

What does a brain dead person look like?

The nurses and doctors realise how difficult it can be to understand brain death. Usually death is recognised by the absence of a heartbeat or breathing. A patient who is brain dead often looks no different in appearance than when they were first admitted to the Department of Critical Care Medicine, they appear to be breathing (because they are attached to a mechanical ventilator), their skin feels warm and the colour is normal and they have a pulse.

Some reflex movements in the limbs may occur. These reflexes originate in the spinal cord, not in the brain, and their presence does not mean that there is brain activity.

A brain dead person has irreversible loss of consciousness, has no brain activity including absence of breathing when disconnected from the ventilator. A person who has been determined brain dead is legally dead.

Please ask questions
It is important for you to understand very clearly what has occurred.

References:

Organ Donation New Zealand. (2011). *Organ and tissue donation: Best practice guidelines for NZ ICUs* (Version 1.0). Auckland, New Zealand: Author.

Saposnik, G., Bueri, J.A., Maurino, J., Saizer, R. & Garetto, N.S. (2000). Spontaneous and reflex movements in brain death. *American Academy of Neurology*, 54(1), 221- 223.

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Understanding Brain Death

DCCM information pamphlet for families and whānau

Welcome *Haere Mai* | Respect *Manaaki*
Together *Tūhono* | Aim High *Angamua*



Introduction

This pamphlet is designed to explain and define the concept of brain death. If you have any questions please do not hesitate to ask the nurse or doctor in the Department of Critical Care Medicine.

What is brain death?

A person who has severe brain damage can deteriorate to become brain dead. Brain death occurs when all functions of the brain irreversibly stop due to a loss of blood flow to the brain. When the brain dies, all of the functions of the brain stop. A person who is brain dead is incapable of breathing, is not aware of their surroundings, and has permanently lost all aspects of consciousness. There is no perception of pain, no vision, hearing, speech, smell, cough or swallow. This is irreversible and will never recover. There still may be reflex limb movements such as a 'knee jerk'. These movements may still be present as they originate in the spinal cord and not in the brain. A person who is brain dead is legally dead.

How does brain death occur?

The brain is enclosed by the skull, which acts like a closed, rigid box. When the brain is severely damaged (trauma, bleeding, stroke, after cardiac arrest) swelling of the brain may occur. The swelling that happens in the brain is like swelling that happens to our skin or muscles when we get bruised.

When the brain swells it increases the pressure inside the skull, as the skull is rigid there is no room to accommodate the swelling.

Sometimes the pressure in the skull cavity can get so high that it cuts off the blood flow and the supply of oxygen to the brain. This causes the brain cells to die and is called 'brain death'.

How do we determine brain death?

Brain death is determined on two occasions each time with a different doctor one of whom is always an intensive care specialist.

The patient is assessed for:

- An assessment of reflexes originating in the brain is carried out.

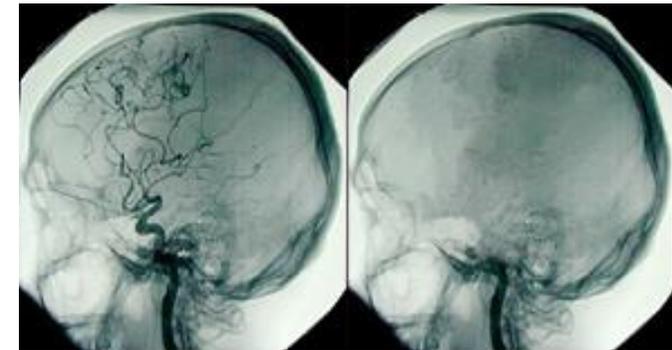
This includes:

- Reaction of the pupils. A light is shone into the patient's eyes to see if the pupils shrink in response to light.
- Cough or gag reflex.
- Eye movement when cold water is introduced into the ears.
- A blink reflex when the cornea of the eye is touched
- Ability to breathe. The patient is taken off the ventilator (breathing machine) but still given oxygen and observed for any signs of breathing.

- Responsiveness and movement (in the face especially as reflex limb movements may occur even if the brain is dead)

If both examinations confirm that there are no signs of brain activity, the time of the second test is documented as the legal time of death.

Sometimes extensive facial/skull injuries or presence of long-lasting sedative medications mean that it is impossible to fully perform the brain death examination. If this is the case, a cerebral angiogram (which determines presence or absence of brain blood flow) may be used. If there is no blood flow to the brain, then criteria for brain death have been met.



The picture above (left) is a Cerebral angiogram showing blood flow to the brain

The picture above (right) is a Cerebral angiogram showing no blood flow to the brain