

How Dead Is a Doornail?

by Mike Dubik, MD

Brian Wood, MD

For hundreds, if not thousands, of years it has been accepted as an axiom that inanimate objects, such as nails, are dead. This self-evident truth has been expressed in the phrase: "dead as a doornail." Thus, someone who is unequivocally dead is said to be "dead as a doornail."

Advanced life support technology now allows us to maintain the heart and lung's functionality in patients who no longer have any brain function. This ability has created legal, moral and religious conundrums. Until a generation ago, these problems were solely the domain of a few ethicists who entertained them as theoretical exercises.

However, now most states have laws concerning brain death. The American Medical Association, the American Bar Association, the American Neurological Association, and the American Academy of Pediatrics came together and formed a Special Task Force^{1,2,3,4} and have endorsed the following as a definition of death: Irreversible cessation of all function of the entire brain, including the brainstem.

If the definition of death as expressed by the AMA *et al* has validity, it should be possible to compare this recent criteria against the widely accepted and time-tested "doornail" standard. We did just that.

We subjected a large doornail⁵ (see Figure 1) that was forged in 1986⁶ to thorough examination, prolonged close observation, and an electroencephalogram (EEG).

Our Findings

The doornail was repeatedly examined and closely observed over a 24 hour period.

1. The nail did not exhibit any vocalizations of volitional activity.
2. The nail evidenced no spontaneous eye movements; neither could respiratory movements be detected.
3. There was no evidence of postural activity (decebrate or decorticate).
4. The nail made no spontaneous or induced movements whatsoever.

Thus, the nail met the "physical examination" criteria of death.^{3,4}

A well-executed and reliably read electroencephalogram is a useful adjunct in the diagnosis of brain death. We performed a 30-minute EEG to document electrocerebral silence (see Figure 2). As is often the case with small children, it was not possible to meet the standard requirement for 10 cm electrode separation. Instead, the inter-electrode distance was decreased proportionally to the size of the nail's head. The EEG was isoelectric, i.e. flat. Further, there was no electrical response to rousing stimuli. When we subjected the doornail to rousing stimuli, there was no response.

We conclude that the criteria for death as described in modern medical literature^{1,2,3,4} is valid and may be used with confidence by clinicians.

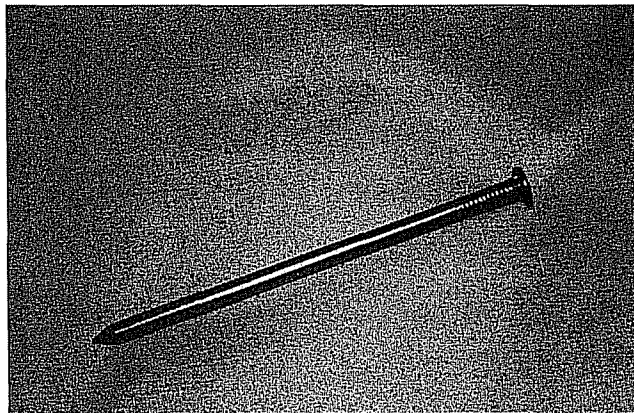


Figure 1. The doornail.

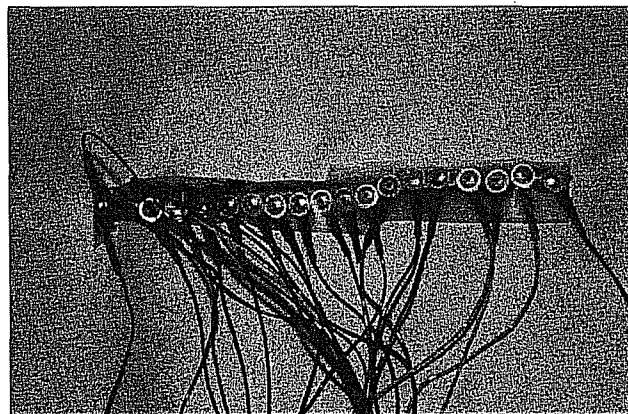


Figure 2. Here, comma, the doornail undergoes electroencephalography.

References

1. "Determination of brain death," Ad Hoc Committee on Brain Death (The Children's Hospital, Boston, MA), *Journal of Pediatrics*, vol. 110, January, 1987, pp. 15-19.
2. "Guidelines for the determination of death," President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research, Washington, DC, *Journal of the American Medical Association*, vol. 246, 1981, p. 2184.
3. Report of a Special Task Force: Guidelines for the Determination of Brain Death in Children," *Pediatrics*, 1987, vol. 8, no. 2, pp. 298-300.
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5. You should see the door it came from.
6. The patient was seven years old at the time of the study.

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than sufficient. This is easily
derived using Avogadro's
constant in place of *c*.**

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Jo Rita Jordan, PhD
Editor & Publisher
Analytical Consumer
jjordan@world.std.com
(508) 369-9079