

## Determining Brain Death



The Uniform Law Commission (ULC) created the Uniform Determination of Death Act (UDDA) in the United States in 1980, which was adopted by all 50 states. The UDDA defines death as either the irreversible cessation of circulatory and respiratory functions or the irreversible cessation of all functions of the entire brain, including the brainstem. While the loss of cardiorespiratory function has always been recognised as death, some view the determination of death by neurologic criteria as a new way of defining death based on the loss of brain functioning instead of biological functioning.

Those who created the UDDA did not see the determination of death by neurologic criteria as a new way of defining death. They referred to evidence indicating that the brain is necessary for maintaining biological functioning. When the brain's regulatory function is absent, homeostatic mechanisms fail, leading to cardiac arrest within a short time. Therefore, the UDDA viewed brain death and cardiopulmonary arrest as equivalent and equally valid criteria for diagnosing a patient's biological death.

However, this point of view has been challenged due to advancements in critical care medicine. With modern support, some patients who are declared brain dead can be stabilised and kept alive for many years with mechanical ventilation and tube feedings. Despite being legally dead, patients who are declared brain dead do not undergo the typical physical decay and putrefaction associated with death. They may retain many capacities of living individuals, such as the ability to absorb nutrition, excrete waste, heal wounds, grow, undergo puberty, and even gestate.

Another issue is that the current guidelines from the American Academy of Neurology (AAN) only test for a select number of functions and do not test for hypothalamic functions, which may still be present in patients diagnosed with brain death. This has further raised concerns about the accuracy of the diagnosis.

Due to increased legal challenges related to the determination of brain death, the Uniform Law Commission (ULC) began evaluating in 2021 whether the UDDA should be revised. Three different proposals have been considered.

The first proposal is to leave the UDDA unchanged but revise the AAN guidelines to include testing for the absence of hypothalamic function, bringing the guidelines more in line with the law. However, this may not address the issue of long-term survival for patients diagnosed with brain death who are given medical support. Furthermore, other brain functions, currently untestable or unknown, could still be present.

The second proposal is to modify the definition of brain death to align with the current guidelines, which require establishing three conditions: unconsciousness, apnoea, and irreversibility. The guidelines define unconsciousness as the absence of responsiveness and brainstem reflexes. Patients must also lose the capacity for spontaneous respiration. These conditions must be irreversible and confirmed by the absence of confounding factors, such as medication or metabolic abnormalities, and by appropriate medical imaging.

The third proposal is to maintain the status quo. If the position that all severe brain injuries are entitled to the same legal protections as fetuses were to prevail, some states could eliminate the determination of death by neurologic criteria entirely. This would mean it would no longer be possible to procure transplantable organs from patients diagnosed with brain death. Physicians would have to continue to provide intensive care unit beds and life support to patients who will never regain consciousness. This could have disastrous consequences for organ procurement and transplantation systems, leading to many avoidable deaths.

Some commissioners are in favour of not making any significant revisions to the UDDA. One way to mitigate the risk of future lawsuits is to provide an opt-out for patients who object to the determination of death by neurologic criteria.

The potential revisions to the UDDA have the potential to create new problems, as changes could result in a patchwork of laws across different states. In contrast, leaving the UDDA intact may not resolve existing problems, but it would maintain the stability of the generally accepted status quo.

Source: [JAMA](#)

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