



**Checklist for Neurological Determination of Death (NDD) –
Adults and Children age 1 year**

Section One: Minimum Clinical Criteria

- a. Deep unresponsive coma with the following established etiology: _____
- b. Confounding factors precluding the diagnosis? Yes No
- c. Temperature (core) _____
- d. Brainstem Reflexes:
 - Bilateral absence of motor responses: (excluding spinal reflexes) Yes No
 - Absent cough: Yes No
 - Absent gag: Yes No
 - Bilateral absence of corneal responses: Yes No
 - Bilateral absence of vestibulo-ocular responses: Yes No
 - Bilateral absence of pupillary response to light: (pupils mid size) Yes No
 - Apnea: Yes No
 - At completion of apnea test: pH _____ PaCO₂ _____ mmHg
 - PaCO₂ 20 mmHg above the pre-apnea test level: Yes No

Section Two: Ancillary Tests

Ancillary tests, as defined by the absence of intracranial blood flow, should be performed when **any** of the minimum clinical criteria cannot be completed, **or** unresolved confounding factors exist.

Ancillary testing has been performed: Yes No
Date: _____ Time: _____

Absence of intracranial blood flow has been demonstrated by:

- Cerebral Radiocontrast Angiography
- Radionuclide Angiography
- Other _____

Section Three: Declaration and Documentation

The first and second physician’s determinations may be performed concurrently. If performed at different points in time, a full clinical examination including the apnea test must be performed, without any fixed examination interval, regardless of the primary etiology.

This patient fulfills the neurological determination of death:

Physician: Print name: _____ Signature: _____
Date: _____ Time: _____

Section Four: Standard End-of-Life Care

- Is this patient medically eligible for organ and/or tissue donation? Yes No
- Has the option for organ and/or tissue donation been offered? Yes No
- Has consent been obtained for donation? Yes No

Checklist for Neurological Determination of Death—Adults and Children ≥ 1 Year

Age Definitions

Children 1 – 18 years of age. (Infants < 1 year and Term Newborns – refer to separate checklist.)

Overarching Principles

The legal time of death is marked by the first determination of death. Existing law states that for the purposes of post-mortem donation, the fact of death shall be determined by two physicians. The first and second physician's determinations may be performed concurrently. If performed at different points in time, a full clinical examination including the apnea test must be performed, without any fixed examination interval, regardless of the primary etiology.

Physicians Declaring Neurological Death

Minimum level of physician qualifications to perform NDD is full and current licensure for independent medical practice in the relevant Canadian jurisdiction. This excludes physicians who are only on an educational register. The authority to perform NDD cannot be delegated. Physicians should have skill and knowledge in both the management of patients with severe brain injury and in determination of neurological death in the relevant age groups. For the purposes of post mortem donation, a physician who has had any association with the proposed transplant recipient that might influence the physician's judgment shall not take part in the declaration of death.

Minimum Clinical Criteria

Established Etiology: Absence of clinical neurological function with a known, proximate cause that is irreversible. There must be definite clinical and/or neuroimaging evidence of an acute central nervous system (CNS) event that is consistent with the irreversible loss of neurological function. NDD may occur as a consequence of intracranial hypertension and/or primary direct brainstem injury.

Deep Unresponsive Coma: A lack of spontaneous movements and absence of movement originating in the CNS such as: cranial nerve function, CNS mediated motor response to pain in any distribution, seizures, decorticate and decerebrate responses. **Spinal reflexes**, or motor responses confined to spinal distribution, may persist.

Confounding Factors:

1. Unresuscitated shock
2. Hypothermia (core temperature <34 degrees Celsius, by central blood, rectal or esophageal/gastric measurements)
3. Severe metabolic disorders capable of causing a potentially reversible coma. If the primary etiology does not fully explain the clinical picture, and if in the treating physician's judgment the metabolic abnormality may play a role, it should be corrected or an ancillary test should be performed.
4. Peripheral nerve or muscle dysfunction or neuromuscular blockade potentially accounting for unresponsiveness, or
5. Clinically significant drug intoxications (e.g. alcohol, barbiturates, sedatives); therapeutic levels and/or therapeutic dosing of anticonvulsants, sedatives and analgesics do not preclude the diagnosis.

Specific to Cardiac Arrest: Neurological assessments may be unreliable in the acute post-resuscitation phase after cardiorespiratory arrest. In cases of acute hypoxic-ischemic brain injury, clinical evaluation for NDD should be delayed for 24 hours or an ancillary test could be performed.

Examiners are cautioned to review confounding issues in the context of the primary etiology and examination.

Clinical judgment is the deciding factor.

Apnea Test:

Optimal performance requires a period of preoxygenation followed by 100% O₂ delivered via the trachea upon disconnection from mechanical ventilation. The certifying physician must continuously observe the patient for respiratory effort. **Thresholds at completion of the apnea test: PaCO₂ ≥ 60 mmHg and ≥ 20 mmHg above the pre-apnea test level and pH ≤ 7.28 as determined by arterial blood gases.** Caution must be exercised in considering the validity in cases of chronic respiratory insufficiency or dependence on hypoxic respiratory drive.

Ancillary Tests

Demonstration of the global absence of intracranial blood flow is considered the standard for determination of death by ancillary testing. The following prerequisite conditions must be met prior to ancillary testing: i) established etiology, ii) deep unresponsive coma, iii) absence of unresuscitated shock and hypothermia. Currently validated techniques are 4-vessel cerebral angiogram or radionuclide cerebral blood flow imaging. EEG is no longer recommended. NDD can be confirmed by ancillary testing when minimum clinical criteria cannot be completed or confounding factors cannot be corrected.