This is a non-evidence-based supplement to the American Academy of Neurology (AAN) guideline update (Neurology® 2010;74:1911–1918) on determining brain death in adults.

Please refer to “AAN Summary of Evidence-based Guideline for Clinicians” at www.aan.com for a summary of the evidence-based content.

Methods of ancillary testing for the determination of brain death*

Cerebral Angiography
The contrast medium should be injected in the aortic arch under high pressure and reach both anterior and posterior circulations.
No intracerebral filling should be detected at the level of entry of the carotid or vertebral artery to the skull.
The external carotid circulation should be patent.
The filling of the superior longitudinal sinus may be delayed.

Electroencephalography
A minimum of eight scalp electrodes should be used.
Interelectrode impedance should be between 100 and 10,000 Ω.
The integrity of the entire recording system should be tested.
The distance between electrodes should be at least 10 cm.
The sensitivity should be increased to at least 2 µV for 30 minutes, with inclusion of appropriate calibrations.
The high-frequency filter setting should not be set below 30 Hz, and the low-frequency setting should not be above 1 Hz.
Electroencephalography should demonstrate a lack of reactivity to intense somatosensory or audiovisual stimuli.

Transcranial Doppler Ultrasonography
Transcranial Doppler (TCD) is only useful if a reliable signal is found. The abnormalities should include either reverberating flow or small systolic peaks in early systole. A finding of a complete absence of flow may not be reliable owing to inadequate transtemporal windows for insonation. There should be bilateral insonation and anterior and posterior insonation. The probe should be placed at the temporal bone, above the zygomatic arch and the vertebrobasilar arteries, through the suboccipital transcranial window.
Insonation through the orbital window can be considered to obtain a reliable signal. TCD may be less reliable in patients with a prior craniotomy.

Cerebral Scintigraphy (Technetium Tc 99mHexametazime [HMPAO])
The isotope should be injected within 30 minutes after its reconstitution.
Anterior and both lateral planar image counts (500,000) of the head should be obtained at several time points: immediately, between 30 and 60 minutes later, and at 2 hours.
A correct intravenous injection may be confirmed with additional images of the liver demonstrating uptake (optional).
No radionuclide localization in the middle cerebral artery, anterior cerebral artery, or basilar artery territories of the cerebral hemispheres (hollow-skull phenomenon).
No tracer in superior sagittal sinus (minimal tracer can come from the scalp).

*See published guideline for indications.