



In reply: The capacity for consciousness and the clinical diagnosis of brain death: are we using the correct gold standard?

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To the Editor,

We read with great interest the comments and insights provided by M.Y. Rady.¹ The goal of our commentary was not to question the validity of the established criteria, but rather to offer an appraisal of available ancillary tests relative to the current definition of death by neurologic criteria (DNC) as accepted in 2021, as well as a necessary

distinction between cerebral flow, perfusion, and function.^{2,3} We recognize the challenges and pitfalls associated with the use of neuroimaging and clinical examination for definitive determination of brain death, but they remain the only bedside tools available to the clinician. Although autopsy studies may provide confirmation of structural neuronal damage, they hardly represent a useful aid to diagnosis in a comatose patient. A potential next question could be whether the medical community is ready to re-explore the foundations leading to DNC determination and incorporate the concepts of consciousness, awareness, and reversible ischemic penumbra to its criteria. Without dedicated research programs in this area, for instance pertaining to the detection of subclinical brain/brainstem function or residual consciousness through functional neuroimaging, clinicians will have to rely on current definitions and accept that an unequivocal physical examination or a definitive absence of flow (and possibly perfusion) on ancillary tests support the absence of brain function and the diagnosis of DNC.

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References

1. Rady MY. The capacity for consciousness and the clinical diagnosis of brain death: are we using the correct gold standard?

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- Can J Anesth 2021; DOI: <https://doi.org/10.1007/s12630-021-02046-7>.
2. Greer DM, Shemie SD, Lewis A, et al. Determination of brain death/death by neurologic criteria: The World Brain Death Project. JAMA 2020; 324: 1078-97.
 3. Plourde G, Briard JN, Shemie SD, Shankar JJ, Chassé M. Flow is not perfusion, and perfusion is not function: ancillary testing for

the diagnosis of brain death. Can J Anesth 2021; DOI: <https://doi.org/10.1007/s12630-021-01988-2>.

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