



Trinity of Life: Brain-Heart-Lungs

Peer review status:

No

Corresponding Author:

Dr. Deepak Gupta,
Anesthesiologist, Wayne State University, 48201 - United States of America

Submitting Author:

Dr. Deepak Gupta,
Anesthesiologist, Wayne State University, 48201 - United States of America

Article ID: WMC005560

Article Type: My opinion

Submitted on: 13-Apr-2019, 09:02:43 PM GMT **Published on:** 25-Apr-2019, 06:45:01 AM GMT

Article URL: http://www.webmedcentral.com/article_view/5560

Subject Categories: CARDIOLOGY

Keywords: cardiopulmonary resuscitation, conscious-CPR, CPR-sedation, death, consciousness, ventricular fibrillation

How to cite the article: Gupta D. Trinity of Life: Brain-Heart-Lungs. WebmedCentral CARDIOLOGY 2019;10(4):WMC005560

Copyright: This is an open-access article distributed under the terms of the [Creative Commons Attribution License \(CC-BY\)](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Source(s) of Funding:

NONE

Competing Interests:

NONE

Trinity of Life: Brain-Heart-Lungs

Author(s): Gupta D

My opinion

As perioperative and critical care physicians, we are always encountering dilemmas about the definition of death. Without delving into philosophical intricacies about this definition from an individual's perspective, I want to focus on how and when specific organs can be proclaimed dead wherein some organs' deaths are almost always considered equivalent to deaths of the individual bodies harboring those dead organs. Historically, prior to mechanical ventilation era, people must have believed that if a person is not visibly breathing, that person must be already dead. Once the era of cardiopulmonary resuscitation (CPR) dawned, it must have become apparent to people that, until a person's heart has given up on the person despite timely initiation of resuscitative efforts, that person cannot be pronounced dead. Now, the way the times are evolving to focus on protecting brains by cooling them down along with futuristic cryogenically frozen bodies harboring such protected brains [1-2], it may eventually turn out that clearly defined irreversible deaths for persons may become unquantifiable and mystical phenomena during the futuristic eras. In the interim, it can be said that lungs are "alive" when they are breathing naturally or artificially, hearts are "alive" when they are beating naturally or artificially, brains are "alive" when they are thinking naturally or artificially, and bodies are "alive" when these trinities of life are functioning as they are supposed to for the bodies harboring them. The time-sensitive thresholds and time-bound deadlines defining the reversibility of organ functions have evolved over time to eventually push back those times further and further when proclaiming the irreversible cessation of critical organs' functions and thus prolonging the life history of modern human beings whereby pronouncing definitive irreversible deaths of bodies will eventually become more and more mystical.

To have a potential insight into such future, the recognition of fibrillating hearts will be so early in continuously monitored perioperative and critical care scenarios that the presence of conscious and communicating brains during these brief lag-periods within these monitored bodies harboring fibrillating hearts will confuse the rescuers and monitors alike just

because these doomed brains haven't yet caught up to the lack of pulsatile blood flow secondary to fibrillating and non-pumping hearts and are remaining conscious-communicative during these extremely brief lag-periods most likely due to imperfect non-zero non-zilch non-pulsatile blood circulating (delivering nutrients and extracting toxins) within their arterial-venous-capillary systems [3-11]. To further delve into such future, the recognition of hearts at potential risks of either "fibrillating thus non-pumping" or "non-pumping despite non-fibrillating" (asystole or pulseless electrical activity) will be so early during day-to-day lives of bodies harboring these potentially sick hearts that these bodies' brains without worrying about natural hearts-initiated pulsatile blood reaching to them will be able to afford to remain conscious and communicative despite these bodies' hearts eventually becoming irreversibly dead because with time these irreversibly dead natural hearts will become irrelevant when automated implantable cardiac devices will not only defibrillate and pace electronically but also compress mechanically buying the time for these bodies to get these irreversibly dead natural hearts replaced with artificial hearts ready to do the pumping of pulsatile blood throughout these bodies [12-13]. Finally, these so-called irreversibly dead bodies harboring non-breathing lungs, non-beating hearts and non-thinking brains will be able to get cryogenically frozen so early in time that their "lives" will get frozen in the space-time continuum to eventually get revived in toto wherein these supposedly dead bodies will be able to be alive again with their re-breathing lungs, re-beating hearts and re-thinking brains by making the leap in time to continue their "lives" from where they had "irreversibly" left thus making their "irreversibly-dead-and-frozen-time-periods" as irrelevant glitches in their space-time continuum [1-2].

Summarily for now, we should not be amazed or rattled or confused (a) when deciding to initiate CPR in conscious and communicating bodies demonstrating fibrillating hearts because these bodies' brains will much sooner than later stop showing signs of thinking by losing their consciousness and ability to communicate [3], or (b) when deciding to sedate during CPR when effective CPR is inducing return of consciousness and ability to communicate sooner than later in those bodies whose natural hearts are failing immediately after withholding CPR thus warranting

continuous effective CPR in those bodies harboring conscious and communicative brains in spite of harboring non-beating natural hearts [14-15].

Acknowledgements

The author is indebted to Jeffrey Kangas, MD and Julia Rusina, DO, Department of Anesthesiology, Detroit Medical Center, Detroit, Michigan, United States, for critically inspiring the awareness about possibility for clinical scenarios warranting sedation during conscious-cardiopulmonary-resuscitation (conscious-CPR).

References

1. Marvel finally explained how Captain America survived being frozen. <https://www.cinemablend.com/news/2445169/marvel-finally-explained-how-captain-america-survived-being-frozen> Accessed April 11, 2019
2. Will we ever be able to bring cryogenically frozen corpses back to life? A cryobiologist explains. <https://theconversation.com/will-we-ever-be-able-to-bring-cryogenically-frozen-corpses-back-to-life-a-cryobiologist-explains-69500> Accessed April 11, 2019
3. Ventricular fibrillation and consciousness are not mutually exclusive. [https://www.resuscitationjournal.com/article/S0300-9572\(15\)00899-0/pdf](https://www.resuscitationjournal.com/article/S0300-9572(15)00899-0/pdf) Accessed April 11, 2019
4. Ventricular fibrillation-induced cardiac arrest in the rat as a model of global cerebral ischemia. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3811953/> Accessed April 11, 2019
5. Systolic Arterial Pressure Recovery After Ventricular Fibrillation in Pigs. [https://www.annalsthoracicsurgery.org/article/0003-4975\(94\)91917-8/pdf](https://www.annalsthoracicsurgery.org/article/0003-4975(94)91917-8/pdf) Accessed April 11, 2019
6. Cerebral blood flow velocity during repeatedly induced ventricular fibrillation. [https://doi.org/10.1016/S0952-8180\(99\)00039-2](https://doi.org/10.1016/S0952-8180(99)00039-2) Accessed April 11, 2019
7. Cerebral blood flow velocity during induced ventricular fibrillation and ventricular tachycardia in humans. <https://doi.org/10.3109/tcic.8.5.212.214> Accessed April 11, 2019
8. Cerebral blood flow velocity during chest compressions in cardiac arrest. https://nvc.nl/sites/nvc.nl/files/pdf/case-report2_8.pdf Accessed April 11, 2019
9. Cerebral blood flow is decoupled from blood pressure and linked to EEG bursting after resuscitation from cardiac arrest. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5119605/> Accessed April 11, 2019
10. Pulsatile Versus Nonpulsatile Flow: No Difference in Cerebral Blood Flow or Metabolism during Normothermic Cardiopulmonary Bypass in Rabbits. <http://anesthesiology.pubs.asahq.org/article.aspx?articleid=1950572> Accessed April 11, 2019
11. Effect of pulsatile and nonpulsatile flow on cerebral perfusion in patients with left ventricular assist devices. <https://doi.org/10.1016/j.healun.2014.08.013> Accessed April 11, 2019
12. Prolonged sustained ventricular fibrillation without loss of consciousness in patients supported by a left ventricular assist device. <https://doi.org/10.1159/000063111> Accessed April 11, 2019
13. UCLA doctors remove man's heart, replace it with total artificial heart. <http://newsroom.ucla.edu/releases/man-s-heart-removed-and-replaced-241430> Accessed April 11, 2019
14. CPR induced consciousness: It's time for sedation protocols for this growing population. [https://www.resuscitationjournal.com/article/S0300-9572\(16\)00085-X/pdf](https://www.resuscitationjournal.com/article/S0300-9572(16)00085-X/pdf) Accessed April 11, 2019
15. CPR Induced Consciousness During Out-of-Hospital Cardiac Arrest: A Case Report on an Emerging Phenomenon. <https://doi.org/10.1080/10903127.2016.1229823> Accessed April 11, 2019