

Brain Death Diagnosis

- [Research progress in the use of botulinum toxin type a for post-stroke spasticity rehabilitation: a narrative review](#)
- [TMEM115: a promising marker for glioma immunotherapy and prognosis](#)
- [Research progress on microglial pyroptosis and inflammasomes: a comprehensive analysis](#)
- [Comprehensive predictive modeling in subarachnoid hemorrhage: integrating radiomics and clinical variables](#)
- [Extracellular Flux Assays for the Measurement of Glycolysis and Mitochondrial Respiration in Brain Cancer Cells](#)
- [The role of neuroimaging in brain death diagnosis: a review of radiological protocols and the need for standardization](#)
- [Atopy improves survival and decreases risk of brain metastasis in cutaneous melanoma](#)
- [Sudden Prehospital Deaths From Brain Arteriovenous Malformations: A Population-Based Study](#)

Brain death is the **irreversible cessation of all functions of the entire brain**, including the brainstem. It is both a legal and medical definition of death in most countries and serves as the foundation for ethical organ donation.

□ Core Clinical Criteria

The clinical diagnosis of brain death requires:

- **Irreversible cause** of coma established (e.g., TBI, hemorrhage, anoxia)
- **Absence of confounding factors:**
 1. Hypothermia (core temperature > 36°C)
 2. CNS depressants, sedatives, paralytics
 3. Severe metabolic or endocrine disturbances
- **Complete neurological examination**, including:
 1. No response to painful stimuli
 2. Absence of brainstem reflexes:
 1. Pupillary light reflex
 2. Corneal reflex
 3. Oculocephalic reflex ("doll's eyes")
 4. Oculovestibular reflex (cold calorics)
 5. Gag and cough reflexes
 3. **Apnea test:** No spontaneous respiration despite a rise in PaCO₂ above 60 mmHg or 20 mmHg over baseline

□ Ancillary Tests (When Required)

see [Ancillary Confirmatory Tests for Brain Death](#)

☐ Observation Periods

Depends on age and national regulation:

- Adults: some protocols require **two independent exams**, others accept **one** if criteria are unequivocally met
 - In cases of uncertain prognosis (e.g., anoxia, hypothermia), a **longer observation period** and/or **ancillary testing** is recommended
-

⚖ Legal and Ethical Considerations

- Must follow national standards (e.g., AAN [USA], ONT [Spain], AoMRC [UK])
 - Documentation must include:
 1. Established irreversible coma
 2. Absence of brainstem reflexes
 3. Apnea test results
 4. Time of death declaration
-

☐⚕ Who Can Perform the Diagnosis?

Typically:

- Two **licensed, independent physicians**
 - Must **not be involved in transplant team**
 - Often includes **neurologists, intensivists, or neurosurgeons**
-

Common Pitfalls in Diagnosis

- **Spinal movements postmortem:** e.g., facial twitching, finger tremors, or the “Lazarus sign” (sitting up) – all mediated by the spinal cord
 - **False appearance of breathing:** Ventilators may auto-trigger due to arterial pulsations or mechanical artifacts, not genuine respiration
-

Brain Death: Diagnosis vs. Criteria

□ **Brain Death Diagnosis**

Refers to the **act or process** of determining that a person is brain dead based on clinical and/or ancillary findings.

Examples:

- “The brain death diagnosis must comply with legal protocols.”
- “Diagnosis was confirmed following a complete exam and apnea testing.”

□ **Brain Death Criteria**

Refers to the **clinical standards** or **protocol elements** used to make the diagnosis.

Examples:

- “The patient fulfilled all brain death criteria.”
- “Protocols define the minimum criteria to establish brain death.”

□ **Comparison Table**

Term	Meaning	Use Case
Brain death diagnosis	Act of declaring death via neurological criteria	Legal documentation, clinical act
Brain death criteria	Required clinical or test-based standards	Protocols, medical education

Brain Death Determination vs. Diagnosis

While related, these terms describe different stages:

□ **Brain Death Determination**

Describes the **step-by-step clinical protocol**:

- Neurological exam
- Apnea test
- Ancillary testing (if needed)
- Observation and legal documentation

Example: “Brain death determination includes all required confirmatory steps.”

□ **Brain Death Diagnosis**

Refers to the **final legal declaration** that the patient is dead based on the determination process.

Example: "Diagnosis of brain death was made at 08:22 by the attending physician."

Summary Table

Term	Definition	Emphasis
Brain Death Determination	Protocol used to confirm brain death	Process and steps
Brain Death Diagnosis	Declaration based on completed protocol	Legal and clinical outcome

Source

* Neurology. 2010 Jun 8;74(23):1911. doi:10.1212/WNL.0b013e3181e242a8

→ <https://n.neurology.org/content/74/23/1911>

See Also

- [Brain Death Criteria](#)
- [Brain Death Determination](#)
- [Apnea Test](#)
- [Ancillary Confirmatory Tests for Brain Death](#)
- [The World Brain Death Project](#)

From:

<https://neurosurgerywiki.com/wiki/> - **Neurosurgery Wiki**

Permanent link:

https://neurosurgerywiki.com/wiki/doku.php?id=brain_death_diagnosis

Last update:

2025/06/24 22:05

