

# Form for the Diagnosis of Death using Neurological Criteria

This form is consistent with and should be used in conjunction with, the AoMRC 2025 Update *A Code of Practice for the Diagnosis and Confirmation of Death (Code)*, with special attention to Appendix 2 from the Royal College of Paediatrics and Child Health.

Endorsed for use by:

Only the latest version of this form must be used – found at [www.ficm.ac.uk](http://www.ficm.ac.uk) – including if the form has been transcribed for use into an electronic health record.

HOSPITAL ADDRESSOGRAPH or

Surname  
First Name  
Date of Birth  
NHS / CHI Number

## Preparation

### 1. Key differences between infants, older children and adults (Code 6.38, Appendix 2)

- Below 37-weeks gestation (post menstrual): The diagnosis of death using neurological criteria cannot be confidently made.
- From 37-weeks corrected gestation (post menstrual) to 2-years corrected age post term: The diagnosis of death using neurological criteria can be confidently made by following the Code provided the following three caveats are followed:
  1. Neurological criteria should **not be applied until at least 24 hours** following the loss of the last observed brainstem reflex or spontaneous breath.
  2. The **interval between the two clinical tests** (referred to as Test 1 and Test 2 in this form) **should be at least 24 hours**.
  3. At present **ancillary investigations should not be used** to support the diagnosis of death using neurological criteria in children under 2-years of age.
- Above 2-years corrected age post term: The diagnosis of death using neurological criteria can be confidently made by following the Code using the same criteria applicable to adults – use the Adult and Children older than 2-years Testing Form.

### 2. Patient selection

- A patient following devastating brain injury who remains deeply comatose (GCS 3/15), has no observed brainstem reflexes and is apnoeic requiring mechanical ventilation but in whom circulation and other bodily functions persist. (Code 6.2)

### 3. Who can use neurological criteria? (Code 6.6-6.12, Appendix 2: A5)

- The diagnosis of Death using Neurological Criteria (DNC) should be made by at least two doctors (e.g. paediatricians and/or suitably qualified specialists) who have had full registration with the General Medical Council (GMC) – or equivalent international professional body recognised by the GMC – for more than 5 years and are competent to diagnose and confirm death using neurological criteria in the UK. At least one of the doctors must be a consultant.
- The two doctors work together to perform a full set of clinical tests but each doctor independently ensures that the diagnosis is carried out in an accurate, standardised and timely manner. The clinical tests are then repeated. Where required, four different doctors can make the diagnosis *provided each pair fulfils the requirements above*.
- Those diagnosing and confirming death should not be acting on behalf of the organ retrieval and transplant service at that time and must not be involved in the allocation of any of the patient's organs or tissues that may subsequently be donated for transplantation.

### 4. Equipment (Code 6.42-6.48)

- *Preconditions*: Case records, medication chart, blood results including phosphate, magnesium, recent blood glucose; relevant imaging; standard ICU monitoring including end-tidal CO<sub>2</sub>; peripheral nerve stimulator; thermometer; patient warming device.
- *Clinical testing of brainstem reflexes*: Bright light source and/or pupilometer; small gauze sterile swabs; otoscope with disposable ear pieces, ice-cold water, 50 ml syringe, disposable quill (or equivalent) if needed; tongue depressor or firm suction catheter (e.g. Yankauer sucker), laryngoscope or video laryngoscope; endotracheal suction catheter.
- *Apnoea test*: Arterial blood gas analysis including at least 4 blood gas syringes, CPAP circuit (e.g. Mapleson circuit, Neopuff or equivalent).

This form is for use in infants between 37-weeks to 2-years, corrected gestational age.

# Form for the Diagnosis of Death using Neurological Criteria

Patient Name:

NHS / CHI Number:

## Precondition 1 Aetiology severe enough to cause permanent cessation of brainstem function

### Guidance (Code 6.2, 6.14 – 6.20, Appendix 2: A6.1)

- 1.1 The patient must have a devastating brain injury of known aetiology or mechanism, Glasgow Coma Score of 3, no observed brainstem reflexes and be mechanically ventilated with apnoea.
- 1.2 The nature and severity of the devastating brain injury must be sufficient to cause permanent cessation of brainstem function. This evaluation must include neuroimaging but might also include electrophysiological or invasive intracranial pressure measurements. (Code 6.14, 6.15)
- 1.3 The doctors must be satisfied that there are no further appropriate therapeutic options which would benefit the patient. (Code 6.16)

Aetiology:

Neuroimaging (and any other evidence):

Test 1  
Test 2  
(24 hours after Test 1)

Precondition 1 Is the aetiology severe enough to cause permanent cessation of brainstem function? (To diagnose death, answers must be YES)	Test 1		Test 2 (24 hours after Test 1)	
	Dr One	Dr Two	Dr One	Dr Two
	Yes	Yes	Yes	Yes
	/	/	/	/
	No	No	No	No

## Precondition 2 Assessment period sufficient to exclude the potential for recovery

### Guidance (Code 6.21 – 6.25, Appendix 2: A6.1)

- 2.1 The doctors must be satisfied that recovery or improvement of the patient's condition will not occur with the passage of time. (Code 6.21)
- 2.2 **Neurological criteria should not be applied until at least 24 hours** following the loss of the last observed brainstem reflex or spontaneous breath. (Appendix 2: Table A3)
- 2.3 **In patients who are hypothermic** (defined as a core temperature less than 36°C), either therapeutic or accidental, **a minimum 24 hour observation period is required** following correction of hypothermia (that is, attaining a core temperature of 36°C or greater). Following correction of hypothermia, transient and temporary reductions in temperature do not mandate a further 24 hour observation at normothermia. **The core temperature should be greater than or equal to 36°C at the time of clinical testing.** (Code 6.24, 6.27, Appendix 2: Table A3)
- 2.4 If there is uncertainty about the potential for recovery the observation time should be extended. If diagnostic uncertainties regarding potential recovery remain, the diagnosis cannot be made. (Code 6.25)

Test 1  
Test 2  
(24 hours after Test 1)

Precondition 2 Is the assessment period sufficient to exclude the potential for recovery? (To diagnose death, answers must be YES)	Test 1		Test 2 (24 hours after Test 1)	
	Dr One	Dr Two	Dr One	Dr Two
	Yes	Yes	Yes	Yes
	/	/	/	/
	No	No	No	No

Test 1: Precondition 1 and 2: ALL answers must be YES

## Form for the Diagnosis of Death using Neurological Criteria

### Precondition 3 Exclusion of potentially reversible factors materially contributing to the coma or apnoea

#### Guidance (Code 6.26 – 6.34, Appendix 2: A6.1)

- 3.1 **Doctors applying neurological criteria must carefully exclude all the potentially reversible factors below and any other factors they consider might be materially contributing to the coma or apnoea.** ‘Materially contributing’ means a factor that is clinically impacting or confounding the diagnosis such that if that factor was removed there could potentially be brainstem function. (Code 6.26)
- 3.2 Patients with devastating brain injury should be considered as having a vulnerable brain which might be more sensitive to lower levels of **depressant drugs**. Carefully review the recent history of what drugs have been ingested or administered to exclude any possibility of ongoing drug effect being the cause of, or materially contributing to, the patient's coma or apnoea. If there is any doubt consider: predicting residual sedative effects according to pharmacokinetic principles, measuring specific drug levels where possible, gaining advice from the UK National Poisons Information Service or pharmacology/biochemistry specialists, using specific antagonists such as naloxone or flumazenil. (Code 6.28)
- 3.3 In patients where a **pre-existing or acquired neuromuscular disorder** is known or possible, careful consideration should be given to the impact of drug history and muscle function before applying neurological criteria. (Code 6.29, Appendix 2: Table A3)
- 3.4 If there are reasons to suspect that an underlying **high cervical cord pathology**, with or without associated cervical spine injury, is contributing to the apnoea, then further investigation will be needed. (Code 6.30, (Appendix 2: Table A3) Diagnosis may be supported by delaying testing and seeking expert neurological advice (Appendix 2: Table A6)

	Test 1		Test 2 (24 hours)	
	Dr One	Dr Two	Dr One	Dr Two
<i>ALL answers must be YES</i>				
<b>Hypothermia</b> (Guidance 2.3) <b>Is the core temperature greater than or equal to 36°C?</b>	Yes / No	Yes / No	Yes / No	Yes / No
<b>Depressant drugs</b> (Guidance 3.2) <b>Are you satisfied that no ongoing drug effect is the cause of, or materially contributing to, the patient's coma or apnoea?</b>	Yes / No	Yes / No	Yes / No	Yes / No
<b>Profound neuromuscular weakness</b> (Guidance 3.3) <b>Are you satisfied that no neuromuscular blocking agent or other drug, or a pre-existing or acquired neuromuscular disorder, is contributing to apnoea or neuromuscular weakness?</b> <i>Confirm that adequate neuromuscular function is present by using a peripheral nerve stimulator or other recognised method.</i>	Yes / No	Yes / No	Yes / No	Yes / No
<b>Cervical spinal cord pathology</b> (Guidance 3.4) <b>Are you satisfied no further investigation is required to exclude high cervical spinal cord pathology?</b>	Yes / No	Yes / No	Yes / No	Yes / No
<b>Circulatory and respiratory disturbances</b> <b>Are you satisfied that no cardiovascular or respiratory disturbance is materially contributing to the observed coma or apnoea?</b> <i>Target normal (or patient baseline / age appropriate) parameters.</i>	Yes / No	Yes / No	Yes / No	Yes / No

Precondition 3: ALL answers must be YES

## Form for the Diagnosis of Death using Neurological Criteria

<b>Precondition 3 (continued)</b> <b>Exclusion of potentially reversible factors</b> <b>materially contributing to the coma or apnoea</b>				
<i>Electrolyte, metabolic and endocrine disturbances</i> (Code 6.33 – 6.34, Appendix 2: Table A3)	<b>Test 1</b>		<b>Test 2</b> (24 hours)	
<b>Sodium (Na<sup>+</sup>) is between 125-160 mmol/L, inclusive.</b>	mmol/L		mmol/L	
<b>Potassium (K<sup>+</sup>) is greater than 2.0 mmol/L.</b>	mmol/L		mmol/L	
<b>Phosphate (PO<sub>4</sub><sup>3-</sup>) is between 0.5 and 3.0 mmol/L, inclusive.</b>	mmol/L		mmol/L	
<b>Magnesium (Mg<sup>2+</sup>) is between 0.5 and 3.0 mmol/L, inclusive.</b>	mmol/L		mmol/L	
<b>Blood glucose is between 3.0 and 20.0 mmol/L, inclusive.</b> <i>As blood glucose concentrations can change rapidly in critically ill patients, a blood sugar measurement should be made prior to clinical testing.</i>	mmol/L		mmol/L	
<b>Other electrolyte and metabolic disturbances</b> Are you satisfied that no other electrolyte or metabolic disturbance is materially contributing to the coma or apnoea (e.g. elevated urea or ammonia, metabolic disorders)? <i>In such situations either correction or expert metabolic advice should be considered.</i>	<b>Dr One</b>  Yes / No	<b>Dr Two</b>  Yes / No	<b>Dr One</b>  Yes / No	<b>Dr Two</b>  Yes / No
<b>Endocrine disturbances</b> Are you satisfied that there is no clinical reason to suspect that an endocrine disturbance is materially contributing to the coma or apnoea? <i>If there is doubt, appropriate endocrine assays should be undertaken.</i>	<b>Dr One</b>  Yes / No	<b>Dr Two</b>  Yes / No	<b>Dr One</b>  Yes / No	<b>Dr Two</b>  Yes / No

*To diagnose death all answers must be in mmol/L range, or YES*

	<b>Test 1</b>		<b>Test 2</b> (24 hours after Test 1)	
<b>Precondition 3</b> Are you satisfied that potentially reversible factors which could be materially contributing to the coma or apnoea have been considered and excluded?	<b>Dr One</b>  Yes / No	<b>Dr Two</b>  Yes / No	<b>Dr One</b>  Yes / No	<b>Dr Two</b>  Yes / No

**Precondition 3 (continued): ALL answers must be in mmol/L range, YES**

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Patient Name:

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### Precondition 4 Additional caution in uncommon circumstances

**Guidance (Consult Code 6.35 – 6.37, Appendix 2: Table A3, if any of the below are present)**

**4.1 Aetiology primarily isolated to the posterior fossa or brainstem. (Code 6.35)**

**4.2 Therapeutic decompressive craniectomy and other conditions where intracranial compliance may be significantly increased. (Code 6.36)**

**4.3 Patients receiving therapeutic steroids to reduce brain oedema (e.g. tumour, abscess, meningitis or trauma). (Code 6.37)**

	Test 1		Test 2 (24 hours after Test 1)	
<b>Precondition 4</b> Have the uncommon circumstances been excluded?	<b>Dr One</b>	<b>Dr Two</b>	<b>Dr One</b>	<b>Dr One</b>
	Yes / No	Yes / No	Yes / No	Yes / No

### Additional advice or expertise

If any additional advice or expertise was sought document here.

Reason advice sought:

Advice given:

Precondition 4: ALL answers must be YES, Additional advice

## Form for the Diagnosis of Death using Neurological Criteria

### Clinical testing for the absence of brainstem reflexes

#### Guidance (Code 6.39-6.43, Appendix 2: Table A4)

- The diagnosis is a two-stage process. Two full sets of clinical tests (including two apnoea tests) must be undertaken by the doctors. The two doctors in each test work together. Typically, one doctor will perform the first set of tests while the other observes. The same two doctors may perform the second set of tests, at least 24 hours after the first set, with roles reversed for the second set. It is acceptable for another doctor to undertake or observe the second set, or for another separate pair of doctors to undertake the second set. In all circumstances the two doctors in each set of tests must satisfy the requirements of 'Who can use neurological criteria' (Form Page 1) and be individually willing to document that death has been diagnosed and confirmed using neurological criteria. (Code 6.6-6.8, 6.49)
- It must be possible to examine both eyes and there should be no reason to suspect an eye injury or abnormality would prevent the reflex occurring if it could. (Code 6.42) Similarly, both ears must be able to be accessed for the oculovestibular reflex. (Code 6.43c) In the case of an inability to examine both eyes or both ears, for whatever reason, diagnosis of death by neurological criteria may be supported by delaying testing and/or seeking expert advice. (Code 6.64, Appendix 2: Table A6)

Brainstem Reflexes

Clinical testing of brainstem reflexes: ALL answers must be NO

	Test 1		Test 2 (24 hours after Test 1)	
<i>Apply an adequate stimulus, bilateral where able, which would ordinarily generate a response. (Code 6.42, 6.43, Table A4) To diagnose death, ALL answers must be NO</i>	Dr One	Dr Two	Dr One	Dr Two
<b>Pupillary reflex (cranial nerves II, III)</b> <b>Do the pupils react to light?</b> <i>Test for direct and consensual response on both sides. Pupils must be fixed in a midsize or dilated position.</i>	Yes / No	Yes / No	Yes / No	Yes / No
<b>Corneal reflex (cranial nerves V, VII)</b> <b>Is there any eyelid movement when each cornea is touched in turn? Touching the sclera is not sufficient.</b> <i>The use of sterile gauze is recommended.</i>	Yes / No	Yes / No	Yes / No	Yes / No
<b>Motor response (cranial nerves V, VII)</b> <b>Is there any motor response within the cranial nerve or somatic distribution when supraorbital pressure is applied? Repeat both sides.</b> <i>Somatic reflex limb and trunk movements (spinal reflexes) may need to be differentiated. (Code 6.19)</i>	Yes / No	Yes / No	Yes / No	Yes / No
<b>Gag reflex (cranial nerves IX, X)</b> <b>Is the gag reflex present? Stimulate the posterior pharynx bilaterally. Use a tongue depressor or firm suction catheter (e.g. Yankauer sucker). A laryngoscope may assist.</b>	Yes / No	Yes / No	Yes / No	Yes / No
<b>Cough reflex (cranial nerves IX, X)</b> <b>Is the cough reflex response present?</b> <i>Pass a suction catheter down the trachea to the carina.</i>	Yes / No	Yes / No	Yes / No	Yes / No
<b>Vestibulo-ocular reflex (cranial nerves III, IV, VI VIII)</b> <b>Is there any eye movement seen during or following the slow injection of at least 50 ml (20-50 ml for a child) ice-cold water over 1 minute into each ear, with the head flexed at 30°?</b> <i>Each ear drum should be clearly visualised before the test.</i>	Yes / No	Yes / No	Yes / No	Yes / No

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### The apnoea test

**Guidance (Code 6.44-6.48, Appendix 2: A8)**

- **The apnoea test must not be performed while the patient is connected to a mechanical ventilator.** Pre-oxygenate FiO<sub>2</sub> 1.0. Prepare a CPAP circuit (e.g. Mapleson circuit, Neopuff or equivalent).
- Oxygenation and cardiovascular stability should be maintained through each apnoea test.
- The 5 minutes observation is a minimum. Some doctors may choose to delay taking the confirmatory arterial blood gas sample immediately at 5 minutes to increase the certainty that the PaCO<sub>2</sub> and pH have reached the apnoea END arterial targets.
- In the case of an absolute inability to complete the apnoea test, for whatever reason, the diagnosis of death by neurological criteria will not be possible.

Apnoea Test (the apnoea test must be performed twice)

	Test 1		Test 2 (24 hours after Test 1)	
<b>START time</b> Document time when apnoea test was commenced.	hr : min  (24 hour clock)		hr : min  (24 hour clock)	
<b>START arterial PaCO<sub>2</sub> - is at least 5.3 kPa</b>  <i>In patients who require a higher PaCO<sub>2</sub> to breathe (Code 6.44) start the apnoea test at a PaCO<sub>2</sub> at or above their chronic or typical baseline if known.</i>	<b>START PaCO<sub>2</sub></b>  kPa  <i>Must be at least 5.3 kPa</i>		<b>START PaCO<sub>2</sub></b>  kPa  <i>Must be at least 5.3 kPa</i>	
<b>Calculate apnoea test TARGET PaCO<sub>2</sub></b>  <i>Use a calculator TARGET PaCO<sub>2</sub> is 2.7 kPa more than START PaCO<sub>2</sub>, and TARGET PaCO<sub>2</sub> must be least 8.0 kPa.</i>	<b>TARGET PaCO<sub>2</sub></b>  START + 2.7  = kPa		<b>TARGET PaCO<sub>2</sub></b>  START + 2.7  = kPa	
<b>END arterial PaCO<sub>2</sub> - has reached TARGET PaCO<sub>2</sub></b>  <i>Must have reached TARGET PaCO<sub>2</sub></i>	<b>END PaCO<sub>2</sub></b>  kPa  Must have reached TARGET PaCO <sub>2</sub>		<b>END PaCO<sub>2</sub></b>  kPa  Must have reached TARGET PaCO <sub>2</sub>	
<b>END arterial pH - is less than 7.3 ([H+] greater than 50 nmol/L)</b>	<b>End pH/[H+]</b>  pH less than 7.3 [H+] greater than 50nmol/L		<b>End pH/[H+]</b>  pH less than 7.3 [H+] greater than 50nmol/L	
<b>END time</b> Document time when apnoea test was ceased.  <i>Must be a minimum of 5 minutes.</i>	hr : min  (24 hour clock)  Perform lung recruitment		hr : min  (24 hour clock)  Perform lung recruitment	
<b>Was any spontaneous respiratory effort observed over a <i>minimum</i> of 5 (five) minutes following disconnection from the ventilator?</b>  (To diagnose death, ALL answers must be NO)	Dr One  Yes / No	Dr Two  Yes / No	Dr One  Yes / No	Dr Two  Yes / No

Considerable atelectasis may develop even with CPAP. At the conclusion of the apnoea test, carry out a manual recruitment manoeuvre.

## Form for the Diagnosis of Death using Neurological Criteria

Completion of Diagnosis			
Register of the doctors carrying out the diagnosis			
Test 1		Test 2	
Date: Time:		Date: Time:	
Dr One Name Grade GMC Signature	Dr Two Name Grade GMC Signature	Dr One Name Grade GMC Signature	Dr Two Name Grade GMC Signature
<b>Guidance</b> <ul style="list-style-type: none"> <li>Death is confirmed at the time when all doctors involved in carrying out the clinical tests are satisfied all the relevant neurological criteria to diagnose death are met.</li> <li><b>This would ordinarily be at the time of completion of the second set of clinical tests. This becomes the time of death.</b></li> </ul>			
Confirmation of Death by the Final Two Doctors in Test 2			
Are you satisfied that death has been confirmed following the permanent cessation of brainstem function?		Dr One Yes / No	Dr Two Yes / No
Time of Death Date Time		Dr One Signature	Dr Two Signature

### References & Resources

- Academy of Medical Royal Colleges. A Code of Practice for the Diagnosis and Confirmation of Death. 2025. [www.aomrc.org.uk](http://www.aomrc.org.uk)
- Harvey D, Butler J, Groves J, et al. Management of perceived devastating brain injury after hospital admission: a consensus statement from stakeholder professional organizations. *Br J Anaesth* 2018;120:138-145. DOI: [10.1016/j.bja.2017.10.002](https://doi.org/10.1016/j.bja.2017.10.002).
- Donation Actions Framework. A Professional, Ethical and Legal Framework for Deceased Organ Donation Actions. 2022. <https://www.odt.nhs.uk/deceased-donation/best-practice-guidance/donation-actions-framework/>
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- Meadows C, Toolan M, Slack A, et al. Diagnosis of death using neurological criteria in adult patients on extracorporeal membrane oxygenation: Development of UK guidance. *J Intensive Care Soc* 2020; 21:28-32. DOI: [10.1177/1751143719832170](https://doi.org/10.1177/1751143719832170).
- Thomas EO, Manara A, Dineen RA, et al. The use of cerebral computed tomographic angiography as an ancillary investigation to support a clinical diagnosis of death using neurological criteria: a consensus guideline. *Anaesthesia* 2023;78:330-336. DOI: [10.1111/anae.15950](https://doi.org/10.1111/anae.15950).
- Dineen RA, Thomas EO, Mortimer A, et al. Cerebral CT angiography as an ancillary investigation in the diagnosis of death using neurological criteria: a new UK guideline. *Clinical Radiology* 2023;78:e166-168. DOI: [10.1016/j.crad.2022.12.003](https://doi.org/10.1016/j.crad.2022.12.003).

FICM Webpage on DNC [www.ficm.ac.uk/diagnosing-death-using-neurological-criteria](http://www.ficm.ac.uk/diagnosing-death-using-neurological-criteria)

A series of helpful education videos are available from NHSBT at [www.odt.nhs.uk](http://www.odt.nhs.uk)

### Form feedback

Comments and feedback should be directed to [contact@ficm.ac.uk](mailto:contact@ficm.ac.uk)