Organ Donation

policy & practice

by Dr Dale Gardiner
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Member of UK Donation Ethics Committee

organdonation.nhs.uk
Outline

1. Policy
   - UK organ donation potential
   - Types of donation
   - Report card
   - Public Policy
   - Scientific, Ethical & Legal Issues

2. Pitfalls in Brain Stem Testing, Quiz

3. Practice
   - The process
   - Implications for the theatre anaesthetist
     - Donation after brain death
     - Donation after circulatory death
     - LUNG DCD
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What’s the UK organ donor potential???

"It's the most difficult yet rewarding thing we have ever done. It was the most fantastic thing he could have done. It sums up what he was like, that he wanted to help others."

Words from a DBD family, April 2010
600,000 UK deaths per annum

240,000

no donation
360,000 hospital deaths per annum

Corneas
Heart valves
Skin
Bone

no donation
4400 potential deceased donors
1088 deceased donors nationally (1:4)
(1:4)

The focus must be the other

Three in Four.
Types of donation
Living Donation

Kidneys, 1000

Liver lobe, 38 (adult and paediatric)

Lung lobe, 0
(done internationally)

Bone marrow
Tissue Donation

Cornea donors, 2970

Heart Valves

Skin

Bone & Ligaments
Donation after Brain Death (DBD)

Mechanically ventilated patient where death has been confirmed using neurological criteria.

652 donors

Kidneys
Liver
Pancreas
Small Intestine
Lungs
Heart
Donation after Circulatory Death (DCD)

Mechanically ventilated patient with a devastating injury, usually brain, where the decision has been made to withdraw life-sustaining treatment. The expectation is that the circulation will cease imminently upon the withdrawal of life-sustaining treatment.

Kidneys
Liver
Pancreas
Lungs

436 donors
Deceased Organ Donation
Deceased Organ Donation
Deceased Organ Donation

2008, Organs for Transplants is published, and the work of implementation begins.
A UK Model for Donation: Local Donation Teams

‘Embedded’ Specialist Nurse for Organ Donation (SN-OD)

Clinical Lead for Organ Donation (CLOD)

Non-clinical Donation Committee Chair (Chair)
The Local Organ Donation Committee

- Oversight
- Representation
- Influence
- Creativity
- Skills
- Time
- Commitment
- Enthusiasm
The old world: 18 coordinator teams
The new world: 190 Local Donation Teams
Deceased Organ Donation

[Graph showing trends in deceased organ donation from 2000-01 to 2011-12, with separate lines for Total Deceased Donors, DBD Donors, and DCD Donors.]
Deceased Organ Donation

25% average increase DCD per year
Effect?

X = with living donation
NHS Organ Donor Register
donorcard
I want to help others to live in the event of my death
“1,000,000 new people on the ODR leads to only 8 new donors.”

Donation is a hospital matter.
Organ Donor Community Surprised And Thrilled By Facebook Decision

Facebook’s decision to give users a way to announce their organ donor status on the social networking site was a well-kept secret in the organ donor community before billionaire CEO Mark Zuckerberg shared the news this morning on ABC News’ Good Morning America. Tom Mone, CEO of OneLegacy, the federally designated organization that does organ recovery in the Los Angeles area, says he didn’t know about the Facebook plan until he opened his computer at 6 a.m. this morning and was bombarded with emails. Mone says he was thrilled at the news.
Organ donation in Spain

50% increase in 5 years
Summary

- There has been a 38% increase since the taskforce report
- The key recommendation of the report was the creation of local donation teams
- Only 4400 potential deceased donors per year (narrow focus required)
- Currently only 1:4 donating (narrow focus must remain on the other 3)
- DCD (donation after the heart has stopped beating) is where the biggest increase has been seen
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The boy who came back from the dead: Experts said car crash teen was beyond hope. His parents disagreed

- Steven Thorpe awoke from 2-week coma after car crash that killed a man
- His devastated parents were even asked to consider donating his organs
- Doctors found signs of life only after his father begged them to recheck him

By LOUISE ECCLES

They were told there was no chance of their son surviving after he suffered devastating injuries in a car crash.

But Steven Thorpe’s parents refused to give up hope – despite four specialists declaring that the 17-year-old was brain dead.

Convinced they saw a ‘flicker’ of life as Steven lay in a coma, John and Janet Thorpe rejected advice to switch off his life support machine.

They begged for another opinion – and it was a decision that saved him.

A neurosurgeon found faint signs of brain activity and two weeks later, Steven woke from his coma. Within seven weeks, he had left hospital.

And four years on, the trainee accounts clerk says he owes everything to the persistence of his parents.

From his home in Kenilworth, Warwickshire, Steven, 21, said: ‘I feel so lucky that my parents wouldn’t take no for an answer.”

The schoolboy was travelling in a Rover with two friends in February 2008 when a stray horse ran into the path of the car in front of them.

His friend Matthew Jones, 18, was killed in the accident. Steven suffered serious injuries to his face, head and arm, and was declared brain dead.

More media misrepresentation, April 2012, selling outrage instead of truth.
UK Criteria for Human Death

= The irreversible cessation of brain-stem function

=> Irreversible unconsciousness
+ Irreversible apnoea

=> intra-cranial or extra-cranial cause
> 5 mins absent cerebral circulation

DO NOT restore Cerebral Circulation
For the first time in the UK, criteria for the confirmation of death using cardio-respiratory was defined.
(5 minutes asystole)

Gardiner et al. *Br J Anaesthesia* January 2012
A medical concept of death

**DEATH**

- Irreversible loss of the capacity for consciousness
- Irreversible loss of the capacity to breathe

**Neurological Criteria**

**Circulatory Criteria**

**Somatic Criteria**
Donation after Brain Death (DBD)

Mechanically ventilated patient where death has been confirmed using neurological criteria.

652 donors

Kidneys
Liver
Pancreas
**Small Intestine**
Lungs
Heart
validation
> 10000 patients
10 years

...30 years
prophecy
Animal experiments – duration of spinal shock decreases with decortication or decerebration (1937)

‘Never been demonstrated in experimental animals.’
Humans
- 30 years of practice
- 10000 patients over 10 years
- 1 recent review of 26 papers (Neurocritical Care, 2000)

- Jorgensen (1973)
63 patients – clinical, EEG, angio
80% spinal reflexes (if not = periods profound hypotension)
Autopsy – liquefaction of the brain
Figure 24-3. Visceral efferent and afferent neurons associated with a thoracic segment of the spinal cord. Preganglionic neurons are red, and postganglionic neurons are green. A sensory (pain) neuron supplying an internal organ of the abdomen is shown in blue. Visceral sensory axons pass through autonomic ganglia, but their cell bodies are in dorsal root ganglia.
“The simple idea, expressed in many textbooks, that autonomic pathways flow out from the CNS, through ganglionic relays, to innervate effector tissues, ignores both the integration of signals that occurs in autonomic ganglia and the existence of organ to organ connections that bypass the CNS.”

John B Furness (2006)
“The organisation of the autonomic nervous system: Peripheral connections”
Autonomic Neuroscience 130:1-5.
So I emailed him…

“Dear Dale

I think you are almost certainly right. If the brain is dead through trauma, the spinal cord can be alive… To me, the clearest evidence for a survival of spinal reflexes affecting cardiovascular function is the hypertensive events that occur after spinal transection.”
“Formerly considered to be associated with chronic spinal cord injury, autonomic dysreflexia may also emerge during the acute stages in both animals and humans.”

During 16 organ retrievals…

Using EEG and BIS

… Nothing happened!

Wennervirta et al (Finland)
Donation after Circulatory Death (DCD)

Mechanically ventilated patient with a devastating injury, usually brain, where the decision has been made to withdraw life-sustaining treatment. The expectation is that the circulation will cease imminently upon the withdrawal of life-sustaining treatment.

Kidneys
Liver
Pancreas
Lungs

436 donors
1. No agreed criteria for diagnosing death after cardio-respiratory arrest.
2. No national professional guidance.
3. What is legal?
4. Conflict of interest?
Recommendation 3

Urgent attention is required to resolve outstanding legal, ethical and professional issues in order to ensure that all clinicians are supported and are able to work within a clear and unambiguous framework of good practice.

Additionally, an independent UK-wide Donation Ethics Group should be established.
For the first time in the UK, criteria for the confirmation of death using cardio-respiratory was defined. (5 minutes asystole)

In many cases, actions that can facilitate DCD most successfully will be in the person’s best interests.

- Best interests extend beyond physical care (values, wishes, beliefs)
- Desire to donate gives clinicians authority to take reasonable steps to ensure donation occurs.

**Legal**

1. Delay Withdrawal
2. Change patient's location
3. Maintain physiological stability
• In the person’s interests
  ▫ By maximising the chance of fulfilling the donor’s wishes about what happens to them after death
  ▫ By enhancing the donor’s chances of performing an altruistic act of donation
  ▫ By promoting the prospects of positive memories of the donor after death
Joint professional statement from the ICS and the BTS

1. Professional support for DCD
2. Professional support for admission to ICU purely for organ donation
3. Suitability criteria for donation outlined.
4. Guidance for treatments before and after death
When we can’t cure we can only continue to care

Organ donation
81 If a patient is close to death and their views cannot be determined, you should be prepared to explore with those close to them whether they had expressed any views about organ or tissue donation, if donation is likely to be a possibility.

82 You should follow any national procedures for identifying potential organ donors and, in appropriate cases, for notifying the local transplant coordinator.
Guidance on roles and responsibilities, conflicts of interest:

1. SN-ODs not to care for the patient before death.
2. Two senior clinicians to make the decision that life sustaining treatment should be withdrawn.
3. Clinical Lead for Organ Donation may act as treating clinician.
4. After death acceptable for treating clinician to take actions necessary to facilitate donation (eg re-intubation).
NICE Guidance

1. Triggered Referral
   - Plan to withdraw life-sustaining treatment
   - Plan to perform brain stem testing
   - Catastrophic brain injury (early referral)

2. Collaborative Approach
   - SN-OD
   - Local faith representative
Summary

Substantial ethical and legal guidance

– Clear criteria for diagnosing death
– GMC duty on exploring organ and tissue donation at the end of life and following national guidance
– DH legal guidance on why organ donation is part of best interests and what this allows
– Professional guidance on ICU admission
– Ethical guidance on conflict of interest
– NICE guidance on triggered referral and collaborative approach
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Pitfalls in Brain Stem Testing
Dead or not Dead Quiz

The following statements are consistent with the neurological criteria for death.

Yes  = dead
No   = not dead
Example Question

• During your brain stem testing investigation the patient blinks to command.

Is a brain stem death diagnosis still possible?

(Dead)

Is a brain stem death diagnosis NOT possible?

(Not Dead)

Not brain stem dead – Patient may be locked in.
Question 1

1. The patient flexes their arm at the elbow following imposition of a painful stimulus to the nail bed on that side?

Is a brain stem death diagnosis still possible?  
(Dead)

Is a brain stem death diagnosis NOT possible?  
(Not Dead)

Dead - May represent a spinal reflex
Question 2

2. The ventilator registers the patient as making spontaneous respirations?

Is a brain stem death diagnosis still possible? (Dead)

Is a brain stem death diagnosis NOT possible? (Not Dead)

Dead - May represent the heart beat creating flow that is triggering ventilation
Question 3

3. The patient has a generalised tonic clonic seizure?

Is a brain stem death diagnosis still possible?
(Dead)

Is a brain stem death diagnosis NOT possible?
(Not Dead)

NOT brain stem dead – the patient must have intact neural connections to have a grand mal fit
Question 4

4. The patient’s pulse increases from 70 bpm to 110 bpm during apnoea testing? Is a brain stem death diagnosis still possible? (Dead)

Is a brain stem death diagnosis NOT possible? (Not Dead)

Dead - Hypercarbia (which occurs during apnoea testing) results in endogenous adrenaline release.
Question 5

5. There is slow drift of one eye away from the ear in which cold water is injected?

Is a brain stem death diagnosis still possible?
(Dead)

Is a brain stem death diagnosis NOT possible?
(Not Dead)

NOT brain stem dead – any eye movements in response to caloric testing signifies the presence of some reflex brain stem arc function.
6. The patient sits up during apnoea testing (Lazarus sign)?

Is a brain stem death diagnosis still possible? (Dead)

Is a brain stem death diagnosis NOT possible? (Not Dead)

Dead - A spinal reaction to the acidosis which follows hypercarbia. Very unsettling and disturbing!
How are you going?

These six questions were asked in the Australian JFICM exam 2008 and the pass rate was only 65%!
7. During an apnoea test on a mechanical ventilator after 20 seconds the patient starts to breathe and then continues to breathe steadily at 16 breaths per minute without variation over the next five minutes?

Is a brain stem death diagnosis still possible? (Dead)

Is a brain stem death diagnosis NOT possible? (Not Dead)

Dead – ventilator apnoea ventilation has kicked in.

Are you convinced not to do your apnoea tests still connected to the ventilator?
8. Supra-orbital painful stimulus leads to movement in one of the arms?

Is a brain stem death diagnosis still possible? *(Dead)*

Is a brain stem death diagnosis NOT possible? *(Not Dead)*

Not dead – although one primarily looks for movement in the cranial nerve distribution one must actively ensure (by repetition) that this was a coincidental spinal reflex but until proven this may represent the patient is not brain stem dead.
9. Due to left orbital trauma you can't visualise or observe the left eye?

Is a ‘clinical’ brain stem death diagnosis still possible?  
(Dead)

Is a ‘clinical’ brain stem death diagnosis NOT possible?  
(Not Dead)

Dead – criteria are guidance.
Question 10

10. During the second set of brain stem testing the second clinician finds the ears full of wax and can't visualise the drum?

Is a ‘clinical’ brain stem death diagnosis still possible i.e. valid? (Dead)

Is a ‘clinical’ brain stem death diagnosis NOT possible i.e. valid? (Not Dead)

Not dead – this finding may invalidate the first oculovestibular test and thus the first test may not be valid.
BONUS QUESTION

11. A CT angiogram of the brain demonstrates some residual blood flow.

Is a brain stem death diagnosis still possible? (Dead)

Is a brain stem death diagnosis NOT possible? (Not Dead)

Dead – Up to 10% of cases will have some flow. Provided the preconditions are satisfied (condition is due to irreversible brain damage) and there is no doubt regarding the clinical tests. The diagnosis of death is clinical and by concept FUNCTIONAL - the irreversible loss of the capacity to breathe and the capacity for consciousness.
www.clodlog.com

Username: Dale
Password: Gardiner

Upcoming Events
27th April 2012
Dignity in Donation at the Nottingham Law School
Open Invitation
Direct link to the Conference, click HERE

22nd May 2012
Midlands Regional Collaborative Birmingham For Midlands Chairs, CLODs and SN-ODs
Testing for brain death

**SOP**

**Shorter version**

### Diagnosis of Death Using Neurological Criteria (BD0 testing form)

**The Diagnosis of Death Following Irreversible Cessation of Brain-Stem Function**

The diagnosis of death by brain-stem testing should be made by at least two medical practitioners who have been registered for more than two years and are experienced in the conduct and interpretation of brain-stem testing. At least one of the doctors must be a consultant in intensive care medicine, and the other must be a consultant in neurology or neurosurgery.

**Doctor One, Name and Designation**

**Doctor Two, Name and Designation**

**Name**

**Signature**

**Grade**

**Date and Time**

**Primary Diagnosis**

**Evidence for Irreversible Brain Damage of Known Antecedents**

**Exclusion of Potentially Reversible Causes**

<table>
<thead>
<tr>
<th></th>
<th>1st Test</th>
<th>2nd Test</th>
<th>3rd Test</th>
<th>4th Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Is the coma due to:</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Drug Levels (given)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Is the patient's body temperature (34°C)</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>3. Is the coma due to a circulatory, metabolic or respiratory disorder?</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>4. Is the respiratory failure due to neuromuscular blocking agents, other drugs or potentially reversible causes of apnoea (e.g. cranial trauma, profound anaesthetic reaction)?</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

**Hospital: Standard Operating Procedure for the Diagnosis and Confirmation of Death in Adults using Neurological Criteria**

**Objective of Care**

- To diagnose and confirm the death of an adult patient who has sustained severe brain injury using neurological criteria.

**Context**

- National professional guidance advocates the confirmation of death by neurological criteria whenever this seems a likely diagnosis and regardless of the likelihood of organ donation.
- UK General Medical Council guidance on end of life care (2010) states that national procedures for identifying potential organ donors should be followed and, in appropriate cases, the specialist nurse for organ donation (SN-OD) should be notified.

**NICE** guidance recommends that the specialist nurse for organ donation (SN-OD) should be notified at the point when the clinical team declare the intention to perform brain-stem death tests.

**Date and Time of referral to SN-OD**

- Whilst most patients will already be an intensive Care Unit (ICU) when the diagnosis is suspected, some patients may be in other areas, e.g. the Emergency Department. On such occasions it is legitimate, if considered necessary, to transfer a patient to the ICU for the diagnosis to be made.
- For many clinicians the diagnosis and confirmation of death using neurological criteria will be a relatively infrequent task and may be complicated by uncertainties regarding the nature of the primary diagnosis, irreversibility and the availability of suitable experienced personnel.

**Best of Kin**

- The next of kin of the patient should be aware of the severity of the individual's illness and the implications of a diagnosis of death using neurological criteria.
- If next of kin are given the opportunity to witness the neurological examination, they should be prepared for the possibility of spinal reflexes and their relevance, as far as the diagnosis of death by neurological criteria is concerned.
- Whether next of kin witness the clinical examination or not, the patient's need for dignity, privacy and spiritual support, remain paramount.

**Insert Hospital Logo Here**
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   ✓ Scientific, Ethical & Legal Issues

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       - LUNG DCD
What’s the process?
Recognise
Identify

Refer,
Time, 0 hrs
Recognise, Identify, Talk, Plan, Refer, Time, 0 hrs
Identify
Recognise
Plan
Talk
Test

Approach
Time 4 hrs+

Refer
Offer
Offer

Wait

Theatre setup
Offer

Theatre setup

Wait

Retrieval

Time 22 hrs+
Offer

Wait

Theatre setup

Retrieval

Last offices
Meanwhile...

Offer

Wait

Theatre setup

Retrieval

Last offices
What’s the process?
What’s the process?

The most complicated process in the NHS
... two small children will celebrate a very special Christmas, after their 35-year-old mother, dependent on hospital dialysis, received a new kidney.

... a two-year-old boy will be able to eat and digest food normally for the first time, after receiving a donated bowel, liver and pancreas.

Luca Giovannini, age 5, died Friday December 2nd 2011

... somewhere in the UK, a two-year-old girl left hospital for the first time in her short life. Heart recipient.

... 34-year-old man whose life has been transformed by a new kidney

and one of the greatest gifts one person can give another in peacetime.
... two small children will celebrate a very special Christmas, after their 35-year-old mother, dependent on hospital dialysis, received a new kidney.

... a two-year-old boy will be able to eat and digest food normally for the first time, after receiving a donated bowel, liver and pancreas.

Luca Giovannini, age 5, died Friday December 2\textsuperscript{nd} 2011

... even in their grief — and even before he had been pronounced brain dead — his mother Vickie, 35, a primary school teacher, and father Renzo, 38, a financial adviser, had determined that they wanted their son’s organs to help others.

... somewhere in the UK, a two-year-old girl left hospital for the first time in her short life. Heart recipient.

... 34-year-old man whose life has been transformed by a new kidney.
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4400 potential deceased donors
Donation after Brain Death (DBD)

Mechanically ventilated patient where death has been confirmed using neurological criteria.

652 donors

Kidneys
Liver
Pancreas
**Small Intestine**
Lungs
Heart
Implications for you

1. You will be seeing this less
2. The time to retrieval should improve
3. Theatre Management
4. Donor physiologists are likely
5. Society is desperate
Anaesthetic

1. 500 mcg fentanyl
2. Muscle Relaxant
3. Volatile for BP control
4. Expect the ‘unexpected’
Donation after Circulatory Death (DCD)

Mechanically ventilated patient with a devastating injury, usually brain, where the decision has been made to withdraw life-sustaining treatment. The expectation is that the circulation will cease imminently upon the withdrawal of life-sustaining treatment.

Kidneys
Liver
Pancreas
Lungs

436 donors
Implications for you

1. You will be seeing this more
2. Every opportunity is precious
3. There is NO easy answer to where the patient should be managed and by whom while awaiting the retrieval team
4. Utilisation of a vacant physical theatre and the need for theatre staff (one)
Anaesthetic

1. None
2. Lung DCD may require re-intubation
Lung Donation after Circulatory Death

an opportunity requiring care
the recipients

the donors

2010

the safe way

the caution
“There is so much more I want to do with my life, but I am only too aware of the huge shortage of donors. However, I am trying my very hardest to stay positive and enjoy what is left of my life to the best of my ability, however limited it may be.”

Robyn Tainty
House of Lords July 2007

By 3 years on the waiting list
1 in 2 Transplanted
1 in 3 died

the recipients

Died September 2007
ADULT LUNG TRANSPLANTATION

Survival comparisons by era
1988-94 vs. 1995-99: p = 0.0009
1988-94 vs. 2000-6/06: p < 0.0001
1995-99 vs. 2000-6/06: p < 0.0001
Nat risk = 159
Nat risk = 523
Nat risk = 762

1988-1994: 1/2-life = 3.9 Years; Conditional 1/2-life = 6.9 Years
1995-1999: 1/2-life = 4.5 Years; Conditional 1/2-life = 7.2 Years
2000-6/2006: 1/2-life = 5.5 Years; Conditional 1/2-life = 7.1 Years

ISHLT
J Heart Lung Transplant 2008;27: 937-983
The organ consequence of death

Brains response to dying

Warm ischaemia time
The organ consequence following brain death

Squashed brain = severe brain response to dying

Damaged heart, often still ok; good liver, pancreas & kidneys

Damaged lungs, often not ok for transplant
The organ consequence following circulatory death

- Prolonged warm ischaemia time
- Not ok heart; ok liver & pancreas; good kidneys
- Less damaged lungs
the caution

Australia reported...
2008

A CODE OF PRACTICE FOR THE DIAGNOSIS AND CONFIRMATION OF DEATH

The confirmation of circulatory death

For the first time in the UK, criteria for the confirmation of death using cardio-respiratory was defined. (5 minutes asystole)

Three vital caveats
(from page 12)

1. There will be NO cardio-pulmonary resuscitation

2. Five minutes is based on the evidence that after this time, *spontaneous* restoration of the heart and circulation will NOT occur.

3. “It is obviously inappropriate to initiate any intervention that has the potential to restore cerebral perfusion after death has been confirmed.”
Challenge for organ donation following circulatory death

Warm Ischaemia

5 minutes +

<20 minutes

<20 minutes

<60 minutes

liver

pancreas

kidney
What is required for successful lung donation after circulatory death?

1. Confirmation of Death
2. Protection of the airway to prevent aspiration of stomach contents
3. Early inflation of the lungs with oxygen
What is required for successful lung donation after circulatory death?

1. Confirmation of Death
2. Protection of the airway to prevent aspiration of stomach contents
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The confirmation of circulatory death

A CODE OF PRACTICE FOR THE DIAGNOSIS AND CONFIRMATION OF DEATH

2008

Three vital caveats
(from page 12)

1. There will be NO cardiopulmonary resuscitation

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3. “It is obviously inappropriate to initiate any intervention that has the potential to restore cerebral perfusion after death has been confirmed.”

3. Early inflation of the lungs with oxygen
2010

Donation after Circulatory Death

the safe way
Lung DCD
1. Confirmation of Death
2. Protection of the airway to prevent aspiration of stomach contents
3. Early inflation of the lungs with oxygen

Usual practice of five minutes observation of cardio-respiratory arrest is safe
Lung DCD
1. Confirmation of Death

2. Protection of the airway to prevent aspiration of stomach contents

3. Early inflation of the lungs with oxygen

A cuffed breathing tube can be placed in the airway any time after death has been confirmed
• if necessary
• planned
• by someone appropriately experienced
Lung DCD
1. Confirmation of Death
2. Protection of the airway to prevent aspiration of stomach contents
3. Early inflation of the lungs with oxygen

Inflation of the lungs
• Minimum wait of 10 minutes after the onset of asystole
  • Single recruitment maneuver
  • Followed by CPAP 5cm H₂O
Lung Donation after Cardiac Death
Checklist for Lung Optimisation in Theatre

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

- Diagnosis of death has been confirmed and recorded in the patients notes
- Secure the patient’s airway with a cuffed endotracheal tube only in the operating theatre (if the patient has been extubated)

Ensure 10 minutes after circulatory arrest has occurred before optimising lungs:

Set the flow meters to 1SL/min 100% FIO2
Under no circumstances should the patient be mechanically ventilated

Using the anaesthetic circuit, manually carry out a single recruitment manoeuvre to inflate the lungs

Following the recruitment manoeuvre, use the AFL valve, to maintain CPAP from N2O using the 1SL/min flow already set

Further single recruitment manoeuvres are often necessary, at a later time, during the lung retrieval process, and are guided by the thoracic team.

Hand over care of the airway to the thoracic team.

Doctor / Donor Care Physiologist, Name and Designation

Name: ____________________________ Date and Time: ____________________________
Grade: ____________________________ Signature: ____________________________

Rationale for Lung Optimisation

1. Lung Donation after Cardiac Death (DDC) is vital to increasing the number of lungs available for transplantation.

2. There is evidence to suggest that lungs from DDC donors are as successful for transplantation as those retrieved from a brain-stem dead donor.

3. The diagnosis of death will have been made in accordance to NH/ NHBD guidelines (NHBD is the old term used for DDC) which are available on the Trust intranet and from the Specialist Nurse for Organ Donation, who will be present in theatre.

4. It is vital to secure the patient’s airway with a cuffed endotracheal tube as aspiration during abdominal retrieval procedures will prevent lung donation. Some patients may already have a cuffed airway (either endotracheal tube or tracheostomy) in situ.

5. There is a potential risk of lung ventilation, following circulatory arrest, restoring cardiac activity and the cerebral circulation.

6. It was felt by the Department of Health Consensus Meeting, supported by international guidance that no lung ventilation manoeuvres should be carried out within the first 10 minutes following circulatory arrest.

7. It was also felt that under no circumstances should the patient be mechanically ventilated, as there is a theoretical risk that rhythmic movements of the lungs could restore cardiac activity.

8. However, without reinflation and oxygenation, lung donation can not successfully occur.

9. The Department of Health Consensus Meeting agreed to a single recruitment manoeuvre with oxygen, followed by the application of CPAP, in accordance to the method outlined above.

10. Any concerns with lung DDC can be discussed with Dr Dale Gardiner, Trust Clinical Lead for Organ Donation, at any time. Contact via switch.

Lung Donation after Cardiac Death: Checklist for the Anaesthetist
Adapted for use in NH/ from the Consensus Meeting into Donation after Cardiac Death organised by the Department of Health (in association with the Devolved Administrations) on behalf of the Intensive Care Society, British Transplantation Society, supported by NHSSBT, on the 7th June 2010
Lung Donation after Cardiac Death
Checklist for Lung Optimisation in Theatre

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

- Diagnosis of death has been confirmed and recorded in the patients notes
- Secure the patient’s airway with a cuffed endotracheal tube only in the operating theatre (if the patient has been extubated)

HOSPITAL ADDRESSOGRAPH or
Surname
First Name
Date of Birth
Hospital Number
Ensure 10 minutes after circulatory arrest has occurred before optimising lungs:

Set the flow metres to 15L/min 100% FiO2
Under no circumstances should the patient be mechanically ventilated

Using the anaesthetic circuit, manually carry out a single recruitment manoeuvre to reinflate the lungs

Following the recruitment manoeuvre use the APL valve, to maintain CPAP 5cm H₂O using the 15L/min flow already set

Further single recruitment manoeuvres are often necessary, at a later time, during the lung retrieval process, and are guided by the thoracic team.

Hand over care of the airway to the thoracic team.
the recipients

the donors

an opportunity requiring care

the safe way

the caution

Donation after Circulatory Death

2010
Outline

1. Policy
   - UK organ donation potential
   - Types of donation
   - Report card
   - Public policy
   - Scientific, Ethical & Legal Issues

2. Pitfalls in Brain Stem Testing, Quiz

3. Practice
   - The process
   - Implications for the theatre anaesthetist
     - Donation after brain death
     - Donation after circulatory death
     - LUNG DCD
A Code of Practice for the Diagnosis and Confirmation of Death

Legal Issues relevant to non-heartbeating organ donation

Donation after Circulatory Death

Treatment and care towards the end of life: guidance on decision-making

+ my local guidelines & forms
Computer Assisted Learning Package

http://www.midtrentccn.nhs.uk/educational-resources/deceased-donation-cal
Attitudes to organ donation by ICU staff?

![Bar chart showing attitudes to organ donation by ICU staff. Positive attitudes are represented by DBD in blue and DCD in red. Negative attitudes are represented by DCD in red.](chart.png)
Words from our DCD donor families

1. “The letter you sent arrived the day of the funeral, and the lapel pins were worn with pride, to symbolise Mum’s gift and the determination we had to make the tough decision to follow Mum’s wishes”
   September 2011

2. “I was very impressed with the unit: the medical care given to my husband and the friendly, caring attitude towards myself, my daughter and other visitors was first class.”
   Consented DCD patient where DCD didn’t proceed.
   May 2011