meeting agreed to a single recruitment manoeuvre with oxygen-enriched air, after a minimum of 10 minutes from 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.

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



Lung retrieval from potential DCD donors can make very important contributions to lung transplantation. However, it requires careful planning and close collaboration between everyone involved in organ donation and retrieval. Recent incidents suggest that not all staff are aware of these requirements.

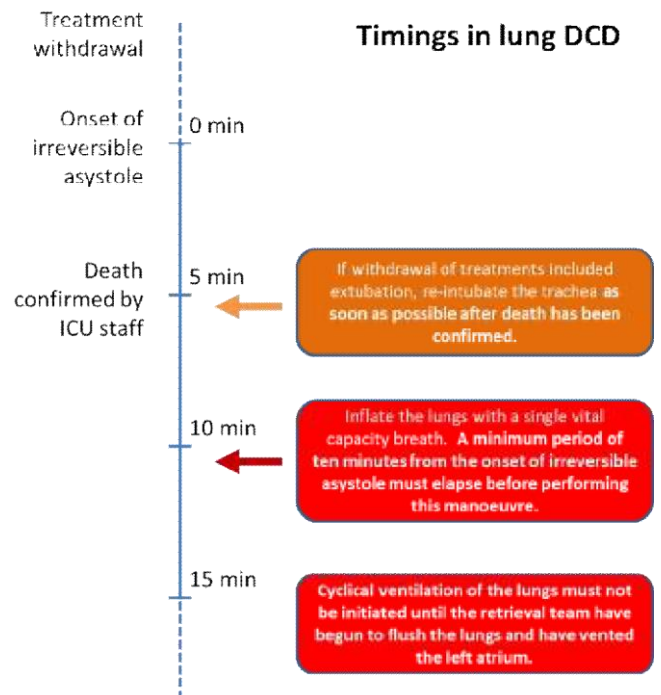
Background

Successful lung retrieval from a DCD donor fulfils more completely a person's wish to be a donor and should be pursued wherever possible. There are challenges however, including soiling of the airways with gastric contents (if the patient has been extubated as part of treatment withdrawal), warm ischaemic injury to the lung parenchyma and atelectasis. Whilst national guidance on lung DCD has laid out how to address these challenges,¹ a series of incidents reported to NHSBT suggest that this is not always well understood. The purpose of this safety briefing is to clarify this guidance and remind clinical staff that lung DCD retrieval requires careful planning and close collaboration between all of those involved in the care of the patient, including the organ retrieval team (see note 1).

Protection against airway soiling If the patient has been extubated as part of treatment withdrawal, the airway should be re-intubated as soon as possible after death has been confirmed (note 2).

Lung ischaemia The lungs should be inflated with a single vital capacity breath of oxygen-enriched air. **A minimum period of ten minutes from the onset of irreversible asystole must elapse before performing this manoeuvre** (notes 3 and 5).

Ventilation Cyclical ventilation of the lungs is not allowed **until the retrieval team have started to flush the lungs and have vented the left atrium** (notes 4 and 5).



IT IS VITAL THAT ALL STAFF STRICTLY ADHERE TO THESE RULES

¹ Organ donation after circulatory death. Report of a consensus meeting. Available at <https://www.bts.org.uk/Documents/Guidelines/Active/DCD%20for%20BTS%20and%20ICS%20FINAL>

1. DCD lung retrieval is a time-critical process. Before treatments are withdrawn there should be effective communication between the ICU team, the Specialist Nurse-Organ Donation and the Retrieval Lead to explicitly agree
 - a. who will be the time-keeper (this will be the SN-OD)
 - b. who will intubate the airway, and when
 - c. who will re-inflate the lungs, and when
 - d. how cyclical re-ventilation will be initiated, and when
 - e. for how long a member of the anaesthetic / ICU team will be needed.

The timings of these interventions must be agreed by all parties. Any uncertainty or dispute MUST be resolved before treatment withdrawal.

2. Ensure that the cuff of the endotracheal tube is firmly inflated to prevent airway soiling.
3. Re-inflation of the lungs
 - a. If performed by a member of the anaesthetic / ICU team, use an anaesthetic machine and circuit to re-inflate and recruit the lungs by delivering a single vital capacity breath of 50% oxygen to generate an airway pressure 30 – 40 cm H₂O for 30 seconds. Thereafter, maintain lung inflation by clamping the endotracheal tube or by adjusting gas flows and the APL valve to 5–10 cm H₂O CPAP.
 - b. If performed by a member of the retrieval team, use a manual device such as an Ambu Bag[®] to re-inflate the lungs with a single breath of oxygen-enriched air, thereafter clamping the endotracheal tube to maintain lung inflation.
This manoeuvre may need to be repeated in order to complete / maintain lung inflation.
4. Intermittent ventilation helps to distribute perfusate through the lungs. Although there is a very small risk that this may restore myocardial contractility, this is not possible once cold perfusion of the lungs has started and the left atrium has been vented.
 - a. If initiated by a member of the anaesthetic / ICU team, the lungs should be ventilated with 50% oxygen via the anaesthetic machine, using pressure control ventilation if possible.
 - b. If initiated by a member of the retrieval team, the lungs should be ventilated manually with oxygen-enriched air using an Ambu Bag[®] or similar device.
5. If the arch vessels are to be clamped, for instance to support normothermic regional perfusion, then lung re-inflation and ventilation can begin as soon as the cerebral circulation has been so isolated.