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Editorial Musings

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Long Covid represents a \$3.7 trillion global economic and humanistic disease burden. At present, there are no known FDA cleared treatments for this condition. Use of Photobiomodulation (PBM) for the use of Long Covid Brain Fog is known to be non-hazardous and has demonstrated strong efficacy in eradicating Long Covid Brain Fog in the course of twelve 14-minute sessions in one month.

Given the growing evidence and non-significant risk of PBM, and lack of any definitive treatment, Hyperchargeoffers PBM to the community in what is known as off label use. The FDA, while deeming PBM non-hazardous and a non-significant risk, does not have a specific approval for its use with Long Covid Brain Fog at this time. As it often takes years of research to gain FDA clearance, and as PBM can readily be deployed, we believe that responsible offering of off label use is a reasonable option to consider in conjunction with a shared decision-making process with one's health care team,

Deeper Dive:

In up to 25% of patients, Covid antigens persist in blood long after Covid Infection occurs. This concept is known as the viral reservoir. The virus is not completely eliminated after an infection. These data are taken from the Lancet, the most prestigious medical journal in the United Kingdom. An analogous occurrence in bacterial infections is strep throat. If antibiotics are not taken, streptococcus, cloaked in hyaluronic acid and effectively "stealth" to the immune system, resides in the body for some time, often erupting later with rash, auto-immune reactions, compromised kidney function, etc.

As the puzzle of how to treat long Covid still is emerging, both the viral reservoir theory, along with the use of photobiomodulation, or light therapy to eradicate the virus, continue to be credible mechanistically, even as objective evidence of their efficacy continues to grow.

Kitchen, et al. describes the cellular mechanisms and rationale in detail. PBM has been demonstrated to:

- accelerate the eradication of herpes virus lesions,
- protect the body's immune cells,
- increase nitric oxide which inhibits viral replication, reduce inflammatory cytokines (factors that drive inflammation in the body and perpetuate Long Covid symptoms),
- increase vascular endothelial growth factor (increases oxygen supply to stressed cells),
- upregulate Heat Shock Protein (Hsp), seen in treatments for influenza A, rhinovirus (common cold), HIV and Sindbis Virus, along with thrombus formation prevention.

Long Covid is a \$3.7 trillion conundrum. Photobiomodulation (PBM) poses non-significant risk. The case for PBM as an effective (yet not specifically FDA cleared for this indication) treatment to eliminate acute and post Covid viral reservoir, is demonstrated at the cellular level in both the lab and clinically. With this evidence, we at Hypercharge believe this protocol of twelve 14 minute-sessions over one month is a reasonable off label consideration to offer to the community, in conjunction with a shared decision-making process with one's provider. More specific information can be found at [Hypercharge.com](https://hypercharge.com).

*Off label use disclaimer: This statement has not been evaluated by the Food and Drug Administration. Photobiomodulation and Hypercharge treatment are not intended to diagnose, treat, cure or prevent any disease.

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BIO:

Dr. Daniel Sipple is board certified in physical medicine and rehabilitation, pain medicine with added qualifications in concussion and mild traumatic brain injury. He trained at the Shirley Ryan Ability Lab, served on faculty at the Mayo Clinic in Eau Claire, Wisconsin. He practiced at Midwest Spine and Brian Institute. Dr. Sipple is a the co-founder of Mayo Clinic Partnered InSitu Biologics, Acies Medical and Hypercharge Medical. Dr. Sipple served on the Board of Directors for the Society for Brain Mapping and Therapeutics, part of President Obama's BRAIN Initiative. In that capacity, presented internationally at the Neuroscience 20 in

conjunction with the G20, and assisted in SBMT's effort to raise \$500 Million for 31 Federally Funded Tech Hubs.

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